Guide for the procurement of standards-based ICT

Elements of Good Practice

Draft

Europe Economics
Chancery House
53-64 Chancery Lane
London WC2A 1QU
Tel: (+44) (0) 20 7831 4717
Fax: (+44) (0) 20 7831 4515
www.europe-economics.com

19 December 2011

TABLE OF CONTENTS

1. INTRODUCTION

The Digital Agenda is Europe's strategy for a flourishing digital economy by 2020. It outlines policies and actions to maximise the benefits of ICT for all. Several actions are related to improving standard-setting procedures and increasing interoperability. Europe must ensure that new IT devices, applications, data repositories and services interact seamlessly everywhere.

Improved standard-setting procedures – Action 21[1] of the Digital Agenda

Following Directive 98/34, this document defines a 'Standard' as "a technical specification approved by a recognised standardisation body for repeated or continuous application, with which compliance is not compulsory and which is one of the following:

> — international standard: a standard adopted by an international standardisation organisation and made available to the public,
>
> — European standard: a standard adopted by a European standardisation body and made available to the public,
>
> — national standard: a standard adopted by a national standardisation body and made available to the public"

Note that this definition does not recognise the validity of standards provided by private consortia and fora that have developed most internet standards. The European Commission is therefore reforming ICT standardisation policy. Means will be provided to use, where necessary, fora and consortia specifications that have wide market acceptance and comply with public policy requirements such as openness, transparency and balanced processes. Examples of such fora and consortia are OASIS, W3C.

The recognition of technical specifications developed by fora and consortia at EU level will, according to current plans still to be adopted by the Council and Parliament, be done by a multi-stake holder platform. Once approved the technical specifications can be used in public procurement in the same manner as official standards. So long as they are not recognised, they remain "technical specifications" that can also be used in public procurement, but their legal validity may be questioned, and an additional explanation may be necessary.

For the remainder of this document we will refer to formal standards and technical specifications from fora and consortia that have the necessary properties to be approved by the multi-stakeholder platform as "standards".

1 http://ec.europa.eu/information_society/newsroom/cf/fiche-dae.cfm?action_id=179&pillar_id=44&action=Action%2021%3A%20Propose%20legislation%20on%20ICT%20interoperability

Procuring ICT that is based on standards – Action 23[2] of the Digital Agenda

Procuring ICT that is based on Standards accessible to all ICT suppliers can help promote competition among suppliers responding to public sector ICT tenders, and reduce the risk of public authorities becoming excessively dependent on a single vendor for the provision of ICT products or services beyond the timeframe of the initial procurement contract, a situation otherwise known as 'lock-in'.

One of the main objectives of public procurement is to be as open as possible and to elicit bids from a good number of competitive suppliers. This nurtures competition in the private sector as contractors try to outdo each other to win government tenders. The most suitable company will be awarded the contract, leading to value for money and an improvement in the quality of goods and services provided to the members of public, and hence lead to more innovation.

However, when a public authority is highly dependent on a single vendor for its ICT systems, there will be a lack of competition and value for money might not be achieved in the long term. Symptoms of possible lock in include the use of specific brand names of products in tender descriptions and requests for backward compatibility with proprietary systems, of which only a few suppliers have knowledge. In Europe Economics' survey around 40% of public authorities reported some degree of lock in.[3] The European Commission will issue guidance on how to use standards in the procurement of ICT, since the appropriate use of standards will help alleviate lock in. This is the aim of Action 23 of the Digital Agenda, and the resulting guidance is provided in this document.

Public procurement of ICT goods and services

The public procurement of Information and Communications Technology (ICT) goods and services is important for a number of reasons.

(a) Public administrations are significant consumers of ICT, and their procurement can have significant influence on innovation and competitiveness in the ICT market. *They therefore have an obligation to ensure that the procurement of ICT takes places on a transparent and non-discriminatory basis that does not unduly favour specific vendors or suppliers.*

(b) The procurement of ICT by public administrations also represents significant expenditure of public funds. Public administrations should therefore strive to ensure the best use of public funds is made over the lifetime of the ICT.

2 http://ec.europa.eu/information_society/newsroom/cf/fiche-dae.cfm?action_id=181&pillar_id=44&action=Action%2023%3A%20Provide%20guidance%20on%20ICT%20standardisation%20and%20public%20procurement

3 Europe Economics Procuring Authorities Survey

(c) Furthermore, public administrations' use of ICT is not limited to their own organisations — increasingly citizens are invited to interact with public administrations via ICT-enabled structures. *Public administrations should, wherever possible, avoid obliging citizens (individuals as well as businesses) to use products or systems from specific vendors to access public services. In addition, governments have an obligation under the Public Sector Information Directive to make their data available in open formats.*[4]

(d) Lack of interoperability among European public administrations might retard the functioning of the internal market. *This point is addressed by the European Interoperability Framework.*[5]

What is the Problem?

The procurement of ICT is a complex process. Many ICT applications are characterised by network effects, whereby the benefits to a single user are significantly enhanced if there are many other users of the same technology (for example, email systems or word processing systems). In addition, many ICT systems have been built up over many years through significant investment, creating a 'legacy' within which current ICT needs must operate.

Procurers need to balance the need for new ICT purchases to work with their existing networks and legacy systems with avoiding becoming over-dependent on a single supplier of the products or components that incorporate the relevant technologies. This is most likely to happen if the products or system components are based on proprietary technologies that cannot be implemented by competing suppliers. It may also happen if the system is developed in such a way that the public authority is reliant on the original developer for all future maintenance or changes, perhaps because of excessive use of "bespoke" features.

Being unduly dependent on a single supplier, vendor or developer beyond the timeframe of the initial procurement contract is known as 'lock-in' and is damaging to competition for future procurements. It implies that the costs to the public authority of migrating to products or systems of another supplier are prohibitively high, even if the alternative option has significant advantages in relation to the existing one.

By limiting the procurement choices of public authorities to certain vendors and the suppliers of their products, lock-in can reduce the ability of other market participants to compete in contracts for public procurement. This in turn can lead to lower levels of innovation, and higher prices.

Similarly, public systems designed for citizens' use that are based on proprietary technologies which cannot be implemented by competing suppliers will restrict the choice that citizens have in the way they interact with the public authority. For example, a public website that can only be

4 Directive 2003/98/EC of the European Parliament and of the Council of 17 November 2003 on the re-use of public sector information: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32003L0098:EN:NOT

5 European Interoperability Framework (http://ec.europa.eu/isa/documents/isa_annex_ii_eif_en.pdf)

accessed through a specific Web browser will oblige citizens to use that specific browser. This can have a number of undesirable effects, including limiting competition in the ICT market.

ICT Standards

ICT standards may play an important role in preventing the reliance on single vendors for products and system components that implement desired technologies by identifying the key element of the technology required and ensuring that its use is not limited to a specific product or service. Products and services from different producers can, in principle, be made interoperable by using such standards; this may enhance competition in the products and services that apply a particular standard.

A greater effort by public authorities to procure ICT that is based on standards that can be accessed and implemented by all suppliers could help to increase the openness of public ICT systems and increase the number of suppliers able to participate in public sector contracts.

There are also other ways in which procurers can enhance the openness of their ICT systems where the role of standards is limited.

Procurement practices

The existence of lock-in and excessive influence of legacy systems can encourage public procurers to engage in poor procurement practices that restrict the ability of all suppliers to participate in tenders, such as referring more than necessary to branded products or specifying overly restrictive technical requirements. These difficulties, and others that public authorities may have in promoting innovation and competition through the procurement of ICT, have been highlighted in recent research.[6] They include:

(a) Problems in using standards appropriately in tenders.

(b) The use of brand names and proprietary technical specifications to identify products and systems, which only certain vendors or suppliers can provide.

(c) Requirements for the new ICT purchase to be compatible with previously purchased products or systems which can favour the original suppliers and thus restrict competition, whilst increasing the risk of vendor lock-in.

(d) The development of specifications which are too restrictive to enable suppliers to provide alternative, innovative solutions.

(e) Tender requirements that can discourage participation of small and medium sized enterprises (SMEs).

6 Reference to Europe Economics' report when published. Research based on a review of relevant literature, a survey of procurers and ICT suppliers across the EU and an analysis of a selection of tenders.

The Purpose of This Guide

The guide is designed for use by procurement officials, IT managers within public organisations, and policy makers at a wider government level.

The guide addresses several topics which are important for procuring ICT systems based on standards in order to avoid lock in. Where possible, examples of best practices are provided.

More general guides on the whole procurement process are available and are recommended for procurers to consult. At the EU level these include the European Commission's Guide to dealing with innovative solutions in public procurement: 10 elements of good practice[7] and there are a number of guides available at national level (e.g. the DETE Ireland's Buying Innovation: the 10 step guide to smart procurement and SME access to public contracts.[8])

The guide follows the structure shown in Figure 1.1 and Figure 1.2 below. Figure 1.1, 'Preparing for ICT procurement', shows high level steps that are relevant for IT managers and policy makers, and which do not necessarily represent a sequential process. Actions addressed within these chapters may need to be taken at any time during the planning and development phases of ICT procurement.

7 European Commission (2007) 'Guide to dealing with innovative solutions in public procurement: 10 elements of good practice', Commission staff working document SEC(2007) 280

8 Department of Enterprise, Trade and Employment (2011) 'Buying Innovation: the 10 step guide to smart procurement and SME access to public contracts'

Figure 1.1: Preparing for ICT Procurement

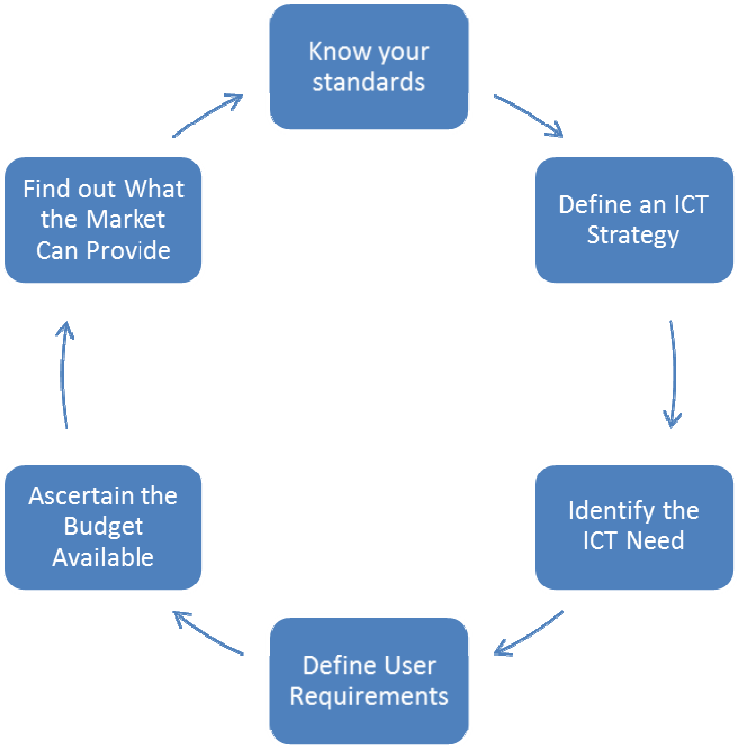

Figure 1.2 shows the steps that are relevant for procurement officials implementing individual procurements.

Figure 1.2: Implementing individual procurements

Legal considerations: disclaimer

This guide is intended to help public authorities procure ICT goods and services, and is not intended as legal advice. Those responsible for procurement should ensure that all recommended stages comply with national and EU legal requirements.

2. KNOW YOUR STANDARDS

The Benefits of Standards

A key benefit of standards in ICT is their role in facilitating interoperability. Standards define the minimum specifications of a technology which, if implemented, can enable products, systems and services developed by different suppliers to communicate and transfer data. Procuring a product from one supplier that is based on standard technology should help to ensure that future purchases are not limited to the original supplier, as others are also able to implement the technology.

The value of standards in this regard is therefore dependent on their quality and on the extent to which they can be accessed and implemented by the market. This will be influenced by:

(a) The costs of accessing the standard: standards' documentation can be made available either without charge or for a small fee. This will depend on the standard setting organisation's business model. High access costs can deter some users from accessing and using the standard.

(b) The cost and practicality of implementing the standard: standards can be implemented by users (e.g. ICT firms) either without charge or with compensation to the owners of the intellectual property of the underlying technology (e.g. royalty payments). Such payments may act as a barrier. In some cases, the terms and conditions attached to the intellectual property rights can restrict certain implementations of the standard independently of the royalty fees paid.[9]

(c) Market demand for the standard: standards may not be implemented widely for a variety of reasons. A standard will be of maximum value in terms of interoperability and avoiding dependence on a single supplier if it is mature and widely supported by the market.

(d) The development of the standard: if all stakeholders have the same possibility of contributing to the development of the standard, and public review is part of the decision-making process, then it is more likely that the implementation of the standard will not favour certain suppliers.

What to Look Out For

Choosing standards can be complicated. Procurers should be aware that:

9 For example, developers of Free/Libre/Open Source Software (FLOSS) do not have the ability to control or audit the use of the licensed technology, and thus cannot implement standards with licence conditions that require this.

(a) Whilst standards that are set through formal standard setting organisations[10] go through a formal development process, they may still contain barriers to implementation by all interested parties, or may not be widely implemented by the market. *Example: ISO standard (ISO/IEC 29500) for document formats. The technical specifications of this ISO standard include references to proprietary technology and brand names of specific products. Further, the specification of this ISO standard is not complete (i.e. the technical specification contains references to an external web site (www.microsoft.com) which refers to web pages that are not currently available*.

(b) On the other hand, specifications developed by industry that have not been through a formal standard setting process can be made available on an open and non-discriminatory basis and implemented equally across the market. *Example: Universal Serial Bus (USB) is a proprietary technical specification that is however opened for implementers. A non-for-profit organisation was set up: USB Implementers Forum (USB-IF). On the first release of USB, Intel owned some rights that had to be licensed. However, following reactions from industry, subsequent norms were royalty free. Access to the standard (USB-IF membership, getting an USB ID for low volume devices) is not trivial, but possible. Interestingly, following an initiative of the European Commission in 2009, one of the several plug formats (Micro-USB) has been chosen as standard plug for mobile phone chargers sold in the European Union*.

(c) Standards can be implemented in different ways and there can be parts of a product or solution that are left up to implementers to design. The fact that an ICT product or system incorporates a certain standard may not guarantee interoperability with products using the same standard from other suppliers. *Example: SQL (Structured Query Language) is a database querying language created in the seventies, and standardised by ISO in 1987 (ISO 9075). However, interoperability problems between major products still exist due to different interpretations of the standard, due to room for interpretation and the complexity of the standard. There remains the possibility of lock-in for suppliers using this standard*.

(d) The barriers associated to using a standard may vary according to the domain to which the standard relates. For example, high royalty payments may not pose a barrier to implementation in a domain where other costs of developing products are very high (such as in the development of certain hardware or telecommunications); whereas in domains where competing suppliers are often small firms even the costs of accessing the standard documentation could pose a barrier to implementation (such as in the development of software).

(e) There are technologies and specifications that appear to be widely implemented but have not passed through a standard setting process (i.e. through a standard setting organisation or an established alternative forum or consortia) and in reality could be implemented by only a few

10 These include European standards setting organisations (CEN, CENELEC and ETIS); international standards setting organisations (ISO, ITU and IEC) and national standards setting organisations within each country; as well as industry fora and consortia such as W3C, OASIS, IETF

suppliers. These are not considered as standards in this document, and procuring products that implement these increases the risk of being locked into a limited number of suppliers or vendors.

(f) There are a large number of standards available and many different standards can reflect similar underlying technologies. Selecting ICT products by implementing only certain standards may exclude alternative products implementing different standards which may better support the functional needs of the purchase.

(g) For a certain ICT purchases the necessary standards may not yet exist.

(h) Standards are of varying quality and are always liable to change.

What to Do

Review existing information on standards

Procurers and IT managers should make use of existing information and evaluations about standards, and investigate whether their government, regional authority or organisation has a set of standards that it promotes. If the procurement is related to a larger sectoral solution (for instance eHealth, transport or education) there might also be a set of standards to be used for compliance with that larger solution.

The Common Assessment Method Standards and Specifications (CAMSS)[11] is an ongoing action under the Interoperability Solutions for European Public Administrations (ISA) programme run by the European Commission. CAMSS is intended to enable the sharing of assessments of ICT interoperability standards across Member States. This resource will include an assessment library where past assessments can be searched.

CAMSS is intended to offer a neutral method to assist Member States in their assessments of standards needed in the development of interoperable national and cross-border eGovernment services. CAMSS aims to ensure that public administrations can assess and select the most relevant ICT standards for their needs. CAMSS comprises 1) a process, 2) a set of criteria and 3) an assessment library. The CAMSS process describes how to complete an assessment from start to finish using CAMSS criteria. Completed assessments are planned to be made available in an assessment library that helps Member States to share and re-use assessments.

A number of Member States publish lists and catalogues of standards which include recommendations as to the quality and openness of the standards. However, standards are often developed within a particular national context and may not be applicable to every public organisation. Examples include:

11 https://webgate.ec.europa.eu/fpfis/mwikis/idabc-camss/

(a) The Netherlands Standardisation Forum, which maintains lists of mandatory and recommended open standards.[12]

(b) The Danish OIO Committee maintains a list of open technical specifications and recommendations on their applicability and usefulness.[13]

(c) The Norwegian Agency for Public Management and eGovernment (Difi) maintains the Standardization Forum, which provides information about mandatory and recommended standards for the Norwegian public sector. The standards are available through an online catalogue.[14]

(d) The French RGI (Référentiel Général d'Interopérabilité) references standards recognised and supported by standards bodies, which are recommended for use by French public authorities. All standards are available online.[15]

(e) In Malta, the specifications and technologies that have been adopted, or are being considered for adoption, by the Government of Malta are contained in the Adopted Specifications List. This is available on the Malta Information Technology Agency (MITA) website.[16]

Keep up to date with the development of new standards relevant to each area of ICT

In keeping up to date with the development of new standards other useful sources include:

(a) The 2010-2013 ICT Standardisation Work Programme, under which standards setting organisations are working to support the development and implementation of standards in priority areas such as eHealth, eGovernment and eInclusion.[17]

(b) Work in the area of eAccessiblity under European Commission Mandate 376, which will develop a toolkit of recommended technical specifications and templates for procurers to include in tenders.[18]

(c) CEN provides a number of documents that are likely to be relevant to procurers in this respect, mainly in the form of CEN Workshop Agreements (CWAs).[19] These include documents covering:

- Electronic invoicing.[20]

---

12 Standardisation Forum, Assessment Procedure and Criteria for Lists of Open Standards www.forumstandaardisatie.nl
13 http://en.itst.dk/it-architecture-standards/standardisation/open-specifications/the-oio-catalogue
14 http://standard.difi.no/english
15 www.references.modernisation.gouv.fr/rgi-interoperabilite
16 https://www.mita.gov.mt/MediaCenter/PDFs/1_GMICT_S_0071_Adopted_Technologies.pdf
17 See http://ec.europa.eu/enterprise/sectors/ict/standards/work-programme/index_en.htm.
18 CEN, CENELEC, ETSTI, AENOR, Online Procurement Toolkit for accessible ICT products and services p.29 http://www.mandate376.eu/
19 The European Committee for Standardization (CEN) is a major provider of European Standards and technical specifications. It is the only recognized European organization according to Directive 98/34/EC for the planning, drafting and adoption of European Standards in all areas of economic activity with the exception of electrotechnology (CENELEC) and telecommunication (ETSI).

- Electronic procurement.[21]

- Electronic catalogues, and the link with classifications used for private and public procurement.[22]

(d) The European Commission will set up a European multi-stakeholder ICT standardisation platform, of which procurers should be aware.[23]

(e) Project PEPPOL provides information about standards used for electronic Procurement (e-Procurement). [24]

Develop and maintain expertise on standards relevant to each area of ICT

Procurers and IT managers should maintain expertise on standards relevant to their area of ICT. This should include information on the various products and suppliers that implement the standard and the effects of this implementation. Cooperation with IT managers from other organisations is recommended, in order to share experiences and expertise.

Competence centre on standards

Some countries, regions and sectors have set up competence centres on standards, in order to alleviate the need for individuals to be aware of all issues associated with the use of standards. Examples include Single Face to Industry in Sweden and the Standardization Forum in Norway. These centres can give advice upon request, but also maintain catalogues of standards to be used in specific tenders.

20 http://www.cen.eu/cen/Sectors/Sectors/ISSS/Activity/Pages/eInvoicing_2.aspx
21 ftp://ftp.cenorm.be/PUBLIC/CWAs/e-Europe/eProc/cwa15236-00-2005-Feb.pdf
22 http://www.cen.eu/cen/Sectors/Sectors/ISSS/Workshops/Pages/eCAT.aspx
23 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2011:349:0004:01:EN:HTML
24 http://www.peppol.eu/

3. DEFINE AN ICT STRATEGY

The implementation of good ICT procurement practice, including the appropriate use of standards and achievement of vendor independence, is likely to be most effective within the context of an ICT strategy. Such a strategy can be at the organisational, sectoral or national level, and generally defines the strategic direction of the authority's ICT and the actions required to achieve this. The existence of an ICT strategy can be a good way of coordinating ICT systems across organisations and governments. ICT procurement decisions taken within the context of a strategy (for example, through coordination with chief information officers) are likely to result in purchases that meet the needs of the authority as a whole, rather than only those of individual departments.

As an example, the recently published UK ICT strategy is aimed at changing the way in which government ICT strategy is delivered, and includes the following features:[25]

(a) mandatory open standards;

(b) spending controls to ensure that new ICT solutions comply with strategy objectives;

(c) transparency to ensure the continued comparison of common ICT services so that government gets the best price;

(d) increased standardisation and modularisation of business processes and supporting technologies to create a platform from which government can deliver new models of open and innovative public services;

(e) a new, strengthened governance structure; and

(f) greater engagement with departments and suppliers to remove cultural as well as technical barriers.

The definition of an ICT strategy should happen at the appropriate policy level. Where such a strategy exists, procurers should ensure that in following this guide their actions fit within their overarching strategy.

25 See http://www.cabinetoffice.gov.uk/content/government-ict-strategy

4. IDENTIFY THE ICT NEED

An ICT purchase should be considered as an investment. This applies to all purchases, from large-scale development projects to the renewal of software licences and the purchase of office hardware. Before each new procurement action, an evaluation of the need should be undertaken to ensure that the product or service specified in the tender meets the needs of the organisation. It is important that decisions are not purely based on historical or individual preferences, or existing contracts.

This action should start with an assessment of the current ICT landscape in which procurement actions need to take place, either to improve the existing systems or to add new functionality to it.

During this stage, careful consideration should be given to the long-term implications of the procurement action. Of particular importance is the likelihood of being tied to the original supplier or service provider after the initial contract period is over (i.e. the risk of lock-in). This could arise from a number of sources, such as reliance on the original provider for all future maintenance, changes or upgrades; the need to request future products or modules to be compatible with the one to be purchased; or the need to explicitly purchase products from the same vendor or brand.

Different options should be taken into account. An important consideration will be the openness of the ICT purchase to data transfer or future supplier change. It will be important to investigate ways in which openness can be achieved. This could be done through the naming of particular standards or through specific openness requirements in the tender.

A business appraisal should be conducted that considers the full costs and benefits of a number of these options so that unnecessary expenditure is avoided, and where ICT purchases are made the option offering the greatest value for money over the long term can be chosen.

What to Do

Understanding your legacy systems

When developing a plan for future ICT purchases, it is recommended to pay particular attention to legacy systems. Legacy systems, such as those built over time through continuous additions of proprietary products and modules, can constrain current and future ICT purchases if compatibility with, or knowledge of, the existing proprietary system is required. This may have the effect of favouring a limited number of vendors, suppliers or providers of these products or services. Legacy systems pose even more of a problem when new additions have to be produced by the same vendor. This can lead to technical obligations on the original vendor or service provider that extend beyond the timeframe of the initial contract, thus limiting future competition.

One option that should, therefore, be considered when faced with procuring ICT in the context of legacy systems is that changes to the legacy system will be planned in such a way that it will become more open and facilitate interoperability with products and services from other vendors or service providers.

The costs of "breaking the locks" from legacy systems can be significant, but these should be considered alongside the future benefits of more open systems within the business appraisal. A long term plan may be needed.

Plan ahead

ICT purchases should be planned ahead to allow time for a proper identification of need. Purchases that need to be done in a hurry (such as those near the end of a contract or licence period) are unlikely to be evaluated properly and there is a risk of the existing contract being renewed without full consideration of the implications.

Undertake a new evaluation of the ICT procurement

Procurers and IT managers should be aware of possible risk aversion bias within their organisations and should not expect to procure from the same supplier or the same product simply because this has been done in the past. A new evaluation should be undertaken of the ICT procurement, including engagement with the market to assess what is available. This may entail researching a number of different options to meet the ICT need.

Develop options

Depending on the ICT need there may be a number of options to consider for the ICT purchase; these will vary significantly according to whether ICT hardware, software, services or the development of bespoke systems are being procured.

In order to minimise the risk of long-term dependence on a single supplier or service provider, options should include the level of openness of the product or service. This could be achieved by:

(a) Requesting that the purchase implements certain standards (according to the discussion above, these should be open for access and implementation by all interested parties).

(b) Including in the option a requirement for the supplier or service provider to provide the desired openness in the absence of suitable standards. This could include requesting that the data produced by the system are available in an open format; or requesting that the developer of a system can hand over the necessary documentation to another developer at the end of the contract.

More generally, and distinct from the use of standards per se, specific products that are known for their openness may also be considered. For example, when purchasing software the merits of open source software could be considered.[26] This relates to the user need, discussed in Chapter 5.

26 It is important to note that there are both benefits and risks to using open source software. The following is a good source of information and advice about procuring open source software: OSOR Guideline on public procurement of open source software,

When considering different options, it must be borne in mind that supplier or service provider dependence can occur in many situations, even when the ICT system is not acquired by the organisation, but an ICT service is procured (e.g. through outsourcing or moving to the Cloud). Provisions for openness must therefore be considered in all types of ICT procurement.

Overly bespoke requirements should be avoided where possible, as the increased complexity of a system may increase the risk of being tied to the original developer.

It must also be borne in mind that regardless of the particular form of procurement (e.g. competitive tender, framework contract) consideration must be given to long-term implications of the procurement choice. This applies also to situations where products can be drawn from wider framework contracts.

Conduct a business appraisal of the options

A business appraisal should be carried out taking into account as far as possible all the costs elements arising from your need and user requirements. It is likely that trade-offs will exist between different needs and requirements, and thus a number of options should be developed and their relative costs and benefits assessed. Useful guidance on how to conduct a business appraisal is provided by the UK Treasury's Business Case Guidance website and Green Book.[27]

Important components of an appraisal should include:

(a) Consideration of the whole life costs of the ICT options. These include costs of maintenance, changes and upgrades over the life of the purchase (and not just the life of the initial procurement contract). In the context of avoiding lock-in, exit costs are very important. These refer to the costs likely to be incurred in moving to another supplier or product in the future. As an example, up-front costs of an option using, say, proprietary technology that cannot be implemented by other suppliers, may be lower than a more open solution, but when exit costs are taken into account the more open solution may provide better value for money.

(b) Other costs incurred during any change could include training and support of staff (particularly with systems that have bespoke user interfaces), overcoming managerial inertia and coordinating with other departments or public sector organisations.

(c) The timeframe for the contract. The use of a specific vendor should not be implied after the timeframe provided for in the tender. Awareness of the likelihood of being tied to the vendor should be taken into account and reflected in the contract timeframe. Constraining future purchases to be compatible with existing products is likely to favour the original vendor and restrict competition.

IDABC European eGovernment Services (June2010), http://www.osor.eu/studies/OSS-procurement-guideline-public-final-June2010-EUPL-FINAL.pdf

27 HM Treasury 'Business Case Guidance' http://www.hm-treasury.gov.uk/data_greenbook_business.htm and HM Treasury 'The Green Book' http://www.hm-treasury.gov.uk/d/green_book_complete.pdf Chapter 5 deals with Options Appraisal

(d) Consideration of the risk profile of the organisation. Some options may seem more risky than others (for example, choosing a smaller supplier instead of a large well-known one, or a less widely implemented open standard); this should be acknowledged and appropriate weights placed on the costs of the options to adjust for the inherent risk. That an option appears riskier than others does not imply that it should be dismissed without assessment of all other factors.

(e) Benchmarking of costs. The comparison of costs of different options may not be straightforward, particularly with more complex purchases. It is recommended that, wherever possible, examples of similar purchases are found from other public organisations, the private sector and other Member States in order to inform cost assessments. Of particular importance will be examples of exit costs that have been incurred in the past, when organisations have migrated systems.

Example: A 2009 study by OSOR.eu investigated the overhaul of the Swedish National Police ICT server infrastructure, moving from proprietary to open source software and hardware. The overhaul concerned (i) the application server, (ii) the database, (iii) the operating system of the servers and (iv) the CPUs of the servers. The changeover was the result of a comprehensive case study made in 2006 following a realisation that the use of proprietary products created lock in and was expensive. The study found that using open source products would reduce lock in and consequently the total cost of ownership from €40m to €21m over 2006-2011, in addition to improving performance.

As the migration is large scale, the changeover process was carefully planned. The first phase, the 'implementation project' (2007), involved the procurement of X86 standard hardware and support for the MySQL database and the Linux operating systems, as well as development and installation of appropriate solutions. The second phase, the 'migration project' (2009 onwards), involved the actual migration of 33 legacy systems to the new ICT platform over a two year period. This phase has required interaction with various stakeholders to convince them of the merits of the new infrastructure, as well as interaction in experts to devise the optimal migration procedure is recommended in each instance.[28]

The use of a formal change management process that takes into account both the technical and non-technical elements of breaking the locks of legacy systems may be considered.[29] In addition, external help may be required (and is often available) for the migration process. Private firms offer specialised migration services.[30]

28 http://www.osor.eu/studies/the-swedish-national-police-how-to-avoid-locking-yourself-in-while-saving-money

29 For example, the ADKAR Change Management Model: http://www.strategies-for-managing-change.com/adkar.html Please note that this is an example only and many other models exist.

5. DEFINE USER REQUIREMENTS

It is important to ensure that the ICT purchase meets the requirements of individual users, the organisation and wider public service. The objectives of the procurement (e.g. creating, recording or storing data, connection with other systems, use by internal staff; interaction with citizens etc.) will influence the degree of openness that is required and the appropriate standards to be used.

What to Do

Understand the wider context of your ICT procurement

If the ICT purchase is intended to connect to other systems within an organisation or across government, procurers should be aware of any common interoperability standards that the purchase should implement. This will be particularly important in terms of information transfer (e.g. data, file formats), to ensure that information can be exchanged across the public sector.

It is recommended that public organisations (either individually or across whole governments) agree on a set of common standards and promote their use, requiring justification where the common standards will not be used. *As an example, governments that promote mandatory or recommended standards include the Netherlands,[31] Denmark,[32] Sweden,[33] France,[34] and Malta.[35]*

The development of reference architectures can be one way of coordinating ICT systems across organisations and governments. An ICT architecture therefore consists of a set of formal descriptions of an information system's structural and behavioural properties, together with descriptions of how it may evolve or be adapted in the future. This often includes the promotion of certain standards to achieve the goals of the architecture.

---

30 For example, the Central Bank of Costa Rica used products from a private company to upgrade its Interbank Negotiation and Electronic Payment System in 2002

31 See the Forum Standaardisatie http://www.forumstandaardisatie.nl/english-page/ and the Netherlands Open in Connection Action Plan http://www.whitehouse.gov/files/documents/ostp/opengov_inbox/nl-in-open-connection.pdf

32 The use of open specifications in procurement of ICT has been mandatory for the Danish public sector since 2006 and for regional and municipal public bodies since 2007. In order to make the use of standards easier for individual authorities, the OIO Committee maintains a list, the OIO Catalogue of Technical Standards on Digitaliser.dk, of open technical specifications and recommendations on whether and where they should be used. http://en.itst.dk/it-architecture-standards/standardisation/open-specifications/use-of-open-specifications

33 See Single Face to Industry (SFTI), a joint initiative that recommends standards for e-procurement in the Swedish public sector. SFTI's steering group has overall responsibility for developing and recommending standards. The policy group also appoints working groups, who perform the concrete work in the development of updating of standards. http://www.sfti.se/e-handel/varfor_behovs_standarder_och_sfti

34 The RGI (Référentiel Général d'Interopérabilité) responds to the French state's wish to reference norms and standards in order to encourage exchange of information with administrative authorities; RGI rules state particular norms or standards that it is obligatory for French state bodies to use. http://www.references.modernisation.gouv.fr/rgi-interoperabilite

35 In Malta, the specifications and technologies that have been adopted, or are being considered for adoption by the Government of Malta are contained in the Adopted Specifications List. https://www.mita.gov.mt/page.aspx?pageid=282

The European Interoperability Framework is an example of an ICT reference architecture.[36] *The Smartcities' guide to ICT architectures is another useful source and provides case studies of architectures in the Netherlands, Sweden and Norway.*[37]

Consider the need for the use of the data generated or stored by the new purchase

Consideration should be given to how the information that will be received, generated or stored by the new ICT purchase will be used, both now and in the future (in some cases access to data may be needed for a very long time). The inputs and outputs of the system or application should be in a sufficiently standard format to enable them to be accessed and used without reliance on the original application that created them.

This may entail requesting that the ICT purchase supports open data formats. For example, some governments mandate that information is created and exchanged in open formats such as ODF and HTML.

The costs of the specific data use needs must be considered within the option to be included in your business appraisal.

Consider the need for public access by businesses or citizens

It is important that citizens and businesses are not restricted to using certain branded products or applications to access public sector ICT applications. Governments are also obliged under the Public Sector Information Directive to make their data available in open formats to facilitate such access. If public access to the ICT purchase is needed, consider in your business appraisal the costs of providing open access.

It is recommended that, where possible, organisations test such applications for interoperability with a range of interfaces and data formats. *For example, a number of online tools are available to website developers to test accessibility of websites on multiple browsers. These typically create screenshots of a website as viewed in several popular browsers.*[38]

If access is restricted in any way, consider the possibility of moving to more open applications. This could be achieved by requesting standards that allow for interoperability.

Even when standards for interoperability do not exist (for example in the case of innovative, custom-made applications) a requirement for maximum public access for citizens may be included as an option and the costs of providing this taken into account within the business appraisal. The ICT need should be communicated to the market well in advance (see Chapter 7

36 European Interoperability Framework for European Public Services (http://ec.europa.eu/isa/documents/isa_annex_ii_eif_en.pdf)
37 Smart Cities 'Creating Municipal ICT Architectures (2011): http://www.smartcities.info/files/Creating%20Municipal%20ICT%20Architectures%20-%20Smart%20Cities.pdf
38 Examples include BrowserShots(http://browsershots.org/), BrowserCam(http://www.browsercam.com/), NetMechanic Browser Photo(http://www.netmechanic.com/products/browser-index.shtml), Litmus(http://litmus.com/) and AnyBrowser (http://www.anybrowser.com/index.html).

on what the market can provide) to enable organisations to work with suppliers to develop suitable solutions.

Consider the need for sharing and redistribution

In view of the importance of making the best use of public funds, it is important to consider the potential to redistribute and reuse ICT assets, in particular software.[39]

When an ICT application that is developed or put together to meet the needs of a public authority could be distributed, reused, improved, modified, translated in another language or localised for another country, public authorities should require from their ICT suppliers the licensing conditions allowing them to do so.

In case the supplier does not write the whole application source code, but combines or adapts existing components covered by various copyright licences, the supplier should confirm that these licences are compatible with allowing the public authority to distribute the application for the above purpose. When procuring ICT with such licence conditions attached, it is important to consider what indemnification is offered by the supplier for intellectual property rights infringement and what liability is accepted.

Requirements in tenders for such licence conditions could include a statement along the lines:

> "The supplier will grant that the purchasing authority has the right to distribute the delivered application under the European Union Public Licence (EUPLv1.1 or later) or any licence(s) providing the rights stated in the article 2 of the EUPL."

Licencing conditions relating to standards should also be checked in this case: if interoperability is required between certain products and services and software licensed under conditions that enable re-use, then the standards that are implemented in the products and services must be compatible with licence conditions of the software.

39 There are a number of initiatives across the EU dedicated to support the sharing of software, semantic assets and open data, such as the OSOR.eu and JOINUP.eu platforms.

6. ASCERTAIN THE BUDGET AVAILABLE

Many public sector organisations now operate under significantly reduced budgets. They are also engaged in many ways with pre-planning of their expenditures. It is important that during the ICT procurement planning phase a consideration of the necessary budget is made, and communicated. This is particularly important if the upfront costs of the procurement are likely to appear larger than the short-term benefits.

What to Do

Accurately account for future costs and benefits

Within the business appraisal, evaluators should consider short- and long-term costs of all options and discount future costs and benefits to present values to enable an equal comparison.

When comparing new options against existing systems, information will need to be collected on the costs currently spent and expected to be spent on the existing systems.

Benchmarking exercises or information sharing with other organisations may help inform the costs of being locked in and the costs and benefits of moving to more open systems.

Communicate the Budgetary Need

Particularly in situations where large upfront costs need to be incurred to bring long-term benefits, it is important to communicate the rationale behind the decision clearly to those responsible for organisational finances. The costs associated to breaking the locks of legacy systems may seem high in comparison with leaving the system as it is, even though future benefits may outweigh the costs in the long term. An appraisal of the options, taking into account all future costs (including exit costs) and benefits, will therefore be an important tool in accessing budgetary approval.

In organisations that work within annual budgets, the need for large upfront investment will have to be communicated well in advance.

7. FIND OUT WHAT THE MARKET CAN PROVIDE

This is an important step in the procurement process, as it enables the procurer to consult the market and to examine alternative solutions in the market place. Transparent market engagement can encourage the participation of a wide range of firms, and can help the procurer develop options that are feasible and best meet the ICT need. In addition, market engagement coupled with research into the available standards is an important step in assessing which standards are the best to include in terms of their market support and quality.

It should be noted that any initial consultation of the market, e.g. a potential technical dialogues, would have to be done under the condition that the seeking or accepting of advice does not have the effect of precluding or distorting competition.

What to Do

As an example of guidance on how to effectively and transparently engage with market participants, we refer procurers to the DETE Ireland's *Buying Innovation: the 10 step guide to smart procurement and SME access to public contracts*.[40] Important steps to highlight are:

Find out what standards are supported by the market

Procurers and IT managers should consult with suppliers and supplier bodies, for example by means of suppliers' conferences, to enable suppliers to help select relevant standards, provide feedback on their feasibility and affordability, and gear up to be able to respond to future procurements relying on the selected standards.

Understanding the market, the environment of relevant standards in which it operates, the companies within it and their capabilities to meet the standards is an important step in encouraging supplier innovation. Care should be taken when the market is dominated by a few large players as this may influence the selection of standards.

Different types of standards (e.g. based on their licensing regimes) will have different effects on market entry depending on the nature of the ICT domain.

When considering specifications that have not been developed by a recognised body and/or are not publicly available, the relevant intellectual property rights must be checked in order to avoid *de facto* discrimination, which may result in only a single tender, or very few tenders, being submitted to the procurer.

40 Department of Enterprise, Trade and Employment (2011) 'Buying Innovation: the 10 step guide to smart procurement and SME access to public contracts'

Work with the market to develop suitable solutions

It is important to communicate long-term ICT procurement plans to the market to give suppliers time to react and develop solutions to your organisation's need. This is particularly important for solutions that require levels of interoperability that are currently unavailable. This will include informing the market of particular standards that have been adopted by the organisation, or of standards that will not be accepted.

The Netherlands Open in Connection website has guidance on communicating with suppliers about the use of open standards, and includes a template manifesto letter to suppliers.[41]

Use information from the engagement process to develop technology-neutral specifications

Ensure that the development of the procurement options, and the accompanying technical specifications used in the tender, are not unduly influenced by the suppliers that have been involved in discussions.

Be aware that information gathered from suppliers on the options should be written within tenders in a technology-neutral way.

Undertake periodic evaluation of suppliers

One aspect of finding out what the market can provide could entail periodically evaluating supplier performance in terms of the extent to which they deliver products and solutions that implement standards (in particular any standards that your organisation is obliged or encouraged to use). Such evaluations could be particularly useful in contracts where regular supplier assessments are agreed.

The Dutch Open in Connection website provides additional guidance on evaluating suppliers.[42]

41 Find English referencehttps://noiv.nl/leveranciersmanifest/
42 http:// http://noiv.nl/

8. DECIDE ON THE BEST PROCUREMENT PROCESS

This begins the advice aimed at individual procurers, as represented in Figure 1.2.

It is important to ensure that the procurement process itself operates in a manner that achieves the objectives set out above.

What to Do

Be aware of procurement procedures

Depending on the ICT good or service that is being procured, procedures ranging from open tenders to negotiated procedures may be appropriate. Public procurement procedures in the EU are:

(a) Open procedure, in which any interested operator can submit a tender.

(b) Restricted procedure, in which any interested operator can request to participate, but only candidates invited to do so may submit a tender.

(c) Negotiated procedure, in which the public body consults operators of its choice and then negotiates the terms of the contract with them.

(d) Competitive dialogue, which may be used for complex contracts if the public authority is not able to define its technical requirements by itself.[43]

Which procedure is appropriate will depend on the nature of the particular procurement. For example, for particularly small value procurements, the negotiated procedure may be most appropriate. However, in all cases the avoidance of lock-in should be considered.

Be aware of legal framework

Procurers should ensure that the procurement process conforms to relevant national and EU laws, which constrain the extent to which procurers can restrict their engagement to small numbers of individuals or firms.

43 http://europa.eu/legislation_summaries/internal_market/businesses/public_procurement/l22009_en.htm

9. WRITE THE INVITATION TO TENDER

When writing the tender documents for the ICT to be purchased, there are a number of aspects of good practice that should be observed. Those responsible for drawing up the technical specifications, such as IT managers, should ensure that specifications are technology-neutral and do not refer unnecessarily to brand names or proprietary specifications. Available expertise on standards should be used to ensure that appropriate standards are used and referenced properly.

What to Do

Be aware of legal framework

Procurers must be aware of the legal framework that governs the referencing of standards in tenders. The Procurement Directives allow for the referencing of standards that are developed in the formally recognised standard setting organisations such as the international Standards Organisations ISO, IEC and ITO, and the European Standards Organisations (ESOs) CEN, CENELEC and ETSI, and the National Standards Bodies. The recently proposed legal package on European Standardisation[44] presents a proposal to allow direct referencing of standards and specifications from fora and consortia.[45]

Avoid unnecessary use of brand names and proprietary technical specifications

Under EU public procurement rules procurers may refer to a brand name to describe a product only when there are no other possible descriptions that are both sufficiently precise and intelligible to potential bidders.[46] Appropriate reference to standards might be an alternative way to describe a bid sufficiently precisely. Therefore, whenever possible the mention of brand names should be avoided to explicitly request a product or to describe the characteristics of a desired product.

Technical specifications that refer to proprietary technology supported by a single or limited number of vendors should also be avoided, as this will have the effect of restricting the ability of competing suppliers to respond to the tender.

Where possible, use templates to help to express the ICT product or system in technology-neutral terms. Templates exist for certain products that can be used. *Examples include Germany's BITKOM guides on wording tenders in a non-proprietary manner for desktop PCs, notebooks and servers.*[47] Be aware of the consequences of compatibility requests

Technical requirements in a tender may be important if there are specific constraints or needs related to existing IT structures or technologies, with which the new purchase must fit.

---

44 COM (2011)311 and COM (2011)315
45 Examples of global for and consortia that play a significant role in the standardisation landscape are W3C, OASIS, IETF
46 European Commission release reference IP/06/443 dated 4 April 2006; this is also a reference to Directive 2004/18/EC, Article 23
47 ITK-beschaffung: http://www.itk-beschaffung.de/en/introduction.html

However, requirements for compatibility with proprietary technologies may have the effect of favouring suppliers of products using these technologies and prevent multiple suppliers and vendors from participating in the tender. Where possible, such technical requirements should be described without the use of brand names. The advantage of having existing products and systems based on standards that can be used by all interested parties is that compatibility with these standards, instead of compatibility with named products, can be requested.

If it is not possible to ensure that the new ICT purchase will work with existing systems without requesting compatibility with proprietary products or systems, it is recommended that the risk of lock-in to the existing vendor or supplier be considered.

Be aware of the standards used and reference them properly

We reiterate the importance of being aware of the effect that the standards used within the tender will have on the ability of suppliers to respond to the tender, and the effect they will have on the product or service to be purchased.

For example, although they deal primarily with open source software, the OSOR guidelines also contain suggested model template texts for the inclusion of standards within tenders.[48]

Include all necessary requests for openness

Other requests for openness may be made within the tender (in addition to requiring that the new ICT purchase implements or is interoperable with certain standards). These can be contained within the award criteria or functional requirements of the tender.

Bidders may be requested to demonstrate the costs required to make the solution open to alternative suppliers after the end of the contract period.

Care should be taken when assigning weights to different categories of cost within the tender, as these could encourage distortions in the way costs are reflected.

48 OSOR guidelines on public procurement of open source software IDABC European eGovernment Services (June 2010), http://www.osor.eu/studies/OSS-procurement-guideline-public-final-June2010-EUPL-FINAL.pdf

10. CONCLUSION: EVALUATE THE PROCUREMENT EXERCISE

It is important to draw lessons for future procurement from each procurement process and share best practice and lessons learned. The effect of using certain standards can be assessed, as well as the accuracy of any cost benchmarking exercises. This evaluation can also be used to assess suppliers in the market in terms of the extent to which they have met required standards in their products or solutions.

What to Do

Write up case studies of procurement exercises to share best practice

Case studies could include the following elements:

(a) What standards were used and what effect this use had

(b) How well the procured product or solution was designed and delivered.

(c) How the overall costs of the procurement compare to the initial benchmarking exercise, and what adjustments need to be made to future benchmarking exercises.

It may be appropriate to disseminate best practice to other public organisations, including those in other Member States.