Study on best practices for ICT procurement based on standards in order to promote efficiency and reduce lock-in
This study was carried out for the European Commission by

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<th>Full Form</th>
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<tr>
<td>BITKOM</td>
<td>Bundesverband Informationswirtschaft, Telekommunikation Und Neue Medien E. V</td>
</tr>
<tr>
<td>CA</td>
<td>Contract Award</td>
</tr>
<tr>
<td>CAMSS</td>
<td>Common Assessment Method for Standards and Specifications</td>
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<tr>
<td>CAN</td>
<td>Contract Award Notice</td>
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<tr>
<td>CPV</td>
<td>Common Procurement Vocabulary</td>
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<td>EC</td>
<td>European Commission</td>
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<td>EIF</td>
<td>European Interoperability Framework</td>
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<td>EU</td>
<td>European Union</td>
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<td>EUPL</td>
<td>European Union Public Licence</td>
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<td>GITC</td>
<td>Government Information Technology and Communications</td>
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<td>GPA</td>
<td>Government Procurement Agreement</td>
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<td>ICT</td>
<td>Information and communications technology</td>
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<td>ISA</td>
<td>Interoperability Solutions for European Public Administrations</td>
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<td>MITA</td>
<td>Malta Information Technology Agency</td>
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<td>MS</td>
<td>Member State</td>
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<tr>
<td>MSP</td>
<td>Multi-Stakeholder Platform on ICT standardisation</td>
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<td>NIFO</td>
<td>National Interoperability Framework Observatory</td>
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<tr>
<td>OASC</td>
<td>Open &amp; Agile Smart Cities</td>
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<tr>
<td>OFE</td>
<td>Open Forum Europe</td>
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<td>PMO</td>
<td>Project Management Office</td>
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<td>RP</td>
<td>Rolling Plan on ICT standardisation</td>
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<tr>
<td>SIRIP</td>
<td>State Information Resources Interoperability Platform</td>
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<tr>
<td>SNPB</td>
<td>Swedish National Police Board</td>
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<tr>
<td>TED</td>
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1. ABSTRACT

The “Study on best Practices for ICT procurement based on standards in order to promote efficiency and reduce lock-in”, carried out by PwC between January 2014 and January 2016, aims primarily at supporting the European Commission in building a community of people related to the field of public procurement of ICT systems and services, willing to share best practices on how to make better use of standards in public procurement in order to solve ICT lock-in.

The project has been structured around four interrelated tasks, dedicated to raise awareness on the concept of “lock-in”, mainly through the enhancement and dissemination of the “Guide for the procurement of standards-based ICT” and the creation of an online community, to build an active network of stakeholders, to collect examples of good practice, and to monitor the take-up of “open” ICT procurement.
2. EXECUTIVE SUMMARY

Scope of the Final Report

This is the Final Report of the “Study on best Practices for ICT procurement based on standards in order to promote efficiency and reduce lock-in” carried out by PwC between January 2014 and January 2016. The Commission nor any person acting on the Commission’s behalf may be held responsible for the use of the information contained therein.

The objective of this Study is to support the European Commission in building a community of people concerned with the public procurement of ICT systems and services. It also aims at sharing best practices on how to make better use of standards in public procurement in order to solve the ICT lock-in issue.

Many public organisations find themselves unintentionally “locked” into particular ICT solutions, as they have failed to draft tender specification, which are sufficiently flexible, and consequently allowing for future vendor turnover.

In this context, the European Commission identified ICT standards as a key element in creating a level playing field for all technology providers. According to Communication COM (2013) 455 “Against lock-in: building open ICT systems by making better use of standards in public procurement”, an increased level of competition would result in a yearly saving of € 1.1 billion in the EU public sector alone.

This report is structured in a straightforward manner with a section dedicated to the overview of the results of each task. At the end, a review of good practices identified and collected as part of the Study is provided.

As far as the methodological approach is concerned, this Study is divided into four interconnected tasks.

Task 1. Awareness creation around "lock-in" and dissemination of the Guide
This task focused on the dissemination of the “Guide for the procurement of standards-based ICT: Elements of Good Practice” and aimed to create a high-level of involvement from key stakeholders and raise awareness.

Task 2. Community building
This task aimed to widen the number of stakeholders to engage and inform them about standards-based ICT procurement by undertaking targeted community-building actions.

Task 3. Collection of best practices
This task aimed to collect and make available best practices on standards-based ICT procurement to the Joinup community and a wider group of stakeholders.

Task 4. Monitoring of take up of "open" procurement
This task aimed at designing a light and effective monitoring system on the extent to which European public entities are following the Guide’s provisions.
Main results of the Study

**Joinup Community: Open Standards for ICT procurement**
The creation of a community of people concerned with the public procurement of ICT systems and services that shares best practices on how to make better use of standards in public procurement in order to resolve ICT lock-in is crucial. The community on Joinup has been the main tool that supported the engagement activities along the Study. Thanks to Joinup’s reputation as one of the biggest collaboration platforms for European Public administrations and to the extensive communication efforts deployed over the last two years, the community easily reached 30,000 internet accesses, becoming a reference point for all those actors wanting to develop their understanding on ICT procurement issues.

**Launch & running of an effective communication campaign**
For the key stakeholders it is fairly easy to distinguish initiatives launched under the Study and related to the Guide. A series of communication tools, such as the Study logo, Study visual identity, Study informative leaflet and Study email were developed to foster the awareness of stakeholders. In addition, extensive communication activities were conducted; around 500,000 dissemination emails, around 17,000 in-private tweets and around 1,000 posts on the major social media (Facebook, LinkedIn and Twitter). Another tool that played an important role in engaging stakeholders was the list of stakeholders impacted by the Study, which contains more than 2,000 key-stakeholders selected from a list of 12,000 public administrations individuals working on ICT procurement issues.

**Set-up and running of bi-annual workshops**
Four different workshops, every six months, took place during the Study. These workshops were organised in conjunction with other significant initiatives concerning ICT procurement issues. Thanks to a carefully designed dissemination strategy, around 75 participants from 25 different countries took part in each event and 130 on average registered to participate. A spike in participation was registered during the fourth event, followed by 90 participants. By using hashtags dedicated to such events (#ictproc2014 & #ictproc2015), participants had the opportunity to proactively interact among them or with the Study’s Twitter community “Open_ICT_Proc”, featuring over 600 followers.

**Brainstorming events (webinars) and online engagement**
Ten online brainstorming events (webinars) were organised as part of the Study. Their aim was to discuss within the Joinup community, but also with the public at large, which procurement practices were best in addressing specific challenges. Online discussions were useful to create momentum, raise attention on specific themes and generate new ideas. On average 20 people joined the events, with a maximum number of participants (80 people) during the last webinar. Some of these events have also been registered and published on the Joinup community to foster the discussion among stakeholders pertaining to the community.

**Collection of best practices**
The Study’s library of good practices on Joinup provides a snapshot on a series of practices currently existing at the European and international level to better procure ICT on the basis of standards, while reducing ICT lock-in. With over 7,000 internet accesses from most of the EU Member States, the library can be considered as one of the most important web repositories of practices concerning ICT procurement.

**The Guide: Using standards for ICT procurement**
The Guide was used as a tool to better disseminate the Study and create awareness around lock-in. Before proceeding with its dissemination, the Guide has been made available in a more user-friendly format to maximise its effectiveness (www.openictprocurement.eu). The Guide, is now organised around six different organisational roles, namely key roles, enables its users to identify themselves (standard setters, senior managers, ICT strategists, technical architects, business case authors,
procurement practitioners). This allows the identification of recommendations tailored to specific roles in the ICT procurement process.

**Monitoring the take-up of “open” procurement**

An effective monitoring aiming to measure the take-up of open procurement has been developed by using a preliminary analysis and text-mining algorithm applied to the data enclosed in the TED database. This monitoring has unveiled that 26% of tender notices analysed received only one offer and 11.9% of tenders contained at least one direct reference to specific ICT vendors, infringing the EU Directive. Noteworthy, this monitoring is also linked to a survey that involved 117 relevant stakeholders, 42% of which admitted to have experienced ICT lock-in. This further demonstrates that the use of standards and the adoption of the recommendations of “The Guide” are still not fully followed. These kind of sources on the take-up of open procurement can be periodically updated and used to carry out effective monitoring.

**Conclusions and recommendations for follow up**

**Face-to-face meeting for the sharing of practices are a good way to encourage public procurers into action**

Knowledge and good practices dissemination need to become the Commission’s primary goals. The sharing of good practices is a good way to inspire and motivate public entities currently experiencing ICT lock-in. Public servants participating to the Study’s workshops all shared the will to implement the practices the just came to know in their own countries.

As outlined in the 2016 EC Rolling Plan for ICT Standardisation, engagement activities, such as workshops, webinars and easy guides, are of primary importance to foster the effective take-up of ICT standardisation initiatives.

**The Joinup Community “Open Standards for ICT Procurement” is well known and should be sustained**

Thanks to extensive communication efforts, the Joinup community became a reference point for those actors wanting to deepen their knowledge on ICT procurement issues. However, with the end of the Study, both the Community and its library are exposed to the risk of becoming soon obsolete. In addition, the consolidated core group of key stakeholders which have cyclically attended most of the workshops and webinars is likely to lose achieved momentum if engagement activities are not sustained.

**ICT lock-in is a widespread and known phenomenon in Europe, even though too few public entities are taking action to counteract it**

When purchasing ICT, the “avoidance of lock-in” is not perceived as an important goal. Public procurers and Senior Managers top priorities are the assurance of “project outcomes” and “value for money”, even if they imply future lock-in situations. According to the Study’s survey, 42% of respondents experienced ICT lock-in in their organisations and 35% of them never mentioned “ICT standards” in tendering documentation.

**The light monitoring system developed under the Study demonstrated that the ICT market that is not enough open yet**

For each ICT tender there are on average four competing bidders, while almost a forth (26%) of the ICT tenders have only one bidder. As of 2015, 12.5% of public ICT tenders contain references to specific trademarks with Croatia, Germany, Luxembourg and Portugal as the worst performing countries.
The adoption of good practices should be leveraged on three motivational drivers
The adoption of open standards and open source products must be fostered by “cost reduction”, “quality” and the possibility to have “direct control over the product/code”. These drivers could also be used to make the Guide more appealing and convincing to prospective users.

The Commission should keep on developing user-friendly Guidelines
The EC should keep on investing in developing Guidelines for the effective take-up of ICT standardisation initiatives. Guidelines should be practical, by including examples showing how suggestions could be translated into reality. Moreover, the possibility to translate them into other European languages should also be explored, as a way to better assist procurers from non-native English speaking countries.

Build on the Study’s methodology replicating TED analysis
The monitoring system, consisting of a methodology that the EC will be able to use to replicate the analysis, could help the Commission in taking action where it is more needed, for example in countries such as Croatia, Germany, Luxembourg and Portugal where the phenomenon of referring to specific brand names is more prevalent. The scope of the analysis could, perhaps, be extended to a wider number of countries and ICT CPVs.

The Commission should stimulate Members States to use TED better
TED provides a comprehensive database of procurement practices in the EU: data about the contracting authorities, the initial and final value of tenders, the number of their lots, the number of offers received per tender, the type of procedures, etc. Unfortunately, as of today, the quality of data contained in the database is limited. The Commission should explore incentivizing Members States to use TED in a more efficient manner.
3. INTRODUCTION

Many public organisations find themselves unintentionally "locked" into particular ICT solutions, as they have failed to draft sufficiently flexible tender specification, allowing for future vendor turnover. In this context, the European Commission identified ICT standards as a key element in creating a level playing field for all technology providers.

Under the Digital Agenda – "Europe’s strategy for a flourishing digital economy by 2020 aiming to maximise the benefits of information and communications technology (ICT) for all" - Action 23 commits to providing guidance on the link between ICT Standardisation and Public Procurement in order to support authorities in using standards to promote efficiency and reduce lock-in.

Making better use of standards will allow more suppliers to be able to submit offers to tenders for standards-based systems, leading to more competition, wider choice, lower prices and potentially higher quality. The lack of competition in the public sector alone leads to a yearly loss of around € 1.1 billion.1

The European Commission adopted on the 25 June 2013 the Communication COM (2013) 455 "Against lock-in: building open ICT systems by making better use of standards in public procurement", together with an accompanying working document, the “Guide for the procurement of standards-based ICT: Elements of Good Practice" (hereafter referred as Guide) with the aim of diminishing lock-in chances. ²

Following COM (2013) 455, the European Commission issued a series of recommendations as to how to reduce lock-in and is currently trying to raise awareness about the lock-in issue.

To this end the EC has already conducted and will continue to deliver several dissemination activities, one of these being the "Study on best Practices for ICT procurement based on standards in order to promote efficiency and reduce lock-in" (hereafter referred as Study) - SMART 2013/0048.

The objectives of this Study are to support the European Commission in:
- disseminating the Guide;
- organise meetings with stakeholders that are affected by the Guide;
- share best practices on the application of the Guide;
- building a community of people concerned with the public procurement of ICT systems and services on the basis of standards;
- design a light and effective monitoring for the take-up of "open" procurement.

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1 Communication COM (2013) 455 "Against lock-in: building open ICT systems by making better use of standards in public procurement"

2 ROLLING PLAN FOR ICT STANDARDISATION 2016
Given these objectives, activities were clustered into four main tasks.

**Task 1. Awareness creation around "lock-in" and dissemination of the Guide**
Creation of awareness around the disadvantages of lock-in situations and collection of examples and best practices showing the significant advantages of not being locked-in. Dissemination of the "Guide for the procurement of standards-based ICT - Elements of Good Practice".

**Task 2. Community building**
Building a community of officials responsible in the public sector for the maintenance and procurement of ICT systems and services, suppliers of ICT systems and services, users and standardisation development organisations to work together to make better use of standards in the ICT systems and services of the public sector, in order to diminish the problem of lock-in.

**Task 3. Collection of best practices**
Collecting and making available (through Joinup) best practices on ICT Strategies and Architectures, Knowledge on standards, Lists of recommended standards, Evaluation of products, Templates and ready texts, Training on ICT procurement, ICT needs, Long term planning, and other assets to the Community and a wider group of stakeholders that could be useful for public authorities and others to make better use of standards in order to diminish lock-in chances.

**Task 4. Monitoring of take up of "open" procurement**
Design a light and effective monitoring system and report yearly on the extent to which European public entities are following the Guide’s provisions. Measures of success include also the prevalence of brand names in tenders; the number of suppliers participating in public procurement bids; and an assessments of value for money of ICT procurement, obtained by:

- follow-up surveys of procuring authorities;
- statistical evaluation of procurement practices available on the TED/ MAPPS database.

“There are several main initiatives and actions at EU level to promote the use of standards:

- The Digital Single Market strategy[^3], third priority area - “Creating a European Digital Economy and Society with long-term growth potential”: an action aimed at helping all industrial sectors to integrate new technologies based on standards to ensure interoperability among them.

The Multi-stakeholder Platform in ICT standardization (henceforth MSP): an advisory group discussing and informing the EC on matters related to ICT standardisation policy. Under the auspices of Regulation 1025/2012, the Platform may make recommendations on ICT technical standards, which can be adopted by Member States procuring authorities. MSP together with the European Commission draft "The EU Rolling Plan for ICT standardization": providing an overview of the needs for preliminary or complementary ICT standardisation activities to be undertaken in support of EU policy activities.

The Interoperability Solutions for European Public Administrations (ISA) programme, which has been designed to help public administrations meet this challenge. The ISA programme includes:

- The Common Assessment Method Standards and Specifications (CAMSS): an action aimed at enabling the sharing of ICT interoperability assessments and creating an assessment library;

Finally the European Commission has been launching the EU Catalogue of ICT Standards and specifications, a new action encouraging public procurers to mention ICT standards and specifications in their calls for proposals.

To facilitate readers, an overview on the structure of this Final Study Report is provided below:

Section 3 INTRODUCTION offers an overview of the policy context and the rationale behind the Study.

Section 4 PROJECT RESULTS: AN OVERVIEW offers an overview of the results of each task. In particular:

- Task 1. Awareness creation around "lock-in" and dissemination of the Guide;
- Task 2. Community buildings;
- Task 3. Collection of Best Practices;
- Task 4. Monitoring of take-up of "Open" Procurement.

Section 5 CONCLUSION AND RECOMMENDATIONS FOR FOLLOW-UP offers an overview of the key takeaways and key recommendations for future actions.

Section 6 ANNEXES includes the following three annexes:

- Annex 1. Collected best practices;
- Annex 2. Task 4 materials (TED analysis & procurement survey);

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6 http://ec.europa.eu/isa/
4. PROJECT RESULTS: AN OVERVIEW

As shown in the previous chapter, the Study is structured around four main tasks, namely:

1. Awareness Creation around “Lock in” and dissemination of the Guide
2. Community Building
3. Collection of Best Practices
4. Monitoring the Take-Up of "Open" Procurement.

The image below provides an overview on the project structure, and represents how all four projects tasks are strictly interrelated. While two of these tasks explicitly focus on building community awareness, the other two tasks - finalised specifically to collect best practices and to monitor take-up of open procurement - have also contributed to foster awareness on the topic, making sets of important information available, so to increase knowledge and participation in the ICT procurement via open standards domain.

Figure 1: Project’s structure

In line with the new 2016 Rolling Plan on ICT standardisations and the emerging trends at the European level, ICT standardisation related activities aiming at fostering the effective take up and implementation of ICT standards, imply more and more greater efforts towards:

- the organization of awareness-creation conferences and workshops;
- the exchange of good practice among Member States and Standardisation Organisations;
- the enhancement of guidelines for procurers wanting to mention standards;
- the encouragement of major IT suppliers to adopt selected standards.

To achieve the purpose of this Study, a structured methodological approach to identify, map and engage stakeholders has been designed and implemented.

The first step of the methodology was working with the EC to identify and validate a list of the stakeholders directly or indirectly impacted by the Study.

Building a detailed stakeholder map was necessary to identify experts and potential participants for the Study’s workshops and online brainstorming events, as well as to disseminate the Guide more strategically.

Thanks to this approach, we managed to involve a number of a wide range of key stakeholders, such as:

1. public administrations managing important ICT standardisation initiatives;
2. representatives of already existing community around ICT standards;
3. owners of good practices concerning standards-based ICT procurement;
4. public procurers;
5. EU and Member State policy makers.

Communication activities were oriented toward the creation of awareness around the disadvantages of being locked-in, the announcement of the new-born community on Joinup, the adoption of the Guide and the promotion of the events organised as part of the Study.

At the end of these two years, several major and lasting results have been achieved. Among them, it is worth mentioning the creation of an online community on Joinup for sharing best practices, the redesign of the Guide to make it user-friendly and the establishment of a network of stakeholders interested in procuring standard-based ICT goods and services.

4.1. AWARENESS CREATION AROUND “LOCK IN” AND DISSEMINATION OF THE GUIDE

This task focuses on the dissemination of the Guide and aims to create a general level of high involvement on behalf of key stakeholders. The final aim of this task is to create and raise awareness.

This task has produced the following main results:

- redesign and dissemination of the Guide;
- creation of an online community on Joinup - Open Standards for ICT procurement;
- launch & running of an effective communication campaign.


In 2013 the European Commission developed the "Guide for the procurement of standards-based ICT — Elements of Good Practice" to help those actors responsible for the procurement of ICT systems and services.

The Guide, as enclosed to Commission’s communication COM (2013) 455 “Against lock-in: building open ICT systems by making better use of standards in public procurement”, provides relevant information on the procurement of ICT using standards, the assessment of ICT standards and the development of practical advice.

"The Guide is to help national authorities grab every opportunity for innovation and efficiency“*


It was designed for procurement officials, IT managers, strategists and architects within public administrations and was structured around the three organisational levels of public administrations: central, local and individual.
Published as a typical European Commission working paper, it resulted too bureaucratic and not easy to understand, instead of being a functional document where to find procedures, recommendations and advice easily.

To facilitate consultation and dissemination, the Guide was re-designed and made available in a more user-friendly format on the following website http://www.openictprocurement.eu

The new version of the Guide "The Guide: Using standards for ICT procurement" is intended to help the actors who are responsible for both planning and purchasing ICT systems and services under the EU procurement directive, to ensure fully and effective competition following best procurement practices, in particular by:

- minimizing the risk of becoming locked in to particular suppliers for unduly long periods;
- making the best use of ICT standards.

The latest version of the Guide is organized around six different organisational roles, named "key roles":

- **standard setters**: define standards to be used in a country or region;
- **senior managers**: decide how standards are applied within public organisations;
- **ICT strategists**: define public organizations’ IT strategies;
- **technical architects**: define IT architectural aspects including interoperability frameworks and components;
- **business case authors**: help assessing the pros & cons of new investment initiatives in ICT;
- **procurement practitioners**: purchase goods and services for public authorities.

The new structure enables end-users to identify themselves and to find recommendations tailored to their roles and daily tasks.

By providing some technical details, the Guide has been re-designed, from a commission working paper (.pdf) into a web-based navigable and commentable website (.html).

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That said, a survey carried out as part of the Study (see section § 4.7.9 for further details), clarifies that a stronger effort to disseminate the Guide should be planned at the EU level.

The survey shows that the Guide could be further improved by:

- including more case studies (best practises, lessons learned, suggestions on “how to deal with no trivial situations” etc…);
- making it shorter and simpler;
- including more templates, standards clauses and lists of standard;
- translating it into all the official European languages.

Indeed, Public Procurers, those who would benefit most from the Guide, are the ones facing the biggest challenges, as they have to deal with documents only written in English.

### 4.1.2. Joinup Community: Open Standards for ICT procurement

The Joinup community is addressed to those officials responsible in the public sector for the maintenance and procurement of ICT systems and services, suppliers of ICT systems and services and other different users.

The Community aims **to create a general level of high involvement** on behalf of key stakeholders; the final aim is to create awareness **through sharing of best practices, good experience and interactions** amongst different stakeholders.

The aim is to work together to make better use of ICT standards in the public sector.

Before developing the Community, an important stage was the identification of the target audience and key stakeholders potentially interested in it.

The second stage implied mapping all of the already existing communities, to make sure contents were really unique and valuable.

The result of this process led to the creation of the “Open Standards for ICT Procurement” community on Joinup.

Main sections/functionalities of the community are:

- **Community homepage.** The content of the homepage is twofold. On the one hand, it gives a brief overview to new users on what the community is about. On the other hand, it gives existing users an overview of what is happening within the community in terms of recent discussions, news items, or upcoming events.

- **E-library/ collection of practices.** This section enlists a relevant number of practices for the reduction/avoidance of ICT lock-in. Each practice is classified according to its typology (e.g. templates, ready texts, guidelines, etc.), its geographical scale (e.g. supranational, national, local), its average users' evaluation (one star, two stars, three stars), its originating entity and the organisational roles for which that practice could be useful (e.g. Standard setters, Senior managers, ICT strategists, Technical architects, Business case authors, Procurement practitioners).

- **The Guide.** This section contains basic info to access “The Guide: Using standards for ICT”
**Other Guidelines.** This section contains other Guidelines relevant to public procurers wanting to purchase ICT, while ensuring best value for money. As an example, it contains DG DIGITS’s “Guidelines on procuring IT solutions” produced under ISA – Action 4.2.5 “Sharing and re-use strategy”.

**News & events.** Users have a view of the most interesting news & events related to the project.

Thanks to Joinup’s reputation as one of the biggest collaborations platforms for EU public administrations, the new-born community quickly reached **30,000** internet accesses. After two years of activity the community:

- can be considered as one of the most important web-repositories of practices on the ICT procurement on the basis of ICT standards (ICT Strategies and Architectures, Knowledge on standards, Lists of recommended standards, Templates and ready texts, ICT needs definition)
- appears on the first pages of major search engines when using keywords such as “Open Standards ICT”, “ICT procurement”, “ICT lock-in”
- homepage reached around **30,000** internet accesses from most of EU 28 Members States
- e-library/collection of practices reached over **6,000** internet access, with “BITKOM guides on wording procurement documents in a non-proprietary manner” as the most visited practice (more than 1,500 visitors alone).

**4.1.3. Launch & running of an effective communication campaign**

A series of communication tools, such as the study logo, the study visual identity, the study informative leaflet and the study email were developed to foster stakeholder awareness. For key stakeholders, it is now fairly easy to distinguish initiatives launched under the study and related to the Guide.

Before starting with the communication initiatives, a list of stakeholders directly impacted by the study has been identified and validated together with the EC. To date, the list contains more than 2,000 key-stakeholders selected from a list of 12,000 stakeholders.

Stakeholders were then grouped into three main categories, namely primary, secondary and tertiary.
Table 1- Categories of stakeholders

<table>
<thead>
<tr>
<th>Primary stakeholders</th>
<th>Secondary stakeholders</th>
<th>Tertiary stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Public procurers, Official responsible in the public sector for the maintenance and procurement of ICT systems and services, Strategists and architects within public administrations, Policymakers at a wider government level.</td>
<td>- ICT standards communities, Research Institutes/Experts in ICT standardisation and open procurement, ICT suppliers and consulting firms, Fora &amp; consortia, ICT PSP Large scale relevant pilots (e.g. PEPPOL; STORK) Procurement networks.</td>
<td>- Other ICT PSP Large scale Pilot, Universities, Citizens, International organizations.</td>
</tr>
<tr>
<td>Primary stakeholders were the most likely to be directly affected by the dissemination and use of the Guide.</td>
<td>Secondary stakeholders were intermediaries indirectly affected by the Guide’s outcomes. They contributed to dissemination through active participation in communities and specialised events.</td>
<td>Tertiary stakeholders were often referred as “external” and played an advisory or advocacy role.</td>
</tr>
</tbody>
</table>

The chart below provides a view on the organisation types in which mapped stakeholders are working.

![Chart 1 – Typologies of mapped stakeholders](image)

A tailored strategy encompassing different communication actions was then defined to manage each stakeholder group closely. This strategy included:

- monitoring: direct mailing with invitation to join the community on Joinup, link to the Guide on ICT procurement & lock-in and to participate to the Twitter channel group;
- keep stakeholders informed: cyclical invitations to attend the biannual workshops and the thematic webinars on Joinup
- satisfy stakeholders through regular involvement in online consultations and constant information about news items and new initiatives

Concurrently, with the creation and updating of the stakeholder list, a twitter community was set-up. In this regard, several tweets launched on the community were necessary to keep key-stakeholders informed on the study’s main initiatives, such as upcoming workshops, webinars and good practices.

Today, the twitter community counts around 600 followers and it was described by its users as a perfect tool to attend the Study’s workshops at distance.
Both the stakeholder list and the Twitter community were leveraged as the two most important communication channels of the Study. Thanks to their effectiveness, workshops have always been very popular, with a peak in participation during the fourth workshop with around 90 participants.

To a lesser extent, also Facebook, LinkedIn and Storify contributed to the successful dissemination of the Study’s activities and the Guide.

As a final point, participation to third-party events (both national and European) has proven to be particularly effective for the Guide’s dissemination and stakeholder engagement. As an example, participation to “Multi Stakeholder Platform on ICT Standardisation” quarterly meetings or the Commission’s “ICT 2015 Innovate, Connect, Transform” improved significantly the quality (in terms of hierarchical role) and the quantity of participants attending the workshops.

### 4.1.1. Lessons learned

**For the Study’s stakeholders it is now fairly easy to distinguish and trust initiatives launched under the Study**

A series of communication tools, such as the logo, the visual identity, the informative leaflet and email templates were developed to foster stakeholder awareness. Stakeholders, in particular workshop goers and twitter followers, are now used to trust initiatives carried out under the Study’s umbrella.

**A robust list of key-stakeholders speeds up engagement activities**

The Study’s stakeholder list allows for personalized and quick communication towards key stakeholders interested in standards-based ICT procurement initiatives.

**Social media presence is crucial to broaden the stakeholder base**

LinkedIn and Twitter proved to be the most useful social media for this type of initiatives. Procurement-dedicated groups on LinkedIn are the best place to engage subject experts while Twitter followers are very useful to multiply and propagate messages regarding the Guide and the workshops.

**The Guide should contain more practical examples**

Some readers defined the Guide as too broad, asking for more practical examples showing how the Guide’s suggestions could be translated into reality. Contents could be further simplified by adopting audios and videos with evidence from good practice owners.

**The guide should be translated into all European languages**

During the course of the Study, procurers from non-native English-speaking countries reported difficulties in understanding the Guide’s contents. In this regard, the Commission should investigate the possibility of translating and distributing the Guide across the EU.

**Participation to third-party events allows to gain a sense as to how the Guide is being used**
Discussing with stakeholders attending third-party events ICT procurement issues is a good way to understand whether the Guide is known in the community and if it is of use to practitioners.
4.2. COMMUNITY BUILDING

This task aimed at widening the number of stakeholders to engage and to inform about standards-based ICT procurement by undertaking targeted community-building actions.

The main results of the tasks are:

- set-up and running of bi-annual workshops;
- brainstorming events (webinars) and online engagement.

4.2.1. Set-up and running of bi-annual workshops

Four different workshops, approximately every six months, took place during the study. These workshops have been organised in conjunction with other significant initiatives concerning ICT procurement issues. Most of the times, significant initiatives selected were the Multi Stakeholder Platform (MSP) on ICT standardisation quarterly meetings.

Below the list of biannual workshops organised as part of the Study.

Table 2 - List of Workshops

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Goals</th>
<th>Best Practices</th>
<th>Participant &amp; Registered</th>
</tr>
</thead>
</table>
| “Public entities reducing lock-in: the way forward” | • provide some suggestions on how to reduce lock-in  
• share some good practice  
• present a first set of insights on the state of the art of ICT public procurement | ✓ EU policies to promote standards for ICT procurement  
✓ Interoperability and sharing & re-use in the public sector  
✓ Open Standards: an attempt of Explanation  
✓ The benefits of using open standards when procuring ICT  
✓ Open Standards to reduce lock-in and to save public money  
✓ Open Standards in Procurement some Dutch experiences  
✓ IBM’s practice for facilitating interoperability of Operating Systems  
✓ The Guide for the procurement of standards-based ICT  
✓ Guideline on Sharing & Re-Use in Public Procurement | Participants 77  
Registered 115 |
| “Open ICT standards for public procurement: sharing of best practices” | • share good practice;  
• next steps / new ideas for DAE Action 23;  
• insights on the state of the art. | ✓ Core Platform of the Future Internet - FIWARE  
✓ Standard “Sharing and re-using” clauses for contracts  
✓ Procurement of Innovation for Cloud Services in Europe - PICSE  
✓ Use of standards in Public Sector ICT eProcurement – SINTEL  
✓ A public service designed around open standards – SIRIP  
✓ UK Guidelines for the adoption of Open Standards  
✓ BITKOM’s Templates and ready texts for wording in official tenders  
✓ Monitoring the take-up of “open” procurement in Europe  
✓ European Commission Open Source Software strategy – OSS | Participants 72  
Registered 95 |
The aim of these workshops was to:

- support stakeholders in sharing good practices about the use of standards in ICT systems and services;
- building a community of officials responsible in the public sector for the maintenance and procurement of ICT systems and services, suppliers of ICT systems and services, users and standardisation development organisations to work together to make better use of ICT standards, in order to diminish lock-in chances.

Given the complexity of the issue, expected participation was of around 30 participants. Thanks to a carefully designed dissemination strategy, almost 75 stakeholders took part in each event, while almost 130 of them registered to receive the workshop materials and official invitation.

Activities that made dissemination efforts particularly effective were:

- mass emailing – around 200,000 workshop invitations;
- in-private tweets – around 7,200 in-private tweets;
- social media dissemination – around 500 messages posted on Twitter, Facebook and LinkedIn;
- Joinup presence – each workshop has been published on Joinup’s frontpage;
- joint efforts with key communities dealing with ICT procurement – events were disseminated though the following communities:
  - Digital Agenda Europe;
  - Procurement Forum;

Participants
70
Registered
100

Participants
90
Registered
140
- Procurement of Innovation Platform;
- PICSE - Procurement Innovation for Cloud Services in Europe;
- European Multi Stakeholder Platform on ICT Standardisation; etc.

- joint efforts with the EC services to select only good practices that would have been of interest and inspiration to participants.

Participants from 25 different countries actually attended the workshops. Attendees were mostly from Belgium (38%), Italy (11%), Netherland (8%) and UK (4%).

![Chart 2 – Participants per country](image)

Below an overview of the types of participants organisations:

![Chart 3 – Types of Participants organisations](image)

A core of participants (around 20 people) cyclically attended each workshop, as they were interested to discover new ways to fight ICT lock-in. Some of them took also part in most of the webinars and showed interest for other initiatives organised as part of the Study.

To facilitate participations and give some clear information about the workshop goals and main topics, the following material has been handed to participants:
The Workshop agenda
- Keynote speakers bios
- The Project’s official leaflet
- The list of registered participants
- A personalised Workshop badge
- A Workshop evaluation sheet
- The official event #hashtag selected for the Workshop

Thanks to hashtags dedicated to events (#ictproc2014 & #ictproc2015), participants had the opportunity to proactively interact among them.

At the end of each workshop, the audience was asked to fill out an evaluation questionnaire, aimed at assessing whether or not they enjoyed the workshop and found it useful for their daily activities. Participants were required to give some suggestions and mark each item submitted on a range from - I strongly disagree (0) - to - I strongly agree (4). The different items of the questionnaire were grouped according to the following areas: Preparatory activities/communication, Workshop performance, Expectations and Networking opportunities.

The table below shows the correspondence between areas and items of the evaluation questionnaire:

<table>
<thead>
<tr>
<th>Items from Evaluation Questionnaire</th>
<th>Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>The information that you received by phone/mail before the event was adequate</td>
<td>Preparatory activities/communication</td>
</tr>
<tr>
<td>The organisation and infrastructure of the event were good</td>
<td>Workshop performance</td>
</tr>
<tr>
<td>The speakers and moderators contributed to a clear and effective workshop</td>
<td></td>
</tr>
<tr>
<td>I can use the information received during this event in my activity</td>
<td></td>
</tr>
<tr>
<td>The event fulfilled your expectations</td>
<td>Expectations</td>
</tr>
<tr>
<td>The cases presented during the conference showed examples of activities that can be put into practice in your country</td>
<td>Networking opportunities</td>
</tr>
<tr>
<td>The event in its whole allowed dynamic exchanges among participants</td>
<td></td>
</tr>
</tbody>
</table>

Average results for the four bi-annual workshops are shown below.

![Chart 4 - Results of the Workshop evaluation questionnaires](image-url)
Workshop participants evaluated all aspects of these events in a very positive way, especially appreciating the preparatory activities and those good practices that can be put into practice. Workshop reports can be found in Annex to this report (see § 6.3).

An interesting comment was “the awareness activities carried out as part of the EC project Study on best practices for ICT procurement were really helpful, but a stronger effort […by the European Commission..] in this direction over the next few years would be very much welcomed. In particular, to better promote practical examples on how public administrations experiencing ICT lock-in successfully managed to get rid of their vendor dependency.”

Similar statements emerged quite often and were also confirmed by the ICT procurement survey (presented in section §6.2.6).

4.2.2. **Brainstorming events (webinars) and online engagement**

Ten online brainstorming events (webinars) were organised to promote online conversations about the procurement of ICT on the basis of standards in an structured form and bring also these conversations to the community on Joinup for further elaboration.

The main aim of these brainstorming events was to discuss within the group and reach a consensus on which practices are good to use, for which situations and at what level ICT strategies should be described.

Online discussions were useful to create momentum and ensured that attention focussed on specific themes, also generating new ideas. Because of the innate limitations of online events, where participants have limited time to express themselves, a strong use of instant messaging tools was made. Indeed, participants questions & ideas were collected and then discussed in dedicated Q&A sessions at the end of each event.

A real challenge was to ensure relevant online participation, but thanks to a smart use of Social Media (Twitter, LinkedIn, Facebook) and targeted emailing, a good number of participants took part in these discussions. On average, 20 people joined the events with a maximum number of participants of over 40 people in one occasion.

These brainstorming events were also significant to identify and engage best practice owners, relevant for the Guide’s further developments.

Hereunder some figures regarding the webinars:

- **participation** – on average 20 participant with a maximum of 40;
- **mass emailing** – around 320,000 webinar invitations;
- **in-private tweets** – around 10,000 in-private tweets;
- **social media dissemination** – around 600 messages posted on Twitter, Facebook and LinkedIn;
- **Joinup presence** – an event dedicated webpage was produced for each webinar;
- **joint efforts with key communities dealing with ICT procurement**.

Below, an overview of the online brainstorming events organised as part of the Study.
### Table 3 - List of Webinars

<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
<th>Speaker(s)</th>
<th>Location</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 September 2014</td>
<td>“Avoiding lock-in when building open ICT systems: How to make better use of standards in public procurement?”</td>
<td>Professor Bjorn Lundell</td>
<td>University of Skövde, Sweden.</td>
<td>Mr Björn Lundell shared insights on how to use standards in public procurement and how to avoid lock-in when building open ICT systems. According to professor Lundell Open Standards i) Promote a healthy competitive market (the existence of Open Standards reduces the risk and cost of market entry, and so encourages multiple suppliers) and ii) Are a basis for interoperability which supports systems heterogeneity, thereby avoiding lock-in and increasing options for individuals and organizations. The presentation focussed also on good practice and bad practice examples about ICT procurement. <a href="http://bit.ly/1rNiSxS">http://bit.ly/1rNiSxS</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mr Mael Brunet</td>
<td>Open Forum Europe, Belgium</td>
<td>Mr Maël Brunet from Open Forum Europe (OFE) shared insights on EU Member States’ practice of referring to specific trademarks when procuring for Computer Software Packages and Information Systems. In OFE’s 2014 report (OFE Procurement Monitoring Report 2013 – 2nd Snapshot), it resulted that 22% of all tender notices issued contained an explicit reference to specific brands – an increase of 5% since previous report published in October 2013. Naming trademarks in tenders is viewed as discriminatory, and is usually against existing EU procurement laws, except under specific and exceptional circumstances. <a href="http://bit.ly/1wayl00">http://bit.ly/1wayl00</a></td>
</tr>
<tr>
<td>4 March 2015</td>
<td>“Sweden’s innovative software procurement strategy: How to get best value for money and not getting locked-in”</td>
<td>Mr Daniel Melin</td>
<td>Swedish National Procurement Services, Sweden.</td>
<td>Daniel Melin shared insights on how Sweden is promoting open standards and open source through central framework agreements. Frameworks make it fully possible to evaluate and compare solutions based on proprietary software, open source software, hosted services and cloud services. Or any combination of those. Frameworks explicitly deny mandatory requirements for non-open standards and non-open source software. Mr Melin also shared how, from a market competitive standpoint, open source and open standards enable better competition</td>
</tr>
<tr>
<td>10 April 2015</td>
<td>“Open Standards for Linked Overheden (Governmental Authorities), the practice in Flanders”</td>
<td>Mr Johan van der Waal</td>
<td>Flemish ICT organisation V-ICT-OR, Belgium.</td>
<td>Mr. van der Waal shared insights on how the Flemish ICT organisation V-ICT-OR developed with the Flemish municipalities an Open Standard model for the use of authentic Belgium and Flemish registers with the enrichment of data, needed in local government. Besides a theoretical model started in November 2014, the implementation and integration with the Flemish government solutions has taken place. Now, a good environment of work is being created for local municipalities. <a href="http://bit.ly/1HPnr3l">http://bit.ly/1HPnr3l</a></td>
</tr>
</tbody>
</table>
between all suppliers of ICT solutions. This enables reuse of software based solutions, a more open public sector and long term cost reductions. http://bit.ly/1za3qyr

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 June 2015</td>
<td>&quot;A Standard that is not managed is not a Standard&quot;</td>
<td>Around 20</td>
</tr>
<tr>
<td>Marijke Salters &amp; Marco Aarts</td>
<td>Marijke and Marco shared insights on how the Dutch Government is promoting the adoption of open standards through BOMOS, a method (initiated by Dr. Erwin Folmer, TNO with contribution from Marijke) which describes how to maintain and manage open standards. A 'one size fits all' approach does not exist, and for each standard, conscious choices leading to appropriate management will have to be made. BOMOS offers a step-by-step plan for making these choices and, within every step, practical points of departure for further fleshing-out of the management approach. Thanks to BOMOS, in the Netherlands there is no doubt on how open standards are to be managed. <a href="http://bit.ly/1OlV286">http://bit.ly/1OlV286</a></td>
<td>Around 20</td>
</tr>
<tr>
<td>9 November 2015</td>
<td>&quot;Joinup: Catalogue of interoperability solutions&quot;</td>
<td>Around 35</td>
</tr>
<tr>
<td>Mr Szabolcs Szekacs</td>
<td>Szabolcs Szekacs from DG DIGIT of the European Commission shared insights on &quot;Joinup: Catalogue of interoperability solutions&quot;. Joinup is a collaborative platform created by the European Commission and funded by the European Union via the Interoperability Solutions for European Public Administrations (ISA) Programme. It offers several services that aim to help e-Government professionals share their experience with each other. During his webinar Mr Szekacs presented how issued related to ICT procurement could be tackled by using the Joinup platform. <a href="http://bit.ly/1MeAGMq">http://bit.ly/1MeAGMq</a></td>
<td>Around 35</td>
</tr>
<tr>
<td>24 November 2015</td>
<td>&quot;MITA’s approach to Open Standards&quot;</td>
<td>Around 20</td>
</tr>
<tr>
<td>Mr Noel Cuschieri</td>
<td>Noel Cuschieri, Enterprise Architect within Malta’s MITA, shared insights on &quot;MITA’s approach to Open Standards&quot;. When establishing Public services, the Maltese Public Sector shall prefer open specifications, taking due account of the coverage of functional needs, maturity and market support. The Maltese Government adopts open standards, encouraging the exchange of information and innovation, while seeking</td>
<td>Around 20</td>
</tr>
<tr>
<td>2 December 2015</td>
<td>&quot;German law mandates vendor-neutral ICT standards&quot;</td>
<td></td>
</tr>
<tr>
<td>Mr Felix Greve</td>
<td>Subject matter expert on legal issues, Germany Felix Greve shared insights on his &quot;PHD thesis dealing with the problem of lacking interoperability from a legal point of view&quot; which provides a concrete legal substantiation of an accountability of the State to enact a regulatory framework which ensures vendor independent data formats in the private market. Although his findings are primarily derived from German law they are likely to be applicable to other European legislations as well</td>
<td></td>
</tr>
</tbody>
</table>

Nr. participants

Around 20

Around 25

Around 20

Around 35
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Title</th>
<th>Participant 1</th>
<th>Participant 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 December 2015</td>
<td>“Sharing procurement practices in joint development of open source software”</td>
<td>Jani Kylmäaho National Land Survey of Finland, Finland</td>
<td></td>
</tr>
<tr>
<td>15 January 2015</td>
<td>&quot;The EU CATALOGUE OF ICT STANDARDS&quot;</td>
<td>Benoit Abeloos Policy officer at the Innovation Unit of European Commission's Directorate General Communication Network Content and Technologies</td>
<td></td>
</tr>
</tbody>
</table>

**Brief description**

Jani Kylmäaho shared insights on how National Land Survey of Finland adheres to a series of important principles in most of its ICT development projects. For instance, among the principles there are the use of Open Source software, the preference for personal competences to company references, the provision of draft agreement as an attachment to the tender and not outsource their key competences. The best example is the development of the Oskari.org open source software, which apply these principles. [http://bit.ly/1MPt0FZ](http://bit.ly/1MPt0FZ)

The Digital Single Market Strategy proposes to develop a European catalogue of standards and specifications. The problem with national catalogues is that they were developed in an independent way, and they may diverge to a more or less extent, in terms of content and scope, and some Member States do not have it at all. Most Member States see an opportunity in having a European catalogue to increase transparency and chances for interoperability. The end goal is to support MS and encourage public procurers to mention ICT standards and specifications in their calls for proposals. [bit.ly/1mTzkxx](http://bit.ly/1mTzkxx)

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**Note:**
- Equal consideration is given to open source and closed source software.
- Mr. Cuschieri presented also the opportunities and challenges of using open standards as key enablers to implement flexible, re-usable and interoperable ICT resources for public services. [http://bit.ly/1OUCoeCi](http://bit.ly/1OUCoeCi)
- Due to the fact that German law is considerably superimposed by European telecommunication law. [http://bit.ly/1lOyfcT](http://bit.ly/1lOyfcT)
**4.2.3. Lessons learned**

**Engagement initiatives are fundamental for the effective take-up of ICT standardisation initiatives**

As outlined in the 2016 version of the EC Rolling Plan for ICT Standardisation, engagement activities, such as workshops, webinars and easy guides, are of primary importance to foster the effective take-up of ICT standardisation initiatives. Indeed, they allow non-expert users to gain knowledge on topics that may seem at first complicated and burdensome.

**Engagement activities must be constant over time**

Cyclical engagement activities enabled the creation of a small community of around 15/20 people that regularly attended initiatives organised under the Study. It is likely that, with the project closure, this small community will rarely meet. The Commission could eventually explore the possibility of extending this kind of initiatives to foster the growth of this small community (snow-ball effect).

**Workshops are a good way to solve problems through collaboration**

Workshops bringing together different professionals (MSP members, procurers, suppliers, standard setters, etc.) demonstrated to be effective to solve ICT procurement issues in new ways. In addition, practice owners had a chance to share with other public servants ways in which procurement activities could be carried out to reduce ICT lock-in.

**Webinars are useful to address stakeholders’ attention towards specific topics**

The 10 webinars organised as part of the Study were useful to focus the community’s attentions on specific topics that were not covered during the workshops organized in Brussels. Furthermore, they proved to be an effective instrument to engage also those stakeholders who did not get a chance to attend Brussels’ workshops.

**The Joinup Community Open Standards for ICT Procurement is well known**

Thanks to Joinup’s reputation as one of the biggest collaboration platforms for European Public administrations and thanks to the extensive communication efforts deployed over the last two years the community quickly became a reference point for all those actors wanting to go deeper into ICT procurement matters. With over 7,000 internet accesses from most of EU Member States, its library can be considered as one of the most important web repositories of practices on standards-based ICT procurement.

**The Study’s library of good practices is exposed to the risk of obsolescence**

The Study’s library of good practices on Joinup provides a snapshot on a series of practices currently existing at the European level. The library will have to be enriched and updated as soon as new standards or better practices are adopted.
4.3. COLLECTION OF BEST PRACTICES

During the course of this study we came across and collected a number of good practices consistent with the actions and principles contained in “The Guide for the Procurement of Standards-Based ICT — Elements of Good Practice”.

The collection of good practices, available both in the annex of this study and on the Joinup community "Open Standards for ICT Procurement", is the result of a systematic gathering, which lasted 2 years (2014 and 2015). The aim of this study was not to gather the highest number of good practices, but to map practices to be involved in stakeholder engagement and dissemination activities.

Gathering activities occurred through:

- four project workshops (with an average participation of 75 key stakeholders per workshop);
- ten online brainstorming events (with an average participation of 25 key stakeholders per webinar);
- one questionnaire (produced in English and Italian, completed by 117 respondents from 25 Member States);
- phone interviews (with those stakeholder who reported themselves as aware of a good practice for the reduction of ICT lock-in).

The aim of publishing these practices on the Joinup platform was that of inspiring and guiding key stakeholders within European public administrations (Standards Setters, Senior Managers, ICT Strategists, ICT Technical Architects, Business Case Authors and Procurement Practitioners) when dealing with the procurement of ICT products and services.

As revealed by the questionnaire of the study (see section § 4.7.9), the Guide could be improved by including more practical cases (good practices, lessons learned, suggestions on "how to deal with non-trivial situations", etc.) describing how other administrations dealt with ICT lock-in.

The entire list of good practices is detailed in Annex 1 COLLECTION OF BEST PRACTICES.

This section focuses on only those practices that best exemplify the actions and principles contained in the Guide and that numerous stakeholders reported as very effective in reducing ICT lock-in.

The following table provides a synoptic view of the main actions that will be examined throughout the chapter.
The table below presents an overview of the good practices collected in Annex (§ 6.1)

**Table 4 – List of Good Practices**

<table>
<thead>
<tr>
<th>Type</th>
<th>Country</th>
<th>EU</th>
<th>Nat</th>
<th>Loc</th>
<th>Relevant for</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Interoperability Framework for European Public Services - EIF</td>
<td>ICT Frameworks and Architectures</td>
<td>EU</td>
<td>✓</td>
<td>✓</td>
<td>Procurement Practitioner - Senior Manager - Standards Setters – Strategist - Technical Architect</td>
</tr>
<tr>
<td>Estonian Interoperability Framework</td>
<td>ICT strategies and architectures</td>
<td>Estonia</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open &amp; Agile Smart Cities – harmonisation through open innovation</td>
<td>ICT Frameworks and Architectures</td>
<td>Norway</td>
<td>✓</td>
<td>✓</td>
<td>Senior Manager - Standards Setters – Strategist - Technical Architect - Procurement Practitioner</td>
</tr>
<tr>
<td>Smartcities’ Guide to ICT architectures</td>
<td>Guidelines and Knowledge on Standards</td>
<td>EU</td>
<td>✓</td>
<td>✓</td>
<td>Technical Architect - Business Case Author</td>
</tr>
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<td>Netherlands</td>
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<td>Guidelines and Knowledge on Standards</td>
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<td>The Netherlands in Open Connection: An action plan for the use of Open Standards and Open Source Software in the public and semi-public sector</td>
<td>Guidelines and Knowledge on Standards</td>
<td>Netherlands</td>
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<td>List of recommended standards</td>
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<td>ICT Needs &amp; Long Term Planning</td>
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<td>Templates and Ready Texts</td>
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4.3.1. ICT Frameworks and Architectures

ICT frameworks and architectures are key to enhance interoperability through open standards and to avoid lock-in. They highlight different ways of addressing interoperability’s main challenges (functional, technical, procedural, cultural, semantic, etc.)

"Interoperability, within the context of European public service delivery, is the ability of disparate and diverse organisations to interact towards mutually beneficial and agreed common goals, involving the sharing of information and knowledge between the organisations, through the business processes they support, by means of the exchange of data between their respective ICT systems."

To address these challenges, a series of systematic approaches were implemented at the EU level, one of these being the European Interoperability Framework (EIF), an Enterprise Architecture framework promoting integration among EU Member States.

The EIF contains a set of recommendations and defines generic standards with regard to organisational, semantic and technical aspects of interoperability, specifying how Member States’ Administrations, Businesses and Citizens should communicate and interact with each other to improve pan-European Government e-Services.

In details, the purpose of the European Interoperability Framework (EIF) is:

- to promote and support the delivery of European public services by fostering cross-border and cross-sectorial interoperability;
- to guide public administrations in their work to provide European public services to businesses and citizens;
- to complement and tie together the various National Interoperability Frameworks (NIFs) at European level.

The National Interoperability Framework Observatory (NIFO) uses five main criteria to assess the alignment of National Interoperability Framework with the European guiding principles. The final goal is to help EU public administrations to align their NIFs with the EIF. NIFO measures the alignment on:

1. to promote and support the delivery of European public services by fostering cross-border and cross-sectorial interoperability;
2. to guide public administrations in their work to provide European public services to businesses and citizens;
3. to complement and tie together the various National Interoperability Frameworks (NIFs) at European level.

The European Interoperability Framework (EIF) is an agreed approach to interoperability for organisations that wish to work together towards the joint delivery of public services. Within its scope of applicability, it specifies a set of common elements such as vocabulary, concepts, principles, policies, guidelines, recommendations, standards, specifications and practices.

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European Interoperability Framework (EIF)

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10 EUROPEAN COMMISSION. Interoperability Solutions for European Public Administrations (ISA). European Interoperability Framework (EIF) for European Public Services., 2010
11 Annex 2 - Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions 'Towards interoperability for European public services'
NIFO considers the Spanish Interoperability framework (Annex 6.1.2.7) fully aligned with the EIF on the ‘Governance’, the ‘Principles’ and the ‘Interoperability Agreements’. It has an almost full alignment on the ‘Conceptual Model’ and a good alignment on the ‘Interoperability levels’. All EIF principles are implemented with practical examples, mostly online services, websites and platforms. In particularly, the Spanish NIF addresses requirements in relation to:

- technical interoperability: the NIF specifies conditions about the selection and use of standards;
- common infrastructures and services: contributes to facilitate multilateral interactions;
- reuse of software: it contributes to a better interoperability;
- interoperability Agreements.

Of particular importance, the Spanish Catalogue of ICT Standards\(^\text{12}\) included within the list of Interoperability Agreements. The Spanish Catalogue of ICT Standards, adopted in 2012 and applicable to all PPAA in Spain, establishes the conditions for the selection, maintenance and use of standards for e-Government services.

The Lithuanian State Information Resources Interoperability Platform (SIRIP)\(^\text{13}\) (Annex 6.1.1.2) is well aligned with the EIF on the principles and conceptual model dimensions and is fairly aligned on the interoperability levels and interoperability agreements dimensions. The Lithuanian interoperability framework offers a centralized easy way for public authorities to design, deliver and manage e-services. Public administrations can now add new e-services faster and at lower costs (according to a government report, SIRIP saved the Lithuanian government about EUR 1.4 million). In addition, such a centralised service system makes it easy to share and re-use e-Government services.

Achieving interoperability for Lithuania implied also a focus on a well-crafted architecture that allowed for the continuous replacement of components matching present and future needs. In their view, a good ICT architecture should define the components (or building blocks) for the required information system and its subsystems, by also including a plan or a roadmap outlining how these components could be procured and further developed over time. In other words, high standards are maintained only when organisations carry out detailed preliminary architectural studies and then develop and design their offerings accordingly.

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The Maltese NIF\textsuperscript{14} (Annex 6.1.1.2), at the forefront for the provision of user-centric online public services for both citizens and businesses, insists on key-concepts such as openness, security, privacy, reusability and user-centricity. The NIF-EIF alignment shows that the Maltese NIF is well aligned.

The Maltese NIF is structured as follows:

- Introduction to the NIF purpose, objectives, key principles
- A conceptual model for an Interoperability Architecture that identifies key Interoperability Agreements across the Public Sector to reduce the interoperability gap in a connected Government paradigm
- Organisational interoperability principles and recommendations for service attributes to contribute in designing interoperable business processes
- Introduction to the concept of semantic interoperability and identification of steps to discover and standardise Government’s data assets
- A standardisation approach to technical interoperability, including contextualisation through Interoperability Profiles

In May 2011 MITA, Malta’s Information Technology Agency (MITA), has updated the Open Standards policy\textsuperscript{15} and directive to harmonise the Government’s direction with the guidance given by the European Interoperability Framework version 2.0 document published by the Commission on December 2010. This includes the definition and approach towards formalised specifications and “openness” characteristics. Open Specifications (informally referred as Open Standards) have been identified as key enablers to implement flexible, re-usable and interoperable ICT resources. In 2012, the Open Standards policy and directive have been consolidated with other interoperability related policy statements in the Interoperability and Open Specifications Policy.

Overall, National Interoperability Frameworks are the result of a collective effort of all national public administrations striving to be aligned with the European scenario and willing to improve their interoperability.

In particular, NIF representatives reported a good alignment with the EIF as good opportunity to:

- Be in line with the latest European policies
- Spur technical interoperability with other Member States
- Facilitate multilateral interactions, also through cloud platforms
- Have a chance to share and re-use software developed somewhere else
- Possibly reduce the total cost of ownership of their ICT solutions
- Reduce ICT Lock-in

Together with ICT Frameworks, architectural interoperability is extremely important also at the organisational/local level, especially with the latest trends toward the creation of a European network of smart cities.

\textsuperscript{14} Government of Malta. Malta Information Technology Agency. National ICT Interoperability Framework

For instance, the **Open & Agile Smart Cities (OASC)**\(^{16}\) (Annex 6.1.1.5) is an initiative that aims to kick-start the use of a shared set of methods to develop systems once for multiple cities and make them interoperable between cities. The vision of OASC is to create an open smart city market based on the needs of cities and communities.

The Open & Agile Smart Cities initiative aims to this major achievement by advocating European cities to adopt four simple mechanisms as *de facto* standards. The first mechanism is a driven-by-implementation attitude. The other three mechanisms are technical - an API, a set of data models, and an open data platform.

The **Smart Cities Guide to ICT architectures**\(^{17}\) (Annex 6.1.2.6) is another useful source of information for business developers, architects and designers wanting to create a municipal ICT architecture. The guide identifies a number of conditions that should be met before administrations begin to develop ICT infrastructures, one of them being, the adoption of open specifications and interoperability whenever possible. Poor interoperability and adaptability are serious issues for many of today’s smart cities. Replacing or changing these components is often prohibitively expensive or too time consuming. Therefore, where possible, architecture solutions should use open standards, underpin service orientation.

### 4.3.2. Guidelines and Knowledge on Standards

Following EC COM/2013/0455, procurement on the basis of ICT standards seems simple. It is necessary to require the use of certain standards in the procurement of ICT products and services. Nevertheless, according to two surveys carried out by Europe Economics in 2011 and 2012 for the European Commission, 50% of public procures claim they are lacking the expertise necessary to select the right standards for the right situations\(^{18}\).

To support public procurers in overcoming these difficulties the European Commission identified a core of good practices that EU Member States were putting into practice to reduce ICT lock-in. These practices served as the basis for drafting the **EC Guide for the procurement of standards-based ICT**, already described in other sections of this document (see section § 4.1.1).

The **Guide**, which has recently been transformed into a website, contains a series of advices to:

- develop an ICT strategy
- assess standards in a methodological, fair and transparent manner
- identify the ICT needs of a public authority on the basis of the user requirements
- plan long-term budgetary expenditures
- engage with the market in order to understand the current market offer
- develop practical, 'ready to use' guidance

Nevertheless, as revealed in a Survey conducted by PwC for the European Commission and presented in section § 4.7.9 of this report, the Guide comes to be still at very first

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\(^{16}\) Open & Agile Smart Cities."Background Document", 2015

\(^{17}\) Smart Cities: An Innovation Network between Governments and Academic Partners. Creating Municipal ICT Architectures – "A Reference Guide From Smart Cities".

step of effectiveness in supporting procures. For example, the Guide is still lacking a
number of practical examples that would support, on a case-by-case basis, procures in
selecting the right behaviors and standards.

A critical aspect affecting all guides is the “risk of non-use”. If a guide is too generic is
of use to no one. If a guide is too specific is of use of only a few. This is to say that the
Guide can be improved, but the level of perfection not easy to reach. For instance, how
many practices should be included in the Guide is still unclear. In addition, the speed of
ICT obsolescence exposes the practices included in the Guide to the risk of being easily
outdated.

The UK Government, decided to regulate the issue once and for all by publishing a series
of principles, namely the Open Standards Principles19. These principles are the
foundation for the specification of standards for software interoperability, data and
document formats in government IT. The seven principles are:

- We start with user needs
- Our selected open standards will enable suppliers to compete on a level playing
  field
- Our standards choices support flexibility and change
- We adopt open standards that support sustainable cost
- Our decisions on standards selection are well informed
- We select open standards using fair and transparent processes
- We are fair and transparent in the specification and implementation of open
  standards

Another interesting fact about the approach of the UK Government is that they publish
challenges on the Standards Hub20 regularly, inviting the users to use open standards to
come up with out-of-the box solutions. Once challenges are solved, guidance on how to
use open standard in those cases is published. In addition, open standards chosen by UK
government technology are published on the “Open standards for government” webpage.

On the other hand, the Maltese Government followed a different approach to disseminate
knowledge on standards. First of all, the Maltese Government embraced the definitions
and direction proposed by the European Interoperability Framework, and defined Open
specifications (Open Standards)21 as formalised specifications characterized by the
following three features:

- All stakeholders have the same possibility of contributing to the development of
  the specification and public review is part of the decision-making process
- The specification is available for everybody to study
- Intellectual property rights related to the specification are licensed on FRAND
  terms or on a royalty-free basis, allowing implementation in both proprietary
  and open source software

Another definition of Open Standard provided by the Maltese Government is the following
“Open Standards enable different industries to provide various software and services that
can work seamlessly together. In a nutshell, open standards simplify inter-operation,

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20 https://standards.data.gov.uk/
guarantee a high degree of flexibility, freedom of choice to the end-users and prevents single vendor lock-in.”

Even if these might seem a trivial debate, defining at an early stage an open standard is crucial (more than 20 definitions of open standards are used and some of them are somewhat contrasting).

After defining an open standard, the Maltese Government gave the possibility to public agencies, the business community, and the general public to request the inclusion of an Open specifications within the Adopted Specifications list.

All specifications, before being adopted, are evaluated on the basis of the following four main criteria:

- Level of Openness
- Relevance to the business context
- Market support
- Impact assessment

The intention of the Maltese government is to ensure that maximum benefits are derived by each ICT investment. In this regard, Open specifications should be used by public procurers to make sure that ICT solutions are flexible, re-usable and interoperable with the other ICT resources.

PICSE - Procurement Innovation for Cloud Services in Europe\(^{22}\) – is a European project aimed to set up a European Procurers’ Platform capable of raising the level of understanding of issues in the procurement of cloud services. Among other initiatives, PICSE developed the PICSE wizard; a web-based application that public research organisations can use to obtain guidelines on the most suitable model for procuring cloud services, to make a self-assessment and evaluate their procurement procedures.

To sum up, guidelines and knowledge on standards can come in any form and from any government entity. As an example, the Irish Government developed a very concise two-page guideline on how to write technical specification in a generic way, to avoid the effect of favouring or eliminating certain undertakings or certain products from competition. Another example are the IDABC Guidelines on Public Procurement of Open Source Software\(^{23}\), aiming to avoid the involvement of poor practices leading to non-transparent and anti-competitive procurement of Open Source Software and meant to be applicable in any context within EU Member states, irrespective of the existence of any related policy.

Regardless of the form and the length of the ICT procurement guidelines, what truly matters is the early involvement of the end-users, namely those who are going to be guided through the procurement process. This is the only way to avoid the “risk of non-use”. In other words, guides should not be drafted by theorists external to the procurement process, but should be the result of a joint effort of procurement practitioners and procurement theorists.

\(^{22}\) http://www.picse.eu/

4.3.3. **Standards Assessment**

The assessment of standards and specifications makes sure that selected standards and specifications lend themselves to the purpose of fostering interoperability and reducing lock-in. An ill-defined assessment process may lead to standard lists:

- with an excessive number of standards
- with obsolete standards
- with overlapping and somewhat contradicting standards
- where it is not clear which standards should be used in specific situations

This is a continuous activity that assures that as soon as new and better standards become available, they will be included in official standards lists, replacing previous standards.

The assessment of ICT standards and specifications for Government solutions is currently organised on a national basis (e.g. within the context of Member States’ National Interoperability Frameworks). That said, there has been an effort at the European level to adopt a common framework that fosters collaboration between Member States. In this regard, CAMSS (Annex 6.1.1.2) is a European Commission initiative launched under the ISA programme, aiming to promote the collaboration of Member States in defining a “Common Assessment Method for Standards and Specifications”\(^24\).

CAMSS does not select standards. Rather, it is a method to assess standards and specifications, which is based on the best practices of several Member States and aligned with the European Regulation on Standardization. It provides a method and flexible tools that can be adapted to suit the needs of each Member State (e.g. by adding/selecting the most relevant criteria, selecting knock-out criteria, etc.).

The CAMSS Joinup Community\(^25\) represents an easy way to access the CAMSS toolkit (containing documented assessment process, a set of quality requirements/criteria and assessment tools) and to interact and discuss the assessments of standards. Moreover, the CAMSS framework does:

- provide European administrations with a well-defined and easy-to-use framework and method for assessing ICT interoperability standards and specifications
- ensure that assessments of ICT standards and specifications can be faster, easier and of higher quality
- enable the reuse, in whole or in part, of such assessments

It also describes the roles and responsibilities in the assessment of formal specifications. These figures are:

1. initiating administration
2. assessment panel
3. decision making body


\(^{25}\) https://joinup.ec.europa.eu/node/66790
4. external stakeholders (e.g. general public, standardization, organisations, interest groups or communities)

In the collection of best practices, some cases were inspired by the CAMSS model and others diverted from it. In this regard, the English, Danish and Dutch cases are of particular interest.

The **UK Cabinet office** adopted an inclusive standard-setting process based on the CAMSS: the **UK Standards Hub**\(^{26}\) (See Annex 6.1.3.2). The Hub is a repository where all information concerning the selection of open standards is collected and published, but serves also as an online platform where different stakeholders, both public and private, can actively participate in the standard assessment process, every step of the way.

The aim is to select a small set of core standards to be applied consistently across UK e-Government services, to make them interoperable and keep low costs. Involving representatives from the industry and allowing them to propose and discuss their own solutions is also essential. The goal is to pull standards from procurers but also from the industry, as suppliers are the ones to who will have to adopt and, consequently, adapt to the selected standards.

Similarly, **Digitaliser.dk**\(^{27}\) (Annex 6.1.3.2) is a social collaboration tool that enables everybody, public or private, to upload, to share and discuss various types of interoperability assets (ML Schemas, datasets, software and technical standards). The goals is Denmark’s digitization, while strengthening cooperation between public and private parties. Digitaliser.dk serves also as platform for the constant review of formerly selected technical standards, already adopted by governmental agencies.

Furthermore, in the **Netherlands** there are two central government administrations that identify, select and assess the list of standards to be published: the Standardisation Forum and the National eGov Board.

Generally, the process of identifying a standard is made up of five phases. The most significant phases are the "Submission" phase (in which everyone can propose a standard), the "Expert review" phase (in which the Standardisation Forum starts with the review) and the "Decision" phase (in which the National e-Gov Board takes the final decision on the standard proposed)\(^{28}\).

According to the **Dutch Standardisation Forum**\(^{29}\), their assessment method resulted in numerous benefits\(^{30}\):

- Transparent process which creates trust and support;
- Increase in participation: more standards are submitted for assessment each year;
- Conflicting standards have been merged.

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26 https://standards.data.gov.uk/
27 https://digitaliser.dk/
29 https://www.forumstandaardisatie.nl/english/
4.3.4. **List of Recommended Standards**

As recommended by the Guide, once the decision on which standards to adopt is made, it is important to publish this information somewhere that is easily accessible, along with any implementation advice that might be necessary.

Public procurers know about policy and legal issues, but they may lack the knowledge of the standards their solution should be compliant to. Therefore, it is important to explain the cases that each standard should be used for, in order to avoid that procurers are using standards for the wrong thing.

The **Digital Single Market Strategy**\(^{31}\) proposes to integrate national catalogues of ICT standards into a European catalogue to avoid market fragmentation at EU level. In fact, at present, national catalogues are developed independently and only few commonalities among them do exist.

**The EU Catalogue of ICT Standards and Specifications** will likely:
- lower vendor lock-in for MS
- lower total cost of ownership of ICT solutions
- increase interoperability
- in addition, in a Digital Single Market, more suppliers will be able to make offers on public procurement, so prices are expected to be lower

Yet, before getting to a definitive Catalogue, the Commission will have to go through several steps. It will launch a study to analyse the national catalogue or adoption strategy in several Member States, as to define the EU level standard adoption processes. It will organise workshops and define surveys for key stakeholders. It will launch an impact assessment to understand the different policy options and exactly quantify the potential socio-economic benefits. The result of such study will become the first prototype of the EU catalogue.

A common library for standards means greater efficiency and cost savings, as well as supporting expertise of civil servants, while selecting standards and specifications. Nevertheless, open standards evolve and updated versions or entirely new standards develop in response to technology innovation. Standards have to be scrutinized and reviewed cyclically under a rigorous process by subject matter experts. Standards that do not keep pace with progress are redundant and have to be updated to suit the user’s needs. However, an extensive restriction of the market using standards may prevent innovation. Hence, founding a balance between the use of standards and enabling new technologies is crucial.

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This issue has already been faced by Spain in the context of the **Spanish National Catalogue of ICT Standards**[^32]. According to the Deputy Head of Unit for Coordination of ICT Units of the Ministry of Finance and Public Administrations, the choice of selecting only 86 standards resulted from several considerations, one over all concerned the challenge of maintaining the catalogue up to date.

The Spanish approach (Annex 7.1.7.1) shows that a preferred standardisation system identifies only a core of standards, which should be carefully updated. It is therefore incumbent on the end-user of a standard to ensure that the standards they are using are in its latest version as published by the government.

The **Danish government** embraced a different perspective characterized by the OIO Catalogue, using a huge number of specifications through Digitaliser.dk, as mentioned above (Annex 6.1.3.2) The **OIO Catalogue of technical standards**[^33] contains recommendations on the applicability and usefulness of almost 200 technical specifications for different types of public sector IT systems. These standards and specifications are intended to be implemented by all public bodies across Denmark.

As outlined in the document *"Assessment Procedure and Criteria for Lists of Open Standards"*[^34] (See annex 6.1.3.3), the **Dutch Standardisation Forum and Standardisation Board** have not develop standards, but assess them assigning a status (required or recommended). When a standard is required, public and semi-public entities are required to use it, unless this leads to insurmountable problems. In these cases, a solid explanation should be provided.

The **Dutch Catalogue** is then composed of two lists:

- "Comply or Explain" standards, that are a mandatory standards. The Dutch Government started in 2008 with 8 standards and now, in the 2015, they already have 38 standards
- List of recommended open standards. At the moment 52 standards, mostly IETF, W3C and OASIS standards[^35]

Public and semi-public Administrations must use the "Comply or Explain" list when the ICT investment is higher than € 50.000 and the tender has both a functional (when to use it) and an organisational scope (who has to use it). In these cases, if procurers do not intend to use the standards contained in the "Comply or Explain" list they will have to provide a valid explanation.

[^32]: http://administracionelectronica.gob.es/pae_Home/pae_Estrategias/pae_Interoperabilidad_Inicio/pae_Normas_tecnicas_de_interoperabilidad.html#CATALOGOESTANDARES
4.3.5. **ICT Needs & Long Term Planning**

Assuming that the adoption of Open Standards can be achieved just by including a sentence within procurement documentations will surely lead to failure. Transitioning to open standards requires long term plans, organisational structure changes and revisions to funding models.

Therefore it is important to draft ICT strategies, comprising necessary steps to achieve the transition to open standards, at each government level, ideally an ICT strategy at the national level, one at the regional level and one at the local/organisational level. Of course, each level down the hierarchy the ICT strategy becomes more concrete and precise.

A sound ICT strategy embedding open standards is essential for the delivery of efficient and cost-effective public services, especially in the long-run: transitioning to open standards increases costs in the short-run and decreases them in the long-run only. This is why life-cycle costing and Return On Investment considerations are of major importance to understand if an ICT investment should be pursued or not.

That said, it is important that each organisation defines its own ICT strategy on the basis of its own ICT needs. Defining and finalizing a strategy is a tailored path. Developing an ICT long term strategy implies:

- Mapping the current status of the existing ICT infrastructures
- Identifying a list of issues related to current systems and infrastructures
- Definition of the long term objectives and aspirations aligned with the organisation’s Mission and Vision
- Formulating a series of actions to implement the strategy. From declared to realized

A sound ICT strategy offers numerous benefits:

- Enables the building of a common infrastructure underpinned by a set of open standards
- Drives down the costs and improves the delivery of services
- Keeps under control ICT spending
- Ensures the value for money of each ICT project
- Focusses on goals and real changes

In our experience, it is evident how steps to achieve ICT strategies’ overarching goals are quite different from one organisation to another. The following two case studies will show how two different organisations managed to achieve consistent benefits in two complete different ways. What is important is that both of them reaped these benefits while implementing their own ICT strategies.

On one side, the experience of **Swedish National Police Board (SNPB)**\(^{36}\) demonstrates that a strategy built on detailed financial analysis (case studies) is a key factor to understand if moving from a closed solution to an open solution is a desirable or not. The case study carried out by SNPB showed that giving up their proprietary solution in favour of an open source solution based on open standards would have produced a cost reduction of around 50%.

\(^{36}\) European Commission. Open Source Observatory and Repository (OSOR). The Swedish National Police: How to Avoid Locking Yourself in While Saving Money
This is why in 2006 SNPB launched a project to move their ICT infrastructure from a proprietary product to a server and a database based on open source software and open standards. The aim was to cut costs, avoid vendor lock-in, achieve better performance and introduce open standards.

On the other side, an interesting example is the one of Fife Council\(^{37}\), Scotland. Mr Lee Parry, ICT Category Manager at the Fife Council and keynote speaker of our first workshop, showed how implementing Fife’s ICT strategy\(^{38}\), made possible the delivery of a £21M public sector ICT infrastructure programme, ahead of schedule and £1.5M under budget.

Mr. Parry and his colleagues formulated a set of five standards that each entity pertaining to Fife had to respect in order to fight or at least reduce lock-in. The five standards are:

- PMO: A dedicated Project Management Office ensures that no ICT purchase is creating commercial or operational risks to the Council
- Technical standards: A set of technical standards guarantees that the overall ICT architecture is secure that the chances of being locked-in are minimised
- Organisational and departmental visions: Fife Council is divided into 19 departments (education, environment, etc.), each one having its own vision with regards to the purchase of ICT. This additional degree of freedom allows each department to select independently its own technical standards
- Subject matter expert reviews: Before any purchase of technology products, the contract has to be reviewed first by a panel of experts that will make sure that the new purchase is in line with the departmental vision
- Contract management: A set of contract management routines and good practices to ensure that all the ICT that has already been installed inside the Council is properly managed

Another factor distinguishing Fife Council strategy from the strategy of other public entities is that Fife always takes into consideration what might happen at the end of the contract. Indeed, in Mr. Parry’s words, Exit Management is as important as any other activity that takes place when purchasing an ICT solution (technical specification writing, etc.).

### 4.3.6. Develop a Procurement Framework

Countries have the possibility to develop procurement agreements. These tools differ from classic procurement. In fact, procurement frameworks are agreements that are pre-negotiated with a range of providers. They are not contracts themselves, but they establish terms governing contracts in a given timeframe for the acquisition of services. Within a procurement framework, public administration then call off competition to contract services based on their specific needs.

They are different from traditional procurement practice, as they:

- avoid lengthy call for tenders,
- allow also smaller public entities, lacking specific ICT procurement expertise, to procure under contractual terms and conditions negotiated by a central (or local) procuring authority.

Of particular importance are the good practices of Sweden and England.

The **National Procurement Service of Sweden**, established in January 2011, is a government department that offers central government authorities coordinated framework agreements for goods and services of general use (ICT products and services; Office furniture and office equipment; Services, hotels and conferences; Safety and security; Transport and vehicle; Other services).

Central government authorities must use these framework agreements, unless they find other deals which are undeniably better in all and for all. Thus, if an authority does not want to use these framework agreements, it should notify the National Procurement Service office.

In the area of ICT products and services, also local and regional authorities can take advantage of the National Procurement Service framework agreements. These ICT frameworks make it fully possible to evaluate and compare solutions based on proprietary software, open source software, hosted services and cloud services or any combination of those.

These frameworks explicitly deny mandatory requirements for non-open standards and non-open source software. On the other hand, it is possible to mandate open standards and open source software. Open standards and open source software are market neutral and thus enhance competition between all market players.

Interestingly, the National Procurement Service office is financed by fees charged to the suppliers in proportion to their turn-over and its economic goal is the full coverage of its own costs.

Another important effect of using procurement frameworks is that they encourage the opening of the market to small and medium-sized enterprises that often do not qualify for competitions.

In the **UK**, thanks to the **Digital Service Framework and the G-Cloud Framework**[^39], the UK Gov. managed to buy ICT through shorter length contracts, buy more flexibly and buy from a much broader range of suppliers.

As an example, the map provides a slight illustration of how centralized the supplier base was in 2010 and how, in 2014, the supplier base developed. Many SMEs coming from all over the UK started to deliver products and services for the UK government (over

[^39]: https://www.digitalmarketplace.service.gov.uk/g-cloud/framework
50% of the new frameworks expenditure goes through SMEs).

Indeed, procurements frameworks, if properly defined, could also reduce ICT lock-in. A type of service that is particularly subject to ICT lock is “Cloud Computing”. This is true for many reasons: i) because the issue is complex; ii) because the topic is new; iii) because is difficult to compare services provided by different providers; iv) because pricing schemes are not always clear; etc.

This is one of the reasons why the UK Gov launched the “G-Cloud”, an initiative aimed at easing the procurement of information technology services based on cloud technologies (SaaS, PaaS, IaaS and SCS) by public-sector bodies. The G-Cloud is based on:

- A number of framework agreements with over 700 suppliers (80% are SMEs)
- The Digital Marketplace, an online platform where is possible to procure services under the G-Cloud framework, the Digital Services framework and the Crown Hosting Data Centres framework

In sum, procurement frameworks are nothing new in the procurement landscape but, if properly used they can make a significant difference reducing the overall cost of procurement, reducing ICT lock-in and opening up the market to SMEs.

4.3.7. Templates and Ready Texts

To procure goods and ICT services it is necessary to use specific documentation, which is time consuming to produce. A way to compile the relevant docs cost-efficiently is to refer to government-produced ready text and templates. This is valuable as it grants higher level of protection through contractual closes minimizing risks of disagreements and if properly applied by relevant stakeholders, it enables a competitive business environment.

On the other hand, templates ensure that all procurers can set specifications in line with the best practices against lock-in.

As a first example, the Interoperability Solutions for European Public Administrations (ISA) provides guidelines at the EU level to be adopted at national level on “Standard Sharing and re-using clauses for contracts”\(^{40}\) (Annex 7.1.6.1).

These contractual clauses focus on:

- Reusing third parties’ IPR assets (integrating “received” open source software in the public authority solution),
- Reusing and distributing the documentation (and other “non-software” knowledge elements),
- “No Vendor Lock-in” clause: how to stay free to adopt a new solution and to contract with another provider.

In addition, promoting common “standard” clauses for contracts in service procurement has the potential to increase the sharing and re-using of IT tools, a possibility strictly related to the right to redistribute software (when written by or exclusively for a public authority).

Among good practices collected the BITKOM "Guides on wording procurement documents in a non-proprietary manner for desktop PCs, notebooks, servers, monitors and printers" (Annex 6.1.7.2) is another example. These guidelines are a compact tool to ensure compliance with legal requirements and environmental criteria and also to identify and describe the state-of-art technical standards, thus guaranteeing perfect product neutrality. The approach of the guidelines leverages general accepted benchmarks as a major element of a non-proprietary product description. The aim is to avoid the use of proprietary brand names while taking state-of-art technical requirements into consideration.

In France, the government has published templates to be used by procurement officers when requesting free software-based ICT solutions (Annex 7.2.1.3). Companies submitting bids should allow the code to be published using a licence that is compatible with either French Cecill or the EU EUPL free software licence, which is a “copy left” type of licence that is freely modifiable and redistributable (more details on licences and contractual closes in section 5.3.2).

When software are made with different components, developers have to report all the elements, specifying the licence for each of them. Unsurprisingly, this can become quite complex in the case where some components are later found out to be proprietary-owned by the vendor.

In Belgium, on 28 October 2014 the Flemish ICT Organisation (V-ICT-OR) published a document containing clauses for tender specifications procurement contracts to promote the use of the specification on "Open Standards Linked Authorities" and established open standards for local governments (Annex 7.1.2.5.). The document proposes clauses to promote the use of OSLO conformance, by including this either as a technical criterion or as an award criterion in the tender specifications.

In Australia, the Government Information Technology and Communications (GITC) (Annex 6.1.2.7) provides model contracts and templates for Commonwealth entities to develop sound commercial agreements efficiently and effectively. Furthermore, these templates are flexible enough to allow inclusion of project-specific details, so that they could be adapted for all uses.

"All standards, interfaces, protocols, formats or semantic assets implemented by the supplied solution and required for the full use of all data created or maintained using the supplied solution during the lifetime must be made available to providers of equivalent technologies who may be awarded a subsequent contract, with no additional costs."

*One of the “No Vendor Lock-in” clauses

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41 https://www.bitkom.org/EN/
The Australian model contract bases simple procurement, conducted in an environment where routines, methods and procedures are well established and designed for hardware acquisition and maintenance; licence and support – commercial off-the-shelf software; licence (not covering support) - commercial off-the-shelf software; ICT consultancy services. The GITC also refer to semi-complex procurement, in which more preparation needs to be carried out and designed for consultancy services; system integration and software development.

4.3.8. Others

In the previous sections we have highlighted a wide array of actions that different stakeholders (Standards Setters, Senior Managers, ICT Strategists, ICT Technical Architects, Business Case Authors and Procurement Practitioners) could undertake to reduce vendor dependency. However, we deem important to present other two good practices, originating at the European level, that are particularly important for the procurement of ICT: European Union Public Licence (EUPL) and Open PEPPOL.

European Union Public Licence (EUPL)

The EUPL licence (Annex 6.1.8.1) is a tool established at the EU level to facilitate resource optimisation and sharing. The "European Union Public Licence” (EUPL) is the first European Free/Open Source Software (F/OSS) licence. It has been created on the initiative of the European Commission. It is now approved by the European Commission in 22 official languages of the European Union.

If not foreseen by an appropriate contractual clause, it may be that software effectively purchased by administrations cannot be re-distributed, for various reasons:

- The software providers’ licence terms are proprietary (limitations on the number of users, the number or power of computers, etc.)
- The software providers’ licence terms are open, but some of the standards implemented in the software belong to third parties, are patented and their use is not royalty free (RF)
- Licence terms are open source, but the provided solution is made from various components and the provider has not paid attention to the licence compatibility of these components
- If there are maintenance terms that restrict any modification of the source by a third party or cancel the guarantee

The aim of the EUPL licence is to raise awareness concerning the opportunities of Free/Open Source distribution and encourage all relevant stakeholders to follow this example.44

Open Pan-European Public Procurement Online (OpenPEPPOL)

The OpenPEPPOL project (annex 7.1.1.4) aims to enable business to easily interact and communicate electronically with European public sector buyers in their procurement process. It does that by developing and implementing specifications for eProcurement around Europe that expand market connectivity and interoperability between

eProcurement communities. The OpenPEPPOL project is run by a consortium of countries and it originated from the European Commission CIP funding programme. PEPPOL is compliant with the eDelivery block of the Connecting Europe Facility (CEF) Building Blocks, helping public administrations to exchange electronic data and documents with other public administrations, businesses and citizens, in an interoperable, secure, reliable and trusted way. PEPPOL relies on standards from OASIS and other sources. In particular, PEPPOL specifications would likely be very useful for the implementation of directive 24/2014 (on public procurement) mandating, from 2018 onwards, non-discriminatory electronic means of communication, generally available and fully interoperable with the ICT products in general use as a way to foster economic operators’ access to public procurement procedures.45

4.3.9. Lessons learned

Good practices are a good way to encourage public procurers to action
The sharing of good practices is a good way to inspire and give hope to public entities currently experiencing ICT lock-in. Public servants participating to the Study’s workshops, went home with the will to implement those ideas they just came to know. Of course, the more practical were examples the more were the incentives to put into practice the takeaways.

To get a grasp on benefits of adopting several kinds of ICT procurement practices please refer to the different sections of chapter 3 Collection of Best Practices. Within each section the benefits of that kind of practice (standards texts, list of standards, guidelines, etc.) are clearly stated.

Good practices are not easy to collect

- **Good practice owners are not always willing to share their experiences**
  
  Good practice owners not always understand the importance of sharing materials and experiences with other public administrations. In many cases, they reported themselves as very busy or uninterested. Being able to get the materials requires time, flexibility and a proactive approach in explaining the potential benefits of the initiative.

- **Good practice materials are oftentimes available in local language only**
  
  Materials in local language require a double effort. First to understand the practice and second to translate it. Our approach has been to provide a synopsis in English and attach the materials in original language. The Commission might explore the possibility of translating those practices worth of European attention.

- **Good practices aren’t always described as such**
  
  There is no standard approach to scout a good practice. Keywords as “good practice” or “best practice” are not indeed helpful when looking for practices.

45 [http://www.peppol.eu/]
Searching for specific materials (Standard Texts, List of ICT Standards, Procurement Templates, etc.) leads to better results.

- **Good practices are sometimes internal only**
  Many public entities feature ICT procurement guidelines, ICT architectures or lists of recommended standards that could only be distributed internally. As an example, CONSIP (the Italian national procurement agency) does have some materials that could not be distributed to other bodies.
4.4. MONITORING OF TAKE-UP OF “OPEN” PROCUREMENT

As already mentioned in the previous sections, the main objectives of the European Commission concerning ICT procurement based on standards are awareness creation, dissemination of “the Guide”, community building, sharing of best practices, with the ultimate aim of freeing the public sector from vendor lock-in and fostering competition. As such, a fundamental aim of this project is to spread awareness about ICT lock-in and its negative consequences. Within this scope, Task 4 of this project was focused on building an effective monitoring system of the take-up of open procurement. This is an important overarching activity, which addresses both the need of understanding the current situation and the need of giving hints on the level of achievement of the aforementioned goals, thus supporting the decision makers on activities towards them.

In order to address this issue, the primary objective of this task was to gain a sense of European public sector ICT procurement trends and how to measure them, with particular reference to the extent of “openness” and “lock-in” in primary contracting authorities. In particular, the monitoring system will be aimed at assessing:

- Statistical data on references to brand names in tenders, the number of suppliers participating in public procurement bids, and assessments of incidence of low competition in ICT procurement
- Information about ICT procurement processes of public authorities, the assessment of their use of standards in ICT procurement, the development of practical advice, long-term business appraisals, and budgetary planning
- Effectiveness of the project in terms of level of involvement of Member States in accessing the various provisions, as well as developing more specialized versions of “The Guide” tailored to their own ICT strategies and their use of specific standards

This section, presenting the results of the Task 4 of this project, aims at shedding some light on the aforementioned points, by presenting the analysis of two main sources of information:

- the TED database
- the results of a survey conducted by PwC

The analyses of these two sources are interdependent and needed to build a light and effective monitoring system of the take-up of “open” procurement around Europe, especially focused on the ICT domain. Indeed, this monitoring system allows its users to monitor the degree of “openness” of the public procurement market for ICT goods and services. As such, one of the main objectives of the current study is to provide the European Commission with a sound methodology for the extraction of relevant information and insights from the TED database, to be replicated in the future. Therefore, starting from this dataset, analytical and qualitative indicators have been derived to infer the current degree of openness of ICT public procurement.

This section is structured as follows: section 5.4.1 will present the methodology followed to perform the analysis on the TED dataset and the extraction of vendor references, together with the results obtained after data cleaning and preparation. This section will also highlight some limitations of this work, as well as recommendations and possible steps forward to be implemented in a future analysis.

Section 5.4.2 will be instead devoted to the presentation and analysis of results of the survey, grouped around main topics: each section will have a summarising paragraph at the beginning and will continue with some deep-dives on the different questions of the survey.
The Appendices will include some additional material, such as the overview of variables content, the list of brand names, some statistics computed on the TED dataset and the questionnaire of the survey.

The databases, comprising all analyses hereby presented (i.e. all preliminary analyses, following the data preparation task; the vendor search, using the text mining algorithm) and the script to run the text mining algorithm for the analysis of possible source of vendor lock-in have been shared to empower the interested stakeholders to replicate the analysis in the future.

### 4.4.1. TED Analysis

#### 4.4.1.1. The TED repository and the legal background

**Summary box**

TED is a database containing information on all tenders, published by any European public administration, with a value exceeding thresholds, established by the EU Directive 2014/24 on public procurement. This Directive also establishes that specific references to vendors, trademarks, patents and similar are not allowed, in order to avoid distortion or limitation of competition, unless these mentions are necessary and accompanied by the words “or equivalent”.

TED is the electronic version of the Official Journal of Europe, gathering all invitations to tender published by any public administration within the 28 member states, candidates countries, and some other entities such as Switzerland, the actors pursuant to the Government Procurement Agreement (GPA), the European Investment Bank, the European Central Bank and the European Bank for Reconstruction and Development. This repository contains an enormous amount of tender notices, which increases every day by a thousand of units. This follows the Public Procurement Directives establishing the mandatory publication on the Supplement of Official Journal of the European Union (OJEU) and on TED, when the contracting authorities intend to award a contract above some specific threshold values.

Therefore public contracts, having as their object the acquisition of software packages or information systems, fall under the remit of EU Directive 2014/24, replacing Directive 2004/18/EC. Specifically, Art. 4 of the aforementioned directive establishes the threshold values, net of value-added tax (VAT), as follows:

- EUR 134,000 for public supply and service contracts awarded by central government authorities
- EUR 207,000 for public supply and service contracts awarded by sub-central contracting authorities
- EUR 750,000 for public service contracts for social and other specific services;
- EUR 5,186,000 for public works contracts

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46 Further details on the provided datasets will be included in the sections dedicated to each analysis that was performed.
According to Art.42.4 of Directive 2014/24/EC, public purchasers may draw up technical specifications in the tenders, but they must allow procurement to be open to competition. The rationale behind these rules is to prevent the use of discriminatory specifications that do not allow all potential contractors, suppliers or service providers to meet the requirements, and to prevent artificial restriction of potential contractors, in line with the principles of the Treaty on European Union. Article 34 TFEU (ex-Article 28 TEC) prohibits all quantitative restrictions and any other measure that distorts competition. The definition contained in Article 34 TFEU is a broad one and encompasses "all trading rules [or measures] enacted by Member States which are capable of hindering, directly or indirectly, actually or potentially intra-Community trade". The Directives and the relevant jurisprudence have established that any reference to a specific vendor, source, process, trademark, patent, type or specific origin or production is not permitted. Only under exceptional circumstances, references are allowed, i.e. when it is otherwise impossible to provide an intelligible description of the subject of the contract which is also sufficiently detailed. In this case, however, the reference must be accompanied by the words "or equivalent". To this end, it must be possible to submit tenders that reflect the diversity of technical solutions. In line with this, it must also be possible to include technical specifications of functional performance and requirements. When it is impossible to reference standards, the contracting authorities must consider equivalent arrangements.

The TED repository contains data about the contracting authorities, the initial and final value of tenders, the number of their lots, the number of offers received per tender, the geographical information about both contracting authorities and awarded contractors, and the type of procedures. Tenders can be published in any of the official languages of the European Union, thus offering a wide variety of content to be analysed.

4.4.1.2. Methodology

This part of our study analyses the TED repository to obtain quantitative insights on the lock-in phenomenon in ICT public procurement. On note, the methodology reported hereby represents an improvement with respect to an initial analysis that was submitted to the DG CONNECT in 2014: feedback received from relevant stakeholders were taken into consideration and the development of an analytical method for quantitative analysis allowed to perform the analysis again, gaining more insightful results and overcoming some limitations encountered; the scope of the analysis was thus enlarged, including all member States and dealing with all EU languages and any problems related to semantic mismatch were overcome thanks to a quality check.

This analysis includes a number of features: the use of a data mining algorithm developed in R, an open-source statistical software for the extraction and processing of information on vendor lock-in and a wide scope, in terms of countries included, timeframe, languages and alphabets considered, compared to other available analyses. Moreover, a quality check was performed with the involvement of the PwC International Network to ensure that all extracted information was semantically relevant.

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49 It can be read: "Technical specifications shall afford equal access for tenderers and not have the effect of creating unjustified obstacles to the opening up of public procurement to competition."


51 Case 8/74 Procureur du Roi v Dassonville [1074] ECR 837

52 R, Version 3.2.2 and the user-interface RStudio (developed for R) were used for all reported analyses.

53 A brief comparison is presented in section 4.7.8.4.
The following sections will explain the process in detail.

4.4.1.2.1. Our approach to the dataset: data cleansing and data selection

Summary box
In order to focus the analysis on relevant data and variables, we excluded all records that were not ICT-related by selecting only the relevant CPVs. We only included tenders published on the TED website between 2010 and 2015 (this latter year only includes the first four months, due to data availability at the time of analysis).

The MAPPS dataset, in open data format, received from the DG GROW contained more than 2.5 million records (i.e. entities) and about 50 main fields of information (i.e. variables), about tenders published on the TED website between 2010 and 2015 (this latter year only includes the first four months, due to data availability at the time of analysis).

The European and European Economic Area Member States considered in this study transposed European procurement legislation (i.e. the new procurement Directive 2014/24/EU, replacing Dir. 2004/18/EC), into their national public procurement legislation, thus referring to law limitations to publication obligation when using OJEU TED. These legislative instruments contain exclusions for certain types of procurement, exempting contracting authorities inter alia from their publication obligations for these procurements. The specific exemptions relevant for this study are listed below:

- Contracts for public procurement with a value below the aforementioned European thresholds;
- Certain contracts relating to defence, security and armaments (dealt with in a separate legislation, Directive 2009/81/EC);
- Contracts for the principal purpose of permitting the contracting authorities to provide or exploit public telecommunications networks or provide to the public telecommunications services (Article 13, Section 3, Directive 2004/18/EC);
- Secret contracts, contracts requiring special security measures (Article 14, Section 3, Directive 2004/18/EC);
- Contracts awarded by actors pursuant to international rules (Article 15, Section 3, Directive 2004/18/EC);
- Service concessions or service contracts of an exclusive right under EU-compatible law (Article 17, Section 3, Directive 2004/18/EC)

Therefore, TED extractions do not contain information on these types of contracts.

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54 The MAPPS database includes all notices published in the European public procurement journal Tenders Electronic Daily (TED) since 1993.
55 This dataset can also be retrieved online at https://open-data.europa.eu/en/data/dataset/ted-csv
56 See footnote 3.
Furthermore, following the publication obligations that are mandated by Public procurement Directives for public procurers in the EU Member States, the dataset and analysis included the following public entities:

- National central public entities;
- Regional public entities;
- Local public entities.

In general, international organisations based in Europe are not subject to the application of national public procurement legislation of their host countries. For instance, international organisations based in Switzerland – a country that is not subject to the EU’s public procurement legislation – do not have to comply with Swiss public procurement legislation. These organisations – such as CERN or the United Nations – apply their own public procurement rules, which typically foresee publication obligations on their own platforms. As a result, public procurement of international organisations in Europe is not covered by national public procurement databases, such as TED, which has been used as data source for this study.

Similarly, the European public procurement legislation is not applicable to international organisations headquartered in the European Union but outside the EU-framework, such as EUROCONTROL or NATO. Such international organisations apply their own public procurement rules, which typically foresee publication obligations on their own platforms. As a result, public procurement of international organisations outside the EU framework based in the European Union is not covered by the OJ EU TED public procurement database, which has been used as main data source for this study.

In order to focus the analysis only on ICT-related contracts, we selected the 21 most relevant CPVs (Common Product Vocabulary) out of all tenders types in the dataset. To retrieve the contracts referring to these fields, we analysed all CPVs to identify those that could be more relevant; the following CPV divisions or groups were thus selected:

- 30200000: Computers equipment and supplies
- 48000000: Software package and information systems
- 72000000: IT services: consulting, software development, Internet and support

The selected CPVs, within these groups, are listed in Annex 6.2.1.

Moreover all contract notices that had not resulted in assignations were removed, in the attempt not to bias the analysis with tenders that could have been withdrawn or modified at a later stage: Hence, all instances that did not have any information in the “award date” variable were excluded, with the intention of focusing the analysis on awards, rather than notices. Secondly, all tenders issued in Iceland and Norway were excluded, as well as all tenders issued by any European institution, in order to restrict the analysis to European Member States only. Thirdly, all duplicate rows were obviously removed. Finally, a deeper analysis of the content revealed that some rows were still duplicates (i.e. thus representing the same contract and ID award) because of problems of data quality: content inputted wrongly, presence of missing values in variables that are not the main

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60 As explained in the Article 15 lit c of Directive 2004/18/EC “public contracts governed by different procedural rules and awarded pursuant to the particular procedure of an international organisation” are explicitly excluded from its application.
61 For more information, refer to http://simap.europa.eu/codes-and-nomenclatures/codes-cpv/codes-cpv_en.htm
62 DT_AWARD=blank
63 ISO_COUNTRY_CODE = “IS” or “NO”
64 CAE_TYPE = 5
ones, and misspelled words or typos caused the duplication of some rows that had to be deleted in order not to double-count the same award.

4.5. As a result of these choices, a new dataset was produced, consisting of 28,670 awards, related to 14,538 tender notices. Annex 6.1 COLLECTED BEST PRACTICES

4.5.1. ICT Frameworks and Architectures

4.5.1.1. European Interoperability Framework for European Public Services

**Country:**
EU

**Organisation:**
Interoperability Solutions for European Public Administration (ISA)

**Scale:**
- Supranational
- National
- Local

**Typology:**
- ICT Frameworks and Architectures

**Relevant for:**
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect

**External links:**
http://bit.ly/1Razmkq

**Short description**
The European Interoperability Framework (EIF) is one of a series of European initiatives that aims to support the establishment of European public services. The European Interoperability Framework addresses this issue in order to facilitate the interoperability of eGovernment services at pan-European level.

The EIF addresses interoperability in a very specific context of providing European public services. Also it contributes to the better functioning of the internal market by increasing interoperability among European public administrations.

The purpose of the European Interoperability Framework (EIF) is:

- to promote and support the delivery of European public services by fostering cross-border and cross-sectorial interoperability;
- to guide public administrations in their work to provide European public services to businesses and citizens;
- to complement and tie together the various National Interoperability Frameworks (NIFs) at European level.

The EIF provides recommendations that address specific interoperability requirements.

Implementing the recommendations will create an environment conducive to public administrations establishing new European public services.

**Key points**
The document offers a number of key issues:

- Underlying principles (sets out general principles underpinning European).
- Interoperability levels (different interoperability aspects to
be addressed).

- Approach to facilitate cooperation among public administrations.
- Interoperability governance (sets out what is needed to ensure interoperability).

### Potential benefits

Public Administrations are encouraged to:

- Reuse and share solutions
- Develop a component-based service model
- Establish European public services
4.5.1.2. SIRIP: State Information Resource Interoperability Platform

**Joinup link:**
http://bit.ly/1rlCCHI

**Country:**
Lithuania

**Organisation:**
Information Society Development Committee under the Ministry of Transport and Communications

**Scale:**
- National

**Typology:**
- ICT Frameworks and Architectures

**Relevant for**
- Business Case
- Technical Architect

**External links:**
http://bit.ly/1QAauV
http://bit.ly/1Y8YMQ9
http://bit.ly/1ktMV0P

**Short description**
The State Information Resources Interoperability Platform (SIRIP) of Lithuania offers an easy way for public authorities to design, deliver and manage e-services. Many e-services can be streamlined and made available in a user friendly one-stop-shop portal to citizens, business entities and civil servants.

The current framework for interoperability in Lithuania is structured around the Public Governance Development Programme 2012-2020 (PGDP) and the Law of Management of Government Information Resources that established the legal framework for the SIRIP as well as related legislation. The latter legislation aims to ensure adequate public information resources development, management, administration, use, maintenance, interoperability, planning, financing and safety.

The centralised service system makes it easy to share and re-use eGovernment services. Public administrations add new services faster and at lower costs, according to a government report published this summer. "The SIRIP solution for identification alone, which has been used by institutions providing various e-services, has saved LTL 4.8 million (About EUR 1.4 million)."

The latter State Information and Communication Technology Interoperability Framework is expected to be published in 2016 and revised and update by 2020 and will use the European Interoperability Strategy (EIS) and the European Interoperability Framework (EIF) as guidelines.

**Key points**
- SIRIP provides a centralized access to public services
- It also offer platform dedicated to design, deliver and management e-services

**Potential benefits**
- Data exchange between government institution is facilitated
- Citizens one stop shop access to all egov services
- The platform allows for service composability
4.5.1.3. NIF: National ICT Interoperability Framework

**Joinup link:**  
http://bit.ly/1PkSCLe

**Country:**  
Republic of Malta

**Organisation:**  
Malta Information Technology Agency (MITA)

**Scale:**  
- National  
- Local  
- Individual

**Typology:**  
- ICT Frameworks and Architectures

**Relevant for (\*):**  
- Technical Architect  
- Strategist

**External links:**  
http://bit.ly/1RIB61a  
http://bit.ly/1SDCRO0

**Short description**  
The ability for public sector organizations to integrate various information systems, which can exhibit varying degrees of isolation, is considered a challenging task. The Maltese government published the National ICT interoperability framework (NIF) to address this problem. The need to lay out a rigorous interoperability framework belongs to the second Strategic Priority of the MITA Strategic Plan, namely to deliver and sustain a robust, resilient and secure ICT infrastructure and IT services to Government. The study is organized as such:

- Chapter 1: Give an introduction to the NIF initiative;  
- Chapter 2: Draws a conceptual model of an Interoperability Architecture that identifies key Interoperability Agreements across the public sector to reduce the interoperability gap in a connected Government paradigm;  
- Chapter 3: Presents organisational interoperability principles and recommends service attributes which contribute towards the design of interoperable business processes;  
- Chapter 4: Introduces the concept of semantic interoperability and identifies steps to discover and standardise Government's data assets;  
- Chapter 5: Defines a standardisation approach to technical interoperability, including contextualisation through Interoperability Profiles.

The National ICT interoperability framework (NIF), draws from the European context and incorporates the principles and recommendations of initiatives such as the European Interoperability Framework, European Interoperability Strategy and the Semantic initiatives promoted through the European Commission's JoinUp platform.

**Key points**

- Identification of technical enablers for the exchange of meaningful information and the ability to reuse existing ICT resources.  
- National ICT Interoperability Framework guide the public sector in maximising the benefits and reducing the cost burden derived from all technology investments by introducing ICT resources that are flexible, reusable and interoperable.

**Potential benefits**

- Avoid vendor lock-in through the use of standards  
- Enables the sharing and re-use of assessments in ICT standards and specifications
4.5.1.4. Estonian Interoperability Framework

**Joinup link:**
http://bit.ly/1xEWtWE

**Country:**
Estonia

**Organisation:**
Estonian Ministry of Economic Affairs and Communications

**Scale:**
- National
- Local
- Individual

**Typology:**
- ICT strategies and architectures
- Relevant for(*):
  - Business Case Author
  - Procurement Practitioner
  - Senior Manager
  - Standards Setters
  - Strategist
  - Technical Architect

**External links:**
https://www.mkm.ee/et

**Short description**
The present document is also a guideline for private sector managers and project leaders who offer development and administrative services to the public sector.

**The objective of the interoperability framework** is to make the operation of the Estonian public sector more effective, improving the services offered to Estonian and EU citizens. The more concrete objectives of the framework are:

- to contribute to the development of a service oriented society, where people can communicate with the state without knowing anything about the hierarchic structure of the public sector or the division of roles in it;
- to bring more transparency into information related political decisions of the information system;
- to support co-development of the state information system;
- to create conditions for free competition, following the agreed framework;
- to reduce public sector IT costs.

The Estonian framework uses the European one as a meta-framework. It mirrors the European Interoperability Framework and its 12 principles, namely subsidiarity and proportionality, user-centricity, inclusion and accessibility, security and privacy, multilingualism, administrative simplification, transparency, preservation of information, openness, reuse, technological neutrality and adaptability, effectiveness and efficiency.

**Key points**
- The framework is a collection of requirements, standards and instructions, handling the interoperability of information systems
- The choice and assessment of standards is public and balanced.

**Potential benefits**
- Data exchange between government institution is facilitated
- Citizens one stop shop access to all eGovernment services
- The platform allows for service composability
4.5.1.5. Open & Agile Smart Cities – harmonisation through open innovation

**Country:**
Norway

**Organisation:**
Open & Agile Smart Cities

**Scale:**
- National
- Local
- Individual

**Typology:**
- ICT Frameworks and Architectures
- Relevant for:
  - Senior Manager
  - Standards Setters
  - Strategist
  - Technical Architect
  - Procurement Practitioner

**External links:**
http://bit.ly/1HUusoC

**Short description**
Open & Agile Smart Cities (OASC) is an initiative that aims to kick-start the use of a shared set of ways to develop systems once for multiple cities and make them interoperable between cities, and within a city.

The vision of OASC is to create an open smart city market based on the needs of cities and communities. Cities need interoperability and standards to boost competitiveness by avoiding vendor lock-in, comparability to benchmark performance, and easy sharing of best practices.

The Open & Agile Smart Cities initiative aims to this achievement by advocating cities to adopt four simple mechanisms as de facto standards.

The first mechanism is a driven-by-implementation attitude. The other three mechanisms are technical - an API, a set of data models, and an open data platform.

OASC promotes interoperability of systems based on the free flow of data, between cities and within cities, by adopting a shared set of simple, widespread, open and freely available mechanisms.

**Key points**
- Open & Agile Smart Cities initiative counts now around 75 cities from 15 countries in Europe, Latin America and Asia-Pacific.

**Potential benefits**
- Communities and developers can co-create their services based on basic but commonly-defined data models
- The adoption of a driven-by-implementation approach implies the definition of new models by experimenting.
4.5.1.6. Smartcities’ Guide to ICT architectures

**Joinup link:**
http://bit.ly/1QmrDOy

**Country:**
EU wide

**Organisation:**
Smart Cities: An innovation network between governments and academic partners

**Scale:**
- Supranational
- National

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for:**
- Technical Architect
- Business Case Author

**External links:**
http://bit.ly/1XXimuV

**Short description**

The Smart Cities project has delivered a number of guide for municipalities and governments to help them design and deliver better e-services. Starting from this background, Smart Cities produced *Smartcities’ Guide to ICT architectures*.

The *Smartcities’ Guide to ICT architectures* is a collection of ideas about ICT architecture for organisations, and it is also oriented to clarify what is the architecture framework. Hence, business developers, architects and designers, and many other e-government stakeholders can find helpful using this publication to acquire some architecture know-how.

The purpose of this publication is to become a reference for the developer community. To this end, taking a broad perspective, the Guide provides a set of common recommendations for the design of ICT architectures while highlighting their importance in service-oriented organisations such as public entities.

This publication also helps identifying the main drivers ensuring that the architecture works well and that the organization’s goals are met. It is also possible to use this publication to identify the main drivers ensuring that the architecture works well and that the organization’s goals are met.

From this point of view, the Guide suggests just a few ways in which an organisation may formulate controls at the business level (vision, goals, etc.).

In addition, the Smartcities’ Guide to ICT architectures is a useful source of case studies, lessons and experiences of architectures in the Netherlands, Sweden and Norway (i.e. three Smart Cities partners: Karlstad, Kristiansand, and Groningen).

The publication/guide is structured as follows: the first part summarises the concept and the value of architecture and also how to support the architecture process; the second part puts these issues into a broader social and governmental context drawing on the experiences of several EU countries.

**Key points**

- Illustrating the main issues involved in the development of ICT, the Guide points out how a lack of strategic ICT planning could compromise the entire project and the efficient use of resource.
- National governments and local authorities should work together to develop standards for e-services and e-government.

**Potential benefits**

- Enhancing how organizations can use technology and data to deliver better services
4.5.2. Guidelines and Knowledge on Standards

4.5.2.1. Open Standards Principles in the for software interoperability, data and document formats in UK government IT specifications

Short description

In the context of the Government ICT Strategy, developed by UK Cabinet Office, has been published "Open Standards Principles - for software interoperability, data and document formats in government IT specifications". Thanks to this policy from 1st November 2012 government bodies must adhere to Open Standards Principles.

This policy refers to the Government in its roles as a purchaser of IT based on open standards with the aim of increasing interoperability and avoiding lock-in.

The intention is to achieve a more diverse and competitive market, enabling IT to interoperate and share information both inside and outside government departments and to achieve more economic efficiency in the delivery of IT.

Open standards are crucial for sharing information across government boundaries and to deliver a common platform and systems that more easily interconnect. This publication describes principles for the selection and specification of open standards which can be implemented in both open source and proprietary software.

In fact, these standards enable software to interoperate through open protocols and allow the exchange of data between data stores and software through open data and document formats. Standards for internal processing within hardware (including eCommunications hardware), which are not relevant to external interfaces, are out of scope.

In short, the publication of the Open Standards Principles is a fundamental step towards achieving a level playing field for open source and proprietary software and breaking our IT into smaller, more manageable components.

Key points

- Beyond the aim to identify criteria to define an open standard, the UK Government want to be aligned with international policies on standards in procurement of government IT.
- For all IT expenditures, government entities must demonstrate compliance with open standards for software interoperability, data and document formats or provide evidence of the need for divergence.

Potential benefits

- Open standards will enable suppliers to compete on a level playing field;
- Greater choice for the Government to reuse solutions and switch between standardised products and components;
- Sharing of information and data across and beyond government boundaries;
- Reduce risk of lock-in to a particular vendor.
4.5.2.2. MITA approach to Open Standards

Joinup link:
http://bit.ly/1qqYn9w

Country:
Republic of Malta

Organisation:
Malta Information Technology Agency (MITA)

Scale:
National

Typology:
- Guidelines and Knowledge on Standards

Relevant for(*):
- Standards Setters
- Procurement Practitioner
- Technical Architect

External links:
http://bit.ly/1Mv56gL
http://bit.ly/1OzFTnG
http://bit.ly/1PxVB1s
http://bit.ly/1NkGTh
http://bit.ly/1lgkGTh
http://bit.ly/1NF2JJg
http://bit.ly/1Qe6VRW

Short description
In June 2010, the Malta Information Technology Agency (MITA) launched a series of policies with the aim to inform and guide all Government organizations in the procurement process of ICT solutions. Open Specifications (informally referred as Open Standards) have been identified as key enablers to implement flexible, re-usable and interoperable ICT resources.

The Government of Malta has adopted the definitions and direction proposed by the European Interoperability Framework and defines Open specifications (informally referred to as Open Standards) as formalised specifications which, within the context of Public services delivery, are characterized by the following features:

- all stakeholders have the same possibility of contributing to the development of the specification and public review is part of the decision-making process;
- the specification is available for everybody to study;
- intellectual property rights related to the specification are licensed on FRAND terms or on a royalty-free basis in a way that allows implementation in both proprietary and open source software.

The specific MITA approach to open standards is to give the public sector, business community and the general public the opportunity to request the inclusion of formalised specifications within the Adopted Specifications list.

Key points
- Open Specifications (or Open Standards) enable different industries to provide various software and services that can work seamlessly together.
- The MITA approach to the adoption of Open standards is to grant to external stakeholders a role in the selection of formalized specifications.

Potential benefits
- Open standards simplify inter-operation
- They guarantee a high degree of flexibility, freedom of choice to the end-users
- They prevents single vendor lock-in
4.5.2.3. Buying Innovation: the 10 step guide to smart procurement and SME access to public contracts

**Joinup link:**
http://bit.ly/1kFNp3i

**Country:**
Ireland

**Organisation:**
Department of Enterprise, Trade & Employment

**Scale:**
- National
- Local
- Individual

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for**: - Senior Manager - Technical Architect - Procurement Practitioner

**External links:**
http://bit.ly/1NZkd1m

**Short description**
Public procurement is a major instrument by which government can encourage innovation in their economy. In public procurement seeking innovative solutions means seeking new products, processes or services or in the delivery of services. True value for money and cost savings can be gained by routinely seeking out novel solutions to public sector needs.

Within this framework this publication sets out the range of actions that should be considered at each step of the procurement process to pursue the goal of stimulating innovation and better solutions to public service needs.

The guide was written by “The Procurement Innovation Group”, within the Department of Enterprise, Trade & Employment of Ireland but is devoted to all officials in all public sector organisations involved in public procurement.

In summary the 10 keys steps to stimulate innovation through public procurement are:

I) Identify the Need – act as an “intelligent customer”; II) Define and Refine User Requirements – Involve key stakeholders throughout the process; III) Ascertain the Budget Available; IV) Engage with the Market prior to Tendering – Find out what the market can provide; V) Decide the best process for procurement; VI) Design the tender; VII) Tender Exercise; VIII) Contract Award; IX) Contract Management, Review and Evaluation; X) Lessons for the Future.

The publication incorporates elements from the “the European Commission’s "Guide on Dealing with Innovative Solutions in Public Procurement – 10 Elements of Good Practice” and also “Buying Green – A handbook on environmental public procurement”

**Key points**
- Recommendations on how innovation can be stimulated through public procurement
- Identify obstacles or problems in the current procurement process which impede opportunities for innovation;

**Potential benefits**
- Developing a more SME-friendly approach to public procurement
- Create valuable synergies between public and private sector
- Ensure a level playing field for all innovative companies wishing to participate in public tendering and provide a standardized approach for policy-makers
4.5.2.4. OSOR Guidelines: suggested model texts for the inclusion of standards and technical specifications in procurement tenders

**Joinup link:**
http://bit.ly/1L328uE

**Country:**
EU wide

**Organisation:**
IDABC: Interoperable Delivery of European eGovernment Services to Public Administrations, Businesses and Citizens

**Scale:**
- National
- Local
- Individual

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for:**
- Procurement Practitioner
- Strategist
- Senior Manager

**External links:**
http://bit.ly/1Hzg9QB

**Short description**

The Guideline on public procurement of Open Source Software looks at the process of public procurement, its principles and requirements; how public procurement works with software, across EU Member States; and how public procurement approaches open source.

The main purpose of these guidelines is to explain how open source can be best addressed with public procurement. Nevertheless, this is not a general purpose guide for procurement of software.

This Guideline has been drawn on the extensive legal analysis conducted by the Dutch government’s OSOSS programme, resulting in the publication of their “Open Standards Manual and Open-Source Software in tenders: Open standards and open-source software and tendering rules”, with the intention of supporting open source software as epitome of collaborative development of software in the European public sector.

In order to be useful for potential users (policy makers, IT managers and procurement officials), one important feature of the OSOR is a section dedicated to the publication and sharing of advice and guidelines related to open source in the public sector.

Furthermore, the Guideline seeks to give practical information regarding the law covering procurement and providing users with:

- Legal guidelines, which provide the legal basis behind the practical guidelines;
- Template texts that can be easily adapted for all use.

These two guidelines may be used in the preparation of procurement, tenders and contracts.

In short, the aim of this Guideline is to explain clearly and simply how and why public agencies can acquire open source in compliance to open standards.

**Key points**

- Therefore, this Guideline is meant to be applicable in any context within EU Member states, regardless of the existence of any policy.

**Potential benefits**

- Reduce risk of lock-in to a particular vendor
- Using open standards enables to be interoperable with other software systems
4.5.2.5. A guide to setting up the management of open standards

**Joinup link:**
http://bit.ly/1YdkGBN

**Country:**
Netherlands

**Organisation:**
Dutch Standardisation Forum and Logius Centre for Standards

**Scale:**
- Supranational
- National
- Individual

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for:**
- Senior Manager
- Standards Setters

**External links:**
http://bit.ly/1STQqZz
http://bit.ly/1N6XhQE

**Short description**
The guide offers a step-by-step plan for implementation of management processes for open standards. A sound management process is required to guarantee the intrinsic quality of a standard, and therefore the likelihood of adoption. How that process happens in practice depends on the situation. A 'one size fits all' approach does not exist, and for each standard, you will have to make conscious choices that lead to appropriate management.

The step by step plan of BOMOSZi provides with understanding of the 'life stage' of the standard and the situational characteristics that are determinant for setting up your management process. Using these characteristics, you find out what requirements the management process should meet, and which specific building blocks for management you can link to it. Based on the information you gather together, you can ultimately develop relatively simply an appropriately and comprehensive management plan, including associated rules of procedure, and implementing it all. The steps are:

- Determine lifecycle phase
- Check situational characteristics
- Check Basic building blocks for the design of your management
- Check Additional components for the design of your management

Assembly and implementation of your management system

**Key points**
- The document clarify in which cases open documents standards are best used
- In open standards there are no restrictions regarding the use of the standards by ICT users and providers

**Potential benefits**
- Open standards reduce risk of lock-in to a particular vendor
- Using open standards enables interoperability with other software systems.

Joinup link: http://bit.ly/1Pq1MG8

Country: Netherlands

Organisation: Dutch Standardisation Forum and Board

Scale: - National - Local - Individual

Typology: - Guidelines and Knowledge on Standards

Relevant for*: - Strategist - Senior Manager - Procurement Practitioner


Short description
This booklet assists organisations and their management in understanding how open standards can be used for documents. It describes how information may be structured and provided in a manner that allows different kinds of users to use it now and in the future. This booklet also addresses practical questions, as well as use of open standards, in the most suitable and cost-effective manner.

This document is primarily intended for I&A coordinators and managers of government bodies who are looking for an introduction to this subject. These persons are responsible for proper implementation and safeguarding of standards in the area of data storage within their organisation.

The booklet applies to text-based documents, such as reports, notes, letters, forms and presentations. Such documents may also contain images, multimedia content or interactive elements, but these components always support the text.

A standard is fully ‘open’ if:
1. the standard has been adopted and will be maintained by a non-profit organisation, and ongoing development is on the basis of an open decision-making procedure which is open to all stakeholders;
2. the standard has been published and the standard specification;
3. document is freely available or can be acquired at a nominal fee;
4. anyone must be able to copy, distribute and use the document and make it available for free, or at a nominal fee;
5. the intellectual property rights to – i.e. any patents that may exist on – the standard, or parts thereof, are made irrevocably available on a royalty-free basis.

There are no restrictions with respect to reuse of the standard.

Key points
- In open standards there are no restrictions regarding the use of the standards by ICT users and providers
- The document clarify in which cases open documents standards are best used

Potential benefits
- Open standards enhance digital information exchange (interoperability)
- Open standards increase the independence of software suppliers fostering competition
4.5.2.7. The Netherlands in Open Connection: An action plan for the use of Open Standards and Open Source Software in the public and semi-public sector

**Joinup link:**
http://bit.ly/1kCMLUn

**Country:**
Netherlands

**Organisation:**
Ministry of Economic Affairs - Netherlands

**Scale:**
- National
- Local
- Individual

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for**
- Technical Architect
- Procurement Practitioner
- Strategist

**Short description**
In 2007, the Ministry of Economic Affairs of the Netherlands published an action plan for the use of Open Standards and Open Source Software in the public and semi-public sector. This paper wanted to achieve a number of goals, such as good participation from citizens, sustainability of information and innovation, and a reduction in administrative burden (by supplying information only once, for example).

The objectives of this action plan are applicable to the national government, subsidiary government bodies and the public and semi-public sector:

1. increase in interoperability between and with the different building blocks and forms of service provision of eGovernment by accelerating the use of open standards;
2. reduction in dependence on suppliers in the use of ICT through faster introduction of open standards and open source software;
3. promotion of a level playing field in the software market and promotion of innovation and the economy by forceful stimulation of the use of open source software and by giving preference in contracts to open source software if equally suitable.

**Key points**
- The Cabinet intends to encourage the use of open standards and open source software within the public and semi-public sector
- Open standards and open source software are two different topics for which separate actions have been formulated

**Potential benefits**
- Reduce risk of lock-in to a particular vendor
- Using open standards enables interoperability with other software systems.
4.5.3. **Standards Assessment**

### 4.5.3.1. Common Assessment Method for Standards and Specification

**Short description**

The programme of the European Commission Interoperability Solutions for European Public Administration (ISA) produced the Common Assessment Method for Standard and Specifications (CAMSS). Yet, the assessment of standards and specifications for eGovernment solutions is actually a national competence applied within each National Interoperability Frameworks.

CAMSS is an initiative to promote collaboration between EU Member States in defining a «Common Assessment Method for Standards and Specifications» and to share with other countries the assessment study results for the development of eGovernment services.

The purpose of CAMSS is:

- to ensure that assessments of technical ICT specifications or standards and interoperability profiles are performed to high and consistent standards;
- to ensure that assessments will contribute significantly to confidence in the interoperability of systems implementing these specifications and profiles;
- to enable the re-use, in whole or in part, of such assessments;
- to continuously improve the efficiency and effectiveness of the assessment process for ICT technical specifications or standards and interoperability profiles.

The CAMSS is also supported by a community on Joinup which includes:

- Access to the CAMSS tools, CAMSS wiki and CAMSS library with assessments carried out by Member States
- A growing member list
- A place to interact and discuss about Standards Assessments
- Downloadable versions of the CAMSS tools with guidelines

**Key points**

- CAMSS is a European framework method to assess standards and specifications in the field of ICT
- Public administration establishes a list of standards for software ranging from recommended to mandatory, to complain and explain.

**Potential benefits**

- Avoid vendor lock-in through the use of standards
- Enables the sharing and re-use of assessments in ICT standards and specifications
4.5.3.2. UK Cabinet Office: Standards Hub

Short description
The UK cabinet office adopted a specific process of inclusive standard-setting. Stakeholders can engage at different levels of the decision-making process on standards: they have a potential role at the 1) suggestion stage 2) the response stage 3) the proposal stage 4) the solution stage. Everyone can participate in the process, users, Government technology officials, Challenge owners, Standards panels, Open Standards Board, Suggestion stage, Response stage, Proposal stage, Solution stage.

The platform also allows reviewing all open standards that have been adopted across government, along with the challenges they have been used to address.

Key points
- Any relevant stakeholders can help set standards for software interoperability, data and document formats in government IT

Potential benefits
- Inclusive decision-making help reducing the administrative burden of a centralized standard setting
- Open and inclusive standards
- Ensure an open process of standardisation
4.5.3.3. Assessment Procedure and Criteria for Lists of Open Standards in the Netherlands

Joinup link: http://bit.ly/1iWun7A

Country: Netherlands

Organisation: Dutch Standardisation Forum and Board

Scale: - National - Local

Typology: Standards Assessment

Relevant for(*): - Standards Setters - Procurement Practitioner - Business Case Author


Short description

The document Assessment Procedure and Criteria for Lists of Open Standards serves as a guide for submitters of open standards, experts and other interested parties. It contains a description of the assessment procedure and the criteria that are used by the Standardisation Forum and Board to assess a submitted standard for the lists of open standards.

The goal of the Dutch government policy on open standards is to promote interoperability of the Dutch public and semi-public sectors, while at the same time ensuring provider independence. Interoperability means the ability to exchange data electronically; in this case between government bodies and businesses, between government bodies and civilians, and between government bodies.

In order to attain this goal, the Standardisation Forum and Board were established in 2006. These institutions do not develop standards, but can assign a status (required or recommended) to existing standards in the public and semi-public sector. The Board and Forum maintain the following two lists:

1. List of open standards for which a 'Comply or Explain‘-regime is in place.
2. List of recommended common open standards.

“Comply or explain" means that Board Members have committed to use the standard, unless this might lead to insurmountable problems, in which case an alternative choice should be explained.

Key points

- The standardisation Forum and Board do not act as standard-setters but decentralize the responsibility by creating an assessment framework to include a standards submitted by all stakeholders
- All government bodies and semi-government bodies are required to adjust their procurement process to the list.

Potential benefits

- Open standards enhance digital information exchange (interoperability)
- Open standards increase the independence of software suppliers fostering competition
- Clear and transparent information in the standardisation process allows open participation from any stakeholders
4.5.4. **List of Recommended Standards**

4.5.4.1. **Spanish National Catalogue of ICT Standards and National Interoperability Framework**

**Joinup link:**

**Country:**
Spain

**Organisation:**
Ministry of Finance and Public Administrations

**Scale:**
- National
- Local
- Individual

**Typology:**
- List of Recommended Standards

**Relevant for:**
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect

**External links:**
http://bit.ly/1RaFskF

**Short description**

The e-Government law of 2007 created the National Interoperability Framework (NIF) together with the National Security Framework. These frameworks are the result of a collective effort of all public administrations aiming to be aligned with the European scenario and to contribute to build up and improve interoperability. In particularly, the NIF addresses requirements in relation to:

- **Technical interoperability**: the NIF specifies conditions about the selection and use of standards.
- **Common infrastructures and services**: contributes to facilitate multilateral interactions.
- **Reuse of software**: it contributes to a better interoperability;
- **Interoperability Agreements**.

Within the list of Interoperability Agreements, there is the National Catalogue of Standards. The National Catalogue is composed by 86 standards. Not for all standards are a formal assessment document, firstly because some of them are self-explanatory. Secondly, because the entire process requires too many resources.

The Catalogue seeks to make E-Government services available to citizens so that they and Public Administration agencies can choose the technology to use, and to adapt to the development of communication systems and techniques.

In addition, the Catalogue is useful for potential users like policy makers, IT managers and procurement officials.

**Key points**

- the NIF is extended through a number of Interoperability Agreements;
- In order to **release software solutions based on ICT Standards**, the Ministry of Finance and Public Administrations of Spain have developed a "Guide to Asset Publication and Licensing" which established a framework and procedures to release assets under open-source license for software or under open licensing for other types of assets.

**Potential benefits**

- Reduce vendor lock-in and ensure provider independence.
- To spur the use of ICT standards by Public Administrations and citizens
- Avoid market fragmentation at EU level
**4.5.4.2. Dutch National Catalogue of ICT Standards**

**Joinup link:**
http://bit.ly/1SA4w49

**Country:**
Netherlands

**Organisation:**
National eGov Board Standardisation Forum

**Scale:**
- National
- Local
- Individual

**Typology:**
- List of Recommended Standards

**Relevant for**(*):**
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect

**Short description**
In 2007, the Dutch Government has launched an action-plan on use of Open Standards. In short, the main goals of the Dutch Policy are to be interoperable and prevent vendor lock-in.

Part of that is the creation a "Comply or Explain" policy.

In detail, the Dutch National Catalogue of ICT Standards collected two lists:

i) "Comply or Explain" Standards, that are a Mandatory Standards and it is composed by 38 standards.

ii) List of recommended open standards.

At the moment they have a list of 52 standards, mostly IETF, W3C and OASIS standards.

The best known of them is the 'Comply or Explain' list of open standards. The standards in this list must be implemented. If they are not, an explanation must be provided as to why.

Nevertheless, Public Administration and Semi-public administration have to use the "Comply or Explain" list, when they make IT investment above € 50.000 and also if the tender has both the functional and the organizational scope.

**Key points**
- The assessment procedure is an active involvement process. Public organisations, private organisations and individuals can submit new standard for the 'Comply or Explain' list or the list of common open standards.

**Potential benefits**
- Reduce vendor lock-in and ensure provider independence.
- To spur the use of ICT standards by Public Administrations and citizens
- Avoid market fragmentation at EU level
4.5.4.3. SAGA: Standards and Architectures for e-Government Applications in Germany

Joinup link: http://bit.ly/1NEuSjK

Country: Germany

Organisation: The German Commission of the Federal Government for IT

Scale: - National - Local - Individual

Typology: - List of Recommended Standards

Relevant for*: - Senior Manager - Standards Setters - Strategist - Technical Architect - Procurement Practitioner


Short description

The SAGA version de.bund 5-0 consists of a binding technology catalogue for the German federal administration software system. In all software projects technologies, projects should be selected in respect with the SAGA classifications.

SAGA aims at reducing risks and increasing investment-safe developments, agility, security, interoperability, reusability and scalability of software systems.

The aim of any standardization activity must be to develop a clear and measurable set of rules, which can be judged by the existing and new solutions. SAGA also takes into account the requirements of the European Interoperability Framework and support its recommendations.

The actual version of SAGA 5.1 de.bund is made up of the latest versions of all SAGA modules which con consists of the following modules:

1. SAGA module Basics de.bund 5.1.0
2. SAGA module Conformity de.bund 5.1.0
3. SAGA module Technical Specifications de.bund 5.0.0

The SAGA module "Basics" describes the objectives, framework, principles, and processes for creating and updating of SAGA.

The SAGA module "Conformity" explains how the SAGA conformity of software can be backed up. To answer the question of how to ensure the conformity with SAGA it was also examined whether certification of projects, software products and stakeholders input could be helpful.

In SAGA module "Technical Specifications" are classified the technical specifications on which the software systems of the federal administration should be implemented. Also, are explained the actual requirements and recommendations of IT specifications for new and existing software systems, products and custom developments.

Key points

- SAGA aims at reducing risks and increasing investment-safe developments

Potential benefits

- Data exchange between government institution is facilitated
- Citizens one stop shop access to all egov services
- The platform allows for service composability
4.5.4.4. Use of open specifications and the OIO catalogue

**Joinup link:**  
http://bit.ly/1H0e6KH

**Country:**  
Denmark

**Organisation:**  
The OIO Committee and NITA

**Scale:**  
- National  
- Local  
- Individual

**Typology:**  
- List of recommended standards

**Relevant for (***):**  
- Standards Setters  
- Procurement Practitioner  
- Technical Architect

**External links:**  
http://bit.ly/1HMvBsN  
http://bit.ly/1MrXWXp

**Short description**

The OIO Committee and NITA have been tasked to promote the use of open specifications in public sector IT systems.

All IT systems built or bought by a Danish public authority should use open specifications to the largest possible extent. In order to make this easier for the individual authorities, the OIO Committee maintains a list of open technical specifications and recommendations on whether and where they should be used.

The list is called "the OIO Catalogue of Technical Standards" on Digitaliser.dk and is freely available to view and comment.

The OIO Catalogue of technical standards on Digitaliser.dk is a core part of the Danish National Interoperability Framework (NIF) as it contains the commonly agreed recommendations of technical standards and specification in relation to the Danish public sector.

The catalogue contains recommendations on the applicability and usefulness of almost 200 technical specifications for different types of public sector IT systems. Each specification is documented with name, description, link to the specification and other metadata. They also have a recommendation level for a given context of use. A given specification can have different recommendation levels for different areas of use.

**Key points**

- Set open standards to ensure data exchange
- The OIO Catalogue of Technical Standards provide useful guidelines to practitioners

**Potential benefits**

- Avoid lock-in through the procurement of standards-based ICT solutions.
4.5.4.5. The Municipality of Alingsås - Open standards & FLOSS
(Free/Libre Open Source Software)

Joinup link:
http://bit.ly/1VYXkOJ

Country:
Norway

Organisation:
Municipality of Alingsås

Scale:
- National
- Local
- Individual

Typology:
- List of Recommended Standards

Relevant for(*):
- Standards Setters
- Procurement Practitioner

External links:
http://bit.ly/1IwkKn7

Short description
In Sweden there is an oligopoly of companies selling ICT products to municipalities and a lock-in situation (also because of language barriers). By using open source, it is possible to use software developed from other places.

The Swedish National Procurement Services - has published a list of open standards. All standards on this list can be implemented in software provided under different licenses, both proprietary and FLOSS.

Additionally, the Kivos - 'Kommunsamverkan i Väst för Open Source' - and the Open Jämtland are two regional organisations coordinating interoperability and open standards issues for their respective municipalities. Both promote the use of open source software and open standards by public agencies as well as software vendors, and enable and deploy open source based solutions for local government.

The network also advocates for open software requirement into the public procurement process - which is the choice of the Alingsås municipality - and it allows the reduction of the administrative burden with respect to open tenders.

It does this by disseminating information and experiences on the deployment of open solutions among municipalities and other government organisations, by stimulating the demand for open source software and promoting the inclusion of open standards in the requirements for the procurement of information systems, and by cooperating with universities and colleges on issues of open source and open standards.

Key points
- All open standards on this list can be implemented in software provided under different licenses, both proprietary and FLOSS

Potential benefits
- Promote the use of open source and open standards in the municipalities
- Encourage collaboration between municipalities
- Reduce vendor lock-in and ensure provider independence
4.5.5. ICT Needs & Long Term Planning

4.5.5.1. The Swedish National Police: How to avoid locking yourself in while saving money

**Short description**

The Swedish National Police Board (SNPB) is the central organisation in the Swedish National Police system. It counts on 27,000 employees, 19,000 of which are police officers.

In 2006, SNPB launched a project with the aim to move on from an ICT infrastructure based on proprietary products to an ICT server and database platform based on Open Source Software and open standards.

The SNPB migration project was the result of costs evaluation from using proprietary products and a study by OSOR.eu concerned to the viable possibility for SNPB of moving towards open source software and hardware.

In addition, SNPB had estimated that thanks to the new ICT infrastructure they would get a saving of around 50%.

Furthermore, for SNPB it was not just a cost reduction issue, for them moving towards an ICT server and database platform based on Open Source software and open standards meant: reduce vendor lock-in and use open standards.

From vendor lock-in and open standards issues, turning to Open Source guaranteed a diverse range of suppliers that enhance competition among them while reducing lock-in.

In short, the migration project has been focusing on the replacement of four essential parts of the infrastructure: 1. the application server; 2. the database; 3. the operating system of the servers and 4. CPUs.

The Swedish National Police experience is a good example of how a public institution can avoid the dependence on vendors and how this has the potential to increase performance.

**Key points**

- It has been also invested €126,000 in training to make sure that the competence is always in house;
- Switching to an Open Source system it may not just be for the cost aspect, it can be for performance also;
- Moving from a proprietary software environment to a consolidated Open Source Software environment with standards is a very big undertaking that should not be underestimated.

**Potential benefits**

- Cost saving
- Reduce risk of lock-in to a particular vendor
- Increasing transparency and sustainability, while reducing the users’ reliance on the original vendors of the software
- Promoting collaboration and participation
- Using open standards enables to be interoperable with other software systems
4.5.5.2. City of Ventspils common procedure for ICT procurement

**Country:**
Latvia

**Organisation:**
Ventspils City Council

**Scale:**
- Local
- Individual

**Typology:**
- ICT Needs & Long Term Planning

**Relevant for**: ( )
- Standards Setters
- Procurement Practitioner

**External links:**
http://bit.ly/1MG7wps

**Short description**
During the last seven years, Ventspils, the sixth largest country in Latvia, has experienced a rapid ICT sector growth. Capitalizing on the achievements to date and aiming to develop Ventspils into a European level hub for smart technologies.

All municipal institutions in Ventspils City Municipality have adopted common procurement procedure for all ICT related products and services. To adapt and enforce use of standards, Ventspils City Council has founded a special municipal institution – Ventspils Digital Centre, which is responsible for all ICT related development.

To avoid technology or supplier lock-ins where possible, source code and intellectual property rights for all custom-made software are being held by Ventspils Digital Centre. Open source solutions are used for virtualization of servers, provisioning of user account management, centralized file storage, e-mail, calendaring, firewall and other key ICT services even for critical ones.

Next challenges will be to address vendor dependency for financial accounting and other specialized software where there are no open-source of vendor independent solutions.

At the end of 2014, the Ventspils City Council, the sixth largest country in Latvia, endorsed the Ventspils information and communication technology (ICT) sector development strategy and action plan for 2014 – 2020.

**Key points**
- Ventspils aims at becoming a European hub for ICT and smart technologies
- The city has a centralized system for adoption of standards and procedures for ICT procurement

**Potential benefits**
- Avoid vendor lock-in through the use of standards
- Enables the sharing and re-use of assessments in ICT standards and specifications
4.5.6. **Develop a Procurement Framework**

4.5.6.1. **Framework agreements for software and cloud services**

**Joinup link:**
http://bit.ly/1za3qyr

**Country:**
Sweden

**Organisation:**
Swedish National Procurement Services

**Scale:**
- National
- Local
- Individual

**Typology:**
- Develop a Procurement Framework

**Relevant for**
- Public procurer
- Representative of the ICT industry

**External links:**
http://bit.ly/1SzFthw

**Short description**
In 2010, the Swedish government centralized certain public procurement activities up to establish a unique body: the National Procurement Services. In short, the task of the National Procurement Services is offer central government authorities coordinated framework agreements for goods and services of general use, in the area of information and communication technology (ICT).

The National Procurement Services administers more than 1000 unique framework agreements in mainly the following areas:

- ICT products and services
- Office furniture and office equipment
- Services, hotels and conferences
- Safety and security
- Transport and vehicle
- Other services

In addition, the National Procurement Services has developed a process in order to safeguard quality in the procurement activities. In fact, as important part of the process comprises the contract management. This means that the framework agreements are followed-up continuously during the duration of the contracts. The contract managers help the procuring entities to call off from the framework agreements and follow up the terms of delivery in close contact with the users as well as the suppliers.

**Key points**
- The Swedish approach is one of the most important framework procurement agreements of ICT in Europe
- The framework reduce risk and uncertainties in the procurement process

**Potential benefits**
- Open source and open standards enable better competition between all suppliers of ICT solutions
- **Open standards and open source** enables reuse of software based solutions, a more open public sector and long term cost reductions
- Open standards and open source to avoid technology lock-in
4.5.7. **Templates and ready texts**

4.5.7.1. **Standard "Sharing and Re-using" clauses for contracts: Contractual Clauses for Service Procurement**

**Joinup link:**
http://bit.ly/1zs8vHx

**Country:**
EU wide

**Organisation:**
ISA – Interoperability Solutions for European Public Administrations

**Scale:**
- European
- National
- Local

**Typology:**
- Templates and ready texts

**Relevant for**(*):
- Procurement Practitioner
- Business Case
- Author
- Strategist

**External links:**
http://bit.ly/1x0H0QX
http://bit.ly/1keDKkQ

**Short description**
Promoting common "standard" clauses for contracts in service procurement has the potential to increase the sharing and re-using of IT tools. In fact, the procurement of software, for technological, legal and contractual reason may bind the contractor to a single contracting agent or impede the government to re-use the IT tool. Hence, contractual standardization could be helpful for public administration when:

- Public sector produces software (i.e. for the management of hospitals, of drivers licences etc.) and this software could be reused by other stakeholders (i.e. in another Member State)
- Public sector uses existing available software (i.e. components found on Internet) to build its own solutions: by reusing the downloaded component "as is", by modifying it (i.e. localisation in national language), or by integrating it in a larger solution that combines several software components

In fact, line of codes produced by Public administrations are rarely written entirely from scratch and at least some parts are reused. If not foreseen by an appropriate contractual clause, it may be that software effectively purchased by administrations cannot be re-distributed, for various reasons:

- The software providers’ licence terms are proprietary (limitations on the number of users, the number or power of computers, etc.)
- The software providers’ licence terms are open, but some of the standards implemented in the software belong to third parties, are patented and their use is not royalty free (RF)
- Licence terms are open source, but the provided solution is made from various components and the provider has not paid attention to the licence compatibility of these components.
- If there is maintenance terms that restrict any modification of the source by a third party or cancel the guarantee.

The document offers some standard clauses for sharing and reuse meeting the following distribution requirements:

- The right to redistribute its own software (when written by or exclusively for the authority)
- Reusing third parties’ IPR assets (integrating “received” open source software in the public authority solution)
- Reusing and distributing the documentation (and other "non-software" knowledge elements)
- "No Vendor Lock-in" clause: how to stay free to adopt a new solution and to contract with another provider.

The standard sharing and re-using clauses for contracts presented by Mr. Schmitz (speaker in one of our workshops) are reported below. They have been grouped according to the objective they try/want to reach.

- Distribute the application
- Facilitate the developers’ communities (when applicable)
- IPR assets coverage
- Open and Royalty Free standards
- "No Vendor Lock-in"

To read more details see The second Workshop attached to this report.

**Key points**

- "Standard" contractual clauses may ease the procurement of Open Software ensuring public administration efficiency and spurring innovation.
- Improve cross-border exchange of software and further integrate the European union’s markets

**Potential benefits**

- Re-use of software by third parties has the effect of increase its value
- Consistent pan-European contractual clause will strengthen the legal predictability and facilitate the business environment.
- Reduce risk of lock-in to a particular vendor
4.5.7.2. BITKOM guides on wording procurement documents in a non-proprietary manner for desktop PCs, notebooks, servers, monitors and printers

**Joinup link:**
http://bit.ly/1up8ZGV

**Country:**
Germany

**Organisation:**
Federal Association of Information Technology, Telecommunications and New Media - BITKOM

**Scale:**
- Local
- Individual

**Typology:**
- Templates and Ready Texts

**Relevant for:**
- Procurement Practitioner

**External links:**
http://bit.ly/1MQbHEK

**Short description**
BITKOM, the German Federal Association for Information Technology, Telecommunications and New Media, represents more than 2,200 companies in the digital sector, including 1,400 direct members.

The aim of BITKOM is to give authorities support for wording in official tenders for the ICT procurement. To this end, as a result of a working group led by German Ministry of the Interior's Procurement Office and BITKOM, "Guides on wording procurement documents in a non-proprietary manner for desktop PCs, notebooks, servers, monitors and printers" were created, to facilitate the purchase of information and telecommunication technology.

The Guide provide compact tools in compliance with legal requirements while ensuring fair competition among service providers, allowing to reduce risk of lock-in to a particular vendor.

Furthermore, this Guide identifies and describes also the state-of-art technical standards, in a way that avoids the use of proprietary brand names in tender specification, in line with the Directive.

In short, thanks to these guidelines, procurement practitioners can count on:

- Different guidelines for different products (Notebooks, Servers, ...);
- Standardised "ready-to-use" text;
- Propose product-neutral technical and environmental criteria for buying ICT products;

Set of product-neutral criteria suitable for their needs.

**Key points**

- The guidelines’ approach leverages general accepted benchmarks as a major element of a non-proprietary product description;
- The Guide is helpful to face two issues that make particularly difficult the subject matter: 1. the rapid lifecycle of ICT product and 2. the need of precise description required with regard to a system's performance (technical requirements).

**Potential benefits**

- Reduce risk of lock-in to a particular vendor;
- Increasing transparency and sustainability, while reducing the users' reliance on the original vendors of the software;
- Using open standards enables interoperability with other software systems.
4.5.7.3. France publishes free software procurement templates

**Joinup link:**
http://bit.ly/1k9V3Ds

**Country:**
France

**Organisation:**
Agence du Patrimoine Immatériel de l’état

**Scale:**
- National
- Local
- Individual

**Typology:**
- Templates and Ready Texts

**Relevant for:**
- Strategist
- Senior Manager
- Procurement Practitioner

**External links:**
http://bit.ly/1OSMBVX
http://bit.ly/1S6GYBF

**Short description**

The French government has published templates to be used by procurement officers when requesting free software-based ICT solutions. The templates include intellectual property clauses, and clarify the specifics of the free software environment. The «Model clauses for development and maintenance of free software» were made public at the 16th Rencontres Mondiales du Logiciel Libre conference.

The templates applies within the legal framework of The Cahier des Clauses Administratives Générales applicables aux marchés publics de Techniques de l’Information et de la Communication (CCAG-TIC) from the 15 September 2009 dealing with Intellectual Property rights in the public markets of IT software.

When issuing a call for tender, public administrations should emphasise that the software will be made available as free software.

The template set two options for the contracting authorities A: «concession» or B «cession». The public body select the most suitable option and adapt it to the specific software.

Companies submitting bids should allow the code to be published using a licence that is compatible with either France’s Cecill or the European Union’s EUPL free software licence. These are «copyleft » licenses are a novel use of existing copyright law to ensure a work remains freely available and that public investment will be profitable to everyone.

**Key points**

- Software, including free software, are protected by copyrights.
- Assignments of the rights should be included in public contracts
- The model clauses must be used to enable proper maintenance of free software solutions

**Potential benefits**

- Model templates ensure software remain freely available
- Set the standard for efficient and secured Intellectual Property IP clauses
4.5.7.4. The Belgian OSLO project: tender clauses to promote the use of the OSLO specification

Joinup link: http://bit.ly/1JsPRBA

Country: Belgium

Organisation: Flemish Organization for ICT in Local Government V-ICT-OR

Scale: - Local - Individual

Typology: - Templates and Ready Texts

Relevant for: - Procurement Practitioner - Strategist - Business Case Author


Short description
The OSLO project from the Flemish ICT Organisation (V-ICT-OR) stands for "Open Standards Linked Authorities" and aims at establishing open standards for local governments to enhance interoperability of services. It also ensures more efficient information management in local government and that citizens must provide their data only once to government. OSLO provides a clear implementation strategy, which outlines how local governments authentic sources should adopt in their processes.

Many governments are wondering what they can include in their tender texts around OSLO. V-ICT-OR published on 28th October 2014 a document containing clauses for tender specifications procurement contracts to promote the use of the OSLO specification. OSLO conformance, by including this either as a technical criterion or an award criterion in the tender specifications.

To complement the vocabulary, OSLO 2.0 proposes guidelines for implementing web services. The guidelines define a URI strategy along with the operations that the URIs must answer. By standardising the service protocol, OSLO aims to minimize the number of services pursuing the same goal.

Following the successful example of the Netherlands, OSLO 2.0 introduces the Software Catalogus, a repository of open standards, software packages, and service providers. With this tool, reusing the Dutch platform, local administrations can quickly learn which provider or package implements which standard, increasing awareness and, in the long-run, use of open standards.

Key points
- Set open standards to ensure data exchange
- The OSLO conformance can be included as a technical criterion or an award criterion

Potential benefits
- Avoid lock-in through the procurement of standards-based ICT solutions.
### Short description

The Government Information Technology and Communications (GITC) contractual framework, initially established in 1991, is a set of terms and conditions that Australian Government agencies may use to create contracts for ICT procurement.

The GITC was originally introduced to support ICT procurement processes at a time when knowledge and experience in ICT purchasing was at a developmental stage.

In a second time, The GITC4 framework was reviewed in the light of changes to the general procurement environment since its initial development. The review showed, among other things, that there was a strong interest in some form of model contracts for use with government ICT procurement. The Government announced the following actions arising from the review:

- First, a series of model contracts would be developed that were tailored to the different elements of ICT procurement, such as hardware, software development, software licensing or managed services.
- Second, the GITC web site would be redeveloped to improve its user-friendliness and to enhance support to users of the model contracts.
- Third, during the period of implementation of these outcomes, the GITC Helpline would be maintained to support those using the GITC.

By analysing in detail the model contracts, we noticed that model contracts provide templates for Commonwealth entities to develop sound commercial agreements efficiently and effectively.

In particular, the model contracts are distinguish for:

- Simple procurement, conducted in an environment where routines, methods and procedures are well established and designed for:
  - Hardware Acquisition and Maintenance;
  - Licence and Support - Commercial off-the-shelf Software;
  - Licence (not covering support) - Commercial off-the-shelf Software;
  - ICT Consultancy Services.
- Semi-complex procurement, in which more preparation needs to be carried out and designed for:
  - consultancy services;
  - system integration and software development.

### Key points

- Templates are flexible enough to allow inclusion of project-specific details, so that they could be adapted for all uses.

### Potential benefits

- Model templates ensure software remain freely available.
4.5.8. Other

4.5.8.1. European Union Public Licence - Licensing the procured software as open source

Short description
The "European Union Public Licence" (EUPL) is the first European Free/Open Source Software (F/OSS) licence. It has been created on the initiative of the European Commission. It is now approved by the European Commission in 22 official languages of the European Union.

These Practical Guidelines will provide information on:

- how to use software distributed under the "European Union Public Licence" (EUPL), and
- how to use this licence to distribute your own software.

The guidelines are intended for those who:

- wish to use software that has been published under the EUPL;
- own rights to software and are considering the EUPL as the licence of choice for its distribution;
- are starting to develop software, might integrate the EUPL licensed software and want to release the product under the EUPL or another F/OSS licence.

It should raise awareness concerning the opportunities of Free/Open Source distribution and encourage all relevant stakeholders to follow this example.

Key points
- The EUPL licence is a tool to facilitate resource optimisation and sharing.

Potential benefits
- Reinforce legal interoperability through the adoption of a common framework
4.5.8.2. OpenPEPPOL & the avoidance of lock-in

**Short description**

The OpenPEPPOL project was run by a consortium of 16 countries and it originated from the European Commission CIP funding programme. The vision was to enable business to communicate electronically with European government institution in the tendering process in order to reap benefits in term of efficiency and cost reduction.

OpenPEPPOL project was designed to come up with solution specifications to different phases of the procurement process, from the process of entering into contract in the public procurement legislation to the actual ordering up to the invoicing and payment phase. The biggest result where in the post-award phase but some also in the pre-award domain.

Solutions are based on the interoperability framework and PEPPOL solutions and specifications operate within a legal and political environment to ensure semantic and technical interoperability. PEPPOL relies on standards from OASIS and other sources.

The biggest success in the Norwegian national implementation of eProcurement solution was in the eInvoicing. The implementation was accomplished as such:

1. Make eInvoicing mandatory for public sector entities;
2. Mandatory use of standard national e-Invoicing format, based on European standardisation;
3. On-boarding of ERP vendors/invoice systems;
4. Decision to use PEPPOL eDelivery network for transport of eInvoices;
5. Establish a national receive capability and address register = SMP/ELMA, also open for private sector;
6. On-boarding of access points through public sector demand;

Web-portals for simplified e-invoicing from SMEs delivered by market.

**Key points**

- Open PEPPOL is a point of reference for organisations that use it, providing users with widely accepted technology standards.
- Business Interoperability Specifications (BIS) for common eProcurement processes are guidelines developed by PEPPOL with the aim to standardise electronic documents exchanged.

**Potential benefits**

- Increase opportunities for greater competition for government contracts and providing better value for tax payers’ money

**Task 4 Materials (TED Analysis & Procurement Survey)** shows details about how we derived this dataset, applying the aforementioned filters.

### 4.5.8.2.1. Text mining for vendor search and quality check

**Summary box**

A data mining algorithm in R was developed and used to search for the presence of vendor names throughout data of tenders issued over 6 years by the 28 EU countries, starting from a list of 293 main vendors. A quality check was then performed to detect and erase all wrong extractions, and to categorise all instances into 3 groups with reference to the lock-in issue, namely lock-in cases, limited lock-in cases and other cases (e.g. mentions of specific technology, not for the sake of procurement). This methodology allowed to deal with all languages encountered in the database.
4.6. An important part of this analysis was to detect the presence of brand names into the TED database, as restricted through the explained methodology; a list of 190 vendors was thus compiled. After a preliminary analysis of the “DESCRIPTION” variable in the TED database, the list was integrated and widened to include 293 vendors covering all the countries considered, as detailed in Annex 6.1 COLLECTED BEST PRACTICES

4.6.1. ICT Frameworks and Architectures

4.6.1.1. European Interoperability Framework for European Public Services

**Country:**
EU

**Organisation:**
Interoperability Solutions for European Public Administration (ISA)

**Scale:**
- Supranational
- National
- Local

**Typology:**
- ICT Frameworks and Architectures

**Relevant for:**
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect

**External links:**
http://bit.ly/1Razmkq

**Short description**

The European Interoperability Framework (EIF) is one of a series of European initiatives that aims to support the establishment of European public services. The European Interoperability Framework addresses this issue in order to facilitate the interoperability of eGovernment services at pan-European level.

The EIF addresses interoperability in a very specific context of providing European public services. Also it contributes to the better functioning of the internal market by increasing interoperability among European public administrations.

The purpose of the European Interoperability Framework (EIF) is:

- to promote and support the delivery of European public services by fostering cross-border and cross-sectorial interoperability;
- to guide public administrations in their work to provide European public services to businesses and citizens;
- to complement and tie together the various National Interoperability Frameworks (NIFs) at European level.

The EIF provides recommendations that address specific interoperability requirements.

Implementing the recommendations will create an environment conducive to public administrations establishing new European public services.

**Key points**

The document offers a number of key issues:

- Underlying principles (sets out general principles underpinning European).
- Interoperability levels (different interoperability aspects to be addressed).
- Approach to facilitate cooperation among public administrations.
- Interoperability governance (sets out what is needed to ensure interoperability).

**Potential benefits**
Public Administrations are encourage to:
✓ Reuse and share solutions
✓ Develop a component-based service model
✓ Establish European public services
4.6.1.2. SIRIP: State Information Resource Interoperability Platform

**Joinup link:**
http://bit.ly/1rlCCHI

**Country:**
Lithuania

**Organisation:**
Information Society Development Committee under the Ministry of Transport and Communications

**Scale:**
- National

**Typology:**
- ICT Frameworks and Architectures

**Relevant for** (*):
- Business Case
- Technical Architect

**External links:**
http://bit.ly/1QAgauV
http://bit.ly/1Y8YMQ9
http://bit.ly/1ktMV0P

**Short description**
The State Information Resources Interoperability Platform (SIRIP) of Lithuania offers an easy way for public authorities to design, deliver and manage e-services. Many e-services can be streamlined and made available in a user friendly one-stop-shop portal to citizens, business entities and civil servants.

The current framework for interoperability in Lithuania is structured around the Public Governance Development Programme 2012-2020 (PGDP) and the Law of Management of Government Information Resources that established the legal framework for the SIRIP as well as related legislation. The latter legislation aims to ensure adequate public information resources development, management, administration, use, maintenance, interoperability, planning, financing and safety.

The centralised service system makes it easy to share and re-use eGovernment services. Public administrations add new services faster and at lower costs, according to a government report published this summer.

"The SIRIP solution for identification alone, which has been used by institutions providing various e-services, has saved LTL 4.8 million (About EUR 1.4 million)."

The latter State Information and Communication Technology Interoperability Framework is expected to be published in 2016 and revised and update by 2020 and will use the European Interoperability Strategy (EIS) and the European Interoperability Framework (EIF) as guidelines.

**Key points**
- SIRIP provides a centralized access to public services
- It also offer platform dedicated to design, deliver and management e-services

**Potential benefits**
- Data exchange between government institution is facilitated
- Citizens one stop shop access to all egov services
- The platform allows for service composability
4.6.1.3. NIF: National ICT Interoperability Framework

**Joinup link:**
http://bit.ly/1PkSCLe

**Country:**
Republic of Malta

**Organisation:**
Malta Information Technology Agency (MITA)

**Scale:**
- National
- Local
- Individual

**Typology:**
- ICT Frameworks and Architectures

**Relevant for**:
- Technical Architect
- Strategist

**External links:**
http://bit.ly/1RIB61a
http://bit.ly/1SDCRO0

**Short description**

The ability for public sector organizations to integrate various information systems, which can exhibit varying degrees of isolation, is considered a challenging task. The Maltese government published the National ICT interoperability framework (NIF) to address this problem. The need to lay out a rigorous interoperability framework belongs to the second Strategic Priority of the MITA Strategic Plan, namely to deliver and sustain a robust, resilient and secure ICT infrastructure and IT services to Government. The study is organized as such:

- **Chapter 1**: Give an introduction to the NIF initiative;
- **Chapter 2**: Draws a conceptual model of an Interoperability Architecture that identifies key Interoperability Agreements across the public sector to reduce the interoperability gap in a connected Government paradigm;
- **Chapter 3**: Presents organisational interoperability principles and recommends service attributes which contribute towards the design of interoperable business processes;
- **Chapter 4**: Introduces the concept of semantic interoperability and identifies steps to discover and standardise Government's data assets;
- **Chapter 5**: Defines a standardisation approach to technical interoperability, including contextualisation through Interoperability Profiles.

The National ICT interoperability framework (NIF), draws from the European context and incorporates the principles and recommendations of initiatives such as the European Interoperability Framework, European Interoperability Strategy and the Semantic initiatives promoted through the European Commission's JoinUp platform.

**Key points**

- Identification of technical enablers for the exchange of meaningful information and the ability to reuse existing ICT resources.
- National ICT Interoperability Framework guide the public sector in maximising the benefits and reducing the cost burden derived from all technology investments by introducing ICT resources that are flexible, reusable and interoperable.

**Potential benefits**

- Avoid vendor lock-in through the use of standards
- Enables the sharing and re-use of assessments in ICT standards and specifications
Short description
The present document is also a guideline for private sector managers and project leaders who offer development and administrative services to the public sector.

The objective of the interoperability framework is to make the operation of the Estonian public sector more effective, improving the services offered to Estonian and EU citizens. The more concrete objectives of the framework are:

- to contribute to the development of a service oriented society, where people can communicate with the state without knowing anything about the hierarchic structure of the public sector or the division of roles in it;
- to bring more transparency into information related political decisions of the information system;
- to support co-development of the state information system;
- to create conditions for free competition, following the agreed framework;
- to reduce public sector IT costs.

The Estonian framework uses the European one as a meta-framework. It mirrors the European Interoperability Framework and its 12 principles, namely subsidiarity and proportionality, user-centricity, inclusion and accessibility, security and privacy, multilingualism, administrative simplification, transparency, preservation of information, openness, reuse, technological neutrality and adaptability, effectiveness and efficiency.

Key points
- The framework is a collection of requirements, standards and instructions, handling the interoperability of information systems
- The choice and assessment of standards is public and balanced.

Potential benefits
- Data exchange between government institution is facilitated
- Citizens one stop shop access to all eGovernment services
- The platform allows for service composability
4.6.1.5. Open & Agile Smart Cities – harmonisation through open innovation

**Country:**
Norway

**Organisation:**
Open & Agile Smart Cities

**Scale:**
- National
- Local
- Individual

**Typology:**
- ICT Frameworks and Architectures
- Relevant for (*): Senior Manager, Standards Setters, Strategist, Technical Architect, Procurement, Practitioner

**External links:**
http://bit.ly/1HUusoC

**Short description**
Open & Agile Smart Cities (OASC) is an initiative that aims to kick-start the use of a shared set of ways to develop systems once for multiple cities and make them interoperable between cities, and within a city.

The vision of OASC is to create an open smart city market based on the needs of cities and communities. Cities need interoperability and standards to boost competitiveness by avoiding vendor lock-in, comparability to benchmark performance, and easy sharing of best practices.

The Open & Agile Smart Cities initiative aims to this achievement by advocating cities to adopt four simple mechanisms as de facto standards.

The first mechanism is a driven-by-implementation attitude. The other three mechanisms are technical - an API, a set of data models, and an open data platform.

OASC promotes interoperability of systems based on the free flow of data, between cities and within cities, by adopting a shared set of simple, widespread, open and freely available mechanisms.

**Key points**
- Open & Agile Smart Cities initiative counts now around 75 cities from 15 countries in Europe, Latin America and Asia-Pacific.

**Potential benefits**
- Communities and developers can co-create their services based on basic but commonly-defined data models
- The adoption of a driven-by-implementation approach implies the definition of new models by experimenting.
4.6.1.6. Smartcities’ Guide to ICT architectures

**Joinup link:**
http://bit.ly/1QmrD0y

**Country:**
EU wide

**Organisation:**
Smart Cities: An innovation network between governments and academic partners

**Scale:**
- Supranational
- National

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for:**
- Technical Architect
- Business Case

**External links:**
http://bit.ly/1XXlmuV

**Short description**

The Smart Cities project has delivered a number of guide for municipalities and governments to help them design and deliver better e-services. Starting from this background, Smart Cities produced Smartcities’ Guide to ICT architectures.

The Smartcities’ Guide to ICT architectures is a collection of ideas about ICT architecture for organisations, and it is also oriented to clarify what is the architecture framework. Hence, business developers, architects and designers, and many other e-government stakeholders can find helpful using this publication to acquire some architecture know-how.

The purpose of this publication is to become a reference for the developer community. To this end, taking a broad perspective, the Guide provides a set of common recommendations for the design of ICT architectures while highlighting their importance in service-oriented organisations such as public entities.

This publication also helps identifying the main drivers ensuring that the architecture works well and that the organization’s goals are met. It is also possible to use this publication to identify the main drivers ensuring that the architecture works well and that the organization’s goals are met.

From this point of view, the Guide suggests just a few ways in which an organisation may formulate controls at the business level (vision, goals, etc.).

In addition, the Smartcities’ Guide to ICT architectures is a useful source of case studies, lessons and experiences of architectures in the Netherlands, Sweden and Norway (i.e. three Smart Cities partners: Karlstad, Kristiansand, and Groningen).

The publication/guide is structured as follows: the first part summarises the concept and the value of architecture and also how to support the architecture process; the second part puts these issues into a broader social and governmental context drawing on the experiences of several EU countries.

**Key points**

- Illustrating the main issues involved in the development of ICT, the Guide points out how a lack of strategic ICT planning could compromise the entire project and the efficient use of resource.
- National governments and local authorities should work together to develop standards for e-services and e-government.

**Potential benefits**

- Enhancing how organizations can use technology and data to deliver better services
4.6.2. **Guidelines and Knowledge on Standards**

4.6.2.1. **Open Standards Principles in the for software interoperability, data and document formats in UK government IT specifications**

**Short description**

In the context of the Government ICT Strategy, developed by UK Cabinet Office, has been published "Open Standards Principles - for software interoperability, data and document formats in government IT specifications". Thanks to this policy from 1st November 2012 government bodies must adhere to Open Standards Principles.

This policy refers to the Government in its roles as a purchaser of IT based on open standards with the aim of increasing interoperability and avoiding lock-in.

The intention is to achieve a more diverse and competitive market, enabling IT to interoperate and share information both inside and outside government departments and to achieve more economic efficiency in the delivery of IT.

Open standards are crucial for sharing information across government boundaries and to deliver a common platform and systems that more easily interconnect. This publication describes principles for the selection and specification of open standards which can be implemented in both open source and proprietary software.

In fact, these standards enable software to interoperate through open protocols and allow the exchange of data between data stores and software through open data and document formats. Standards for internal processing within hardware (including eCommunications hardware), which are not relevant to external interfaces, are out of scope.

In short, the publication of the Open Standards Principles is a fundamental step towards achieving a level playing field for open source and proprietary software and breaking our IT into smaller, more manageable components.

**Key points**

- Beyond the aim to identify criteria to define an open standard, the UK Government want to be aligned with international policies on standards in procurement of government IT.
- For all IT expenditures, government entities must demonstrate compliance with open standards for software interoperability, data and document formats or provide evidence of the need for divergence.

**Potential benefits**

- Open standards will enable suppliers to compete on a level playing field;
- Greater choice for the Government to reuse solutions and switch between standardised products and components;
- Sharing of information and data across and beyond government boundaries;
- Reduce risk of lock-in to a particular vendor.
**4.6.2.2. MITA approach to Open Standards**

**Joinup link:**
http://bit.ly/1qqYn9w

**Country:**
Republic of Malta

**Organisation:**
Malta Information Technology Agency (MITA)

**Scale:**
National

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for:**
- Standards Setters
- Procurement Practitioner
- Technical Architect

**External links:**
http://bit.ly/1Mv56gL
http://bit.ly/1OzFTnG
http://bit.ly/1PxVB1s
http://bit.ly/1lgkGTh
http://bit.ly/1NF2JJg
http://bit.ly/1Qe6VRW

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**Short description**

In June 2010, the Malta Information Technology Agency (MITA) launched a series of policies with the aim to inform and guide all Government organizations in the procurement process of ICT solutions. Open Specifications (informally referred as Open Standards) have been identified as key enablers to implement flexible, re-usable and interoperable ICT resources.

The Government of Malta has adopted the definitions and direction proposed by the European Interoperability Framework and defines Open specifications (informally referred to as Open Standards) as formalised specifications which, within the context of Public services delivery, are characterized by the following features:

- all stakeholders have the same possibility of contributing to the development of the specification and public review is part of the decision-making process;
- the specification is available for everybody to study;
- intellectual property rights related to the specification are licensed on FRAND terms or on a royalty-free basis in a way that allows implementation in both proprietary and open source software.

The specific MITA approach to open standards is to give the public sector, business community and the general public the opportunity to request the inclusion of formalised specifications within the Adopted Specifications list.

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**Key points**

- Open Specifications (or Open Standards) enable different industries to provide various software and services that can work seamlessly together.
- The MITA approach to the adoption of Open standards is to grant to external stakeholders a role in the selection of formalized specifications.

**Potential benefits**

- Open standards simplify inter-operation
- They guarantee a high degree of flexibility, freedom of choice to the end-users
- They prevents single vendor lock-in
4.6.2.3. Buying Innovation: the 10 step guide to smart procurement and SME access to public contracts

**Short description**

Public procurement is a major instrument by which government can encourage innovation in their economy. In public procurement seeking innovative solutions means seeking new products, processes or services or in the delivery of services. True value for money and cost savings can be gained by routinely seeking out novel solutions to public sector needs.

Within this framework this publication sets out the range of actions that should be considered at each step of the procurement process to pursue the goal of stimulating innovation and better solutions to public service needs.

The guide was wrote by “The Procurement Innovation Group”, within the Department of Enterprise, Trade & Employment of Ireland but is devoted to all officials in all public sector organisations involved in public procurement.

In summary the 10 keys steps to stimulate innovation through public procurement are:

1) Identify the Need – act as an “intelligent customer”; 2) Define and Refine User Requirements – Involve key stakeholders throughout the process; 3) Ascertaining the budget available; 4) Engage with the market prior to tendering – Find out what the market can provide; 5) Decide the best process for procurement; 6) Design the tender; 7) Tender Exercise; 8) Contract Award; 9) Contract Management, Review and Evaluation; 10) Lessons for the Future.

The publication incorporates elements from the “the European Commission’s “Guide on Dealing with Innovative Solutions in Public Procurement – 10 Elements of Good Practice” and also “Buying Green – A handbook on environmental public procurement”

**Key points**

- Recommendations on how innovation can be stimulated through public procurement
- Identify obstacles or problems in the current procurement process which impede opportunities for innovation;

**Potential benefits**

- Developing a more SME-friendly approach to public procurement
- Create valuable synergies between public and private sector
- Ensure a level playing field for all innovative companies wishing to participate in public tendering and provide a standardized approach for policy-makers
4.6.2.4. OSOR Guidelines: suggested model texts for the inclusion of standards and technical specifications in procurement tenders

**Joinup link:**
http://bit.ly/1L328uE

**Country:**
EU wide

**Organisation:**
IDABC: Interoperable Delivery of European eGovernment Services to Public Administrations, Businesses and Citizens

**Scale:**
- National
- Local
- Individual

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for:**
- Procurement Practitioner
- Strategist
- Senior Manager

**External links:**
http://bit.ly/1Hzg9QB

**Short description**

The *Guideline on public procurement of Open Source Software* looks at the process of public procurement, its principles and requirements; how public procurement works with software, across EU Member States; and how public procurement approaches open source.

The main purpose of these guidelines is to explain how open source can be best addressed with public procurement. Nevertheless, this is not a general purpose guide for procurement of software.

This Guideline has been drawn on the extensive legal analysis conducted by the Dutch government’s OSOSS programme, resulting in the publication of their “Open Standards Manual and Open-Source Software in tenders: Open standards and open-source software and tendering rules”, with the intention of supporting open source software as epitome of collaborative development of software in the European public sector.

In order to be useful for potential users (policy makers, IT managers and procurement officials), one important feature of the OSOR is a section dedicated to the publication and sharing of advice and guidelines related to open source in the public sector.

Furthermore, the Guideline seeks to give practical information regarding the law covering procurement and providing users with:

- Legal guidelines, which provide the legal basis behind the practical guidelines;
- Template texts that can be easily adapted for all use.

These two guidelines may be used in the preparation of procurement, tenders and contracts.

In short, the aim of this Guideline is to explain clearly and simply how and why public agencies can acquire open source in compliance to open standards.

**Key points**

- Therefore, this Guideline is meant to be applicable in any context within EU Member states, regardless of the existence of any policy.

**Potential benefits**

- Reduce risk of lock-in to a particular vendor
- Using open standards enables to be interoperable with other software systems
4.6.2.5. A guide to setting up the management of open standards

**Joinup link:**
http://bit.ly/1YdkGBN

**Country:**
Netherlands

**Organisation:**
Dutch Standardisation Forum and Logius Centre for Standards

**Scale:**
- Supranational
- National
- Individual

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for:**
- Senior Manager
- Standards Setters

**External links:**
http://bit.ly/1STQqZz
http://bit.ly/1N6XhQE

**Short description**

The guide offers a step-by-step plan for implementation of management processes for open standards. A sound management process is required to guarantee the intrinsic quality of a standard, and therefore the likelihood of adoption. How that process happens in practice depends on the situation. A 'one size fits all' approach does not exist, and for each standard, you will have to make conscious choices that lead to appropriate management.

The step by step plan of BOMOS2i provides with understanding of the 'life stage' of the standard and the situational characteristics that are determinant for setting up your management process. Using these characteristics, you find out what requirements the management process should meet, and which specific building blocks for management you can link to it. Based on the information you gather together, you can ultimately develop relatively simply an appropriately and comprehensive management plan, including associated rules of procedure, and implementing it all. The steps are:

- Determine lifecycle phase
- Check situational characteristics
- Check Basic building blocks for the design of your management
- Check Additional components for the design of your management

Assembly and implementation of your management system

**Key points**

- The document clarify in which cases open documents standards are best used
- In open standards there are no restrictions regarding the use of the standards by ICT users and providers

**Potential benefits**

- Open standards reduce risk of lock-in to a particular vendor
- Using open standards enables interoperability with other software systems.
This booklet assists organisations and their management in understanding how open standards can be used for documents. It describes how information may be structured and provided in a manner that allows different kinds of users to use it now and in the future. This booklet also addresses practical questions, as well as use of open standards, in the most suitable and cost-effective manner.

This document is primarily intended for I&A coordinators and managers of government bodies who are looking for an introduction to this subject. These persons are responsible for proper implementation and safeguarding of standards in the area of data storage within their organisation.

The booklet applies to text-based documents, such as reports, notes, letters, forms and presentations. Such documents may also contain images, multimedia content or interactive elements, but these components always support the text.

A standard is fully ‘open’ if:

6. the standard has been adopted and will be maintained by a non-profit organisation, and ongoing development is on the basis of an open decision-making procedure which is open to all stakeholders;
7. the standard has been published and the standard specification;
8. document is freely available or can be acquired at a nominal fee;
9. anyone must be able to copy, distribute and use the document and make it available for free, or at a nominal fee;
10. the intellectual property rights to – i.e. any patents that may exist on – the standard, or parts thereof, are made irrevocably available on a royalty-free basis.

There are no restrictions with respect to reuse of the standard.

**Key points**

- In open standards there are no restrictions regarding the use of the standards by ICT users and providers
- The document clarify in which cases open documents standards are best used

**Potential benefits**

- Open standards enhance digital information exchange (interoperability)
- Open standards increase the independence of software suppliers fostering competition
4.6.2.7. The Netherlands in Open Connection: An action plan for the use of Open Standards and Open Source Software in the public and semi-public sector

**Short description**

In 2007, the Ministry of Economic Affairs of the Netherlands published an action plan for the use of Open Standards and Open Source Software in the public and semi-public sector. This paper wanted to achieve a number of goals, such as good participation from citizens, sustainability of information and innovation, and a reduction in administrative burden (by supplying information only once, for example).

The objectives of this action plan are applicable to the national government, subsidiary government bodies and the public and semi-public sector:

3. increase in interoperability between and with the different building blocks and forms of service provision of eGovernment by accelerating the use of open standards;
4. reduction in dependence on suppliers in the use of ICT through faster introduction of open standards and open source software;

The objectives of this action plan are applicable to the national government, subsidiary government bodies and the public and semi-public sector:

3. promotion of a level playing field in the software market and promotion of innovation and the economy by forceful stimulation of the use of open source software and by giving preference in contracts to open source software if equally suitable.

**Key points**

- The Cabinet intends to encourage the use of open standards and open source software within the public and semi-public sector
- Open standards and open source software are two different topics for which separate actions have been formulated

**Potential benefits**

- Reduce risk of lock-in to a particular vendor
- Using open standards enables interoperability with other software systems.

Joinup link: http://bit.ly/1kCMLUn

Country: Netherlands

Organisation: Ministry of Economic Affairs - Netherlands

Scale: - National - Local - Individual

Typology: - Guidelines and Knowledge on Standards

Relevant for**: - Technical Architect - Procurement Practitioner - Strategist

External links: http://bit.ly/1L4ouMn
4.6.3. **Standards Assessment**

4.6.3.1. **Common Assessment Method for Standards and Specification**

**Joinup link:**
http://bit.ly/1JNZLze

**Country:**
EU

**Organisation:**
Interoperability Solutions for European Public Administration (ISA)

**Scale:**
- Supranational
- National
- Local

**Typology:**
- Standards Assessment

**Relevant for (**)**:
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect

**External links:**
http://bit.ly/1Qwzeex

**Short description**
The programme of the European Commission Interoperability Solutions for European Public Administration (ISA) produced the Common Assessment Method for Standard and Specifications (CAMSS). Yet, the assessment of standards and specifications for eGovernment solutions is actually a national competence applied within each National Interoperability Frameworks.

CAMSS is an initiative to promote collaboration between EU Member States in defining a «Common Assessment Method for Standards and Specifications» and to share with other countries the assessment study results for the development of eGovernment services.

The purpose of CAMSS is:
- to ensure that assessments of technical ICT specifications or standards and interoperability profiles are performed to high and consistent standards;
- to ensure that assessments will contribute significantly to confidence in the interoperability of systems implementing these specifications and profiles;
- to enable the re-use, in whole or in part, of such assessments;
- to continuously improve the efficiency and effectiveness of the assessment process for ICT technical specifications or standards and interoperability profiles.

The CAMSS is also supported by a community on Joinup which includes:
- Access to the CAMSS tools, CAMSS wiki and CAMSS library with assessments carried out by Member States
- A growing member list
- A place to interact and discuss about Standards Assessments
- Downloadable versions of the CAMSS tools with guidelines

**Key points**
- CAMSS is a European framework method to assess standards and specifications in the field of ICT
- Public administration establishes a list of standards for software ranging from recommended to mandatory, to complain and explain.

**Potential benefits**
- Avoid vendor lock-in through the use of standards
- Enables the sharing and re-use of assessments in ICT standards and specifications
4.6.3.2. UK Cabinet Office: Standards Hub

**Joinup link:**
http://bit.ly/1MCValv

**Country:**
United Kingdom

**Organisation:**
HM Government, Minister for the Cabinet Office and Paymaster General

**Scale:**
National

**Typology:**
- Standards Assessment

**Relevant for**(*):
- Standards Setters
- Strategist
- Technical Architect

**External links:**

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**Short description**

The UK cabinet office adopted a specific process of inclusive standard-setting. Stakeholders can engage at different levels of the decision-making on standards: they have a potential role at the 1) suggestion stage 2) the response stage 3) the proposal stage 4) the solution stage. Everyone can participate to the process, users, Government technology officials, Challenge owners, Standards panels, Open Standards Board, Suggestion stage, Response stage, Proposal stage, Solution stage.

The platform also allows review all open standards that have been adopted across government, along with the challenges they have been used to address.

**Key points**

- Any relevant stakeholders can help set standards for software interoperability, data and document formats in government IT

**Potential benefits**

- Inclusive decision-making help reducing the administrative burden of a centralized standard setting
- Open and inclusive standards
- Ensure an open process of standardisation
4.6.3.3. Assessment Procedure and Criteria for Lists of Open Standards in the Netherlands

**Joinup link:**
http://bit.ly/1iWun7A

**Country:**
Netherlands

**Organisation:**
Dutch Standardisation Forum and Board

**Scale:**
- National
- Local

**Typology:**
- Standards
  Assessment

**Relevant for(*):**
- Standards Setters
- Procurement Practitioner
- Business Case Author

**External links:**
http://bit.ly/1llgL7Y
http://bit.ly/1NMBix2

**Short description**

The document *Assessment Procedure and Criteria for Lists of Open Standards* serves as a guide for submitters of open standards, experts and other interested parties. It contains a description of the assessment procedure and the criteria that are used by the Standardisation Forum and Board to assess a submitted standard for the lists of open standards.

The goal of the Dutch government policy on open standards is to promote interoperability of the Dutch public and semi-public sectors, while at the same time ensuring provider independence. Interoperability means the ability to exchange data electronically; in this case between government bodies and businesses, between government bodies and civilians, and between government bodies.

In order to attain this goal, the Standardisation Forum and Board were established in 2006. These institutions do not develop standards, but can assign a status (required or recommended) to existing standards in the public and semi-public sector. The Board and Forum maintain the following two lists:

3. List of open standards for which a 'Comply or Explain'-regime is in place.

4. List of recommended common open standards.

"Comply or explain" means that Board Members have committed to use the standard, unless this might lead to insurmountable problems, in which case an alternative choice should be explained.

**Key points**

- The standardisation Forum and Board do not act as standard-setters but decentralize the responsibility by creating an assessment framework to include a standards submitted by all stakeholders
- All government bodies and semi-government bodies are required to adjust their procurement process to the list.

**Potential benefits**

- Open standards enhance digital information exchange (interoperability)
- Open standards increase the independence of software suppliers fostering competition
- Clear and transparent information in the standardisation process allows open participation from any stakeholders
4.6.4. List of Recommended Standards


**Joinup link:**

**Country:**
Spain

**Organisation:**
Ministry of Finance and Public Administrations

**Scale:**
- National
- Local
- Individual

**Typology:**
- List of Recommended Standards

**Relevant for**
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect

**External links:**
http://bit.ly/1RaFskF

**Short description**
The e-Government law of 2007 created the National Interoperability Framework (NIF) together with the National Security Framework. These frameworks are the result of a collective effort of all public administrations aiming to be aligned with the European scenario and to contribute to build up and improve interoperability. In particularly, the NIF addresses requirements in relation to:

- Technical interoperability: the NIF specifies conditions about the selection and use of standards.
- Common infrastructures and services: contributes to facilitate multilateral interactions.
- Reuse of software: it contributes to a better interoperability;
- Interoperability Agreements.

Within the list of Interoperability Agreements, there is the National Catalogue of Standards. The National Catalogue is composed by 86 standards. Not for all standards are a formal assessment document, firstly because some of them are self-explanatory. Secondly, because the entire process requires too many resources.

The Catalogue seeks to make E-Government services available to citizens so that they and Public Administration agencies can choose the technology to use, and to adapt to the development of communication systems and techniques.

In addition, the Catalogue is useful for potential users like policy makers, IT managers and procurement officials.

**Key points**

- the NIF is extended through a number of Interoperability Agreements;
- In order to release software solutions based on ICT Standards, the Ministry of Finance and Public Administrations of Spain have developed a "Guide to Asset Publication and Licensing" which established a framework and procedures to release assets under open-source license for software or under open licensing for other types of assets.

**Potential benefits**

- Reduce vendor lock-in and ensure provider independence.
- To spur the use of ICT standards by Public Administrations and citizens
- Avoid market fragmentation at EU level
### 4.6.4.2. Dutch National Catalogue of ICT Standards

**Joinup link:**
http://bit.ly/1SA4w49

**Country:**
Netherlands

**Organisation:**
National eGov Board Standardisation Forum

**Scale:**
- National
- Local
- Individual

**Typology:**
- List of Recommended Standards

**Relevant for**
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect

**External links:**
http://bit.ly/1ZlYaIu
http://bit.ly/1TEJNKN

### Short description

In 2007, the Dutch Government has launched an action-plan on use of Open Standards. In short, the main goals of the Dutch Policy are to be interoperable and prevent vendor lock-in.

Part of that is the creation a "Comply or Explain" policy.

In detail, the Dutch National Catalogue of ICT Standards collected two lists:

i) "Comply or Explain" Standards, that are a Mandatory Standards and it is composed by 38 standards.

ii) List of recommended open standards.

At the moment they have a list of 52 standards, mostly IETF, W3C and OASIS standards.

The best known of them is the ‘Comply or Explain’ list of open standards. The standards in this list must be implemented. If they are not, an explanation must be provided as to why.

Nevertheless, Public Administration and Semi-public administration have to use the "Comply or Explain" list, when they make IT investment above € 50.000 and also if the tender has both the functional and the organizational scope.

### Key points

- The assessment procedure is an active involvement process. Public organisations, private organisations and individuals can submit new standard for the 'Comply or Explain' list or the list of common open standards.

### Potential benefits

- Reduce vendor lock-in and ensure provider independence.
- To spur the use of ICT standards by Public Administrations and citizens
- Avoid market fragmentation at EU level
4.6.4.3. SAGA: Standards and Architectures for e-Government Applications in Germany

Joinup link: http://bit.ly/1NEuSjK

Country: Germany

Organisation: The German Commission of the Federal Government for IT

Scale: - National - Local - Individual

Typology: - List of Recommended Standards

Relevant for*: - Senior Manager - Standards Setters - Strategist - Technical Architect - Procurement Practitioner


Short description
The SAGA version de.bund 5-0 consists of a binding technology catalogue for the German federal administration software system. In all software projects technologies, projects should be selected in respect with the SAGA classifications.

SAGA aims at reducing risks and increasing investment-safe developments, agility, security, interoperability, reusability and scalability of software systems.

The aim of any standardization activity must be to develop a clear and measurable set of rules, which can be judged by the existing and new solutions. SAGA also takes into account the requirements of the European Interoperability Framework and support its recommendations.

The actual version of SAGA 5.1 de.bund is made up of the latest versions of all SAGA modules which consist of the following modules:

4. SAGA module Basics de.bund 5.1.0
5. SAGA module Conformity de.bund 5.1.0
6. SAGA module Technical Specifications de.bund 5.0.0

The SAGA module "Basics" describes the objectives, framework, principles, and processes for creating and updating of SAGA.

The SAGA module "Conformity" explains how the SAGA conformity of software can be backed up. To answer the question of how to ensure the conformity with SAGA it was also examined whether certification of projects, software products and stakeholders input could be helpful.

In SAGA module "Technical Specifications" are classified the technical specifications on which the software systems of the federal administration should be implemented. Also, are explained the actual requirements and recommendations of IT specifications for new and existing software systems, products and custom developments.

Key points
- SAGA aims at reducing risks and increasing investment-safe developments

Potential benefits
- Data exchange between government institution is facilitated
- Citizens one stop shop access to all egov services
- The platform allows for service composability
4.6.4.4. Use of open specifications and the OIO catalogue

**Joinup link:**  
http://bit.ly/1H0e6KH

**Country:**  
Denmark

**Organisation:**  
The OIO Committee and NITA

**Scale:**  
- National  
- Local  
- Individual

**Typology:**  
- List of recommended standards

**Relevant for**:  
- Standards Setters  
- Procurement Practitioner  
- Technical Architect

**External links:**  
http://bit.ly/1HMvBsN  
http://bit.ly/1MrXWXp

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**Short description**

The OIO Committee and NITA have been tasked to promote the use of open specifications in public sector IT systems. All IT systems built or bought by a Danish public authority should use open specifications to the largest possible extent. In order to make this easier for the individual authorities, the OIO Committee maintains a list of open technical specifications and recommendations on whether and where they should be used.

The list is called “the OIO Catalogue of Technical Standards” on Digitaliser.dk and is freely available to view and comment.

The OIO Catalogue of technical standards on Digitaliser.dk is a core part of the Danish National Interoperability Framework (NIF) as it contains the commonly agreed recommendations of technical standards and specification in relation to the Danish public sector.

The catalogue contains recommendations on the applicability and usefulness of almost 200 technical specifications for different types of public sector IT systems. Each specification is documented with name, description, link to the specification and other metadata. They also have a recommendation level for a given context of use. A given specification can have different recommendation levels for different areas of use.

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**Key points**

- Set open standards to ensure data exchange
- The OIO Catalogue of Technical Standards provide useful guidelines to practitioners

**Potential benefits**

- Avoid lock-in through the procurement of standards-based ICT solutions.
4.6.4.5. The Municipality of Alingsås - Open standards & FLOSS (Free/Libre Open Source Software)

Joinup link: http://bit.ly/1VYXkOJ

Country: Norway

Organisation: Municipality of Alingsås

Scale: - National - Local - Individual

Typology: List of Recommended Standards

Relevant for(*): Standards Setters - Procurement - Practitioner

External links: http://bit.ly/1IwkKn7

Short description

In Sweden there is an oligopoly of companies selling ICT products to municipalities and a lock-in situation (also because of language barriers). By using open source, it is possible to use software developed from other places.

The Swedish National Procurement Services - has published a list of open standards. All standards on this list can be implemented in software provided under different licenses, both proprietary and FLOSS.

Additionally, the Kivos - 'Kommunsamverkan i Väst för Open Source'- and the Open Jämtland are two regional organisations coordinating interoperability and open standards issues for their respective municipalities. Both promote the use of open source software and open standards by public agencies as well as software vendors, and enable and deploy open source based solutions for local government.

The network also advocates for open software requirement into the public procurement process - which is the choice of the Alingsås municipality - and it allows the reduction of the administrative burden with respect to open tenders.

It does this by disseminating information and experiences on the deployment of open solutions among municipalities and other government organisations, by stimulating the demand for open source software and promoting the inclusion of open standards in the requirements for the procurement of information systems, and by cooperating with universities and colleges on issues of open source and open standards.

Key points

- All open standards on this list can be implemented in software provided under different licenses, both proprietary and FLOSS

Potential benefits

- Promote the use of open source and open standards in the municipalities
- Encourage collaboration between municipalities
- Reduce vendor lock-in and ensure provider independence
4.6.5. ICT Needs & Long Term Planning

4.6.5.1. The Swedish National Police: How to avoid locking yourself in while saving money

**Short description**

The Swedish National Police Board (SNPB) is the central organisation in the Swedish National Police system. It counts on 27,000 employees, 19,000 of which are police officers.

In 2006, SNPB launched a project with the aim to move on from an ICT infrastructure based on proprietary products to an ICT server and database platform based on Open Source Software and open standards.

The SNPB migration project was the result of costs evaluation from using proprietary products and a study by OSOR.eu concerned to the viable possibility for SNPB of moving towards open source software and hardware.

In addition, SNPB had estimated that thanks to the new ICT infrastructure they would get a saving of around 50%.

Furthermore, for SNPB it was not just a cost reduction issue, for them moving towards an ICT server and database platform based on Open Source software and open standards meant: reduce vendor lock-in and use open standards.

From vendor lock-in and open standards issues, turning to Open Source guaranteed a diverse range of suppliers that enhance competition among them while reducing lock-in.

In short, the migration project has been focusing on the replacement of four essential parts of the infrastructure: 1. the application server; 2. the database; 3. the operating system of the servers and 4. CPUs.

The Swedish National Police experience is a good example of how a public institution can avoid the dependence on vendors and how this has the potential to increase performance.

**Key points**

- It has been also invested €126,000 in training to make sure that the competence is always in house;
- Switching to an Open Source system it may not just be for the cost aspect, it can be for performance also;
- Moving from a proprietary software environment to a consolidated Open Source Software environment with standards is a very big undertaking that should not be underestimated.

**Potential benefits**

- Cost saving
- Reduce risk of lock-in to a particular vendor
- Increasing transparency and sustainability, while reducing the users’ reliance on the original vendors of the software
- Promoting collaboration and participation
- Using open standards enables to be interoperable with other software systems
Short description

During the last seven years, Ventspils, the sixth largest country in Latvia, has experienced a rapid ICT sector growth. Capitalizing on the achievements to date and aiming to develop Ventspils into a European level hub for smart technologies.

All municipal institutions in Ventspils City Municipality have adopted common procurement procedure for all ICT related products and services. To adapt and enforce use of standards, Ventspils City Council has founded a special municipal institution – Ventspils Digital Centre, which is responsible for all ICT related development.

To avoid technology or supplier lock-ins where possible, source code and intellectual property rights for all custom-made software are being held by Ventspils Digital Centre. Open source solutions are used for virtualization of servers, provisioning of user account management, centralized file storage, e-mail, calendaring, firewall and other key ICT services even for critical ones.

Next challenges will be to address vendor dependency for financial accounting and other specialized software where there are no open-source of vendor independent solutions.

At the end of 2014, the Ventspils City Council, the sixth largest country in Latvia, endorsed the Ventspils information and communication technology (ICT) sector development strategy and action plan for 2014 – 2020.

Key points

- Ventspils aims at becoming a European hub for ICT and smart technologies
- The city has a centralized system for adoption of standards and procedures for ICT procurement

Potential benefits

- Avoid vendor lock-in through the use of standards
- Enables the sharing and re-use of assessments in ICT standards and specifications
4.6.6. **Develop a Procurement Framework**

4.6.6.1. Framework agreements for software and cloud services

**Short description**

In 2010, the Swedish government centralized a certain public procurement activities up to establish a unique body: the National Procurement Services. In short, the task of the National Procurement Services is offer central government authorities coordinated framework agreements for goods and services of general use, in the area of information and communication technology (ICT).

The National Procurement Services administers more than 1000 unique framework agreements in mainly the following areas:

- ICT products and services
- Office furniture and office equipment
- Services, hotels and conferences
- Safety and security
- Transport and vehicle
- Other services

In addition, the National Procurement Services has developed a process in order to safeguard quality in the procurement activities. In fact, an important part of the process comprises the contract management. This means that the framework agreements are followed-up continuously during the duration of the contracts. The contract managers help the procuring entities to call off from the framework agreements and follow up the terms of delivery in close contact with the users as well as the suppliers.

**Key points**

- The Swedish approach is one of the most important framework procurement agreements of ICT in Europe
- The framework reduce risk and uncertainties in the procurement process

**Potential benefits**

- Open source and open standards enable better competition between all suppliers of ICT solutions
- **Open standards and open source** enables reuse of software based solutions, a more open public sector and long term cost reductions
- Open standards and open source to avoid technology lock-in

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**Joinup link:**
http://bit.ly/1za3qyr

**Country:**
Sweden

**Organisation:**
Swedish National Procurement Services

**Scale:**
- National
- Local
- Individual

**Typology:**
- Develop a Procurement Framework

**Relevant for**

Public procurer
Representative of the ICT industry

**External links:**
http://bit.ly/1SzFthw
4.6.7. **Templates and ready texts**

4.6.7.1. **Standard "Sharing and Re-using" clauses for contracts:**

**Contractual Clauses for Service Procurement**

**Short description**

Promoting common "standard" clauses for contracts in service procurement has the potential to increase the sharing and re-using of IT tools. In fact, the procurement of software, for technological, legal and contractual reason may bind the contractor to a single contracting agent or impede the government to re-use the IT tool. Hence, contractual standardization could be helpful for public administration when:

- Public sector produces software (i.e. for the management of hospitals, of drivers licences etc.) and this software could be reused by other stakeholders (i.e. in another Member State)
- Public sector uses existing available software (i.e. components found on Internet) to build its own solutions: by reusing the downloaded component "as is", by modifying it (i.e. localisation in national language), or by integrating it in a larger solution that combines several software components

In fact, line of codes produced by Public administrations are rarely written entirely from scratch and at least some parts are reused. If not foreseen by an appropriate contractual clause, it may be that software effectively purchased by administrations cannot be re-distributed, for various reasons:

- The software providers' licence terms are proprietary (limitations on the number of users, the number or power of computers, etc.)
- The software providers' licence terms are open, but some of the standards implemented in the software belong to third parties, are patented and their use is not royalty free (RF)
- Licence terms are open source, but the provided solution is made from various components and the provider has not paid attention to the licence compatibility of these components.
- If there is maintenance terms that restrict any modification of the source by a third party or cancel the guarantee.

The document offers some standard clauses for sharing and reuse meeting the following distribution requirements:

- The right to redistribute its own software (when written by or exclusively for the authority)
- Reusing third parties’ IPR assets (integrating “received” open source software in the public authority solution)
- Reusing and distributing the documentation (and other “non-software” knowledge elements)
- “No Vendor Lock-in” clause: how to stay free to adopt a new solution and to contract with another provider.

The standard sharing and re-using clauses for contracts presented by Mr. Schmitz (speaker in one of our workshops) are reported below. They have been grouped according to the objective they try/want to reach.

- Distribute the application
- Facilitate the developers’ communities (when applicable)
- IPR assets coverage
- Open and Royalty Free standards
- "No Vendor Lock-in"

To read more details see The second Workshop attached to this report.

**Key points**

- “Standard” contractual clauses may ease the procurement of Open Software ensuring public administration efficiency and spurring innovation.
- Improve cross-border exchange of software and further integrate the European union’s markets

**Potential benefits**

- Re-use of software by third parties has the effect of increase its value
- Consistent pan-European contractual clause will strengthen the legal predictability and facilitate the business environment.
- Reduce risk of lock-in to a particular vendor
4.6.7.2. BITKOM guides on wording procurement documents in a non-
proprietary manner for desktop PCs, notebooks, servers,
monitors and printers

Joinup link:
http://bit.ly/1up8ZGV

Country:
Germany

Organisation:
Federal Association of Information Technology, Telecommunications and New Media - BITKOM

Scale:
- Local
- Individual

Typology:
- Templates and Ready Texts

Relevant for(*):
- Procurement Practitioner

External links:
http://bit.ly/1MQbHEK

Short description
BITKOM, the German Federal Association for Information Technology, Telecommunications and New Media, represents more than 2,200 companies in the digital sector, including 1,400 direct members.

The aim of BITKOM is to give authorities support for wording in official tenders for the ICT procurement. To this end, as a result of a working group led by German Ministry of the Interior’s Procurement Office and BITKOM, “Guides on wording procurement documents in a non-
proprietary manner for desktop PCs, notebooks, servers, monitors and printers” were created, to facilitate the purchase of information and telecommunication technology.

The Guide provide compact tools in compliance with legal requirements while ensuring fair competition among service providers, allowing to reduce risk of lock-in to a particular vendor.

Furthermore, this Guide identifies and describes also the state-of-art technical standards, in a way that avoids the use of proprietary brand names in tender specification, in line with the Directive.

In short, thanks to these guidelines, procurement practitioners can count on:
- Different guidelines for different products (Notebooks, Servers, ...);
- Standardised "ready-to-use" text;
- Propose product-neutral technical and environmental criteria for buying ICT products;
- Set of product-neutral criteria suitable for their needs.

Key points
- The guidelines’ approach leverages general accepted benchmarks as a major element of a non-proprietary product description;
- The Guide is helpful to face two issues that make particularly difficult the subject matter: 1. the rapid lifecycle of ICT product and 2. the need of precise description required with regard to a system’s performance (technical requirements).

Potential benefits
- Reduce risk of lock-in to a particular vendor;
- Increasing transparency and sustainability, while reducing the users' reliance on the original vendors of the software;
- Using open standards enables interoperability with other software systems.
France publishes free software procurement templates

Short description

The French government has published templates to be used by procurement officers when requesting free software-based ICT solutions. The templates include intellectual property clauses, and clarify the specifics of the free software environment. The «Model clauses for development and maintenance of free software» were made public at the 16th Rencontres Mondiales du Logiciel Libre conference.

The templates apply within the legal framework of The Cahier des Clauses Administratives Générales applicables aux marchés publics de Techniques de l’Information et de la Communication (CCAG-TIC) from the 15 September 2009 dealing with Intellectual Property rights in the public markets of IT software.

When issuing a call for tender, public administrations should emphasise that the software will be made available as free software.

The template set two options for the contracting authorities A: «concession» or B «cession». The public body select the most suitable option and adapt it to the specific software.

Companies submitting bids should allow the code to be published using a licence that is compatible with either France’s Cecill or the European Union’s EUPL free software licence. These are «copyleft » licenses are a novel use of existing copyright law to ensure a work remains freely available and that public investment will be profitable to everyone.

Key points

- Software, including free software, are protected by copyrights.
- Assignments of the rights should be included in public contracts
- The model clauses must be used to enable proper maintenance of free software solutions

Potential benefits

- Model templates ensure software remain freely available
- Set the standard for efficient and secured Intellectual Property IP clauses
4.6.7.4. The Belgian OSLO project: tender clauses to promote the use of the OSLO specification

Joinup link:
http://bit.ly/1JsPRBA

Country:
Belgium

Organisation:
Flemish Organization for ICT in Local Government V-ICT-OR

Scale:
- Local
- Individual

Typology:
- Templates and Ready Texts

Relevant for(*):
- Procurement Practitioner
- Strategist
- Business Case Author

External links:
http://bit.ly/1NuI1XY
http://bit.ly/1Pru3MK

Short description
The OSLO project from the Flemish ICT Organisation (V-ICT-OR) stands for “Open Standards Linked Authorities” and aims at establishing open standards for local governments to enhance interoperability of services. It also ensure a more efficient information management in local government and that citizens must provide their data only once to government. OSLO provides a clear implementation strategy, which outlines how local governments authentic sources should adopt in their processes.

Many governments are wondering what they can include in their tender texts around OSLO. V-ICT-OR published on 28th October 2014 a document containing clauses for tender specifications procurement contracts to promote the use of the OSLO specification. OSLO conformance, by including this either as a technical criterion or an award criterion in the tender specifications.

To complement the vocabulary, OSLO 2.0 proposes guidelines for implementing web services. The guidelines define a URI strategy along with the operations that the URIs must answer. By standardising the service protocol, OSLO aims to minimize the number of services pursuing the same goal.

Following the successful example of the Netherlands, OSLO 2.0 introduces the Software Catalogus, a repository of open standards, software packages, and service providers. With this tool, reusing the Dutch platform, local administrations can quickly learn which provider or package implements which standard, increasing awareness and, in the long-run, use of open standards.

Key points
- Set open standards to ensure data exchange
- The OSLO conformance can be included as a technical criterion or an award criterion

Potential benefits
- Avoid lock-in through the procurement of standards-based ICT solutions.
Short description
The Government Information Technology and Communications (GITC) contractual framework, initially established in 1991, is a set of terms and conditions that Australian Government agencies may use to create contracts for ICT procurement.

The GITC was originally introduced to support ICT procurement processes at a time when knowledge and experience in ICT purchasing was at a developmental stage.

In a second time, The GITC4 framework was reviewed in the light of changes to the general procurement environment since its initial development. The review showed, among other things, that there was a strong interest in some form of model contracts for use with government ICT procurement. The Government announced the following actions arising from the review:

- First, a series of model contracts would be developed that were tailored to the different elements of ICT procurement, such as hardware, software development, software licensing or managed services.
- Second, the GITC web site would be redeveloped to improve its user-friendliness and to enhance support to users of the model contracts.
- Third, during the period of implementation of these outcomes, the GITC Helpline would be maintained to support those using the GITC.

By analysing in detail the model contracts, we noticed that model contracts provide templates for Commonwealth entities to develop sound commercial agreements efficiently and effectively.

In particular, the model contracts are distinguish for:

- Simple procurement, conducted in an environment where routines, methods and procedures are well established and designed for:
  - Hardware Acquisition and Maintenance;
  - Licence and Support - Commercial off-the-shelf Software;
  - Licence (not covering support) - Commercial off-the-shelf Software;
  - ICT Consultancy Services.
- Semi-complex procurement, in which more preparation needs to be carried out and designed for:
  - consultancy services;
  - system integration and software development.

Key points
- Templates are flexible enough to allow inclusion of project-specific details, so that they could be adapted for all uses.

Potential benefits
- Model templates ensure software remain freely available
4.6.8. Other

4.6.8.1. European Union Public Licence - Licensing the procured software as open source

**Joinup link:**
http://bit.ly/1OAelgL

**Country:**
EU

**Organisation:**
Interoperability Solutions for European Public Administration (ISA)

**Scale:**
- Supranational
- National
- Local

**Typology:**
- Other

**Relevant for:**
- Business Case Author
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect

**External links:**
http://bit.ly/1RaAft7
http://bit.ly/1TEvXbe

**Short description**
The “European Union Public Licence” (EUPL) is the first European Free/Open Source Software (F/OSS) licence. It has been created on the initiative of the European Commission. It is now approved by the European Commission in 22 official languages of the European Union.

These Practical Guidelines will provide information on:
- how to use software distributed under the “European Union Public Licence” (EUPL), and
- how to use this licence to distribute your own software.

The guidelines are intended for those who:
- wish to use software that has been published under the EUPL;
- own rights to software and are considering the EUPL as the licence of choice for its distribution;
- are starting to develop software, might integrate the EUPL licensed software and want to release the product under the EUPL or another F/OSS licence.

It should raise awareness concerning the opportunities of Free/Open Source distribution and encourage all relevant stakeholders to follow this example.

**Key points**

- The EUPL licence is a tool to facilitate resource optimisation and sharing.

**Potential benefits**

- Reinforce legal interoperability through the adoption of a common framework
4.6.8.2. OpenPEPPOL & the avoidance of lock-in

**Country:**
Norway

**Organisation:**
OpenPEPPOL

**Scale:**
- Supranational
- National
- Local

**Typology:**
- Other

**Relevant for:**
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Technical Architect

**External links:**
http://bit.ly/1Ju7gxT

### Short description

The OpenPEPPOL project was run by a consortium of 16 countries and it originated from the European Commission CIP funding programme. The vision was to enable business to communicate electronically with European government institution in the tendering process in order to reap benefits in term of efficiency and cost reduction.

OpenPEPPOL project was designed to come up with solution specifications to different phases of the procurement process, from the process of entering into contract in the public procurement legislation to the actual ordering up to the invoicing and payment phase. The biggest result where in the post-award phase but some also in the pre-award domain.

Solutions are based on the interoperability framework and PEPPOL solutions and specifications operate within a legal and political environment to ensure semantic and technical interoperability. PEPPOL relies on standards from OASIS and other sources.

The biggest success in the Norwegian national implementation of eProcurement solution was in the eInvoicing. The implementation was accomplished as such:

1. Make eInvoicing mandatory for public sector entities;
2. Mandatory use of standard national e-Invoicing format, based on European standardisation;
3. On-boarding of ERP vendors/invoice systems;
4. Decision to use PEPPOL eDelivery network for transport of eInvoices;
5. Establish a national receive capability and address register = SMP/ELMA, also open for private sector;
6. On-boarding of access points through public sector demand;
7. Web-portals for simplified e-invoicing from SMEs delivered by market.

### Key points

- Open PEPPOL is a point of reference for organisations that use it, providing users with widely accepted technology standards.
- Business Interoperability Specifications (BIS) for common eProcurement processes are guidelines developed by PEPPOL with the aim to standardise electronic documents exchanged.

### Potential benefits

- Increase opportunities for greater competition for government contracts and providing better value for tax payers’ money

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**TASK 4 MATERIALS (TED ANALYSIS & PROCUREMENT SURVEY).** This list was given as input to a text mining algorithm developed in R that was applied on the dataset, as previously defined: thanks to this procedure it was possible to derive a new dataset, whereby each row reported a single reference to a specific vendor extracted from the description of a tender notice. Of note, the search was also applied to the title field of each tender, though it did not produce any positive result, suggesting that calls for tender never include any explicit reference to proprietary technologies. With the new output at our disposal, we only kept one row for each tender notice and each different vendor reference, thus removing duplicates due to the presence of many ID awards referring to the same ID notice. It is important to remark that if one tender notice contained three references relating to three different vendors, three separate rows were inserted in the

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67 The algorithm was applied to the "DESCRIPTION" variable in the dataset.
database; conversely, when one notice contained three references to the same vendor, it was counted only once.

Furthermore, long effort was devoted to the multilingual quality check. Thanks to the breadth of PwC’s international network, we were able to recruit native analysts who contributed to validate all references, in all languages, which were extracted using the algorithm. They also validated vendors’ names as reported in the respective countries, especially in the case of Bulgaria, where the Cyrillic alphabet is required to report names used in other languages.

Through this check, it was possible to detect irrelevant extractions caused by semantic problems, which were manually corrected and excluded. For example, the vendor “Dell” was extracted many times from tenders in Italian, although in some of those the word “dell” simply referred to the Italian preposition having the same spelling. Similarly, the word “Aix” was sometimes mistakenly extracted as a vendor in tenders issued in the French region of Aix-en-Provence.

After the elimination of these irrelevant mentions, all references were divided into three main categories, listed below: this represents an important step, improving the analysis, since it allowed a classification that provides further details to the European Commission in assessing the occurrence of lock-in. In order to clearly distinguish among these in the database, two columns were added, namely “limited-lock-in” and “others”, taking the two opposite values “YES” or “NO” according to the represented instance. All references were thus divided into:

- Explicit references to vendors, pinpointing at an actual lock-in instance\(^{68}\), as well as an infringement of the EU Directives;
- Explicit references to vendors, mitigated by either the sentence “or equivalent”, or any other phrase expressing a similar concept, in the various languages. These instances were identified as limited lock-in cases\(^{69}\), since the aforementioned Directive allows, under special circumstances reported in section 4.4.1.1, to mention a vendor if followed by the phrase “or equivalent”;
- References to vendors that occurred, but could not be considered as lock-in instances. Those were labelled as “others”\(^{70}\), since the occurrence appeared not for the sake of the procurement tender (e.g. available technology for informative purpose only, background description of the tenderer’s IT architecture..). These instances were labelled as such, only if the tenderer was not asking for a license renewal, nor for any other special requirement concerning the specific tender.

Following this distinction, we only focused on the first two cases to give an overview of actual forms of lock-in. Thus, all tender notices reporting a vendor that falls under the third case, were not computed in the analysis hereby presented.

Finally, the quality check also allowed to detect further vendors that had not been included in the initial list used as input to the algorithm: all additional vendors are included in Appendix 4 so that any future analysis could be improved by also considering those.

In summary, the scope of our analysis spans over 6 years, namely from 2010 to 2015; 21 CPVs; 22 languages and 3 alphabets, including Cyrillic and Greek alphabets; and 28

\(^{68}\) In the dataset: limited_lock_in = NO and OTHERS = NO.
\(^{69}\) In the dataset: limited_lock_in = YES.
\(^{70}\) In the dataset: OTHERS = YES.
European countries (issuers of any tender), which assigned ICT procurement bids to 52 countries.

4.6.8.3. Preliminary data analysis

After the phase of data cleaning and preparation, a preliminary analysis of the dataset was performed, aimed at understanding the actual content of each variable. This also allowed detecting possible sources of problems, such as unreliable data, wrong data, presence of null values, or similar. The task was performed with the support of the Codebook provided by DG GROW, which gave partial information on the domain of each variable, with some recommendation for the analysis. More details on the content of the analysed section of the TED database is reported in Appendix 2 to provide some insight into the nature of the data reported in the TED website. In fact the EU Commission previously acknowledged\(^\text{71}\) that many variables contain a considerable number of blank instances and that data quality is a real problem to be tackled when dealing with data pre-reported in the TED database. This pinpoints at a tendency of the issuing institutions not to fill all fields when reporting a tender on the TED website: this could be easily avoided by preventing the submission of the form, when the compiler fails to provide all the information required. Some automatic quality check could also be included into the IT system on which the TED is based, to limit the presence of contrasting information.

4.6.8.3.1. ID notices

4.7. ID notices are the unique identifiers for a Contract Award Notice (CAN). Each of them may be contained in multiple entries, corresponding to multiple different Contract Awards (CA). Therefore, in order to be able to identify how many CANs were issued each year, each tender was considered only once. This information is contained in Annex 6.1 COLLECTED BEST PRACTICES

4.7.1. ICT Frameworks and Architectures

4.7.1.1. European Interoperability Framework for European Public Services

Short description

\(^{71}\) DG GROW G4 (2015), Public Procurement Indicators 2013.
The European Interoperability Framework (EIF) is one of a series of European initiatives that aims to support the establishment of European public services. The European Interoperability Framework addresses this issue in order to facilitate the interoperability of eGovernment services at pan-European level.

The EIF addresses interoperability in a very specific context of providing European public services. Also it contributes to the better functioning of the internal market by increasing interoperability among European public administrations.

The purpose of the European Interoperability Framework (EIF) is:
- to promote and support the delivery of European public services by fostering cross-border and cross-sectorial interoperability;
- to guide public administrations in their work to provide European public services to businesses and citizens;
- to complement and tie together the various National Interoperability Frameworks (NIFs) at European level.

The EIF provides recommendations that address specific interoperability requirements.

Implementing the recommendations will create an environment conducive to public administrations establishing new European public services.

**Key points**

The document offers a number of key issues:

- Underlying principles (sets out general principles underpinning European).
- Interoperability levels (different interoperability aspects to be addressed).
- Approach to facilitate cooperation among public administrations.
- Interoperability governance (sets out what is needed to ensure interoperability).

**Potential benefits**

Public Administrations are encouraged to:

- Reuse and share solutions
- Develop a component-based service model
- Establish European public services
Short description

The State Information Resources Interoperability Platform (SIRIP) of Lithuania offers an easy way for public authorities to design, deliver and manage e-services. Many e-services can be streamlined and made available in a user friendly one-stop-shop portal to citizens, business entities and civil servants.

The current framework for interoperability in Lithuania is structured around the Public Governance Development Programme 2012-2020 (PGDP) and the Law of Management of Government Information Resources that established the legal framework for the SIRIP as well as related legislation. The latter legislation aims to ensure adequate public information resources development, management, administration, use, maintenance, interoperability, planning, financing and safety.

The centralised service system makes it easy to share and re-use eGovernment services. Public administrations add new services faster and at lower costs, according to a government report published this summer. "The SIRIP solution for identification alone, which has been used by institutions providing various e-services, has saved LTL 4.8 million (About EUR 1.4 million)."

The latter State Information and Communication Technology Interoperability Framework is expected to be published in 2016 and revised and update by 2020 and will use the European Interoperability Strategy (EIS) and the European Interoperability Framework (EIF) as guidelines.

Key points

- SIRIP provides a centralized access to public services
- It also offer platform dedicated to design, deliver and management e-services

Potential benefits

- Data exchange between government institution is facilitated
- Citizens one stop shop access to all egov services
- The platform allows for service composability
**4.7.1.3. NIF: National ICT Interoperability Framework**

**Joinup link:**
http://bit.ly/1PkSCLe

**Country:**
Republic of Malta

**Organisation:**
Malta Information Technology Agency (MITA)

**Scale:**
- National
- Local
- Individual

**Typology:**
- ICT Frameworks and Architectures

**Relevant for:**
- Technical Architect
- Strategist

**External links:**
http://bit.ly/1RIB61a
http://bit.ly/1SDCRO0

**Short description**

The ability for public sector organizations to integrate various information systems, which can exhibit varying degrees of isolation, is considered a challenging task. The Maltese government published the National ICT interoperability framework (NIF) to address this problem. The need to lay out a rigorous interoperability framework belongs to the second Strategic Priority of the MITA Strategic Plan, namely to deliver and sustain a robust, resilient and secure ICT infrastructure and IT services to Government. The study is organized as such:

- Chapter 1: Give an introduction to the NIF initiative;
- Chapter 2: Draws a conceptual model of an Interoperability Architecture that identifies key Interoperability Agreements across the public sector to reduce the interoperability gap in a connected Government paradigm;
- Chapter 3: Presents organisational interoperability principles and recommends service attributes which contribute towards the design of interoperable business processes;
- Chapter 4: Introduces the concept of semantic interoperability and identifies steps to discover and standardise Government’s data assets;
- Chapter 5: Defines a standardisation approach to technical interoperability, including contextualisation through Interoperability Profiles.

The National ICT interoperability framework (NIF), draws from the European context and incorporates the principles and recommendations of initiatives such as the European Interoperability Framework, European Interoperability Strategy and the Semantic initiatives promoted through the European Commission’s JoinUp platform.

**Key points**

- Identification of technical enablers for the exchange of meaningful information and the ability to reuse existing ICT resources.
- National ICT Interoperability Framework guide the public sector in maximising the benefits and reducing the cost burden derived from all technology investments by introducing ICT resources that are flexible, reusable and interoperable.

**Potential benefits**

- Avoid vendor lock-in through the use of standards
- Enables the sharing and re-use of assessments in ICT standards and specifications
4.7.1.4. Estonian Interoperability Framework

**Joinup link:**
http://bit.ly/1xEWtWE

**Country:**
Estonia

**Organisation:**
Estonian Ministry of Economic Affairs and Communications

**Scale:**
- National
- Local
- Individual

**Typology:**
- ICT strategies and architectures
- Relevant for(*): Business Case Author, Procurement Practitioner, Senior Manager, Standards Setters, Strategist, Technical Architect

**External links:**
https://www.mkm.ee/et

**Short description**
The present document is also a guideline for private sector managers and project leaders who offer development and administrative services to the public sector.

**The objective of the interoperability framework** is to make the operation of the Estonian public sector more effective, improving the services offered to Estonian and EU citizens. The more concrete objectives of the framework are:

- to contribute to the development of a service oriented society, where people can communicate with the state without knowing anything about the hierarchic structure of the public sector or the division of roles in it;
- to bring more transparency into information related political decisions of the information system;
- to support co-development of the state information system;
- to create conditions for free competition, following the agreed framework;
- to reduce public sector IT costs.

The Estonian framework uses the European one as a meta-framework. It mirrors the European Interoperability Framework and its 12 principles, namely subsidiarity and proportionality, user-centricity, inclusion and accessibility, security and privacy, multilingualism, administrative simplification, transparency, preservation of information, openness, reuse, technological neutrality and adaptability, effectiveness and efficiency.

**Key points**
- The framework is a collection of requirements, standards and instructions, handling the interoperability of information systems
- The choice and assessment of standards is public and balanced.

**Potential benefits**
- Data exchange between government institution is facilitated
- Citizens one stop shop access to all eGovernment services
- The platform allows for service composability
4.7.1.5. Open & Agile Smart Cities – harmonisation through open innovation

**Country:**
Norway

**Organisation:**
Open & Agile Smart Cities

**Scale:**
- National
- Local
- Individual

**Typology:**
- ICT Frameworks and Architectures

**Relevant for:**
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect
- Procurement Practitioner

**External links:**
http://bit.ly/1HUusoC

**Short description**
Open & Agile Smart Cities (OASC) is an initiative that aims to kick-start the use of a shared set of ways to develop systems once for multiple cities and make them interoperable between cities, and within a city.

The vision of OASC is to create an open smart city market based on the needs of cities and communities. Cities need interoperability and standards to boost competitiveness by avoiding vendor lock-in, comparability to benchmark performance, and easy sharing of best practices.

The Open & Agile Smart Cities initiative aims to achieve this by advocating cities to adopt four simple mechanisms as de facto standards.

OASC promotes interoperability of systems based on the free flow of data, between cities and within cities, by adopting a shared set of simple, widespread, open and freely available mechanisms.

**Key points**
- Open & Agile Smart Cities initiative counts now around 75 cities from 15 countries in Europe, Latin America and Asia-Pacific.

**Potential benefits**
- Communities and developers can co-create their services based on basic but commonly-defined data models
- The adoption of a driven-by-implementation approach implies the definition of new models by experimenting.
4.7.1.6. Smartcities’ Guide to ICT architectures

**Joinup link:**
http://bit.ly/1QmrD0y

**Country:**
EU wide

**Organisation:**
Smart Cities: An innovation network between governments and academic partners

**Scale:**
- Supranational
- National

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for:**
- Technical Architect
- Business Case Author

**External links:**
http://bit.ly/1XXlmuV

**Short description**

The Smart Cities project has delivered a number of guide for municipalities and governments to help them design and deliver better e-services. Starting from this background, Smart Cities produced *Smartcities’ Guide to ICT architectures*.

*The Smartcities’ Guide to ICT architectures* is a collection of ideas about ICT architecture for organisations, and it is also oriented to clarify what is the architecture framework. Hence, business developers, architects and designers, and many other e-government stakeholders can find helpful using this publication to acquire some architecture know-how.

The purpose of this publication is to become a reference for the developer community. To this end, taking a broad perspective, the Guide provides a set of common recommendations for the design of ICT architectures while highlighting their importance in service-oriented organisations such as public entities.

This publication also helps identifying the main drivers ensuring that the architecture works well and that the organisation’s goals are met. It is also possible to use this publication to identify the main drivers ensuring that the architecture works well and that the organization’s goals are met.

From this point of view, the Guide suggests just a few ways in which an organisation may formulate controls at the business level (vision, goals, etc.).

In addition, the Smartcities’ Guide to ICT architectures is a useful source of case studies, lessons and experiences of architectures in the Netherlands, Sweden and Norway (i.e. three Smart Cities partners: Karlstad, Kristiansand, and Groningen).

The publication/guide is structured as follows: the first part summarises the concept and the value of architecture and also how to support the architecture process; the second part puts these issues into a broader social and governmental context drawing on the experiences of several EU countries.

**Key points**

- Illustrating the main issues involved in the development of ICT, the Guide points out how a lack of strategic ICT planning could compromise the entire project and the efficient use of resource.
- National governments and local authorities should work together to develop standards for e-services and e-government.

**Potential benefits**

- Enhancing how organizations can use technology and data to deliver better services
4.7.2. **Guidelines and Knowledge on Standards**

4.7.2.1. **Open Standards Principles in the for software interoperability, data and document formats in UK government IT specifications**

**Joinup link:**
http://bit.ly/1sCL7l5

**Country:**
United Kingdom

**Organisation:**
HM Government, Minister for the Cabinet Office and Paymaster General - UK

**Scale:**
- National
- Local
- Individual

**Typology:**
- Guidelines and Knowledge on Standards

- Relevant for:* Senior Manager, Standards Setters

**External links:**
http://bit.ly/1RJyYFX

**Short description**

In the context of the Government ICT Strategy, developed by UK Cabinet Office, has been published "Open Standards Principles - for software interoperability, data and document formats in government IT specifications". Thanks to this policy from 1st November 2012 government bodies must adhere to Open Standards Principles.

This policy refers to the Government in its roles as a purchaser of IT based on open standards with the aim of increasing interoperability and avoiding lock-in.

The intention is to achieve a more diverse and competitive market, enabling IT to interoperate and share information both inside and outside government departments and to achieve more economic efficiency in the delivery of IT.

Open standards are crucial for sharing information across government boundaries and to deliver a common platform and systems that more easily interconnect. This publication describes principles for the selection and specification of open standards which can be implemented in both open source and proprietary software.

In fact, these standards enable software to interoperate through open protocols and allow the exchange of data between data stores and software through open data and document formats. Standards for internal processing within hardware (including eCommunications hardware), which are not relevant to external interfaces, are out of scope.

In short, the publication of the Open Standards Principles is a fundamental step towards achieving a level playing field for open source and proprietary software and breaking our IT into smaller, more manageable components.

**Key points**

- Beyond the aim to identify criteria to define an open standard, the UK Government want to be aligned with international policies on standards in procurement of government IT.
- For all IT expenditures, government entities must demonstrate compliance with open standards for software interoperability, data and document formats or provide evidence of the need for divergence.

**Potential benefits**

- Open standards will enable suppliers to compete on a level playing field;
- Greater choice for the Government to reuse solutions and switch between standardised products and components;
- Sharing of information and data across and beyond government boundaries;
- Reduce risk of lock-in to a particular vendor.
4.7.2.2. MITA approach to Open Standards

**Joinup link:**
http://bit.ly/1qqYn9w

**Country:**
Republic of Malta

**Organisation:**
Malta Information Technology Agency (MITA)

**Scale:**
National

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for:**
- Standards Setters
- Procurement Practitioner
- Technical Architect

**External links:**
http://bit.ly/1Mv56gL
http://bit.ly/1OzFTnG
http://bit.ly/1PxVB1s
http://bit.ly/1JgkGTh
http://bit.ly/1NF2JJg
http://bit.ly/1Qe6VRW

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**Short description**

In June 2010, the Malta Information Technology Agency (MITA) launched a series of policies with the aim to inform and guide all Government organizations in the procurement process of ICT solutions. Open Specifications (informally referred as Open Standards) have been identified as key enablers to implement flexible, re-usable and interoperable ICT resources.

The Government of Malta has adopted the definitions and direction proposed by the European Interoperability Framework and defines Open specifications (informally referred to as Open Standards) as formalised specifications which, within the context of Public services delivery, are characterized by the following features:

- all stakeholders have the same possibility of contributing to the development of the specification and public review is part of the decision-making process;
- the specification is available for everybody to study;
- intellectual property rights related to the specification are licensed on FRAND terms or on a royalty-free basis in a way that allows implementation in both proprietary and open source software.

The specific MITA approach to open standards is to give the public sector, business community and the general public the opportunity to request the inclusion of formalised specifications within the Adopted Specifications list.

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**Key points**

- Open Specifications (or Open Standards) enable different industries to provide various software and services that can work seamlessly together.
- The MITA approach to the adoption of Open standards is to grant to external stakeholders a role in the selection of formalized specifications

**Potential benefits**

- Open standards simplify inter-operation
- They guarantee a high degree of flexibility, freedom of choice to the end-users
- They prevents single vendor lock-in
4.7.2.3. Buying Innovation: the 10 step guide to smart procurement and SME access to public contracts

**Joinup link:**
http://bit.ly/1kFNp3i

**Country:**
Ireland

**Organisation:**
Department of Enterprise, Trade & Employment

**Scale:**
- National
- Local
- Individual

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for (\*)**:
- Senior Manager
- Technical Architect
- Procurement Practitioner

**External links:**
http://bit.ly/1NZkd1m

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**Short description**

Public procurement is a major instrument by which government can encourage innovation in their economy. In public procurement seeking innovative solutions means seeking new products, processes or services or in the delivery of services. True value for money and cost savings can be gained by routinely seeking out novel solutions to public sector needs.

Within this framework this publication sets out the range of actions that should be considered at each step of the procurement process to pursue the goal of stimulating innovation and better solutions to public service needs.

The guide was written by “The Procurement Innovation Group”, within the Department of Enterprise, Trade & Employment of Ireland but is devoted to all officials in all public sector organisations involved in public procurement.

In summary the 10 keys steps to stimulate innovation through public procurement are:

I) Identify the Need – act as an "intelligent customer"; II) Define and Refine User Requirements – Involve key stakeholders throughout the process; III) Ascertain the Budget Available; IV) Engage with the Market prior to Tendering – Find out what the market can provide; V) Decide the best process for procurement; VI) Design the tender; VII) Tender Exercise; VIII) Contract Award; IX) Contract Management, Review and Evaluation; X) Lessons for the Future.

The publication incorporates elements from the "the European Commission’s "Guide on Dealing with Innovative Solutions in Public Procurement – 10 Elements of Good Practice” and also “Buying Green – A handbook on environmental public procurement”

**Key points**

- Recommendations on how innovation can be stimulated through public procurement
- Identify obstacles or problems in the current procurement process which impede opportunities for innovation;

**Potential benefits**

- Developing a more SME-friendly approach to public procurement
- Create valuable synergies between public and private sector
- Ensure a level playing field for all innovative companies wishing to participate in public tendering and provide a standardized approach for policy-makers
4.7.2.4. OSOR Guidelines: suggested model texts for the inclusion of standards and technical specifications in procurement tenders

Joinup link:
http://bit.ly/1L328uE

Country:
EU wide

Organisation:
IDABC: Interoperable Delivery of European eGovernment Services to Public Administrations, Businesses and Citizens

Scale:
- National
- Local
- Individual

Typology:
- Guidelines and Knowledge on Standards

Relevant for(*):
- Procurement Practitioner
- Strategist
- Senior Manager

External links:
http://bit.ly/1Hzg9QB

Short description
The Guideline on public procurement of Open Source Software looks at the process of public procurement, its principles and requirements; how public procurement works with software, across EU Member States; and how public procurement approaches open source.

The main purpose of these guidelines is to explain how open source can be best addressed with public procurement. Nevertheless, this is not a general purpose guide for procurement of software.

This Guideline has been drawn on the extensive legal analysis conducted by the Dutch government's OSOSS programme, resulting in the publication of their "Open Standards Manual and Open-Source Software in tenders: Open standards and open-source software and tendering rules", with the intention of supporting open source software as epitome of collaborative development of software in the European public sector.

In order to be useful for potential users (policy makers, IT managers and procurement officials), one important feature of the OSOR is a section dedicated to the publication and sharing of advice and guidelines related to open source in the public sector.

Furthermore, the Guideline seeks to give practical information regarding the law covering procurement and providing users with:
- Legal guidelines, which provide the legal basis behind the practical guidelines;
- Template texts that can be easily adapted for all use.

These two guidelines may be used in the preparation of procurement, tenders and contracts.

In short, the aim of this Guideline is to explain clearly and simply how and why public agencies can acquire open source in compliance to open standards.

Key points
- Therefore, this Guideline is meant to be applicable in any context within EU Member states, regardless of the existence of any policy.

Potential benefits
- Reduce risk of lock-in to a particular vendor
- Using open standards enables to be interoperable with other software systems
4.7.2.5. A guide to setting up the management of open standards

**Joinup link:**
http://bit.ly/1YdkGBN

**Country:**
Netherlands

**Organisation:**
Dutch Standardisation Forum and Logius Centre for Standards

**Scale:**
- Supranational
- National
- Individual

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for:**
- Senior Manager
- Standards Setters

**External links:**
http://bit.ly/1STQqZz
http://bit.ly/1N6XhQE

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**Short description**

The guide offers a step-by-step plan for implementation of management processes for open standards. A sound management process is required to guarantee the intrinsic quality of a standard, and therefore the likelihood of adoption. How that process happens in practice depends on the situation. A 'one size fits all' approach does not exist, and for each standard, you will have to make conscious choices that lead to appropriate management.

The step by step plan of BOMOS2i provides with understanding of the 'life stage' of the standard and the situational characteristics that are determinant for setting up your management process. Using these characteristics, you find out what requirements the management process should meet, and which specific building blocks for management you can link to it. Based on the information you gather together, you can ultimately develop relatively simply an appropriately and comprehensive management plan, including associated rules of procedure, and implementing it all. The steps are:

- Determine lifecycle phase
- Check situational characteristics
- Check Basic building blocks for the design of your management
- Check Additional components for the design of your management

Assembly and implementation of your management system

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**Key points**

- The document clarify in which cases open documents standards are best used
- In open standards there are no restrictions regarding the use of the standards by ICT users and providers

**Potential benefits**

- Open standards reduce risk of lock-in to a particular vendor
- Using open standards enables interoperability with other software systems.
Short description

This booklet assists organisations and their management in understanding how open standards can be used for documents. It describes how information may be structured and provided in a manner that allows different kinds of users to use it now and in the future. This booklet also addresses practical questions, as well as use of open standards, in the most suitable and cost-effective manner.

This document is primarily intended for I&A coordinators and managers of government bodies who are looking for an introduction to this subject. These persons are responsible for proper implementation and safeguarding of standards in the area of data storage within their organisation.

The booklet applies to text-based documents, such as reports, notes, letters, forms and presentations. Such documents may also contain images, multimedia content or interactive elements, but these components always support the text.

A standard is fully ‘open’ if:

11. the standard has been adopted and will be maintained by a non-profit organisation, and ongoing development is on the basis of an open decision-making procedure which is open to all stakeholders;
12. the standard has been published and the standard specification;
13. document is freely available or can be acquired at a nominal fee;
14. anyone must be able to copy, distribute and use the document and make it available for free, or at a nominal fee;
15. the intellectual property rights to – i.e. any patents that may exist on – the standard, or parts thereof, are made irrevocably available on a royalty-free basis.

There are no restrictions with respect to reuse of the standard.

Key points

- In open standards there are no restrictions regarding the use of the standards by ICT users and providers
- The document clarify in which cases open documents standards are best used

Potential benefits

- Open standards enhance digital information exchange (interoperability)
- Open standards increase the independence of software suppliers fostering competition
**Short description**

In 2007, the Ministry of Economic Affairs of the Netherlands published an action plan for the use of Open Standards and Open Source Software in the public and semi-public sector. This paper wanted to achieve a number of goals, such as good participation from citizens, sustainability of information and innovation, and a reduction in administrative burden (by supplying information only once, for example).

The objectives of this action plan are applicable to the national government, subsidiary government bodies and the public and semi-public sector:

5. increase in interoperability between and with the different building blocks and forms of service provision of eGovernment by accelerating the use of open standards;

6. reduction in dependence on suppliers in the use of ICT through faster introduction of open standards and open source software;

3. promotion of a level playing field in the software market and promotion of innovation and the economy by forceful stimulation of the use of open source software and by giving preference in contracts to open source software if equally suitable.

**Key points**

- The Cabinet intends to encourage the use of open standards and open source software within the public and semi-public sector
- Open standards and open source software are two different topics for which separate actions have been formulated

**Potential benefits**

- Reduce risk of lock-in to a particular vendor
- Using open standards enables interoperability with other software systems.
4.7.3. **Standards Assessment**

4.7.3.1. **Common Assessment Method for Standards and Specification**

**Joinup link:**
http://bit.ly/1JNZLze

**Country:**
EU

**Organisation:**
Interoperability Solutions for European Public Administration (ISA)

**Scale:**
- Supranational
- National
- Local

**Typology:**
- Standards Assessment

**Relevant for(*):**
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect

**External links:**
http://bit.ly/1Qwzeex

**Short description**

The programme of the European Commission Interoperability Solutions for European Public Administration (ISA) produced the Common Assessment Method for Standard and Specifications (CAMSS). Yet, the assessment of standards and specifications for eGovernment solutions is actually a national competence applied within each National Interoperability Frameworks.

CAMSS is an initiative to promote collaboration between EU Member States in defining a «Common Assessment Method for Standards and Specifications» and to share with other countries the assessment study results for the development of eGovernment services.

The purpose of CAMSS is:

- to ensure that assessments of technical ICT specifications or standards and interoperability profiles are performed to high and consistent standards;
- to ensure that assessments will contribute significantly to confidence in the interoperability of systems implementing these specifications and profiles;
- to enable the re-use, in whole or in part, of such assessments;
- to continuously improve the efficiency and effectiveness of the assessment process for ICT technical specifications or standards and interoperability profiles.

The CAMSS is also supported by a community on Joinup which includes:

- Access to the CAMSS tools, CAMSS wiki and CAMSS library with assessments carried out by Member States
- A growing member list
- A place to interact and discuss about Standards Assessments
- Downloadable versions of the CAMSS tools with guidelines

**Key points**

- CAMSS is a European framework method to assess standards and specifications in the field of ICT
- Public administration establishes a list of standards for software ranging from recommended to mandatory, to complain and explain.

**Potential benefits**

- Avoid vendor lock-in through the use of standards
- Enables the sharing and re-use of assessments in ICT standards and specifications
4.7.3.2. UK Cabinet Office: Standards Hub

**Joinup link:**
http://bit.ly/1MCValv

**Country:**
United Kingdom

**Organisation:**
HM Government,
Minister for the
Cabinet Office and
Paymaster General

**Scale:**
National

**Typology:**
- Standards Assessment

**Relevant for:**
- Standards Setters
- Strategist
- Technical Architect

**External links:**

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**Short description**

The UK cabinet office adopted a specific process of inclusive standard-setting. Stakeholders can engage at different level of the decision-making on standards: they have a potential role at the 1) suggestion stage 2) the response stage 3) the proposal stage 4) the solution stage. Everyone can participate to the process, users, Government technology officials, Challenge owners, Standards panels, Open Standards Board, Suggestion stage, Response stage, Proposal stage, Solution stage.

The platform also allows review all open standards that have been adopted across government, along with the challenges they have been used to address.

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**Key points**

- Any relevant stakeholders can help set standards for software interoperability, data and document formats in government IT

**Potential benefits**

- Inclusive decision-making help reducing the administrative burden of a centralized standard setting
- Open and inclusive standards
- Ensure an open process of standardisation
Short description

The document Assessment Procedure and Criteria for Lists of Open Standards serves as a guide for submitters of open standards, experts and other interested parties. It contains a description of the assessment procedure and the criteria that are used by the Standardisation Forum and Board to assess a submitted standard for the lists of open standards.

The goal of the Dutch government policy on open standards is to promote interoperability of the Dutch public and semi-public sectors, while at the same time ensuring provider independence. Interoperability means the ability to exchange data electronically; in this case between government bodies and businesses, between government bodies and civilians, and between government bodies.

In order to attain this goal, the Standardisation Forum and Board were established in 2006. These institutions do not develop standards, but can assign a status (required or recommended) to existing standards in the public and semi-public sector. The Board and Forum maintain the following two lists:

5. List of open standards for which a 'Comply or Explain'-regime is in place.
6. List of recommended common open standards.

"Comply or explain" means that Board Members have committed to use the standard, unless this might lead to insurmountable problems, in which case an alternative choice should be explained.

Key points

- The standardisation Forum and Board do not act as standard-setters but decentralize the responsibility by creating an assessment framework to include a standards submitted by all stakeholders
- All government bodies and semi-government bodies are required to adjust their procurement process to the list.

Potential benefits

- Open standards enhance digital information exchange (interoperability)
- Open standards increase the independence of software suppliers fostering competition
- Clear and transparent information in the standardisation process allows open participation from any stakeholders
4.7.4. List of Recommended Standards


Country: Spain

Organisation: Ministry of Finance and Public Administrations

Scale: - National - Local - Individual

Typology: - List of Recommended Standards

Relevant for*: - Procurement Practitioner - Senior Manager - Standards Setters - Strategist - Technical Architect

External links: http://bit.ly/1RaFskF

Short description

The e-Government law of 2007 created the National Interoperability Framework (NIF) together with the National Security Framework. These frameworks are the result of a collective effort of all public administrations aiming to be aligned with the European scenario and to contribute to build up and improve interoperability. In particularly, the NIF addresses requirements in relation to:

- Technical interoperability: the NIF specifies conditions about the selection and use of standards.
- Common infrastructures and services: contributes to facilitate multilateral interactions.
- Reuse of software: it contributes to a better interoperability;
- Interoperability Agreements.

Within the list of Interoperability Agreements, there is the National Catalogue of Standards. The National Catalogue is composed by 86 standards. Not for all standards are a formal assessment document, firstly because some of them are self-explanatory. Secondly, because the entire process requires too many resources.

The Catalogue seeks to make E-Government services available to citizens so that they and Public Administration agencies can choose the technology to use, and to adapt to the development of communication systems and techniques.

In addition, the Catalogue is useful for potential users like policy makers, IT managers and procurement officials.

Key points

- the NIF is extended through a number of Interoperability Agreements;
- In order to release software solutions based on ICT Standards, the Ministry of Finance and Public Administrations of Spain have developed a “Guide to Asset Publication and Licensing” which established a framework and procedures to release assets under open-source license for software or under open licensing for other types of assets.

Potential benefits

- Reduce vendor lock-in and ensure provider independence.
- To spur the use of ICT standards by Public Administrations and citizens.
- Avoid market fragmentation at EU level.
4.7.4.2. Dutch National Catalogue of ICT Standards

**Joinup link:**
http://bit.ly/1SA4w49

**Country:**
Netherlands

**Organisation:**
National eGov Board Standardisation Forum

**Scale:**
- National
- Local
- Individual

**Typology:**
- List of Recommended Standards

**Relevant for:**
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect

**External links:**
http://bit.ly/1ZiYaIu
http://bit.ly/1TEJNKN

**Short description**
In 2007, the Dutch Government has launched an action-plan on use of Open Standards. In short, the main goals of the Dutch Policy are to be interoperable and prevent vendor lock-in.

Part of that is the creation a "Comply or Explain" policy.

In detail, the Dutch National Catalogue of ICT Standards collected two lists:

i) "Comply or Explain" Standards, that are a Mandatory Standards and it is composed by 38 standards.

ii) List of recommended open standards.

At the moment they have a list of 52 standards, mostly IETF, W3C and OASIS standards.

The best known of them is the ‘Comply or Explain’ list of open standards. The standards in this list must be implemented. If they are not, an explanation must be provided as to why.

Nevertheless, Public Administration and Semi-public administration have to use the "Comply or Explain" list, when they make IT investment above € 50.000 and also if the tender has both the functional and the organizational scope.

**Key points**

- The assessment procedure is an active involvement process. Public organisations, private organisations and individuals can submit new standard for the 'Comply or Explain' list or the list of common open standards.

**Potential benefits**

- Reduce vendor lock-in and ensure provider independence.
- To spur the use of ICT standards by Public Administrations and citizens
- Avoid market fragmentation at EU level
4.7.4.3. SAGA: Standards and Architectures for e-Government Applications in Germany

Joinup link:
http://bit.ly/1NEuSjK

Country:
Germany

Organisation:
The German Commission of the Federal Government for IT

Scale:
- National
- Local
- Individual

Typology:
- List of Recommended Standards

Relevant for(*):
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect
- Procurement Practitioner

External links:
http://bit.ly/1PkzXPC
http://bit.ly/1n4gCXc
http://bit.ly/1UwrkAm
http://bit.ly/1SzX8pt

Short description
The SAGA version de.bund 5-0 consists of a binding technology catalogue for the German federal administration software system. In all software projects technologies, projects should be selected in respect with the SAGA classifications.

SAGA aims at reducing risks and increasing investment-safe developments, agility, security, interoperability, reusability and scalability of software systems.

The aim of any standardization activity must be to develop a clear and measurable set of rules, which can be judged by the existing and new solutions. SAGA also takes into account the requirements of the European Interoperability Framework and support its recommendations.

The actual version of SAGA 5.1 de.bund is made up of the latest versions of all SAGA modules which consists of the following modules:

7. SAGA module Basics de.bund 5.1.0
8. SAGA module Conformity de.bund 5.1.0
9. SAGA module Technical Specifications de.bund 5.0.0

The SAGA module "Basics" describes the objectives, framework, principles, and processes for creating and updating of SAGA.

The SAGA module "Conformity" explains how the SAGA conformity of software can be backed up. To answer the question of how to ensure the conformity with SAGA it was also examined whether certification of projects, software products and stakeholders input could be helpful.

In SAGA module "Technical Specifications" are classified the technical specifications on which the software systems of the federal administration should be implemented. Also, are explained the actual requirements and recommendations of IT specifications for new and existing software systems, products and custom developments.

Key points
- SAGA aims at reducing risks and increasing investment-safe developments

Potential benefits
- Data exchange between government institution is facilitated
- Citizens one stop shop access to all egov services
- The platform allows for service composability
4.7.4.4. Use of open specifications and the OIO catalogue

Short description

The OIO Committee and NITA have been tasked to promote the use of open specifications in public sector IT systems.

All IT systems built or bought by a Danish public authority should use open specifications to the largest possible extent. In order to make this easier for the individual authorities, the OIO Committee maintains a list of open technical specifications and recommendations on whether and where they should be used.

The list is called “the OIO Catalogue of Technical Standards” on Digitaliser.dk and is freely available to view and comment.

The OIO Catalogue of technical standards on Digitaliser.dk is a core part of the Danish National Interoperability Framework (NIF) as it contains the commonly agreed recommendations of technical standards and specification in relation to the Danish public sector.

The catalogue contains recommendations on the applicability and usefulness of almost 200 technical specifications for different types of public sector IT systems. Each specification is documented with name, description, link to the specification and other metadata. They also have a recommendation level for a given context of use. A given specification can have different recommendation levels for different areas of use.

Key points

- Set open standards to ensure data exchange
- The OIO Catalogue of Technical Standards provide useful guidelines to practitioners

Potential benefits

- Avoid lock-in through the procurement of standards-based ICT solutions.
4.7.4.5. The Municipality of Alingsås - Open standards & FLOSS (Free/Libre Open Source Software)

**Joinup link:**
http://bit.ly/1VYXkJ

**Country:**
Norway

**Organisation:**
Municipality of Alingsås

**Scale:**
- National
- Local
- Individual

**Typology:**
- List of Recommended Standards

**Relevant for:**
- Standards Setters
- Procurement Practitioner

**External links:**
http://bit.ly/1IwkKn7

**Short description**
In Sweden there is an oligopoly of companies selling ICT products to municipalities and a lock-in situation (also because of language barriers). By using open source, it is possible to use software developed from other places.

The Swedish National Procurement Services - has published a list of open standards. All standards on this list can be implemented in software provided under different licenses, both proprietary and FLOSS.

Additionally, the Kivos - 'Kommunsamverkan i Väst för Open Source' - and the Open Jämtland are two regional organisations coordinating interoperability and open standards issues for their respective municipalities. Both promote the use of open source software and open standards by public agencies as well as software vendors, and enable and deploy open source based solutions for local government.

The network also advocates for open software requirement into the public procurement process - which is the choice of the Alingsås municipality - and it allows the reduction of the administrative burden with respect to open tenders.

It does this by disseminating information and experiences on the deployment of open solutions among municipalities and other government organisations, by stimulating the demand for open source software and promoting the inclusion of open standards in the requirements for the procurement of information systems, and by cooperating with universities and colleges on issues of open source and open standards.

**Key points**
- All open standards on this list can be implemented in software provided under different licenses, both proprietary and FLOSS

**Potential benefits**
- Promote the use of open source and open standards in the municipalities
- Encourage collaboration between municipalities
- Reduce vendor lock-in and ensure provider independence
4.7.5. ICT Needs & Long Term Planning

4.7.5.1. The Swedish National Police: How to avoid locking yourself in while saving money

**Joinup link:**
http://bit.ly/1jWEScG

**Country:**
Sweden

**Organisation:**
Swedish National Police

**Scale:**
- Local
- Individual

**Typology:**
- ICT Needs & Long Term Planning

**Relevant for:**
- Strategist
- Procurement Practitioner
- Senior Manager

**External links:**
http://bit.ly/1MDxWHG
http://bit.ly/1UwsxYl

**Short description**

The Swedish National Police Board (SNPB) is the central organisation in the Swedish National Police system. It counts on 27,000 employees, 19,000 of which are police officers.

In 2006, SNPB launched a project with the aim to move on from an ICT infrastructure based on proprietary products to an ICT server and database platform based on Open Source Software and open standards.

The SNPB migration project was the result of costs evaluation from using proprietary products and a study by OSOR.eu concerned to the viable possibility for SNPB of moving towards open source software and hardware.

In addition, SNPB had estimated that thanks to the new ICT infrastructure they would get a saving of around 50%.

Furthermore, for SNPB it was not just a cost reduction issue, for them moving towards an ICT server and database platform based on Open Source software and open standards meant: reduce vendor lock-in and use open standards.

From vendor lock-in and open standards issues, turning to Open Source guaranteed a diverse range of suppliers that enhance competition among them while reducing lock-in.

In short, the migration project has been focusing on the replacement of four essential parts of the infrastructure: 1. the application server; 2. the database; 3. the operating system of the servers and 4. CPUs.

The Swedish National Police experience is a good example of how a public institution can avoid the dependence on vendors and how this has the potential to increase performance.

**Key points**

- It has been also invested €126,000 in training to make sure that the competence is always in house;
- Switching to an Open Source system it may not just be for the cost aspect, it can be for performance also;
- Moving from a proprietary software environment to a consolidated Open Source Software environment with standards is a very big undertaking that should not be underestimated.

**Potential benefits**

- Cost saving
- Reduce risk of lock-in to a particular vendor
- Increasing transparency and sustainability, while reducing the users' reliance on the original vendors of the software
- Promoting collaboration and participation
- Using open standards enables to be interoperable with other software systems
4.7.5.2. City of Ventspils common procedure for ICT procurement

**Short description**

During the last seven years, Ventspils, the sixth largest country in Latvia, has experienced a rapid ICT sector growth. Capitalizing on the achievements to date and aiming to develop Ventspils into a European level hub for smart technologies,

All municipal institutions in Ventspils City Municipality have adopted common procurement procedure for all ICT related products and services. To adapt and enforce use of standards, Ventspils City Council has founded a special municipal institution – Ventspils Digital Centre, which is responsible for all ICT related development.

To avoid technology or supplier lock-ins where possible, source code and intellectual property rights for all custom-made software are being held by Ventspils Digital Centre. Open source solutions are used for virtualization of servers, provisioning of user account management, centralized file storage, e-mail, calendaring, firewall and other key ICT services even for critical ones.

Next challenges will be to address vendor dependency for financial accounting and other specialized software where there are no open-source of vendor independent solutions.

At the end of 2014, the Ventspils City Council, the sixth largest country in Latvia, endorsed the Ventspils information and communication technology (ICT) sector development strategy and action plan for 2014 – 2020.

**Key points**

- Ventspils aims at becoming a European hub for ICT and smart technologies
- The city has a centralized system for adoption of standards and procedures for ICT procurement

**Potential benefits**

- Avoid vendor lock-in through the use of standards
- Enables the sharing and re-use of assessments in ICT standards and specifications
4.7.6. Develop a Procurement Framework

4.7.6.1. Framework agreements for software and cloud services

Joinup link:
http://bit.ly/1za3qyr

Country:
Sweden

Organisation:
Swedish National Procurement Services

Scale:
- National
- Local
- Individual

Typology:
- Develop a Procurement Framework

Relevant for(*):
Public procurer
Representative of the ICT industry

External links:
http://bit.ly/1SzFthw

Short description

In 2010, the Swedish government centralized certain public procurement activities up to establish a unique body: the National Procurement Services. In short, the task of the National Procurement Services is to offer central government authorities coordinated framework agreements for goods and services of general use, in the area of information and communication technology (ICT).

The National Procurement Services administers more than 1000 unique framework agreements in mainly the following areas:

- ICT products and services
- Office furniture and office equipment
- Services, hotels and conferences
- Safety and security
- Transport and vehicle
- Other services

In addition, the National Procurement Services has developed a process in order to safeguard quality in the procurement activities. In fact, as important part of the process comprises the contract management. This means that the framework agreements are followed-up continuously during the duration of the contracts. The contract managers help the procuring entities to call off from the framework agreements and follow up the terms of delivery in close contact with the users as well as the suppliers.

Key points

- The Swedish approach is one of the most important framework procurement agreements of ICT in Europe
- The framework reduce risk and uncertainties in the procurement process

Potential benefits

- Open source and open standards enable better competition between all suppliers of ICT solutions
- Open standards and open source enables reuse of software based solutions, a more open public sector and long term cost reductions
- Open standards and open source to avoid technology lock-in
4.7.7. **Templates and ready texts**

4.7.7.1. **Standard "Sharing and Re-using" clauses for contracts:**

*Contractual Clauses for Service Procurement*

**Joinup link:**
http://bit.ly/1zs8vHx

**Country:**
EU wide

**Organisation:**
ISA – Interoperability Solutions for European Public Administrations

**Scale:**
- European
- National
- Local

**Typology:**
- Templates and ready texts

**Relevant for:**
- Procurement Practitioner
- Business Case Author
- Strategist

**External links:**
http://bit.ly/1x0H0QX
http://bit.ly/1keDKkQ

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**Short description**
Promoting common "standard" clauses for contracts in service procurement has the potential to increase the sharing and re-using of IT tools. In fact, the procurement of software, for technological, legal and contractual reasons may bind the contractor to a single contracting agent or impede the government to re-use the IT tool. Hence, contractual standardization could be helpful for public administration when:

- Public sector produces software (i.e. for the management of hospitals, of drivers licences etc.) and this software could be reused by other stakeholders (i.e. in another Member State)
- Public sector uses existing available software (i.e. components found on Internet) to build its own solutions: by reusing the downloaded component "as is", by modifying it (i.e. localisation in national language), or by integrating it in a larger solution that combines several software components

In fact, line of codes produced by Public administrations are rarely written entirely from scratch and at least some parts are reused. If not foreseen by an appropriate contractual clause, it may be that software effectively purchased by administrations cannot be re-distributed, for various reasons:

- The software providers’ licence terms are proprietary (limitations on the number of users, the number or power of computers, etc.)
- The software providers’ licence terms are open, but some of the standards implemented in the software belong to third parties, are patented and their use is not royalty free (RF)
- Licence terms are open source, but the provided solution is made from various components and the provider has not paid attention to the licence compatibility of these components.
- If there is maintenance terms that restrict any modification of the source by a third party or cancel the guarantee.

The document offers some standard clauses for sharing and reuse meeting the following distribution requirements:

- The right to redistribute its own software (when written by or exclusively for the authority)
- Reusing third parties’ IPR assets (integrating “received” open source software in the public authority solution)
- Reusing and distributing the documentation (and other "non-software" knowledge elements)
- “No Vendor Lock-in” clause: how to stay free to adopt a new solution and to contract with another provider.

The standard sharing and re-using clauses for contracts presented by Mr. Schmitz (speaker in one of our workshops) are reported below. They have been grouped according to the objective they try/want to reach.

- Distribute the application
- Facilitate the developers’ communities (when applicable)
- IPR assets coverage
- Open and Royalty Free standards
- “No Vendor Lock-in”

To read more details see The second Workshop attached to this report.

**Key points**

- “Standard” contractual clauses may ease the procurement of Open Software ensuring public administration efficiency and spurring innovation.
- Improve cross-border exchange of software and further integrate the European union’s markets

**Potential benefits**

- Re-use of software by third parties has the effect of increase its value
- Consistent pan-European contractual clause will strengthen the legal predictability and facilitate the business environment.
- Reduce risk of lock-in to a particular vendor
4.7.7.2. BITKOM guides on wording procurement documents in a non-proprietary manner for desktop PCs, notebooks, servers, monitors and printers

Joinup link: http://bit.ly/1up8ZGV

Country: Germany

Organisation: Federal Association of Information Technology, Telecommunications and New Media - BITKOM

Scale: - Local - Individual

Typology: - Templates and Ready Texts

Relevant for: - Procurement Practitioner


Short description
BITKOM, the German Federal Association for Information Technology, Telecommunications and New Media, represents more than 2,200 companies in the digital sector, including 1,400 direct members.

The aim of BITKOM is to give authorities support for wording in official tenders for the ICT procurement. To this end, as a result of a working group led by German Ministry of the Interior’s Procurement Office and BITKOM, “Guides on wording procurement documents in a non-proprietary manner for desktop PCs, notebooks, servers, monitors and printers” were created, to facilitate the purchase of information and telecommunication technology.

The Guide provide compact tools in compliance with legal requirements while ensuring fair competition among service providers, allowing to reduce risk of lock-in to a particular vendor.

Furthermore, this Guide identifies and describes also the state-of-art technical standards, in a way that avoids the use of proprietary brand names in tender specification, in line with the Directive.

In short, thanks to these guidelines, procurement practitioners can count on:

- Different guidelines for different products (Notebooks, Servers, ...);
- Standardised "ready-to-use" text;
- Propose product-neutral technical and environmental criteria for buying ICT products;

Set of product-neutral criteria suitable for their needs.

Key points

- The guidelines’ approach leverages general accepted benchmarks as a major element of a non-proprietary product description;
- The Guide is helpful to face two issues that make particularly difficult the subject matter: 1. the rapid lifecycle of ICT product and 2. the need of precise description required with regard to a system’s performance (technical requirements).

Potential benefits

- Reduce risk of lock-in to a particular vendor;
- Increasing transparency and sustainability, while reducing the users' reliance on the original vendors of the software;
- Using open standards enables interoperability with other software systems.
Joinup link: http://bit.ly/1k9V3Ds

Country: France

Organisation: Agence du Patrimoine Immateriel de l’état

Scale: - National - Local - Individual

Typology: - Templates and Ready Texts

Relevant for(*): - Strategist - Senior Manager - Procurement Practitioner


Short description

The French government has published templates to be used by procurement officers when requesting free software-based ICT solutions. The templates include intellectual property clauses, and clarify the specifics of the free software environment. The «Model clauses for development and maintenance of free software» were made public at the 16th Recontres Mondiales du Logiciel Libre conference.

The templates applies within the legal framework of The Cahier des Clauses Administratives Générales applicables aux marchés publics de Techniques de l’Information et de la Communication (CCAG-TIC) from the 15 September 2009 dealing with Intellectual Property rights in the public markets of IT software.

When issuing a call for tender, public administrations should emphasise that the software will be made available as free software.

The template set two options for the contracting authorities A: «concession» or B «cession». The public body select the most suitable option and adapt it to the specific software.

Companies submitting bids should allow the code to be published using a licence that is compatible with either France’s Cecill or the European Union’s EUPL free software licence. These are «copyleft » licenses are a novel use of existing copyright law to ensure a work remains freely available and that public investment will be profitable to everyone.

Key points

- Software, including free software, are protected by copyrights.
- Assignments of the rights should be included in public contracts
- The model clauses must be used to enable proper maintenance of free software solutions

Potential benefits

- Model templates ensure software remain freely available
- Set the standard for efficient and secured Intellectual Property IP clauses
4.7.7.4. The Belgian OSLO project: tender clauses to promote the use of the OSLO specification

Joinup link: http://bit.ly/1JsPRBA

Country: Belgium

Organisation: Flemish Organization for ICT in Local Government V-ICT-OR

Scale: - Local - Individual

Typology: - Templates and Ready Texts

Relevant for (\*): - Procurement Practitioner - Strategist - Business Case Author


Short description

The OSLO project from the Flemish ICT Organisation (V-ICT-OR) stands for "Open Standards Linked Authorities" and aims at establishing open standards for local governments to enhance interoperability of services. It also ensure a more efficient information management in local government and that citizens must provide their data only once to government. OSLO provides a clear implementation strategy, which outlines how local governments authentic sources should adopt in their processes.

Many governments are wondering what they can include in their tender texts around OSLO. V-ICT-OR published on 28th October 2014 a document containing clauses for tender specifications procurement contracts to promote the use of the OSLO specification. OSLO conformance, by including this either as a technical criterion or an award criterion in the tender specifications.

To complement the vocabulary, OSLO 2.0 proposes guidelines for implementing web services. The guidelines define a URI strategy along with the operations that the URIs must answer. By standardising the service protocol, OSLO aims to minimize the number of services pursuing the same goal.

Following the successful example of the Netherlands, OSLO 2.0 introduces the Software Catalogus, a repository of open standards, software packages, and service providers. With this tool, reusing the Dutch platform, local administrations can quickly learn which provider or package implements which standard, increasing awareness and, in the long-run, use of open standards.

Key points

- Set open standards to ensure data exchange
- The OSLO conformance can be included as a technical criterion or an award criterion

Potential benefits

- Avoid lock-in through the procurement of standards-based ICT solutions.
Short description

The Government Information Technology and Communications (GITC) contractual framework, initially established in 1991, is a set of terms and conditions that Australian Government agencies may use to create contracts for ICT procurement.

The GITC was originally introduced to support ICT procurement processes at a time when knowledge and experience in ICT purchasing was at a developmental stage.

In a second time, The GITC4 framework was reviewed in the light of changes to the general procurement environment since its initial development. The review showed, among other things, that there was a strong interest in some form of model contracts for use with government ICT procurement. The Government announced the following actions arising from the review:

- First, a series of model contracts would be developed that were tailored to the different elements of ICT procurement, such as hardware, software development, software licensing or managed services.
- Second, the GITC web site would be redeveloped to improve its user-friendliness and to enhance support to users of the model contracts.
- Third, during the period of implementation of these outcomes, the GITC Helpline would be maintained to support those using the GITC.

By analysing in detail the model contracts, we noticed that model contracts provide templates for Commonwealth entities to develop sound commercial agreements efficiently and effectively.

In particular, the model contracts are distinguish for:

- Simple procurement, conducted in an environment where routines, methods and procedures are well established and designed for:
  - Hardware Acquisition and Maintenance;
  - Licence and Support - Commercial off-the-shelf Software;
  - Licence (not covering support) - Commercial off-the-shelf Software;
  - ICT Consultancy Services.
- Semi-complex procurement, in which more preparation needs to be carried out and designed for:
  - consultancy services;
  - system integration and software development.

Key points

- Templates are flexible enough to allow inclusion of project-specific details, so that they could be adapted for all uses.

Potential benefits

- Model templates ensure software remain freely available
4.7.8. Other

4.7.8.1. European Union Public Licence - Licensing the procured software as open source

**Short description**

The “European Union Public Licence” (EUPL) is the first European Free/Open Source Software (F/OSS) licence. It has been created on the initiative of the European Commission. It is now approved by the European Commission in 22 official languages of the European Union.

These Practical Guidelines will provide information on:
- how to use software distributed under the “European Union Public Licence” (EUPL), and
- how to use this licence to distribute your own software.

The guidelines are intended for those who:
- wish to use software that has been published under the EUPL;
- own rights to software and are considering the EUPL as the licence of choice for its distribution;
- are starting to develop software, might integrate the EUPL licensed software and want to release the product under the EUPL or another F/OSS licence.

It should raise awareness concerning the opportunities of Free/Open Source distribution and encourage all relevant stakeholders to follow this example.

**Key points**

- The EUPL licence is a tool to facilitate resource optimisation and sharing.

**Potential benefits**

- Reinforce legal interoperability through the adoption of a common framework
### 4.7.8.2. OpenPEPPOL & the avoidance of lock-in

**Short description**

The OpenPEPPOL project was run by a consortium of 16 countries and it originated from the European Commission CIP funding programme. The vision was to enable business to communicate electronically with European government institutions in the tendering process in order to reap benefits in term of efficiency and cost reduction.

OpenPEPPOL project was designed to come up with solution specifications to different phases of the procurement process, from the process of entering into contract in the public procurement legislation to the actual ordering up to the invoicing and payment phase. The biggest result was in the post-award phase but some also in the pre-award domain.

Solutions are based on the interoperability framework and PEPPOL solutions and specifications operate within a legal and political environment to ensure semantic and technical interoperability. PEPPOL relies on standards from OASIS and other sources.

The biggest success in the Norwegian national implementation of eProcurement solution was in the eInvoicing. The implementation was accomplished as such:

13. Make eInvoicing mandatory for public sector entities;
14. Mandatory use of standard national e-Invoicing format, based on European standardisation;
15. On-boarding of ERP vendors/invoice systems;
16. Decision to use PEPPOL eDelivery network for transport of eInvoices;
17. Establish a national receive capability and address register = SMP/ELMA, also open for private sector;
18. On-boarding of access points through public sector demand;

Web-portals for simplified e-invoicing from SMEs delivered by market.

**Key points**

- Open PEPPOL is a point of reference for organisations that use it, providing users with widely accepted technology standards.
- Business Interoperability Specifications (BIS) for common eProcurement processes are guidelines developed by PEPPOL with the aim to standardise electronic documents exchanged.

**Potential benefits**

- Increase opportunities for greater competition for government contracts and providing better value for tax payers’ money

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**Table 5 Contract Award Notices (CANs) per year**

<table>
<thead>
<tr>
<th>Year</th>
<th># issued CANs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>2,094</td>
</tr>
<tr>
<td>2011</td>
<td>2,484</td>
</tr>
<tr>
<td>2012</td>
<td>2,489</td>
</tr>
</tbody>
</table>

---

**4.7.8.2.1. Participation to tenders**

**Summary box**
Preliminary analysis was conducted to explore the participation to tenders. We looked at the number of participants (offers) and the number of awards per tender. The average number of offers per tender is 4. If we consider as “low competition”, all cases with only one offer, we obtain that about 20% of awards and 27% of notices fall under this category. The worst performing countries in this perspective are Croatia, Latvia, Romania, Slovakia and Poland.

A further step was to extract information on the participation to tenders. A first measure is the number of bidders awarded in each tender\(^{73}\). The vast majority of tender notices only reported one award assigned (11,453 notices, equal to 78% of analysed notices). Furthermore, 98% of notices were associated to a number of awards between 1 and 10: this could be seen both by relating each notice to its awards, and by checking that the count of awards corresponded to the variable “NUMBER_AWARDS”. As expected these numbers corresponded (in fact, as explained in the official codebook, the variable “NUMBER_AWARDS” is “artificially computed”\(^{74}\), thus it required a further check of the validity of the data). The check led to confirm that, in fact, some extreme values were correctly reported: for example, 190 bidders were awarded within tender ID 2014135944.

Another measure of participation to tenders is the number of participants per tender. In order to analyse this, it is useful to look at the variable “NUMBER_OFFERS”: this should include the number of offers received by each tenderer per tender notice. The average number of participants per tender award is 4. This figure has been obtained by multiplying the “NUMBER_OFFERS” variable by the number of unique tender notices that reported such number of offer and then dividing by the number of analysed notices (i.e. 14,538). However, this value is overestimated due to data quality issues. To limit them, a check was performed on all rows with a number of offers higher than 50, matching this information with the number of ID awards and, in some cases, checking directly on the TED archive online. For example, notice ID 2015219526, having 39 awards, had a reported number of offers equal to 135 for each award ID, suggesting that 135 may be the total number of offers for the whole tender, thus the figure could not be multiplied by the number of awards. On the other hand, the average number of participants risks to be underestimated because of the 3,488 awards (corresponding to 1,932 notices), where the number of offers is either “0” or “not available”, despite tenders were awarded. Therefore, these cases represent a flaw in the quality of the data, as we could not extract the exact impact of offers on tenders.

With these limitations in mind, we still obtained the following data pinpointing at the level of participation in the public ICT procurement (Table 6).

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Awards</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>2,934</td>
</tr>
<tr>
<td>2014</td>
<td>3,165</td>
</tr>
<tr>
<td>2015</td>
<td>1,372</td>
</tr>
<tr>
<td>Total</td>
<td>14,538</td>
</tr>
</tbody>
</table>

\(^{73}\) Variable “NUMBER_AWARDS”.

Looking at the geographical distribution of this data, we found low competition (i.e. tenders with just one offer) to be mostly present in Poland, Germany, France, Lithuania and Latvia, representing all together about 69% of the 5,791 awards that received only one offer. However, this figure slightly changes when looking at the relative incidence of these awards on the total number of issued awards in each country. With this perspective, the worst performing countries are Croatia, Latvia, Romania, Slovakia and Poland.

All these phenomena can be seen in Figure 2, whereby we have calculated the relative incidence of awards with just one offer on the total number of issued awards, by country.

Table 6 Participation to ICT public procurement

| Number of awards where no offer was reported | 65 |
| Number of awards where the number of offer was not reported (=NA) | 3,423 |
| Number of tender notices with low competition (= only 1 offer) | 3,884 |
| Incidence of notices with low competition (= only 1 offer) | 26,7% |
| Number of awards with low competition (= only 1 offer) | 5,791 |
| Incidence of awards with low competition (= only 1 offer) | 20,2% |
| Number of awards where there was among 2 and 135 offers | 19,391 |
| Number of offers per tender notice | 4,04 |
| Number of offers per tender notice | 4,04 |

Source: TED analysis

Figure 2: Incidence of low competition awards in EU28

4.7.8.2.2. Discount rate on initial contract value

A very important measure of the impact of public procurement on markets is the economic value of tenders. When considering this, the attempt to derive any monetary measure from the dataset is rather complex, as already acknowledged by DG GROW in a

75 Extreme values were checked and coded as NA when it was impossible to derive any other indicators on their actual value (e.g. 2011 in correspondence of ID notice 2012178569).
report in 2015\textsuperscript{76}. This is due to a number of data quality problems, especially the lack of any value in a considerable number of tenders. Only 10.154 out of 28.670 awards (35,4\%) present both a non-null figure in the “estimated value” of the contract (i.e. the initial value set in the tender by the contracting authority) and a non-null amount of the “total final value” of the contract (i.e. the value requested to the awarded contractor). Moreover, 5.511 awards show a value lower than the lowest threshold set by the EU Directive (i.e. €134.000), and some outliers appear to have very high or very low nonsensical values, for example over 500 million euros or under 1.000€. As a result of these data quality issues, no relevant statistic could be derived. It is in the scope of a current ongoing EC project to develop a new methodology that can provide a better estimate of the value of the contracts recorded in the TED database\textsuperscript{77}. In this regard, it would be interesting to compute the discount rate between estimated and final values for a wider database of tenders, in order to explore the effect of tenders on competition as affected by the relation between openness and decreased prices.

4.7.8.3. Results on vendor search

As mentioned before, one of the main aims of this study was to understand the impact of open procurement standards and the lock-in phenomenon. Our algorithm shed light on this evaluation, searching for mentions to specific vendors within the tenders, which can be considered as an indicator of limited competition.

The main measures that could be derived were:

- Reference to trademarks, relative to all tenders, by year
- References to trademarks relative to all country-specific tenders
- Top recurring vendors, by country and as a whole.

These indicators can provide information on whether competition is distorted by the explicit mention of a certain technology or vendor (thus limiting the chances for other solution providers), also reporting about the infringement of the European Directive about open procurement. \textbf{Even if these indicators alone cannot be considered as ultimate measures of the openness level of ICT procurement, they can be thought as good proxies, since the use of ICT standards provides evidence of compliance with EU Public Procurement directives.} As such, brand names should not be used

\textsuperscript{76} DG GROW G4 (2015), Public Procurement Indicators 2013. The report attempted an estimation of the public procurement market considering all tenders, both above and below the thresholds established in Directive 2014/24/EC, mostly encountering the same issues described here for what concerns the tenders in the TED database.

\textsuperscript{77} EC Economic and Statistical Working Group (2014), Modification of the Methodology to Estimate the Value of Procurement Published in OJ/TED.
when writing technical specifications and tenders, which would lead in turn to an expected low number of references to trademarks.

The algorithm developed in R for our analysis initially extracted 5,959 references to trademarks. The removal of duplicates (i.e. keeping only one row for each tender notice and vendor) resulted in 2,657 mentions, on which the quality check was performed. First, irrelevant extractions were removed, and the dataset further reduced to 2,620 rows\(^{78}\). Secondly, instances were classified as explained in section 4.5.8.2.1, to avoid counting references not being mentioned for the sake of procurement needs. Thirdly, the number of actual contra-legem quotations of vendors resulted in 2,469. As previously mentioned, one tender may contain more than one reference. As such, the references extracted correspond to 1,726 contra-legem unique tenders, equal to 11,9% of all tenders analysed.

On average, 1,43 vendors are mentioned in each contra-legem tender, and 23% of these tenders contain more than one mention (that is, 395 out of 1,726). References range from one to 24 different occurrences within the same tender.

Over the list of 293 possible vendors that had been searched\(^{79}\), 188 were found; this applies both to tenders that were written in Latin alphabets, as well as in those written in Greek or Cyrillic: indeed vendors were found to be written with their original Latin spelling.

\textit{4.7.8.3.1. Reference to trademarks, relative to all tenders, by year}

Figure 3 shows the yearly breakdown of tender notices containing direct references to trademarks. We have shown both the count of references and the relative measure of contra-legem notices to all notices issued in the same year. The occurrence of explicit mentions is relative low and rather stable. Although the number of contra-legem tenders has seen an increase over the past 5 years, this is partly related to the increase of the number of tenders issued in the EU28.

Moreover, 2014 shows a relative reduction of contra-legem tenders, from 13,2 % in 2013 to 11,8% in 2014, stable in the first term of 2015. This indicator highlights that European public entities procuring for ICT products and services are slightly improving even if much has still to be done.

\textit{Figure 3: Number of contra-legem mentions, and incidence of contra-legem tenders on total tenders, by year}

\(^{78}\) DG CONNECT will be provided with a dataset called "Dataset_TED\_vendor\_search\_final", including all the analyses specified in section 4.7.8.3.

\(^{79}\) Please, refer to Appendix 2 for the complete list.
4.7.8.3.2. References to trademarks by country

When looking at the figures in depth, it is useful to consider the countries in which contra-legem tenders were issued. Figure 4 shows the breakdown of contra-legem tender notices by country, as well as the number of references: out of the 28 European countries under scrutiny, 83% of the violations have been found in the first 10 countries enlisted in the graph, among which there are 5 founding members (all but Luxembourg), as well as the 2 countries outside the Monetary Union, namely the UK and Denmark). This suggests that the compliance with European regulation on public procurement is unlikely to be directly influenced by the length of the commitment of countries within the European Union. It is also interesting to notice that only Malta was never found to be non-compliant.

Figure 4: Contra-legem mentions and tenders by country
The overall number of violations in these countries is influenced by the following factors:

- Size of the economy: it is obvious that the larger the economy, the greater the number of published tenders, thus the chance of finding more contra-legem tenders in absolute numbers.
- Number of issued tenders: France, Poland and Germany are by far the countries which have issued the highest number of tenders during the analysed period, thus again increasing the chance to have mentioned a specific vendor.

In order to control these effects on the results,
Figure 5 shows a measure of contra-legem tenders relative to all the tenders issued in the respective countries. Of note, with this perspective the 10 countries that have the highest incidence differ from the previous consideration. Germany slides to the second place, whereas Croatia, which was not in the top 10 when considering the count of contra-legem tenders, is the worst performing in relative terms. This figure gives a better understanding of those countries that have contravened regulations the most. Appendix 5 gives the complete overview of these phenomena for each country.
Figure 5: Incidence of contra-legem tenders on all tenders issued, by country.

Table 7 shows the distribution by CPV. With this perspective, it is possible to identify which area should receive the greatest attention in the context of monitoring system. In fact, only 5 of the 21 CPVs under analysis contain 98% of the trademark references. However, this figure is influenced by the fact that some CPV codes have a wider scope (i.e. those for divisions, such as 48000000), while others are more precise (e.g. 30230000). In order to correct this phenomenon, some quality check should be done prior to the publication of the tender, so that to make the use of CPV efficient through the categorisation of the type of products or services requested. This would also facilitate the match between demand and offer in the market for procurement since entities could have a more detailed specification about the subject of the notice.

Table 7 Incidence of contra-legem tenders by CPV

<table>
<thead>
<tr>
<th>CPV</th>
<th>Number of contra-legem tenders</th>
</tr>
</thead>
<tbody>
<tr>
<td>48000000</td>
<td>743</td>
</tr>
<tr>
<td>72000000</td>
<td>610</td>
</tr>
<tr>
<td>30200000</td>
<td>185</td>
</tr>
<tr>
<td>30230000</td>
<td>81</td>
</tr>
<tr>
<td>30210000</td>
<td>57</td>
</tr>
<tr>
<td>48100000</td>
<td>22</td>
</tr>
<tr>
<td>48190000</td>
<td>11</td>
</tr>
<tr>
<td>72100000</td>
<td>5</td>
</tr>
<tr>
<td>48180000</td>
<td>3</td>
</tr>
<tr>
<td>72150000</td>
<td>2</td>
</tr>
<tr>
<td>48150000</td>
<td>2</td>
</tr>
<tr>
<td>48110000</td>
<td>1</td>
</tr>
<tr>
<td>72130000</td>
<td>1</td>
</tr>
<tr>
<td>72110000</td>
<td>1</td>
</tr>
<tr>
<td>72140000</td>
<td>1</td>
</tr>
<tr>
<td>72120000</td>
<td>1</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>1,726</strong></td>
</tr>
</tbody>
</table>

Source: TED analysis
4.7.8.3.3. **Top recurring vendors, by country and as a whole**

In terms of which vendors appear more frequently in the tenders, the most popular brands are unsurprisingly at the top. Microsoft appeared 491 times, accounting for 19.9% of all mentions, followed by SAP, Oracle and Windows (Figure 7: Top 20 brands by mention frequency in contra legem tenders).

Figure 8 also shows how these mentions distribute among the 10 worst performing countries.

**Figure 7: Top 20 brands by mention frequency in contra legem tenders**

<table>
<thead>
<tr>
<th>Brand</th>
<th>Frequency</th>
<th>Brand</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft</td>
<td>491 (19.9%)</td>
<td>Cisco</td>
<td>43 (1.7%)</td>
</tr>
<tr>
<td>SAP</td>
<td>269 (10.9%)</td>
<td>Mac</td>
<td>41 (1.7%)</td>
</tr>
<tr>
<td>Oracle</td>
<td>222 (9%)</td>
<td>Apple</td>
<td>37 (1.5%)</td>
</tr>
<tr>
<td>Windows</td>
<td>203 (8.2%)</td>
<td>Adobe</td>
<td>34 (1.4%)</td>
</tr>
<tr>
<td>IBM</td>
<td>138 (5.6%)</td>
<td>Microsoft Office</td>
<td>34 (1.4%)</td>
</tr>
<tr>
<td>Linux</td>
<td>76 (3.1%)</td>
<td>EMC</td>
<td>25 (1%)</td>
</tr>
<tr>
<td>VMware</td>
<td>75 (3%)</td>
<td>SAS</td>
<td>24 (1%)</td>
</tr>
<tr>
<td>HP</td>
<td>67 (2.7%)</td>
<td>MS Office</td>
<td>23 (0.9%)</td>
</tr>
<tr>
<td>SharePoint</td>
<td>63 (2.5%)</td>
<td>Esri</td>
<td>22 (0.9%)</td>
</tr>
<tr>
<td>Citrix</td>
<td>45 (1.8%)</td>
<td>Lotus</td>
<td>22 (0.9%)</td>
</tr>
</tbody>
</table>

Source: TED analysis
4.7.8.3.4. Analysis by contracting authorities

In order to expand the insight with respect to the previous analysis, we have hereby included two further perspectives on the data taken into consideration.

Firstly, it can be useful to look at what type of contracting authorities issued the majority of contra-legem tenders. The types of authorities issuing the tenders can be found in the dataset in the field "cae_type". There are 8 types of issuers: Central governments, local authorities, authorities belonging to the water, energy, transport and telecommunications sectors, bodies governed by public law, national or federal Agencies/Offices, regional or local Agencies/Offices and Other or Not specified authorities. Figure 9 shows the distribution of contra-legem tenders among these institutions.
Figure 9: Contra-legem tenders by Contracting Authority type

![Pie chart showing the distribution of contra-legem tenders by authority type.]

Source: TED analysis

It can be noted that the majority of non-compliant tenders are issued by either bodies governed by public law or central governments. Although this can be a useful input for the monitoring system in terms of which authorities to concentrate on, it needs to be noted that the distribution is also highly dependent on the number of tenders each type of authority issues in total. In turn, depends also on the size of the different groups (especially for the group "other", which could contain a considerable number of authorities that do not belong to any of the other groups, or contrarily could contain the same authorities previously mentioned that did not select the right classification when submitting the notice). Even considering these indicators, it emerged that 14.3% and 13.3% of the tenders issued respectively by central governments and body governed by public law are contra-legem; interestingly this incidence is higher for the water, energy, transport and telecommunications sectors, having 19% of their tenders with lock-in instances.

4.7.8.4. Comparison with previous studies

This study on European ICT procurement is not the first of its kind. One of the prominent works on the matter are the OFE Procurement Monitoring Reports. Their reports show similar analysis to that performed in the current study, although there are some differences, mainly in terms of scope: to discuss them, we will refer to the most recent available report, issued in 2014.

Firstly, the most recent OFE report had a 3-month timeframe, namely from April to June 2014, whereas our analysis was performed on the last 6 years. Secondly, the scope of the analysis in terms of CPV considered is also wider in the current work, as the OFE report excluded the purchase of supplies other than software packages, and the execution of works or the provision of services, thus it considered solely the CPV code 48000000.

On the other hand, there are similar features between the two studies, which make the comparison possible. First of all both analyses were done using tender notices (instead of
awards) to search for vendor names. Moreover, both studies differentiate between types of mentions, to avoid misrepresentations of references which were quoted for reasons other than the lock-in.

Another interesting study was published by Europe Economics in 2012, also investigating ICT public procurement, its openness to competition and the compliance of tender issuers to regulations. The part of this study conducted on the TED database followed another approach. The analysis was conducted in depth, and the results are mainly descriptive and qualitative. It investigated the whole content of tender, including technical specifications, requests for compatibility or interoperability, the use of standards, etc. However, the study considered a very limited number of tenders (32) from only 6 countries, thus the results are hardly representative of the whole ICT procurement phenomenon. Nonetheless, the depth of the analysis allowed a better understanding of the tenders, thus a greater degree of understanding of the motives and mechanisms behind the mention of brand names in tenders. Of note, this study confirms the observation made by the OFE that an explicit mention of a brand name is not an exhaustive indicator of lock-in cases, as some technical specifications might be so specific that they impair competition de facto although no brand is quoted.

In the European Economics report, it is interesting to notice that the majority of tenders examined was found to contain brand names for compatibility reasons (25 tender out of 32), whereas the mention of vendors aimed at requiring a specific technology was a considerably smaller portion (11 tenders out of 32). Although the results cannot be effectively compared with our analysis, it is likely that an in-depth analysis of the tenders’ content may unveil different insights and results than those obtained solely from the summaries available in the TED database. This observation makes improvements of the analysis presented in this document possible. However, the scope of the requested analysis (i.e. statistical analysis on the TED database), as well as budget constraints, prevented to further explore all available material on top of the record included in the TED dataset. That said, the quality check has given insights on the semantic content of each description, overcoming any possible limitations related to the usage of a text mining approach only.

Indeed, the aim of our analysis was to provide a light measurement model and a replicable methodology that allows including a great number of tenders, thus being more representative. Thanks to the effective algorithm that has been developed, it is possible to consider the expansion of the investigation in the future (e.g. including more vendor names, including relevant key words). A more precise analysis that also explore the whole content of tenders may contribute to the results elaborated from the TED database. This would allow a better understanding of the lock-in phenomenon, especially if it was to be performed on those countries or sectors that at first sight seem to be the least complying.
4.7.8.5. Lessons learned

The analysis just exposed is part of the Task 4 of this project, aims at building a light and effective monitoring system, consisting of a methodology that the European Commission will be able to use to replicate the analyses (both the preliminary analysis needed to explore the content and the vendor search using a text mining algorithm). Despite a limited budget, it was possible to derive a number of insights from the data enclosed in the TED database and to overcome some limitations initially encountered in a previous run of a similar analysis (e.g. mainly related a restricted geographic coverage and the impossibility to deal with all EU languages). To this end, the scope of the analysis has been enlarged, including all Member States and dealing with all EU languages and any problems related to semantic mismatch were overcome thanks to a quality check performed by the PwC international network. Therefore, this is a light and effective monitoring system at disposal of the DG CONNECT to screen a good number of tenders, develop further analyses and periodically update those presented here. Indeed, despite some problems in the data quality of the information enclosed in the TED database, the employed methodology guarantees solid results, based on statistical analysis, blended with qualitative insights coming from the quality check.

Nonetheless, some recommendations may be drawn from the analysis hereby presented to support the European Commission in its aim of reducing lock-in and fostering competition, as well as to further improve the future analyses. Recommendations may be clustered into two main areas:

- **Functional recommendations**: aiming at further extending what was analysed hereby
- **General recommendations**: addressing some limitations related to the data quality of the TED database

**TED Analysis - Functional recommendations:**

- A wider CPV and geographical scope could extend the scope of the analysis
  
  As far as the possibility to further improve this methodology, some extensions could be implemented in the future. For instance, the scope of analysis could be extended to more CPVs or the search of the selected CPVs could be applied to the "Additional CPV" variables, rather than to the main one only. The analysis could also be extended by including all authorities and countries (i.e. EU institutions, Iceland, Norway). This could provide the European Commission with further material to get an even more complete picture of the actual total phenomenon of ICT tenders procedures taking place across Europe.

- Textual analyses on tenders become more flexible, thanks to the application of a text mining algorithm
  
  The use of a text mining algorithm simplifies the most relevant part of the analysis, allowing flexibility and the possibility to modify its extent, provided the implementation of wished changes (e.g. the list of inputs to be considered by the algorithm should be redefined, the area where to search could be modified to include other text fields if needed etc.). For instance it could be possible to apply the text mining algorithm to whole texts of tenders (instead of their summaries only), after creating a dataset enclosing all information that should be analysed. Another extension could be to
include all other vendors found during in the quality check phase (reported in Annex 6), remembering that no list could be fully exhaustive.

A “parallel” search to the one run hereby could search for key words, possibly giving insights on the adoption of best practices and thus providing another perspective to the analysed matter (still using the same algorithm adapted to enclose the new words to be searched). This would thus require to translate any relevant word in all EU languages, taking care of the management of all linguistic elements that may change a word, such as suffixes for plural, genders etc. for languages that have these variable structures (if not considered, the algorithm would extract much less than it should). Without claiming to be complete, words could be taken from the semantic domains of Compatibility, Data migration strategy, Interoperability, License, ODF (Open Document Format for Office Applications), OIO Catalogue, Open documents, Open source, Open standards, OSLO specification, OSLO Vocabulary, Platform independence, Reasonable and non-discriminatory terms” (RAND), Reusability.

- In-depth, qualitative analyses could provide the European Commission with further insights

Finally, any quantitative analysis could be improved by adding some qualitative insights, by exploring the whole content of tenders, rather than just the summarized description available in the TED database. This would allow a better understanding of the lock-in phenomenon, especially if it was to be performed on those countries or sectors that at first sight seem to be the least complying.

- Some intrinsic limitations of the TED database could still underestimate the phenomenon of ICT lock-in

All considered, it should also be taken into consideration by the DG CONNECT that there may be other sources of underestimation of the lock-in phenomenon due to the obligations themselves: in fact as mentioned in the introduction, the TED dataset contains tenders above certain value thresholds. Therefore, besides possibly limiting the analysis in terms of overall competitiveness of the ICT public procurement market, this limitation may also have distorted the results on a country-specific basis. As such, the countries’ average size of tenders is an important factor. For example, in Sweden almost all software purchases are done through framework agreements with numerous mini-competitions among software suppliers. This means that no mini-competition, with a monetary value below the European threshold, is taken into consideration by this monitoring system. Further, the UK Government is making a slow transition toward the purchase of ICT products through smaller purchases as a way to foster the competition between SMEs and multinational companies. This may translate into a limitation of any study, since many below-threshold cases may not be taken into account, not being present in the TED database. Moreover, it should be reminded that any algorithm alone cannot ensure a reliable result, without adding a multi-linguistic quality check that the European Commission could certainly put in place, thanks to the linguistic variety of its employees.
TED Analysis - General recommendations concerning data quality

- The first goal is to ensure data quality of the TED database
  As far as the technical domain is concerned, it could be important to tackle issues of data quality of the TED database, by establishing some sort of controlling unit at institutional level to check the accuracy of data provided by tenderers in the registering phase into TED. It would be advisable to perform some data cleaning regularly to maintain the TED database with an acceptable degree of reliability, since its content is an important source of information that may be exploited to effectively derive indicators on the public procurement processes, as well as their results and their alignment to the EU laws.

- Automatic rules could gather more reliable results in the submission phase of the tenders
  Some technical improvements can be applied to the IT systems regulating the functioning on the TED submission form: some automatic rule should be imposed to avoid any submission missing relevant information to dramatically reduce the presence of blank and null values. Some other rules could be instead created to check automatically the accuracy of the submitted information (e.g. send a pop-up message when the value is below or too above the thresholds to ensure that there is no typo; mandate that the "Main CPV" is at the "division" level and the other "Additional CPV" variables are at lower levels, such as "groups", "classes" or "categories").
4.7.9. **Survey Results’ analysis**

4.7.9.1. **Methodology**

As a second source of information, a survey was designed and implemented in order to help gather some insights towards aspects related to the procurement of ICT products and services in Europe such as perceptions, knowledge and past experiences of stakeholders about ICT lock-in. These topics are also important in the construction of a light and effective monitoring system to be maintained in order to evaluate the achievements of the project and of the general aims and take actions to correct distortions or noncompliance.

The survey was realized using an advanced version of Qualtrics (http://www.qualtrics.com/), developed for PwC. This tool allows to design and distribute online surveys, as well as to collect and analyse the results easily and effectively.

The survey was produced in English and Italian, completed by 117 respondents coming from 25 different Member States, working for 109 different public and private entities, ensuring a good level of representativeness.\(^\text{80}\). This survey was implemented between February and March 2015. Moreover, a quality assessment of the answers was also done to exclude inconsistent answers\(^\text{81}\), prior to the analysis.

4.7.9.2. **Results**

4.7.9.2.1. **Characteristics of respondents**

**Summary box**

This analysis surveyed 117 professionals from 25 European countries, holding different roles in the procurement area within 109 public and private organisations, whose expenditure for ICT goods and services covers a wide range (while being polarised). More operative roles showed a higher participation at the survey, showing how this topic is relevant for them, despite the confirmation that the new European Directive is still not widely known.

**Wide coverage of countries and organisations**

As anticipated in section 4.7.9.1, the survey was completed by 117 respondents from 25 different Member States (all but Luxembourg, Estonia and Hungary), with a high representation of Latvia, followed by Italy and the Netherlands (see Figure 10); respondents work for 109 different public and private entities, whose relative distribution is shown in Figure 11. Almost a third of the sample worked for Central Governments, reflecting the importance of the procurement topic for them, whereas only 3% came

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\(^\text{80}\) Requirements asked to reach stakeholders from at least 25 EU countries, working for at least 7 different types of organisations and covering the 6 professional roles specified in “The Guide: Using standards for ICT procurement”.

\(^\text{81}\) As an example, the same respondent declared “my yearly expenditure is below 50.000€”, while saying at the same time that “a good part of my expenditure is above EU threshold” which is more than 50.000€. Others chose affirmative answers to close-ended questions, while explaining that they did exactly the opposite compared to what they affirmed in the previous question.
instead from any national Central Purchasing Body, highlighting that these entities are not much widespread yet.

**Figure 10: Respondents distribution by country**

Source: survey, question 2 (based on 117 respondents)

**Figure 11: Respondents by organisation type**

Source: survey, question 3 (based on 117 respondents)

Skewed distribution of respondents towards operative roles

The respondents of the survey work for a wide variety of organisations covering a number of professional roles, both those defined in “The Guide: Using standards for
ICT procurement\textsuperscript{82}, and other positions involved in the procurement area (see Figure 12).

The highest level of response was obtained from Procurement Practitioners (i.e. who purchase goods and services for public authorities and write specifications, engage the market and manage the procurement process leading to a contract; their response rate was 38\%), followed by Senior Managers (i.e. who are accountable for expenditure, strategy and delivering their organisations’ objectives, therefore the main influencers on how effectively open standards will be used; they represent 19\% of the sampled responses) and Technical Architects (i.e. who design technical solutions to business problems, determining the IT architecture and solving interoperable issues; they are 9\% of the sample).

Standard setters (i.e. who define what standards are to be used in a country, region or authority) and Strategists (i.e. who determine the technology and digital strategies in line with an overarching business strategy) represented 6\% of the sample each. Finally, only 1\% of the sample is represented by business case authors (i.e. who assess the costs, benefits, advantages and disadvantages of certain initiatives, such as an IT project, and act as consultants to the management team to decide on investments within an organisation). However, a certain percentage in the “other” group could be added here since there are some consultants who may ultimately be considered business authors. Especially these stakeholders in higher-level positions should be involved as much as possible as they can contribute significantly to the outcomes and the realisation of European objectives.

Among “Others” (21\%), there are some professionals from the IT sector, such as a CIO and some IT administrators, as well as some stakeholders in relevant positions, such as Project Managers, Principals and administrators working in the public procurement area (or advising public authorities).

\textbf{Figure 12: Respondents by professional role}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{respondents_by_role.png}
\caption{Respondents by professional role}
\end{figure}

\textit{Source: survey, question 4 (based on 117 respondents)}

\textsuperscript{82} www.openictprocurement.eu
**ICT expenditure among organisations is polarised**

In the respondents’ answers, it seems that the expenditure for procurement for ICT goods and services is polarised: indeed 42% of organisations spend more than one million €, while 33% only spend less than 50.000€. This information can be matched with the percentage amount exceeding the European thresholds; among those who replied “less than 50.000€”, 12% of answers were not reliable since they claimed to have spent more than the thresholds, while saying that they spent less than 50.000€ (which is, in turn, far less than these thresholds). Figure 13 shows that, for instance, among those who spent between 500.001€ and 750.000 €, seven organisations claimed that 20% of their expenditure is higher than the European thresholds, while for one organisation, up to 40% of its expenditure for ICT exceeded the thresholds. Finally, in three organisations more than half of their expenditure was higher than the thresholds.

**Figure 13: Distribution of ICT expenditure per goods and services and % of expenditure above EU thresholds.**

Source: survey, questions 5 & 6 (based on 117 respondents)

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83 See section 4.4.1.1 for more details on the thresholds.
The new Directive on procurement is still not widely known

As a general comment, the level of awareness of the new procurement Directive (i.e. Dir. 2014/24/EU, replacing Dir. 2004/18/EC) could be more satisfactory. When asked if respondents are aware of the upcoming changes (namely that “electronic communication/e-procurement will become mandatory and all contracting authorities shall use electronic means of communication generally available and fully interoperable”), only 56% of the sample declared to know something about it, even though its provisions will strongly impact the way these administrations will have to perform their procurement activities from 2018 onwards. There is a strong need for dissemination activities, as well as some incentives to take actions on time, in order to be fully compliant by 2018.

4.7.9.2.2. ICT lock-in awareness

Summary box

ICT lock-in is a widely known concept, whose negative implications have been experienced by almost half of the sampled respondents. Its main alleged causes are the lack of interoperability, the lack of compatibility as well as high switching costs. Some countermeasures have been implemented, primarily the adoption of open source and open standards and the creation of some guidelines.

ICT lock-in is a known problem

A satisfactory level of knowledge about ICT lock-in has been registered (65 % of the sample declared to have heard about it), even if there is no clear consensus on its definition. In fact ICT lock-in is a situation of dependency on a specific vendor, when this is the only one providing a certain product/service, or when its IT solutions are not interoperable with other products, in turn leading to high transition costs (from the existing technology to another one, not only in monetary terms, but also in cognitive terms).

The answers of respondents about ICT lock-in showed that the alleged causes can be categorized in three main clusters, making migration of data and dialogue with other entities too complex or lengthy to bring other providers in:

- Lack of interoperability;
- Lack of compatibility with existing tailored-made solutions;
- High switching costs (either in the form of non-amortised investments previously done, or in the form of actual transition costs for the design and implementation of new solutions, not to mention the psychological costs of learning new tools and win the resistance to change).

The lock-in status is described by respondents as a “de facto monopoly”, bringing about “technical or commercial challenges” which impose “legacy systems”; this situation makes respondents “almost feel powerless to question any alternative” also pointing at the possible lack of motivation of business users, who tend to oppose changes to avoid initial inconvenience of learning new tools and processes. A respondent also pointed out that there is “no objective measure” to define ICT lock-in and there were some wrong

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84 Source: survey, question 24 (based on 117 respondents).
85 Source: survey, question 7 (based on 117 respondents).
definitions: in fact, the European Commission should probably insists more on the concept, as well as on its bad implications on the market and its agents.

42% of the sample experienced ICT "lock-in" (these percentage raises at 52%, when considering those who know what ICT lock-in means). Many examples are mentioned in the questionnaires: first of all, there is a high occurrence of the most renowned vendors’ names (e.g. Microsoft, Oracle, SAP, IBM, BlackBerry), followed by some quotations about more specific tools such as Visual FoxPro, AIX products, MS Lync or some Content Management System for web applications. Other examples of negative experiences were explained: all of these turn around lack of needed documentation, lack of control over the code or over the access authorisation rights, also due to the IP rights that contractually hampered any change or further customisation.

A high variety of countermeasures to tackle ICT lock-in has emerged, as it can be seen from Figure 14. The most used method is "to define ICT strategies and architectures on open source and open standards": many examples are mentioned by respondents, such as the Italian Digital Administration Code (DAC), according to whom Consip can acquire computer programs, or parts, in accordance with the principles of economy and efficiency, investment protection, reuse and technological neutrality. Other respondents specified that there exist internal legal guidelines ensuring the handle of IT modular solutions and the guarantee of interoperability and cooperation among systems, portability of the solution on other platforms, reusability of the solution, as well as information security. There is also evidence of some studies on best of breed Public eProcurement Solutions in different implementation scenarios. Another measure used very often is the definition of a list of standards and technical specifications and guidelines. For example, in Sweden new framework agreements for the public sector were created, which makes it cumbersome to procure non-open standards and non-open source software. Other respondents claimed that they get informed about standards by attending conferences or by reading papers. Someone else felt that there are only two or three international standards really describing goods and services sufficiently well: this answer reminds that the European Union should examine the available standards, to promote them more in the contexts where they could be useful. Training initiatives and the adoption of external consultants were also chosen by a number of respondents as possible countermeasures to the risk (or the occurrence) of ICT lock-in. Finally, it is important to remark that defining needs clearly, as well as long term strategies can help organisations to find the most adequate measures to fight ICT lock-in.

In this respect, it is useful to mention that a virtuous circle of good practices should be made real to help organisations to free from ICT lock-in, by leveraging on other organisations’ experiences. However so far the vast majority of respondents are not aware of any successful initiative (see also section 4.7.9.2.4).

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86 Source: survey, question 8 (based on 117 respondents).
87 Source: survey, question 9 (based on 117 respondents).
4.7.9.2.3. ICT procurement current practices

Summary box
80% of the sample prefers open procedures when procuring ICT goods and services. Cost considerations, quality control concerns, supplier's expertise and the need of direct control are driving factors behind "make-or-buy" decisions, and the respondents show a relevant need for procurement experts. The "use of templates and standards clauses" is limited, while the habit of dealing with "license agreements before contract award" is common. The avoidance of lock-in is not perceived as an important goal and there is no intention to "ensure provider turnover", calling for an urgent corrective action from the European authorities.

Open procedures dominate the ICT procurement

Open procedures are the most used method when procuring ICT products and services, chosen by 80% of the sample while the other types of procedures are equally preferred, as shown in Figure 15.
It is conspicuous\(^88\) that different procedures are chosen for different reasons. For instance, restricted procedures are preferred when procuring services requiring special features provided by one operator only (military purposes, personal data protection, public connectivity services, specific activities in strategic sites ...), as well as when too many vendors could be involved. On the contrary, negotiated procedures more appropriate in the case of time boundaries, or a supplier’s services uniqueness. Finally, there were some opposite comments on competitive dialogue: in fact, someone claimed that they engaged in it for reasons related to cost effectiveness reasons, while other stakeholders explicitly said that they did not choose it because it was perceived as non-cost-effective. By analysing all comments, it appears that participants to the survey did not have a unanimous understanding about the peculiarities of each procedure, so it is advisable to stress more on the different meaning.

**Cost and quality as main drivers**

Cost considerations, quality control concerns, supplier’s expertise and the need of direct control are driving factors behind "make-or-buy" decisions\(^89\) (see Figure 16). Similarly, these factors should be used as "motivational drivers" to promote the adoption of ICT standards that indeed support the cost reduction and ensure a good level of quality.

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\(^{88}\) Source: survey, question 10 (based on 117 respondents).

\(^{89}\) Source: survey, question 11 (based on 117 respondents).
Respondents choosing “other” drivers mentioned primarily the lack of internal ICT capacity ex ante preventing any make-or-buy choice. Such a decision is not an option also for those organisations committed to long-term framework agreements with specific vendors.

**Procurement expertise is felt as necessary**

Over 60% of the sample relies on internal experts to secure high technical quality of their procurement\(^\text{90}\), as shown in Figure 17. When these are not available, external consultants together with employee trainings are felt as the solution; a worrisome 20% of the sample openly admitted that they did not take any action, also for budgeting reasons: this suggests that the European Commission should take more actions in order to ensure compliance with rules and possibly guarantee some incentives. Training sessions should also be organised. Interestingly, a respondent claimed “properly executed procurement should not require IT expertise but a clear statement of desired outcome”, moving the attention on functional requirements, instead of on technical requirements. Those who selected “other” measures mostly relied on self-education, market research and benchmarking. Another respondent denounced the lack of an adequate training for civil servants involved in public procurement in Finland.

\(^{90}\) Source: survey, question 12 (based on 117 respondents).
Figure 17: Control measures on IT and legal capabilities of procurement teams

Templates & standards clauses are rarely used

A limited number of respondents used "templates and standard clauses" in their tendering documentation (only 17%)[91]. Nevertheless, those who used them, considered them very effective: indeed they claimed that they are "efficient and motivating for informal learning", "helpful", "effective", "but tough to monitor and enforce".

Good practices and its benefits should be stressed in order to push others to adopt it; the European Commission should also provide more templates in an attempt of simplification. In general, organisations pertaining to our sample largely agreed on the importance of dealing with license agreements since the beginning of the procurement procedure (86%)[92]. Noteworthy, the small number of respondents who did not take them into account spend less than € 50.000 each year.

Forward-looking but individual rationales are in place when procuring ICT

Half of the sample considered migration and exit costs before awarding ICT tenders[93], according to the "product life-cycle costing" methodology introduced by the new Public procurement Directive. This percentage is expected to increase over the upcoming years with the full adoption of the Directive 24/2014 in all Member States. Among those who did not take exit and migration costs into account, the worst performers are the "Procurement Practitioners" and, more interestingly, "Standard Setters" and "Senior Managers". Training and education is thus needed.

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[91] Source: survey, question 13 (based on 117 respondents).
[92] Source: survey, question 14 (based on 117 respondents).
Moreover, it is interesting to understand respondents’ perceptions on the relative importance of different objectives, when they procure ICT goods and services. Unsurprisingly, on top of the most important goals, there is the achievement of value for money: gaining an adequate level of quality while keeping an eye on the budget. Secure the project outcomes was also considered very important by most of the respondents. Less than one third of the sample considered maximisation of competition, innovation promotion, and providers’ turnover as very important aims: this can be explained by a general self-concentrated approach by individuals, who tend to focus less on wider societal benefits (such as these latter). Moreover, the providers’ turnover, coupled with the avoidance of ICT lock-in reminds of the possible inconvenience due to switching costs and implications, therefore they appear not to be primary objectives. The avoidance of discriminatory terms and conditions was also considered very important by more than half of the sample, reinforcing again the wish to secure outcomes effectively and with the least disadvantages as possible.

4.7.9.2.4. ICT standards awareness and use

**Summary box**

Standards are still little used, even among those who experienced lock-in. The majority of respondents is not aware of any successful initiative to reduce ICT lock-in and there is an urgent need for dissemination activities at the EU level, as well as training.
Still limited use of ICT standards

35% of the sample never mentioned "ICT standards" in their tendering documentation, 15% rarely used them and 10% used them sometimes. However, 41% of the sample used them often, also because of previous experiences with lock-in; among the standards used, there are ISO, Open Software, ITU, CEN-CENELEC, W3C, and IETF.

The skewed composition of the respondent base towards the most operative roles may partially explain these low results in terms of awareness and adoption of best practices, more likely to be known by higher-level professionals.

A priority: investing in dissemination activities

The analysis of the questionnaires revealed that over 80% of the respondents is not informed about successful initiatives carried out at the European level to avoid ICT lock-in. Those who instead are informed mentioned, among others, the Netherlands (i.e. forumstandaardisatie), the Academic and Research Network of Slovenia, the Alingsås municipality (in Sweden), the Austrian Public Procurement Authority, the Tor Vergata University (in Rome, Italy), NATO, the Munich municipality (in Germany), the Cabinet Office (in the UK), the Germany’s SAGA Committee, the MITA approach to Open Standards (Malta) and the Latvian Information and Communications Technology Association (LIKTA).

The dissemination of the best practices should become an explicit goal at the European level.

40 % of the sample suggested important initiatives to be further investigated: these are summarised in

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94 Source: survey, question 17 (based on 117 respondents).
95 Source: survey, question 18 (based on 117 respondents).
Awareness level of the respondents on useful initiatives

1. I know someone who has prepared lists of recommended standards and other technical specifications
   - Academic and Research Network of Slovenia - ARNES
   - Bitkom
   - Consip
   - eCl@aa
   - forumstandaardisatie.nl
   - Kammarkollegiet in combination with the University of Skövde
   - The Latvian Information and Communications Technology Association
   - NATO
   - UK Cabinet Office
   - Germany’s SAGA Committee

2. I know someone who has realized templates and ready texts to be used in procurement documentation
   - Treasury of the Republic of Cyprus
   - DG INFORMATICS
   - Consip (i.e. the DPS Institute call notice, defining the product category “DPS ICT”, the hardware, software and ICT services. In DPS Consip provides support to the single CA by setting up: product and services characteristics, negotiation model based on the lowest price and the most economic advantageous tender award criteria, standard documentation on procurement in order to facilitate CA to publish and manage the specific procedure, to provide useful indications or support to facilitate the use of ICT procurement standards)
   - eCl@aa
   - forumstandaardisatie.nl
   - Ventspils City Municipality

3. I know someone who has disseminated knowledge on standards and other technical specification
   - BFS
   - eCl@ss
   - CEN
   - forumstandaardisatie.nl
   - LIKTA
   - Latvian Open Technology Association (LATA)
   - OSOR website

4. I know someone who has defined ICT strategies and architectures
   - eCl@ss
   - forumstandaardisatie.nl
   - Maritime National Single window (to support implementation of Directive 2010/65/EU)
   - The Ministry of Finance in Finland
   - OSOR website
   - Ventspils City Municipality, Riga City Municipality

5. I know someone who has written procurement guidelines
   - LIKTA
   - Joinup
   - Latvian ICT associations
   - Rishab Ghosh
   - Patrice-Emmanuel Schmitz
   - Italian Digital Agency (AGID)
   - Latvian Information and Communications Technology Association
   - Ventspils City Municipality
   - Professor Luis Valadares Tavares

6. I know someone who has organized training initiatives on ICT procurement
   - eCl@ss
   - VIP d.o.o. Hrvatska
   - OSOR website

7. I know someone who has evaluated an ICT product or service
   - eCl@ss
   - Ventspils City Municipality

8. I know someone who has organized training initiatives on ICT procurement
   - eCl@ss
   - PJR d.o.o. Hrvatska
   - Latvian Information and Communications Technology Association

9. I know someone who has made long term plans for the evolution of ICT
   - eCl@ss
   - Ventspils City Municipality
   - Siemens
   - Audi
This is to assess whether or not they can contribute to the European Commission fight against lock-in.

**Figure 20: Successful initiatives against ICT lock-in in respondents’ words**

<table>
<thead>
<tr>
<th>Awareness level of the respondents on useful initiatives</th>
<th>Mentioned initiatives</th>
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<tbody>
<tr>
<td>1 I know someone who has prepared lists of recommended standards and other technical specifications</td>
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<td>* Bitkom</td>
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<td>* Consip</td>
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<td>* eCl@ss</td>
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<td></td>
<td>* forumstandaardisatie.nl</td>
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<td></td>
<td>* Kammarkollegiet in combination with the University of Skövde</td>
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* eCl@ss
* PJR d.o.o. Hrvatska
* Latvian Information and Communications Technology Association

9 I know someone who has made long term plans for the evolution of ICT
* eCl@ss
* Ventspils City Municipality
* Siemens
* Audi

1 I know someone who has exactly described our ICT needs
* eCl@ss
* Ventspils City Municipality
* Siemens
* Audi
* Experts working at Vortal

4.7.9.2.5. The Guide – an appraisal

Summary box
A stronger effort to disseminate the Guide should be planned at the EU level, since very few participants read it and find it interesting. The Guide should be made simpler, shorter and with more practical cases, as well as useful material to be used (such as templates, list of standards and legal requirements).

The Guide must be disseminated and simplified

Only 28% of the sample read the Guide\(^{96}\), found it somewhat interesting\(^{97}\) and provided some suggestions to improve it\(^{98}\). Among those who expressed their feedback, it emerged that “The Guide” could improve by:

- Including more case studies (best practises, lessons learned, suggestions on “how to deal with non-trivial situations” etc.)
- Making “The Guide” simpler and shorter
- Including more templates, standards clauses and lists of standards

Central administrations were, as expected, the actors who care the most about ICT lock-in. Indeed, they scored the highest percentage in guidelines and recommendations development.

Moreover, it was suggested to send this Guide to all IT managers in Europe, as well as to translate it into all official European languages. There was also a case of strong criticism from a Strategist, pointing out at the lack of value, accuracy of information and reliance on too many assumptions. Despite being an isolated comment, it can further motivate to improve the quality at the Guide.

Little commitment to define guidelines on ICT procurement

Most of the organisations (65%) did not develop any recommendation guidelines to define how procurement for ICT should be managed\(^{99}\), confirming that a true adoption of standards and of the new Directive is lagging behind. The best players have instead

\(^{96}\) Source: survey, question 20 (based on 117 respondents).
\(^{97}\) Source: survey, question 21 (based on 117 respondents).
\(^{98}\) Source: survey, question 22 (based on 117 respondents).
\(^{99}\) Source: survey, question 23 (based on 117 respondents).
defined a “framework that identifies the difference activities involved in the Vendor Management cycle and the responsibilities across the departments” or internal documentations (such as general “guidelines on how documentation is shared, who owns it”, “guidelines on quality indicators, product life cycles and on the drafting of tender documentation on application services”...). Some respondents limit themselves to apply the national authorities’ guidelines.

4.7.9.2.6. Use of the CAMSS

Summary box
The CAMSS is rarely known and a high effort of information and dissemination is needed to make it useful and effective.

CAMSS is not known yet

The CAMSS (i.e. "Common Assessment Method for Standards and Specifications") is an initiative part of the European Commission's IDABC programme (i.e. Interoperable Delivery of European eGovernment Services to public Administrations, Business and Citizens), aiming to «initiate, support and coordinate the collaboration between volunteer Member States in defining a “Common Assessment Method for Standards and Specifications” and to share the assessment study results for the development of eGovernment services»100. This initiative is not widely known by the respondents and only 3% of them have used it in the past; 61% claimed to be interested in such an initiative, whereas 17% admitted that they are not. Among the possible reasons behind this, someone quoted the too little level of procurement to be worth the investment, someone else mentioned time limitations. A general lack of awareness drove these answers, thus it is important to promote the CAMSS and make it as more known as possible.

Figure 21: Awareness of CAMSS

Source: survey, question 24 (based on 117 respondents)

4.7.9.3. Lessons learned

The analysis of the survey’s results has shown that the **ICT lock-in is a widespread and known problem** among European countries, even though still **too few organisations take explicit effort** to counteract it.

**Knowledge and best practices dissemination need to become a primary goal of the European Commission.**

Indeed, there is still too little awareness about the new Directive 2014/24/EU with its implications calling for many lengthy and sometimes complex adjustments in terms of ICT systems (respecting the 2018 deadline will become harder if no action is taken as soon as possible). Similarly, successful initiatives, as well as the benefits from using open standards and open source products, and the negative implications coming from the ICT lock-in, should become well known by each economic operator, working in the public procurement area. Moreover, CAMMS initiative should be promoted further among Member States: this is why regular some workshops, events and training session should be organised at the European, as well as at the national level (with the support of the European Commission). All this will create a virtuous circle of good practices where everyone will be motivated to take corrective actions, by leveraging on other organisations’ positive experiences.

**Adoption of good practices should leverage on the main motivating drivers, namely cost reduction and quality**

As an overarching topic, the adoption of open standards and open source products must be promoted by stressing on the main motivating drivers, namely cost reduction, quality and direct control the code. Moreover, some dissemination and training activities on the different procedures for ICT procurement are required since they are not perceived as so distinctive.

**“The Guide” needs to be simplified, made more practical and disseminated**

A simplification of “The Guide - Using standards for ICT procurement” is advisable in order to make it more ready-to-use, by adding more practical examples, business cases, templates, lists of standards and legal requirements. Adding ad-hoc sections describing in details how to face and overcome ICT lock-in in situations such as data migration, software incompatibility, and presence of tailored IT solutions is also needed, since these are the problems most frequently mentioned by any Public Administration. The Guide should be published in all European official languages, updated frequently and sent to all the relevant stakeholder.
5. CONCLUSIONS AND RECOMMENDATIONS FOR FOLLOW UP

On the basis of the experience acquired over the 24 months of the Study activities, the following list of recommendations for the European Commission, meant to assure potential follow-up of the actions implemented, can be drawn.

**Face-to-face meetings for the sharing of practices are a good way to encourage public procurers to act**

Knowledge and good practices dissemination need to become one of the primary goals of the Commission’s. As outlined in the 2016 EC Rolling Plan for ICT Standardisation, engagement activities, such as workshops, webinars and easy guides, are of primary importance to foster the effective take-up of ICT standardisation initiatives. For instance, public servants participating to the Study’s workshops all shared the will to implement the practices the just came to know in their own countries. Indeed, the sharing of best practices provides an opportunity of exploiting existing knowledge and it is a good way to inspire and motivate public entities currently experiencing ICT lock-in. Practices should be as practical as possible, in other words “experienced-based”, in order to facilitate retention and their re-use.

**The Joinup Community “Open Standards for ICT Procurement” is well known and should be sustained**

The Joinup community became a reference point for those actors wanting to deepen their knowledge on ICT procurement issues. With the end of the Study, both the Community and its library are exposed to the risk of becoming soon obsolete. Thus, community management efforts should be sustained to increase the core group of stakeholders, attract new members and retain the existing ones. The practices library should be also kept up-to-date and enriched. Without such an effort, the community risks to lose all of its members, especially those who attended almost all the workshops and participated in community’s discussions.

**ICT lock-in is a widespread and known phenomenon in Europe, even though too few public entities are taking action to counteract it**

According to the Study’s survey, 42% of respondents experienced ICT lock-in in their organisations due to i) high switching costs, ii) compatibility and program extension issues and iii) migration of data which makes almost impossible providers’ substitution. A limited number of respondents (35%) has used “templates and standard clauses” in their tendering documentation. Nevertheless, those who used them see them as very effective. When purchasing ICT, the avoidance of lock-in is not perceived as an important goal. “Value for money” and the “assurance of the project outcomes” are top priorities, even if they imply a future lock-in situation. Noteworthy, “ensuring provider turnover” is seen as non-important.

**The light monitoring system developed under the Study demonstrated that the ICT market is still not fully open**

For each ICT tender there are on average four competing bidders, while almost a forth (26%) of the ICT tenders have only one bidder. The averages for open and restricted procedures are higher, indicating that these procedures attract more competition than negotiated procedures. Also framework agreements and joint purchasing attract more bids. Large differences do exists also among Member States. As of 2015, 12,5% of public ICT tenders is not in line with the EU directive on public procurement because contains references to specific trademarks. In relative terms, Croatia, Germany, Luxembourg and Portugal are the worst performing countries.
The adoption of good practices should be leveraged on three motivational drivers

The adoption of open standards and open source products must be fostered by "cost reduction", "quality" and the possibility to have "direct control over the product/code". In particular, to motivate procurers into action, the monetary value of the savings due to "open" products and services should be clear. Without such a value, procurers will not take into serious consideration the problem of lock-in, keeping on procuring as if lock-in situations do not exist. These drivers could also be used to make the Guide more appealing and convincing to prospective users.

The Commission should keep on developing user-friendly Guidelines

The EC should keep on investing in developing visual, didactic, and interactive guidelines for the effective take-up of ICT standardisation initiatives. Guidelines should be practical, by including best practices, lessons learned and suggestions on how to deal with non-trivial situations. They could also include ad-hoc sections covering the situations that most frequently force Public Administrations to go on with their old technology providers. Moreover, the possibility to translate them into other European languages should also be explored, as a way to better assist procurers from non-native English speaking countries.

Build on the Study’s methodology replicating TED analysis

The monitoring system enables the EC to replicate the analysis and evaluate the situation in the European Union in terms of public procurement directives adoption. For example in countries such as Croatia, Germany, Luxembourg and Portugal where the phenomenon of referring to specific brand names is more prevalent. The analysis could be repeated periodically, perhaps extending the scope with an increased number of CPVs, countries and authorities. This could provide the Commission with an even more complete picture on the ICT procurement landscape.

The Commission should stimulate Members States to use TED better

TED provides a comprehensive database of procurement practices in the EU; data about the contracting authorities; the initial and final value of tenders; the number of their lots; the number of offers received per tender; the type of procedures, etc. Unfortunately, as of today, the quality of data contained in the database is limited (missing info, partial info, wrong info, unclear use of CPVs, etc.). The Commission should explore other ways of incentivizing Members States to use TED in a more effective manner.
6. ANNEXES

6.1. COLLECTED BEST PRACTICES

6.1.1. ICT Frameworks and Architectures

6.1.1.1. European Interoperability Framework for European Public Services

**Short description**

The European Interoperability Framework (EIF\(^{101}\)) is one of a series of European initiatives that aims to support the establishment of European public services. The European Interoperability Framework addresses this issue in order to facilitate the interoperability of eGovernment services at pan-European level.

The EIF addresses interoperability in a very specific context of providing European public services. Also it contributes to the better functioning of the internal market by increasing interoperability among European public administrations.

The purpose of the European Interoperability Framework (EIF) is:

- to promote and support the delivery of European public services by fostering cross-border and cross-sectorial interoperability;
- to guide public administrations in their work to provide European public services to businesses and citizens;
- to complement and tie together the various National Interoperability Frameworks (NIFs) at European level.

The EIF provides recommendations that address specific interoperability requirements.

Implementing the recommendations will create an environment conducive to public administrations establishing new European public services.

**Key points**

The document offers a number of key issues:

- Underlying principles (sets out general principles underpinning European).
- Interoperability levels (different interoperability aspects to be addressed).
- Approach to facilitate cooperation among public administrations.
- Interoperability governance (sets out what is needed to ensure interoperability).

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\(^{101}\) EUROPEAN COMMISSION. Interoperability Solutions for European Public Administrations (ISA)
Potential benefits

Public Administrations are encourage to:
- Reuse and share solutions
- Develop a component-based service model
- Establish European public services
6.1.1.2. SIRIP: State Information Resource Interoperability Platform

**Joinup link:**
http://bit.ly/1rlCCHl

**Country:**
Lithuania

**Organisation:**
Information Society Development Committee under the Ministry of Transport and Communications

**Scale:**
- National

**Typology:**
- ICT Frameworks and Architectures

**Relevant for**:
- Business Case Author
- Technical Architect

**External links:**
http://bit.ly/1QAgauV
http://bit.ly/1Y8YMQ9
http://bit.ly/1ktMV0P

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**Short description**

The State Information Resources Interoperability Platform (SIRIP)\(^{102}\) of Lithuania offers an easy way for public authorities to design, deliver and manage e-services. Many e-services can be streamlined and made available in a user friendly one-stop-shop portal to citizens, business entities and civil servants.

The current framework for interoperability in Lithuania is structured around the Public Governance Development Programme 2012-2020 (PGDP)\(^{103}\) and the Law of Management of Government Information Resources that established the legal framework for the SIRIP as well as related legislation. The latter legislation aims to ensure adequate public information resources development, management, administration, use, maintenance, interoperability, planning, financing and safety.

The centralised service system makes it easy to share and re-use eGovernment services. Public administrations add new services faster and at lower costs, according to a government report published this summer. “The SIRIP solution for identification alone, which has been used by institutions providing various e-services, has saved LTL 4.8 million (About EUR 1.4 million).”

The latter State Information and Communication Technology Interoperability Framework is expected to be published in 2016 and revised and update by 2020 and will use the European Interoperability Strategy (EIS) and the European Interoperability Framework (EIF) as guidelines.

**Key points**

- SIRIP provides a centralized access to public services
- It also offer platform dedicated to design, deliver and management e-services

**Potential benefits**

- Data exchange between government institution is facilitated
- Citizans one stop shop access to all egov services
- The platform allows for service composability

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6.1.1.3. NIF: National ICT Interoperability Framework

**Joinup link:**
http://bit.ly/1PkSCLe

**Country:**
Republic of Malta

**Organisation:**
Malta Information Technology Agency (MITA)

**Scale:**
- National
- Local
- Individual

**Typology:**
- ICT Frameworks and Architectures

**Relevant for:**
- Technical Architect
- Strategist

**External links:**
http://bit.ly/1RIB61a
http://bit.ly/1SDCRO0

**Short description**
The ability for public sector organizations to integrate various information systems, which can exhibit varying degrees of isolation, is considered a challenging task. The Maltese government published the National ICT interoperability framework (NIF)\(^{104}\) to address this problem. The need to lay out a rigorous interoperability framework belongs to the second Strategic Priority of the MITA Strategic Plan, namely to deliver and sustain a robust, resilient and secure ICT infrastructure and IT services to Government. The study is organized as such:

- Chapter 1: Give an introduction to the NIF initiative;
- Chapter 2: Draws a conceptual model of an Interoperability Architecture that identifies key Interoperability Agreements across the public sector to reduce the interoperability gap in a connected Government paradigm;
- Chapter 3: Presents organisational interoperability principles and recommends service attributes which contribute towards the design of interoperable business processes;
- Chapter 4: Introduces the concept of semantic interoperability and identifies steps to discover and standardise Government’s data assets;
- Chapter 5: Defines a standardisation approach to technical interoperability, including contextualisation through Interoperability Profiles.

The National ICT interoperability framework (NIF), draws from the European context and incorporates the principles and recommendations of initiatives such as the European Interoperability Framework, European Interoperability Strategy and the Semantic initiatives promoted through the European Commission’s JoinUp platform.

**Key points**
- Identification of technical enablers for the exchange of meaningful information and the ability to reuse existing ICT resources.
- National ICT Interoperability Framework guide the public sector in maximising the benefits and reducing the cost burden derived from all technology investments by introducing ICT resources that are flexible, reusable and interoperable.

**Potential benefits**
- Avoid vendor lock-in through the use of standards
- Enables the sharing and re-use of assessments in ICT standards and specifications

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6.1.1.4. Estonian Interoperability Framework

Joinup link: http://bit.ly/1xEWtWE

Country: Estonia

Organisation: Estonian Ministry of Economic Affairs and Communications

Scale: - National - Local - Individual

Typology: - ICT strategies and architectures

Relevant for*: Business Case Author
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect

External links: https://www.mkm.ee/et

Short description
The present document is also a guideline for private sector managers and project leaders who offer development and administrative services to the public sector.

The objective of the interoperability framework is to make the operation of the Estonian public sector more effective, improving the services offered to Estonian and EU citizens. The more concrete objectives of the framework are:

- to contribute to the development of a service oriented society, where people can communicate with the state without knowing anything about the hierarchic structure of the public sector or the division of roles in it;
- to bring more transparency into information related political decisions of the information system;
- to support co-development of the state information system;
- to create conditions for free competition, following the agreed framework;
- to reduce public sector IT costs.

The Estonian framework uses the European one as a meta-framework. It mirrors the European Interoperability Framework and its 12 principles, namely subsidiarity and proportionality, user-centricity, inclusion and accessibility, security and privacy, multilingualism, administrative simplification, transparency, preservation of information, openness, reuse, technological neutrality and adaptability, effectiveness and efficiency.

Key points
- The framework is a collection of requirements, standards and instructions, handling the interoperability of information systems
- The choice and assessment of standards is public and balanced.

Potential benefits
- Data exchange between government institution is facilitated
- Citizens one stop shop access to all eGovernment services
- The platform allows for service composability

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6.1.1.5. Open & Agile Smart Cities – harmonisation through open innovation

**Country:**
Norway

**Organisation:**
Open & Agile Smart Cities

**Scale:**
- National
- Local
- Individual

**Typology:**
- ICT Frameworks and Architectures
- Relevant for (*):
  - Senior Manager
  - Standards Setters
  - Strategist
  - Technical Architect
  - Procurement Practitioner

**Short description**
Open & Agile Smart Cities (OASC)\(^{106}\) is an initiative that aims to kick-start the use of a shared set of ways to develop systems once for multiple cities and make them interoperable between cities, and within a city.

The vision of OASC is to create an open smart city market based on the needs of cities and communities. Cities need interoperability and standards to boost competitiveness by avoiding vendor lock-in, comparability to benchmark performance, and easy sharing of best practices.

The Open & Agile Smart Cities initiative aims to this achievement by advocating cities to adopt four simple mechanisms as de facto standards.

The first mechanism is a driven-by-implementation attitude. The other three mechanisms are technical - an API, a set of data models, and an open data platform.

OASC promotes interoperability of systems based on the free flow of data, between cities and within cities, by adopting a shared set of simple, widespread, open and freely available mechanisms.

**Key points**
- Open & Agile Smart Cities initiative counts now around 75 cities from 15 countries in Europe, Latin America and Asia-Pacific.

**Potential benefits**
- Communities and developers can co-create their services based on basic but commonly-defined data models
- The adoption of a driven-by-implementation approach implies the definition of new models by experimenting.

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6.1.1.6. Smartcities’ Guide to ICT architectures

**Joinup link:**
http://bit.ly/1QmrD0y

**Country:**
EU wide

**Organisation:**
Smart Cities: An innovation network between governments and academic partners

**Scale:**
- Supranational
- National

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for:**
- Technical Architect
- Business Case
- Author

**External links:**
http://bit.ly/1XXImuV

**Short description**
The Smart Cities project has delivered a number of guide for municipalities and governments to help them design and deliver better e-services. Starting from this background, Smart Cities produced Smartcities’ Guide to ICT architectures. The Smartcities’ Guide to ICT architectures is a collection of ideas about ICT architecture for organisations, and it is also oriented to clarify what is the architecture framework. Hence, business developers, architects and designers, and many other e-government stakeholders can find helpful using this publication to acquire some architecture know-how.

The purpose of this publication is to become a reference for the developer community. To this end, taking a broad perspective, the Guide provides a set of common recommendations for the design of ICT architectures while highlighting their importance in service-oriented organisations such as public entities.

This publication also helps identifying the main drivers ensuring that the architecture works well and that the organization’s goals are met. It is also possible to use this publication to identify the main drivers ensuring that the architecture works well and that the organization’s goals are met.

From this point of view, the Guide suggests just a few ways in which an organisation may formulate controls at the business level (vision, goals, etc.).

In addition, the Smartcities’ Guide to ICT architectures is a useful source of case studies, lessons and experiences of architectures in the Netherlands, Sweden and Norway (i.e. three Smart Cities partners: Karlstad, Kristiansand, and Groningen).

The publication/guide is structured as follows: the first part summarises the concept and the value of architecture and also how to support the architecture process; the second part puts these issues into a broader social and governmental context drawing on the experiences of several EU countries.

**Key points**
- Illustrating the main issues involved in the development of ICT, the Guide points out how a lack of strategic ICT planning could compromise the entire project and the efficient use of resource.
- National governments and local authorities should work together to develop standards for e-services and e-government.

**Potential benefits**
- Enhancing how organizations can use technology and data to deliver better services

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6.1.2. Guidelines and Knowledge on Standards

6.1.2.1. Open Standards Principles in the for software interoperability, data and document formats in UK government IT specifications

Short description

In the context of the Government ICT Strategy, developed by UK Cabinet Office, has been published "Open Standards Principles - for software interoperability, data and document formats in government IT specifications"108. Thanks to this policy from 1st November 2012 government bodies must adhere to Open Standards Principles.

This policy refers to the Government in its roles as a purchaser of IT based on open standards with the aim of increasing interoperability and avoiding lock-in.

The intention is to achieve a more diverse and competitive market, enabling IT to interoperate and share information both inside and outside government departments and to achieve more economic efficiency in the delivery of IT.

Open standards are crucial for sharing information across government boundaries and to deliver a common platform and systems that more easily interconnect. This publication describes principles for the selection and specification of open standards which can be implemented in both open source and proprietary software.

In fact, these standards enable software to interoperate through open protocols and allow the exchange of data between data stores and software through open data and document formats. Standards for internal processing within hardware (including eCommunications hardware), which are not relevant to external interfaces, are out of scope.

In short, the publication of the Open Standards Principles is a fundamental step towards achieving a level playing field for open source and proprietary software and breaking our IT into smaller, more manageable components.

Key points

- Beyond the aim to identify criteria to define an open standard, the UK Government want to be aligned with international policies on standards in procurement of government IT.
- For all IT expenditures, government entities must demonstrate compliance with open standards for software interoperability, data and document formats or provide evidence of the need for divergence.

Potential benefits

- Open standards will enable suppliers to compete on a level playing field;
- Greater choice for the Government to reuse solutions and switch between standardised products and components;
- Sharing of information and data across and beyond government boundaries;
- Reduce risk of lock-in to a particular vendor.

6.1.2.2. MITA approach to Open Standards

Joinup link:  
http://bit.ly/1qqYn9w

Country:  
Republic of Malta

Organisation:  
Malta Information Technology Agency (MITA)

Scale:  
National

Typology:  
- Guidelines and Knowledge on Standards

Relevant for*:  
- Standards Setters  
- Procurement Practitioner  
- Technical Architect

External links:  
http://bit.ly/1MV56gL  
http://bit.ly/1Qe6VRW

Short description

In June 2010, the Malta Information Technology Agency (MITA) launched a series of policies with the aim to inform and guide all Government organizations in the procurement process of ICT solutions. Open Specifications (informally referred to as Open Standards) have been identified as key enablers to implement flexible, re-usable and interoperable ICT resources.

The Government of Malta has adopted the definitions and direction proposed by the European Interoperability Framework and defines Open specifications (informally referred to as Open Standards) as formalised specifications which, within the context of Public services delivery, are characterized by the following features:

- all stakeholders have the same possibility of contributing to the development of the specification and public review is part of the decision-making process;
- the specification is available for everybody to study;
- intellectual property rights related to the specification are licensed on FRAND terms or on a royalty-free basis in a way that allows implementation in both proprietary and open source software.

The specific MITA approach to open standards is to give the public sector, business community and the general public the opportunity to request the inclusion of formalised specifications within the Adopted Specifications list.

Key points

- Open Specifications (or Open Standards) enable different industries to provide various software and services that can work seamlessly together.
- The MITA approach to the adoption of Open standards is to grant to external stakeholders a role in the selection of formalized specifications

Potential benefits

- Open standards simplify inter-operation
- They guarantee a high degree of flexibility, freedom of choice to the end-users
- They prevents single vendor lock-in

6.1.2.3. Buying Innovation: the 10 step guide to smart procurement and SME access to public contracts

**Joinup link:**
http://bit.ly/1kFNp3i

**Country:**
Ireland

**Organisation:**
Department of Enterprise, Trade & Employment

**Scale:**
- National
- Local
- Individual

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for**
- Senior Manager
- Technical Architect
- Procurement Practitioner

**External links:**
http://bit.ly/1NZkd1m

**Short description**
Public procurement is a major instrument by which government can encourage innovation in their economy. In public procurement seeking innovative solutions means seeking new products, processes or services or in the delivery of services. True value for money and cost savings can be gained by routinely seeking out novel solutions to public sector needs.

Within this framework this publication sets out the range of actions that should be considered at each step of the procurement process to pursue the goal of stimulating innovation and better solutions to public service needs.

The guide\(^{110}\) was wrote by “The Procurement Innovation Group”, within the Department of Enterprise, Trade & Employment of Ireland but is devoted to all officials in all public sector organisations involved in public procurement.

In summary the 10 keys steps to stimulate innovation through public procurement are:

I) Identify the Need – act as an “intelligent customer”; II) Define and Refine User Requirements – Involve key stakeholders throughout the process; III) Ascertain the Budget Available; IV) Engage with the Market prior to Tendering – Find out what the market can provide; V) Decide the best process for procurement; VI) Design the tender Exercise; VII) Tender Exercise; VIII) Contract Award; IX) Contract Management, Review and Evaluation; X) Lessons for the Future.

The publication incorporates elements from the “the European Commission’s "Guide on Dealing with Innovative Solutions in Public Procurement – 10 Elements of Good Practice" and also “Buying Green – A handbook on environmental public procurement”

**Key points**
- Recommendations on how innovation can be stimulated trough public procurement
- Identify obstacles or problems in the current procurement process which impede opportunities for innovation;

**Potential benefits**
- Developing a more SME-friendly approach to public procurement
- Create valuable synergies between public and private sector
- Ensure a level playing field for all innovative companies wishing to participate in public tendering and provide a standardized approach for policy-makers

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\(^{110}\) Department of Enterprise, Trade & Employment (DETE), Ireland. "BUYING INNOVATION - The 10 Step Guide".
6.1.2.4. OSOR Guidelines: suggested model texts for the inclusion of standards and technical specifications in procurement tenders

**Joinup link:**
http://bit.ly/1L328uE

**Country:**
EU wide

**Organisation:**
IDABC: Interoperable Delivery of European eGovernment Services to Public Administrations, Businesses and Citizens

**Scale:**
- National
- Local
- Individual

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for[111]:**
- Procurement Practitioner
- Strategist
- Senior Manager

**External links:**
http://bit.ly/1Hzg9QB

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**Short description**

The Guideline on public procurement of Open Source Software[111] looks at the process of public procurement, its principles and requirements; how public procurement works with software, across EU Member States; and how public procurement approaches open source.

The main purpose of these guidelines is to explain how open source can be best addressed with public procurement. Nevertheless, this is not a general purpose guide for procurement of software.

This Guideline has been drawn on the extensive legal analysis conducted by the Dutch government’s OSOSS programme, resulting in the publication of their “Open Standards Manual and Open-Source Software in tenders: Open standards and open-source software and tendering rules”, with the intention of supporting open source software as epitome of collaborative development of software in the European public sector.

In order to be useful for potential users (policy makers, IT managers and procurement officials), one important feature of the OSOR is a section dedicated to the publication and sharing of advice and guidelines related to open source in the public sector.

Furthermore, the Guideline seeks to give practical information regarding the law covering procurement and providing users with:

- Legal guidelines, which provide the legal basis behind the practical guidelines;
- Template texts that can be easily adapted for all use.

These two guidelines may be used in the preparation of procurement, tenders and contracts.

In short, the aim of this Guideline is to explain clearly and simply how and why public agencies can acquire open source in compliance to open standards.

**Key points**

- Therefore, this Guideline is meant to be applicable in any context within EU Member states, regardless of the existence of any policy.

**Potential benefits**

- Reduce risk of lock-in to a particular vendor
- Using open standards enables to be interoperable with other software systems

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6.1.2.5. A guide to setting up the management of open standards

**Joinup link:**
http://bit.ly/1YdkGBN

**Country:**
Netherlands

**Organisation:**
Dutch Standardisation Forum and Logius Centre for Standards

**Scale:**
- Supranational
- National
- Individual

**Typology:**
- Guidelines and Knowledge on Standards

**Relevant for:**
- Senior Manager
- Standards Setters

**External links:**
http://bit.ly/1STQqZz
http://bit.ly/1N6XhQE

**Short description**

The guide offers a step-by-step plan for implementation of management processes for open standards. A sound management process is required to guarantee the intrinsic quality of a standard, and therefore the likelihood of adoption. How that process happens in practice depends on the situation. A ‘one size fits all’ approach does not exist, and for each standard, you will have to make conscious choices that lead to appropriate management.

The step by step plan of BOMOS2i provides with understanding of the ‘life stage’ of the standard and the situational characteristics that are determinant for setting up your management process. Using these characteristics, you find out what requirements the management process should meet, and which specific building blocks for management you can link to it. Based on the information you gather together, you can ultimately develop relatively simply an appropriately and comprehensive management plan, including associated rules of procedure, and implementing it all. The steps are:

- Determine lifecycle phase
- Check situational characteristics
- Check Basic building blocks for the design of your management
- Check Additional components for the design of your management

Assembly and implementation of your management system

**Key points**

- The document clarify in which cases open documents standards are best used
- In open standards there are no restrictions regarding the use of the standards by ICT users and providers

**Potential benefits**

- Open standards reduce risk of lock-in to a particular vendor
- Using open standards enables interoperability with other software systems.

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Short description
This booklet assists organisations and their management in understanding how open standards can be used for documents. It describes how information may be structured and provided in a manner that allows different kinds of users to use it now and in the future. This booklet also addresses practical questions, as well as use of open standards, in the most suitable and cost-effective manner.

The booklet applies to text-based documents, such as reports, notes, letters, forms and presentations. Such documents may also contain images, multimedia content or interactive elements, but these components always support the text.

A standard is fully ‘open’ if:
16. the standard has been adopted and will be maintained by a non-profit organisation, and ongoing development is on the basis of an open decision-making procedure which is open to all stakeholders;
17. the standard has been published and the standard specification;
18. document is freely available or can be acquired at a nominal fee;
19. anyone must be able to copy, distribute and use the document and make it available for free, or at a nominal fee;
20. the intellectual property rights to – i.e. any patents that may exist on – the standard, or parts thereof, are made irrevocably available on a royalty-free basis.

There are no restrictions with respect to reuse of the standard.

Key points
- In open standards there are no restrictions regarding the use of the standards by ICT users and providers
- The document clarify in which cases open documents standards are best used

Potential benefits
- Open standards enhance digital information exchange (interoperability)
- Open standards increase the independence of software suppliers fostering competition

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6.1.2.7. The Netherlands in Open Connection: An action plan for the use of Open Standards and Open Source Software in the public and semi-public sector

Joinup link: http://bit.ly/1kCMLUn

Country: Netherlands

Organisation: Ministry of Economic Affairs - Netherlands

Scale: - National - Local - Individual

Typology: Guidelines and Knowledge on Standards

Relevant for*: - Technical Architect - Procurement Practitioner - Strategist

External links: http://bit.ly/1L4ouMn

Short description

In 2007, the Ministry of Economic Affairs of the Netherlands published an action plan for the use of Open Standards and Open Source Software in the public and semi-public sector. This paper wanted to achieve a number of goals, such as good participation from citizens, sustainability of information and innovation, and a reduction in administrative burden (by supplying information only once, for example).

The objectives of this action plan are applicable to the national government, subsidiary government bodies and the public and semi-public sector:

7. increase in interoperability between and with the different building blocks and forms of service provision of eGovernment by accelerating the use of open standards;
8. reduction in dependence on suppliers in the use of ICT through faster introduction of open standards and open source software;
3. promotion of a level playing field in the software market and promotion of innovation and the economy by forceful stimulation of the use of open source software and by giving preference in contracts to open source software if equally suitable.

Key points

- The Cabinet intends to encourage the use of open standards and open source software within the public and semi-public sector
- Open standards and open source software are two different topics for which separate actions have been formulated

Potential benefits

- Reduce risk of lock-in to a particular vendor
- Using open standards enables interoperability with other software systems.

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6.1.3. Standards Assessment


Joinup link: http://bit.ly/1JNZLze

Country: EU

Organisation: Interoperability Solutions for European Public Administration (ISA)

Scale: - Supranational - National - Local

Typology: Standards Assessment

Relevant for*: - Procurement Practitioner - Senior Manager - Standards Setters - Strategist - Technical Architect

External links: http://bit.ly/1Qwzeex

Short description

The programme of the European Commission Interoperability Solutions for European Public Administration (ISA) produced the Common Assessment Method for Standard and Specifications (CAMSS) \(^{115}\). Yet, the assessment of standards and specifications for eGovernment solutions is actually a national competence applied within each National Interoperability Frameworks.

CAMSS is an initiative to promote collaboration between EU Member States in defining a «Common Assessment Method for Standards and Specifications» and to share with other countries the assessment study results for the development of eGovernment services.

The purpose of CAMSS is:

- to ensure that assessments of technical ICT specifications or standards and interoperability profiles are performed to high and consistent standards;
- to ensure that assessments will contribute significantly to confidence in the interoperability of systems implementing these specifications and profiles;
- to enable the re-use, in whole or in part, of such assessments;
- to continuously improve the efficiency and effectiveness of the assessment process for ICT technical specifications or standards and interoperability profiles.

The CAMSS is also supported by a community on Joinup which includes:

- Access to the CAMSS tools, CAMSS wiki and CAMSS library with assessments carried out by Member States
- A growing member list
- A place to interact and discuss about Standards Assessments
- Downloadable versions of the CAMSS tools with guidelines

Key points

- CAMSS is a European framework method to assess standards and specifications in the field of ICT
- Public administration establishes a list of standards for software ranging from recommended to mandatory, to complain and explain.

Potential benefits

- Avoid vendor lock-in through the use of standards
- Enables the sharing and re-use of assessments in ICT standards and specifications

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\(^{115}\) CAMSS: Common Assessment Method for Standards and Specifications, IDABC.
### Short description

The UK cabinet office adopted a specific process of inclusive standard-setting. Stakeholders can engage at different levels of the decision-making on standards: they have a potential role at the 1) suggestion stage 2) the response stage 3) the proposal stage 4) the solution stage. Everyone can participate in the process, users, Government technology officials, Challenge owners, Standards panels, Open Standards Board, Suggestion stage, Response stage, Proposal stage, Solution stage.

The platform also allows reviewing all open standards that have been adopted across government, along with the challenges they have been used to address.

### Key points

- Any relevant stakeholders can help set standards for software interoperability, data and document formats in government IT

### Potential benefits

- Inclusive decision-making help reducing the administrative burden of a centralized standard setting
- Open and inclusive standards
- Ensure an open process of standardisation
6.1.3.3. Assessment Procedure and Criteria for Lists of Open Standards in the Netherlands

**Joinup link:**
http://bit.ly/1iWun7A

**Country:**
Netherlands

**Organisation:**
Dutch Standardisation Forum and Board

**Scale:**
- National
- Local

**Typology:**
- Standards Assessment

**Relevant for**(*)�:
- Standards Setters
- Procurement Practitioner
- Business Case
- Author

**External links:**
http://bit.ly/1llgL7Y
http://bit.ly/1NMBix2

**Short description**
The document *Assessment Procedure and Criteria for Lists of Open Standards* serves as a guide for submitters of open standards, experts and other interested parties. It contains a description of the assessment procedure and the criteria that are used by the Standardisation Forum and Board to assess a submitted standard for the lists of open standards.

The goal of the Dutch government policy on open standards is to promote interoperability of the Dutch public and semi-public sectors, while at the same time ensuring provider independence. Interoperability means the ability to exchange data electronically; in this case between government bodies and businesses, between government bodies and civilians, and between government bodies.

In order to attain this goal, the Standardisation Forum and Board were established in 2006. These institutions do not develop standards, but can assign a status (required or recommended) to existing standards in the public and semi-public sector. The Board and Forum maintain the following two lists:

7. List of open standards for which a 'Comply or Explain'-regime is in place.

8. List of recommended common open standards.

"Comply or explain" means that Board Members have committed to use the standard, unless this might lead to insurmountable problems, in which case an alternative choice should be explained.

**Key points**
- The standardisation Forum and Board do not act as standard-setters but decentralize the responsibility by creating an assessment framework to include a standards submitted by all stakeholders
- All government bodies and semi-government bodies are required to adjust their procurement process to the list.

**Potential benefits**
- Open standards enhance digital information exchange (interoperability)
- Open standards increase the independence of software suppliers fostering competition
- Clear and transparent information in the standardisation process allows open participation from any stakeholders

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6.1.4. List of Recommended Standards

6.1.4.1. Spanish National Catalogue of ICT Standards and National Interoperability Framework\(^\text{118}\)

**Joinup link:**

**Country:**
Spain

**Organisation:**
Ministry of Finance and Public Administrations

**Scale:**
- National
- Local
- Individual

**Typology:**
- List of Recommended Standards

**Relevant for**\(^\text{118}\):
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect

**External links:**
http://bit.ly/1RaFskF

**Short description**
The e-Government law of 2007 created the National Interoperability Framework (NIF) together with the National Security Framework. These frameworks are the result of a collective effort of all public administrations aiming to align with the European scenario and to improve interoperability. In particular, the NIF addresses requirements in relation to:

- **Technical interoperability**: the NIF specifies conditions about the selection and use of standards.
- **Common infrastructures and services**: contributes to facilitate multilateral interactions.
- **Reuse of software**: it contributes to a better interoperability;
- **Interoperability Agreements**.

Within the list of Interoperability Agreements, there is the National Catalogue of Standards. The National Catalogue is composed by 86 standards. Not for all standards are a formal assessment document, firstly because some of them are self-explanatory. Secondly, because the entire process requires too many resources.

The Catalogue seeks to make E-Government services available to citizens so that they and Public Administration agencies can choose the technology to use, and to adapt to the development of communication systems and techniques.

In addition, the Catalogue is useful for potential users like policy makers, IT managers and procurement officials.

**Key points**

- the NIF is extended through a number of Interoperability Agreements;
- In order to release software solutions based on ICT Standards, the Ministry of Finance and Public Administrations of Spain have developed a "Guide to Asset Publication and Licensing" which established a framework and procedures to release assets under open-source license for software or under open licensing for other types of assets.

**Potential benefits**

- Reduce vendor lock-in and ensure provider independence.
- To spur the use of ICT standards by Public Administrations and citizens.
- Avoid market fragmentation at EU level

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Joinup link: http://bit.ly/1SA4w49

Country: Netherlands

Organisation: National eGov Board Standardisation Forum

Scale:
- National
- Local
- Individual

Typology:
- List of Recommended Standards

Relevant for:
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect

External links:
http://bit.ly/1ZiYaJu
http://bit.ly/1TEJNKN

Short description

In 2007, the Dutch Government has launched an action-plan on use of Open Standards. In short, the main goals of the Dutch Policy are to be interoperable and prevent vendor lock-in.

Part of that is the creation a "Comply or Explain" policy.

In detail, the Dutch National Catalogue of ICT Standards collected two lists:

i) "Comply or Explain" Standards, that are a Mandatory Standards and it is composed by 38 standards.

ii) List of recommended open standards.

At the moment they have a list of 52 standards, mostly IETF, W3C and OASIS standards.

The best known of them is the 'Comply or Explain' list of open standards. The standards in this list must be implemented. If they are not, an explanation must be provided as to why.

Nevertheless, Public Administration and Semi-public administration have to use the "Comply or Explain" list, when they make IT investment above € 50,000 and also if the tender has both the functional and the organizational scope.

Key points

- The assessment procedure is an active involvement process. Public organisations, private organisations and individuals can submit new standard for the 'Comply or Explain' list or the list of common open standards.

Potential benefits

- Reduce vendor lock-in and ensure provider independence.
- To spur the use of ICT standards by Public Administrations and citizens
- Avoid market fragmentation at EU level
6.1.4.3. SAGA: Standards and Architectures for e-Government Applications in Germany

**Joinup link:**
http://bit.ly/1NEuSjK

**Country:**
Germany

**Organisation:**
The German Commission of the Federal Government for IT

**Scale:**
- National
- Local
- Individual

**Typology:**
- List of Recommended Standards

**Relevant for:**
- Senior Manager
- Standards Setters
- Strategist
- Technical Architect
- Procurement Practitioner

**External links:**
http://bit.ly/1PkzXPC
http://bit.ly/1n4gCXc
http://bit.ly/1UwrkAm
http://bit.ly/1SzX8pt

---

**Short description**

The SAGA version de.bund 5-0 consists of a binding technology catalogue for the German federal administration software system. In all software projects technologies, projects should be selected in respect with the SAGA classifications.

SAGA aims at reducing risks and increasing investment-safe developments, agility, security, interoperability, reusability and scalability of software systems.

The aim of any standardization activity must be to develop a clear and measurable set of rules, which can be judged by the existing and new solutions. SAGA also takes into account the requirements of the European Interoperability Framework and support its recommendations.

The actual version of SAGA 5.1 de.bund is made up of the latest versions of all SAGA modules which con consists of the following modules:

10. **SAGA module Basics** de.bund 5.1.0
11. **SAGA module Conformity** de.bund 5.1.0
12. **SAGA module Technical Specifications** de.bund 5.0.0

The SAGA module "Basics" describes the objectives, framework, principles, and processes for creating and updating of SAGA.

The SAGA module "Conformity" explains how the SAGA conformity of software can be backed up. To answer the question of how to ensure the conformity with SAGA it was also examined whether certification of projects, software products and stakeholders input could be helpful.

In SAGA module "Technical Specifications" are classified the technical specifications on which the software systems of the federal administration should be implemented. Also, are explained the actual requirements and recommendations of IT specifications for new and existing software systems, products and custom developments.

**Key points**

- SAGA aims at reducing risks and increasing investment-safe developments

**Potential benefits**

- Data exchange between government institution is facilitated
- Citizens one stop shop access to all egov services
- The platform allows for service composability

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6.1.4.4. Use of open specifications and the OIO catalogue

Joinup link: http://bit.ly/1H0e6KH

Country: Denmark

Organisation: The OIO Committee and NITA

Scale: - National - Local - Individual

Typology: - List of recommended standards

Relevant for*: - Standards Setters - Procurement Practitioner - Technical Architect


Short description

The OIO Committee and NITA have been tasked to promote the use of open specifications in public sector IT systems. All IT systems built or bought by a Danish public authority should use open specifications to the largest possible extent. In order to make this easier for the individual authorities, the OIO Committee maintains a list of open technical specifications and recommendations on whether and where they should be used.

The list is called "the OIO Catalogue of Technical Standards" on Digitaliser.dk and is freely available to view and comment.

The OIO Catalogue of technical standards on Digitaliser.dk is a core part of the Danish National Interoperability Framework (NIF) as it contains the commonly agreed recommendations of technical standards and specification in relation to the Danish public sector. The catalogue contains recommendations on the applicability and usefulness of almost 200 technical specifications for different types of public sector IT systems. Each specification is documented with name, description, link to the specification and other metadata. They also have a recommendation level for a given context of use. A given specification can have different recommendation levels for different areas of use.

Key points

- Set open standards to ensure data exchange
- The OIO Catalogue of Technical Standards provide useful guidelines to practitioners

Potential benefits

- Avoid lock-in through the procurement of standards-based ICT solutions.

6.1.4.5. The Municipality of Alingsås - Open standards & FLOSS (Free/Libre Open Source Software)

Joinup link: http://bit.ly/1VYXkOJ

Country: Norway

Organisation: Municipality of Alingsås

Scale: - National - Local - Individual

Typology: - List of Recommended Standards

Relevant for*: - Standards Setters - Procurement Practitioner

External links: http://bit.ly/1IwkKn7

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**Short description**

In Sweden there is an oligopoly of companies selling ICT products to municipalities and a lock-in situation (also because of language barriers). By using open source, it is possible to use software developed from other places.

The Swedish National Procurement Services has published a list of open standards. All standards on this list can be implemented in software provided under different licenses, both proprietary and FLOSS.

Additionally, the Kivos - 'Kommunsamverkan i Väst för Open Source'- and the Open Jämtland are two regional organisations coordinating interoperability and open standards issues for their respective municipalities. Both promote the use of open source software and open standards by public agencies as well as software vendors, and enable and deploy open source based solutions for local government.

The network also advocates for open software requirement into the public procurement process - which is the choice of the Alingsås municipality - and it allows the reduction of the administrative burden with respect to open tenders.

It does this by disseminating information and experiences on the deployment of open solutions among municipalities and other government organisations, by stimulating the demand for open source software and promoting the inclusion of open standards in the requirements for the procurement of information systems, and by cooperating with universities and colleges on issues of open source and open standards.

**Key points**

- All open standards on this list can be implemented in software provided under different licenses, both proprietary and FLOSS

**Potential benefits**

- Promote the use of open source and open standards in the municipalities
- Encourage collaboration between municipalities
- Reduce vendor lock-in and ensure provider independence

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121 Kivos (‘Kommunsamverkan I Väst För Open Source’). Swedish Public Open Source Movement Working from the Bottom up.
### 6.1.5. ICT Needs & Long Term Planning

#### 6.1.5.1. The Swedish National Police: How to avoid locking yourself in while saving money

**Joinup link:**

**Country:**
Sweden

**Organisation:**
Swedish National Police

**Scale:**
- Local
- Individual

**Typology:**
- ICT Needs & Long Term Planning

**Relevant for:**
- Strategist
- Procurement Practitioner
- Senior Manager

**External links:**

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#### Short description

The Swedish National Police Board (SNPB) is the central organisation in the Swedish National Police system. It counts on 27,000 employees, 19,000 of which are police officers.

In 2006, SNPB launched a project with the aim to move on from an ICT infrastructure based on proprietary products to an ICT server and database platform based on Open Source Software and open standards.

![Image of The Swedish National Police](https://via.placeholder.com/150)

In addition, SNPB had estimated that thanks to the new ICT infrastructure they would get a saving of around 50%.

Furthermore, for SNPB it was not just a cost reduction issue, for them moving towards an ICT server and database platform based on Open Source software and open standards meant: reduce vendor lock-in and use open standards.

From vendor lock-in and open standards issues, turning to Open Source guaranteed a diverse range of suppliers that enhance competition among them while reducing lock-in.

In short, the migration project has been focusing on the replacement of four essential parts of the infrastructure: 1. the application server; 2. the database; 3. the operating system of the servers and 4. CPUs.

The Swedish National Police experience is a good example of how a public institution can avoid the dependence on vendors and how this has the potential to increase performance.

#### Key points

- It has been also invested €126.000 in training to make sure that the competence is always in house;
- Switching to an Open Source system it may not just be for the cost aspect, it can be for performance also;
- Moving from a proprietary software environment to a consolidated Open Source Software environment with standards is a very big undertaking that should not be underestimated.

#### Potential benefits

- Cost saving
- Reduce risk of lock-in to a particular vendor
- Increasing transparency and sustainability, while reducing the users' reliance on the original vendors of the software
- Promoting collaboration and participation
- Using open standards enables to be interoperable with other software systems

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122 European Commission. Open Source Observatory and Repository (OSOR). The Swedish National Police: How to Avoid Locking Yourself in While Saving Money

---
6.1.5.2. City of Ventspils common procedure for ICT procurement

**Country:**
Latvia

**Organisation:**
Ventspils City Council

**Scale:**
- Local
- Individual

**Typology:**
- ICT Needs & Long Term Planning

**Relevant for:**
- Standards Setters
- Procurement Practitioner

**External links:**
http://bit.ly/1MG7wps

**Short description**
During the last seven years, Ventspils, the sixth largest country in Latvia, has experienced a rapid ICT sector growth. Capitalizing on the achievements to date and aiming to develop Ventspils into a European level hub for smart technologies, all municipal institutions in Ventspils City Municipality have adopted common procurement procedure for all ICT related products and services. To adapt and enforce use of standards, Ventspils City Council has founded a special municipal institution – Ventspils Digital Centre, which is responsible for all ICT related development.

To avoid technology or supplier lock-ins where possible, source code and intellectual property rights for all custom-made software are being held by Ventspils Digital Centre. Open source solutions are used for virtualization of servers, provisioning of user account management, centralized file storage, e-mail, calendaring, firewall and other key ICT services even for critical ones.

Next challenges will be to address vendor dependency for financial accounting and other specialized software where there are no open-source of vendor independent solutions.

At the end of 2014, the Ventspils City Council, the sixth largest country in Latvia, endorsed the Ventspils information and communication technology (ICT) sector development strategy and action plan for 2014 – 2020.

**Key points**
- Ventspils aims at becoming a European hub for ICT and smart technologies
- The city has a centralized system for adoption of standards and procedures for ICT procurement

**Potential benefits**
- Avoid vendor lock-in through the use of standards
- Enables the sharing and re-use of assessments in ICT standards and specifications
6.1.6. **Develop a Procurement Framework**

6.1.6.1. **Framework agreements for software and cloud services**

**Joinup link:**
http://bit.ly/1za3qyr

**Country:**
Sweden

**Organisation:**
Swedish National Procurement Services

**Scale:**
- National
- Local
- Individual

**Typology:**
- Develop a Procurement Framework

**Relevant for:**
Public procurer Representative of the ICT industry

**External links:**
http://bit.ly/1SzFthw

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**Short description**

In 2010, the Swedish government centralized certain public procurement activities up to establish a unique body: the National Procurement Services. In short, the task of the National Procurement Services is offer central government authorities coordinated framework agreements for goods and services of general use, in the area of information and communication technology (ICT).

The National Procurement Services administers more than 1000 unique framework agreements in mainly the following areas:

- ICT products and services
- Office furniture and office equipment
- Services, hotels and conferences
- Safety and security
- Transport and vehicle
- Other services

In addition, the National Procurement Services has developed a process in order to safeguard quality in the procurement activities. In fact, as important part of the process comprises the contract management. This means that the framework agreements are followed-up continuously during the duration of the contracts. The contract managers help the procuring entities to call off from the framework agreements and follow up the terms of delivery in close contact with the users as well as the suppliers.

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**Key points**

- The Swedish approach is one of the most important framework procurement agreements of ICT in Europe
- The framework reduce risk and uncertainties in the procurement process

**Potential benefits**

- Open source and open standards enable better competition between all suppliers of ICT solutions
- **Open standards and open source** enables reuse of software based solutions, a more open public sector and long term cost reductions
- Open standards and open source to avoid technology lock-in
6.1.7. Templates and ready texts

6.1.7.1. Standard "Sharing and Re-using" clauses for contracts: Contractual Clauses for Service Procurement

Joinup link: http://bit.ly/1zs8vHx

Country: EU wide

Organisation: ISA – Interoperability Solutions for European Public Administrations

Scale: - European - National - Local

Typology: - Templates and ready texts

Relevant for(*): - Procurement Practitioner - Business Case Author - Strategist


Short description

Promoting common "standard" clauses for contracts in service procurement has the potential to increase the sharing and re-using of IT tools. In fact, the procurement of software, for technological, legal and contractual reason may bind the contractor to a single contracting agent or impede the government to re-use the IT tool. Hence, contractual standardization could be helpful for public administration when:

- Public sector produces software (i.e. for the management of hospitals, of drivers licences etc.) and this software could be reused by other stakeholders (i.e. in another Member State)
- Public sector uses existing available software (i.e. components found on Internet) to build its own solutions: by reusing the downloaded component "as is", by modifying it (i.e. localisation in national language), or by integrating it in a larger solution that combines several software components

In fact, line of codes produced by Public administrations are rarely written entirely from scratch and at least some parts are reused. If not foreseen by an appropriate contractual clause, it may be that software effectively purchased by administrations cannot be re-distributed, for various reasons:

- The software providers’ licence terms are proprietary (limitations on the number of users, the number or power of computers, etc.)
- The software providers’ licence terms are open, but some of the standards implemented in the software belong to third parties, are patented and their use is not royalty free (RF)
- Licence terms are open source, but the provided solution is made from various components and the provider has not paid attention to the licence compatibility of these components.
- If there is maintenance terms that restrict any modification of the source by a third party or cancel the guarantee.

The document offers some standard clauses for sharing and reuse meeting the following distribution requirements:

- The right to redistribute its own software (when written by or exclusively for the authority)
- Reusing third parties’ IPR assets (integrating "received” open source software in the public authority solution)
- Reusing and distributing the documentation (and other "non-software” knowledge elements)
- "No Vendor Lock-in” clause: how to stay free to adopt a new solution and to contract with another provider.

The standard sharing and re-using clauses for contracts presented by Mr. Schmitz (speaker in one of our workshops) are reported below. They have been grouped according to the objective they try/want to reach.

- Distribute the application

Facilitate the developers’ communities (when applicable)
- IPR assets coverage
- Open and Royalty Free standards
- “No Vendor Lock-in”

To read more details see The second Workshop attached to this report.

**Key points**

- “Standard” contractual clauses may ease the procurement of Open Software ensuring public administration efficiency and spurring innovation.
- Improve cross-border exchange of software and further integrate the European union’s markets

**Potential benefits**

- Re-use of software by third parties has the effect of increase its value
- Consistent pan-European contractual clause will strengthen the legal predictability and facilitate the business environment.
- Reduce risk of lock-in to a particular vendor
6.1.7.2. BITKOM guides on wording procurement documents in a non-proprietary manner for desktop PCs, notebooks, servers, monitors and printers

**Joinup link:**
http://bit.ly/1up8ZGV

**Country:**
Germany

**Organisation:**
Federal Association of Information Technology, Telecommunications and New Media - BITKOM

**Scale:**
- Local
- Individual

**Typology:**
- Templates and Ready Texts

**Relevant for**
- Procurement Practitioner

**External links:**
http://bit.ly/1MQbHEK

BITKOM\textsuperscript{125}, the German Federal Association for Information Technology, Telecommunications and New Media, represents more than 2,200 companies in the digital sector, including 1,400 direct members.

The aim of BITKOM is to give authorities support for wording in official tenders for the ICT procurement. To this end, as a result of a working group led by German Ministry of the Interior's Procurement Office and BITKOM, “Guides on wording procurement documents in a non-proprietary manner for desktop PCs, notebooks, servers, monitors and printers” were created, to facilitate the purchase of information and telecommunication technology.

The Guide provide compact tools in compliance with legal requirements while ensuring fair competition among service providers, allowing to reduce risk of lock-in to a particular vendor.

Furthermore, this Guide identifies and describes also the state-of-art technical standards, in a way that avoids the use of proprietary brand names in tender specification, in line with the Directive.

In short, thanks to these guidelines, procurement practitioners can count on:

- Different guidelines for different products (Notebooks, Servers, ...);
- Standardised "ready-to-use" text;
- Propose product-neutral technical and environmental criteria for buying ICT products;
- Set of product-neutral criteria suitable for their needs.

**Key points**

- The guidelines' approach leverages general accepted benchmarks as a major element of a non-proprietary product description;
- The Guide is helpful to face two issues that make particularly difficult the subject matter: 1. the rapid lifecycle of ICT product and 2. the need of precise description required with regard to a system's performance (technical requirements).

**Potential benefits**

- Reduce risk of lock-in to a particular vendor;
- Increasing transparency and sustainability, while reducing the users' reliance on the original vendors of the software;
- Using open standards enables interoperability with other software systems.

\textsuperscript{125} BITKOM (Bundesverband Informationswirtschaft, Telekommunikation Und Neue Medien E. V). Non-Proprietary Performance Description of Desktop PC.
6.1.7.3. France publishes free software procurement templates

**Short description**

The French government has published templates to be used by procurement officers when requesting free software-based ICT solutions. The templates include intellectual property clauses, and clarify the specifics of the free software environment. The «Model clauses for development and maintenance of free software» were made public at the 16th Rencontres Mondiales du Logiciel Libre conference.

The templates applies within the legal framework of The Cahier des Clauses Administratives Générales applicables aux marchés publics de Techniques de l’Information et de la Communication (CCAG-TIC) from the 15 September 2009 dealing with Intellectual Property rights in the public markets of IT software.

When issuing a call for tender, public administrations should emphasise that the software will be made available as free software.

The template set two options for the contracting authorities A: «concession» or B «cession». The public body select the most suitable option and adapt it to the specific software.

Companies submitting bids should allow the code to be published using a licence that is compatible with either France’s Cecill or the European Union’s EUPL free software licence. These are «copyleft » licenses are a novel use of existing copyright law to ensure a work remains freely available and that public investment will be profitable to everyone.

**Key points**

- Software, including free software, are protected by copyrights.
- Assignments of the rights should be included in public contracts
- The model clauses must be used to enable proper maintenance of free software solutions

**Potential benefits**

- Model templates ensure software remain freely available
- Set the standard for efficient and secured Intellectual Property IP clauses

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### 6.1.7.4. The Belgian OSLO project: tender clauses to promote the use of the OSLO specification

**Joinup link:**
http://bit.ly/1JsPRBA

**Country:**
Belgium

**Organisation:**
Flemish Organization for ICT in Local Government V-ICT-OR

**Scale:**
- Local
- Individual

**Typology:**
- Templates and Ready Texts

**Relevant for:**
- Procurement Practitioner
- Strategist
- Business Case Author

**External links:**
http://bit.ly/1NuI1XY
http://bit.ly/1Pru3MK

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#### Short description

The OSLO project from the Flemish ICT Organisation (V-ICT-OR) stands for "Open Standards Linked Authorities" and aims at establishing open standards for local governments to enhance interoperability of services. It also ensures a more efficient information management in local government and that citizens must provide their data only once to government. OSLO provides a clear implementation strategy, which outlines how local governments authentic sources should adopt in their processes.

Many governments are wondering what they can include in their tender texts around OSLO. V-ICT-OR published on 28th October 2014 a document containing clauses for tender specifications procurement contracts to promote the use of the OSLO specification. OSLO conformance, by including this either as a technical criterion or an award criterion in the tender specifications.

To complement the vocabulary, OSLO 2.0 proposes guidelines for implementing web services. The guidelines define a URI strategy along with the operations that the URIs must answer. By standardising the service protocol, OSLO aims to minimize the number of services pursuing the same goal.

Following the successful example of the Netherlands, OSLO 2.0 introduces the Software Catalogus, a repository of open standards, software packages, and service providers. With this tool, reusing the Dutch platform, local administrations can quickly learn which provider or package implements which standard, increasing awareness and, in the long-run, use of open standards.

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#### Key points
- Set open standards to ensure data exchange
- The OSLO conformance can be included as a technical criterion or an award criterion

#### Potential benefits
- Avoid lock-in through the procurement of standards-based ICT solutions.

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Short description

The Government Information Technology and Communications (GITC) contractual framework, initially established in 1991, is a set of terms and conditions that Australian Government agencies may use to create contracts for ICT procurement.

The GITC was originally introduced to support ICT procurement processes at a time when knowledge and experience in ICT purchasing was at a developmental stage.

In a second time, the GITC framework was reviewed in the light of changes to the general procurement environment since its initial development. The review showed, among other things, that there was a strong interest in some form of model contracts for use with government ICT procurement. The Government announced the following actions arising from the review:

- First, a series of model contracts would be developed that were tailored to the different elements of ICT procurement, such as hardware, software development, software licensing or managed services.
- Second, the GITC web site would be redeveloped to improve its user-friendliness and to enhance support to users of the model contracts.
- Third, during the period of implementation of these outcomes, the GITC Helpline would be maintained to support those using the GITC.

By analysing in detail the model contracts, we noticed that model contracts provide templates for Commonwealth entities to develop sound commercial agreements efficiently and effectively. In particular, the model contracts are distinguish for:

- Simple procurement, conducted in an environment where routines, methods and procedures are well established and designed for:
  - Hardware Acquisition and Maintenance;
  - Licence and Support - Commercial off-the-shelf Software;
  - Licence (not covering support) - Commercial off-the-shelf Software;
  - ICT Consultancy Services.
- Semi-complex procurement, in which more preparation needs to be carried out and designed for:
  - consultancy services;
  - system integration and software development.

Key points

- Templates are flexible enough to allow inclusion of project-specific details, so that they could be adapted for all uses.

Potential benefits

- Model templates ensure software remain freely available
6.1.8. Other

6.1.8.1. European Union Public Licence - Licensing the procured software as open source

Joinup link:
http://bit.ly/1OAelgL

Country:
EU

Organisation:
Interoperability Solutions for European Public Administration (ISA)

Scale:
- Supranational
- National
- Local

Typology:
- Other

- Relevant for(*):
  Business Case
  Author
  Procurement Practitioner
  Senior Manager
  Standards Setters
  Strategist
  Technical Architect

External links:
http://bit.ly/1RaAft7
http://bit.ly/1TEvXbe

Short description
The "European Union Public Licence" (EUPL) is the first European Free/Open Source Software (F/OSS) licence. It has been created on the initiative of the European Commission. It is now approved by the European Commission in 22 official languages of the European Union.

These Practical Guidelines will provide information on:
- how to use software distributed under the "European Union Public Licence" (EUPL)\textsuperscript{128}, and
- how to use this licence to distribute your own software.

The guidelines are intended for those who:
- wish to use software that has been published under the EUPL;
- own rights to software and are considering the EUPL as the licence of choice for its distribution;
- are starting to develop software, might integrate the EUPL licensed software and want to release the product under the EUPL or another F/OSS licence.

It should raise awareness concerning the opportunities of Free/Open Source distribution and encourage all relevant stakeholders to follow this example.

Key points
- The EUPL licence is a tool to facilitate resource optimisation and sharing.

Potential benefits
- Reinforce legal interoperability through the adoption of a common framework

\textsuperscript{128} European Commission, European Union Public Licence, 2007
6.1.8.2. OpenPEPPOL & the avoidance of lock-in

**Country:**
Norway

**Organisation:**
OpenPEPPOL

**Scale:**
- Supranational
- National
- Local

**Typology:**
- Other

**Relevant for (**)**:
- Procurement Practitioner
- Senior Manager
- Standards Setters
- Technical Architect

**External links:**
http://bit.ly/1Ju7gxT

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**Short description**

The OpenPEPPOL project was run by a consortium of 16 countries and it originated from the European Commission CIP funding programme. The vision was to enable business to communicate electronically with European government institution in the tendering process in order to reap benefits in term of efficiency and cost reduction.

OpenPEPPOL project was designed to come up with solution specifications to different phases of the procurement process, from the process of entering into contract in the public procurement legislation to the actual ordering up to the invoicing and payment phase. The biggest result where in the post-award phase but some also in the pre-award domain.

Solutions are based on the interoperability framework and PEPPOL solutions and specifications operate within a legal and political environment to ensure semantic and technical interoperability. PEPPOL relies on standards from OASIS and other sources.

The biggest success in the Norwegian national implementation of eProcurement solution was in the eInvoicing. The implementation was accomplished as such:

19. Make eInvoicing mandatory for public sector entities;
20. Mandatory use of standard national e-Invoicing format, based on European standardisation;
21. On-boarding of ERP vendors/invoice systems;
22. Decision to use PEPPOL eDelivery network for transport of eInvoices;
23. Establish a national receive capability and address register = SMP/ELMA, also open for private sector;
24. On-boarding of access points through public sector demand;

Web-portals for simplified e-invoicing from SMEs delivered by market.

---

**Key points**

- Open PEPPOL is a point of reference for organisations that use it, providing users with widely accepted technology standards.
- Business Interoperability Specifications (BIS) for common eProcurement processes are guidelines developed by PEPPOL with the aim to standardise electronic documents exchanged.

**Potential benefits**

- Increase opportunities for greater competition for government contracts and providing better value for tax payers’ money
### 6.2. TASK 4 MATERIALS (TED ANALYSIS & PROCUREMENT SURVEY)

#### 6.2.1. List of CPV analysed

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### 6.2.2. List of vendors

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<td>CCS Media</td>
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### 6.2.3. TED Variable analysis: focus on the analysed scope

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<th>Distinct values</th>
<th>Variable domain</th>
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<tbody>
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<td>Year of tender issuance; range from 2010 to 2015</td>
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<td>ID_NOTICE</td>
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<td>Unique identifier of a tender notice; range from 2010205 to 2015226245</td>
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<td>ID_TYPE</td>
<td>3</td>
<td>Type of notice:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 = classical Contract Award Notice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 = utility Contract Award Notice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18 = defence Contract Award Notice</td>
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<td>DOC_TITLE</td>
<td>1.510</td>
<td>Title of the tender notice</td>
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<td>CAE_NAME</td>
<td>8.017</td>
<td>Name of the contracting authority</td>
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<td>CAE_NATIONALID</td>
<td>913</td>
<td>VAT number of the contracting authority for utilities (mostly blank)</td>
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<td>ISO_COUNTRY_CODE</td>
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<td>28 EU countries</td>
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<td>CAE_TYPE</td>
<td>8</td>
<td>Type of contracting authority:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = &quot;Central government&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 = &quot;Local authorities&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 = &quot;Water, energy, transport and telecommunications sectors&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 = &quot;Body governed by public law&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 = &quot;Other&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N = &quot;National or federal Agency / Office&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>R = &quot;Regional or local Agency / Office&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Z = &quot;Not specified&quot;</td>
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<td>MAIN_ACTIVITY</td>
<td>143</td>
<td>Main area of activity of the issuer (many blank)</td>
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<tr>
<td>TYPE_OF_CONTRACT</td>
<td>3</td>
<td>Type of contract.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The values are the following:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W = &quot;Works&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>U = &quot;Supplies&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S = &quot;Services&quot;</td>
</tr>
<tr>
<td>TAL_LOCATION_NUTS</td>
<td>1.165</td>
<td>NUTS code for the &quot;Main site or location of work, place of delivery or of</td>
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<tr>
<td></td>
<td></td>
<td>performance&quot; (many blanks)</td>
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<tr>
<td>FRA_AGREEMENT</td>
<td>1</td>
<td>Y (or blank)</td>
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<tr>
<td>DESCRIPTION</td>
<td>13.898</td>
<td>Description of the tender and requirements for bidders</td>
</tr>
<tr>
<td>CPV</td>
<td>21</td>
<td>Common Procurement Vocabulary code for the required activity, subject of the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>tender</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Type of procedure.</td>
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<tr>
<td></td>
<td></td>
<td>The values are the following:</td>
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<td></td>
<td>ACN = &quot;accelerated negotiated &quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACR = &quot;accelerated restricted&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AWP = &quot;award without prior publication of a contract notice&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COD = &quot;competitive dialogue&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NOC = &quot;negotiated without a call for competition&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIC = &quot;negotiated with a call for competition&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OPE = &quot;open&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RES = &quot;restricted&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In addition, &quot;NIP&quot; and &quot;NOP&quot; were found: these values are the corresponding of</td>
</tr>
<tr>
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<td></td>
<td>&quot;NIC&quot; and &quot;NOC&quot; for the defense standard forms.</td>
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<tr>
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<td>Type of procedure.</td>
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<td>The values are the following:</td>
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<td></td>
<td>ACN = &quot;accelerated negotiated &quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACR = &quot;accelerated restricted&quot;</td>
</tr>
<tr>
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<td></td>
<td>AWP = &quot;award without prior publication of a contract notice&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COD = &quot;competitive dialogue&quot;</td>
</tr>
<tr>
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<td></td>
<td>NOC = &quot;negotiated without a call for competition&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIC = &quot;negotiated with a call for competition&quot;</td>
</tr>
<tr>
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<td></td>
<td>OPE = &quot;open&quot;</td>
</tr>
<tr>
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<td></td>
<td>RES = &quot;restricted&quot;</td>
</tr>
<tr>
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<td></td>
<td>In addition, &quot;NIP&quot; and &quot;NOP&quot; were found: these values are the corresponding of</td>
</tr>
<tr>
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<td></td>
<td>&quot;NIC&quot; and &quot;NOC&quot; for the defense standard forms.</td>
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<tr>
<td>CRIT_CODE</td>
<td>2</td>
<td>Award criteria. The values are the following:</td>
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<td></td>
<td>L &quot;Lowest price&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M &quot;Most economically advantageous tender&quot;</td>
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<tr>
<td></td>
<td></td>
<td>(many blanks)</td>
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<td>CRIT_CRITERIA</td>
<td>--</td>
<td>Unreliable variable: no standard pattern was found</td>
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<td>2</td>
<td>Indication of electronic auction. The values are the following:</td>
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<td></td>
<td>Y, N, blank</td>
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<td>VC_VALUE_EUROS</td>
<td>--</td>
<td>Value of the Contract award notice in € (VAT excluded)</td>
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<td>DT_DISPATCH</td>
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<td>Date of dispatch of the notice; range from 01/08/2008 to 23/04/2015</td>
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<td>DT_APPLICATIONS</td>
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<td>Closure date to receive applications to tenders; range from 01/08/2011 to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30/04/2015</td>
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<td>LOTS_NUMBER</td>
<td>50</td>
<td>Number of lots, dividing the contract; range from 0 to 224.</td>
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<tr>
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<td>The provided Codebook specifies that value = 1 is a typo</td>
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228
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<th>Variable</th>
<th>Value</th>
<th>Description</th>
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<td>Number of assigned awards; range from 1 to 190</td>
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<td>Unique identifier of an award; range from 3127579 to 6904134</td>
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<td>WIN_NAME</td>
<td>13.791</td>
<td>Name of the awarded participant</td>
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<tr>
<td>WIN_COUNTRY_CODE</td>
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<td>Country of the awarded participant (28 EU countries &amp; 24 non EU countries)</td>
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<td>NUMBER_OFFERS</td>
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<td>Number of received offers; range from 0 to 135 (extreme and unreliable values were coded as NA)</td>
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<td>ESTIMATED_VALUE_EUROS</td>
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<td>Estimated value of an award in € (VAT excluded). Unreliable variable</td>
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<td>TFV_EUROS</td>
<td>--</td>
<td>Total final value of the contract award in € (VAT excluded). Unreliable variable</td>
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<td>SUBCONTRACTED</td>
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<td>Indication of the possibility to subcontract the award. The values are Y, N, blank</td>
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<td>Date of the assignment of an award; range from 01/08/2010 to 30/04/2015</td>
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<tr>
<td>ID_OJ</td>
<td>--</td>
<td>No information about this variable in the codebook</td>
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6.2.4. **List of vendors not included in the algorithm, as identified by the multilingual check (not exhaustive)**

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<td>BO</td>
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<td>Captiva</td>
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<td>EE</td>
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<td>CS Master Collection</td>
<td>FR</td>
</tr>
<tr>
<td>CSS</td>
<td>FR</td>
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<td>Design Patterns</td>
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<td>DIDO</td>
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<td>Geoconcept</td>
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<td>Intego Virusbarrier</td>
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<td>MongoDB</td>
<td>SE</td>
</tr>
<tr>
<td>MS X-Tend</td>
<td>BE</td>
</tr>
<tr>
<td>NAGIOS</td>
<td>IT</td>
</tr>
<tr>
<td>Nokia</td>
<td>NL</td>
</tr>
<tr>
<td>NSK</td>
<td>NL</td>
</tr>
<tr>
<td>PeopleSoft</td>
<td>NL</td>
</tr>
<tr>
<td>Pitstop Pro</td>
<td>FR</td>
</tr>
<tr>
<td>Power AMC</td>
<td>FR</td>
</tr>
<tr>
<td>Promethean</td>
<td>UK</td>
</tr>
<tr>
<td>Quarkxpress</td>
<td>FR</td>
</tr>
<tr>
<td>Quite Imposing</td>
<td>FR</td>
</tr>
<tr>
<td>Raindance</td>
<td>SE</td>
</tr>
<tr>
<td>Rational</td>
<td>EE</td>
</tr>
<tr>
<td>RES</td>
<td>NL</td>
</tr>
<tr>
<td>Sanako</td>
<td>LT</td>
</tr>
<tr>
<td>Smart</td>
<td>UK</td>
</tr>
<tr>
<td>Spring</td>
<td>FR</td>
</tr>
<tr>
<td>Struts</td>
<td>FR</td>
</tr>
<tr>
<td>Tivoli</td>
<td>EE</td>
</tr>
<tr>
<td>Toad</td>
<td>FR</td>
</tr>
<tr>
<td>Tomcat</td>
<td>SE</td>
</tr>
<tr>
<td>VTDOCS</td>
<td>IT</td>
</tr>
<tr>
<td>VTIGER</td>
<td>IT</td>
</tr>
</tbody>
</table>
### 6.2.5. Overview of vendor presence and contra-legem tenders by country

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of references</th>
<th>Number of contra-legem tenders</th>
<th>Total tenders issued</th>
<th>% of contra legem tenders over total issued notices</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>27</td>
<td>25</td>
<td>132</td>
<td>18,94%</td>
</tr>
<tr>
<td>BE</td>
<td>120</td>
<td>68</td>
<td>434</td>
<td>15,67%</td>
</tr>
<tr>
<td>BG</td>
<td>17</td>
<td>14</td>
<td>271</td>
<td>5,17%</td>
</tr>
<tr>
<td>CY</td>
<td>4</td>
<td>4</td>
<td>31</td>
<td>12,90%</td>
</tr>
<tr>
<td>CZ</td>
<td>56</td>
<td>46</td>
<td>400</td>
<td>11,50%</td>
</tr>
<tr>
<td>DE</td>
<td>484</td>
<td>383</td>
<td>1.656</td>
<td>23,13%</td>
</tr>
<tr>
<td>DK</td>
<td>148</td>
<td>87</td>
<td>406</td>
<td>21,43%</td>
</tr>
<tr>
<td>EE</td>
<td>1</td>
<td>1</td>
<td>73</td>
<td>1,37%</td>
</tr>
<tr>
<td>ES</td>
<td>212</td>
<td>191</td>
<td>1.195</td>
<td>15,98%</td>
</tr>
<tr>
<td>FI</td>
<td>31</td>
<td>27</td>
<td>352</td>
<td>7,67%</td>
</tr>
<tr>
<td>FR</td>
<td>323</td>
<td>205</td>
<td>2.728</td>
<td>7,51%</td>
</tr>
<tr>
<td>GR</td>
<td>1</td>
<td>1</td>
<td>201</td>
<td>0,50%</td>
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<tr>
<td>HR</td>
<td>18</td>
<td>15</td>
<td>57</td>
<td>26,32%</td>
</tr>
<tr>
<td>HU</td>
<td>54</td>
<td>36</td>
<td>228</td>
<td>15,79%</td>
</tr>
<tr>
<td>IE</td>
<td>41</td>
<td>27</td>
<td>156</td>
<td>17,31%</td>
</tr>
<tr>
<td>IT</td>
<td>49</td>
<td>37</td>
<td>407</td>
<td>9,09%</td>
</tr>
<tr>
<td>LT</td>
<td>27</td>
<td>20</td>
<td>453</td>
<td>4,42%</td>
</tr>
<tr>
<td>LU</td>
<td>4</td>
<td>4</td>
<td>18</td>
<td>22,22%</td>
</tr>
<tr>
<td>LV</td>
<td>29</td>
<td>28</td>
<td>190</td>
<td>14,74%</td>
</tr>
<tr>
<td>MT</td>
<td>-</td>
<td>-</td>
<td>9</td>
<td>0,00%</td>
</tr>
<tr>
<td>NL</td>
<td>88</td>
<td>68</td>
<td>1.191</td>
<td>5,71%</td>
</tr>
<tr>
<td>PL</td>
<td>471</td>
<td>260</td>
<td>1.946</td>
<td>13,36%</td>
</tr>
<tr>
<td>PT</td>
<td>22</td>
<td>22</td>
<td>102</td>
<td>21,57%</td>
</tr>
<tr>
<td>RO</td>
<td>34</td>
<td>20</td>
<td>260</td>
<td>7,69%</td>
</tr>
<tr>
<td>SE</td>
<td>38</td>
<td>32</td>
<td>430</td>
<td>7,44%</td>
</tr>
<tr>
<td>SI</td>
<td>37</td>
<td>24</td>
<td>161</td>
<td>14,91%</td>
</tr>
<tr>
<td>SK</td>
<td>24</td>
<td>23</td>
<td>192</td>
<td>11,98%</td>
</tr>
<tr>
<td>UK</td>
<td>109</td>
<td>58</td>
<td>859</td>
<td>6,75%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2.469</strong></td>
<td><strong>1.726</strong></td>
<td><strong>14.538</strong></td>
<td><strong>11,87%</strong></td>
</tr>
</tbody>
</table>
6.2.6. Survey

1. Contact Information
   - First Name
   - Last name
   - E-mail
   - Phone

2. Member State in which your organization is located

3. Please select the type of organization you work for
   - Central Government
   - State Government
   - Local Government
   - Body governed by public law (e.g. hospitals, schools, etc.)
   - Central Purchasing Body (National)
   - Central Purchasing Body (Regional)
   - EU body
   - Other (please specify)

4. What is your role within your organization?
   - Technical Architect: If you design technical solutions to business problems. You generally think about the whole technical estate, how it interoperates and how to replace components cheaply and easily
   - Strategist: If you determine the technology or digital strategies in the context of an overarching business strategy
   - Standard setter: If you define what standards are to be used in a country, region or authority
   - Procurement practitioner: If you purchase goods and services for public authorities. You write specifications, engage the market and manage the procurement process leading to a contract
   - Other: Please specify
   - Senior Manager: If you are accountable for expenditure, strategy and delivering organisation’s objectives
   - Business case author: If you assess the cost and benefit of certain initiatives (such as an IT project). Business cases are used as a management tool to agree investments within an organisation

5. In your organization, what is the average yearly expenditure for the purchase of ICT goods and services? (Please express the amount in € Euro. For example € 150 000)
   - Less than € 50 000
   - Between € 50 000 and € 200 000
   - Between € 200 001 and € 500 000
   - Between € 500 001 and 750 000
   - Between € 750 001 and 1 000 000
   - More than €1 000 000

6. What percentage of your ICT procurement is above EU threshold? (Please, express the amount in percentage points. For example: 22 %)  P.N. According to EC Directive 24/2014 (Art 4) threshold values, net of value-added tax (VAT), are as follows: (a) EUR 5 186 000 for public works contracts; (b) EUR 134 000 for public supply and service contracts awarded by central government authorities; (c) EUR 207 000 for public supply and service contracts awarded by sub-central contracting authorities; (d) EUR 750.000 for public service contracts for social and other specific services.
   - (% from 1 to 100%)
7. Have you ever heard of “ICT lock-in”? If yes, can you please describe it in a few words?

- Yes
- No, I have never heard of "ICT lock-in"

8. Have you ever found yourself in a "lock-in" situation? If yes, can you please describe it in a few words?

- Yes
- No, we have never found ourselves in a lock-in situation
- No, and I am not even aware of what "lock-in" means

9. What measures have you put in place or plan to put in place to fight lock-in and other related IT problems? If any, could you briefly describe them?

- We have defined ICT strategies and architectures (please specify)
- We have disseminated knowledge on standards and other technical specification (please specify)
- We have prepared lists of recommended standards and other technical specifications (please specify)
- We have realized templates and ready texts to be used in procurement documentation (please specify)
- We have organized training initiatives on ICT procurement (please specify)
- We have exactly described our ICT needs (please specify)
- We have made long term plans for the evolution of ICT (please specify)
- We have written procurement guidelines (please specify)
- We have hired external consultants (please specify)
- Other (please specify)
- We have not yet put in place any action to fight lock-in and other related IT problems (please specify)
- None. We have not put in place any measure to fight lock-in and any other related ICT problem

10. What procedures do you usually use when procuring for ICT products or services?

- Open Procedure (please specify for what type of IT purchases you choose this procedure and what would be the reason behind your choice)
- Restricted Procedure (please specify for what type of IT purchases you choose this procedure and what would be the reason behind your choice)
- Negotiated Procedure w/out a call for competition (please specify for what type of IT purchases you choose this procedure and what would be the reason behind your choice)
- Negotiated Procedure (please specify for what type of IT purchases you choose this procedure and what would be the reason behind your choice)
- Competitive Dialogue (please specify for what type of IT purchases you choose this procedure and what would be the reason behind your choice)

11. When you need to acquire IT systems, what influences your decision on whether to reach to the open market for a specific product/system or whether to use your own resources/in-house capacity?

- Need of direct control over the product
- Intellectual property concerns
- Quality control concerns
- Supplier unreliability
- Supplier’s expertise on the technical areas and the domain
- Cost considerations
- Brand preferences
- Political and environmental reasons
- Other (please specify)
12. How do you ensure that civil servants executing the procurement procedure have the necessary IT technical and legal expertise? (E.g., do you have employee training schemes/ internal experts within your organisation/outsourced consultancy services?)

- Employee training schemes
- Internal experts within your organisation
- Outsourced consultancy services
- Other (please specify)
- We do not make sure that civil servants executing the procurement procedure have the necessary IT technical and legal expertise

13. Has your organisation ever inserted IT-related templates/standards clauses (such as the ones available at JoinUp eLibrary; http://bit.ly/1qEzwVg) in tendering documents? If yes, how do you assess their efficiency?

- Yes
- No

14. Does your organisation take into consideration from the beginning of the IT procurement process the impact of license agreements (in terms of transfer of intellectual property rights to you as a buyer)?

- Yes
- No

15. When conducting procurement of IT, do you integrate the future migration/exit costs, according the "product life-cycle costing" methodology introduced by the new Public procurement directives before the decision on the award of the contract?

- Yes
- No

16. Please select the appropriate level of importance

<table>
<thead>
<tr>
<th>Very Important</th>
<th>Important</th>
<th>Somewhat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Important</td>
<td>Not Important</td>
<td></td>
</tr>
</tbody>
</table>

- Achieve value for money
- Secure the project outcomes
- Promote innovation
- Maximize competition
- Ensure provider turnover
- Avoid ICT lock-in
- Avoid discriminatory terms and conditions

17. How often do you refer to "ICT procurement standards" when writing down a tender notice for the purchase of ICT goods and services? If yes, to which standards do you usually refer to?

- Very often
- Often
- Sometimes
- Rarely
- Never

18. Are you aware of any public body (throughout the EU) which successfully avoided "ICT lock-in" situations by using standards? If yes, can you briefly describe it?

- Yes
19. Do you know any interesting initiative meant to provide useful indications or support to facilitate the use of ICT procurement standards?

- I know someone who has defined ICT strategies and architectures (please specify)
- I know someone who has disseminated knowledge on standards and other technical specification (please specify)
- Other (please specify)
- I know someone who has organized training initiatives on ICT procurement (please specify)
- No, I don't know
- I know someone who has prepared lists of recommended standards and other technical specifications (please specify)
- I know someone who has realized templates and ready texts to be used in procurement documentation (please specify)
- I know someone who has organized training initiatives on ICT procurement (please specify)
- I know someone who has exactly described our ICT needs (please specify)
- I know someone who has made long term plans for the evolution of ICT (please specify)
- I know someone who has written procurement guidelines (please specify)
- I know someone who has evaluated an ICT product or service (please specify)


- Yes
- No

21. If you read the Guide (Q 20), can you please indicate your level of interest about it? (1 is "not interested" and 5 is "very interested")

22. If you had a chance to read the "Guide" (see Q. 20), would you suggest any way to improve it?

- No, I have never read the Guide
- Yes, I read it and I would like the Guide to...

23. Has your organization developed any guideline or recommendation for the procurement of ICT goods and services? If yes, could you briefly describe what they are all about? Are they currently available? Implemented?

- Yes
- No, we have not developed any guideline or recommendation for the procurement of ICT goods and service

24. How are you aware of the new procurement provisions within Directive 24/2014 repealing Directive 18/2004? In particular, are you aware that starting from 2018: i) electronic communication/e-procurement will become mandatory ii) all contracting authorities shall use electronic means of communication generally available and fully interoperable

- Yes
- No

25. CAMSS, an action of the European Commission's Interoperability Solutions for European Public Administrations - ISA programme, aims to support and coordinate the collaboration between Member States in defining a “Common Assessment Method
for Standards and Specifications (https://joinup.ec.europa.eu/community/camss/description). How aware are you of this initiative?

- We have already used CAMSS in the past
- We know CAMSS and plan to use it
- We do not know CAMSS but are interested in getting further information on how it could be useful for us
- We don't know the CAMSS initiative and will not be interested in it
- Other comments (please specify)
6.3. WORKSHOP REPORTS

6.3.1. Workshop report 1

6.3.1.1. General information

The Workshop “Public Entities Reducing Lock-In: The Way Forward” has been the first milestone of this Project. The main objectives of the event were to:

- Define the EU policy context around ICT procurement and the use of standards
- Present to the stakeholder community the project and its first achievements
- Provide some suggestions on how to reduce lock-in
- Share some good practice and bad practice examples about ICT procurement
- Present a first set of insights on the state of the art of ICT public procurement using standards through Europe

The Workshop took place on the 7th of July 2014 in Brussels, within DG CONNECT’s premises, running from 10:00 till 16:30, and in order to meet the preliminarily set objectives a vast panel of relevant speakers was involved in the event.

In particular, representatives of the European Commission Services from different DGs, as well as directly from Commissioner Kroes’ Cabinet, took the floor and opened the event providing attending participants with an overview on the whole policy context as well as specifically on the running project, its’ scope and already achieved targets, focusing also on synergies running across different EC-promoted activities.

The Workshop moved then straight into its core topics, with presentations of high-level representatives of organisations differently involved in the process of public procurement of ICT, as well as in the use of standards and in the promotion of interoperability solutions. All speakers provided interesting insights focusing on their perspective of the situation, sharing with the public their impressions both on the positive and negative aspects, while trying to provide some simple advice and “quick-win” solutions.

Furthermore, the event focused also on some cases representing true experience of public administrations and large organisations facing the challenge of avoiding lock-in, while assuring maximum interoperability of ICT systems.
The Workshop was then closed with a focus on already available tools to support public bodies when procuring ICT, with particular reference to the new enhanced online version of the “Guide for the procurement of standards-based ICT”, as well as the “Guidelines for sharing and re-use of ICT solutions in public procurement”.

Main facilitator of the Workshop was the Study’s lead Project Officer Thomas Reibe from DG Connect.

Extensive dissemination activities were carried out over the two months preceding the event, including different mailing rounds across several stakeholder communities, a dedicated social media campaign, publication of information shots on various online platforms and direct contact made with relevant key stakeholders.

Out of the 106 persons who registered for the Workshop, 77 actually attended the event. Most of them were representing central and local EU public administrations, research institutes and various business support organisations, as well as ICT suppliers. Some of the members of the Multistakeholder Platform (MSP) on ICT standardisation also attended the Workshop.

A dedicated participant folder was previously prepared and then distributed to all attending participants at the moment of on-site registration. In particular, the folder contained:

- The Workshop agenda
- Key speakers bios and a brief summary of their presentations
- The Project’s official leaflet
- The list of registered participants
- A personalised Workshop badge
- A Workshop evaluation sheet
- The official event hashtag selected for the Workshop
6.3.1.2. Workshop content

Thomas Reibe welcomed attendees and opened the event, briefly introducing the Workshop agenda:

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.30</td>
<td>Introductory greetings</td>
<td>The EU policy context and brief general presentation of the project</td>
<td></td>
</tr>
<tr>
<td>11.00</td>
<td>First Session</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.05</td>
<td>Why should Public Bodies use Open Standards when procuring ICT?</td>
<td>Mr. Wenning, focused on &quot;open standards&quot; and their various meanings across different areas.</td>
<td></td>
</tr>
<tr>
<td>12.00</td>
<td>In-depth discussion A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.30</td>
<td>Open standards and the EU Procurement directive - do's and don't's</td>
<td>Mr. Mitchell delivered a detailed presentation about &quot;Open standards and the EU Procurement directive - do's and don't's&quot;.</td>
<td></td>
</tr>
<tr>
<td>13.00</td>
<td>In-depth discussion B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.30</td>
<td>The benefits of using open standards when procuring ICT</td>
<td>Mr. Parry provided an explanation of &quot;The benefits of using open standards when procuring ICT&quot;.</td>
<td></td>
</tr>
<tr>
<td>14.30</td>
<td>Second Session: Case Studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.10</td>
<td>Third Session</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.10</td>
<td>Available tools to support Public Bodies when procuring ICT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

REGISTRATION OF PARTICIPANTS AND WELCOME COFFEE (10.00 – 10:30)

Mrs Johannisse the policy context to which European public entities will have to adapt in the coming years, while showing the most important actions taken at the European level to promote the use of Open Standards for the procurement of ICT.

Having clarified the policy context, Mr Reibe presented the project that DG Connect is currently working on to allow European public bodies to build open ICT systems by making better use of open standards.

Mr Szekacs, briefly presents the emerging synergies between Action 23 and the EC Sharing and Re-use Framework.

REGISTRATION OF PARTICIPANTS AND WELCOME COFFEE (10.00 – 10:30)

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REGISTRATION OF PARTICIPANTS AND WELCOME COFFEE (10.00 – 10:30)

Mrs Johannisse the policy context to which European public entities will have to adapt in the coming years, while showing the most important actions taken at the European level to promote the use of Open Standards for the procurement of ICT.

Having clarified the policy context, Mr Reibe presented the project that DG Connect is currently working on to allow European public bodies to build open ICT systems by making better use of open standards.

Mr Szekacs, briefly presents the emerging synergies between Action 23 and the EC Sharing and Re-use Framework.
6.3.1.2.1. Opening session: The EU policy context and brief presentation of the project

As mentioned, the opening session was dedicated to representatives of the European Commission Services, and in particular to the advisor for the Digital Agenda of EC Commissioner Kroes, as well as to DG Connect and DG Digit representatives, which provided attending participants with an overview on the whole policy context as well as specifically on the running project, its' scope and already achieved targets, focusing also on synergies running across different EC-promoted activities.

Sigrid Johannisse: EU policies to promote standards for ICT procurement

Advisor Cabinet VP Kroes for Digital Agenda, Mrs. Sigrid Johannisse, welcomed participants presenting the relevance of the issue of standardisation for Vice President Neelie Kroes when she was already Commissioner for competitiveness and growth. She underlined how standardisation plays a crucial role for the Digital Agenda, using the example of e-health and e-government which would not be possible without standardisation.

Standardisation is something important to ensure collaboration and connectivity within government and between governments. It is important to ensure interoperability between systems and between countries to compete in a global market and to transmute the energy spent on these issues in true success. Mrs. Johannisse then focused on the lock-in effect, to figure out exactly what it is, what it produces and what public administrations can do to avoid it. To this end she presented the reasons why public administrations should use standards, pros and cons of standardisation and the difficulties associated with the use of standards, and specified how the decision to adopt standards when purchasing ICT is a decision which will bring long-term benefits.

Mrs. Johannisse then introduced the regulatory environment in Europe in the field of standards and the struggle against lock-in: Action 23, MSP, Rolling plan on standardisation. At this point Mrs. Johannisse also shared with the audience the most important actions taken at European level to promote the use of Open Standards for the procurement of ICT goods and services. Among them, of course the EU action against lock-in: Communication COM(2013)455 “Against lock-in: building open ICT systems by making better use of standards in public procurement” and underlined the importance of sharing best practices on this topic.

She then briefly concluded presenting the policy context to which European public entities will have to adapt in the coming years. Open standards are certainly a part of it, thus making it important for European public administrators to understand the role they play within the overall policy context. As an example of the changing approach of EU to the topic, going from a flexible approach to a set of mandatory rules, she mentioned the new Directives on procurement and how they will make progressively mandatory the use of e-procurement by 2018, giving also considerable importance to the issue of interoperability and standards as key factors to make public procurement in the EU more competitive and open.
Thomas Reibe: Study on best practices for ICT procurement based on standards

Mr. Thomas Reibe, Policy Officer - Unit F2 - DG CONNECT, briefly presented to the audience the “Study on best practices for ICT procurement” that, under Service Contract 30-CE-0601961/00-29 between DG CONNECT and PwC, will be completed over the next 18 months.

Before moving on to the Project’s nuts-and-bolts, Mr. Reibe briefly summerised the political context that led the European Commission to invest in this Study:

1. DIGITAL AGENDA – ACTION 23: Under which the EC commits to providing guidance on the link between ICT Standardisation and Public Procurement in order to help authorities use standards to promote efficiency and reduce lock-in.
2. PAN-EUROPEAN STUDY ON PUBLIC PROCUREMENT PRACTICES: In 2011 the EC following up on Action 23, conducted a pan-European study assessing the public procurement practices in the EU.

Following Communication (2013) 455, the European Commission issued a series of recommendations on how to reduce lock-in and is currently trying to raise awareness about the lock-in theme. To this end, Mr. Reibe reported that over the next few years the EC will deploy a number of dissemination activities, one of them being the activities within the Study on “Best Practices for ICT procurement based on standards in order to promote efficiency and reduce lock-in”. The overall duration of the Study is two years, with effect from January 1 2014, and is divided into four main tasks:

Task 1: Dissemination of the Guide - Creation of a general level of high involvement on behalf of key stakeholders to make them aware of the project and the Guide.

Task 2: Community Building - Widen the number of stakeholders to engage and to inform about standards-based ICT procurement.

Task 3: Sharing of Best Practices: Collect the greatest number of good and bad practices about ICT procurement. These practices will later be published and discussed on the dedicated Joinup Community.

Task 4: Monitoring: Monitoring the take-up of “open procurement” (expected outcome), by collecting and elaborating relevant data.

Having presented in detail the four main tasks, Mr. Reibe moved on briefly presenting the new version of the Guide for the procurement of ICT based on standards and the two main communication channels through which relevant stakeholders will be engaged. The first one being the Joinup Community “Open Standards for ICT Procurement” and the second one being the dedicated Twitter account “Open ICT Proc”.

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Szabolcs Szekacs: The EC sharing and re-use framework

Mr. Szekacs, representing Directorate-General for Informatics of the European Commission, closed the introductory session by presenting the emerging synergies between Action 23 and the EC Sharing and Re-use Framework.

In particular Mr. Szekas started his intervention presenting EC’s ISA programme, the programme on Interoperability Solutions for European Public Administrations. ISA supports and facilitates efficient and effective cross-border electronic collaboration between European public administrations. The programme enables the delivery of electronic public services and ensures the availability, interoperability, re-use and sharing of common solutions. A budget of over 144 M Euro has been foreseen for the period from 2010-2015.

ISA embeds the EC sharing and re-use framework, which is structured on various levels, starting from a set of high-level principles and recommendations, on which a number of specific instruments are built on, together with an underlying “supporting infrastructure” for sharing and collaboration (namely, the online platform Joinup).

Mr. Szekas concluded explaining how ISA provides several solutions which can help procurers avoid vendor lock-in and facilitate the development of interoperable and re-useable services; raising awareness of availability of these frameworks, instruments and services is crucial in order to create a more interoperable future for Europe.

6.3.1.2.2. First session: Why should Public Bodies use Open Standards when procuring ICT?

High-level representatives of organisations differently involved in the process of public procurement of ICT, as well as in the use of standards and in the promotion of interoperability solutions shared their views with the audience during the Workshop’s first session. All speakers provided interesting insights focusing on their perspective of the situation, sharing with the public their impressions both on the positive and negative aspects, while trying to provide some simple advice and “quick-win” solutions.

Rigo Wenning: Open standards – An attempt of explanation

Mr. Wenning joined the World Wide Web Consortium (W3C) 15 years ago working on Privacy topics. Over time, his responsibilities extended to work on all legal matters and in 2005, he became the W3C’s Legal Counsel. Since 2001 Mr. Wenning is W3C’s representative to the ICT Standards Board and now the representative to the EC’s Multistakeholder platform.

Having given many presentations on the topic, he was the perfect presenter to introduce the audience to the definition of “open standards”. Indeed, in his words “Open
standards” are popular and everybody talks about them but... no one really knows how to recognise an open standard.”. He therefore tried, in his presentation, to give some advice and orientation on “open standards”, what they do and why they are so important in the internet era.

He opened his presentation explaining why we should use open standards. The answer to this question is simple: to fight lock-in. But how many types of lock-in are there? Essentially two.

- **Strict lock-in**: This type of lock-in can be traced back to those legal restrictions that we used to see in the 80’s.
- **Soft lock-in**: This type of lock-in is the most widespread nowadays and it can be summarised with one word: convenience.

Most individuals and organisations are scared of moving from a proprietary system to another because of convenience. Indeed, the cost of moving from one supplier to another (*switching costs*) might be very high for end consumers and organisations. Let’s think of a consumer that has to switch from his smartphone, which he is comfortable with, to another smartphone of a different brand. It is clear that he will have to bear some costs before understanding how to use the new product.

We should therefore avoid, if possible, buying proprietary systems that, even if very easy-to-use, will raise the switching costs of moving from a vendor to another. But how do we do that? How do we make sure to be able to move from one vendor to another?

The answer is using open standards (data formats, wire formats, protocols, semantics, etc.). Indeed, in Mr. Wenning’s words, we should make sure that the data coming in and coming out of our electronic solutions is fully interoperable with the data used and produced by new and diverse solutions.

Only by using open standards will it be possible to create a real distributed system where servers, databases, laptops, mobile phones etc., will be able to seamlessly communicate among themselves even if produced by different vendors.

Open standards, to be called as such, have to respect the five principles defined by Open-Stand (Cooperation, Principles, Empowerment, Availability and Voluntary Adoption). In addition, the World Wide Web Consortium finds “Economies of scale” to be the key factor in making an open standard a success. Undeniably, to achieve economies of scale, open standards must:

- Be available for free on the Internet
- Be implementable on a Royalty Free basis
- Be of technical merit and usable
- Cater to an eco-system

But there are two major risks that could seriously affect the adoption of open standards. First of all, standards are defined by the unquestionable decision of a committee, with the risk that if it decides that “a camel is a horse”, a camel becomes a horse. Second of all, there are more than five hundred organisations that claim to be a standardisation

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129 [http://open-stand.org/principles/](http://open-stand.org/principles/)
organisation. Which one is to be followed is still unclear. Fortunately a positive aspect is that in the EU, the Multi-Stakeholder Platform on ICT Standardisation (MSP) is currently working to make things easier on these topics for European citizens and organisations.

**Nikolaos Loutas: Save time & Reduce costs – Find and reuse interoperability solutions on Joinup for developing European public services**

Mr. Nikolaos Loutas, manager in PwC working with the Brussels-based technology team, explained how sharing and reuse of interoperability solutions is a key enabler towards overcoming interoperability barriers of any type in cross-border digital public services. Interoperability, favoured by the use of appropriate ICT standards, is an enabling factor for public entities wanting to save money and avoid lock-in. Indeed, the uncoordinated development of ICT solutions leads to duplication of effort, increased development times and costs, and non-interoperable systems.

Mr. Loutas, recalling what was previously presented also by DG DIGIT representative Szabolcs Szekacs in the opening session of the Workshop, focused then on how the ISA Programme of the European Commission has developed a vision to facilitate the access of public administrations in Europe to reusable interoperability solutions. The ISA Programme has also been funding Joinup, serving as a multi-purpose platform, offering among others, a vast catalogue of interoperability solutions.

The catalogue hosts four types of interoperability solutions (technical, semantic, organisational and legal) and provides benefits for both reusers and owners of interoperability solutions; more than 5000 solutions are already available in the catalogue.

Among the most significant questions raised by the audience, Mr. Loutas was asked if the interoperability solutions provided through Joinup were also available outside EU countries? His answer was that the portal had been developed online and freely accessible, without any geographical restriction.

Furthermore, other participants were curious to know if there was some kind of process in place to assure previous verification of solutions shared on Joinup. Mr. Loutas confirmed that all content shared on the online platform was previously verified by the managing team, and also that – through the portal – it is possible to seek for advice on legal aspects.

**Iain Mitchell: Open standards and the EU Procurement Directive - Do's and Dont's**

Iain G. Mitchell - member of both the Scottish and English Bars, and ranked in the Chambers Directory as a “Leader of the Bar” in matters of IT Law, Public Procurement and Commercial Litigation - presented his view on the new EU Procurement Directives in relation to open standards. The UK representative on the IT Committee of the CCBE opened his presentation by stating that sometimes a lack of familiarity with the provisions
of the EU Procurement Directive can lead public authorities to misunderstand the scope and effects of the Directive, and what can lawfully be done to permit and facilitate the use of standards to escape from the risks of lock-in.

In his view, the **EU procurement law is rather straightforward** and it is fundamental to keep the focus on the **underlying principles**. The context which has to be kept into consideration when thinking of these Directives is based on EU’s final objective of increasing internal competition. **Directive 2014/24/EU**, replacing Directive 2004/18/EC, clearly recalls in its preamble the main Treaty principles and so-called “derived” principles.

Regarding standards, **Preamble 47** of the new Directive refers to **research and innovation** as the main driver for future growth and calls to public authorities to foster R&I through public procurement, while **Preamble 74** then explicitly refers to standards, linking them to the fundamental underlying principles. **Article 42, in paragraphs 2 and 3**, quotes the method of referring to technical specifications, and provides a hierarchy to which public procurers must comply when referring to standards in their tendering processes. In particular standards to be quoted in tendering documentation are ranked in the Directive as follows:

- National standards transposing European standards,
- European Technical Assessments,
- common technical specifications,
- international standards,
- other technical reference systems established by the European standardisation bodies or - when any of those do not exist:
  - national standards,
  - national technical approvals
  - national technical specifications relating to the design, calculation and execution of the works and use of the supplies.

Several cases presented by Mr. Mitchell showed how it is not possible to force a public administration to buy something that it does not want in the search for equal treatment. As an example in the case of Concordia Bus Finland Oy Ab v Helsingin kaupunki and HKL-Bussiliikenne the Municipality of Helsinki wrote in the tender notice that the contract would be awarded to the undertaking whose tender was economically most advantageous overall to the city. Three categories of criteria would be used to assess this: the overall price asked for operation, the quality of the bus fleet, and the operator’s quality and environment programme. In short, additional points were awarded to the tenders who fulfilled the nitrogen oxide emission limits. Concordia Bus offered the lowest price but its buses weren’t in line with the emission standards. In fact, only one tenderer belonging to the city was was in line with those specifications. Thus, including this environmental criterion there was no competition. Concordia appealed to the Korkein hallinto-oikeus (Supreme Administrative Court) to have the Competition Council’s decision quashed. The most important of those questions was whether the Community legislation, correctly interpreted, allows a municipality which organises a tender procedure for the operation of an urban bus service to include operators’ ecological and quality management in the comparison of tenders. **131** The Court of Justice ruled that the principle of equal treatment

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does not prevent considering environment protection criterion merely because the transport operator to whom the contract is awarded is one of the few undertakings able to offer a bus fleet which meets those criterion.132

Other cases showed the risks of arbitrarily selecting standards included in tendering documentation: quoted examples of “bad practice” included the Slovak National Tax Authority, which decided to impose upon the Slovak population to submit tax forms electronically through their single e-portal. The main problem with such a demand was that the web-based portal was only accessible to users with a certain type of widely available operating system and software package. Furthermore, the Scottish Public Health Administration was mentioned as an additional case of bad practice, given their recent experience in 2011 of managing “linear accelerators”, extremely expensive equipment, in relation to which the Scottish Health Administration ended-up experiencing lock-in to software providers of these apparatus.

Mr. Mitchell concluded his presentation quoting a series of "Do’s" and "Dont’s": among the provided advice he suggested not to fear the use of standards when drafting procurement documentation, and to follow the hierarchy in the EU Procurement Directive; he also suggested thinking of the standards to be used which must be really required and most likely should be “open”. The use of standards in procurement must not be considered as just a “box-ticking” exercise, ICT procurement using standards furthermore should not be limited by legacy costs, and -finally- he advised to always think of the general principles underlying procurement, asking questions such as: i) Does this close down the market to competition?; ii) Could this create lock-in? iii) Is this solution going to cost us more money than another solution?

Karel De Vriendt: Open standards to reduce lock-in and to save public money

Mr. Karel De Vriendt, fellow of the Open Forum Academy, briefly presented himself and his relevant experience in the field. He clarified that his intervention would focus on Government ICT systems, because they are part of the national infrastructure, and they have particular relevance for services provided to businesses and citizens, and for this reason they must be interoperable, flexible, reconfigurable and extensible. They should not impose undue restrictions on businesses and citizens and should not favour specific ICT vendors nor impose their products upon business and citizens.

He briefly presented the need for openness, identifying them as factors that can bring governments to save -overall in the whole Union- up to €1Bn per year, based on the total amount of public expenditure for ICT in Europe and on the assumption that when there in not competition in procurement procedures, prices are at least 10% higher.

He then explained what open standards are, making clear that precaution has to be used when it comes to ICT specifications in public procurement.

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Mr. De Vriendt then provided an overview of the most well-known definitions of open standards, citing the examples of four countries: UK, Spain, Netherlands and Germany. He stressed, however, that these cases are important as examples of having reasons about adopting a specific standard, with objective criteria to be set out in a transparent way.

ICT specifications must not be thought of as a cluster of individual islands but as connected parts of a complex ICT architecture in order to ensure interoperability. The first thing to be sure of is that the selected specifications can ensure interoperability between ICT systems that are in use: indeed every ICT system interfaces with other systems within or outside the organisation; many ICT systems interface directly with human beings and should fit in an architectural context using building blocks and multilayered approaches. Interfaces can be direct (protocols) or indirect (file formats, data definitions). If public administrations build a big ICT architecture they have the power to affect sellers behaviour. In this regard, many States have adopted interoperability frameworks.

He defined the lock-in effect as the reverse situation of the free market, or a situation where competition among sellers is limited and entities are not able to purchase the best solutions at the best price. In other words lock-in is in place when the liberty to choose the best solution offered by the market is no longer available because of decisions taken by others, in the past, by external partners -such as the regulatory public bodies-, today by partners within the organisations. Thus lock-in leads to sub-optimal solutions, negotiated procedures and shabby justifications. Being locked-in can be forgiven because nobody is responsible for choices made in the past and by others, but staying locked-in is an intentional market distortion because everybody is responsible of repeating the same bad choices.

Regarding open standards and procurement, currently there is not much supporting evidence or research done where using open standards has resulted in saving money. Few studies show that most cases combine going with open standards, while using open source, especially in the underlying infrastructure and desktop tools for savings. One more related issue is that going for openness means gains to be observed in the long term. For these reasons the existing best practices (mainly in the UK and the Netherlands) point out the importance of the definition of an ICT architecture, as a consequence and as part of that architecture, the listing of the open standards that will knit the various building blocks of the architecture together. Once ICT standards are defined, every entity should specify the use of these standards as mandatory in its public procurement.

Mr. De Vriendt continued explaining briefly what steps to follow to break lock-in situations:

- become aware of being locked in
- describe two architectures: the present architecture and the desired architecture
- analyse the present architecture: overview of the reality (including proprietary formats/protocols that cause lock-in)
- describe the desired architecture: building blocks and horizontal layers linked together via formats/protocols based on open standards
- define a transition plan

With reference to the considerations related to the theory of total cost of ownership applied to the decision making process against lock-in in public entities, Mr. De Vriendt stated some recommendations:

- costs linked to previous decisions are not to be considered for future decisions
- end of lifetime costs should be considered
- training costs do not cover great relevance
Finally Mr. De Vriendt did not propose “ready to-use” solutions, but provided the audience with some recommendations:

- Publish architecture/strategy, publish target dates for breaking lock-in
- Stop using interfaces, formats or programming languages “owned” by one provider
- Avoid lock-in creep – you may save money in the short run but you lose out greatly in the long run
- Systematically go for software that runs on multiple platforms (multiple underlying OS’s)
- Use the present paradigm shifts to break your lock-ins
- Share best practices and cases of use, case stories about costs and benefits calculation schemes.

Mr. Szabolcs Szekacs intervened to recount his experience related to the difficulty of finding a method for calculating the perk of adopting interoperability and sharing and re-use solutions. Mr De Vriendt replied that benefits coming from interoperability do not need to be argued since they are immediately observable.

Furthermore, another question pointed out that the problem of lock-in does not derive only from the correct way to write tender specifications, but also how public entities assess the compliance of vendors solutions with tender specifications. In this sense Mr. De Vriendt responded by clarifying that if the non-compliance of the acquired solution is verified during the execution of the contract, public entities always have the possibility to terminate the contract.

Thomas Reibe in conclusion made clear that the European Commission does not define precisely open standards in its Communication (455/2011). In this case, what the Commission does is provide guidance meant to emphasize the importance for public procurers to develop their technical skills to understand their own systems and to understand whether the solutions offered are actually compatible.

Lee Parry: The benefits of using open standards when procuring ICT

Mr. Lee Parry is an award winning ICT Project Manager who, using his experience with the successful delivery of large scale ICT Projects and Procurement, made the move into Procurement. With over fifteen years of industry experience, Mr. Parry has a background in ICT and Telecommunications, and used his experience to ensure the successful delivery of a £21M Public Sector ICT Infrastructure Programme, for the Fife Council, which was delivered on time and £1.5M under budget.

Mr. Parry opened his presentation claiming that lock-in is unavoidable. To demonstrate his thesis, he demonstrated four examples of situations in which his organisation found itself locked-in even though it had put in place all the necessary strategies to avoid it.

- **Voice Over IP Solution**: The VOIP solution bought from a private vendor (CISCO) was a wonderful opportunity to standardise the communication architecture around the Council. Unfortunaly, they later discovered that with this solution they could only buy additional or replacement hardware from a limited number of vendors. The number of sellers was even lower for the purchase of maintenance services.
- **ERP Solution**: The Oracle ERP management system was the perfect solution to allow Fife Council to streamline a number of activities around the Council. Indeed this solution allowed Fife to collect, store, manage and interpret data
coming from different business units and different areas of the Council. Unfortunately, they later discovered that Fife wasn’t the owner of the software licence. This meant that each year a certain amount of money had to be paid, and that only a restricted number of suppliers had to be contacted to purchase maintenance services, and that every time Fife desired to install a new module within the ERP they had to pay more in licences.

- **Mobile Application Development Platform**: Given work dematerialisation, Fife decided that it was time to provide its employees with a series of mobile applications to allow them to work from remote locations. Unfortunately, they later realised that the mobile application development platform was proprietary. This meant that the applications they developed could only be used on certain types of devices but not on others.

- **Microsoft**: As with most public administrations, Fife Council needs to buy Microsoft products because no alternatives could ensure the same level of service and compatibility.

Despite this pretty pessimistic claim, Mr. Parry believes that lock-in is not unsurmountable. In fact, these bad experiences led him and his colleagues to formulate a set of five standards that each entity pertaining to Fife has to respect in order to fight or at least reduce lock-in. The five standards are:

- **PMO**: A dedicated Project Management Office ensures that no ICT purchase is creating commercial or operational risks to the Council.

- **Technical standards**: A set of technical standards guarantees that the overall ICT architecture is secure that the chances of being locked-in are minimised.

- **Organisational and departmental visions**: Fife Council is divided into 19 departments (education, environment, etc.), each one having its own vision with regards to the purchase of ICT. This additional degree of freedom allows each department to independently select its own technical standards.

- **Subject matter expert reviews**: Before any purchase of technology products, the contract has to be reviewed first by a panel of experts that will make sure that the new purchase is in line with the departmental vision.

- **Contract management**: A set of contract management routines and good practices to ensure that all the ICT that has already been installed inside the council is properly managed.

Another factor distinguishing Fife Council from other public entities is that Fife always takes into serious consideration what might happen at the end of the contract. Indeed in Mr. Parry’s words, **Exit Management** is as important as any other activities that take place when purchasing an ICT solution (technical specification writing, etc.). Fife’s exit management strategy might be summarised by these four activities:

- Solution lifecycle review pre-procurement
- Consideration of previous solutions
- Supplier engagement to test appetite
- Contract management to ensure conformity

Still in the area of ICT Procurement, one of Mr Parry’s further achievements includes the creation of a £26M Agile Procurement Vehicle (APV) for Fife Council for the provision of ICT and Business Change Services and Solutions. The APV led to the creation of a framework contract for telecommunications services, on behalf of the Scottish Government for all 180 Scottish Public Sector organisations within Scotland, delivering savings of at least 30% compared with equivalent UK Government frameworks.

Significant questions raised sought to understand if Microsoft lock-in was due to the high investment costs, the MS Office Suite or the MS Operating Systems. Mr. Parry pointed out
that, unfortunately, there are currently almost no alternatives that can guarantee the same service levels of service, as those products.

6.3.1.2.3. Second session: Case studies

The second session of the Workshop focused then on cases representing experiences of public administrations and large organisations facing the challenge of avoiding lock-in, while assuring maximum interoperability of ICT systems.

Walter van Holst: Open standards in ICT procurement - Some Dutch experiences

Walter van Holst is a senior ICT legal advisor within Mitopics with over a decade of experience with tendering procedures, both in the public and private sector, drafting contracts and settling disputes. He was involved with the Dutch NOiV programme promoting open source and open standards in the Dutch government and more recently with the Bureau Forum Standaardisatie, with the task of enabling public procurement officers to apply more open standards in ICT-tenders.

Mr. van Holst shared some of the lessons learnt by the Dutch government after over a decade of policies giving preferential treatment to open standards. In fact, since 2003 the Dutch government made the preference for open standards mandatory for the purchase of ICT products. As this policy has proved ineffective, in 2007 the Government issued a series of instructions to make explicit when the policy had to be taken into consideration:

- The preference for open standards is mandatory for all investments over €50,000.
- In these cases, if open standards are not chosen, a detailed explanation of why not should be provided in the annual report. The explanation must be convincing.
- A special list of standards (very MSP-like) should be taken into consideration when the policy kicks-in.

The results of this policy were measured by Dr. Mathieu Paapst, a Ph.D. researcher within the University of Groningen. Dr. Paapst analysed all the Dutch government tenders for ICT products, from €50,000 to €120,000, that were published on Tenders Electronic Daily (TED) between 2010 and 2012. He discovered that the compliance with the preferential treatment policy was pretty low.

- 2010: Around 40% of compliance, with 0% explanations provided.
- 2011: Around 40% of compliance, with 0% explanations provided.
- 2012: Around 40% of compliance, with 0% explanations provided.

Mr Van Holst, believes the same results also apply for 2013 and 2014. As a result of this research the Dutch government started an investigation to understand the reasons behind these results.

- **Policy awareness (What)**: Many public procurers are not aware of the policy.
- **Application of the policy (When)**: Even if some procurers are aware of the policy, it is unclear to them when the policy kicks-in.
Putting it in practice (How): Even if some procurers are aware and know when it kicks in, it is unclear to them what is an open standard and how they should use them to avoid lock-in.

On the basis of these three reasons, the Dutch government thought that it was time to provide procurement officials with a little more support to help them understand the What, the When and the How. They therefore identified the “top twelve” ICT tenders (the most purchased ICT products & services) and developed a matrix of semi-mandatory standards that procurement officials should use in case they are buying one of these twelve products. At the moment this document is thirty pages long and is in the process of being approved by the various legislative committees before becoming law in all respects.

Significant questions raised sought to understand the differences between this Dutch project and other projects that were carried out in other countries, such as the UK, on the same topic. Mr. van Holst pointed out that other countries are mainly collecting standards without taking into account the public procurers' perspective. The Dutch government is instead collecting and organising these standards in a way that public procurers can easily use them, even if just copying and pasting a marginally reworded version of the text.

Grant Williamson: IBM’s practice for facilitating interoperability of Operating Systems

Mr. Williamson’s intervention focused on the desktop solution adopted by IBM to ensure the use of open standards: IBM Open Client. He started with the story of this solution within the company, started in 1988 to achieve browser independence for the desktop environment.

IBM passed through a Linux desktop and reached, in the end, a single image delivery Client system, with a self-help program. In 2014, IBM came to develop a desktop environment based on Mac, Linux and Windows configurations, with versialed cloud services and mobile. Mr. Williamson explained why they decided to run Mozilla Firefox browser and what IBM decided to do:

- Drive the enterprise adoption of Firefox and IBM's transformation to web based delivery of enterprise applications
- WebSphere Portal based w3 Intranet is the foundation
- Accelerate adoption of HTML5 techniques, Social Networking technologies and situational applications in the Enterprise
- Build an Operating System and browser independent IT environment
- Advance IBM's adoption of open w3c standards
- Innovation that matters for our company, and the world – developers share IBM's best practices and influence technology direction at the Mozilla.org foundation

Later he described the IBM Social Document Strategy, based on light-weight web editing, mobile device support and a desktop editing support, driving IBM towards a cloud first development model. To stay in line with its strategy, IBM adopted Apache Open Office (OO), mainly because:
- **Cross-platform OOO3** runs on several hardware architectures and under multiple operating systems, such as Microsoft Windows, Mac OS X, Linux, and Solaris.
- **Extensive language support** OOO’s user interface is available in over 40 languages.
- **Consistent user interface** All components have a similar “look and feel,” making them easy to use and master.
- **File compatibility.** In addition to its native OpenDocument formats, OOO includes PDF and Flash export capabilities, as well as support for opening and saving files in many common formats including Microsoft Office, HTML, XML, WordPerfect, and Lotus 123 formats. New in OOO3 (using an extension): the ability to import and edit some PDF files.
- **No vendor lock-in** OOO3 uses OpenDocument, an XML (eXtensible Markup Language) file format developed as an industry standard by OASIS (Organization for the Advancement of Structured Information Standards).

The IBM solution is based on Open Standards, not Open Source, because it is able to run on every system and application (Mac, Windows, Linux). In essence, users choose their own platform. Specific application requirements for customers are allowed to define the OS.

Among the main questions, there was interest to know more about the standard adopted by IBM for documents, since they use “Open Office”, and if they had perhaps experienced problems in communicating with other users. Mr. Williamson clarified that interoperability is granted and that the format used is an IBM fully compatible format.

**6.3.1.2.4. Third session: Available tools to support Public Bodies when procuring ICT**

The last session of the event focused on already available tools to support public bodies when procuring ICT, with particular reference to the new enhanced online version of the “Guide for the procurement of standards-based ICT”, as well as the “Guidelines for sharing and re-use of ICT solutions in public procurement”.

**Giovanna Galasso: The Guide for the procurement of standards-based ICT**

Ms. Giovanna Galasso, Study’s Project Manager, briefly presented to the audience the recent evolution of the European Commission’s “Guide for the procurement of standards-based ICT”, firstly developed as a Commission Staff Working Document attached to the “Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Against lock-in: building open ICT systems by making better use of standards in public procurement”, and then recently transformed -within the framework of the Project- into a more “user-friendly” navigable online version.

This new version of the Guide, accessible at [www.openictprocurement.eu](http://www.openictprocurement.eu), has been redesigned together with EC Services, around 6 key roles, in order to represent the users that may need to look-up for potential advice. These roles that the Guide now considers are:

- Standards Setters (centralised)
- Senior Management (centralised/local)
- Strategists (local)
- Technical Architects (local)
- Procurement Practitioners (individual)
- Business Case Authors (local)

Each role has a set of "user needs" associated with it – these are the things they need to know or to do to effectively carry out their job to avoid being "locked-in". The whole Guide has been developed to be a "dynamically evolving" document, commentable in each of its main sections, in order to acquire relevant feedback from the extended stakeholder community and to eventually integrate and modify its main contents.

Among the most significant questions raised, some sought to understand if this new enhanced version of the Guide was replacing the previous "more formal" EC Staff Working document. Ms. Galasso pointed out that both versions will still be publically available over the net, given also that contents included in the two versions are essentially the same, even though dissemination and awareness raising actions will focus in the future on the new online navigable “user-friendly” version of it. It is also expected that over time EU Member States will develop more “nationally” tailored versions of the Guide, specific to their own ICT strategies and their use of standards and translated in the local language.

**Leda Bargiotti: Guidelines on sharing and re-use in public procurement**

Ms. Leda Bargiotti, PwC manager within the Brussels-based Technology team, briefly presented the ISA Programme, the already-mentioned programme of the European Commission that aims to provide Interoperability Solutions for Public Administrations and electronic collaboration, focusing particularly this time on Action 4.2.5: "Sharing and Re-use strategy".

The main goal of this Action is to increase visibility of existing procurement best practices instead of re-doing the work already done. In the implementation process of the project activities, Ms. Bargiotti contributed with DG DIGIT to the development of a meta guideline meant to help procurers with some practical advice. This Guideline, currently available and published online, includes practical advice such as:

- checking which solutions are already available for re-use purposes;
- seeking examples of re-use templates or ready text when drafting tenders;
- requesting ICT solutions to be easily accessible by everybody.

The Guidelines offer support in order to avoid referring to proprietary products such as brand names, trademarks and patents and sets out principles to avoid requesting compatibility with previously purchased ICT solutions. Other advice provided includes the possibility of using explicit requirements to use standards against proprietary elements, as well as the provision of documentation during the contract and knowledge handover at the end of it, together with reminding procurers to include exit costs in the price of the contract.
At the end of the presentation whilst demonstrating another available tool to support public procurers, the main question raised was about the availability and accessability of the Guidelines; Ms. Bargiotti’s answer was that the Guidelines are already available today on the Joinup platform.
6.3.1.3. Analysis and evaluation

6.3.1.3.1. Workshop evaluation

At the end of the Workshop, the audience was required to fill out an evaluation questionnaire aimed at assessing whether they enjoyed the initiative and found it useful in relation to their activity. Participants were required to evaluate the different aspects of the initiative ranking each statement from 1 (which expressed strong disagreement with the remark) to 4 (which expressed strong agreement with the remark).

The table below shows the items presented in the evaluation questionnaire:

<table>
<thead>
<tr>
<th>Items</th>
<th>Response</th>
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<tbody>
<tr>
<td>The information that you received by phone/mail before the event was adequate</td>
<td>1-4</td>
</tr>
<tr>
<td>The organisation and infrastructure of the event were good</td>
<td>1-4</td>
</tr>
<tr>
<td>The event fulfilled your expectations</td>
<td>1-4</td>
</tr>
<tr>
<td>The speakers and moderators contributed to a clear and effective Workshop</td>
<td>1-4</td>
</tr>
<tr>
<td>The event in its whole allowed dynamic exchanges among participants</td>
<td>1-4</td>
</tr>
<tr>
<td>The cases presented during the Workshop showed examples of activities that can be put into practice in your country</td>
<td>1-4</td>
</tr>
<tr>
<td>I can use the information received during this event in my activity</td>
<td>1-4</td>
</tr>
</tbody>
</table>

The results of the Workshop evaluation questionnaire, as presented in the graph below, show that the participants in this initiative evaluated most of the aspects of the event in a very positive way, especially appreciating the organisation of the Workshop, the topics presented and the usefulness of information provided. The total number of questionnaires collected was 28.

All items presented in the questionnaire received more than 50% of completely positive feedback, while the comparatively lowest levels of agreement registered were towards the possibilities of interaction and networking among participants.

The evaluation questionnaire offered also the possibility to provide further comments and possible suggestions. Among the most significant comments registered, several participants underlined that it would be useful to organise future Workshops in an even more interactive way, offering occasions for networking and more focused discussions. Furthermore other comments requested more case studies of public bodies involved in ICT procurement while trying to avoid “lock-in”.

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General advice collected went also in the direction that easy-to-use practical tools for public procurers are never enough, so there is always the true need to have them available and updated; the only obvious limit to these tools is that they are generally just available in the English language, creating a limitation for those public procurers from non-English speaking countries, which – especially if representing at the local governmental level – may have difficulties accessing material which has not been appropriately localised.

6.3.1.3.2. Lessons learnt and recommendations

On the basis of feedback collected through the evaluation questionnaires given out during the event, as well as taking into consideration any questions and comments that were addressed by the audience throughout the various sessions, it emerged that content and speakers were very much appreciated.

Just to quote a further comment collected via email shortly after the event: “[…] this conference was delivered with very high professional standards. Highly interesting discussions were raised with regards to standards, sharing of best practice, the ‘live’ Guide and all other initiatives which were discussed in order to pre-empt future lock-in situations. All these essential tools help us procurers in purchasing ICT products.” [a participant]

Concerning the next Workshop scheduled for the 3rd of December 2014 in Brussels, we deem it will be necessary to keep on this positive track, focusing more on aspects which were less taken in consideration during the first Workshop –essentially due to lack of time- particularly more practical and specific cases of good and bad practices, ideally presented directly by public organisations procuring ICT; and also more networking and interaction opportunities for participants, which was pointed out in the evaluation questionnaires that not enough time was dedicated to networking.

Furthermore the next Workshop will be also the chance to present first preliminary outcomes of Project's Task 4, dedicated to the analysis of standards-based public procurement of ICT throughout the EU. With regards to attendees, greater attention will be devoted – in sight of the next upcoming Workshop – in the weeks before the event, to try and engage more public procuring authorities representatives, in particular national central procuring agencies.
6.3.2. Workshop report 2

6.3.2.1. General information

The Workshop "Standards for ICT Procurement: Sharing of Best Practices" has been the second milestone of the Project "Study on best practices for ICT procurement based on standards in order to promote efficiency and reduce lock-in". The main objectives of the event were:

- Share some good practice and bad practice examples about ICT procurement
- Stimulate the debate around the next steps/ new ideas for DAE Action 23
- Present a first set of insights on the state of the art of ICT public procurement using standards throughout Europe

The Workshop took place on the 3rd of December 2014 in Brussels, within DG CONNECT's premises (Avenue de Beaulieu 25), running from 9:30 till 16:10, and - in order to meet the preliminary set objectives - a vast panel of relevant speakers was involved.

Main facilitators of the Workshop were the Study's lead Project Officer Thomas Reibe from DG Connect Unit F2 "Innovation" and PwC's Government Advisory Partner Giancarlo Senatore.

Extensive dissemination activities were carried out over the two months preceding the event, including different mailing rounds across several stakeholder communities, a dedicated social media campaign, publication of information shots on various online platforms and direct contact made with relevant key stakeholders.

Out of the 96 persons who registered for the Workshop 72, from 30 different countries, actually attended. Most of them were representing central and local EU public administrations, research institutes and various business support organisations, as well as ICT suppliers. Some of the members of the Multistakeholder Platform (MSP) on ICT standardisation also attended the Workshop.
A dedicated participant folder was previously prepared and then distributed to all attending participants at the moment of on-site registration. In particular, the folder contained:

- The Workshop agenda
- Key speakers bios
- The Project’s official leaflet
- The list of registered participants
- A personalised Workshop badge
- A Workshop evaluation sheet
- The official event hashtag selected for the Workshop

### 6.3.2.2. Workshop content

Viorel Peca welcomed attendees and opened the event, briefly introducing the Workshop agenda:

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.00</td>
<td>INTRODUCTORY SESSION</td>
<td>Viorel Peca, Head of Unit F2 &quot;Innovation“ - DG CONNECT (10:00 – 10:15)</td>
</tr>
<tr>
<td>10.15</td>
<td>SHARING OF BEST PRACTICES – Part A</td>
<td>Nuria de Lama, Representative of Atos Research &amp; Innovation to the EC (10:15 – 10:45)</td>
</tr>
<tr>
<td>11.20</td>
<td></td>
<td>Patrice-Emmanuel Schmitz, Lawyer and Director for European studies at Unisys (10:45 – 11:10)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Silvana Muscella, CEO &amp; Founder Trust-IT Services (11:10 – 11:20)</td>
</tr>
<tr>
<td>11.20</td>
<td>COFFEE BREAK – NETWORKING – BRAINSTORMING</td>
<td></td>
</tr>
<tr>
<td>12.00</td>
<td>SHARING OF BEST PRACTICES – Part B</td>
<td>Massimiliano Inzerillo, Head of the e-Procurement Services for ARCA Lombardia (12:00 – 12:30)</td>
</tr>
<tr>
<td>15.15</td>
<td></td>
<td>Felix Zimmermann, Head of the Public Procurement Law Department within BITKOM (14:45 – 15:15)</td>
</tr>
<tr>
<td>15.35</td>
<td></td>
<td>Rosa Martelli, PwC Government Advisory (15:15 – 15:35)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pierre Damas, Head of Sector A3 &quot;Service Oriented Solutions“ - DG DIGIT (15:35 – 15:50)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>European Commission Open Source Software strategy - OSS</td>
</tr>
<tr>
<td></td>
<td>FINAL DISCUSSION</td>
<td></td>
</tr>
</tbody>
</table>
6.3.2.2.1. Opening session

**Viorel Peca: Introductory greetings**

Viorel Peca is the Head of Unit F2 "Innovation" within DG Connect. His unit's mission is to develop and inspire a new vision on ICT innovation. He joined the European Commission in 2008 and DG Connect in 2011 as Head of Unit for Networked Media. Previously he was Project Manager and Chief Business Analyst for the eFP7 team of DG DIGIT.

Mr Peca briefly presented the audience the "Study on best practices for ICT procurement based on standards in order to promote efficiency and reduce lock-in" that, under Service Contract 30-CE-0601961/00-29 between DG Connect and PwC, will be completed over the next 12 months.

Here a brief summary of the political context that led the EC to fund this study:

- **DIGITAL AGENDA – ACTION 23**: under which the EC commits to providing guidance on the link between ICT Standardisation and Public Procurement in order to help authorities use standards to promote efficiency and reduce lock-in.
- **PAN-EUROPEAN STUDY ON PUBLIC PROCUREMENT PRACTICES**: in 2011 the EC following up on Action 23, conducted a pan-European study assessing the public procurement practices in the EU.

Following COM (2013) 455, the European Commission issued a series of recommendations as to how to reduce lock-in and is currently trying to raise awareness about the lock-in theme.

To this end, the EC will, and did, deploy different dissemination activities over a period of two years, one of these being the project "Best Practices for ICT procurement based on standards in order to promote efficiency and reduce lock-in".

At the end of this first year of Project activities many goals have been achieved.

- The creation of an online community to support those individuals who intend to use open standards for the procurement of ICT products and services: [http://bit.ly/1jxoDyv](http://bit.ly/1jxoDyv)
- The creation of an eLibrary of virtuous and less virtuous open procurement practices and other different examples/ initiatives related to the procurement of ICT goods and services by public bodies throughout Europe: [http://bit.ly/1zyeNoM](http://bit.ly/1zyeNoM)
- The organization of a few webinars with international public procurement experts;
The first workshop "Public Entities reducing Lock-In: the way forward" focused primarily on the legal aspects related to the use of open standards for the procurement of ICT products and services.

The second workshop "Standards for ICT Procurement: Sharing of Best Practices" has been a good opportunity to:

- share good practice and bad practice examples about ICT procurement;
- stimulate the debate around the next steps/new ideas for DAE Action 23;
- present a first set of insights on the state of the art of ICT public procurement using standards through Europe.

In conclusion, having provided a brief explanation about the project rational, context and main achievements Mr Peca moved on to presenting the Workshop agenda, as detailed in the previous page.

6.3.2.2.2. Sharing of Best Practices – Part A

Nuria de Lama: Core Platform of the Future Internet - FIWARE

Nuria de Lama has been working for 15 years in IT Research & Development in different environments. Since 2010, she is representative of Atos Research & Innovation to the European Commission. In this position she is responsible for the coordination of European research activities, definition and implementation of the R&D strategy as well as contribution to business development. This includes coordination of Atos activities in ambitious initiatives such as PPPs (Public-Private Partnership), mainly in the Future Internet (FI) and Big Data domains. She is an active member of the FI community, coordinating Atos project portfolio, operatively involved in FIWARE (http://www.fiware.org/) as Collaboration Officer and member of the FI Steering Board.

FIWARE, the EC funded project Nuria is currently working on, is an open alternative to existing proprietary internet platforms, as those provided by Amazon or Google, that enables an easy development and deployment of Future Internet applications. FIWARE will dramatically increase Europe’s Information and Communications Technology competitiveness by introducing an innovative infrastructure that enables cost-effective creation and delivery of versatile digital services, high-quality of service and security guarantees.

FIWARE's APIs (Application Programming Interfaces) specifications are public and royalty-free, supported by open source reference implementations. Thanks to this, alternative FIWARE instance providers can rapidly emerge in the market.

Furthermore, FIWARE provides enhanced OpenStack-based cloud hosting capabilities and a rich library of components. These components, called the "Generic Enablers", provide open standard APIs that make it easier to connect to Internet of Things (IoT) devices, process data and media in real-time at large scale, to perform Big Data analysis or to incorporate advanced features to interact with the end-users.
Ms de Lama is keen to point out that due to its open nature, application providers will be able to choose who will provide and operate the environment where their applications will be hosted and, even more important, where the data to be used by their applications will be also hosted. The same way, open data providers will be able to choose who will provide and operate the environment where open data will be made available together with the tools that help to process data in real time and perform big data analysis. In both cases, decisions can be driven not just based in economic terms but trust and the ability to port applications and data to alternative providers without the burden application providers have to face when trying to port their applications from a proprietary environment where they have got locked-in.

However, FI-WARE’s potential doesn’t rely only on the technology and the free-to-choose options it brings. A great and powerful open innovation ecosystem is being developed around FI-WARE technologies enabling application developers (particularly entrepreneurs) to meet potential users/customers, data providers or even investors and vice versa. This open innovation ecosystem gravitates around FI-Lab (http://lab.fi-ware.org) a concrete working FI-WARE instance offered to developers for free so that they can experiment and deploy using FI-WARE technologies and exploiting published open data.

All those interested in adopting the FIWARE technology can find, on the FIWARE Academy training platform, useful information on how to use, integrate and exploit the capabilities of the FIWARE offering. The training content within the FIWARE Academy is mostly composed by videos recorded during live presentations (webinars) and lessons composed by slides with a synchronized voice-over that provides the necessary explanation.

One of the most relevant domains for the application of FI-WARE technologies is the one associated with Smart Cities. Ms de Lama reports that FIWARE’s vision for Smart Cities is now starting to get a lot of traction and that many cities around Europe are already connected to the FIWARE’s Lab (In Italy: Trento, Torino; In Spain: Valencia, Sevilla, Malaga, Santander, Barcelona; In Finland: Helsinki, Espoo; In the Netherlands: Amsterdam; In Portugal: Lisbon).

But being “smart” requires first being “aware”. Indeed, becoming/ implementing a Smart City requires gathering and managing context information describing the current historic “state” of the city. Context information refers to the values of attributes characterizing entities relevant to city services, governance and third-party apps. Once context information is gathered, a lot of useful complementary FIWARE enablers can be used (Advanced Web-based UI, Open Data publication, Data/Apps visualization, Complex event processing, Multimedia processing, Big Data Analysis, etc.).

For example in “Smart Seville”:

- Valuable Open Datasets have been uploaded on a Big Data platform and are ready for analysis (demography, bikes renting, etc.)
- Real-time detection of people masses has been implemented through real-time multimedia analysis of video streams from urban surveillance cameras
- Real-time open data on noise & water healthiness is captured from multiple sensors and offered through standard FI-WARE APIs

And in “Smart Santander”:

- Real-time open data coming from large deployment of sensors (4500 IoT devices, 150 mobile sensor units, 2500 RFIDs) is offered through standard FI-WARE APIs
- Open data sets captured from sensors since August 2013 are uploaded on big data platform ready for analysis
FI-WARE application examples are already available (e.g. Management of Parque de las Llamas public lighting)

Last but not least, the city of Valencia which launched a tender to purchase an Open Smart City Solution, awarded the contract to Telefonica, who offered a winning solution based on the European FIWARE standard. Valencia will be the first Spanish city to centralize all of its municipal information through a smart city technological solution. The software base will consist of 350 sensors that will automatically manage several municipal services (traffic, street lighting, gardens, local police, pollution, cleaning and waste collection, weather services etc.).

Patrice-Emmanuel Schmitz: Standard “Sharing and re-using” clauses for contracts

Mr Patrice-Emmanuel Schmitz lawyer, ICT Practitioner, and director for European studies at Unisys (Brussels) is acting as legal expert in the frameworks of the www.Joinup.eu project, the collaborative public sector sharing and reusing website of the European Commission.

The document “standard sharing and re-using clauses for contracts”, on which he based his presentation, has been produced in the scope of ISA Action 4.2.5 “Sharing and re-use strategy” whose aim is to develop a holistic approach to sharing and reuse across border and sectors with a view to helping public administrations all over Europe to utilize again solutions related to public services delivery in an efficient and effective way.

Before presenting the clauses for sharing and re-use, Mr Schmitz deemed important to provide a few information on the context in which this document is inserted. According to Mr Schmitz, there are four reasons why European public administrations would want to share and re-use:

- to generate higher savings when procuring ICT
- to localise best practices/ software developed in other Member States
- to take full advantage of the Public Procurement Directive 2014
- to ensure that sharing and reusing can produce full efficiency for all users

In addition, there are several ways to share and re-use:

- MS1 “gives” or “sell” reusable/localisable national components to MS2, Ms3
- MS1 is put in charge by MS2, 3, 4... to develop some reusable components
- MS1, 2, 3... form a EGTC (European Grouping of Territorial Cooperation) that contracts the development of shareable components
- Multiple additional possibilities within Procurement Directive 2014/24/EU
  - Accession by one or several MS to a framework contract awarded by another MS (Art 37 – 1);
  - Launch of a new procurement contract, done together by several/ all MS, based on an agreement organising e.g. the project, governance, responsibilities and budgets (Art. 38 – 1);
  - Use by a MS of the (national) Central Purchasing Body (CPB) established by another MS (Art. 39 – 2);
Establishment of a Common Central Purchasing Body (CCPB) by several MS (Art 39 – 4. & 5.)

However, Patrice-Emmanuel pointed out that there is a prior condition to be met for “sharing and re-use” to effectively take place “the freedom of using the results”. This condition (the freedom of using the results) is currently normed by Art I.9 of the EC contract model of September 2011 which reads as follows:

- **Art I. 9.1 Modes of exploitation**: All rights about [works in general] produced within the contract are vested to EU and may be used as follows: Distribution, storage/archiving, modification, localisation (language), use for own purpose, licensing to third parties;
- **Art I. 9.1 Pre-existing rights**: i) To list when distributing final results; ii) To provide a copy of the licence.

In addition there are additional issues due to the fact that the delivery of a generic ICT “application X” means merging, integrating and adapting multiple components into one application. Accordingly, the thorny questions that Mr Schmitz posed to the audience were:

- Pre-existing rights (licences) of all components are identified and transferred to the Contracting Authority (CA), but what about distributing/sharing/reusing the application «as a whole»?
  - Can the CA apply the licence of its choice?
  - Can the CA apply any licence (in case of incompatibility)?
  - Can the CA get support from a F/OSS community?
  - Will the contractor assist/support this community?
  - What guarantees against lock-in?

The answers to these questions do depend on the license types/versions governing the use or redistribution of the individual components comprising a generic application. As an example, there are more than 60 “official” open source licences but, according to the FSF (Free Software Foundation), 40 of them are not compatible with the GPL (General Public Licence). Without a doubt, incompatibility does not limit internal use, but does make sharing/reusing (under any licence) problematic and uncertain.

This is exactly why it is important using the sharing and reusing clauses, that even if aren’t always applicable should always be considered and inspected when procuring services related to: i) the development of new IT tools; ii) the re-use of already available IT tools.

These clauses, which have been developed taking advantage of previous works [i] Guideline of public procurement of OSS; [ii] Guide for the procurement of standard-based ICT; [iii] Joinup.eu experience and studies; [iv] EC licensing practice (the multilingual European Union Public Licence – EUPL)] can be used under different scenarios:

- **PA writes and distribute its own software** with internal or external resources (contractor)
- **PA reuses existing third party software** for integration in PA solutions
- **PA migrates from solution A to solution B** and wants to avoid «vendor lock-in»
- **The use/reuse of «non-software» assets** such as standards and semantic assets (taxonomies, thesauri, etc.).
- **Community building**, OSS is not «only» a licensing model, but (also) a development model
The standard sharing and re-using clauses for contracts presented by Mr. Schmitz are reported below. They have been grouped according to the objective they try/want to reach.

**Distribute the application**

- The supplier will grant that the purchasing authority has the right to distribute the delivered application under the European Union Public Licence (*EUPL* v1.1 or later) or any licence(s) providing the rights stated in the article 2 of the EUPL.

**Facilitate the developers’ communities (when applicable)**

- In its proposal, the supplier will detail how it will:
  - Organise, animate and support a long term developers community in order to bring new developments, corrections and improvements to the delivered software or solution;
  - Encourage contributions (to the software or solution) from the public authority itself, from its own staff and from third parties;
  - Organise technically and legally the collaborative work of the community;
  - Combine its own software guarantee – if any – with the work provided by this developers

**IPR assets coverage**

- The ownership of all copyright, trademarks, trade names, patents, and all other intellectual property rights ("IPR") specifically developed and implemented in the provided system or solution: graphics, website layout, surface content, logos and devices, and the rights to the domain name(s), manuals, training materials or presentations, shall be transferred and remain vested to the contracting authority.
- At the sole exception of IPR licensed to the contracting authority under licence(s) providing the rights stated in the article 2 of the EUPL, the contracting authority, as the acknowledged owner, shall be and remain the sole owner of all IPR in all data, material, documentation or information inputted, loaded or placed onto the provided system or solution in any manner, reports generated by or from the system, material or documentation placed on the system, outputs, and end-products.
- The successful tenderer will be required to indemnify the contracting authority against third party claims relating to the awarding authority use, re-use, redistribution or licensing of any part of the provided system or solution (software, hardware or intellectual property).

**Open and Royalty Free standards**

- Implemented standards, interfaces, protocols, formats, semantic assets (*i.e.* taxonomies) must be:
  - Implementable by all potential providers of equivalent technologies
  - The past and future development of the standard is open and transparent
  - Reusable without restrictions and royalty free in the framework of a distribution providing the rights stated in the article 2 of the EUPL v1.1 or later

**“No Vendor Lock-in”**

- Vendor must indemnify for the “cost of lock-in”
• All standards, interfaces, protocols, formats or semantic assets implemented by 
  the supplied solution and required for the full use of all data created or 
  maintained using the supplied solution during the lifetime must be made 
  available to providers of equivalent technologies who may be awarded a 
  subsequent contract, with no additional costs.

• Any costs resulting from the lack of availability, licence restrictions or royalties 
  related to these standards, interfaces, protocols, formats or semantic assets 
  shall be borne by the provider of the supplied solution.

• Such costs may be minimized by ensuring that the supplied solution uses only 
  standards, interfaces, protocols or formats that:
  − are implementable by all potential providers of equivalent technologies;
  − are developed through an open and transparent process;
  − can be reused without restrictions and royalty free in the framework of 
    a distribution providing the rights stated in the article 2 of the EUPL.

During the Q&A session Mr Schmitz replied to one of the participants’ question saying 
that “standard sharing and re-using clauses for contracts” have been translated in all EU 
languages but Gaelic and Croatian.

**Silvana Muscella: Procurement of Innovation for Cloud Services in 
Europe - PICSE**

Silvana Muscella, Managing Director and founder of Trust-IT Services, focuses on high-level strategy 
building, business acquisition, coordination and 
strategic marketing and communication 
developments in ICT. Slivana, was invited to 
Brussels to present PICSE (*Procurement 
Innovation for Cloud Services in Europe*) an 18 
month project funded under the EU Framework 
Programme for Research and innovation H2020 she 
is currently working on. PICSE aims to set up a 
European Procurers' Platform capable of raising the level of understanding of the issues 
surrounding procurement of cloud services.

In particular, PICSE's objectives are:

• simplify the procurement model for cloud services
• provide a range of best practices for implementing results
• set out a realistic roadmap for cloud procurement over the next five years
• lay the foundations for future joint procurements to support an hybrid cloud 
  model

PICSE’s consortium intends to achieve these goals:

• providing organisations with a template that can be used for self-assessment 
  and evaluation of its own procurement procedures
• providing organisations with a decision support tool that can guide procurers via 
  a series of multiple choice questions to identify suitable options and highlight 
  key aspects that should be taken into account during the procurement process 
  (*PICSE Procurement Wizard*)
The idea of PICSE came about and matured with the experience of the Helix Nebula initiative in which the three partners forming PICSE’s consortium (CERN, Coordinator, CSA, Trust-IT Services) were involved. The work performed during the Helix Nebula initiative, in its two years pilot phase, has shown that cloud services are suitable for scientific workloads performed by public research organisations and that they are now prepared to consider procuring commercial cloud services on a significant scale.

The consortia put together a survey “The survey on Procurement Barriers” to identify the challenges currently existing in cloud procurement and, therefore, produce a report on cloud procurement barriers. All answers to the 18 questions comprising this survey are anonymous and will be used only for collecting inputs that will serve PICSE’s goals. [https://www.surveymonkey.com/r/PICSE]

In addition, PICSE’s consortium developed the “Partner Search tool” (http://www.picse.eu/partner-search), a unique place entirely dedicated to organizations interested in ICT8 & ICT36 calls, that will allow demand and supply side to meet, establishing new collaborations. Partner Search tool users can:

- post their comments and leave comments on their posts (all posts are moderated by PICSE’s consortium to ensure a high-quality service)
- publish description of proposals’ ideas and partners required
- browse call ideas, comment or contact other users

In conclusion, Ms. Muscella provided the audience with two examples of PCP/ PPI for cloud services:

- Cloud for Europe: a tender for the Pre-Commercial Procurement (PCP) of research & development on cloud computing services
- DICTU Cloud: a project for the implementation of an on premise (owned and managed by DICTU) multi-tenant cloud infrastructure

6.3.2.2.3. Sharing of Best Practices – Part B

**Massimiliano Inzerillo: Use of standards in Public Sector ICT eProcurement - SINTEL**

Mr Inzerillo graduated in Management Engineering at "Politecnico di Milano". Since 2010 he started following e-procurement issues within the Central Procurement Body of Regione Lombardia (ARCA) becoming, after a few years, the Head of the eProcurement Services. The aim of ARCA’s eProcurement services unit is to spread and to promote eProcurement as a tool to simplify the way Public Administrations procure, also following those principles as included in the European Digital Agenda.

**Part 1 – ARCA Lombardia**

ARCA Lombardia is the Central Procurement Body (CPB) of Region Lombardia; the most populated Italian region (~ 10 million inhabitants), with the highest number of municipalities (1.546 municipalities) and that produces 20,9% of the Italian GDP. What matters most in this case is the total public procurement value of Region Lombardia, around 4 billion euros per year.

ARCA Lombardia, 100% owned by Region Lombardia, plays three main roles:

1. **Framework Contract manager**: Awards bundled tendering procedures which may be joined by every public entity within the region, thus realizing major economies of scale
2. **e-Procurement Service Provider**: ARCA manages a full range of public eProcurement solutions which are available free-of-charge for both contracting authorities and suppliers

3. **Procurement Competence Centre**: ARCA offers free consultancy to public authorities facing procurement or change management issues. Furthermore, ARCA can award tenders on behalf of other delegatee public entities

More than 60% of all CAs (Contracting Authorities) within Region Lombardia purchase their products and services through ARCA, which handles business relationships with more than 34,000 suppliers distributed all over Europe.

**Part 2 – Capitalizing the wide spectrum of opportunities offered by ARCA’s main activities**

According to Mr Inzerillo there are three reasons why a CPB like ARCA can become an efficient enabler of anti ICT lock-in policies.

- **A CPB is a Competence Centre**: ARCA (according to regional targets) has to facilitate the implementation of European Guidelines / Directives

- **A CPB manages Framework Agreements for all CAs**: ARCA manages bundled tendering procedures for both goods and services (*Tender strategy design, Vendor Management, Tendering, Evaluation and awarding, Contract Management*).

- **A CPB develops and owns eProcurement solutions that might be used by all CAs in a geographical area**: For example ARCA’s e-Procurement solution:
  - Ensures the efficient use of resources (*HR, Time, Other materials*)
  - Automatically notifies various kinds of information
  - Validates entered information (*data-entry validation*)
  - Automatically ranks various kinds of data (*suppliers, products, prices, etc.*)
  - Automatically provides Procurement Templates

**Part 3 – SINTEL (the regional e-Procurement platform) as a way to spread anti lock-in good practices to Regional Contracting Authorities**

SINTEL allows public entities within Region Lombardia to electronically purchase products and services, both above and below EU threshold.

- **SINTEL can be used in complete autonomy**: ARCA’s goal is to teach CAs how to independently procure products and services using SINTEL’s eProcurement platform

- **SINTEL is completely free**: SINTEL is free both for CAs and private suppliers

- **ARCA provides free change management support**: ARCA business model is based on a strong support for CAs users, with a dedicated team that offers free consultancy service for tendering and change management issues

According to Mr Inzerillo, SINTEL can be used to spread anti lock-in good practices to all CAs within Lombardy. Indeed, if ARCA is to include open standards in the eProcurement templates that SINTEL automatically proposes CAs when procuring for ICT products and services, all CAs will automatically produce tender procedures that will ensure greater competition among ICT suppliers, will guarantee ICT systems interoperability and will reduce ICT lock-in.

To prove his thesis Mr Inzerillo made a live demonstration showing how, including Open Standards in the Procurement Templates that SINTEL automatically generates when a public entity procures for ICT products and services, the resulting tenders are perfectly compliant with the EC "Guide for the procurement of standards-based ICT".
Aurelija Orlova: A public service designed around open standards - SIRIP

Aurelija Orlova is a chief specialist involved in performing planning, organization and coordination activities within the Lithuanian Information Society Development Committee under the Ministry of Transport and Communications (ISDC). She has been working on e-Government projects (particularly on the State Information Resources Interoperability Platform - SIRIP) delivering centralized electronic solutions for Lithuania. Aurelija has also participated in the preparation of the "Electronic service definition, typing and evaluation model" and the "E-service usability methodology", both dedicated to the correct implementation of e-government projects in Lithuania.

The State Information Resources Interoperability Platform (SIRIP) is a Lithuanian system created to deliver centralized access to public services. According to Ms. Orlova, it is a convenient electronic platform that offers an easy way for Lithuanian public authorities to design, deliver and manage e-services.

SIRIP offers several functionalities:

- national and cross-border identification and authentication of citizens, business entities and civil servants;
- payment (direct and via payment broker);
- centralized data exchange among public authorities;
- e-service design (including environment testing);
- e-service monitoring, auditing and administrating.

Public authorities can use these functionalities for free without having to develop a solution on their own.

1. National and cross-border identification and authentication of citizens, business entities and civil servants: SIRIP includes a flexible, secure and reliable identification service. All users can log-on to the system via online banking or by using an electronic signature.

2. Payment (direct and via payment broker): SIRIP provides a convenient way to make secure payments for internal or external services. Its payment protocol blends various payment options and offers a way for external systems to carry out and manage money transfers within the SIRIP environment. The process is further simplified by employing the payment intermediary services such as payment-broker. This way e-service providers are not required to sign separate agreements with every bank.

3. Centralized data exchange among public authorities: A smooth and reliable interaction between SIRIP and external software systems is secured by Enterprise Service Bus. ESB is what handles the routing of message exchange between services and ensures agility and flexibility with regards to e-service creation and interaction between applications. In the very near future SIRIP’s infrastructure would be cloud based and public authorities would have an opportunity to use such cloud based services.

4. E-service design (including testing environment): Finally, with all these components SIRIP is also a convenient tool for designing eServices as well as combining eServices according to life events, such as child birth. Public service providers can request form, data structure, process and integration interface creation without leaving the comfort of the SIRIP environment. The platform also provides access to services designed using SIRIP as well as external systems.

5. E-service monitoring, auditing and administrating: SIRIP incorporates a service management system that lets providers consolidate processes that are being created,
search through ongoing operations, audit and monitor their status. The dedicated institution space allows public administrations to conveniently manage their services and content.

According to Ms. Orlova, the IVPK had to make some important decision for the correct deployment/implementation of SIRIP:

- **Clear licencing and maintenance.** SIRIP is made of several logical units, such as ESB, BPEL, eGovernment portal, payment broker, authentication service. Some of these components are generic to all industries, some require high level of customization to meet IVPK needs. Therefore off the shelf solutions were chosen only for generic functions. ESB, BPEL, DBMS functionality is implemented using Oracle products - OSB, SOA Suite, DBMS. Components that require many custom changes were custom build on open frameworks, e.g. Apache Tomcat web application container, ZKoss enterprise web application framework.

- **Lose coupling.** SIRIP is made of separate components that serve specific purposes. The communication between these components is implemented using open standard technologies - XML for data structures, WS-S for data security, XML Signature for data integrity. Whenever it is possible, web-services are preferred to other means of interoperability. Each of SIRIP logical components may be deployed and scaled independently, technologically it is possible to host SIRIP components in public cloud service.

- **Virtualization.** SIRIP is implemented as virtualized platform and each component may be scaled when needed. Depending on situation, different resources may be allocated to ESB, BPEL, Portal, Payment broker and authentication service of the platform. Virtualization of the platform is implemented using VMWare solutions.

**SIRIP main results, benefits and impacts**

- SIRIP currently connects 191 government institutions, provides access to 511 public services and has had more than for 24 mln. litas transactions since 2012. Almost two million unique visitors to the central e-government portal since 2008.
- More than 130 e-services are created using SIRIP design tools and more than 60 e-services have been developing recently.
- Realization of State Information Resources Interoperability Platform has increased take-up of eGovernment services significantly (increase of 16% in 3 years according to Lithuanian statistics).
- All public authorities have centralized access to the main Lithuanian registers.

**IVPK Expectations**

Nowadays more than 2500 budgetary institutions out of more than 3500 do not have documents management systems. To solve this problem IVPK planned to develop a centralized document management system based on cloud computing. Moreover, by realizing this it is expected the growth of electronic documents usage and higher level e-service delivery.

**SIRIP as a good practice for other countries**

In spite of the fact that SIRIP has been helping Lithuanian authorities delivering fast and cheap e-services, some elements should be considered before implementing a similar solution:

- **Changes in legislation** in order to create more efficient and user friendly e-services (Lithuania has been facing a number of problems that restrict better quality e-service design. E.g., because of legislation institutions are not willing to give registers’ data for free or to change the service procedure. At times a service user is asked to fill information into e-form even if the data can be
gotten automatically. All these problems can be solved only by changing the legislation);

- **Standardized cross-border data exchange** – everything should be designed in a way to make it easy to adapt to similar systems internationally.

6.3.2.2.4. Sharing of Best Practices – Part C

**Linda Humphries: UK Guidelines for the adoption of Open Standards**

Linda, a senior technology adviser in the UK’s Government Digital Service, has over 12 years’ experience working on IT and digital projects. She is head of open standards policy, covering software, data and document formats for use in government technology, working as part of the Office of the Chief Technology Officer.

Linda delivered the UK Government’s Open Standards Principles in 2012 to level the playing field for open source and proprietary software use in government. She has since implemented a transparent selection process for open standards and led the project to select open formats for government documents.

The document Open Standards Principles, which Ms Humphries presented during the workshop, describes principles for the selection and specification of open standards that can be implemented both in open source and proprietary software.

Just to mention a few of the problems that led the UK Gov. to take action and to promote the use open standards principles:

- Big & long-term ICT contracts
- Lock- in into a supplier
- Very small number of suppliers
- Little or no competition
- Little information
- No data to inform Gov. decisions
- No cost transparency at all

Over the last few years, the UK Gov. has been trying to exit these big contracts breaking them into smaller components (*i.e.* desktop; networks; hosting; telephony; service management; applications; etc.). To reach this objective, **open standards became necessary** to plug components together and to move data around.

To this end, in 2012, UK’s GDS launched a public consultation to ask the people what made a standard open. Having a sound and solid definition was indeed important to start off on the right foot. At the end of the consultation phase, the UK Gov. decided to base its open standards definition on the EIF v.1.1 (*European Interoperability Framework*). Only minor things/concepts were added to the EIF definition to make it even clearer. In particular: i) open standards are royalty free; ii) open standards need to be proved to be working in more than one project.

Right after the consultation, the UK Gov. published the policy document “**Open Standards Principles**” to make clear how it would work with open standards from then on. The seven principles, contained within the document, are listed below.

- We place the needs of our users at the heart of our standards choices
- Our selected open standards will enable suppliers to compete on a level playing field
- Our standards choices support flexibility and change
- We adopt open standards that support sustainable cost
- Our decisions on standards selection are well informed
- We select open standards using fair and transparent processes
- We are fair and transparent in the specifications and implementation of open standards

Having defined the Open Standards Principles, the Gov. moved onto creating the Standards Hub a virtual place where everyone is involved in the standards selection process. Indeed, through the Standards Hub anyone can get involved in the process of prioritising and helping the UK Cabinet Office to select open standards for government IT. The aim is to choose a small set of core standards that are to be applied consistently across the UK Government to make services better for users and to keep costs down.

There are five groups of people involved in selecting and implementing open standards:
- Users
- Government technology officials
- Challenge owners
- Standards panels
- Open Standards Board

There are also five phases in the Standards Hub approach:
- Suggestions phase
- Challenge phase
- Proposal phase
- Assessment/evaluation/decision phase
- Implementation phase

However, according to Ms. Humphries, Open Standards can’t fix everything. They can only do what they do as part of a much bigger picture that includes several elements.
- A Minister that is absolutely behind how the GDS is currently buying technology and how is currently delivering digital services. In addition, the Minister understands open standards and wants the UK public sector at large to use them.
- A technology code of practice agreed by all technology leaders across departments in the UK Government. The code sets rules for how departments should buy and build ICT, and also rules limiting the size of ICT contracts in terms of how much they cost and in terms of how much they last.
- A Digital Service Framework and a G-Cloud Framework that have helped the UK Gov. buy on shorter length contracts, buy more flexibly and buy from a much broader range of suppliers. As an example, the map provides a slight illustration of how centralized was their supplier base and how, in 2014, they have got many SME coming from all over UK to deliver government contracts. In fact, over 50% of the new framework expenditure goes through SMEs.
- Contracts Finder, a place where all information about public contracts with values over £ 10.000 is published. This to allow the public to see how and where public money has been spent.
- Mystery Shopper scheme, a tool suppliers might use if the feel they have been unfairly treated. For example, if something written in a public tender seems to exclude some suppliers from the competition they might refer to the mystery shopper scheme.
Government Technology Blog (GTB), where the GDS officials do publish information on what they are doing so that the public can keep track of them. But the GTB is much more than that, because "one of the big blocks that we have in the UK is a situation in where is not about contracts being locked-in, is about minds being locked-in. People do not realize there is something you can do differently and this blog is a really powerful tool for us in demonstrating to people in the UK Government, as well as anyone else who wants to read it, that there is a different way. You can do things differently and here is the proof. It is not just about the outcome, it is about the learning journey. The things we are learning as we are going along get publish on here so... it is actually part of an armoury of different tools that we can use to reduce mind lock-in as well."

In conclusion, Ms Humphries said that Since 2011, by having all of these procurement frameworks in place, the UK government saved one billion pounds (£ 1.000.000.000).

Felix Zimmermann: BITKOM’s templates and ready texts for wording in official tenders

Felix Zimmermann is Head of Department of Public Procurement and Public Procurement Law at the German ICT association BITKOM. He gained practical experience in public procurement procedures at the Federal competition authority in Bonn and as a lawyer at KBK Rechtsanwälte, a law firm specialised in ICT and energy procurement in Hannover. Furthermore, he is co-author of a legal commentary for public procurement (juris VOL/A).

BITKOM, the German Federal Association for Information Technology, Telecommunications and New Media, represents more than 2,200 companies in the digital sector, including 1,400 direct members. Comprising 1,000 small and medium-sized businesses as well as more than 200 start-ups and nearly all global players, BITKOM’s members offer a wide range of software technologies, IT-services, and telecommunications or internet services.

The aim of BITKOM is to give authorities support for wording in official tenders for the procurement of information and communication technologies in a non-proprietary manner, i.e. in a way that avoids the use of proprietary brand names or referring to specific manufacturers, while taking state-of-art technical requirements into consideration.

Indeed, the purchase of information and telecommunication technology (ITK) is a particularly difficult field for public purchasers due, in part, to the technical complexity of the subject matter and the rapid product lifecycles. However, the main reason for this difficulty is the precise description required with regard to a system’s performance, taking into account all technical requirements. This is why product and service descriptions have often relied on well-known proprietary product names.

To this end BITKOM facilitates the procurement of information telecommunication technology (ITK) with different instruments (practice-oriented texts and forms).

1. Guideline family for ICT Public Procurement
BITKOM guidelines are a compact tool to ensure compliance with legal requirements and environmental criteria and also to identify and describe state-of-art technical standards, thus guaranteeing perfect product neutrality. The guidelines’ approach leverages general accepted benchmarks as a major element of a non-proprietary product description.

The guideline family in short:

- Different guidelines for different products (Notebooks, Servers, Thin Clients, Printers, MFPs, Monitors)
- Standardised “ready-to-use” texts
- Propose product-neutral technical and environmental criteria for buying ICT products
- Procurers can find a set of product-neutral criteria suitable for their needs
- Competition between products in different product categories of standard office situations, e.g.
  - Desktop PC: A-Class (Standard), B-Class (Performance)
  - Notebook: A-Class (Standard), B-Class (Performance), C-Class (Ultra-portable)
  - Printers: Working Place Printers, Group Printers, Department Printers

2. EVB-IT Forms

The EVB-IT Forms provide additional terms of contract for procuring ICT. These forms (i.e. Additional terms and conditions for the maintenance of standard software) are provided both in a .doc and .pdf format without a password (unprotected) to allow perspective procurers to easily copy and paste entire sections.

The EVB-IT Forms in short:

- Standardized contract rules and templates for different situations (Hardware purchasing; Hardware maintenance; Individual software programming; Standard software maintenance; Standard software purchasing; Standard software renting; Service; System building; System building and delivery)
- Adapted to new technologies and legal developments
- Terms of contract supported by the ICT industry and the German Government
- Two documents per EVB-IT contract template
  - Contract forms: predefined by procurer and filled out by the bidder
  - General business terms: predefined text
- Different templates for different types of products
  - Simple products: Basic EVB-IT Contracts
  - Complex products: System EVB-IT Contracts

3. CSR Forms

The Corporate Social Responsibility (CSR) bidder template declaration for ICT procurement is the latest tool launched by BITKOM to ensure that the ICT products & services the administration is procuring have been produced according to stringent CSR principles.

The CSR Forms in short:

- Standardised rules for a CSR-proof
  - Questionnaire
  - Certificates
  - Liability rules
- Step-by-step implementation in the supply chain (to solve the problem of supply chain intransparency)
- Step-by-step implementation of product categories
Having presented these three instruments Mr Zimmerman told the audience during the Q&A session that at present not all of their materials have been translated from German to English. Nevertheless, it is very likely that many of them will be translated to English in 2015.

**Rosa Martelli: Monitoring the take-up of “open” procurement in Europe**

Rosa Martelli is assistant manager for PwC Advisory Italy within the Public Sector Team. She gained relevant expertise in public procurement field supporting national and international public administrations.

PwC, as part of the project “Best Practices for ICT procurement based on standards in order to promote efficiency and reduce lock-in”, is currently supporting the EC in building a light and effective monitoring system to measure the use of open standards in ICT procurement, thus the take-up of the open ICT procurement in Europe.

In this framework, Rosa Martelli presented the preliminary outcomes on the “take-up” of open procurement in Europe.

She made clear how the monitoring system will be based on a dataset built on available data, from MAPPs dataset (extracted from TED), a survey results and best practices collected from Member States. Starting from the dataset, analytical and qualitative indicators will be designed and their results will be presented in a final report that will be published on Joinup website by DG CONNECT.

The monitoring system will use two type of information to monitor the use of open standards when procuring ICT:

- references to trademarks
- number of participants to tenders.

Even if these drivers cannot be considered exact measures of open ICT procurement, they can be considered as good proxy since using ICT standards provides the following evidences:

- Higher savings when procuring ICT
- An increased level of competition among suppliers
- Being compliant with EU Public Procurement directives (not using brandnames when writing technical specifications and tenders).

Ms Martelli focused the attention on the starting point of the dataset, represented by the enormous quantity of data recorded in TED dataset, and on actions needed to filter and clean data. The analysis is based on these sifting criteria:

- Type and number of document: 12.808 awarded tenders
- Geographical coverage: EU 22
The indicators that will be built and measured will be able to provide information about the use of open standards and the openness level of ICT procurement. Here some examples: Openness level of participation to tenders; Breakdown of number of bids per awarded contractor; Breakdown of tender notices with references to Specific Trademarks per CPV; Breakdown of tender notices containing references to specific trademarks by Country; Breakdown of tender notices containing references to specific trademarks per year.

The second source of information to provide data to the dataset is the survey that will be launched by the beginning of 2015, in order to gather qualitative information about knowledge and use of instruments connected to open ICT Procurement and ICT standards. Through the survey, it will be possible to monitor further information and to create qualitative indicators, based on perceptions, knowledge and experiences about the openness level of ICT procurement in Europe, such as the awareness level about lock-in in ICT procurement, the knowledge and use of tools and open standards in tender specifications, the existence of best/bad practices and tailored guidelines.

First evidences of the analysis
In the second part of the intervention Rosa presented more in detail limits and results of the dataset. Concerning the limits of the analysis, it has been conducted on a limited number of items compared to the whole accessible dataset, since it contains fragmented and incomplete information (Incomplete info, Same item recorded in different names, unclear use of CPV).

The first chart presents was about the "Breakdown of tender notices containing references to specific trademarks per year", that showed how on a total of 12,808 scanned tender award notices, 15% were found containing direct reference. The trend among the five different years analysed was found steady, showing no apparent connection with public procurement Directives implementation, preventing references to trademarks in tender specifications.

The second chart was referring to "Tender Notices Breakdown to Specific Trademarks per CPV" and showed high concentration for few CPVs among scanned tenders with reference to trademarks: more than 95% of them are absorbed by 5 of the 12 considered CPVs. The most recurrent CPVs are: 48000000 (Software package and information systems); 72000000 IT services (consulting, software development, Internet and support); 30200000 - Computer equipment and supplies; - 30230000; Computer-related equipment- 30210000; Data-processing machines (hardware).

Then she passed to present the third indicator "Breakdown of tender notices containing references to specific trademarks by Country", showing the concentration of them in few countries: almost 90% have been published by 10 countries. By analysing the trend among the different years, no strict connection seems to exist between the number of contra-legem tenders and European membership time.

Concerning the indicator "Breakdown of tender notices containing references to specific trademarks per trademark", on a total of 12,808 scanned tender award notices, more than 72% were found to contain direct reference to 10 trademarks, from a list of almost 200 ICT providers.
At the same time it has been presented the indicator related to trademarks and countries “Breakdown of tender notices containing references to specific trademarks per trademark and Country” finding how some trademarks are recurrent in almost all the analysed countries, while there are some others that are used by a specific country.

By reversing the previous indicator drivers, it has been measured the “Breakdown of tender notices containing references to specific trademarks per Country and trademarks”, showing how some countries used direct references for many trademarks, while other countries are using less references but for specific trademark.

Finally an infographic chart was presented about the “Openness level of participation to tenders”, specifying that even if a range from 1 to 15 participants per single procedure (where articulated in lots, it is intended per lot) was found and with an average of participation of 2 participants per procedure, 23% of procedures registered just one participant.

Having presented evidences coming from the analysis Ms Martelli told the audience during the Q&A session that to improve the analysis more efforts should be invested in cleaning up data collected in TED and create quality controls of data, and it was underlined as it these inputs have already been received by EC. Further analysis could be focused on the use of trademarks references in order to detect when they are used in a correct manner from the legal point of view. She finally made clear how the final dataset will be made available to public in an open format.

**Pierre Damas: European Commission Open Source Software strategy - OSS**

In year 2000, the European Commission defined a strategy concerning the internal use of Open Source Software (OSS). This strategy, which has been reviewed several times since its first introduction, will once again be revised in 2015.

Mr Damas, Head of Sector A1 - DG DIGIT and responsible for the renewal of the OSS strategy, presented the audience the draft OSS strategy the EC is planning to launch in 2015. Of course, being only a “work in progress” version of the document, the information presented shouldn’t be interpreted as the one which will be included in the final strategy to be published in 2015.

The current OSS strategy (2011-2013), organized in the form of a decalogue, is available on Europa at the following link (http://ec.europa.eu/dgs/informatics/oss_tech/index_en.htm). Essentially, there are 5 domains of usage on which the strategy has led to important achievements.

- Servers (i.e. MySQL, LAMP, Tomcat, ECAS, Apache)
- Collaboration, Web tools (i.e. Forums, CMS, Wikis, FPFIS)
- Desktop (i.e. VLC, GIMP, Firefox, 7-Zip)
- Development tools & platforms (OS Libraries, RefApp, Eclipse)
- Production of code under OSS licence (i.e. Joinup, EUPL, CircaBC, EUSurvey, Citizens’ Initiative)

In addition, according to the OSS Inventory 2014 results:

- there is a strong presence of OS in the EC data centres
  - more than 10000 Apache HTTP Servers
  - more than 1800 Red Hat Linux Servers
  - Drupal planned for next Europa
there is a strong presence among developers
- OSS tools like Eclipse seem to be in standard developer toolbox
- several OSS libraries are widely used
- CITnet promoting community-based development
- ISA programme producing software distributed under EUPL

- there is a visible presence on the desktop
  - Firefox, 7-zip, VLC are part of standard PC configuration
  - Several tools are widely used including GIMP, Filezilla etc.

A study conducted by Mr Damas’ team on how different European public entities are approaching the adoption of OSS in their day-to-day shows that currently three OSS approaches dominate the scene:

1. No formal approach: public entities do not publish what they are doing about OSS
2. OSS by default: public entities when possible procure OSS
3. Equal treatment: approach used by the European Commission which guarantees equal treatment between proprietary and OSS solutions

This study, together with the OSS Inventory 2014 and a series of comments collected by DG DIGIT from various stakeholders over the last 4 years, led the Commission to make four important decisions concerning the future of the OSS strategy:

1. The strategy will remain in a decalogue form (user-friendly and readable)
2. The strategy will facilitate communities’ contributions
3. The EC will prefer OSS for internal development
4. The strategy will include also an action plan

The future OSS strategy 2015 decalogue could be the following. Of course, as mentioned above, the decalogue might be subjected to changes over the next few months. Indeed, this is only a temporary draft version.

1. Product management
   The Commission shall continue to adopt formally, through the Product Management procedure, the use of OSS technologies and products.

2. Procurement
   The Commission shall consider OSS solutions alongside proprietary ones in IT procurement. Contracts will be awarded on a “value for money” basis.

3. Interoperability & Open Standards
   For all future IT developments, the Commission shall promote the use of products that support recognised, well-documented and preferably open standards. Interoperability is a critical issue for the Commission, and use of well-established standards is a key factor to achieve it.

4. Distribution
   For the development of new information systems, in particular where deployment is foreseen by third parties outside of the EC infrastructure, OSS shall be the preferred choice and used whenever possible.

5. Legal context
   The Commission shall further clarify the legal context around the internal use of OSS and make this clarification available to interested parties. The main topics to be addressed are: licensing schemes, Intellectual Property Rights, equal opportunities in the context of procurement and participation in OSS communities.
6. Architecture
The EC shall further develop guidelines and best practices allowing the setup of OSS and mixed solutions covering the full set of professional services, including deployment of OSS solutions in its data centres at the same level of service as the proprietary ones.

7. Methods & Communities
The Commission shall continue to develop and adopt best practice and tools emerging from OSS communities while applying state-of-the-art governance practices. In addition, the EC will facilitate and promote the creation of communities for those OSS products released by the Commission and facilitate participation in external OSS communities.

8. e-Government
OSS plays an important role in e-Government projects and shall be therefore considered within the framework of these activities.

9. Internal & external strategies alignment
The collaboration between Commission teams in charge of the internal and external OSS strategies shall be further enhanced in order to achieve convergence.

10. Inter-institutional aspects
The ICT ecosystem is extremely dynamic, innovative, and constantly evolving; as such it impacts many areas of the Commission’s policies. Within this context, DIGIT shall continue to play an active role in promoting partnerships focusing on OSS between the European Institutions and other stakeholders.

During the Q&A session Mr Damas told the audience that for many years the Commission has failed to abandon the MS Office package. However, due to rapid improvements in Open alternatives, the EC is currently exploring the possibility to move to an Open Source suite.
6.3.2.3. Analysis and evaluation

6.3.2.3.1. Workshop evaluation

At the end of the Workshop, the audience was asked to fill out an evaluation questionnaire aimed at assessing whether they enjoyed the initiative and found it useful in relation to their activity. Participants were required to evaluate the different aspects of the initiative ranking each statement from 1 (which expressed strong disagreement with the remark) to 4 (which expressed strong agreement with the remark).

The table below shows the items presented in the evaluation questionnaire:

<table>
<thead>
<tr>
<th>Evaluation Questionnaire - Items</th>
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<tbody>
<tr>
<td>1  The information that you received by phone/mail before the event was adequate</td>
</tr>
<tr>
<td>2  The organisation and infrastructure of the event were good</td>
</tr>
<tr>
<td>3  The event fulfilled your expectations</td>
</tr>
<tr>
<td>4  The speakers and moderators contributed to a clear and effective Workshop</td>
</tr>
<tr>
<td>5  The event in its whole allowed dynamic exchanges among participants</td>
</tr>
<tr>
<td>6  The cases presented during the Workshop showed examples of activities that can be put into practice in your country</td>
</tr>
<tr>
<td>7  I can use the information received during this event in my activity</td>
</tr>
</tbody>
</table>

The results of the Workshop evaluation questionnaire, as presented in the graph below, show that the participants in this initiative evaluated most of the aspects of the event in a very positive way, especially appreciating the possibility to interact with the other participants, the organisation of the Workshop and the usefulness of information provided. The total number of questionnaires collected was 26.

All items presented in the questionnaire received more than 60% of completely positive feedback, while the comparatively lowest levels of agreement registered were towards the possibilities of putting into practice the cases presented during the conference.

The evaluation questionnaire offered also the possibility to provide further comments and possible suggestions. Among the most significant comments registered, a few participants underlined that it would be useful to organize future workshop with more practical examples of good and bad practices. Indeed, they highlighted how it is important not only to provide the good examples but also the bad ones, as it is important for them to
understand the “don’ts” and the “lessons learned” when procuring ICT products and services.

6.3.2.3.2. Lessons learnt and recommendations

On the basis of feedback collected through the evaluation questionnaires given out during the event, as well as taking into consideration any questions and comments that were addressed by the audience throughout the various sessions, it emerged that both content and speakers were very much appreciated.

Just to quote a comment collected via email shortly after the event: “It was a pleasure to participate in Open Standards for ICT Procurement: Sharing of Best Practices Workshop. Thank you for the good organization and the given opportunity to present our case. I hope we can keep in touch solving ICT problems.” [a speaker]

Concerning the next workshop, scheduled for July 2015, we deem it will be necessary to stay on this positive track, focussing more on aspects which were less taken into consideration during the first two Workshops. Particularly the Procurement of Innovation and the gathering of ideas to revamp the EC policy for the procurement of ICT products and services on the base of standards.

Furthermore the next Workshop will be also the chance to present one or more bad practice examples, where a Public Administration failed to achieve its goals through the adoption of procurement Standards.
6.3.3. **Workshop report 3**

6.3.3.1. **General information**

The Workshop "Open standards for ICT Procurement: Saving while reducing lock-in" has been the third milestone of the Project "Study on best practices for ICT procurement based on standards in order to promote efficiency and reduce lock-in". The main objectives of the event were:

- Discuss ways in which Pre-Commercial Procurement can be used as a tool to steer the development of solutions towards concrete public sector needs;
- Share some good and bad practice examples about the Procurement of ICT and Innovation within EU Public Administrations;
- Gather new ideas to revamp the EC policy for the procurement of ICT products and services on the basis of standards.

The Workshop took place on the **12th of June 2015 in Brussels, within DG CONNECT's premises (Avenue de Beaulieu 25)**, running from 9:00 till 16:00, and - in order to meet the preliminary set objectives - a vast panel of relevant speakers was involved.

Main facilitators of the Workshop were the Study's lead Project Officer Thomas Reibe from DG Connect Unit F2 "Innovation" and PwC's Digital Innovation Team Senior Manager Giovanna Galasso.

Extensive dissemination activities were carried out over the two months preceding the event, including different mailing rounds across several stakeholder communities, a dedicated social media campaign, publication of information shots on various online platforms and direct contact made with relevant key stakeholders.

Out of the 118 persons who registered for the Workshop **70, from 25 different countries, actually attended**. Most of them were representing central and local EU public administrations, research institutes and various business support organisations, as
well as ICT suppliers. Some of the members of the Multistakeholder Platform (MSP) on ICT standardisation also attended the Workshop.

A dedicated participant folder was previously prepared and then distributed to all attending participants at the moment of on-site registration. In particular, the folder contained:

- The Workshop agenda
- Key speakers bios
- The Project’s official leaflet
- The list of registered participants
- A personalised Workshop badge
- A Workshop evaluation sheet
- The official event #hashtag selected for the Workshop

6.3.3.1.1. Thomas Reibe - Senior Expert, EC - DG Connect, Unit F2 - Innovation

Introductory greetings

Mr. Thomas Reibe, Policy Officer - Unit F2 - DG CONNECT, briefly presented the "Study on best practices for ICT procurement" that, under Service Contract 30-CE-0601961/00-29 between DG CONNECT and PwC, will be completed over the next 18 months.

Before moving on to the Workshop Agenda, Mr. Reibe briefly summarised the workshop goals and provides an overview on the project’s main achievements.

The main goals of the workshop were:

- Discuss ways in which Pre-Commercial Procurement can be used as a tool to steer the development of solutions towards concrete public sector needs
- Share some good and bad practice examples about the Procurement of ICT and Innovation within EU Public Administrations;
- Gather new ideas to revamp the EC policy for the procurement of ICT products and services on the basis of standards.

Among the project’s main achievements Mr Reibe mentioned:

- The creation of a web version of the Guide for the procurement of standards-based ICT: http://www.openictprocurement.eu/; The guide is interactive and available to support public authorities in working with ICT standards.
- The creation of an online community to support those who intend to use open standards for the procurement of ICT products and services: https://joinup.ec.europa.eu/community/open_standards_ict/description;
- The creation of an e-Library of virtuous and less virtuous open procurement practices and other different examples/initiatives related to the procurement of ICT goods and services by public bodies throughout Europe: https://joinup.ec.europa.eu/community/open_standards_ict/og_page/best-practices-library


A few more webinars will be organized before the end of the year.

Mr Reibe then moved onto presenting the workshop agenda.

<table>
<thead>
<tr>
<th>Registration of Participants and Welcome Coffee (09.00 – 09:30)</th>
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<tbody>
<tr>
<td><strong>INTRODUCTORY GREETINGS (09:30 – 09:45)</strong></td>
</tr>
<tr>
<td>Speaker: Thomas Reibe, Senior Expert, EC - DG Connect, Unit F2 - Innovation</td>
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</tbody>
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Mr Reibe then concluded his speech by asking the participants to engage in the discussion either raising their hands or using the event hashtag #ictproc2015
6.3.3.1.2. Aet Rahe - Head of ICT Policy Department, Estonian Ministry of Economic Affairs and Communications

Overview of Estonian ICT policy coordination, how to keep costs under control and still achieve the results?

Aet Rahe is the head of ICT Policy Department (State Information Systems Department) within the Estonian Ministry of Economic Affairs and Communications. In her position she is responsible for the Estonian IT policy making and investment management.

Her presentation focused on the means useful to avoiding vendor lock-in while keeping costs under control.

Right at the beginning of her presentation, she shared with the audience some background info about Estonia:

- majority of Government investments in new and innovative software development are funded through Structural Funds;
- In the Estonian software industry there is no major player. Quite the contrary, a lot of SMEs populate this market and majority of the companies are local origin;
- Around 70% of Estonian territory is populated by 1% of its population; which means that for Estonians living in remote areas the only way to easily and comfortably use public services is through the internet. This is especially true taking into account the bad weather conditions that oftentimes Estonian citizens have to face.

Therefore, building a strong E-government was (and still is) the only cost effective way to adequately serve citizens.

According to Ms. Rahe a series of basic principles should be taken into careful consideration to build an effective E-government, like that of Estonia:

**Ask for data only once**
Citizens shouldn’t be asked for the same information more than once. If certain data set already exists in some government registry then it should be queried from there in machine-readable format.

**Politicians should trust engineers**
Estonian politicians trusted Estonian engineers and their solutions to solve logistics and other types of issues.

**Citizens as data owners**
According to Estonian law, citizens are the owners of their personal data. This implies that each citizen has the right to know who, within public administrations, is using his/her data and why.

In addition the reuse of government owned data is strictly regulated. Indeed:

- each agency has to declare and register the kind of information it possesses
- whoever needs to re-use government owned data has to use the secure information exchange infrastructure called X-road.

**No Legacy Policy**
It consists in a set of rules that forces the government to constantly innovate its ICT systems over time. No legacy policy helps to keep the innovation going and avoid getting stuck with outdated technologies that restrict necessary process and regulatory changes.

**A coordinated and distributed architecture**

Each agency is responsible for its ICT projects, which of course have to fit with the central government infrastructure. In addition, each ICT investment made by the agencies costing more than 500,000 € has to be justified in terms of objectives, possible returns and monitoring metrics.

**Intellectual Property Rights**

The Estonian approach is to be open, procuring software mostly with open licences, thus enhancing the future business opportunities for software providers.

The objective is not to exclude commercial providers – they should be considered if the ready-made product is more cost effective, but when custom software is procured, the preferred licensing model should be open. This approach also helps avoiding vendor lock-in. In addition, government software over the last years has been largely shared with other countries.

The exceptions in licensing models are software that are connected to state defence or that are the core components of Estonian e-government.

At the end a few questions were raised by the audience.

**Many institutions heavily depend on proprietary software. Which steps would you engage in to get rid of it?**

- In Estonia we don’t have a big problem with having too much proprietary software in use. Quite contrary, majority of the government software is custom built. So avoiding the build-up of proprietary software is not an issue when you have lot of clever engineers who are able to build custom software in a cost-effective way.

**Which advices would you give to Belgium, the EC and the EP to be more like Estonia?**

- A key starting point: “get rid of paper” (i.e. e-residency, e-cabinet). Start using digital signature. EC should start “walking the walk” when it comes to using electronic ways of doing things.

**6.3.3.1.3. Thomas Gustavsson - CEO/CTO, PrimeKey Solutions AB**

**A Small and Medium Enterprise (SME) dependent on Open Standards**

Tomas Gustavsson has been researching and implementing PKI systems since 1994. He is currently project founder and developer of the open source PKI project EJBCA within PrimeKey, which is a SME started in Sweden in 2002. Its core business concerns implementing open source software competing with proprietary vendors in the IT security area and precisely in the PKI sector.

Mr Gustavsson’s presentation was divided into three blocks:
PrimeKey and its background
Why open standards are crucial for PrimeKey’s business
The standardisation areas in which the EU performs well and where it needs to improve.

PrimeKey employs 27 people around EU. According to Mr Gustavsson, this would not have been possible without open standards pre-dominancy in his market segment; PKI (Public Key Infrastructure). Open standards on which this market is based are: ISO X.509 as the foundation, complemented by a variety of standards from IETF, Oasis, ETSI and other organizations. These standards do embody the knowledge of 1 person that has been working on these topics for 100 years. In fact, they are the result of the fruitful collaboration of a number of people that wanted to define useful standards for a niche market as that of PKI. And this knowledge is now freely accessible.

Today, very few barriers are restricting market competition for PKI solutions; this has become especially true since September 2000 when the RSA patent expired. This contextual change, has allowed many small companies like that of Mr Gustavsson to take the bet creating a new start-up.

Indeed, RSA patent expiry together with the availability of many basic features within open source software allowed PrimeKey to start-up in 2001 at relatively low cost. PrimeKey first assignments were strongly related to open standards in open source software; as an example the EJBCA Project (Enterprise Java Bean Certificate Authority) whose source code is available under terms of the GNU Lesser General Public License. EJBCA has now been turned into i) EJBCA Enterprise and ii) EJBCA Community, which are both very much used by governments and corporations for their mission critical applications.

In short, the use and promotion of open standards allows disruptive SMEs to enter the market improving the average level of the technology offer, lowering the overall costs for services, creating new jobs and breaking down troubling monopolies

Therefore the EU should take important steps in
- Promoting standardization organizations;
- Promoting open standards adoption;
- Requiring public procurers to ask for open standards solutions for their ICT systems.

This because SMEs like PrimeKey might, as an example:
- Download standard documentation from a certified standardization organization;
- Search for existing open source projects, with suitable licensing frameworks;
- Implement solutions (with any programming language),
- Perform interoperability test against open reference implementations;
- Launch new ICT solutions, fully interoperable with those using the same standards.

As a result, the use of open standards, allows governments and enterprises to have access to cost effective ICT solutions. This because:
- open standards usage allows ICT vendors pertaining to different countries to compete on a level playing field;
- open standards are freely available (but for implementation licences for Standard Essential Patents needed);
- open standards are the basis for interoperable solutions across companies & governments;
- open standards usage reduces the overall cost for solutions over time.
A good example of such an approach is ETSI; ETSI standards are open and free available, especially in PKI, thus fostering the development of interoperable solutions across companies & governments.

Certainly pursuing the Open Standards path is not easy but necessary because dangerous distortions could take place.

6.3.3.1.4. Susanne Wigard - Programme Manager, ISA Unit, EC DG DIGIT

Introduction and update of the Common Assessment Method for Standards and Specifications (CAMSS) action to alleviate ICT lock-in

Susanne Wigard is a program manager in the Interoperability Solutions for European Public Administration (ISA) Unit at the European Commission in Brussels.

Her presentation provided information on how CAMSS can contribute to alleviate ICT lock-in and what benefits CAMSS has in this respect.

"CAMSS" is an initiative to promote collaboration between EU Member States in defining a "Common Assessment Method for Standards and Specifications" and to share with other countries the assessment study results for the development of eGovernment services.

In other words CAMMS is:
- a method to assess standards and specifications in the field of ICT
- based on the best practices of the Member States and
- aligned with the Regulation on European Standardisation.
- a method that enables the sharing and reuse of assessments of ICT standards and specifications with the goal of avoiding lock-in through the use of open standards.

The CAMSS toolkit consists of a documented reference assessment process, a set of quality requirements (criteria), and assessment tools.

The assessment of standards and specifications for eGovernment solutions is currently organised on a national basis, e.g. within the context of Member States’ National Interoperability Frameworks.

Unfortunately, at present, only very few administrations are using CAMSS because:
- they have their own method
- each assessment embodies a political decision. Some people might not be happy if you encourage the use of a certain standard versus another.

For these reasons the sharing and reuse of assessment is, at present, working to a very limited extent, but the hope is that over time it will be used by more administrations.

All CAMMS tools & info are available on Joinup:
https://joinup.ec.europa.eu/community/camss/home
The Joinup community provides:
- Access to the CAMSS tools, CAMSS wiki and CAMSS library with assessments carried out by Member States;
- A place to interact and discuss about Standards Assessments;
- Downloadable versions of the CAMSS tools with guidelines.

At this time, the number of community members is quite small and they are not very active. Again the hope is that they will increase over time, also because a newer online version of the CAMMS tool will be soon available with:
- An improved search and access functionalities;
- An updated list of standards and assessments (aligned with the EU regulation 1025/2012 criterions for identification of ICT technical specifications to be referenced in public procurements and including the expert group "Multi Stakeholder Platform for ICT standardisation" assessment form as a subset).

At the end of her presentation Ms. Wigard made clear that the use of the CAMMS community on Joinup is free and available to anyone.

6.3.3.1.5. Jim Zemlin - Executive Director, The Linux Foundation

Open Source and Open Standards: Harmonizing Sometimes Conflicting Collaboration Models to Prevent Lock-In

Jim Zemlin is the executive director of the Linux Foundation, home to the most widely deployed software in the history of computing. At the Linux Foundation, Jim works with the world’s largest technology companies, including Amazon, Facebook, IBM and Google to define together the future of server computing, cloud computing, mobile computing and much more.

His presentation started-off with a brief focus on how valuable open source has become over time, in spite of the traditional view "open source as a business with no financial returns".

He brought some examples of how the scenario is rapidly changing in favour of "Open Sourcing". Indeed, he showed how Big companies like Microsoft and Apple are now convinced that Open Sourcing is no longer an option.

He then moved onto presenting how "Open Source" and "Standards Setting Organizations" can complement each other in order to avoid vendor lock-in. According to his view, large open source projects do not depend on traditional specification development models found in standard development organizations, so it is time to find a new way forward.

What is “Open Source?”
- Strictly speaking: software code in human readable form (in comparison to machine-readable object code)
- Generically speaking: a collaborative development technique, usually open to anyone to participate in for free
- Most often used to develop software
• Results in a usable product rather than a design
• The deliverable is usually available for free

**How is Open Source Developed?** There are many models depending on the objectives:
• Hosted at a “forge” like GitHub, which provides a technical development platform for free
• Hosted by an existing foundation like the Linux Foundation
• Incorporated as a stand-alone entity

Furthermore, in **Open Source** there are *many different governance approaches* which are described as follows:
• Participation and technical governance are usually based on a meritocracy approach
• Funded projects may have a Board of Directors constituted in a manner typical of a consortium
• Funded projects may also have multi-tier memberships with ascending rights
• Elite projects maintain a strict separation between “board” and “technical steering committee”

**How are IPR managed in the Open Source World?**
• Code is available for free
• Project may be subject to contribution and licensing rules, or there may be no rules at all
• If there is a user licence, the terms can vary widely, from almost minimal (“permissive”) to significant (“copyleft”)
• Copyright in each code contribution may be conveyed to the project, or retained by the owner
• Patent rules for contributors and users can vary widely

**Open Source vs. Open Standards** – two approaches in comparison
• **Open standards** provide value only if everyone complies with the standard
  – IPR commitments are limited to compliant implementations
  – Copyright applies only to standards, not to implementations
  – Participants are subject to explicit IPR policies and obligations
• **Open source software** derives its value from allowing anyone to change it. In particular:
  – There may (or may not) be some type of contribution agreements
  – Many participants may be subject to non-member inventions agreements or work for hire obligations
  – Patents are often not addressed at all
  – Copyright applies to the deliverable itself
  – Commercializing software under restrictive licenses can impose IPR and code-contributions on non-members
• But:
  – Open source software needs to implement standards
  – RAND commitments can cause problems under “Copyleft” licences

Therefore, many consortia have adapted their IPR policies to implement open standards while addressing the pending licensing issues.

The Linux Foundation approach is that of seeking a balance between standardization and open source in order to:
- Enable the rapid development of innovation deriving from open source
- Provide some of the consistency and IPR frameworks governing many standard development organizations

**Open Source vs. Open Standards** - Sometime contrasting

- **Open standards approach**: a new foundation to create a framework of standards directed at a specific use case(s)
- **Open source approach**: a new consortium to develop code for software that addresses a specific use case(s)

An area in which the Linux foundation is working on together with OC the alliance is an IoT framework, which is trying to balance the rapid development of the actual code base with parallel specification development processes that have an IPR framework around it.

The convergence between **Open Source and Open Standards** has a number of benefits:

- Provides a new approach to solve complex problems
- Broadens opportunities for innovation
- Addresses cross-sectorial challenges
- Provides a faster time to market solutions
- Lowers per-participant development costs
- Reduces risks of lock-in

Therefore, according to Mr Zemlin’s view, the best lock-in defence is integrating Open Source with Open Standards, which in the end will result in improved interoperability.

The Open Source community needs to understand what open standard are all about and how to participate in standard development organizations.

**At the end of Mr Zemlin’s presentation several questions were raised by the audience.**

**Have you ever faced data security problems? How are you addressing them?**

- About the information safety of data exchanged, saved or stored, some problems may be raised in an open source organization. However there are a lot of open data projects which are currently working on the legal framework surrounding data privacy. Of course, open source projects need to insert fundamental secure coding practices as part of their duties.

**In the automotive industry there are many proprietary source codes. If I buy a car, do you think that I can claim to the car company to have access to the source codes that are run in my car?**

- The answer is “not for a while”. Basically car companies do not want to give away software per se. They will only do it, under certain conditions in the future, to see how their cars can be hacked, also to see how the developers community may come out with out of the box gadgets.

**What is your suggestion for EU entrepreneurs to engage with open software industry in the EU?**

- Elements which affect and create proper environment are;
  - access to capital
  - collaboration with research centres such as Stanford
one advice could be to look at Silicon Valley practices and bring them in the EU. This is already happening in the EU but it needs to be encouraged more.

6.3.3.1.6. Thomas Vinje - Partner, Clifford Chance - Legal Counsel to ECIS

Cloud Computing Standards and Interoperability: How to avoid lock-in in a cloud environment

Thomas Vinje is Partner and Chairman of the Global Antitrust group at Clifford Chance LLP. He is specialized in European Union antitrust and intellectual property law, especially in high-technology matters. He has been particularly active on dominance matters in the IT sector, especially related to intellectual property.

According to Mr Vinje, in the ongoing advancement of computing architectures, cloud offers unprecedented flexibility, agility and productivity. Cloud computing, if effectively implemented, will give more freedom and power to technology users than ever before.

While organizations are rushing to cloud computing, it is essential that enterprises do not overlook the implications of switching vendors, or of moving certain implementations into or out of a cloud environment.

Open interfaces and data formats - based on open standards - are key. Closed or proprietary interfaces cede many key decisions and options to the discretion of the cloud provider and, together with closed data formats, may limit the ability to transfer data in the future.

This is the very definition of lock-in. Europe can stay at the forefront of the digital industry only by free and unfettered competition and interoperability with others around the world.

This is exactly why ECIS (European Committee for Interoperability System) has focused since its inception on issues related to promoting interoperability, and avoiding lock-in.

Few key factors are crucial to foster interoperability:

- Education and awareness in part of ICT procurers
- Standards based ICT procurement (public and private)
- Intellectual property laws
- Competition law, its compliance and enforcement

It goes without saying that cloud is changing dramatically how software and IT services are acquired, deployed and used. Cloud services can be classified in three categories:

- Software as a Service (SaaS)
- Infrastructure as a Service (IaaS)
- Platform as a Service (PaaS)

For each category risks of lock-in do exist:
- **Software as a Service (SaaS):** the ability to move from one vendor to another could be difficult due to several types of dependencies (in particular for data formats)
- **Infrastructure as a Service (IaaS):** the ability to migrate workloads among cloud platforms is very limited
- **Platform as a Service (PaaS):** the service platform is usually connected to the underlying provider platform. Therefore, moving from a vendor to another could be difficult

Below a few questions ICT procurers should take into careful consideration when procuring for cloud services, of any type.

- Are there any common security issues that could be addressed through standard open interfaces?
- Are the virtual machines packaging formats based on open standards?
- Lock-in concerns could be potentially mitigated by source code access? And by the use of open source components?
- Is it possible to migrate existing workclouds among IaaS providers?
- Does the PaaS provider allows one to write the application that one can move to another platform as a service provider?
- Do the applications running on the PaaS rely on open packaging deployment, and run-time management interfaces?

If these are too many questions to remember, there is a single question public procurers should keep in mind:

- How easily can I move my data/ functionalities to another location or platform should I need to do so?

Mr Vinje ended his intervention saying that ECIS has published several papers on this topic. All of them are freely accessible on ECIS’ website [http://www.ecis.eu/](http://www.ecis.eu/)

At the end of his presentation, Mr Vinje responded to several questions coming from the audience.

**What do you suggest to solve the lock-in effect of customization & integration? We all know that customers (public or private) need customization & integration services from their ICT suppliers.**

- Yes, this phenomenon frightens me also. When such customization occurs, the cloud service provider should be required by the customer to provide all the relevant information so that is better positioned to move somewhere else.

**Do you think (I am a layer too) we should create a right to data export?**

- I would not favor the adoption of regulation. I think it would be really difficult to define exactly what the right would be. I would be happy to look at it, I wouldn’t exclude it entirely, but I think again that lock-in avoidance is probably driven by the power of ICT procurers.

**You stated quite rightly that you don’t see a dominant player in the cloud market. However, a research shows we are moving to a situation where 3 major suppliers will dominate the market in the future. What if they decide to make a price cartel?**

- Theoretically cartels can exist in concentrated markets. Cartels in IT markets are very uncommon. The cloud market is extremely differentiated and I think that for cloud suppliers would be difficult to engage in cartel like behavior.
6.3.3.1.7. Sara Bedin - European Independent Expert on Innovation Procurement (PCP and PPI)

Europe has an enormous and overlooked opportunity to spur innovation using public procurement

Sara Bedin is working in implementing the innovation procurement strategy in Europe. Her key achievements and competencies concern the definition and evaluation of innovation support policies.

Since 2007 she has been working to introduce pre-commercial public procurement (PCP) into the Italian research and innovation policy framework as well as to contextualize the European model within the existing Italian regulations and exemption from procurement law.

According to Ms. Bedin, public procurement in the ICT sector, given its large overall GDP share, offers a powerful leverage for the emergence of new standards and for the EU industry competitiveness and growth. Moreover she believes that public procurement of R&D services and innovative products & services is vital for improving the quality and efficiency of public services in a time of budget constraints.

By developing a forward-looking innovation procurement strategy that uses PCP and PPI in a complementary way, public procurers can drive innovation from the demand side. Currently however, compared to other parts of the world, PCP and PPI are underutilized in Europe133.

What distinguishes PCP and PPI? According to the Digital Agenda for Europe PCP:
“Pre-Commercial Procurement (PCP) can be used when there are no near-to-the-market solutions yet and new R&D is needed. PCP can then compare the pros and cons of alternative competing solutions approaches. This will in turn enable to de-risk the most promising innovations step-by-step via solution design, prototyping, development and first product testing134.”

And PPI:
“Public Procurement of Innovative solutions (PPI) is used when challenges can be addressed by innovative solutions that are nearly or already in small quantity in the market and don’t need new Research & Development (R&D)135.”

According to Ms. Bedin’s view, fully tapping the potential of PCP and PPI, enabling a large and competitive supply chain might reduce ICT lock-in. How?

1) Pooling demand and sizing the market opportunities at least at the European level:

- Optimizing the value for money and impact of public R&D spending and investments
- Creating opportunities for EU companies to take international leadership in new markets

2) Working on market receptiveness and contestability, expansion of competitiveness:
- Allowing SMEs to grow and compete in a global market (because they are under-represented in public procurement compared to their overall weight in the economy and because, at present, SMEs are mainly relegated to the role of subcontractors).
- Large companies to submit more tenders as the qualification requirements are easy to comply with.
- Enlarging the participation and looking also beyond the regular suppliers.

3) Avoiding an hyper-specification of the need and focalizing on the core and common functionalities:
- Working on the problem description rather than on the solution specification.

At the end of Ms. Bedin presentation no significant questions were raised by the audience.

6.3.3.1.8. Giovanna Galasso - Senior Manager, PwC Italy – Digital Innovation Team

Preliminary results from the ICT Procurement Survey

In her presentation, Ms. Galasso summarized the preliminary results of the ICT Procurement Survey, part of the project "Best Practices for ICT procurement based on standards in order to promote efficiency and reduce lock-in", which aims at involving stakeholders around a process to effectively monitoring the use of open standards in ICT procurement. The results of the survey, together with MAPPs dataset, and a list of best practices, will constitute the building blocks of the monitoring system.

The level of awareness of the recent procurement provisions within the new procurement Directive is still quite low among respondents (around 50%). On the other hand, a satisfactory level of knowledge about ICT lock-in emerges, even if there is no clear consensus on its definition. Around 40% of respondents experienced lock-in issues in their organisations and they mainly pointed to three lock-in categories:

- Migration of data and dialogue with other entities is too complex to bring in other providers;
- Compatibility and program extension issues connected with highly-tailored implemented IT solutions;
- High switching costs.
Not all organisations are putting in place measures to fight lock-in, but the most frequently mentioned counter-actions taken by those who are active in that sense are:

- to define **ICT strategies and architectures** based on open source and open standards;
- to define lists of recommended standards and other technical specifications;
- to define procurement guidelines.

The **open procedure** is the **most used** when procuring for ICT products and services, which is a normal result giving that the sample of the survey is mainly composed of public procurers. “**Make-or-buy**” **decisions** are based on cost considerations, quality control concerns, supplier’s expertise and the need of direct control: these very same factors should be used as "**motivational drivers**" to promote the adoption (of open) ICT standards. The use of templates and standard clauses is not widespread among respondents, who instead are generally aware of the importance of dealing with licence agreements since the very beginning of the procurement procedure.

The main **drivers of ICT procurement** are "**value for money**" and "**assurance of project outcome**", while "**lock-in avoidance**" and "**ensuring provider turnover**" appears less important. Those who experienced lock-in are familiar with the use of standards.

**Recommendations to improve the Guide on ICT procurements**, coming from the analysis of respondents will help making it a more practical tool, increasing its uptake:

- Include a number of practical case studies (e.g. for the definition of "ICT strategies and architectures")
- Include ready-to-use texts/templates and lists of standards
- Simplify the language, making it motivating (pushing on Cost, Quality and Direct Control considerations as motivating factors for the use of ICT standards)
- Develop ad-hoc sections describing in-detail how to overcome ICT lock-in in the following situations i) data migration; ii) software incompatibility; iii) tailored IT solutions; etc.

Moreover, given that most respondents do not have access to the guidelines in their national language, the need for translation from English to the most spoken languages of Europe emerges.

The majority of respondents are not aware of the "**Common Assessment Method for Standards and Specifications**", developed within the ISA programme, to support and coordinate the collaboration between Member States.

Improving the data quality of TED database to make it a powerful tool for monitoring the openness of the ICT procurement market is a basic step in the right direction. Data Management rules, automatic data validation checks and algorithms could help, together with the monitoring over time the number of competing bidders for ICT tenders in Europe (still too low to ensure competitiveness).

**6.3.3.1.9. Bob Jones - Leader of the PICSE project, CERN IT department**

**Procurement Innovation for Cloud Services in Europe – PICSE**

Dr. Jones presented preliminary results from the PICSE project (Procurement Innovation for Cloud Services in Europe http://www.picse.eu/) which focuses on the publicly funded research sector in Europe.
PICSE’s top five objectives are to:

- Set up a European Procurers Platform
- Make the procurement model for Cloud Services simpler
- Provide a set of best practices for implementing results
- Set out a realistic roadmap for cloud procurement over the next five years
- Lay the foundations for future joint procurement actions

The idea of PICSE came about and matured with the experience of the Helix Nebula initiative (http://www.helix-nebula.eu) in which the three partners forming PICSE's consortium (CERN, Coordinator, CSA, Trust-IT Services) were involved.


From the report it emerges that the top five risks of cloud computing are:

- The lack of customization
- Unclear privacy policies
- Lack of service interoperability
- Lack of confidentiality assurance in IPR management
- Immature services
- Stringent legal and regulatory requirements.

In addition public research organizations are facing several challenges:

- Many existing procurement policies do not foresee provisioning services on‐demand (there are no cloud-oriented procurement policies in place)
- Developing a standalone test to verify the suitability and ROI is not easy (there is no consolidated method to evaluate business cases for cloud computing)
- A standard legal and contractual framework for cloud services does not exist (there are no standard contracts)
- Several cloud tenders were unsuccessful because of too stringent requirements (no bidders replied).

Based on this analysis, several lessons learned were derived:

- The adoption of cloud-based standards is encouraged. Especially to ensure interoperability & avoid lock-in
- Over-specifying requirements may discourage cloud service providers
- Technical, legal, procurement and financial aspects of cloud computing must be addressed by the cloud procurement team who must work together and be involved at different stages of the procurement process
- Successful procurement actions show that it is essential for the procuring organisation to possess a very good knowledge of cloud
- Joint procurement is a good practice to share risks & legal burdens, especially when procuring innovation.

To support public research organizations in getting to grips with joint Pre Commercial Procurement, PICSE asked Trento RISE Francesca Cinardo to deliver a webinar about the “Legal aspects of Joint Pre-Commercial Procurements: from modelling to implementation”.

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The recorded webcast can be accessed from the following link: http://indico.cern.ch/event/372086/

In addition PICSE has developed a wizard, the “PICSE Wizard”, to help public research organizations make informed decisions about how to procure cloud services.

The PICSE Wizard has two main functions:
- To find the best procurement model for cloud services
- To assess how suitable research organizations’ current procurement process is for procuring cloud services

The Wizard will be officially launched in Geneva on June 26th 2015 during the workshop “The Helix Nebula Initiative & PICSE: Towards a European Open Science Cloud” (http://indico.cern.ch/event/388437/other-view?view=standard)

At the end of Dr. Jones presentation no questions were raised by the audience.

6.3.3.1.10. Thomas Reibe, EC - DG Connect, Unit F2 - Innovation

Final Discussion

To spur the Final Discussion, Mr Thomas Reibe, DG Connect, Unit F2 – Innovation, and Project Officer for the EC project “Study on best practices for ICT procurement”, asked the participants to provide ideas to be, eventually, included in the upcoming communication on the Internal Single Market –procurement chapter.

In short, the main questions which participants tried to answer were:

1) **What do you think of the awareness activities carried out as part of the project “Study on best practices for ICT procurement”? Are they really useful?**
   - A clear and unambiguous response arrived from the audience. The awareness activities carried out as part of the EC project “Study on best practices for ICT procurement” were really helpful, and a stronger effort in this direction over next few years would be very much welcomed. In particular to better promote practical examples on how public administrations experiencing ICT lock-in successfully managed to get rid of their vendor dependency.

2) **What could the Commission to do as part of its ICT Procurement strategy?**
   - The EC should force major vendors such as Oracle, IBM etc. to allow independent vendors to provide maintenance and support services for their products. This would allow SMEs to grow in the market also fostering a higher level of competition. Furthermore, such a market opening will favour local players also reducing the overall market prices in the long-run.
   - The EC should sponsor the set-up of meetings among public procurers who successfully managed to eliminate/ reduce ICT lock-in. As an example, some Swedish administrations managed to move away from their vendors and many other similar cases do exist and should be further promoted.
- The EC should sponsor the creation of guides on procurement such as those of BITKOM (see previous workshop). Indeed, those guides do contain a series of advices to write procurement documentation in a non-proprietary manner. [http://bit.ly/1up8ZGV](http://bit.ly/1up8ZGV)

- The EC should promote the insourcing of ICT maintenance and support services by public administrations. In Norway, after the implementation costs savings were observed. Insourcing is an emerging tendency among ICT procurers.

- In Ireland, the “Demand” shapes the “Offer”. For a number of reasons until 2009 the Irish government had no Open Source strategy. As a result the supply for open source service was lacking. From 2010 Irish government decided to procure Open Source services, first in small quantities and then more consistently. This resulted in the creation of a number of very small start-ups working on Open Source to supply the government. Now the Open Source market is vigorous. Therefore the EC should promote actions to better govern the “Demand” for ICT products and services.

At the end of this session Mr Reibe thanked the participants inviting them to the next project workshop scheduled for end of November/December 2015.
6.3.3.2. Analysis and evaluation

6.3.3.2.1. Workshop evaluation

At the end of the Workshop, the audience was asked to fill out an evaluation questionnaire aimed at assessing whether they enjoyed the initiative and found it useful in relation to their activity. Participants were required to evaluate the different aspects of the initiative ranking each statement from 1 (which expressed strong disagreement with the remark) to 4 (which expressed strong agreement with the remark).

The table below shows the items presented in the evaluation questionnaire:

<table>
<thead>
<tr>
<th>Evaluation Questionnaire - Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The information that you received by phone/mail before the event was adequate</td>
</tr>
<tr>
<td>2. The organisation and infrastructure of the event were good</td>
</tr>
<tr>
<td>3. The event fulfilled your expectations</td>
</tr>
<tr>
<td>4. The speakers and moderators contributed to a clear and effective Workshop</td>
</tr>
<tr>
<td>5. The event in its whole allowed dynamic exchanges among participants</td>
</tr>
<tr>
<td>6. The cases presented during the Workshop showed examples of activities that can be put into practice in your country</td>
</tr>
<tr>
<td>7. I can use the information received during this event in my activity</td>
</tr>
</tbody>
</table>

The results of the Workshop evaluation questionnaire, as presented in the graph below, show that the participants in this initiative evaluated most of the aspects of the event in a very positive way, especially appreciating the possibility to interact with the other participants, the organisation of the Workshop and the usefulness of information provided. The total number of questionnaires collected was 15.

All items presented in the questionnaire received more than 95% of completely positive feedback, while the comparatively lowest levels of agreement registered were towards the possibilities of putting into practice the cases presented during the conference.

The evaluation questionnaire offered also the possibility to provide further comments and possible suggestions. Among the most significant comments registered, a few participants underlined that it would be useful to organize future workshop with more practical examples on how public administrations experiencing ICT lock-in successfully managed to change their vendor dependency.
6.3.3.2.2. Lessons learnt and recommendations

On the basis of feedback collected through the evaluation questionnaires given out during the event, as well as taking into consideration any questions and comments that were addressed by the audience throughout the various sessions, it emerged that both content and speakers were very much appreciated.

Just to quote a comment collected via email shortly after the event: “Thank you for inviting me at your event. It was quite important and interesting. I had the opportunity to meet professionals in their field of expertise and I was also able to express some of my views and even make suggestions and proposal for your future meetings and events, that I hope I will be invited to participate.” [a participant]

Concerning the next workshop, scheduled for end November / December 2015, we deem it will be necessary to stay on this positive track, focussing more on aspects related to the adoption of Open Document Formats within public administrations and how some other public entities successfully managed to move away from their vendors (breaking lock-in).

Furthermore the next Workshop will be also a chance to present one or more bad practice examples, where a Public Administration failed to achieve its goals through the adoption of procurement Standards.
6.3.4. Workshop report 4

6.3.4.1. General information

The Workshop "Open ICT Standards for Public Procurement - Fostering Interoperability" has been the fourth milestone of the project "Study on best practices for ICT procurement based on standards in order to promote efficiency and reduce lock-in". The main objectives of the event were:

- Present the European Catalogue of ICT technical specification for public procurement and how it will contribute to the Digital Single Market;
- Provide suggestions on how to reduce lock-in when procuring ICT;
- Share some good practice examples on how to procure ICT on the basis of standards within the EU Public Administrations.

The Workshop took place on the 13th of November 2015 in Brussels, within DG CONNECT’s premises (Avenue de Beaulieu 25), from 9:00 till 16:00. In order to meet the set objectives a vast panel of relevant speakers was involved.

Main facilitators of the Workshop were the study’s Lead Project Officer Dimitris Dimitriadis from DG Connect Unit F2 "Innovation" and PwC’s Digital Innovation Team Senior Manager Giovanna Galasso.

Extensive dissemination activities were carried out over the two months preceding the event. These included different rounds of emails sent to several stakeholder communities, a dedicated social media campaign, publication of information selected from various online platforms and direct contact with relevant key stakeholders.

Out of a 135 people - from 28 different countries - who registered to the Workshop around 90, actually attended. Most of them were representing central and local EU public administrations, research institutes and various business support organisations, as well as ICT suppliers. Some of the members of the Multistakeholder Platform (MSP) on ICT standardisation also attended the Workshop.

A dedicated participant folder was previously prepared and distributed to all attending participants during the on-site registration. In particular, the folder contained:

- The Workshop agenda
- A personalised Workshop badge
Mr. Dimitris Dimitriadis, - Policy Officer from Unit F2 – Innovation at the DG CONNECT - and Giovanna Galasso - Senior Manager at PwC's Digital Innovation Team- briefly presented the “Study on best practices for ICT procurement” and its main results.

Right at the beginning of the workshop, Mr. Dimitriadis briefly summarised the workshop goals and provided an overview on the project’s main achievements.

The main goals of the workshop were to:

- Present the **European Catalogue of ICT** technical specification for public procurement and how it will contribute to the Digital Single Market;
- Provide suggestions on **how to reduce lock-in** when procuring ICT;
- **Share good practice** examples on how to procure ICT on the basis of standards.

Among the project’s main achievements Mr Dimitriadis mentioned:

- The creation of an online community to support those who intend to use open standards for the procurement of ICT products and services: [https://joinup.ec.europa.eu/community/open_standards_ict/description](https://joinup.ec.europa.eu/community/open_standards_ict/description);
- The creation of an e-Library of virtuous and less virtuous open procurement practices and other different examples/initiatives related to the procurement of ICT goods and services by public bodies throughout Europe: [https://joinup.ec.europa.eu/community/open_standards_ict/og_page/best-practices-library](https://joinup.ec.europa.eu/community/open_standards_ict/og_page/best-practices-library)
The set-up and running of a series of Online Brainstorming events to stimulate a debate around the use of open standards for ICT procurement (http://bit.ly/1rNiSxS) (http://bit.ly/1wayl00) (http://bit.ly/1za3qyr). During these events speakers usually present their findings and then a debate occurs.

A few more webinars will be organized before the end of the year.

Mr. Dimitriadis at this point left the floor to Ms. Giovanna Galasso. She currently manages the “Study on best practices for ICT procurement” and the related stakeholders management activities. In her presentation, Ms. Galasso has shown the main aspects of the analysis on the “Light Monitoring System to Measure the Take-up of ‘Open’ Procurement”.

Her presentation is organised in two parts:

- **The light monitoring system** – is a statistical evaluation of procurement practices, in which data on ICT procurement from the MAPPs database was analysed at periodic intervals to assess whether visible changes to key indicators took place. The analysis concerns:
  - Number of references to trademarks (prevalence of brand names in tenders);
  - Number of suppliers participating in public procurement bids (level of competition).

- **Follow-up survey of procuring authorities**: 117 professionals from 25 European countries were surveyed to obtain data about their practices related to open procurement of ICT systems.

**The light monitoring system**

According to Ms. Galasso, to analyse this huge dataset, some improvements from the previous analysis were necessary. One of them was the implemented methodology. In fact, the methodology, used for the statistical analysis of the TED, is based on:

1. **Data cleansing and data selection**:
   - 21 most relevant CPVs;
   - EU28 (i.e. excluded Iceland, Norway and tenders issued by EU institutions);
   - Duplicates & not awarded tenders were removed.

2. **Search for vendors**:
   - 293 vendors/trademarks.

3. **Quality check**:
   - Multi-linguistic control;
   - Detection of further vendors;
   - Improved analytical techniques: text mining in R (open-source statistical software).

The evidences, from the second iteration of the TED Analysis, fund that:

a) **Average of participation**:
   - 26% the incidence of tender notices with only one offer;
   - the average of participation is 4 per procedure.

b) **Incidence of trademarks in ICT procurement tenders**:
   - Three main families of CPV analyzed (48000000 – 72000000 – 30200000) that account for 88% of the total tender with contra legem references;
   - 2.006 references to trademarks were found;
   - 11% of the analysed tenders contain references to specific trademarks; 16% of them contain more than one reference.

c) **Trademarks in ICT procurement tenders per country**:
The top 10 countries cover 83% of total references to vendors (on average 1,43 references for tender);

Most frequent trademarks referenced in ICT tenders are Microsoft, SAP, Oracle, IBM, Linux;

2,585 explicit references to vendors.

**Follow-up survey of procuring authorities**

Likewise, the bulk of the survey’s questions were on ICT lock-in awareness, adoption of good practices, use of ICT standards and feedback on the Guide for the procurement of standards-based ICT. Respondents, which come from 25 Member States, are mainly (ICT) procurement experts working in central and local governments or public sector bodies.

The results of the survey, demonstrated that 42% of sample respondents experienced ICT "lock-in" in their organization. Maybe related to this result, 41% often mentions ICT standards because of previous bad experiences. In contrast, 35% never mention ICT standards in tendering documents, and only 15% rarely mentions ICT standards in tendering documents.

As a matter of fact, the above-mentioned results confirm that the main drivers of ICT procurement are still "value for money" and "assurance of project outcome", while "lock-in avoidance" and "ensuring provider turnover" appears less important.

The analysis of respondents led to some **Recommendations to improve the Guide on ICT Procurements**, and increase its uptake. The recommendations are to:

- Include a higher number of practical case studies (e.g. for the definition of "ICT strategies and architectures");
- Include ready-to-use texts/templates, templates, and lists of standards;
- Simplify the language (pushing on Cost, Quality and Direct Control considerations as motivating factors for the use of ICT standards)

Develop ad-hoc sections describing in-detail how to overcome ICT lock-in in the following situations i) data migration; ii) software incompatibility; iii) tailored IT solutions; iv) exit strategy etc.

After Giovanna’s intervention, Mr. Dimitriadis moved onto presenting the workshop agenda.

Below the Agenda that was officially distributed on the event day.

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**REGISTRATION OF PARTICIPANTS AND WELCOME COFFEE (09.00 – 09:30)**

**INTRODUCTORY GREETINGS (09:30 – 09:45)**

Mr Dimitriadis will open the workshop briefly introducing the audience to the workshop’s goals and structure. Furthermore, the latest developments/ activities carried out as part of the “Study on best practices for ICT procurement based on standards in order to promote efficiency and reduce lock-in” will be also presented. To close the session, Ms Galasso will present outcomes on the “take-up” of open procurement in Europe.

Speaker: Dimitris DIMITRIADIS, DG CNECT - Policy Officer - Unit F2 – Innovation
Giovanna GALASSO, PwC Italy - Senior Manager, Digital Innovation Team

**EU CATALOGUE OF ICT STANDARDS, AND HOW IT WILL CONTRIBUTE TO THE DIGITAL SINGLE MARKET (09:45 – 10:15)**

The Digital Single Market Strategy proposes to integrate national catalogues of ICT standards into a European catalogue to avoid market fragmentation at EU level.

The presentation will discuss the envisaged next steps to build such an EU catalogue.

Speaker: Benoit ABELLOIS, DG CNECT - Policy Officer - Unit F2 - Innovation

**SPANISH NATIONAL CATALOGUE OF ICT STANDARDS (10:15 – 10:45)**

The presentation will discuss the experience of Spain with the national catalogue of ICT standards, the legal act which implements it (the National Interoperability Framework), the process and lessons learned about its development, implementation, maintenance and its relationship with the catalogue of services for reuse, with links to the current European context and activities.

Speaker: Miguel A. AMUTIO GÓMEZ - Ministry of Finance and Public Administrations, Deputy Head of Unit Coordination of ICT Units

**COFFEE BREAK – NETWORKING – BRAINSTORMING (10.45 – 11:30)**

**A QUEST FOR LOWER SUPPORT COSTS AND THIRD PARTY MAINTENANCE (11:30 – 12:00)**

Mission critical IT systems need to be well supported and have access to software most recent versions. Third Party Maintenance providers could drive costs down but they are rare and have limited possibilities. Johan Vercruysse will
present Belgium’s quest for lower support & maintenance costs and the steps taken so far to enhance TPM presence in the Belgian market.

**Speaker:** Johan VERCRUYSSE, SMALS - Director of Clients and Services

**OPEN STANDARDS & FLOSS IN THE SWEDISH PUBLIC SECTOR (12:00 – 12:30)**

Mr. Westerlund will present experiences on the use of open ICT standards within Swedish municipalities to answer the following questions:
- How can we succeed in avoiding lock-in to specific vendors in the ICT area?
- How can we create infrastructure using standardized platforms?
- How do we engage management and political leadership in the development of open standards and FLOSS?

In addition he will describe his experience on how to use cooperation between municipalities to create innovation.

**Speaker:** Göran WESTERLUND, Municipality of Alingsås - IT Director / CIO

**DUTCH NATIONAL CATALOGUE OF ICT STANDARDS (12:30 – 13:00)**

In the Netherlands, public organisations are obliged to ask certain standards when they buy or develop ICT. These are standards from the Dutch Catalogue of ICT standards (the so-called ‘comply or explain’ list). This list contains standards that are recommended and standards that are obliged (comply or explain). A standard is only included on the list after an extensive procedure consisting of expert sessions and public consultation, where for example the scope of the standard is defined.

In this presentation Lancelot shares the experience of the Dutch government with the Catalogue of ICT standards and how the catalogue contributes to the adoption of ICT standards.

**Speaker:** Lancelot SCHELLEVIS, Dutch Standardisation Forum Office – Policy Officer on Standardisation

**LUNCH BREAK – NETWORKING – BRAINSTORMING (13.00 – 14.00)**

**OpenPEPPOL & THE AVOIDANCE OF LOCK-IN (14:00 – 14:30)**

Mr. Hoddevik will briefly present how OpenPEPPOL addresses the use of open source software and open standards when facilitating pan European public procurement. In his presentation, Mr. Hoddevik will share also a practical case: the impact of OpenPEPPOL’s approach on the Norwegian market for eInvoicing solutions.

**Speaker:** André HODDEVIK, OpenPEPPOL - Secretary General & Difi - Head of e-Procurement Unit

**OPEN & AGILE SMART CITIES – HARMONISATION THROUGH OPEN INNOVATION (14:30 – 15:00)**

Open & Agile Smart Cities is a hands-on collaboration network, which has grown to 61 cities (and counties) in eight months. OASC is a bottom-up, volunteer initiative, in which cities work together to implement open and harmonised APIs, data models, open data catalogues and hands-on experimentation.

**Speaker:** Jarmo ESKELINEN, CEO - Forum Virium Helsinki, Task Force Member – European Network of Living Labs

**FOUR DIMENSIONS AFFECTING POLICY RESISTANCE IN ICT PROCUREMENT (15:00 – 15:30)**

Based on the results of my 2013 PhD-research, I will explore the changes of success and acceptance for current initiatives on open ICT standards.

**Speaker:** Mathieu PAAPST, University of Groningen - Center for Law & ICT - Assistant Professor

**PROCUREMENT OF CLOUD SERVICES IN EUROPE: HOW THE PICSE WIZARD CAN MAKE A DIFFERENCE (15:30 – 15:45)**

Following the release of the PICSE report “Procuring cloud services today” (http://picse.eu/news/new-report-experiences-and-lessons-learned-the-public-sector-procuring-cloud-services-today) that includes testimonials from ten public sector organisations across Europe that have either carried out a process of procuring cloud services, or are considering doing so, PICSE launched its Wizard, designed to help these organisations overcome a set of barriers in procuring cloud services. The Wizard is a web-based application that European procurers and IT managers can use to obtain guidelines on the most suitable model for procuring cloud services, to make a self-assessment and evaluate their procurement procedures. The tool includes a set of recommendations that can guide the user during the cloud procurement process while also raising awareness of the innovative procurement instruments made available by the EC such as FCPC & PPI instruments. The tool has been built after an intensive consultation with major stakeholders in the sector.

**Speaker:** Sara GARAVELLI, Trust-IT Services Ltd - Project Manager

**FINAL DISCUSSION – Q&A (15.45 – 16.15)**

Mr. Dimitriadis then concluded his speech by asking the participants to engage in the discussion either by raising their hands or using the event hashtag #ictproc2015.

**6.3.4.1.2. Benoit Abeloos - DG CNECT - Policy Officer - Unit F2 - Innovation**

**EU Catalogue of ICT Standards, and how it will contribute to the Digital Single Market**

Benoit Abeloos discussed the EU catalogue on ICT standard that has been developed by the DG Connect and the DG Growth, as part of the EU Digital Market Strategy.
Mr. Abeloos underscores the problems that need to be addressed. Public procurers know about policy and legal issues but may lack a knowledge on the standards for which they need a solution to comply to. There is a risk of vendor lock-in within the public procurement and a lack of interoperability of ICT solution. Furthermore, it is relevant to enhance coordination between member states in ICT standards adoption.

Mr. Abeloos also highlights the importance of involving the industry and enabling them to adopt their own solutions. The goal is to pull standards from public procurement but also from the industry.

Guidelines and tools are necessary at the EU level helping public procurement to specify the right ICT standard. Also Mr. Abeloos considers the importance of a global standard adoption process at the EU level to ensure interoperability, defragment the market and provide visibility to the industry.

The speaker explains that some commonalities in standards already exist in several countries. These are the starting point of the EU catalogue. The plan is also to leverage the multi-stakeholder platform which identifies technical specification which has been developed by foreign bodies that don’t have the status of international standards or EU standards but which are useful and are used already in the market. The MSP identifies specification in order to give member states the possibility to refer to them in the process of the identifying specifications (which is about complying with the understood specification).

The use-case methodology starts with the user and identify the base standard that needs to be addressed in the use case. (i.e. exactly like the CAMMS)

The focus should not be on the low level use-case standards which are obvious standard and make the list too long and the maintenance costs too high but on a tool which is focused on higher level use-case which is meaningful to the user. It is also key that the adoption process does not hamper innovation. In fact, restricting too much the market using standards may prevent innovation. There is a balance to be found with using standards and still enabling new technologies.

Mr. Abeloos points out the importance of good governance in the EU catalogue, governance should be multi-stakeholder. An inclusive platform would be the first element of the UE catalogue governance. It is also key to have a dialogue with the ISA platform between administration, which scope is on e-Government but where reference to the EU catalogue in the EU interoperability framework could be added.

The speaker then goes on discussing the different models and policy options for standard adoption. These are:
- Purely voluntary
- Voluntary with regular monitoring
- Recommendation
- Comply or explain policy
- Legal basis for the catalogue

Mr. Abeloos explains what the next steps are. The EC will launch a study to analyse the national catalogue or adoption strategy in Member States, as to define the EU level standard adoption processes. The EC will organize workshops and define surveys for key stakeholders.

The result of such study will be a first prototype of the EU catalogue. Therefore the plan is to launch an impact assessment on this catalogue to understand the different policy option existing and the socio-economic benefit of the catalogue which are i) lower vendor lock-in for MS, ii) lower total cost of ownership of ICT solutions and iii) increase interoperability. Other benefits expected are also that in a single market more suppliers need to be able to make offers on public procurement, so prices are lowered.
Q: You suggested that the implementation of standards by the industry is voluntary but if you set an EU standard catalogue for interoperability the voluntary aspect becomes irrelevant. If you cannot implement a standard you cannot go for procurement that make reference to that standard in this catalogue, and if you continue to use the old equivalent clause then you lose the benefits of interoperability because equivalent standards are not necessarily interoperable. What is your view on such issue?

A: We are talking about demand side policy and about using public procurement to try to make the market evolve and try to defragment the market. The rest of the procurement market, which is between private players in the market, is still the higher proportion. There is still that voluntary aspect in the market so we are using public procurement to help the market to converge and innovate. If we go for a comply or explain type of policy we still have the possibility to make things evolve and make the standards evolve as well.

Q: Open standards is only truly open if there is a free software implementation working. I was wondering if this aspect was considered too in the EU catalogue.

A: Open standards generally means that they have been developed according to the criteria of annex II of the EU standardization regulation, which are openness, transparency, and based on consensus. There could be IP and royalties if these are reasonable, fair and non-discriminatory.

6.3.4.1.3. Miguel A. Amutio Gómez - Ministry of Finance and Public Administrations, Deputy Head of Unit Coordination of ICT Units

Spanish National Catalogue of ICT Standards

Miguel A. Amutio Gómez is the Deputy Head of Unit for Coordination of ICT Units of the Ministry of Finance and Public Administrations of Spain. His presentation focused on the Catalogue of Standards of Spain.

Mr. Amutio Gómez’s presentation is divided into three blocks:
- Spanish National Catalogue of ICT;
- Challenges ahead;
- The European ICT Standards Catalogue.

Right at the beginning of his presentation, he shared with the audience some background info about the situation in Spain. In particular, Mr. Amutio pointed out that in decentralised countries such as Spain, in which there might be a wide number of different stakeholders interacting, interoperability is a critical issue to be tackled.

Indeed, in Spain, e-Government services are provided in a complex scenario which involves the interaction of:
- The General State Administration;
- 17 regional governments plus 2 autonomous cities;
- Over 8,000 local entities.

In this respect the e-Government law of 2007 created the National Interoperability Framework (NIF) together with the National Security Framework. Afterwards, the NIF was developed by means of a lower level act, a Royal Decree published in January 2010.

These frameworks are the result of a collective effort of all public administrations that aim to be aligned with the European scenario and want to build up and improve interoperability. In particular, the NIF addresses requirements in relation to:
Technical interoperability: the NIF specifies conditions about the selection and use of standards, taking into account the European and national legal framework about standards;

Common infrastructures and services: contributes to facilitate multilateral interactions;

Reuse of software: it contributes to a better interoperability;

Interoperability Agreements.

Within the list of Interoperability Agreements there is a Catalogue of Standards. In short, the Catalogue of Standards, adopted in 2012 and applicable to all PPAA in Spain, establishes the conditions for the selection of standards, maintenance and use of standards for e-Government services.

For the two fold purpose of preparing the NIF and establishing the Catalogue of Standards it was necessary to choose some selection criteria. A brief overview of the selected criteria:

- The general condition in the legal framework, EU & National Draftedbefore Regulation 1025/2012;
- Additional criteria (inspired in CAMSS) asthe suitability, the openness, the market condition, potential of reuse.

At the end of the process, following a previous exploration of the universe of possible standards to be considered, 86 entries have populated the Catalogue of ICT standards. This was the result of a process with the participation of expert opinions, the assessment of working groups, and formal adoption. The main part of the entries were needed for other interoperability agreements (e-document, e-file, signature, intermediation platform,...), of common infrastructures and services.

According to Mr. Amutio, the choice of 86 entries is a result of several considerations, one over all, was the challenge of maintaining it up to date.

Furthermore, Mr. Amutio shared with the audience another solution that it is used by Spain: The Catalogue of Interoperability Solutions (including semantic assets, common services, applications, recommendations, etc.). Its objective is to increase the interoperability by promoting the reuse of solutions by public administrations.

The speaker then highlights the main challenges ahead:

1. Interoperability in the digital transformation of government: to maintain interoperability in a changing environment with growing requirements in terms of interoperability, security, privacy, accessibility, transparency, reuse of public sector information, document management.
2. Gaps: possible gaps between ICT procurement, approaches followed in interoperability frameworks, and solutions used by public administrations and citizens. So the challenge is to bring together the three worlds ensuring that the standards are well known.
3. Adaptation to waves: such as impact of social networks, mobility, cloud computing and big data, among others.
4. Sustainability: the challenge is to keep the catalogue up-to-date (review entries, reach agreements and publish new releases periodically); which could be a significative effort if we consider initiatives in the 28 Member States.

In conclusion, according to him, a link with the European ICT Catalogue of Standards would simplify the effort by Member States and contribute to the overall interoperability picture.

6.3.4.1.4. Johan Vercruysse - Smals - Director of Clients and Services

A quest for lower support Costs and third-party maintenance
Johan Vercruysse is Director of Clients and Services at Smals which is a company supporting the Belgian public organisations in the sector of ICT procurement. One of Smals’ main achievement was to help reduce public sector expenditures in ICT by 10%, on contracts already signed or contract in execution.

Smals negotiating on the behalf of all Belgium public administration interacted directly with vendors discussing unnecessary extra costs. The vendor in order to keep good relationships with the buyer was making concessions that reached a reduction of 10% or something comparable.

Vercruysse warned that compliance audit had revealed a dark side of the public procurement practice in ICT. It was identified a modus operandi of vendors hiding extra costs for public bodies in complex sets of licenses agreements and way too expensive software support and maintenance services. Database is considered as intellectual property from the major vendors. Smals went to the Belgian competition authority and provided information about these software business behaviors. It was suggested to the competition authority to guarantee frank access and fair conditions. The solution proposed from Smals to the competition authority was to correct the situation by separating for instance the delivery of new version and patches from the deliverance of support and maintenance. Independent vendors also have access to the new version and the patches.

Mr. Vercruysse underlined the importance of opening up the market. He believes there is a national leverage to contact national competition authorities and denounce after-market lock-in, as this is an abuse of dominant position. Among all possible actions to reduce lock in impact there is the vehicle of economic policy and regulations to help companies in all the European economic area.

Q: The need to open the platform for APIs and outside developers is critical in many production systems, because of terms and conditions of many contracts it can be very expensive whereas the cost should be negligible. What is your view on this?

A: The question arises concerning the responsibility of the vendor if an outsider developer works onto the solution. The platform provider may refuse granting support or maintenance as someone else has added on a solution. So the right to access should be defined but also it should be clarified how the vendor should act if someone adds to the system. This must be fair and reasonable. The company cannot ask to the vendor something that the vendor cannot bear and conversely the vendor should not hide behind intellectual property.

Q: I want to ask a question related to compliance and internal audit. You discussed with vendors to reduce costs of 10%, but was it the end of the contract? Weren’t there any complaints? How did you edge the operational legal risks?

A: The approach was voluntary and there was no leverage at hand such as end of contracts or anything else. Smals was talking on behalf of all Belgian public administrations and not only a single one. The negotiation phase was long but vendors, understanding their long-term interests made concessions.

6.3.4.1.5. Göran Westerlund - Municipality of Alingsås - IT Director / CIO

Open Standards & FLOSS in the Swedish public sector

Göran Westerlund is the IT Director/CIO of the Municipality of Alingsås and will talk about local goverment challenges and lessons concerning Open standards & FLOSS (Free/Libre Open Source Software).
The speaker explains that in Sweden there is a sort of oligopoly of companies selling ICT products to the municipalities and a lock-in situation (also because of language barriers). By using open source it is possible to use software developed from other places.

The questions Mr. Göran Westerlund wants to address are:
- How to succeed avoiding lock in?
- How to save money?
- How to create infrastructure use standardized platforms?
- How to engage the political leadership?

In Sweden, Kammarkollegiet - the Swedish National Procurement Services - has published a list of open standards. All standards on this list can be implemented in software provided under different licenses, both proprietary and FLOSS.

Local municipalities should impose requirements on open standards and it is necessary to involve the political leadership. The speaker underscores that such implementation is not a technical question but rather a political question.

However, the speaker explain that a bottom-up approach is equally necessary. He mentions as a best practice the Kivos which is an open source network for certain municipalities in Sweden. It allows for exchange of information and experience on open solutions among municipalities and the rest of the public sector. The network also advocates for open software requirement into the public procurement process - which is the choice of the Alingsås municipality - and it allows the reduction of the administrative burden with respect to open tenders.

**Q:** What are the success of regional bottom-up initiatives to implement open source standards? What is the role of national and EU level standard-setting bodies in comparison to such bottom-up initiative? Is there a best place where standards should be adopted? Is top-down or bottom-up more effective?

**A:** Standards do come from the top. They are already set at the national level and from the Swedish National Procurement Services the question is rather how to use them. Software people are innovating standards but the question is how not to be locked in exclusive single vendor software.

**Q:** What was the political will? How to engage politicians into the process, what can you do as a municipality?

**A:** There need to be politicians at the municipal level which are concerned by the issue of open standards and sources, it is with them that the dialogue needs to start.

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6.3.4.1.6. **Lancelot Schellevis - Dutch Standardisation Forum Office – Policy Officer on Standardisation**

**Dutch National Catalogue of ICT Standards**

Lancelot Schellevis is Advisor Standardization/eGov at the Dutch Forum Standaardisatie. He is responsible for the maintenance and procedures of Catalogue of standards. In his presentation, Mr. Schellevis shared to the audience the experience of the Dutch government with the Catalogue of ICT standards and how the catalogue contributes to the adoption of ICT standards.

In 2007 the Dutch Government has launched an action-plan on the use of open standards. In short, the main goals of the Dutch policy are:
- To be interoperable;
and prevent vendor lock-in.

Nevertheless, part of that is the creation a "Comply or Explain" policy.

The Dutch Government aims to be completely digitalized by 2017. Under those circumstances, the government wants to be able to exchange data electronically and re-use them properly, but in that case the interoperability is a key factor. It is not possible to consider interoperability without using open standards. At the same time, preventing vendor lock-in and ensuring provider independence are still important issues to be taken into account.

Mr. Schellevis offered to the audience an example of some municipalities, that have to rely on two vendors while only 16% is satisfied with the services they provide and 67% has problems with connecting different systems from different vendors.

The intention is to promote the adoption of standards and specifications within Public bodies. To this scope, there are two central government organisations: Standardisation Forum and National eGov Board.

The Standardisation Forum supports the National eGov Board in order to identify standards to use and their interoperability level. Instead, the National eGov Board makes decisions on which standards to adopt. As a result, these adopted standards become part of the Catalogue.

Generally, the process of identifying a standard is organized in 5 phases. The most significant phases are for example the "Submission" phase (in which everyone can propose a standard), the "Expert review" (the Standardisation Forum starts with the review) and the "Decision" phase (in which, the National eGov Board takes the final decision on the standard proposed).

The Catalogue collected two lists:

- "Comply or Explain" standards, that are a mandatory standards. The Dutch Government started in 2008 with 8 standards and now, in the 2015, they already have 38 standards.
- List of recommended open standards. At the moment they have a list of 52 standards, mostly IETF, W3C and OASIS standards. But, they have planned to increase the number of the standards reaching around 60 standards in a couple of month. This is possible also because, the list is very flexible which allows to better adapt to the needs.

Nevertheless, Public Administrations and Semi-public administrations have to use the "Comply or Explain" list, when they make IT investment above 50.000 € and if the tender has both the functional and the organisational scope.

When are they obliged to use "Comply or Explain" policy?

1. **Comply:** If the tender includes both scopes, functional (when to use it) and organisational (who has to use it) in this case the open standards are mandatory.
2. **Explain:** If the procurers do not use mandatory standards while procuring, they have to provide with an explanation justifying it.

Every year, the Dutch Government delivers a monitoring report. The report, based on the assessment of 48 public tenders during July 2014 - June 2015, has shown that:

- 210 standards are mandatory (functional and organisational scope in 48 tenders);
- Average 4,4 per tender;
- 90 standards actually asked for (43%).

The Dutch Government has met some bottlenecks while procuring ICT goods. The speaker shared with the audience some of them:

- Lack of awareness, no standard procedure;
Lack of expertise;
IT-expertise needed to incorporate standards in project design.

Given these points, according to Mr. Schellevis, there are some factors that have to be taken into account, as:
- Not open standards as such, but interoperability and reducing vendor lock in;
- Interoperability is a chain issue and there is an urgent problem;
- Awareness, monitoring, information, formats and help-desk;
- Incremental change;
- Incorporate standards policy in architectural frameworks.

6.3.4.1.7. André Hoddevik - OpenPEPPOL - Secretary General & Difi - Head of e-Procurement Unit

OpenPEPPOL & the avoidance of lock-in

André Hoddevik presented OpenPEPPOL and discussed the Norwegian experience using eInvoicing and specifications from OpenPEPPOL in a national environment.

The OpenPEPPOL project was run by a consortium of 16 countries and it originated from the European Commission CIP funding programme. The vision was to enable business to communicate electronically with European government institution in the tendering process in order to reap benefits in term of efficiency and cost reduction. The project started in 2008 and ended in 2012 and later became a valuable association.

The OpenPEPPOL project was designed to come up with solution specifications to different phases of the procurement process, from the process of entering into contract in the public procurement legislation to the actual ordering up to the invoicing and payment phase. The biggest result where in the post-award phase but some also in the pre-award domain.

Solutions are based on the interoperability framework and OpenPEPPOL solutions and specifications operate within a legal and political environment to ensure semantic and technical interoperability. OpenPEPPOL relies on standards from OASIS and other sources.

The speaker explained that OpenPEPPOL scope is to avoid the creation of a bilateral agreement between van operators in exchange of data which are generally quite expensive and may favor the richest company. So OpenPEPPOL is an efficient lock-out for small business, its business model is cheap to enter into. For Mr. Hoddevik the biggest success in the Norwegian national implementation of eProcurement solution was in the eInvoicing. The implementation was accomplished as such:

- Make eInvoicing mandatory for public sector entities;
- Mandatory use of standard national e-Invoicing format, based on European standardisation;
- On-boarding of ERP vendors/invoice systems;
- Decision to use PEPPOL eDelivery network for transport of eInvoices;
- Establish a national receive capability and address register = SMP/ELMA, also open for private sector;
- On-boarding of access points through public sector demand;
- Web-portals for simplified e-invoicing from SMEs delivered by market.

The speaker then provided some data proving the success story of the practice. After 2 years and a half from the inception of the programme in Norway the score of transactions reached 10 million. After another year it reached 20 million. At the time of the presentation the growth ratio is of 10-15% from one month to the other. 45 thousands company registered and the public...
sector receivers are 4% of this amount counting up to 98.04% of the total of all public administration in Norway. The growth comes from the private sector. There is no obligation for them to use eInvocing system, but instead of using two different e-Invoicing systems standardization may simplify procedures.

Mandating eInvoicing through legislative means is a powerful tool to ensure widespread usage if combined with availability of open source software components, support and governance if combined with standardization of:

- Business processes;
- Information content (semantics) (EHF $\leftrightarrow$ PEPPOL BIS $\leftrightarrow$ CEN BII);
- Business document formats;
- Document delivery services (ELMA, AP $\leftrightarrow$ PEPPOL eDelivery).

Q: How do you think public innovation can drive the take up in the private market?

A: The Norwegian market is not big enough to drive innovation by itself. If the technology and solution is available to the private sector it has been observed that they will use it and re-use it.

6.3.4.1.8. Jarmo Eskelinen - CEO - Forum Virium Helsinki, Task Force Member - European Network of Living Labs

Open & Agile Smart Cities – Harmonisation through open innovation

Jarmo Eskelinen works at the innovation unit of the city of Helsinki talking about smart and agile city.

The speaker highlighted the key eco-systemic changes happening in the cities and how user differently interface to everyday life and what they now expect from public services. Public services are in transformation as only user centered services are the right services. Without collaboration with all the urban community it is impossible to implement such user-centered services. Citizens empowerment is key.

How do the cities can be used as a resource? is it possible to use citizens as partners?

The city should change from the thinking were public service owns and provides for everything to the one where citizens are enablers and drive good things.

Developers then need to have access to data and API and everything should be available (government data should be open).

2 key issues were highlighted:

1. The old legacy: how do you make the old system into a new compatible one? Development won’t happen trough proprietary standards but trough open API, if the public does not harmonize the possibility to open-up data and software private companies like Google will take over;

2. It is all about city collaboration. Examples are selected for cities which have a joint procurement project like the Antwerp-Copenhagen-Helsinki starting in December 2016 (which will be to procure at the pre-commercial level a compatible modular IOT platform). This could then be extendable to other cities.

In open agile smart cities, to create interoperability in cities it is necessary to use:
Compatibles API, for complex sensitive private data;
Compatibles process so other countries can open catalogue from other countries and understand what is in there. Currently platform may be compatible but the language is different. It is necessary to harmonize standards, open data sets;
Shared data models. Doesn't matter how many data are opened if they are not harmonized between cities they will be difficult to use: metadata levels should be built on top of the APIs one;
Implementation in practice can happen through development labs.

The speaker explained the importance of cities as agents of innovation. Cities are faster to move than governments. Bottom-up trends should be enabled: from city to city network to EU level to the globe. Customer drive was always the way to harmonize a market. Mr. Eskelinen believes it is necessary to create the will in the customers to have compatible markets and business will follow. It is better for a company to have a solution that works with all cities rather than having to sell it individually to each city. Through city experimentation we can better understand which app is better suited.

Q: Why only big cities are taken as examples? Are there recommendations for small cities?

A: Smaller cities have easier and quicker opportunities to harmonized standards and legacy systems, so innovation should start from there to.

Q: Which are the regional differences and how come no German city has joined the network named by Mr. Eskelinen?

A: No active marketing was really done, in Germany yet. Different countries work in different ways. The idea is to have a one contact point in each country.

Q: There are many smart city networks where the standards are not really an issue for such network, do you also plan to get in contact with these networks and organisations?

A: We are actually in discussion with several of such networks and there are ongoing and planned partnership.

6.3.4.1.9. Mathieu Paapst - University of Groningen - Center for Law & ICT - Assistant Professor

Four dimensions affecting policy resistance in ICT procurement

Mathieu Paapst discussed the innovative Dutch approach to open standard and open source products.

In 2014-2015 – 71% of tenders asked for standards that were in the Dutch catalogue. In the EC legislation there is a notification procedure where member states can let the commission know what is the reason to use national technical prescriptions in procurement instead of European ones. Therefore the EC will look if there is any trade barrier, and the national standards are accepted.

In 2008 the Dutch government decided to notify the commission on the framework of the Dutch catalogue and the comply or explain principle that comes with it rather than the standards in the catalogue but on the framework of the Dutch catalogue. Because this is an open framework there is no reason to notify individually standard that are on the list. Now in the Netherland these standard can be adopted without the need to justify the commission with an equivalent.
Mathieu Paapst research project was to look at all standards and understand the underlying choice of adoption or non-adoption at the municipalities and government level. The research outcome was to create a framework necessary to evaluate and forecast related policy outcomes.

Mr. Paast found that the first step for open policies to be successful is that a policy taker need to understand the underlying problem that the policy needs to address: do the contracting authority actually know that there is a problem with non-open standards?

Only after a knowledge of the problem from the policy taker it will have a generally favourable or unfavourable orientation to the policy. Therefore, other aspects should be addressed by policy makers, like the financial, technical and legal dimensions.

**Technical negative:**
Objective compatibility established by current vendors also known as vendor lock-in (application should support multiple platforms). Policy shouldn't just insist on interoperability but also vendor independence.

**Legal dimension:**
If a standard has acquired a certain monopoly the supplier of the product is able to exert an additional power on the basis of intellectual property law. When product compatibility is prevented by using IP law this raises competition issues. The legal influence can be counterbalances by positive legal influence like law, EU regulations and directives.

**Financial dimension:**
Costs related to migration costs.

**Knowledge and experience dimension:**
Policy-takers should take into consideration that there are positive and negative experience on software. Communication is an important policy instrument however the policy taker needs to be aware in the first place.

6.3.4.1.10. Sara Garavelli - Trust-IT Services Ltd - Project Manager

*Procurement of Cloud Services in Europe: how the PICSE wizard can make a difference*

Sara Garavelli, Trust-IT Services, presented the work of the PICSE project (www.picse.eu) within the funding framework of Horizon 2020 on cloud procurement for public sector. The objective of PICSE was to analyse the main challenges that public organisations face in procuring cloud services and try to propose innovative procurement approaches and guidelines.

The result was the release of a tool, the so called PICSE Wizard (http://wiz.picse.eu), that can support public research organisations (PROs) in procuring cloud services. In fact Ms. Garavelli warned that one of the major problem of the procurement of cloud services is the lack of awareness of what a cloud purchase means.

The tool is specifically designed for procurement officials, IT managers and procurement initiators procuring cloud in public sector organisations through a tender procedure. The tool comes from an extensive consultation with key stakeholders in the field, among the others, the European Space Agency and CERN, but also reboxed experts in the cloud procurement field, which shared their experiences and best practices. This makes the Wizard a unique tool that provides organisations approaching cloud procurement with concrete tips and suggestions on what to do and don't do. The two main functions of the released tool are:

- To find the best cloud procurement model;
To self-assess an existing procurement process to understand if it is suitable for a cloud purchase.

The talk also highlighted that there are still a set of challenges in procuring cloud for PROs:

- Many existing procurement processes do not foresee provisioning services on-demand;
- Having the right skill-set is fundamental;
- Writing an effective cloud tender is challenging;
- Developing a standalone test to verify the suitability and ROI is not easy;
- Things are clearer for procuring IaaS, the level of confidence for SaaS/PaaS is not the same;
- Joint procurement gives more opportunities;
- PCP is a new instrument.

Q: guidelines cannot be too specific or they cannot be too general, and they need to meet the particular expectations eventually in the same language, how these issues were considered into.

A: Garavelli explained that in this case guidelines were specific in the sense that PICSE decided to focus on a precise category of stakeholders: the public sector organisations. This was done to avoid to give too general guidelines and so to provide a tool that can concretely support the public research sector. The tool is a proper knowledge hub and includes pointers to tools developed by other projects and organisations such as tools on cloud certification schemes, templates how to draft cloud contracts, etc.

6.3.4.1.11. Dimitris Dimitriadis, EC - DG Connect, Unit F2 - Innovation

Final Discussion

The closure session of the event - Final Discussion - was led by Mr. Dimitris Dimitriadis, DG Connect, Unit F2 – Innovation, and Project Officer for the EC “Study on best practices for ICT procurement”. During this session, the participants raised some questions, doubts and requests directly to some speakers.

To facilitate the complete understanding of each good practice and experience, the question and answer of the final discussion session were reallocated in the section dedicated to the specific speakers presentation.
6.3.4.2. Analysis and evaluation

6.3.4.2.1. Workshop evaluation

At the end of the Workshop, the audience was asked to fill out an evaluation questionnaire aimed at assessing whether they enjoyed the initiative and found it useful in relation to their activity. Participants were required to evaluate the different aspects of the initiative ranking each statement from 1 (which expressed strong disagreement with the remark) to 4 (which expressed strong agreement with the remark).

The table below shows the items presented in the evaluation questionnaire:

<table>
<thead>
<tr>
<th>Evaluation Questionnaire - Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 The information that you received by phone/mail before the event was adequate</td>
</tr>
<tr>
<td>2 The organisation and infrastructure of the event were good</td>
</tr>
<tr>
<td>3 The event fulfilled your expectations</td>
</tr>
<tr>
<td>4 The speakers and moderators contributed to a clear and effective Workshop</td>
</tr>
<tr>
<td>5 The event in its whole allowed dynamic exchanges among participants</td>
</tr>
<tr>
<td>6 The cases presented during the Workshop showed examples of activities that can be put into practice in your country</td>
</tr>
<tr>
<td>7 I can use the information received during this event in my activity</td>
</tr>
</tbody>
</table>

The results of the Workshop evaluation questionnaire, as presented in the graph below, show that the participants in this initiative evaluated the event in a very positive way, especially appreciating the possibility to interact with the other participants, the organisation of the Workshop and the usefulness of information provided. The total number of questionnaires collected was 16.

All items presented in the questionnaire received more than 98% of completely positive feedback. The negative feedbacks were towards the possibilities of putting into practice the cases presented during the conference.

![Graph showing evaluation results](image)

The evaluation questionnaire offered also the possibility to provide further comments and possible suggestions. Among the most significant comments registered, a few participants underlined that it would be useful to organize future workshop with more practical examples on how public administrations experiencing ICT lock-in successfully managed to change their vendor dependency.
6.3.4.2.2. Lessons learnt and recommendations

On the basis of feedback collected through the evaluation questionnaires given out during the event, as well as taking into consideration any questions and comments that were addressed by the audience throughout the various sessions, it emerged that both content and speakers were very much appreciated.

Just to quote a comment collected via email shortly after the event: “Our Authority and especially our ICT experts found the topics of the agenda of the workshop very interesting and worth attending. Kindest regards.”

To stay in this positive track, it will be necessary to go ahead with this kind of events promoting the adoption of best practice for the procurement of ICT on basis of standards.

Furthermore future Workshops will be also a chance to present one or more bad practice examples, where a Public Administration failed to achieve its goals through the adoption of procurement Standards.
6.4. DATASETS

6.4.1. *Dataset_TED_preliminary_analysis_final*

Provided separately.

6.4.2. *Dataset_TED_vendor_search_final*

Provided separately.
7. References


Heuninckx, B. (2009), Applicable Law to the Procurement of International Organisations in Europe, Public Procurement Research Group, University of Nottingham. Available


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European Commission

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Luxembourg, Publications Office of the European Union

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