**Guidelines for Public Procurement of ICT
Goods and Services
SMART 2011/0044**

D2 – Overview of Procurement Practices

Final Report

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1   INTRODUCTION

1.1   This report represents deliverable D2: Overview of Procurement Practices of the contract SMART 2011/0044. As set out in the ITT, the report includes an overview of procurement practices in the European Union at all levels (national, regional and local) across a range of public sector organisations (e.g. universities; hospitals; police stations; government ministries) and sectors (e.g. health, education, banking). It also includes an overview of policy areas — both national and EU-wide — where standards play a key role and are used in procurement.

1.2   This report forms the basis for D3 which describes the difficulties public procurers face in procuring ICT based on standards and identifies guidelines and best practice to help them.

Background to the Work

1.3   The public procurement of Information and Communications Technology (ICT) is important for a number of reasons. Public administrations are a large consumer of ICT, and via their procurement power can have significant influence on innovation and competitiveness in the ICT market.

1.4   The procurement of ICT by public administrations also represents a significant source of the expenditure of public funds. For example, it was estimated that total EU government expenditure of this sort could have reached €94 billion in 2007.[1] Estimates of IT spending in the UK public sector in 2010, (estimated as the highest spender in the EU with 23 per cent of EU IT expenditure) are approximately €18 billion per year.[2]

1.5   Furthermore, public administrations' use of ICT is also not limited to their own organisations — increasingly citizens are invited to interact with public administrations via ICT-enabled structures.

1.6   These factors all contribute to the importance of public bodies' ability to procure ICT in an efficient and responsible manner that promotes competition and innovation in the ICT industry; makes the best use of public funds; and makes it cost effective for citizens to interact with and benefit from eGovernment.

1.7   One of the 'Key Action' areas included in the Digital Agenda — Action 23 — is the promotion of interoperability and standards in ICT public procurement.[3] The main idea

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[1]   European Commission IDBAC eGovernment News 'UK government continues to lead ICT spending in Europe',– 01 June 2005 – EU & Europe-wide/United Kingdom http://ec.europa.eu/idabc/servlets/Doc3be9.pdf?id=21677

[2]   Stephen J, Page J, Myers J, Brown A, Watson D and Magee I (2011) 'System Error: fixing the flaws in government IT' Institute for Government, UK

[3]   The Digital Agenda is one of seven flagship programmes set up under the Europe 2020 strategy in order to develop a single digital market as a route to sustainable economic and social benefits. See European Commission (2010) 'A Digital Agenda for Europe'

behind improving the use of standards in procurement by public authorities is that relevant standards could allow public authorities to avoid over-specific (including unwarranted brand-specific) requirements in their ICT tender specifications which can lead to lower competition and higher risk of vendor and product lock-in. An appropriate use of standards in ICT procurement can be an important driver of competitiveness in the ICT industry and it also facilitates competition for the benefit of consumers.

1.8   This work forms part of Action 23 which undertakes to provide guidance on the link between ICT standardisation and public procurement.

1.9   This study explores the difficulties experienced by public authorities in the procurement of ICT, in particular those that are related to the development of competition in the ICT market, including the use of standards. Guidance to help public authorities procure ICT that is based on standards is developed in a subsequent report (D3).

Our Approach

1.10   Our approach to this overview has involved:

(a) A review of the key literature on procurement and standardisation policy in the EU; the role of standards in ICT and difficulties in the public procurement of ICT goods and services.

(b) A survey of 244 public procurers and 172 ICT suppliers across the EU.

(c) Interviews and discussions with 14 public procurers, suppliers and experts in the field of ICT procurement and standards.

(d) An in-depth analysis of 32 public ICT tenders.

Structure of the Report

1.11   This report is structured in the following way:

(a) Chapter 2 describes the background to EU procurement and ICT standardisation policy and presents an overview of economic theory of standards. Key challenges in ICT procurement relating to the use of standards and competition in the supplier market are then discussed.

(b) Chapter 3 analyses key policy areas at the EU and Member State level where ICT standards play a key role and are used in public procurement.

COM(2010) 245 and European Commission (2010) 'EUROPE 2020: A strategy for smart, sustainable and inclusive growth' COM(2010) 2020

(c) Chapter 4 presents a summary of our research methods to investigate ICT procurement practices across the EU.

(d) Chapter 5 presents the results of our investigation into current procurement practices through our survey, interviews and tender analysis, and concludes with an overview of procurement practices across the EU.

(e) Chapter 6 concludes with a summary of the key difficulties faced by public authorities in procuring ICT based on the results of our literature and investigation into procurement practices. This lays the ground for D3 and the development of guidelines to address these problems.

(f) The Appendices contain the detailed material used in the report:

– Appendix 1 – Data gathering methodology

– Appendix 2 – Survey Results

– Appendix 3 – Tender Analysis

– Appendix 4 – Procuring Authorities' Questionnaire

– Appendix 5 – Suppliers' Questionnaire

2 ICT STANDARDISATION AND PROCUREMENT

Definition of ICT Standards

2.1 Following Directive 98/34, this report defines a 'Standard' as "a technical specification approved by a recognised standardisation body[4] for repeated or continuous application, with which compliance is not compulsory and which is one of the following:

(a) international standard: a standard adopted by an international standardisation organisation[5] and made available to the public,

(b) European standard: a standard adopted by a European standardisation body[6] and made available to the public,

(c) national standard: a standard adopted by a national standardisation body and made available to the public"

2.2 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.[7] 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.

2.3 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.

2.4 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.

2.5 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".

2.6 We note that all other types of technical specifications, including those adopted widely by industry but not formally approved (for example the "USB" interface (Universal Service

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[4] Standards can be developed in a number of ways within these SSOs. For example, a company may agree to relinquish control over a commercially successful specification to a standards setting organisation to let it be standardised, sharing any underlying intellectual property more publically on reasonable licencing terms. Alternatively, a standards-setting organisation may open a formal call for submissions of technology to solve a particular issue.

[5] These include ISO, ITU and IEC

[6] These include CEN, CENELEC and ETIS

Bus), or the "Java" language technology)[8] are considered to be standards and are termed "technical specifications" in this document.

Benefits of standards in ICT

2.7   Four main economic benefits of standards are identified in the literature:[9]

(a) Interoperability and compatibility between different elements of a system or network or between different products.

(b) Provision of minimum levels of quality, either in terms of functionality or safety.

(c) The reduction in variety, allowing for economies of scale in production.

(d) The provision of information, including standard service descriptions.

2.8   Possible disadvantages are that standards may inhibit innovation on top of the standard (for example, in the case that a limited number of providers have access to the necessary information for implementing the standard) , or be used by incumbent suppliers as a way of increasing entry costs to the relevant market (for example through the use of restrictive licensing conditions).

2.9   Standards can be a key tool in fostering interoperability among products or services within a market by enabling different and sometimes competing devices and services to communicate and translate data.

2.10   They can support innovation by encouraging companies to contribute to standards-setting activities and share their intellectual property with others. Furthermore, once formal standards or commonly used technical specifications that create a common framework (enabling efficient implementation) are introduced to the market, competing vendors can focus on innovative additions that set their products or services apart. [10] [11]

EU Standardisation and Procurement Policy

2.11   The legal basis for the current ICT standardisation policy in the European Union is set down by Directive 98/34/EC. This builds on an earlier Council Decision 87/95/EEC, which recognises the need for interoperability and contains rules on referencing ICT standards

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[7]   See COM (2011)311 and COM (2011)315
[8]   As discussed later, "de facto standards" can be available on an open basis — the Java technology was released as open source in 2006/2007, although with some disputes as to its openness in all cases.
[9]   See, for example, Hesser, Czaya and Riemer (2007) 'Development of standards ' in W. Hesser (Ed) *Standardisation in Companies and Markets*, pp123-169, Hamburg: Helmut Schmidt University
[10]   Microsoft (2009) 'White Paper – Standards in the ICT Industry'
[11]   We note that although the benefits of standards within the ICT market can arise from both standards that are developed through through formal SSOs and those industry-developed technical specifications that arise out of market-led and consumer-driven acceptance of technology, only formal standards are considered in the Digital Agenda Action 23 promotion of the use of standards.

in procurement. This is under review: see the the recent legal package on EU standardisation: COM (2011)311 and COM (2011)315.

2.12 The rules that govern public procurement at present (the 'Procurement Directives') are

(a) The Utilities Directive 2004/17/EC, which governs utilities procurement;

(b) The Public Sector Directive 2004/18/EC, which governs works, supplies and services procurement;

(c) Directive 2009/81/EC on procurement in the fields of defence and security; and

(d) Directive 2007/66/EC, which deals with remedies.

2.13 The Commission is currently undertaking a review of the EU public procurement system, and has published a Green Paper on the modernisation of EU public procurement policy soliciting opinions on various aspects of the procurement rules.[12] The European Parliament has recently adopted a resolution in recognition of the European's review of the Public Procurement Directives, which emphasises the need to improve legal clarity of the directives; to develop the full potential of public procurement; to simplify the rules and allow more flexible procedures; to improve access for SMEs; to avoid unfair advantages; and to expand the use of e-procurement.[13]

Implications of policies on ICT public procurement

2.14 In terms of ICT procurement, meeting the requirements contained in the Procurement Directives of equal treatment of all economic operators, transparent behaviour and non-discrimination can be achieved by referring to national, European or international standards so that technical specifications of a tender do not mention a specific process or refer to a specific trade mark.

2.15 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'.

2.16 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

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[12] European Commission (2011) 'GREEN PAPER on the modernisation of EU public procurement policy – Towards a more efficient European Procurement Market' COM(2011) 15.

[13] European Parliament, 'Resolution on Modernisation of Public Procurement (2011/2048(INI))' adopted texts 25 October 2011 http://www.europarl.europa.eu/sides/getDoc.do?type=TA&language=EN&reference=P7-TA-2011-0454

improvement in the quality of goods and services provided to the members of public, and hence lead to more innovation.

Developments in EU Standardisation policy

2.17   The rules governing the referencing of standards in public tenders, as expressed in the Procurement Directives, allow for the referencing of standards that are developed in the formally recognised SSOs, 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 direct referencing of technical specifications developed in global fora and consortia is not currently provided for. This is a significant issue for ICT where a number of relevant technical specifications, in particular in areas such as the internet and the World Wide Web, are developed through these organisations.[14]

2.18   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. 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.

2.19   Another development in EU standardisation policy is the 2010-2013 ICT Standardisation Work Programme under which standards setting organisations are invited to initiate work supporting the development and implementation of standards in priority areas, such as eHealth; regulated medicinal products; eGovernment; RFID and eInclusion.[15]

2.20   The developing standardisation policy in the EU serves to highlight the importance placed on the use of ICT standards in the EU, and the complex and evolving environment in which public authorities operate when considering the use of standards in ICT procurement. The number of standards in existence, the variety of areas to which they apply (as well as the number of areas for which standards do not currently exist) and the range of standards setting organisations and consortia make the process of purchasing ICT based on standards a continually evolving and challenging area.

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[14]   Examples of global for and consortia that play a significant role in the standardisation landscape are W3C, OASIS, IETF
[15]   See http://ec.europa.eu/enterprise/sectors/ict/standards/work-programme/index_en.htm.

Intellectual property rights in standards

2.21   The role of intellectual property rights (IPR) in ICT standards is important given the increasing value of ICT interoperability and the need for the sharing of technological intellectual property through the creation of standards. [16]

2.22   Standards-setting organisations adopt a variety of IPR policies depending on the individual circumstances of the market and standards in question. IP essential to the implementation of standards is often licensed to applicants on a (fair) reasonable and non-discriminatory basis ((F) RAND). The actual licensing agreement is made between the respective owners of the IP and those who wish to implement the standard.[17] It must be noted that whilst RAND terms allow patent owners to collect patent royalties for essential patent claims, this does not necessarily mean that parties do in fact collect such royalties. RAND therefore permits the licensing on royalty-free (RF) models such as "RF-RAND" (royalty-free RAND).

2.23   However, there is ongoing debate among stakeholders (such as the communication sector, the IT and software sector, SMEs and consumer organisations) on the approach taken to IP policies. In particular, some standardisation organisations require IPR in standards to be subject to royalty-free licencing.

2.24   Royalty-free licencing is considered by many as essential in the software industry. This is because in a market where competing products and services could be implemented by small firms or groups of individuals, the positive economic effects of standards in terms of facilitating competition may only be achieved by licensing terms that are free or royalty and licence-audit requirements.   For example, licencing terms that prevent Free/Libre/Open Source Software (FLOSS) implementations can be considered as neither reasonable nor non-discriminatory (RAND) as these exclude the participation of firms developing and releasing software under open source licences.[18] Such terms present in markets where FLOSS developers provide significant existing or potential competition to the rights holders can have a restrictive effect on competition, preventing the benefits that standards should have by enabling *all* competing firms to develop products incorporating the same standardised technology. [19]

2.25   In light of this argument, there exist definitions of standards (often termed an 'open standard' definition) that include the criterion that the standard should be available on a royalty-free basis in order for it to be truly non-discriminatory. The first, informal version of the European Interoperablity Framework 1.0 included such a definition, which has been

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[16]   See Industrial Property Rights Communication - COM(2008) 465, 16.7.2008.
[17]   This includes, at the discretion of the IPR holder, licensing essential IP without compensation.
[18]   This is because FLOSS requires that users of the software can use it for any purpose; study the source code; modify and improve it; and distribute it freely. This is at odds with licensing conditions of standards that require royalty payments to the rights holders. A standard that is licenced under (F)RAND conditions cannot be implemented and released under several important Open Source licences.
[19]   Ghosh, R.A (2005) 'An economic basis for open standards' FLOSSPOLS project, European Commission

adopted by a number of Member States and organisations.The EIF 1.0 defines the minimal characteristics of an open standard as:

(a) being maintained by a not-for-profit organisation with on-going development based on an open procedure available to all interested parties;

(b) having been published and available and able to be copied for a zero or nominal fee; and

(c) the intellectual property of the standard being available, irrevocably, on royalty-free basis.[20]

2.26 However, we note that there is much debate about the definition of an 'open' standard and that a formal, legal European definition does not exist. The formal version of the EIF 2.0 does specify that a standard should be licenced in a way that allows implementation in both proprietary and open source software.[21][22] The impact of various licencing conditions on the implementation of a standard must be therefore assessed on a case-by-case basis.

Economic Effects of Standards

Network externalities

2.27 A key benefit of standards is their role in addressing network externalities. Network effects are particularly relevant to applications of ICT whereby the benefits to a single user are significantly enhanced if there are many other users of the same technology. The value of the use of the technology, which is over and above the value of a single copy of the technology, is known as the network externality.

2.28 Network effects and barriers to alternative technologies[23] often result in the dominance of particular products in their application areas, known as natural monopolies. The development of standards can help address network externalities and avoid the negative consequences of natural monopolies by identifying the feature of the technology that provides the network effect, and ensuring that its use is not limited to a specific product or service. Products and services from different producers can therefore in principle be

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[20] European Interoperability Framework for Pan-European eGovernment Services, Version 1.0, p.9
[21] European Interoperability Framework for European Public Services p.26
1.1

[23] New technologies are often disadvantaged by their lack of an existing user base and are unable to overcome the value of the network effect of the old technology.

made interoperable by using these standards; in this way it is possible for competition to exist in the products and services that apply a particular technology. [24]

2.29   The economic benefits of standards in addressing network effects can be limited in practice. If the technology for interoperability on which a standard is based has rights associated with it, and these rights are owned by one market player (or a consortium), then such rights can be exploited to restrict competition in interoperable products and services that are enabled through the implementation of the standard. This in turn could increase the risk of ICT buyers becoming locked into the products or services of certain suppliers if products (requiring the implementation of the standards) are unable to be supplied by competing suppliers.

The quality of standards

2.30   The economic benefits of standards in terms of promoting interoperability and competition are therefore greater the more widely implemented a standard is.

2.31   There are three commonly cited elements affecting the quality of a standard in terms of how well it addresses network effects: *creation* of the standard (e.g. this should be open to all stakeholders and must be consensus driven, to avoid standards being set that favour a limited number of suppliers); the *implementation* of the standard (e.g. how easily the standard can be implemented within ICT products and services, such the affordability of the specification of the standard and the affordability of the IPR present in the standard); and the *use* of the standard (the extent to which all firms have the right to use the standard in their products, the range of purposes for which users can use the standard, and the additional costs of use).[25]

2.32   Formal standards (those agreed on through a formal process within SSOs) are often held to be more widely available for use and implementation among different suppliers than technical specifications agreed among producers on standard technologies without a formal process. [26]

2.33   However, the owners of rights associated with formal standards also have the ability to dominate the market in products and services based on the standard particularly if such standards are encumbered by private patent claims. [27].

2.34   Therefore it is not possible to determine the quality of a standard and how widely it can be implemented by the market simply by considering the standard setting process.

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[24]   Ghosh, R.A (2005) 'An economic basis for open standards' FLOSSPOLS project, European Commission

[25]   These dimensions of open standards are based on West, J (2007) 'The economic realities of open standards: black, white and many shades of grey', cited in Folmer, E and Verhoosel, J (2011) 'State of the Art on Semantic IS Standardisation, Interoperability and Quality', TNO, University of Twente and NOiV

[26]   Ghosh, R.A (2005) 'An economic basis for open standards' FLOSSPOLS project, European Commission

[27]   West (2004) ''What are open standards? Implications for adoption, competition and policy' *Standards and Public Policy conference*, Federal Reserve Bank of Chicago, May 11

Determing the quality of a standard, and thus the extent to which requiring such a standard in a public procurement tender might restrict the competition for the tender, is a challenge that procurers must be aware of.

2.35   Furthermore, the use of standards will not necessarily solve interoperability or lock in problems. Vendors are still able to maintain high switching costs even with standards and thus reduce the scope for a level playing field among suppliers by locking-in their customers to their particular implementation of the standard (e.g. if the supplier interprets the standard in a different way).[28]

Challenges in ICT Procurement

2.36   There are a number of challenges identified in the literature facing public authorities when procuring ICT products and services. We focus on those related to the development of competition in the ICT supplier market, such as the correct use of standards; avoiding dependence on suppliers and vendors (both within public organisations and in their interaction with citizens); and tendering practices that avoid restrictive or discriminatory terms and specifications and promote competition.

2.37   Other challenges in ICT procurement regularly highlighted relate largely to project management and communication within public authorities regarding the development of ICT needs. These include, for example:[29]

(a) Project delays, whereby IT projects run behind schedule and fail to deliver expected benefits, whilst often incurring significantly greater than anticipated costs.

(b) Commercial problems, such as public authorities' inability to hold suppliers to their original delivery commitments or mange sub-contractor relationships.

(c) Poor communication on expenditure levels or best negotiated rates, which leads different public authorities to pay different amounts for similar ICT products and services.

(d) ICT projects not designed with the user in mind, which can be a feature of overcomplicated and bespoke solutions, where the resulting ICT does not meet the needs of the end user and is burdensome to use.

2.38   Such challenges are either a feature of the whole ICT project life beyond the procurement phase, or do not impact directly on the ability of suppliers to compete for public sector

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[28]   Chen and Forman (2006) 'Can vendors influence switching costs and compatibility in an environment with open standards?' *MIS Quarterly: Management Information Systems, 30(SPEC.IS.),* 541-562

[29]   For a good summary of the issues see Stephen J, Page J, Myers J, Brown A, Watson D and Magee I (2011) 'System Error: fixing the flaws in government IT' Institute for Government, UK

contracts. As such these challenges, although significant, fall outside the immediate scope of this analysis.

2.39 We turn to a discussion of the relevant issues.

The use of Standards

2.40 The landscape of ICT standards is complex and there are a number of difficulties procurers may face in procuring ICT based on standards.

Economic effect of standards

2.41 There is a range of economic effects of standards which have a bearing on the interoperability between ICT products and systems and the ability of ICT buyers to change suppliers and vendors (related to the ability of competing firms to supply products and services that incorporate the standards). There is no definitive way of assessing the economic effects of a standard at face value (for example by considering the institutional process by which the standard is developed). Procurers could easily reference ICT standards in tenders which have the unintended consequences of restricting the ability of suppliers to compete for the tender. This is over and above the use of brand names or proprietary technical specifications.

Use of standards by the market

2.42 Similarly, it is not possible to determine the quality of a standard in terms of how widely it is implemented in the market simply by considering the standard setting process.[30] Whilst standards that are set through formal standard setting organisations[31] go through a formal development process, they may still contain barriers to implementation by all interested parties, may not be widely implemented by the market, or may not be implemented accurately according to the specifications. This could result in products that despite claiming to implement a standard are not interoperable with other products implementing the same standard.[32] Determining the the extent to which requiring a standard in a public procurement tender might restrict the competition for the tender, is a challenge of which procurers must be aware.

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[30] For example, West (2007) cites Egyedi (2003): "Dominant rhetoric underestimates the openness of industry consortia and overestimates the democratic process of formal standards committees".

[31] 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

[32] As an 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.

Standards and interoperability

2.43   Standards generally define minimum technical specifications which, if implemented, can enable interoperability between ICT products and services. Interoperability is the ability of two or more systems (or components) to exchange and subsequently use information (i.e. to communicate). However, standards do not specify everything completely and there will always be parts of a product or solution that incorporates a standard(s) that are left up to the implementers to design. In addition, interoperability in ICT rarely entails the uniform implementation of a single standard, as ICT involves multipurpose devices and software programmes that can incorporate many different specifications and standards. This has the advantage of encouraging innovation. However, this also means that even though ICT products and services implement standards, they can still be sufficiently different so as not to guarantee full interoperability or compatibility.[33]

The value and quality of standards

2.44   The value of standards in promoting interoperability and competition is dependent on the extent to which they are adopted by the market. Procuring ICT that is based on standards that are either outdated or are not supported by a wide range of market participants could have the unintended consequence of locking the procurer into a particular solution or supplier if there is not enough competition in the products and services related to that standard. There exist many standards that have passed through formal standards-setting processes but which are not supported by the market. Knowledge of which standards are up to date and widely implemented is a challenge for procurers, and cannot be easily judged according to, for example, the process by which the standard is developed.

2.45   In addition, the quality of standards can affect how easily they can be implemented by suppliers and thus contribute to interoperability and enhanced supplier competition. For example a study in Sweden found that public sector organisations very often refer to standards with the following problems: [34]

   (a) The technical specifications of the standards lack complete implementations.

   (b) The technical specifications lack sustainable implementations (the assets created by the applications using the standards outlive the applications themselves).

   (c) The technical specifications lack reusable implementations (the technology cannot be implemented indefinitely by numerous suppliers.

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[33]   An example here is SQL (Structured Query Language), a full database 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.

[34]   B. Lundell (2011), 'Public sector ICT procurement Policy & Practice. Panel 1: The importance of procuring   open   ICT systems'. Digital Agenda Assembly workshop on Interoperability and Standards(16-17 June),   Brussels, p 11.

(d) The technical specifications refer to specific trademarks and products.

(e) The technical specifications contain links to external sources and websites are no longer available.

2.46   In-depth knowledge of the quality of standards is therefore required to ensure the best outcomes in using them in the public procurement of ICT.

The number of standards

2.47   Standards emerge to meet differing consumer needs, and as such overlapping standards in the ICT industry are common. The large number of SSOs and other fora and consortia, as well as industry-developed standards, means that there are often many different standards that reflect similar underlying technical specifications. This compounds the difficulties facing ICT buyers in determining the most appropriate standards to apply to ICT purchases.

2.48   In addition, the evolution of the standards landscape and the continual development of new standards make it difficult to keep up with what the most appropriate and widely used standards are.[35]

2.49   It is also seldom possible to recommend the use of ICT products and services that implement only certain standards, as this would limit the variety of ICT products and services available for use.

Availability of standards

2.50   The promotion of procuring ICT based on standards to address lock-in and enhance interoperability could be of limited value in areas where common standards currently do not exist. This is particularly the case for complex ICT applications that are likely to be more bespoke.

Supplier dependence: lock-in and legacy systems

2.51   Public authorities and agencies are obliged to achieve value for money and save costs (taxpayer money) over the long term. Avoiding lock-in to specific vendors and being restricted in terms of the ICT products and services that can be purchased is therefore key.

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[35]   Folmer, E and Verhoosel, J (2011) 'State of the Art on Semantic IS Standardisation, Interoperability and Quality', TNO, University of Twente and NOiV

Definition of lock-in

2.52   During a normal procurement process, a pre-defined period is set at the outset, and the evaluation of the bids should take into account all costs that will be incurred during this period, such as support and maintenance, training and other services, as well as upgrades in the case of software purchases. At the end of the pre-defined period, it is assumed that the procuring authority will have no contractual obligations towards the original vendor.

2.53   However, with the purchase of ICT products and solutions that are based on technical specifications or standards which can only be implemented by the original vendor or a restricted range of suppliers, this assumption no longer holds. Although no contractual obligations exist towards the original vendor beyond the pre-determined lifetime of the original procurement, the technical and financial cost of moving to a system from another vendor or producer, or using the services of another supplier (the exit costs), may be prohibitively high. Public authorities may therefore be inefficiently constrained in the future by being unable to migrate systems or vendors, even when doing so may be in the best interests of the organisation.

2.54   This effect can be described as 'lock-in' — long-term dependence on a particular vendor or supplier beyond the boundaries of individual procurement actions.[36] Including requirements in ICT tenders for systems to be more open (such as requesting that bidders facilitate the 'handover' to new suppliers or vendors, or mandating the use of standards) can reduce the risk of this lock-in.

2.55   Lock-in can take other forms, for example if an organisation owns digital artefacts (e.g. documents or data files) in proprietary formats that cannot be accessed by applications other than that originally used to create them. The organisation is thus tied to the original supplier of the application in order to access the files. Given the long life cyle of public sector documents and data, there is a further risk that the original application will not be available in the future and that the vendor will not be willing or able to provide a technical solution to enable the files to be accessed. In this scenario migration away from the original vendor and accessing of the files may not even be technically possible, regardless of the costs.

2.56   Public authorities' purchase of ICT can also be constrained by the existence of legacy systems (such as large databases, or office software suites) that limit procurers to only those solutions that are compatible with the existing systems. Where the legacy systems are based on proprietary software or hardware, authorities can also be tied into specific vendors.

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[36]   R.A Ghosh, R. Glott, P.E Schmitz, A. Boujraf, (2008) 'OSOR guidelines public procurement and open source software'. IDABC Dissemination of Good Practice in Using Open Source Software (GPOSS)

2.57   However, there also exist other factors that can play a significant role in an organisation's inability to migrate ICT systems or suppliers, even when doing so may be best in terms of the ICT need. These include the costs of re-training staff and lack of political or institutional will. The concept of risk aversion is also highly relevant in the context of public authorities — the perceived risk involved in migrating to another system or supplier (even when the technical costs may not be great) may be prohibitively high.

2.58   There are a number of examples of public authorities that are considered locked-in to vendors and constrained in their choice of future ICT procurement to products that are compatible with the existing systems. As these existing systems are based on proprietary ICT, compatible products are often provided only by the same vendor:

(a)   The Finnish Ministry of Justice shares the use of a special document handling application with all other ministries of the State in order to prepare documents for the cabinet decision system. This application is based on proprietary file formats and macros. The proprietary technology has to be supported by all ministries requiring binary interoperability in the integration between organizations, mandating the support and costs of proprietary technology. [37]

(b)   According to feedback from a Belgian city IT manager, Belgian municipalities depend on a handful of providers of municipal IT solutions that have all tied their products to a proprietary vendor's office suite. The city hopes to break this dependency by requiring in their procurement that these IT vendors will also support open source office suites. The city's IT department will these days always compare proprietary and open source solutions in addition to proprietary ones.[38]

(c)   Research undertaken in Sweden of document formats and documents owned by Swedish municipalities found that in many cases the files could not be opened in applications other than those from the same provider as the original one (even supposedly open file formats), thus requiring the municipalities to continue using the proprietary applications in order to access their files. The authors recommend that public sector organisations should only refer to a software or file format standard if the standard has been implemented in a sustainable open source software implementation to avoid the risk of future lock-in to an unsustainable proprietary implementation. [39]

2.59   The key problem identified in these examples is not the purchase of proprietary software *per se*, but the apparent lack of conscious evaluation of the ICT need or consideration of alternative forms of software. These above examples relate largely to office software:

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[37]   Gijs Hillenius (2011), 'EU institutes' vendor lock-in no example to other administrations' OSOR, Feb 07, 2011 http://www.osor.eu/news/eu-institutes-vendor-lock-in-no-example-to-other-administrations/?searchterm=proprietary

38   Gijs Hillenius (2011) 'Municipalities' PCs 'completely locked-in' by proprietary software, OSOR, Oct 31, 2011 http://www.osor.eu/news/be-municipalities-pcs-completely-locked-in-by-proprietary-software/?searchterm=proprietary

[39]   Lundell, Bjorn. 2011. "e-Governance in public sector ICT procurement: what is shaping practice in Sweden". *European Journal of ePractice* No.12

evidence of wider, more complex lock-in, for example into database systems or entire IT solutions, is less often reported on although not necessarily less of a problem.

Consideration of exit costs

2.60   These costs of migrating to other systems or vendors, regardless of their underlying cause, should form part of an evaluation of a new ICT purchase, in addition to all other costs associated with the purchase.

2.61   If exit costs are taken into account, then procurers can place a more accurate value on alternative options with varying degrees of openness. This is important especially if including requirements in ICT tenders for systems to be more open increases the upfront costs of the procurement. Taking into account the exit costs of a more 'closed' alternative with lower upfront costs will enable a more equal evaluation of the options.

2.62   A realistic assessment of the life of the ICT purchase is also important. The use of a particular supplier or vendor should not be implied after the timeframe explicitly provided for in the tender (which is often the case when backwards compatibility is required and the original supplier favoured in future tenders). Considering all future payments to the same supplier and not just those incurred within the single tender will help prevent decisions being taken that are optimal in the short term only. A difficulty here is the nature of public sector budgeting, whereby budgets are in general set annually. Procurers are likely to be encouraged to take decisions based on short-term costs rather than long term benefits. The decision to continue to purchase products from a certain supplier may be most cost-effective in the short run for compatibility reasons, but in the long run a move to more open systems that do not reply on particular suppliers may be more cost-effective.

Over-customisation and little re-use

2.63   A commonly cited problem with ICT procurement, that extends back to the development of the ICT need, is that public authorities often request bespoke solutions with features beyond what is necessary for the work being performed. These bespoke systems generally cost significantly more than standard 'off-the-shelf' commercial options. The levels of customisation and bespoke design also makes it much harder for the systems to be re-used or to be fully in interoperable with other systems. Public authorities can find themselves dependent on the service provider responsible for developing the system for all future changes or upgrade, as other suppliers lack the required knowledge to manage the system.[40] In addition, switching to other systems (or changing the brand/supplier of the products used within the system) can be prohibited by the risk of heavy migration and redevelopment costs.

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[40]   Stephen J, Page J, Myers J, Brown A, Watson D and Magee I (2011) 'System Error: fixing the flaws in government IT' Institute for Government, UK

2.64   It is therefore important to note that avoiding supplier dependence should be taken into consideration in the initial development of ICT needs, and excessive customisation avoided if possible.

Role of standards in avoiding lock-in

2.65   The procurement of ICT, in particular software, based on standards has been promoted as best practice in enhancing interoperability and avoiding lock-in.[41]   Standards are important if they are available for any user to access and implement within their products. Procuring ICT that is based on standards increases the likelihood of it being interoperable with other applications using the same standards (therefore the extent to which the standard is widely implemented by the market is an important indicator of the benefit of the standard). As a result, this can help procurers to achieve 'vendor independence' and retain the ability to change software products or producers in the future without loss of data or significant loss of functionality. The use of products based on standards will also enable public authorities to procure products from different vendors whilst retaining any network effects of the products.[42]

2.66   Standards can help to reduce the risk of lock-in when the scope of an ICT system is limited and well-defined, for example when a particular business need is covered exactly by the standard and competing implementations of the standard can be implemented easily. However, in reality ICT needs are often more complex and a system or solution will encompass many standards (sometimes hundreds) and will provide functionality beyond the scope of the standard. This limits the ability of standards to help avoid lock-in.

2.67   Therefore having explicit requirements within the tender for bidders to ensure the openness of their proposed solution may be the most effective way of ensuring future supplier and vendor independence.

2.68   As an example, a key aspect to avoiding lock-in is the ability to transfer data from one system to another, and data portability can significantly reduce switching costs. Standards are an important enabler of data portability. However, when purchasing ICT systems public authorities should also ensure that the systems provide sufficient functionality to make data portability effective (e.g. by allowing data to be exported from or imported to the system). These requirements must be made within the tender over and above the referencing of standards for data formats.

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[41]   See, for example, Ghosh, R.A (2005) 'An economic basis for open standards' FLOSSPOLS project, European Commission; R.A Ghosh, R. Glott, P.E Schmitz, A. Boujraf, (2010)'IDBAC guidelines on public procurement of open source software' OSOR; Folmer, E and Verhoosel, J (2011) 'State of the Art on Semantic IS Standardisation, Interoperability and Quality', TNO, University of Twente and NOiV. A number of Member States also support the use of open standards in public procurement such as Denmark, the Netherlands, the UK, and Italy.

[42]   Ghosh, R.A (2005) 'An economic basis for open standards' FLOSSPOLS project, European Commission

Importance of compatibility

2.69   A common objective in procurement is compatibility of the new purchase with ICT products and infrastructure that has already been adopted. Compatibility is concerned with the ability of two or more systems or components to perform their required functions while sharing the same environment; for example the ability of a new feature of a database to work with the existing version of the database. Whilst compatibility is important to ensure that the procured ICT works with existing systems, it should not be an default requirement, and a wider evaluation of the ICT to be purchased should take place.[43]

2.70   Evidence of frequent requests for compatibility is found in the FLOSSPOLS survey in 2005.[44] The results show that of the 955 European governments surveyed, 59 per cent favour compatibility when procuring ICT, compared with 33 per cent that favour interoperability. The authors of the survey suggest that this implies that in general procurement institutions tend to buy software products based on their backward compatibility with previously acquired software (often of a certain supplier), instead of buying new products based on their interoperability with other systems (based on standards). This trend can cause the user to be explicitly locked-in to previously purchased software. According to the FLOSSPOLS survey, many procurers were not aware that the compatibility criteria cited in their tenders reduced their ability to support or benefit from interoperability. [45]

Evaluation of ICT needs

2.71   The evaluation of ICT products or services before the procurement process begins is an important element of good procurement practice. Procurement decisions that are based purely on historical purchases can increase the risk of public authorities being locked into certain technologies or brands that, in the long run, fail to meet the needs of the organisation.

2.72   In addition, a full evaluation of the full costs of a solution, including the exit costs, will enable the procurer to make a more informed decision about what needs to be procured and allow alternative solutions that are (for example) more open but possibly more costly up-front to be compared equally with solutions that are more closed.

2.73   An example of a lack of product evaluation is provided in research undertaken of Swedish municipalities in the context of e-Government.[46] Sustainable e-Government requires that

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[43]   Lundell, Bjorn. 2011. "e-Governance in public sector ICT procurement: what is shaping practice in Sweden". *European Journal of ePractice* No.12 p.9

[44]   Ghosh RA, Glott, R (2005) 'Free/Libre and Open Source Software: Policy Support. Results and policy paper from survey of government authorities' FLOSSPOLS

[45]   Ghosh, R.A (2005) 'An economic basis for open standards' FLOSSPOLS project, European Commission

[46]   Lundell, Bjorn. 2011. "e-Governance in public sector ICT procurement: what is shaping practice in Sweden". *European Journal of ePractice* No.12 p.6

digital assets (e.g. documents and data) can be accessed and edited over their entire lifetime. The choice of file format for digital assets is therefore critical, but most decision makers are unaware of these problems. [47]

2.74   The research found that municipalities generally do not evaluate either document formats or office applications before they adopt them. Renewal of licenses is also generally done without an evaluation — often over a period of many years — even when the original procurement decision was taken a number of years previously and in many cases municipalities renew licenses through centrally procured agreements.[48] Most government institutions surveyed have renewed their software licenses with single vendors with no previous evaluation since 1991.[49]

2.75   This research recommends that municipalities take responsibility for evaluating document formats and office applications before they are adopted, as municipalities cannot and should not rely on central purchasing organisations' policy and analysis to match their specific requirements. Moreover, evaluations should be documented and conducted on a regular basis, with the evaluation of document formats preceding decisions on applications. Renewal of licenses should be treated analogously to initial procurements and evaluated on a regular basis.[50]

Supplier dependence: interaction with citizens

2.76   Public sector consumers of ICT, through their procurement practices, are obliged to avoid explicitly harming competition in the market of private consumers. An extension of this is that public agencies should not require citizens to purchase systems from specific vendors in order to access public services, as this could essentially grant such vendors a state-sponsored monopoly. Government systems based on technical specifications or standardswhich cannot be accessed or implemented by all competitors runs the risk of having a significant uncompetitive effect.[51] [52]

2.77   There are a number of examples where public authorities have implicitly or explicitly required citizen to use certain proprietary ICT products. These include the use of proprietary document formats and internet applications:

(a) A survey of Swedish municipalities revealed that 83 per cent of citizens lived in municipalities that were either unable or unwilling to process (ODF) documents (a file

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[47]   Lundell, Bjorn. 2011. "e-Governance in public sector ICT procurement: what is shaping practice in Sweden". *European Journal of ePractice* No.12

[48]   Lundell, Bjorn. 2011. "e-Governance in public sector ICT procurement: what is shaping practice in Sweden". *European Journal of ePractice* No.12 p.9

[49]   B. Lundell, (2011), 'e-Governance in public sector ICT procurement: what is shaping practice in Sweden?'. European Journal of ePractice, Nº 12, www.epracticejournal.eu. (March/April), p 8-10.

[50]   Lundell, Bjorn. 2011. "e-Governance in public sector ICT procurement: what is shaping practice in Sweden". *European Journal of ePractice* No.12 p.10

[51]   Ghosh, R.A (2005) 'An economic basis for open standards' FLOSSPOLS project, European Commission

[52]   Note that the use of certain licencing conditions in standards can affect the extent to which they can be implemented by all suppliers, as illustrated in the context of open source software.

format based on a royalty-free standard), and that 35 per cent of the responding municipalities preferred proprietary document formats.[53]

(b) A survey by the Free Software Foundation Europe (FSFE) found that the majority of departments in the German federal government failed to meet requirements to implement open standards.[54] These requirements, from the German Information Technology Council (Rat der IT-Beauftragten) and in force since the beginning of 2010, state that government departments should support Open Document Format (ODF).[55]

(c) BBC iPlayer is an on-line service from the UK state broadcaster allowing UK citizens to access television and radio. When it was first launched in July 2007, the beta version of iPlayer was criticised on the grounds that it required both Windows XP and Windows Media Player. This was subject to complaint from the Open Source Consortium in their evidence to DG Competition's consultation on the revision of the Communication on the application of State aid rules to public service broadcasting, on the grounds that it leveraged Windows Media Player and was not technology neutral.[56] More recently, in 2010 iPlayer began to use a verification system, the SWF Verification Routine for Flash player for its streaming service that had the effect of blocking users who used unauthorised media players, including open source ones.[57]

(d) The Romanian "Biblioteca Nationala de Programe" (BNP) is an e-Government website which promotes applications built in Romania that are useful for businesses and public administration.[58] The BNP was criticised for recommending a proprietary internet browser (Internet Explorer) for using the site. Further criticism was made for access to the website only being available after having downloaded two proprietary applications (Oracle JInitiator and Installer Certification) which only run on one proprietary operating system (Oracle JIinitatior requires Windows 98, NT, 2000, XP).[59,60,61] The BNP was re-launched in response to such criticism.[62]

2.78 Designing public ICT systems that are interoperable with a range of peripheral products can be achieved through the use of standards (such as those relating to open file formats) or open source software as described above. However, for more complex ICT systems, building in such flexibility can be very costly, particularly where standards for interoperability do not exist. For example, the promotion of Digitally Enhanced

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[53] Lundell, Bjorn. "Public sector ICT procurement policy and practice: experience of standard document formats and office applications in the Swedish public sector." Presentation to Digital Agenda Assembly workshop on Interoperability and Standards, slide 4.
[54] This definition is based on the EIF 1.0 definition
[55] http://fsfe.org/news/2010/news-20100802-01.en.html
[56] http://ec.europa.eu/competition/state_aid/reform/comments_broadcasting/osc_annex2.pdf
[57] http://www.guardian.co.uk/technology/blog/2010/mar/01/bbc-iplayer
[58] http://bnp.ici.ro/index.html
[59] http://www.osor.eu/news/ro-e-government-software-site-locked-in-to-proprietary-software
[60] http://www.blogary.ro/2011/01/catre-societatea-dezinformationala/
[61] http://docs.oracle.com/cd/B12166_01/web/B10470_01/appa.htm
[62] http://economie.hotnews.ro/stiri-it-8225600-autoritatile-vor-promoveze-soft-urile-romanesti-printr-biblioteca-nationala-programe.htm

Independent Living[63] in Wales is limited by the fact that the choice of telecare peripherals (e.g. the personal devices individuals use within their homes) is constrained by the ICT application hosting device — only those devices provided by the telecare provider in charge of the main telecare system can be used. It is acknowledged that technical interoperability does not currently exist to enable the development of peripherals by other suppliers. Ongoing work is needed to first establish common standards, which can then be requested by procurers.[64]

Tendering practices that restrict competition

2.79   According to article 23 (8) of the *EU Public Procurement Directives*, when tendering, procurers can use technical specifications to describe a product. Under article 34, referring to specific trademarks, source, origins, or patents of a product, is prohibited unless the reference follows the words "or equivalent".[65] However, there is evidence from a number of sources that procurers often refer to trademarks in ICT tenders. When a trademark reference is used in the tendering process, the number of suppliers is immediately reduced as only suppliers who deal with such trademark products will be considered.

2.80   For example, Open Forum Europe's (OFE) procurement monitoring report on EU Member States acquiring computer software packages and information systems found that 13 per cent out of a total of 441 screened tender notices from 2010 made use of reference to trademarks.[66] Similarly, research presented in Ghosh (2005) found that the EU's public procurement portal identified 149 recent tenders including the term 'Microsoft'.[67.]

2.81   OFE suggests that referring to trademarks is a common and persistent problem, mostly in countries such as Germany, France and Poland, where procurers refer to trademarks the most often in invitations to tender.[68] Instead of using such references, OFE and OSOR Guidelines Public Procurement and Open Source Software, suggest that procurers

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[63]   This refers to the UK-wide DALLAS programme – Delivering Assisted Living Lifestyles at Scale. Digitally enhanced independent living provides individuals with access to technology within their homes that is linked to a wider network. It includes, for example, interactive interfaces and data transmission, and enables vulnerable people to live at home whilst remaining connected to a safe network of assistance.

[64]   In this case, the Dallas interoperability White Paper addresses the development of technical interoperability and common standards: Technology Strategy Board (2011) 'Interoperability in Dallas' Interim version 1.0, September 2011

[65]   Open Forum Europe, (2011), 'OFE Procurement Monitoring Report: EU Member States practice of referring to specific trademarks when procuring for Computer Software Packages and Information Systems between the months of February and April 2010' (May), p 4-5.

[66]   Open Forum Europe, (2011), 'OFE Procurement Monitoring Report: EU Member States practice of referring to specific trademarks when procuring for Computer Software Packages and Information Systems between the months of February and April 2010' (May), p 6.

[67]   R.A. Ghosh (2005), 'An Economic Basis for Open Standards' Maastricht, FLOSSPOLS project (December), p 15.

[68]   *Open Forum Europe,* (2011), 'OFE Procurement Monitoring Report: EU Member States practice of referring to specific trademarks when procuring for Computer Software Packages and Information Systems between the months of February and April 2010' (May), p 8.

should refer to product standards, functional performance or technical specifications, in the tendering process, in order to increase access of markets to tenders.[69]

2.82   An analysis of 94 Dutch calls for tender for the delivery of software published from January to June 2010 found a similar preference for named proprietary products.[70] In 36 per cent of cases a clear preference for a named closed source product or vendor was found, with the result that other vendors did not have a fair chance of winning the tender.

2.83   In addition to asking for a named product or licence of a named product, other discriminatory criteria within the tenders included asking for a reseller of licenses of closed source installed base or new named closed software; requiring that the vendor be a certified or recognised partner of a named closed source product; requiring that the vendor have an agreement with a named vendor for technical support for the product; requiring that the product be certified by a named closed source vendor; requiring that the vendor deliver a new product and have permission to expand the closed source installed base; requiring that the vendors' employees be certified by a named vendor; asking for an operating system that can be downgraded to Windows XP or used together with the Microsoft Campus Agreement; and tendering for hardware while asking for named software (generally Microsoft) to be installed on it.[71]

Summary of Challenges

2.84   The above challenges in ICT procurement form the basis for our investigation of procurement practice across the EU, summarised as:

(a) Identifying the ICT need and evaluating new ICT purchases

(b) Procurement in the face of legacy systems

(c) Use of brand names and restrictive specifications

(d) Making appropriate use of standards in tenders and

(e) Avoiding inefficient lock-in to vendors.

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[69]   Open Forum Europe, (2011), 'OFE Procurement Monitoring Report: EU Member States practice of referring to specific trademarks when procuring for Computer Software Packages and Information Systems between the months of February and April 2010' (May), p .1, 11.
        R.A. Ghosh (2005), 'An Economic Basis for Open Standards' Maastricht, FLOSSPOLS project (December), p . 17.
[70]   Paapst, M. 'Affirmative action in procurement for open standards and FLOSS.' *International Free and Open Software Law Review* Vol.2 No.2 p.184-185
[71]   Paapst, M. 'Affirmative action in procurement for open standards and FLOSS.' *International Free and Open Software Law Review* Vol.2 No.2 p.187

3   USE OF STANDARDS IN DIFFERENT POLICY AREAS

3.1   This section describes a number of policy areas in which public procurement and the use of standards are important.

3.2   We first discuss some EU policies such as eAccessibility and eGovernance, and then some national policies that aim either to promote the use of standards or to address other challenges in the procurement of ICT.

EU Initiatives

e-Government

3.3   e-Government involves using ICT to provide citizens and businesses with better public services. It has the potential to allow citizens and anyone carrying out business with government to do so more easily.[72]

The European Interoperability Framework (EIF)

3.4   The European Interoperability Framework (EIF)[73] contains a set of recommendations on how Administrations, Businesses and Citizens should communicate with each other within the EU.

3.5   The recommendations in the first, informal EIF 1.0 were issued under the programme 'Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens programme' (IDABC) in 2004. These recommendations were adopted in response to the eEurope Action Plan which called on the European Commission to "issue an agreed interoperability framework" in support of the delivery of pan-European eGovernment services to "citizens and enterprises". [74]   The Action Plan stipulated that the Framework should be based on 'open' standards.[75]   The use of open standards is identified within the EIF as one of eight principles for pan-European eGovernment services that are needed "to attain interoperability in the context of pan-European eGovernment services".

3.6   The EIF defines the minimal characteristics of an open standard as: being maintained by a not-for-profit organisation with on-going development based on an open procedure available to all interested parties; having been published and available and able to be copied for a zero or nominal fee; and the intellectual property of the standard being available, irrevocably, on royalty-free basis.[76] Whilst this definition of open standards has not been formally adopted (indeed, there does not exist a legal European definition of

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[72]   http://ec.europa.eu/information_society/activities/egovernment/index_en.htm
[73]   http://ec.europa.eu/idabc/en/document/2319/5644.html
[74]   European Interoperability Framework for Pan-European eGovernment Services, Version 1.0, p.5
[75]   European Interoperability Framework for Pan-European eGovernment Services, Version 1.0, p.5
[76]   European Interoperability Framework for Pan-European eGovernment Services, Version 1.0, p.9

open standards), a number of Member States and organisations have based their definitions of open standards on this. Unless otherwise stated, references to 'open standards' in the rest of this section are based on the EIF 1.0 definition.

3.7   The EIF itself was intended to outline general principles for pan-European co-operation,[77] rather than to give practical guidance that could be used by procurers to ensure that open standards are used more widely.

3.8   The formal version 2.0 of the EIF (2010) recommends that public administrations should prefer 'open specifications' but does not define 'open standards' as the previous version did. It also recommends in doing so that public bodies should "take due account of the coverage of functional needs, maturity and market support", and states that such bodies may decide to use less open specifications in cases in which open specifications "do not exist or do not meet functional interoperability needs". Moreover, specifications should always be "mature and sufficiently supported by the market", except in the case in which the creation of "innovative solutions" is required.[78]

3.9   The definition of an open specification in version 2.0 differs from the definition of an open standard in version 1.0. Under version 2.0:

- 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 (free, reasonable and non-discriminatory) terms or on a royalty-free basis in a way that allows implementation in both proprietary and open source software.[79][80]

3.10   Version 2.0 of the EIF has been criticised both for unduly favouring open standards[81] and for not favouring them enough.[82]

3.11   In 2009 the IDABC programme was replaced by the Interoperability Solutions for European Public Administrations (ISA)[83],[84]

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[77]   European Interoperability Framework for Pan-European eGovernment Services, Version 1.0, p.11
[78]   European Interoperability Framework for European Public Services p.26 (http://ec.europa.eu/isa/documents/isa_annex_ii_eif_en.pdf)
[79]   European Interoperability Framework for European Public Services p.26

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[81]   http://www.pcworld.com/businesscenter/article/213896/controversial_european_interoperability_framework_announced.html
[82]   http://blogs.computerworlduk.com/open-enterprise/2010/12/european-interoperability-framework-v2---the-great-defeat/index.htm
[83]   This is a follow up programme to the Interoperable Delivery of European eGovernment Services to public Administrations, Business and Citizens (IDABC) programme, which expired in 2009.
[84]   See http://ec.europa.eu/isa/index_en.htm.

Interoperability Solutions for European Public Administrations

3.12   The Interoperability Solutions for European Public Administrations (ISA) was established by Decision No 922/2009/EC of the European Parliament and of the Council in order to promote electronic co-operation between public administrators in the EU.   The programme, which replaced the IDABC programme, will cover four areas:

(a) Common frameworks in support of interoperability (policies, strategies, specifications, methodologies, guidelines and similar approaches and documents).

(b) Reusable generic tools (demonstrators, reference, shared and collaborative platforms, common components and similar building blocks for user needs across policy fields).

(c) Common services (operational applications and infrastructures of a generic nature to meet user requirements across policy areas).

(d) Analysis of the ICT side in the implementation of new EU legislation.

3.13   The Common Assessment Method for Standards and Specifications (CAMSS) is being developed under the ISA framework in order to provide a method for assessing formal specifications, enabling sharing and re-use. CAMSS is primarily intended as a guide for selecting and assessing formal specifications for eGovernment projects.

Open Source Observatory and Repository (OSOR)

3.14   The European Commission launched the Open Source Observatory and Repository (OSOR) in order to support the use of open source software in the European public sector.[85] In March 2010 OSOR produced the *Guideline on public procurement of Open Source Software*, with a view to explaining how the public sector can acquire open source software, and why it should do so. This Guideline also makes recommendations on the use of open standards and general ICT procurement.[86]

3.15   The Guideline is intended to encourage public authorities at any level (local, regional or national) to procure open source software, even in the absence of specific policies on the use of open source, by showing procurement officers, policymakers and IT managers how to procure open source solely following European procurement regulations.[87] The Guideline argues that many public agencies are unclear about how to procure open source software and, moreover, that poor practice in procurement is widespread and

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[85]   OSOR was introduced through IDABC and continued under ISA.
[86]   *Guideline on public procurement of open source software,* IDABC European eGovernment Services (March 2010), p. 5 (http://www.osor.eu/idabc-studies/OSS-procurement-guideline%20-final.pdf)
[87]   *Guideline on public procurement of open source software,* IDABC European eGovernment Services, p. 6

leads to software procurement that lacks transparency and discriminates in favour of proprietary software.[88]

3.16   In terms of open standards, the Guideline advises that in addition to official European standards, relevant national standards can be required in the technical specification of a call for tenders where no European standard exists. It is noted that, in practice, due to their technical complexity, standards are referred to in tenders by name, even when they are not official standards. Open standards can thus be referred to by name, or by reference to an official list of open standards.[89]

3.17   The Guideline advises that, in the absence of a definition of open standards that is applicable to the public body or an official list of open standards that can be cited, it may be necessary to define the standard with reference to functional specifications. In this case, openness of standards can be given preference, through weighting in award criteria, or a requirement by making it mandatory in the specifications. The Guideline also advises that openness of standards can be an award criterion when no specific standards are referenced in the requirements, in the case in which detailed technical specifications are expected to be proposed by bidders.[90]

3.18   The Guideline provides text templates for public sector bodies procuring software based on open standards. It notes that standards that are named in the functional specifications should have been screened for their openness prior to the tender, so that if it is only named standards that are used there is no need for the tender itself to include requirements for standards' openness. However, if some of the standards that may be included are not detailed in the technical specifications, or if the interfaces, protocols or formats stated in the technical specifications are defined in functional terms, openness requirements may have to be included in the tender.[91]

3.19   The text template provided in the Guideline is consistent with version 1.0 of the European Interoperability Framework's definition of open standards. Although a universally accepted definition of open standards does not exist, a definition is not necessarily required if tenders include requirements or award criteria for the openness of standards.[92]

e-Accessibility

3.20   E-Accessability is intended to reduce "the barriers and difficulties that people experience when trying to access goods and services based on ICTs" according to EC Mandate 376, *Standardisation mandate to CEN, CENELEC and ETSI in support of European accessibility requirements for public procurement of products and services in the ICT*

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[88]   *Guideline on public procurement of open source software,* IDABC European eGovernment Services, p. 7
[89]   *Guideline on public procurement of open source software,* IDABC European eGovernment Services, p. 42
[90]   *Guideline on public procurement of open source software,* IDABC European eGovernment Services, p. 42-3
[91]   *Guideline on public procurement of open source software,* IDABC European eGovernment Services, p. 55
[92]   *Guideline on public procurement of open source software,* IDABC European eGovernment Services, p. 55

domain concerns.[93] The main objectives of this mandate include the harmonisation and facilitation of procurement of accessible ICT products and services by public bodies through the identification of fundamental European accessibility requirements, and the provision of an electronic toolkit so that public procurers can make use of these harmonised requirements.[94]

3.21   Included as deliverables of the mandate are: a European Standard (EN) specifying requirements for accessibility for ICT products and services in particular technical areas, a list of standards that comply with these accessibility requirements and an online toolkit which includes thorough guidance and "ready text" for public procurers. Guidance and support material for public procurers are also required, covering, *inter alia*, IT planning guidelines, broad circulation of materials on accessible IT, technical advice on new ICT hardware and software, an inventory of existing accessibility support services and needs, the inclusion of accessibility in ICT calls for proposals and verification of supplier claims of accessibility.[95]   Of these, we would judge the inclusion of accessibility in ICT calls for proposals as being of most importance to this work as it directly relates to procurement, but all the issues covered by the mandate are potentially relevant.

3.22   Drafts have been made available for discussion, but as at end November 2011 have not yet been finalised.[96]   When writing the draft EN, effort was made to maximise alignment with future updates of American accessibility requirements, with the US Access Board's Draft ICT Standards and Guidelines used as the basis for candidate texts. In some cases the same text was used, but in many cases the wording was changed. In some cases concepts and wording from widely accepted international standards were used as a basis for requirements that were not defined adequately in the US standards and requirements.[97]

3.23   The work subsequent to the mandate has analysed toolkits from Norway, Denmark, Ireland, USA and Canada, and recommended technical specifications for the toolkit that results from the mandate. In particular the toolkit must:

(a) Contain text ready to be inserted by procurers in their calls for tender.

(b) Be designed in a "clear, logical and structured way", so that it can be used by those without specific knowledge in the area of accessibility.

(c) Allow the user to browse cross-linked contents in a structure way.

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[93]   European Commission – DG Enterprise & Industry, *Standardisation mandate to CEN, CENELEC and ETSI in support of European accessibility requirements for public procurement of products and services in the ICT domain* M376 (2005) 1

[94]   European Commission – DG Enterprise & Industry, *Standardisation mandate to CEN, CENELEC and ETSI in support of European accessibility requirements for public procurement of products and services in the ICT domain* M376 (2005) 1

[95]   European Commission – DG Enterprise & Industry, *Standardisation mandate to CEN, CENELEC and ETSI in support of European accessibility requirements for public procurement of products and services in the ICT domain* M376 (2005) 2

[96]   http://www.mandate376.eu/

[97]   Draft ETSI TR 101 550 V0.0.3 *Human Factors; documents relevant to European accessibility requirements for public procurement of products and services* 5.1

(d) Have user-friendly internal search facilities.

(e) Include a categorisation and classification of the different parts of the public procurement process for different types of accessible ICT.

(f) Develop the templates or concepts that should be considered by procurers when they develop tenders' terms of reference.[98]

e-Health

3.24 There are a wider range of initiatives to enhance interoperability through the development of standards in the area of healthcare. A sample of such initiatives is mentioned briefly below. However, these focus on the development of standards rather than offering best practice in terms of using these standards within the public procurement of ICT.

3.25 e-Health involves giving citizens online access to health information and to their own records, and building secure networks that allow health professions to securely access information about patients. It encompasses health information networks, electronic health records, telemedicine services and systems for monitoring and supporting patients.[99]

3.26 In 2008 the Commission co-founded a European large scale pilot, European Patients' Smart Open Services project (epSOS).[100] epSOS aims at developing, testing and validating specifications for interoperability of patients' ePrescriptions. It involves 23 Member States and associate countries and will end in December 2013.

3.27 A thematic network on eHealth Interoperability, CALLIOPE,[101] was launched the same year to "build consensus and awareness on the issue and develop a European Roadmap". A support action on Healthcare Interoperability Testing and Conformance Harmonisation, HITCH[102], was launched in January 2010 to propose an eHealth interoperability conformance and testing roadmap.[103]

3.28 EC Mandate 403, addressed to the European standardisation organisations CEN, CENELEC and ETSI, concerns standardisation in eHealth. Specifically, it notes that compatibility and interoperability in eHealth services are required in order to ensure these services are available to EU citizens and health professionals. In particular, it points out that being able to transport personal health data over wired and wireless networks is an "essential component" of an operable health system. Moreover, it notes that achieving this interoperability requires standards that are "based on consensus between all the

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[98]   CEN, CENELEC, ETSTI, AENOR, *Online Procurement Toolkit for accessible ICT products and services* p.29
[99]   http://ec.europa.eu/information_society/activities/health/docs/unit/009factsheet_ehealth_en.pdf
[100] http://www.epsos.eu/
[101] http://www.calliope-network.eu/
[102] http://www.hitch-project.eu/node/1
[103] 2010-2013 ICT Standardisation Work Programme for industrial innovation (European Commission)

relevant stakeholders" and that standards must have been "verified by consistent and coordinated interoperability testing".[104]

3.29   The mandated work includes two phases. Phase 1 involves compiling a list of relevant standards and technical reports, while phase 2 involves the agreement of implementable standards. The mandate stresses the importance of testing and verification methods, drafting of testing standards and the demonstration of interoperability between eHealth services.[105]

3.30   Work is currently at phase 2, with the final phase 1 report having been approved by the Commission.[106]

INSPIRE

3.31   The INSPIRE directive, Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007, established an Infrastructure for Spatial Information in the European Community and came into force in 2007. It requires that common implementing rules (IR) be adopted in respect of several areas of ICT. These are: Metadata, Data Specifications, Network Services, Data and Service Sharing and Monitoring and Reporting. These implementing rules are binding in their entirety and are adopted Decisions or Regulations by the Commission.

3.32   The only evidence of procuremntr-related policy related to INSPIRE is in the context of the Czech Environmental Information Agency (CENIA), which runs a national geoportal that has been fully compliant with the INSPIRE directive since 2010. It acts both as aggregator and enforcer of INSPIRE standards in Czech procurement, and is supported by the Czech Republic's national INSPIRE team. It includes a mixture of open and closed source software.[107]

e-Procurement

3.33   The Directorate-General for Informatics (DIGIT) has recently announced that Open e-PRIOR, the open-source procurement platform, will soon include a web portal for invoicing allowing Small and Medium Enterprises (SME) and individuals to submit electronic invoices to their customers who have already installed Open e-PRIOR.[108]

3.34   The supplier will be able to manually encode his invoices through a web form and submit them electronically to the customer, thus avoiding delays, printing and postage costs. The

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[104]   European Commission – DG Enterprise & Industry, *Standardisation mandate addressed to CEN, CENELEC and ETSI in the field of Information and Communication Technologies* (403) (2007) 2.1

[105]   European Commission – DG Enterprise & Industry, *Standardisation mandate addressed to CEN, CENELEC and ETSI in the field of Information and Communication Technologies* (403) (2007) 5.1

[106]   http://www.ehealth-interop.nen.nl/publicaties/2860

[107]   Presentation, Jiři Hradec, CENIA

[108]   OSOR (2011) 'Open e-PRIOR' http://www.osor.eu/projects/openeprior

procurement platform e-PRIOR then sends them to the appropriate back office of the customer, where invoices are processed following the usual validation flow.

3.35   The platform's goal is to offer to the public administrations in the Member States a full invoicing solution, covering all of their suppliers: not only big companies connecting their own back-office systems to Open e-PRIOR installed at the public administration, but also SME and individuals, who will have the possibility to switch to invoicing without additional cost investment.[109]

3.36   The CEN Global e-Business Interoperability Test Bed has released its draft CWA (CEN Workshop Agreement) for public review. It focuses on solutions that support e-business standards assessment and testing with regard to interoperability issues.

3.37   In the move towards globally networked enterprises, businesses are increasingly facing interoperability challenges similar to those which public administrations experience in the field of e-Government. These challenges call for more and improved e-business testing capabilities, particularly in situations where e-business standards are to support complex interactions among a larger number of organizations.

3.38   Since 2009, CEN, the European Committee for Standardization, has been host to a workshop dedicated to address these interoperability issues. The Global e-Business Interoperability Test Bed workshop (GITB) focuses on methodologies and architectures that support e-business standards assessment and testing activities from early stages of e-business standards implementation, to proof-of-concept demonstrations, to conformance and interoperability testing.

3.39   The project uses a holistic approach to e-Business interoperability and addresses the issue by working on multiple layers: the Transport and Communication Layer (technical interoperability) the Business Document Layer (semantic interoperability) and the Business Process Layer (process interoperability).

3.40   In a first phase, the project delivered a baseline assessment of existing testing requirements and capabilities. A second phase was initiated to define architecture for an interoperability test bed at a global scale and the governance structure thereof.[110]

eSignatures and eInvoicing

3.41   Directive 1999/93/EC[111] aims at establishing a legal framework for electronic signatures and for certification service providers in the internal market. Article 232 of Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax allows the issue of electronic invoices instead of paper invoices.

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[109]   http://www.osor.eu/news/eu-open-e-prior-to-offer-web-portal-for-einvoicing

3.42   At the end of 2007 the European Commission set up an Expert Group on e-invoicing in order to propose solutions supporting the provision of e-invoicing services in an open and interoperable manner across Europe. The Expert Group delivered its Final Report in November 2009.[112] On the basis of this final report and a public consultation, the European Commission published in December 2010 the Communication COM (2010) 712 'Reaping the benefits of electronic invoicing for Europe'.[113] This Communication defined a number of actions in different areas, including standardisation. In 2011, CEN will design implementation guidelines for the standardised Cross-Industry Invoice data model.

National Initiatives

3.43   This section sets out some examples of Member States' policy initiatives in standards-based procurement.

3.44   Many standards are developed within Member States for specific applications which are too locally specific to be of use in other Member States — this must be kept in mind for any recommendations to share standards.

Germany

Description of best practice

3.45   The Procurement Office of the Federal Ministry of the Interior and the Federal Association for Technology, Telecommunications and new Media (BITKOM)[114] have produced guides on wording tenders in a non-proprietary manner for desktop PCs, notebooks and servers. These guides are available in German and English. They are intended as a tool to allow authorities to comply with their legal requirements (European and German law forbids the use of brand names in public tenders), thereby safeguarding fair competition. The guides are also intended to allow authorities to "identify and describe state-of-the-art standards". The guides specifically acknowledge that technical complexity, quick succession of product cycles and precisely describing system performance requirements are all problems that have resulted in descriptions in tenders relying on proprietary product names.[115] The main purpose of the guide is therefore to provide public authorities with the tools to avoid using proprietary product names.

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[110]http://www.semic.eu/semic/view/snav/currentInformation/News.xhtml;jsessionid=D1A4FCC6AE2722CA97D768038902B6E9?newsId=fb9703e2-d969-4da9-98d5-0148edaff8aa&tmpl=News

[111]   http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&numdoc=31999L0093&model=guichett

[112]   http://ec.europa.eu/internal_market/consultations/docs/2009/e-invoicing/report_en.pdf

[113]   http://ec.europa.eu/enterprise/sectors/ict/files/com712_en.pdf

[114]   BITKOM is an industry association that acts as an intermediary between public procurers and ICT companies

[115]   *Non-Proprietary performance Description of Desktop PCs* p.3

Key points

3.46   The guide is developed mainly through input from companies, with BITKOM ensuring that the content is yechnology neutral.

3.47   The guides identify benchmarks as the best approach to describing the performance of the required ICT need. Benchmarks are a "programme or suite of programmes that measures the overall performance of a system or individual components". They are "based on strict test methods, developed by independent industrial consortiums and software manufacturers, and recognized and supported by manufacturers of ICT products". The guide recommends the use of application benchmarks, which measure system performance by simulating typical software applications, as opposed to synthetic benchmarks which test individual components, on the grounds that application benchmarks produce the most objective results.[116]

3.48   For desktop PCs and notebooks, the guides' recommended benchmark for measuring performance is SYSmark. This is produced by BAPCo, which is an industrial consortium consisting of AMD, ARCintuition, Dell, Hewlett-Packard, Hitachi, Intel, Lenovo, Microsoft, NVIDIA, Samsung, Seagate, Sony, Toshiba and We Connect. The guide contains practical details about how to use SYSmark, and includes recommendations of how this should be done.[117]

3.49   For desktops, the guide sets out a classification of software profiles based on the requirements of typical users (e.g. office worker with administrative tasks) and specifies the minimal technical requirements for each classification.[118] These include industry standards (e.g. ATX, BTX or ITX form factor for motherboards) for some aspects of the desktop PCs, but are far more general in others (for example, simply stating "keyboard, mouse" for input/output devices). For notebooks, the classification is based on mobility requirements.[119]

3.50   The guide also details "non-technical" requirements that authorities might require, including pre-installation of software, installation on site and support, and gives examples of what authorities' needs could be, though it does not give specific recommendations.

Outcome

3.51   We are not aware of any formal evaluation of the BITKOM guides.

3.52   There may be some danger of relying on specific standards, particularly those that have been developed through industry consortia. For example, AMD left the BAPCo consortium after the new standard that the consortium developed highly favoured the

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[116]   *Non-Proprietary performance Description of Desktop PCs* p.4
[117]   *Non-Proprietary performance Description of Desktop PCs* p.6
[118]   *Non-Proprietary performance Description of Desktop PCs* p.8
[119]   *Non-Proprietary Procurement Specification Notebooks*, p.10

performance of Intel chips, and Intel now appears to dominate the consortium. Even when good practice, such as referring to benchmarks, is implemented it is necessary that the benchmark itself is developed in a neutral way that does not favour any particular manufacturer.

Netherlands

Description of best practice

3.53   The Dutch government's policy on open standards is aimed at ensuring the interoperability of the public and "semi-public" sectors, while guaranteeing provider independence.[120]   The policy, although developed by the Dutch cabinet, is without legal obligations and therefore places high trust in government bodies.

3.54   The policy on open standards forms part of the overarching ICT reference architecture in the Netherlands, NORA (Dutch Government Reference Architecture).   NORA was designed as a framework within which the government could realise its aim of creating a citizen-orientated eGovernment with reusable assets (e.g. documents and file formats) and minimal burden on citizens when interacting with government (e.g. avoiding placing obligations on citizens to use particular ICT software or applications).

3.55   The policy has been promoted through a number of action plans, such as the OSOSS programme and the Netherlands Open in Connection programme, and seeks to promote interoperability through the use of open standards.[121]   These are promoted through lists of standards, some mandatory and some recommended, that public and semi-public ICT procurers must use.   These include government departments, implementing bodies, provinces, district water boards, municipalities and education, healthcare and social security institutions.

3.56   In addition, the policy supports the use of ODF (open document format, based on open standards) for the exchange of documents both within government and between government and citizens.

Key points

3.57   The Standardisation Forum and Board maintain two lists of open standards. One is a list of mandatory open standards, for which a 'comply or explain' regime is in place, so that for public ICT tenders and purchases in excess of €50,000 (including new systems or software, rebuilds and contract extensions), procurers must either apply the relevant open standard or else explain why the standard was not applied along the lines of a limited number of exception criteria.   These criteria apply, and so allow the use of non-open standards, either when no open standard is available, or else the conduct of

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[120]   Standardisation Forum, *Assessment Procedure and Criteria for Lists of Open Standards*
[121]   Jaap Korpel, *Open standards for government – the Dutch experience*

business/service would be jeopardised by applying the open standard. As of 13 June 2011 there were 19 such mandatory open standards. The other list contains recommended common open standards.[122]

3.58   Anyone can submit a standard for inclusion on one of the lists, and the standard goes through an assessment procedure. The assessment procedure involves a number of players. The Standardisation Board, comprised of high-level civil servants, decides on the eventual inclusion of the standards in the lists after the procedure has been completed. The Standardisation Forum, which includes representatives from government, business and science advises the Board on whether or not a standard should be included on the basis of an expert investigation and public consultation. The expert group themselves are selected by the Office of the Standardisation Forum, which organises and implements the assessment procedure.[123]

3.59   A key element of developing lists of recommended standards is the role of the government in determining the key ICT functions that it needs and translating these into standards. This may increase the likelihood of the standards being as relevant and helpful as possible to public authorities. This can be done through a reference architecture, which sets out what the objective of the ICT and standards are (e.g. to promote interoperability; to avoid vendor lock-in; to act over the short or long term). Different needs may have different implications for standards.

3.60   Until recently the policy was supported by NOiV (Netherlands in Open Connection),[124] who worked with the Standardisation Board and Forum and whose activities included: engaging with local politicians and public administration; providing ICT and procurement professionals with the skills and tools to ensure openness; exchanging information and best practice; involving industry, including software and IT services; improving the transparency of market applications; and maintaining a procurement hotline and help desk.[125]

3.61   The Dutch policy also include the publication of many guidance documents, such on the importance of open standards; how to procure open source; and what common standards are used in certain areas.

Outcome

3.62   According to NOiV, lessons learned from the Dutch experience include the need for politicians and administrative and procurement staff to be informed and the need for accurate details in tender requirements. In particular, formats and text examples are

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[122]   Jaap Korpel, *Open standards for government – the Dutch experience*
[123]   Standardisation Forum, *Assessment Procedure and Criteria for Lists of Open Standards* p.5
[124]   NOiV was set up from 2007 until 2011 to help Dutch government move to open standards and open source software.
[125]   Jaap Korpel, *Open standards for government – the Dutch experience*

welcome. For semantic standards in particular, all parties must agree upon definitions, which may imply legislation, and any change in policy or law may affect standards.[126]

3.63   Discussions with the NOiV team revealed that even with a dedicated programme, the up-take in the use of standards in procurement is slow. This was thought to be compounded by the fact that the 'comply or explain' policy was not based on law (rather on 'high trust'); however, it was not felt that mandating the use of standards in law would be practical.

3.64   The use of standards requires effort from suppliers as well as procurers — if procurers are encouraged to require the ICT they procure to meet certain standards, then suppliers need to support these standards. Any list of standards therefore needs to be agreed on with a range of stakeholders.

3.65   A possible barrier to the take-up in the use of standards, as viewed by the NOiV team, is the division between IT and procurement departments in many public organisations (although it was thought that this may be particular to the Netherlands).   IT managers writing the specifications may be more interested in procuring what they want or need than in meeting legal obligations to use standards.

Italy

Description of best practice

3.66   Italian procurement regulations since 1993 have addressed digital administration, interoperability, re-use and accessibility. The Italian norms include Codes of Digital Administration (CAD) issued in 2005 and 2010. Each norm defines some standards. The most recent CAD requires comparative technical and economic evaluation of ICT, covering the opportunity and convenience of ad hoc IT solutions, the possibility for re-use in the contracts, the convenience and opportunity of acquiring software under proprietary and open source licences.[127]

Key points

3.67   Public bodies are required to inform the agency DigitPA about their procurement in order to facilitate re-use by other public bodies. The solutions they adopt must be modular and allow for data and documents to be in an open format. Public bodies that own customised software must also be able to give it, for free including documentation and source codes, to other public entities.[128]

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[126]   Jaap Korpel, *Open standards for government – the Dutch experience*
[127]   Flavia Marzano, Presentation, *From theory to practice? "My" Italian experience.* P.5, Digital Agenda Assembly 03 'Interoperability and standards: making it happen' http://ec.europa.eu/information_society/events/cf/daa11/item-display.cfm?id=5984#feature-948
[128]   Flavia Marzano, Presentation, *From theory to practice? "My" Italian experience.* P.7 Digital Agenda Assembly 03 'Interoperability and standards: making it happen' http://ec.europa.eu/information_society/events/cf/daa11/item-display.cfm?id=5984#feature-948

3.68   CONSIP, a public stock company owned by the Italian state, develops purchasing initiatives in line with public bodies' procurement requirements and provides these bodies with consultancy services and information and how to meet specific requirements.[129]

Outcome

3.69   According to Flavia Marzano, President of UnaRete[130] although the regulations are tight in principle, because no sanctions are detailed in the norms standards are often not respected (especially those relating to accessibility, usability, transparency and completeness of information). Lack of specific competences for administrators is another cause of the regulations' limited effect. The Italian experience points to the need for dissemination of information and training of public administrators and politicians. The CONSIP model is seen as providing a good model for ensuring more systematic compliance with standards.[131]

France

Description of best practice

3.70   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. It results from the provisions of order no. 2005-1516, which was intended to give administrative authorities a reference framework for this matter.[132]

3.71   Section 11 of the order states that:

> The RGI establishes technical rules to ensure the interoperability of information systems. In particular, it determines the data directories, norms and standards to be used by the administrative authorities. The conditions for development, approval, modification and publication of these standards are set by decree.

Key points

3.72   The number of rules in the RGI is limited in order to reduce the impact of compliance, and these are contained in the RGI document itself.[133] These rules state particular norms or standards that it is obligatory for French state bodies to use. The RGI itself does not create norms and standards. Rather, it references standards recognised and supported by standards bodies. All standards are available online via the website (www.references.modernisation.gouv.fr/rgi-interoperabilite).[134] As an example, the RGI

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[129]   Flavia Marzano, Presentation, *From theory to practice? "My" Italian experience*. P.8 Digital Agenda Assembly 03 'Interoperability and standards: making it happen' http://ec.europa.eu/information_society/events/cf/daa11/item-display.cfm?id=5984#feature-948
[130]   http://www.unarete.it/
[131]   Flavia Marzano, Presentation, *From theory to practice? "My" Italian experience*. P.9 Digital Agenda Assembly 03 'Interoperability and standards: making it happen' http://ec.europa.eu/information_society/events/cf/daa11/item-display.cfm?id=5984#feature-948
[132]   http://references.modernisation.gouv.fr/sites/default/files/RGI_Version1%200.pdf
[133]   http://references.modernisation.gouv.fr/sites/default/files/RGI_Version1%200.pdf
[134]   http://www.epractice.eu/files/France.pdf

states that, for exchanging emails, it is obligatory to use the simple mail transfer protocol (SMTP).[135,136]

3.73   The RGI was also intended to guide administrative authorities, by highlighting which norms and standards are recommended. These norms and standards reflect best practice for interoperability, but have not been adopted by all stakeholders. The RGI also lists norms and standards that have high potential in terms of interoperability, but lack maturity or widespread adoption by the market. These are termed "under observation".

UK

Description of best practice

3.74   The UK's Cabinet Office has developed an ICT strategy for the public sector to improve the commissioning of ICT projects and procurement and enhance interoperability, among other things.[137]   Part of the work involves investigating the use of open standards, and issues around selecting specific standards for use throughout the public sector.

3.75   A Policy Action Note 3/11 (January 2011) presented the government's initial thoughts on the use of open standards, stating that when organisations are purchasing software, ICT infrastructure, ICT security and other ICT goods and services, 'open' standards should be deployed wherever possible in the procurement specifications. The note went on to state that "Government assets should be interoperable and open for use in order to maximise return on investment, avoid technological lock-in, reduce operational risk in ICT projects and provide responsive services for citizens and businesses." [138]   The government is currently (as of 29 February 2012) consulting on the definition of 'open' standards.[139]

3.76   The work also involves exploring options for a mechanism through which the government can choose standards that are most appropriate to meet the needs and objectives of the ICT strategy.

3.77   In addition to the use of open standards, the Cabinet Office has also developed policy regarding the use and procurement of open source software. According to the Government Procurement Service's ICT advice note (October 2011) on the procurement of open source, the key points of UK government procurement policy are:

(a) Active consideration of open source solutions alongside proprietary solutions.

(b) Procurement decisions made on the basis of best value for money solutions, using the *total lifetime cost of ownership* of the solution.

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[135]   RGI, p.75
[136]   http://tools.ietf.org/html/rfc5321
[137]   http://www.cabinetoffice.gov.uk/content/government-ict-strategy
[138]   http://www.cabinetoffice.gov.uk/sites/default/files/resources/PPN%203_11%20Open%20Standards.pdf
[139]   The consultation is named 'Open Standards: Open Opportunities Flexibility and efficiency in Government IT' and focuses on open standards for software interoperability, data and document formats in government IT.

(c) Mixes of open source and proprietary products to arrive at the best possible IT solution.

(d) Open source to be favoured, due it its inherent flexibility, where there is no "significant overall cost difference" between open and non-open source products.[140]

3.78   The ICT advice note is available as part of the Cabinet Office's Open Source Procurement Toolkit.[141]

Key points

3.79   The second bullet point implies that standards may be European or global standards, rather than simply national standards. The note states that government departments should include open standards in their procurement specifications "unless there are clear business reasons why this is inappropriate", but does not state what these reasons could be. It does not mention any sanctions for departments that do not use open standards in the absence of clear reasons not to do so.

3.80   In addition to the ICT advice note on the procurement of source, the Cabinet Office's Open Source Procurement Toolkit also includes advice on calculating the total costs of ownership.[142]   This guide stresses that the total cost of ownership concept allows procurers to examine long and short term costs for IT solutions, by quantifying and comparing costs, and applies both to open source and proprietary options. It also notes that the concept allows costs of open source and proprietary software to be fairly assessed. It states the need to consider all costs across a product's lifetime under three broad categories: i) acquisition and procurement; ii) operation and management and ii) end of life management.

3.81   A possible option for choosing standards to be used throughout the public sector is the use of an online platform, whereby the government would publish ICT needs or 'challenges' that are related to the ICT strategy and ICT suppliers and other knowledgable parties would propose solutions to these needs (such as what standards would be most relevant and appropriate). The recommendations received would then be reviewed by various topic-related working groups and panels, and sent to a Standards Board for final approval.   In this way the selection of standards would be as collaborative and transparent as possible. Standards that would be assessed could include both formal committee standards (i.e. those developed by the European Standards Setting organisations); those from alternative for and consortia; and other non-formal standards. Assessment considerations would include how open a recommended standard is in terms of implementation within the market, and what possible impacts may arise from the use of a standard.

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[140]   http://www.cabinetoffice.gov.uk/sites/default/files/resources/ICT-Advice-Note-Procurement-of-Open-Source.pdf p.2-3
[141]   http://www.cabinetoffice.gov.uk/resource-library/open-source-procurement-toolkit
[142]   http://www.cabinetoffice.gov.uk/sites/default/files/resources/Total-Cost-of-Ownership-things-to-consider-v1.pdf

3.82   The Cabinet Office envisages that the result of this assessment process would be the development of a profile of standards and key ICT tools (a broader concept than a list of recommended standards) that would be recommended for use across the government in order to meet the aims of the ICT strategy, in particular in enhancing interoperability and ensuring openness.

Outcome

3.83   As the work on open standards and standards selection is ongoing, there are no available assessments of the impacts of using open standards or of mandating the use of certain standards.

Ireland

Description of best practice

3.84   Public procurement directives in Ireland require that contracting authorities avoid restrictive technical specifications when awarding public contracts. Examples given are to avoid the use of specs which include brand names like "Pentium 4 or equivalent" or "Intel or equivalent" or specifying processors with a clock rate above a certain speed. Rather, it is stated that specifications should indicate that PCs and notebooks meet or exceed overall performance ratings using the BAPCo benchmark. The use of BAPCo to benchmark overall performance is analogous to practice in Germany.

3.85   BAPCo describes itself as "a not-for-profit organisation with membership consisting of virtually all of the major industry manufacturers …The benchmarks use a suite of common applications (such as Microsoft Word, Adobe Photoshop, etc.) doing a number of common tasks so the PCs and Notebooks are evaluated under "real world" conditions".[143]

Key points

3.86   The Centre for Management and Organisation Development and National Procurement Policy Unit released a note giving advice on the avoiding the restrictive and discriminatory technical specifications and thereby avoid breaches in European procurement law. It advises the use of the BAPCo SYSmarket 2004 benchmark for desktop PCs, with a minimum score of 168 as the performance benchmark, rather than specifying bus speeds, cash sizes etc.[144]

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[143]   http://ictprocurement.gov.ie/pc-related-information/
[144]   NPPU/CMOD, *Information and Communications Technology – Guidance on use of Generic Technical Specifications*

Sweden

Description of best practice

3.87 Swedish government policy states that "[a]dministrative e-services should, as far as is possible, be based on open standards and use software based on open source software and solutions that progressively frees management from reliance on individual platforms and solutions." Single Face to Industry (SFTI), a joint initiative between the Swedish Association of Local Authorities and Regions (SLK), the Swedish National Financial Management Authority (ESV) and the Legal, Financial and Administrative Services Agency (Kammarkollegiet), recommends standards for e-procurement in the Swedish public sector.[145]

3.88 The rationale for use of standards is to provide an open interface between the public sector and its suppliers, with fewer technical barriers to trade and lower costs in changing suppliers or making technical adjustments. Standards applied are based on international standards (or national ones in the absence of international ones), with adjustments made on the basis of public sector requirements.[146]

Key points

3.89 SFTI's steering group has overall responsibility for developing and recommending standards. It consists of representatives from the Swedish Association of Local Authorities and Regions (SLK), the Swedish National Financial Management Authority (ESV) and the Legal, Financial and Administrative Services Agency (Kammarkollegiet). The needs and wishes of users and review and feedback on the use of SFTI standards are communicated through the policy group, which consists of representatives of municipalities, counties and state authorities and suppliers of goods and services to the public sector, with IT companies and system suppliers involved in the group's work. The policy group also appoints working groups, who perform the concrete work in the development of updating of standards.[147]

3.90 SFTI recommends standards based on GS1 EANCOM for advanced e-procurement and simpler forms of electronic business using XML-based syntaxes. SFTI recommends an XML- invoice - Svefaktura - based on Universal Business Language (UBL) and has, since 2008, also recommended an electronic order format, Sveorder, based on specifications from CEN/BII and the UBL-syntax.

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[145] http://www.sfti.se/in_english_1?pageID=9cd2ac05-da30-4a89-8fb3-dee2d3a55ec0
[146] http://www.sfti.se/e-handel/varfor_behovs_standarder_och_sfti
[147] http://www.sfti.se/om_sfti/organisation_for_sfti

3.91   SFTI also offers courses and conferences to assist in implementing its recommendations. These include courses in electronic commerce which cover standards and related issues.[148]

Outcome

3.92   Lundell (2011), in a survey of Swedish municipalities, found that despite government policy, the municipalities relied too much on central purchasing organisations for setting policy and did not take enough responsibility for evaluating their own requirements. He also recommended that municipalities should evaluate document formats prior to deciding on applications.[149]

Norway

Description of best practice

3.93   In 2009 the Norwegian government adopted obligatory IT standards for the public sector, with the aim of ensuring equal access to public information and services so that users are not discriminated against on the basis of their use of particular software or technical equipment. This includes requirements to use open formats for files on government web sites and documents exchanged in emails. The standards are accessible online, in a reference catalogue that contains obligatory document formats for web publication. The obligatory standards were initially applied only to central government, but the Ministry of Government Administration, Reform and Church Affairs also plans to apply the standards to municipal government.[150]

Key points

3.94   The Agency for Public Management and eGovernment (Difi) maintains the Standardization Forum.   The forum provides information about mandatory and recommended standards for the Norwegian public sector. It also allows users to propose new standards, express views on existing standards and follow the decision process that leads to decisions on new standards.[151] Within Difi, the ICT governance and coordination department (ITS) is responsible for the standardisation secretariat. ITS takes part in the EU EIF group and in other relevant (EU IDABC) expert groups. A standardisation committee evaluates and proposes technical and other standards for the government.

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[148]   http://www.sfti.se/e-handel/lar_dig_mer/kurser_och_konferenser_5
[149]   Lundell, Bjorn. 2011. "e-Governance in public sector ICT procurement: what is shaping practice in Sweden". *European Journal of ePractice* No.12 p.10
[150]   http://www.regjeringen.no/en/dep/fad/press-centre/press-releases/2009/new-obligatory-it-standards-for-the-stat.html?id=570650
[151]   http://standard.difi.no/english

Denmark

Description of best practice

3.95   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. [152]   The catalogue has been the responsibility of the National IT and Telecom Agency (NITA) though this will change with NITA's abolition in the aftermath of the Danish General Election in September 2011.

Key points

3.96   For 'mandatory' standards, compliance is, as in the Netherlands, based on the principle of "comply or explain", with authorities having to use the relevant standard or else explain why they have not done so.[153]   The catalogue contains recommendations on the applicability and usefulness of nearly 200 technical specifications. Each specification is documented on the catalogue with its name, a description, and link to the specification. The catalogue also gives specification its own recommendation level for given areas of use. A given specification can have different recommendation levels across different areas of use. There are six recommendation levels: mandatory, recommended, useable, under observation, discouraged and 'phase out'.

3.97   New specifications and updates to current recommendations may be proposed. Under current procedure, when a proposal is received by NITA, NITA make a technical assessment of the specification in accordance with the common EU guidelines, the CAMSS. The proposal and NITA's assessment are then submitted for a public review, before a final decision on the proposal is made by the OIO Committee.[154]

Outcome

3.98   Federspiel and Brincker[155] examined the move towards open standards from the context of risk with a particular emphasis on how public sector bodies rely on the performance of propriety software to access critical information and the risk to this access in the switch to open source. The Danish Government's decision to pass this resolution was as the result of lengthy and frequent debates on the risks of adopting an open source approach.

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[152]   http://en.itst.dk/it-architecture-standards/standardisation/open-specifications/use-of-open-specifications
[153]   http://www.epractice.eu/files/Denmark.pdf
[154]   http://en.itst.dk/it-architecture-standards/standardisation/open-specifications/the-oio-catalogue
[155]   Federspiel Sofie Blinkenberg, Brincker Benedikte, 2010, Software as Risk: Introduction of Open Standards in the Danish Public Sector, The Information Society 26, pp38-47

However Federspiel and Brincker also highlight that an additional reason for the resolution was the hope that local Danish ICT companies would benefit from such the decision for the public sector to go open source.

Estonia

Description of best practice

3.99   Use of open standards is an important part of ensuring interoperability in Estonia's IT Interoperability Framework (2005). This specifies that a standard is open if:

(a) It has been adopted and is further developed by a non-profit organisation. Its development is based on consensus and open decision-making procedures, allowing the participation of all competent interested parties.

(b) It has been published and is available free of charge or at a nominal cost for all users. Everyone must have the right to copy, distribute and use open standards for free or at a nominal cost.

(c) Patent rights and other intellectual property related to the use of an open standard or a part of it are available for all users without author's royalties.

(d) There are no restrictions on its re-use and distribution.[156]

Key points

3.100   The framework states that central and local government are required to consider open-source based solutions in their tender notifications alongside proprietary solutions, with open-source favoured, *ceteris paribus*. However, procurers are free to opt for open-source or proprietary solutions on a case-by-base basis. In cases where communication between information systems is required, in joint projects for commonly used information systems and in all new or modernised information systems, only products supporting open standards should be used. Moreover, dependence on company-specific products and services should be avoided.

Malta

Description of best practice

3.101   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.[157]   This is available on the Malta Information Technology Agency

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[156]   http://www.riso.ee/en/files/framework_2005.pdf
[157]   https://www.mita.gov.mt/page.aspx?pageid=282

(MITA) website for viewing by potential suppliers and service providers and also for referencing in Government procurement processes. .[158]

3.102   MITA has also published the Government's Open Standards Policy[159] and Directive,[160] the intention of which is to identify open specifications that best serve the purpose of Government in order to reach the following objectives:

(a)   Avoid unwarranted lock-in scenarios and / or dependencies on specific hardware and software stacks

(b)   Ensure a level playing field so that multiple vendors can fairly compete on the feature set and performance levels of their products

(c)   Create re-usable resources so they can be effectively shared within Government

(d)   Enable future generation Public services which combine their own resources (such as application and data) with other external services

(e)   Facilitate inter-connectivity and information exchange (at hardware, network and software, including user interface, business logic and data levels) between solution constituents, Public services and EU-wide implementations

(f)   Ensure controlled and reliable long term access to public information.

Key points

3.103   MITA is in the process of consulting the public sector, business sector and general public on the inclusion of internationally recognised ICT standards within government.   The assessment guides highlight the following areas:

"Level of Openness - gauging the standard's conformity with the minimum and targeted openness criteria as described in the Open Standard Definition, Policy and Directive;

"Relevance to the business context – gauging the applicability of the standard's features to its scope of use;

"Market penetration - gauging the more practical side of the standard by looking at the quality of the standard implementations, commercially or otherwise, that are readily available for use;

"Impact assessment – gauging the extent to which the standard is envisaged to be used within Government and therefore what potential benefits and risks it might introduce." [161]

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[158]   https://www.mita.gov.mt/MediaCenter/PDFs/1_GMICT_S_0071_Adopted_Technologies.pdf
[159]   https://www.mita.gov.mt/MediaCenter/PDFs/1_GMICT_P_0099_Open_Standards_v2.0.pdf
[160]   https://www.mita.gov.mt/MediaCenter/PDFs/1_GMICT_D_0099_Open_Standards_v2.0.pdf

3.104   After interested parties have recommended standards, the GMICT Standardisation Board assesses the recommendation against these assessment criteria.   The board may engage contributory bodies and consultants from within and outside Government to validate their recommendation. If appropriate the Board will endorse the recommendation and the Standard will be included in the Adopted Specification List and solution providers can make then use the newly adopted Standard in their architecture design for Government's ICT systems.

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[161]   https://www.mita.gov.mt/page.aspx?pageid=282

4   RESEARCH METHODS

Introduction

4.1   In addition to reviewing published literature and policy documents, information for the analysis of current ICT procurement practices was gathered through:

(a) Surveys of procuring authorities and ICT suppliers

(b) Follow-up interviews and discussions with procuring authorities, suppliers and experts in the field or ICT procurement

(c) Analysis of ICT tenders

4.2   Full descriptions of the methodology for each of these approaches are presented in Appendix 1. The survey results are in Appendix 2, the full tender analysis in Appendix 3 and the questionnaires in Appendices 4 and 5 and.

Summary of Data Gathered

Survey

Procuring authorities[162]

4.3   Surveys of public procurers and ICT suppliers were undertaken in order to gather information on how public bodies undertake ICT procurement, how these procurement practices affect suppliers, and what key difficulties procurers face when tendering for ICT products and services.

4.4   A wide range of public authorities were covered by the survey, including across all Member States, sizes, types of public body, sector and regional level. Similarly, a wide range of suppliers were surveyed across size and ICT sector.

4.5   Responses were received from 244 procuring authorities. The best represented Member State is Italy, with 25 respondents (10 per cent of all respondents), followed by the UK with 20 respondents, Finland (19) and Spain (18). There were nine from Germany and 10 from France, so all five of the largest economies are adequately represented.

4.6   Procuring authorities from a range of sectors responded to the survey. Each sector includes a range of public bodies:

(a) Education, including responses from universities, schools, libraries and government education ministries.

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[162]   Full survey results with charts and tables found in the Appendix

(b) Health, including hospitals, blood transfusion services and government health ministries.

(c) Economic affairs, including central banks, government financial ministries and development organisations.

(d) Public order and safety, including police departments, fire departments, prison services, and ministries of justice.

(e) Social protection, including pension, insurance departments and departments of social affairs.

(f) Local authorities, municipalities and general government departments are also represented.

4.7 Procuring authorities were also drawn from national, regional and local areas:

(a) National (40 per cent of respondents): covering the whole country, for example government ministries and agencies, central banks, regulators, national libraries and police services.

(b) Regional (11 per cent of respondents): operating on a provincial level or encompassed a number of districts, such as regional government agencies, regional broadcasters, regional regulators, district hospitals etc.

(c) Local (27 per cent of respondents): operating within a single city or town, such as municipalities, universities, schools, hospitals, police stations, local authorities, and prisons.

4.8 Procuring authorities also ranged widely in terms of size:

(a) Small (annual ICT expenditure less than €200,000): 18 per cent of sample

(b) Medium (annual ICT expenditure €200,000- €1 million): 22 per cent of sample

(c) Large (annual ICT expenditure Greater than €1 million): 46 per cent of sample

ICT suppliers[163]

4.9 Responses were received from 172 suppliers in all but three Member States.[164] The most responses were received from suppliers with their headquarters in the UK (15) followed by Germany, Denmark, Spain, the Netherlands (13 respectively). There were also respondents with head offices from outside the EU but subsidiaries within the EU.

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[163] Full survey results with charts and tables in Appendix
[164] No responses were received from Austria, Luxembourg and Malta

4.10   The size of responding firms ranges from less than ten to more than 1000. Small and medium-sized enterprises (SMEs), which are firms with fewer than 250 employees, make up the majority of the respondents (67 per cent). In terms of turnover the majority of respondents (68 per cent) can again be classified as SMEs, with a turnover of less than €50 million.

Interviews

4.11   Follow-up interviews were conducted with a selection of ten procuring authorities responding to the questionnaire to explore procurement practices in more detail. Interviewees were drawn from Belgium, Estonia, Finland, France, Ireland, Italy, the Netherlands, Sweden and the UK. Written responses were received from seven additional procuring authorities who could not participate in interviews. Interviews and discussions were also held with two suppliers and four experts in the field of ICT procurement.[165]

Tender analysis

4.12   An in-depth analysis of 32 public tenders for ICT contracts were analysed to develop an insight into how standards are used in public tenders and to determine whether their use has implications in terms of lock-in, interoperability and supplier competition.

4.13   The table below presents a summary of the key statistics from this analysis.[166]

Table 4.1: Summary of Key Statistics of Tender Analysis

Member State	Belgium	France	Greece	Ireland	Netherlands	UK
	6	9	3	1	3	10
Type of ICT	Software	Hardware	IT services			
	21	13	13			
Degree of customisation	Off-the-shelf	Bespoke	Combination			
	10	16	6			
Use of standards	Standards used		Standards not used			
	17		15			
Use of brand names	To name part of solution	To describe product to be procured	To directly require product			
	17	2	9			
Requirements and specifications	Mainly functional requirements		Mainly technical specifications			
	12		9			

Source: Tender Analysis conducted by CETIIC

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[165]   Please see the Appendix for a description of interviewees
[166]   The full tender analysis is in the Appendix

5   CURRENT PROCUREMENT PRACTICE IN THE EU

Introduction

5.1   We now present an overview of ICT procurement practices across the EU based on information gathered through the survey, interviews and tender analysis. Evidence from recent studies into ICT procurement practices discussed in the literature review is also drawn on to complement our findings.

5.2   Information gathered through our survey, interviews and tender analysis provides an overview of public authorities' ICT procurement practices across the EU. Input was received from 244 procurers across all 27 Member States, and 172 suppliers in all but three Member States through the survey, with additional information from ten interviews and seven written responses.

5.3   Five main themes are explored, namely:

(a) **Identifying and specifying the ICT need.** This covers the type of ICT public authorities predominantly procure, how they identify their ICT needs and what their main objectives are when procuring ICT. It also covers how procurers draw up tenders and technical specifications and the impact this has on suppliers.

(b) **Lock-in and legacy systems.** The extent to which public authorities experience lock-in to vendors or suppliers is explored, as well as the procurement on ICT in the context of legacy systems.

(c) **Interoperability.** This investigates the importance public procurers place on the interoperability of their ICT with other systems or applications. In particular, the extent to which public ICT applications used by businesses and citizens are interoperable with an unrestrictive range of products is explored.

(d) **Use of brand names.** The use of brand names and other restrictive practices in public ICT tenders is investigated.

(e) **Use of Standards.** This explores the extent to which public procurers purchase ICT that is based on standards, and the level of knowledge related to the use of standards.

Identifying and Specifying the ICT Need

5.4   Public authorities procure a range of ICT products and services. The results from the survey suggest that IT equipment[167] is most frequently procured, although software[168] and

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[167]   Defined in our survey as computers, servers and information systems etc
[168]   Defined in our survey as system infrastructure software, applications etc

IT services[169] are also commonly procured.[170] A large proportion of the ICT purchased by public authorities involves a degree of customisation or bespoke design. Nearly 70 per cent of survey respondents said that the ICT they procure consists of either purely bespoke products or services such as innovative business applications, custom-made solutions and software, or a combination of off-the-shelf products and bespoke solutions. Of the tenders analysed, the majority also relate to bespoke or customised solutions and services.

5.5   The main reason given in interviews for the high percentage of customised solutions and services is that in the public sector ICT largely plays a supporting role for (often very varied) public sector objectives and is developed with a focus on the final outcome, and thus tailored solutions are often required.

5.6   It has been noted in the literature and confirmed in interviews that there is a risk in procuring too highly bespoke ICT solutions in terms of lock-in, where the costs of migrating to another system or service provider are prohibitively high given the dependence on the knowledge of the original supplier.

Objectives for procurement

5.7   The objectives of the public authorities in undertaking ICT procurement are likely to have a bearing on the procurement process. For example, if the objective is value for money then this may have a different influence on the nature of the procurement compared with an objective of (say) promoting new technology, or encouraging SMEs.

5.8   Figure 5.1 below indicates that securing the project outcome and achieving value for money are the most important objectives for the majority of procuring authorities.

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[169]   Defined in our survey software development, web-based applications, cloud computing etc
[170]   Procuring Authorities Survey Question 10. Note that procurers were asked to list the most frequently purchased ICT, and not the ICT associated with the highest level of expenditure.

Figure 5.1: Objectives for Procurement
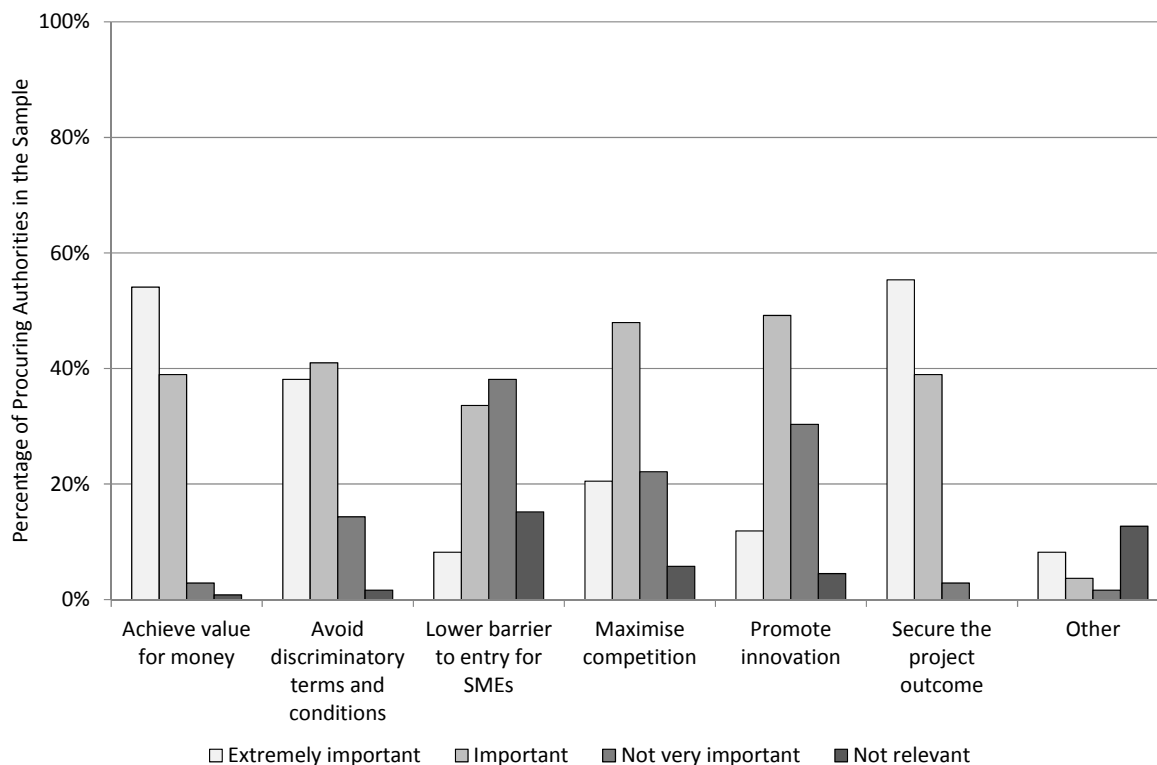
Source: Europe Economics Procuring Authorities Survey Question 12

5.9   Lowering barriers to entry for SMEs was not considered important by the majority of respondents.[171] This is interesting in light of the recently adopted European Parliament Resolution on public procurement that emphasises the importance of SME access to public procurement and recommends a number of ways in which access can be enabled by public procurers and the European Commission.[172]   It is possible that national requirements on procurers to achieve value for money take precedence over EU-level support for SME participation.

5.10   That said, however, our supplier survey suggests an active participation of SMEs in the ICT market, with just under 70 per cent of respondents being classified as SMEs both in terms of the number of employees or annual turnover.

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[171]   Only 42 per cent considered this extremely important or important.
[172]   European Parliament, 'Resolution on Modernisation of Public Procurement (2011/2048(INI))' adopted texts 25 October 2011 http://www.europarl.europa.eu/sides/getDoc.do?type=TA&language=EN&reference=P7-TA-2011-0454

Evaluating and specifying ICT needs

5.11   The way in which ICT procurement needs are assessed and developed into tenders is likely to influence the quality of the tender process and the final outcome for the procuring authority, as well as the ability of suppliers to respond to the tenders.

5.12   Our survey results suggest good practice among public authorities in identifying the ICT to be procured in that the majority undertake a new evaluation of the products and suppliers in the market to identify the most suitable products or services for their needs (72 per cent or respondents always or often do this). Just under half of procures responding to our survey also often engage with the ICT industry, such as through collaboration and research.

5.13   Feedback from interviews suggests that engagement with the ICT industry is important for procurers to comprehensively evaluate the range of products and services available, as well as to gather information on new bespoke solutions and to identify what is required to meet the ICT need.[173]   Interviewees highlighted that care needs to be taken to avoid influence by suppliers, and to ensure that resulting tender specifications do not include proprietary specifications or standards. It was suggested by interviewees that small public authorities with limited IT skills would be more likely to procure complete, off-the-shelf products and systems as they would lack the internal skills to develop their own bespoke requirements.[174]

5.14   On the other hand, 44 per cent of respondents to the survey always or often base their procurement of ICT on examples from existing or previous contracts or sources without undertaking any new product evaluation. This could be problematic if existing products or vendors are purchased purely due to historical practice or preference as these may not be the most suitable for the authorities' needs, and may also restrict the ability of new vendors or suppliers of new products and services to access public sector procurement opportunities (especially if the calls for tender refers to the favoured ICT products or vendors by name).

5.15   The purchase of licence extensions or upgrades is undertaken regularly by nearly 80 per cent of procurers responding to the survey. This could suggest a more wide-spread lack of product evaluation than indicated above. Some of the tenders that were analysed displayed particularly poor practice in this regard, including requests for upgrades or renewals of proprietary products by name with no mention of the desired functionality of the products or allowance for room for alternative products to be proposed.

5.16   Translating ICT needs in to clear tender specifications or functional requirements appears to be an area of difficulty among public authorities. A key factor identified by suppliers in

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[173]   Examples from interviews include a student information capture system and an e-log book system for fishing vessels.
[174]   Our survey results, however, did not reveal any statistically significant differences across size of public authority in terms of the type of ICT procured.

how public sector bids restrict supplier participation — and a general problem identified by respondents to the procurers survey — is the difficulty in developing tender specifications that accurately reflect the ICT need:

(a) Specifications can often be too vague;

(b) Too detailed (describing the solution rather than the problem and allowing no room for alternatives);

(c) Lack functional descriptions (i.e. what the procurer wants the ICT solution to do);

(d) Requests for over-customised solutions that require completely new elements each time;

(e) Insufficient pre-market engagement with suppliers to assess how realistic or suitable the ICT request is.

Tender writing practices

5.17 Public procurers responding to our survey demonstrate good tender writing practices, with a small proportion referring to brand names or restrictive technical specifications, and shown in the figure below.

Figure 5.2:Tender Writing Practices
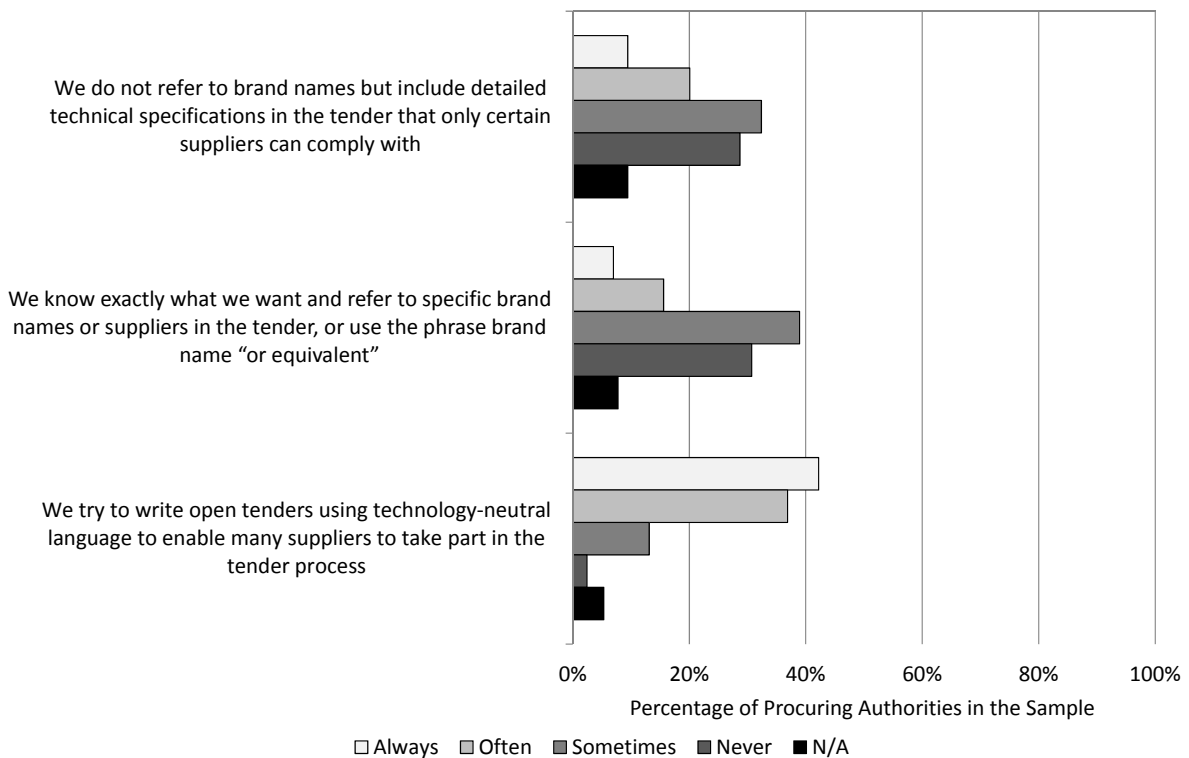
Source: Europe Economics Procuring Authorities Survey Question 18

5.18   However, responses from suppliers indicate that public sector tenders can often limit their ability to participate in tenders, as shown in Figure 5.3 below. Just under 60 per cent of suppliers consider that tenders either always or often refer to very specific technology that only a few suppliers can provide; just over 50 per cent of respondents reported that tenders either always or often refer to proprietary technical specifications.

Figure 5.3: Restrictive Nature of Public Sector Tenders
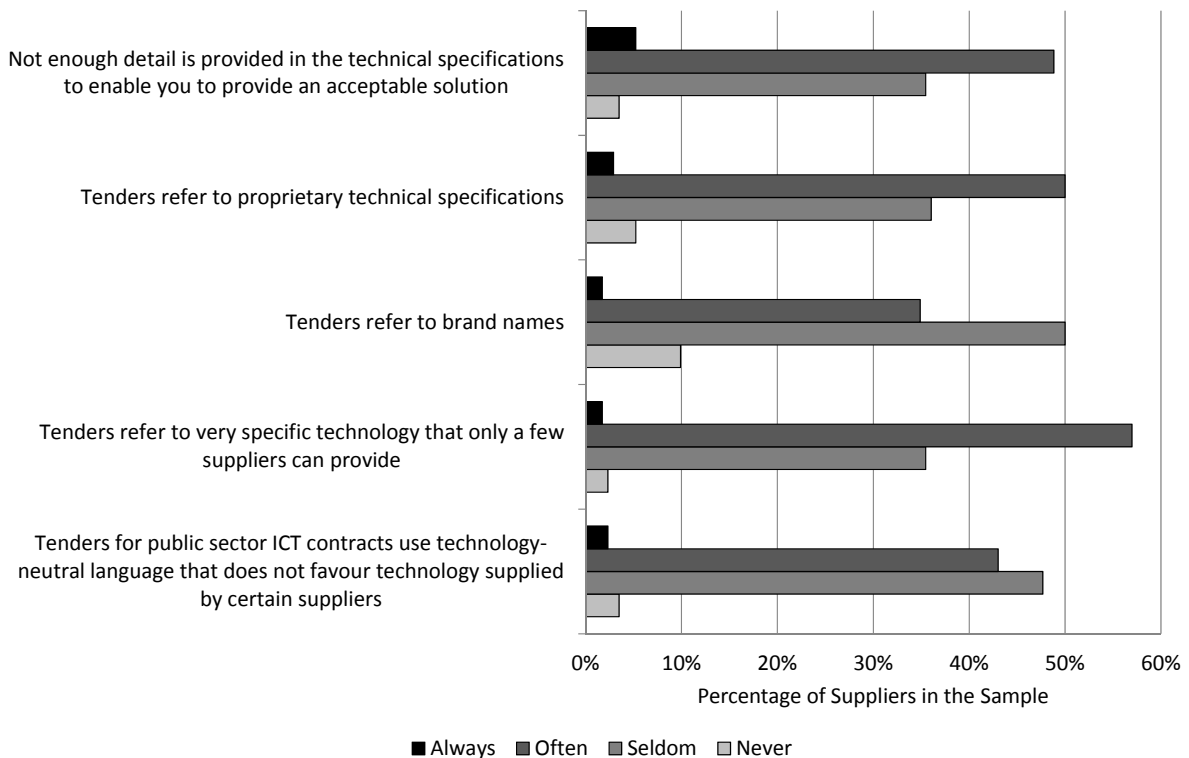
Source: Europe Economics ICT Suppliers Survey Question 21

5.19   Feedback from interviews covers a range of tender writing practices. Some interviewees ensured that where possible their tenders largely detailed their functional requirements for the ICT, leaving bidders to propose their own solutions (within the technical constraints identified).   In order to ensure that this approach resulted in suitable solutions, one procurer made use of acceptance tests whereby shortlisted bidders were asked to develop and demonstrate a simple version of their proposed solution.

5.20   Where interviewees made use of national frameworks, they said they did not need to write technical specifications as these had already been done, and they merely identified the products they needed.

Available skills

5.21   The skills available in public authorities to decide on the ICT needs and develop technical specifications are largely internal or independent IT skills.   The role of procurement

officers in the technical development of tenders appears to be relatively small — less than 20 per cent of survey respondents included these skills as relevant. This is reinforced by feedback from the interviews which suggests a division between the procurement and IT roles within organisations. In general the technical requirements for the ICT need will be developed by IT managers and then passed to procurement officers for legal compliance checks.   However, interviewees did suggest that in smaller organisations, IT and procurement expertise are more likely to be concentrated within single departments.

5.22   This suggests that any guidance about on ICT procurement should be directed at both procurement officers and IT managers.

5.23   It also suggests that those ultimately responsible for the legal compliance of the tenders (who we assume to be the procurement officers) should be given guidance about poor practices to look out for in ICT tenders prepared by IT managers so that these can be identified and rectified.

Lock-in and Legacy Systems

5.24   As discussed in the literature, public authorities can be inefficiently constrained in their purchase of ICT by the existence of legacy systems, or by being locked-in to existing ICT products and services.

5.25   Evidence from our survey of public procurers shows that at least 40 per cent of respondents consider themselves 'locked-in' to their existing ICT solutions and suppliers. Figure 5.4 below shows that the perception of lock-in varies according to the underlying cause. Moving from left to right in the figure, just under 40 per cent of respondents state that changing their existing brand of solution would be too costly as other systems would need to be adapted as well. Thisimplies that a lack of interoperability and openness of existing solutions is the underlying cause of the lock-in.[175]

5.26   Just over a third (34 per cent) consider such a change too costly given the current levels of training among staff, which implies institutional, rather than technical, barriers to change.

5.27   Lock-in resulting from incompatible data formats appears to be less of a problem, although a quarter of respondents still feel that they would not be able to change their ICT solutions for fear that their information would not be transferable. This again implies a lack of openness of data formats and applications at the heart of the lock-in. It is not clear, however, whether all the respondents had attempted to migrate their data from their current systems.   Perceptions of lock-in may therefore underestimate the actual prevalence of this phenomenon.

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[175]   This is the sum of respondents replying 'strongly agree' or 'agree' to this question

5.28 Finally, lock-in resulting from service providers is considered a problem by just under 20 per cent of respondents. This could be the result of a lack of technical openness, or a failure of suppliers to accurately document their development procedures.

5.29 Understanding the underlying causes of lock-in is key to developing solutions to the problem. The role of standards will be most relevant in situations where lock-in influenced by technical issues (such as data transferability or the interoperability of systems), as opposed to institutional factors.

Figure 5.4: Experience of Lock-In by Procuring Authorities
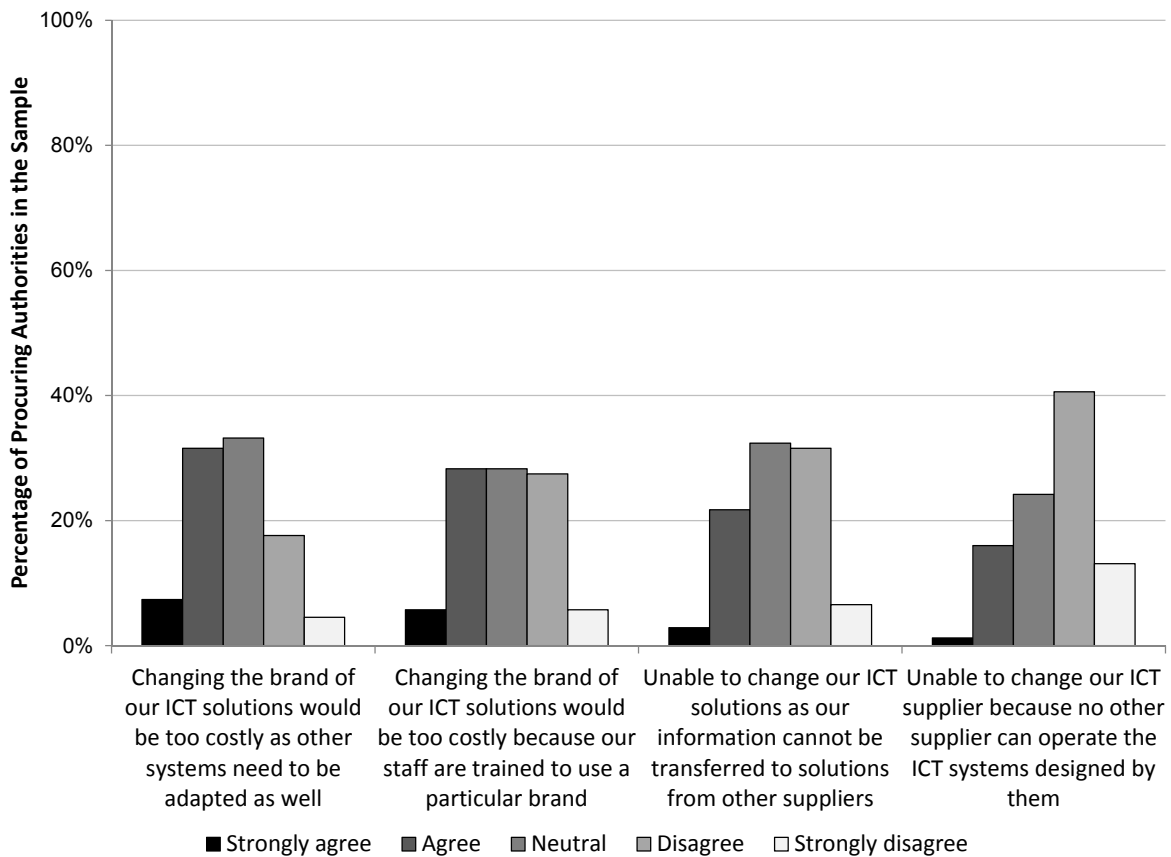
Source: Europe Economics Procuring Authorities Survey Question 21

5.30 Suppliers were also asked to describe evidence of public procurers being locked-in to certain suppliers or brands.[176] Twenty-six per cent of suppliers (45 of the sample of 172) are aware of evidence of lock-in displayed in public sector ICT tenders, or feel that the tenders they have seen would serve to perpetuate existing lock-in.

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[176] Supplier Survey question 30

5.31   This contradicts evidence found in other research, in particular lock-in to brands of software and applications that produce specific file and data formats.[177]   It may be the case that public authorities are not aware of the extent to which they are constrained by their current ICT systems.

5.32   Feedback from interviews and detailed responses from procurers and suppliers, however, suggests a larger concern with lock-in and the effects of legacy systems, in particular with the following:

(a) Software. Software lock-in was often linked by respondents to an inability to transfer information to other types of software, as well as to the dominant nature of certain software vendors which make it difficult to identify and purchase suitable software from smaller competitors.

(b) Database systems. Particular reasons for lock-in given by respondents are that many systems used by respondents do not integrate well with systems developed by other vendors. Overall costs of changing systems, in addition to technical limitations, often cannot be justified by any additional capabilities of new systems.

(c) Bespoke solutions.   Lock-in to bespoke ICT appears to be related mainly to transferring the specific technical knowledge to other suppliers. A lack of proper documentation by service providers when developing the bespoke systems means that it is very difficult for other suppliers to know the history of the system and to provide the same services. This creates very high risk for the procurer in switching suppliers and service providers.

5.33   Feedback from interviews indicates that procurers can make tenders more open in the context of legacy systems by providing detailed documentation on the existing systems and underlying code, where available. New suppliers will generally still be at a cost disadvantage compared with the incumbent, but are still given the opportunity to compete. However, interviewees did express concern that new suppliers might have been able to provide solutions at a lower cost than the incumbent had the original systems been designed in a more open way. Political will in terms of allowing larger budgets to account for the cost incurred by new entrants is often lacking.

5.34   A number of interviewees suggested that their organisations had considered migrating systems (such as introducing open source software, or changing their database vendor for one with more open solutions) but that the costs of doing so were prohibitive. Two interviewees from large national public agencies thought that a move to open source might take at least three years, and that there was not the political will or required managerial skills to achieve this.

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[177]   For example, Lundell (2011) found that documents owned by municipalities in Sweden could not be opened in applications from providers other than those used to create the original documents, and that in many cases even different versions of an application developed by the same provider could not open previously produced documents.

5.35   Requests for backwards compatibility of new ICT with existing systems is extensive among procurers, as shown in Figure 5.5 below.

Figure 5.5: Importance of Compatibility of new ICT with Existing Systems for Procuring Authorities
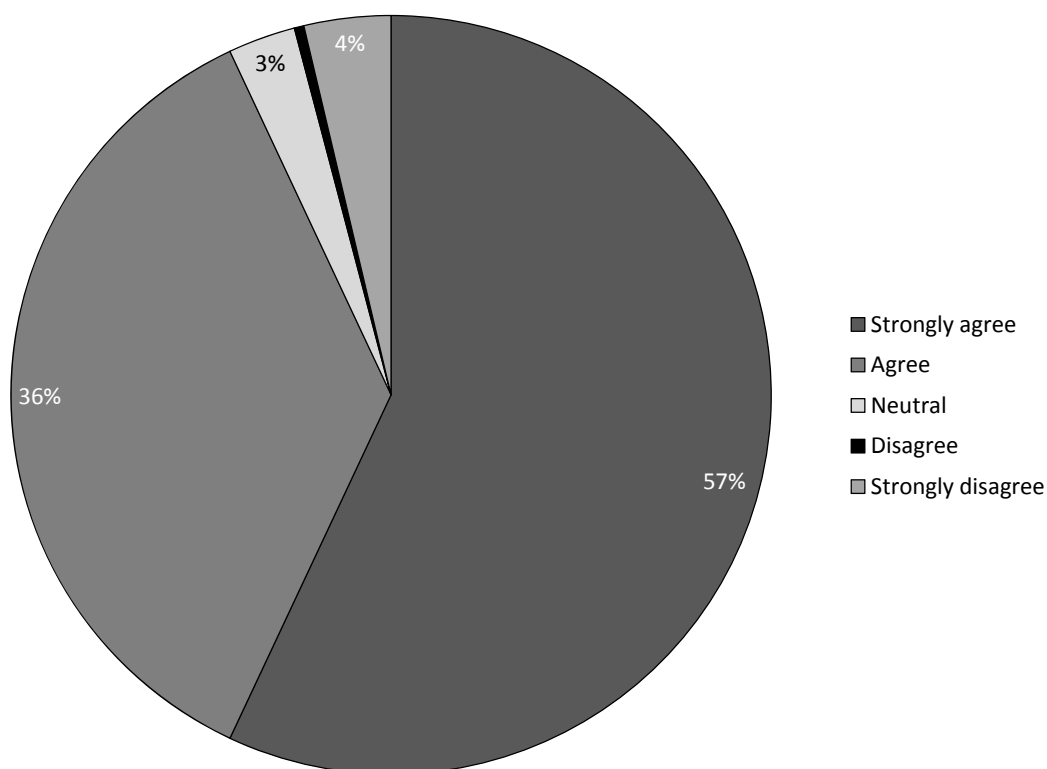
Source: Europe Economics Procuring Authorities Survey Question 21

5.36   Suppliers responding to the survey also experience frequent requests for the new products or services being tendered for to be compatible with existing solutions and systems. These requests for compatibility are considered by the majority of suppliers (just under 70 per cent) to either always or sometimes restrict their ability to participate in the tender. [178] This suggests that compatibility requests from procurers often refer to specific proprietary products that certain suppliers were not able to provide, which could increase the likelihood of the procuring authority being continually locked-in to the original vendor's products or systems.

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[178]   *Europe Economics ICT Supplier's Survey Question 25*

5.37   This is reinforced by feedback from interviews, where most respondents said they request compatibility with specific software (for example Microsoft word processing) and databases and systems (for example Oracle or SAP).

5.38   Extensive requests for compatibility with proprietary brands and systems is also evident from our tender analysis, in which 25 of the 32 tenders analysed required compatibility with some named existing hardware, software or systems. However, in some cases the compatibility requested may not have been restrictive, such as requests for applications to produce file formats compatible with existing proprietary applications; several kinds of software now claim to faithfully produce and read output in file formats traditionally associated with proprietary software. (Although the functionality offered can in some cases be of low quality.)

5.39   Requests for compatibility do not necessarily indicate inefficient vendor lock-in. It is often the case that certain platforms or groups of products or systems integrate particularly well and provide advanced features and enhanced performance (which are often a key differentiator for a supplier). In this case the optimal solution for the procurer can be one based on compatibility with the existing system, even if this is a proprietary system. Procurers need to ensure that they specify their needs in such a way as to maximise the value of their purchase, whilst keeping the tender process as open as possible.

Exit costs

5.40   Literature suggests that it is good practice to take into account exit costs in the evaluation of ICT purchases to avoid the risk that the unexpected costs of migrating to another ICT system, supplier or service provider could prevent such action in the future and result in lock-in. Figure 5.6 below shows that exist costs are considered either extremely important or important by the majority of procurers responding to the survey (66 per cent).

Figure 5.6: Importance of Cost Categories
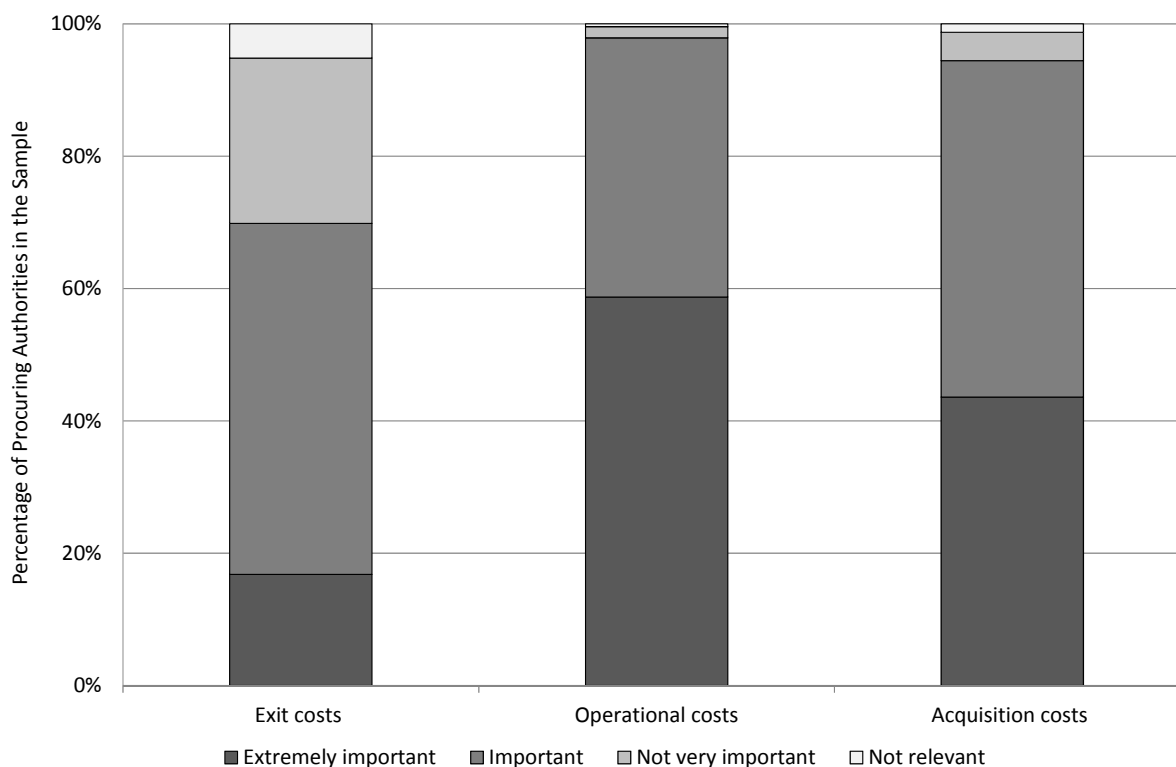
Source: Europe Economics Procuring Authorities Survey Question 13

5.41 This is somewhat contradicted by the suppliers responding to the survey, who report that procurers seldom or never require them to include exit costs in their price (for example, likely costs required to hand the system over to an alternative supplier in the future).

5.42 Feedback from interviews suggests that procurers do take steps to avoid lock-in, in particular when bidding for ICT development services, where requests can be made for the bidder to make provisions for the handover of the solution to independent service providers in the future. Taking account of future exist costs and avoiding lock-in is often requested by interviewees through the award criteria of the tender (or functional requirements) rather than through the mandating of standards.[179]

5.43 Interviewees also consider that avoiding lock-in with software as a service is easier than with conventional software, as part of the service requested in the functional requirements can be to ensure that the output of the software is interoperable with all other current software applications; this places an ongoing requirement on the service provider and

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[179] Examples include choosing software as a service over standard software; and Android mobile phone equipment over Apple. In both cases the up-front acquisition costs were lower for the 'closed' options, but the openness of the alternative options meant that long-run costs in terms of maintenance, upgrades and exist were lower.

avoids the risk that the procurer is faced with closed software in the future (and thus locked-in to the original vendor). The choice of software as a service described by one interviewee is a good example of the consideration of long-term exit costs: the acquisition costs of standard software in this case were lower than those for software as a service, but once the long-term maintenance and exit costs of the standard software had been taken into account it was deemed more cost effective to choose software as a service.

Interoperability

5.44   Procuring authorities often specify in their tenders that the ICT products or services being procured must be interoperable with products or systems from different brands and suppliers. Of our respondents to the procuring authorities' survey, 70 per cent had at some time specified the need for such interoperability. The most common way of doing so, as cited by 16 per cent of respondents, was through specifying the systems or products (often by brand name) with which the new ICT must be compatible with. Only nine per cent said they requested interoperability through the use of standards.

5.45   Procuring authorities highlighted a number of difficulties in requesting interoperability. These include:

(a) Difficulty in specifying the all technical details necessary to achieve interoperability. Systems have many different functions and describing how each one is required to operate with other systems can be too challenging. In addition, where systems involve proprietary elements it can be difficult to access the detailed specifications to include in the tender to help the bidders develop interoperable solutions.

(b) Inability to quote brand names makes requesting interoperability with other named products or brands particularly difficult.

(c) Lack of adequate standards is a key impediment to describing the need for interoperability.

5.46   Feedback from a number of interviews indicates that procurers view data portability as key to achieving interoperability, and that standards relating to data formats are therefore among the most useful.

Applications to citizens

5.47   The majority of public authorities responding to the survey (55 per cent) make ICT applications available to citizens. Only six per cent of the total survey sample state that citizens are obliged to use a particular brand of browser or software to access the ICT application.

5.48   This result contradicts more widespread evidence found in the literature of public authorities obliging citizens and businesses to use specific brands of ICT products to access their ICT systems applications.[180]   It is possible that respondents to the survey are not aware of the implicit obligation their organisation places on those accessing their ICT applications, which could include specific systems (such as online tax systems that only work with certain browsers) and also more subtle forms of obligation such as the use of proprietary file formats that can only be accessed through specific proprietary applications.

5.49   An interview with the Welsh local government highlighted difficulties with a lack of interoperability in the context of eHealth (in this case, the promotion of Digitally Enhanced Independent Living).[181]   Currently, the choice of telecare peripherals (e.g. the personal devices individuals use within their homes) that the local authority can procure for individuals is constrained by the application hosting device — only those devices provided by the telecare provider in charge of the main telecare system can be used. It is the opinion of the interviewee that the large providers of the telecare systems are not interested in providing interoperability amongst devices.   However, it is also acknowledged that technical interoperability does not in fact currently exist.   Ongoing work is needed to first establish common standards, which can then be requested by procurers.[182]

5.50   The perceived absence of common standards should not, however, be a reason for public authorities to accept that their ICT applications oblige citizens to use proprietary ICT products.   In many cases open access can be built into the original design of the application if such openness is requested.   Public authorities could also test their applications (in particular websites and file formats which are the most common form of interaction with citizens) for usability by multiple browsers or office software tools.

Use of Brand Names and Proprietary Technical Specifications

5.51   The use of brand names in tenders appears to be somewhat more widespread than indicated in previous studies.   The majority of procurers responding to the survey use brand names in tenders, with 23 per cent either always or often referring to brand names, and just under 40 per cent only sometimes doing so, as shown in Figure 5.7 below.

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[180] For example, the study of Swedish municipalities investigated how public sector organisations behave when citizens wish to communicate by use of a document in the open document file format. The research shows that only eight per cent of Swedish citizens could extepct to receive a response in an open docuemtn format; and that 35 per cent of all municplaties prefer only proprietary document formats. See Lundell, Bjorn. 2011. "e-Governance in public sector ICT procurement: what is shaping practice in Sweden". *European Journal of ePractice* No.12

[181] This refers to the UK-wide DALLAS programme – Delivering Assisted Living Lifestyles at Scale. Digitally enhanced independent living provides individuals with access to technology within their homes that is linked to a wider network. It includes, for example, interactive interfaces and data transmission, and enables vulnerable people to live at home whilst remaining connected to a safe network of assistance.

[182] In this case, the Dallas interoperability White Paper addresses the development of technical interoperability and common standards: Technology Strategy Board (2011) 'Interoperability in Dallas' Interim version 1.0, September 2011

5.52   Suppliers also consider the use of brand names within public tenders relatively extensive, with 37 per cent stating that brand names are always or often used by procurers.[183] However, over 50 per cent of suppliers state that procurer either seldom or never use brand names.

Figure 5.7: Use of Brand Names by Procuring Authorities
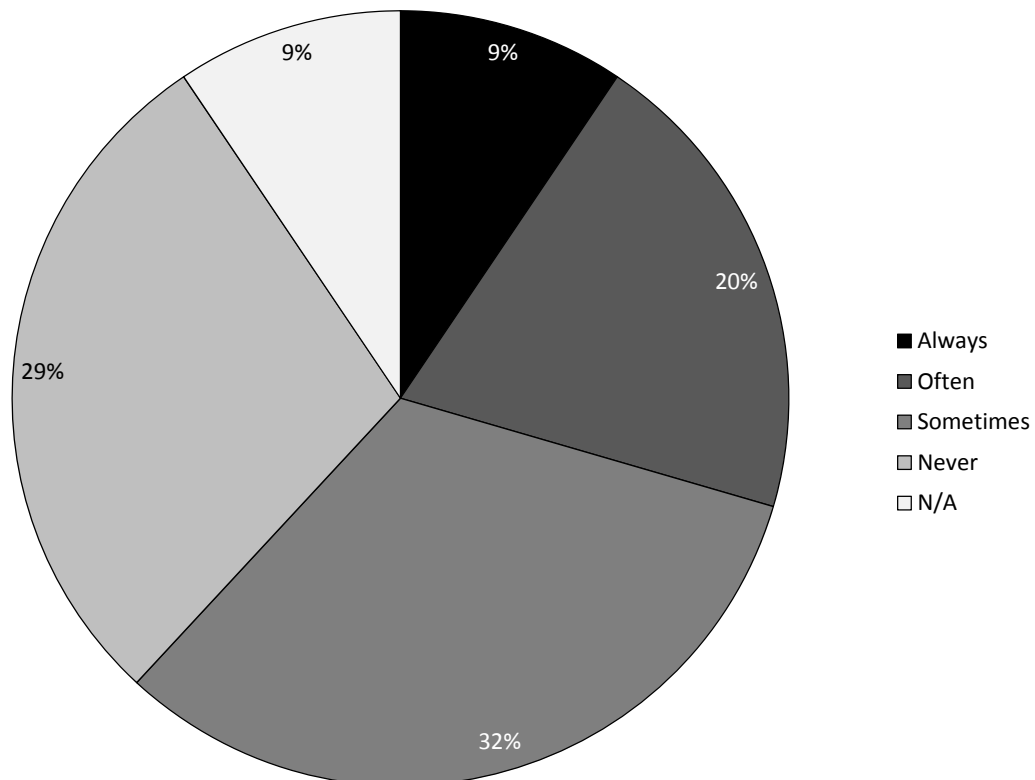
*Source: Europe Economics Procuring Authorities Survey Question 18b*

5.53   Our tender analysis indicates a widespread use of brand names within tenders: of the 32 tenders examined, 16 specifically quoted brand names in the tender, while seven quoted brand names but allowed 'equivalent' products. Brand names are used in three cases: to name (part of) the existing solution, often with compatibility requirements; to describe the product to be procured; or directly requiring that specific brand/product.

5.54   Suppliers also consider that proprietary technical specifications and restrictive references to technology that only a few suppliers can provide are often included in public procurement tenders, as shown in the figure below.

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[183]   Source: Europe Economics ICT Supplier's Survey Question 21c

Figure 5.8: Use of Proprietary Specifications by Procuring Authorities (according to suppliers)
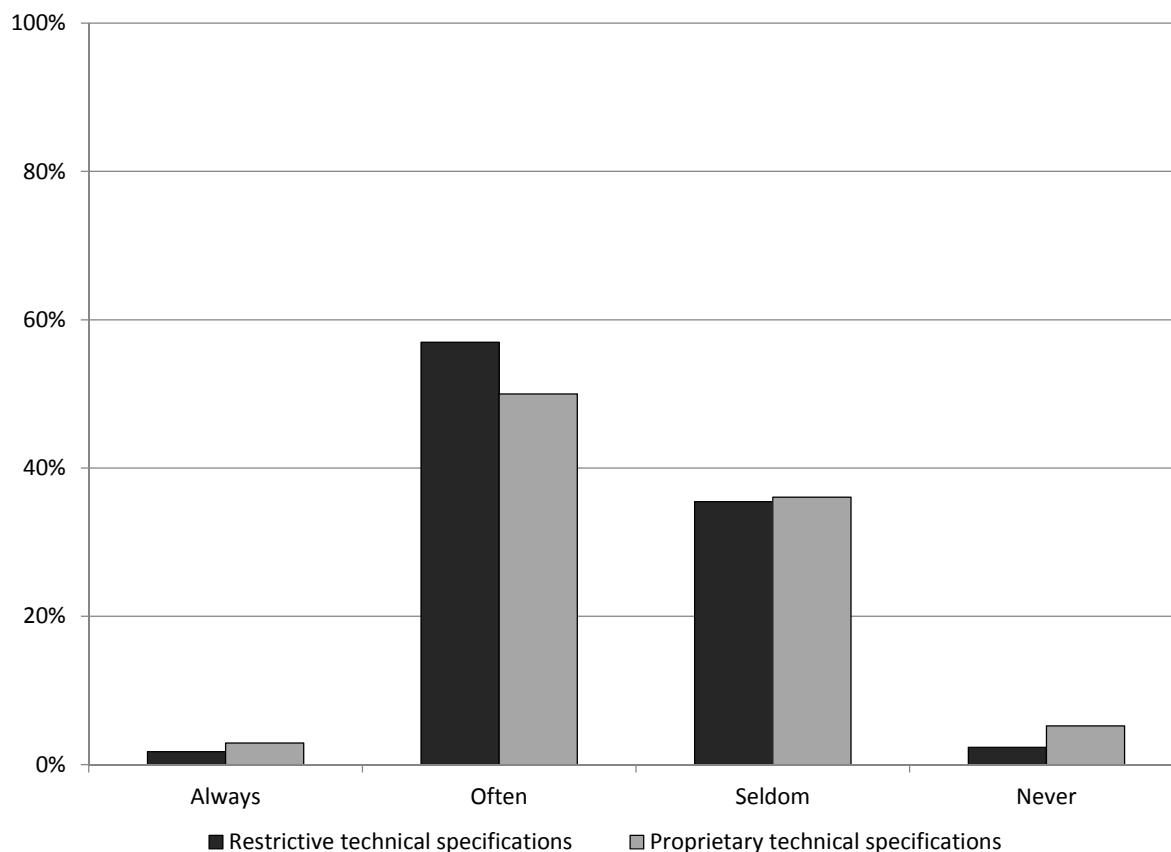
Source: Europe Economics ICT Supplier's Survey Question 21b,d

Use of Standards

5.55   Survey results suggest that the use of standards in public sector tenders is extensive, with 67 per cent of procurers always or often referring with standards.[184] Respondents were asked to list the ten main standards used. Although it cannot be assumed that the way in which the standards were referenced in the questionnaire corresponds to how they are referenced in tenders, our analysis of the referenced standards suggests that a very small proportion of respondents have a detailed, comprehensive knowledge of how to use standards when procuring ICT.[185]

5.56   Our tender analysis provides an insight into how standards are used in tenders in practice, and confirms the implications of the survey results. The two main poor practices identified were the incorrect referencing of the standards (e.g. many references included

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[184]   *Europe Economics Procuring Authorities Survey Question 30*
[185]   See the Appendix for a more detailed analysis of the standards used

only the high-level standard with no further detail to properly identify the standard);[186] and the absence of standards where they could usefully have been used.[187]

5.57   The poor use of standards is supported by evidence from the survey of difficulties experienced by procurers in using standards, as shown in the figure below. The most commonly cited reason by 47 per cent of all respondents is a lack of expertise to decide which standards are relevant and appropriate for the particular ICT need.

Figure 5.9: Difficulties Procurers Have in Using Standards
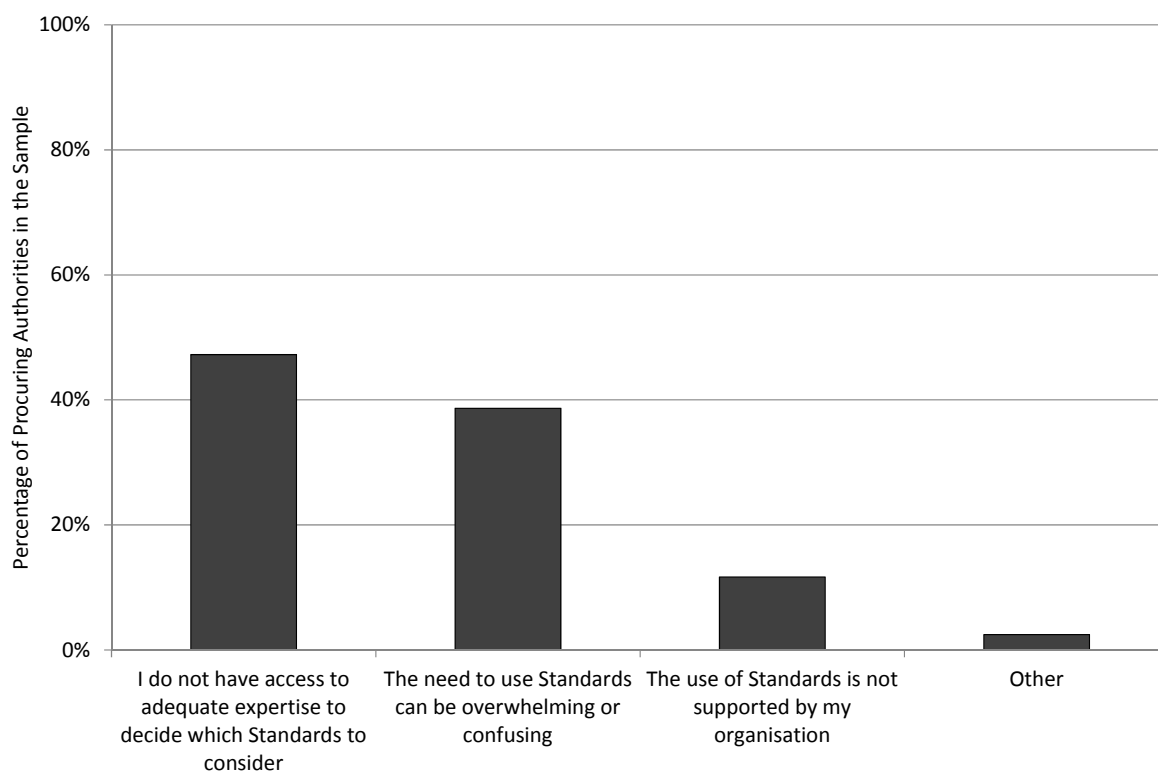
Source: Europe Economics Procuring Authorities Survey Question 37

5.58   Feedback from interviews on public procurers' use of standards indicates a general awareness of the importance of standards in achieving interoperability between products and specifying minimum levels of quality (generally relating to ICT services). However, a common theme among interviewees was the perception of a lack of standards in many areas. Furthermore, standards were considered to be helpful in achieving interoperability and compatibility only in limited cases; standards were often considered to only specify

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[186] For example, tenders simply listed 'HTML' or 'XML' without specifying the standardisation organisation or version of the standard. Incomplete referencing could result in bidders providing products and solutions that incorporate different versions of the standard intended by the procurer.

[187] This related largely to the absence of common IT service-level standards, such as quality in IT service management (e.g. ISO 20000); information security (e.g. ISO 27000) and computer software development processes (e.g. ISO 15504).

minimum requirements which bidders could meet whilst still differentiating their products or solutions to make interoperability difficult.

5.59   The majority of interviewees also expressed concern at the difficulty in ensuring that suppliers in fact meet the standards they claimed to, in particular those relating to the provision of services. Undertaking checks of certificates, or requiring proof of concept tests, was often considered to be too costly for procurers.   Of particular concern was the risk that requesting adherence to certain standards could restrict bidders with alternative (and preferable) solutions that did not meet those particular standards.

Perceived disadvantages in the use of standards

5.60   In addition to difficulties in using standards, both procurers and suppliers consider there to be disadvantages in the use of standards, although this is not widespread. The most frequently cited disadvantage by 28 per cent of procuring authorities is that standards can restrict the ability of some supplier to participate in bids.[188]

5.61   Suppliers were also asked what they thought the main disadvantages of the use of standards in ICT tenders are. The two most commonly cited reasons by just under 40 per cent of respondents — that standards can favour technologies only provided by certain suppliers, or give other unfair advantages to certain suppliers — suggests that procuring authorities' use of restrictive standards does pose a problem. [189] However, it could also be the case that suppliers are unwilling to adapt their products to implement certain standards if they are already market leaders in products that do not implement such standards.

Reasons for the use of standards

5.62   Procuring authorities' use of standards appears to be largely driven by the role standards can play in specifying the technical specifications the ICT products or services need to meet, as seen in

5.63   below. Just under 30 per cent of respondents consider that the use of standards makes it easier for more suppliers to participate in the tenders.

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[188]   *Europe Economics Procuring Authorities Survey Question 34*
[189]   *Europe Economics ICT Supplier's Survey Question 33*

Figure 5.10: Procuring Authorities' Reasons for Using Standards
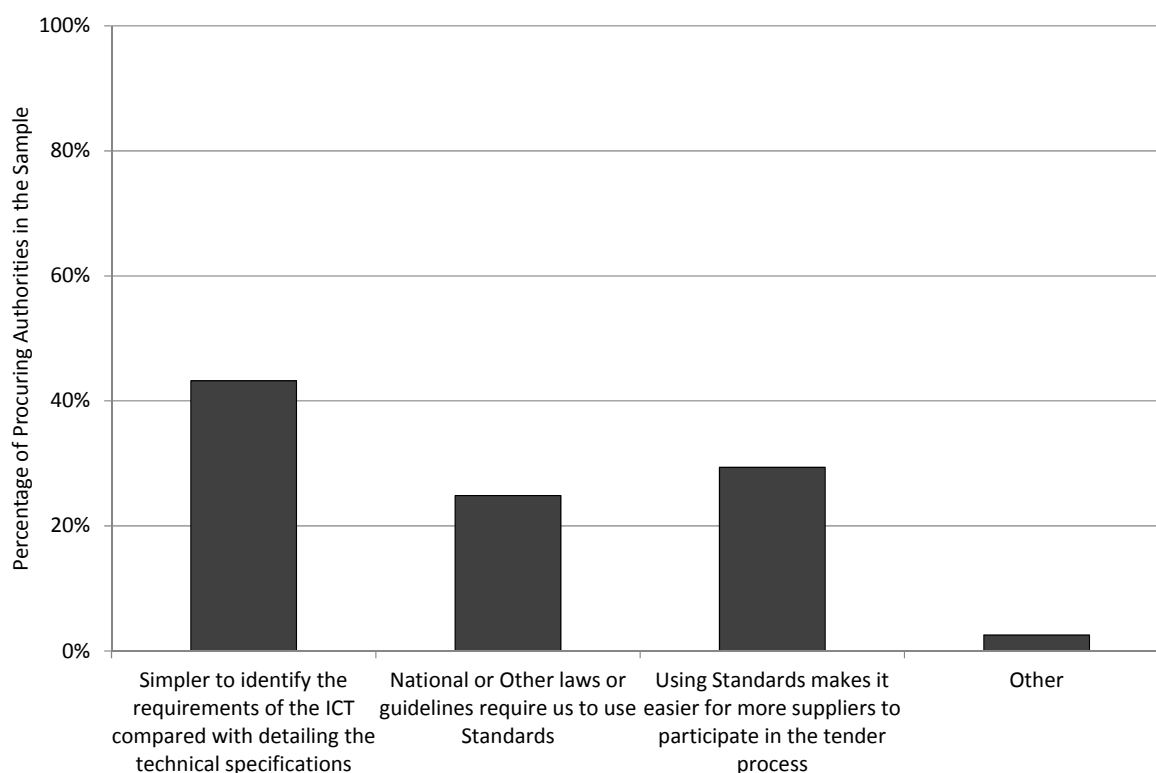
Source: Europe Economics Procuring Authorities Survey Question 33

5.64   The use of standards as required by national law or policies was highlighted by 25 per cent of respondents. Member States with a relatively high proportion of survey respondents citing this as a factor (between 20 and 35 per cent of respondents within the Member State) include France, Italy, Lithuania, Portugal and the UK. Interestingly, where national policies on the use of standards have been highlighted in our examination of best practice (e.g. Denmark, Germany, the Netherlands, Sweden and the UK), the proportion of respondents citing national policies as a factor behind their use of standards is not very high (between 23 per cent and 28 per cent), nor noticeably higher than in other Member States.

Summary of Procurement Practices

Identifying and specifying the ICT need

5.65   The main objective for public authorities when purchasing ICT is to achieve value for money and secure the project outcome (see Figure 5.1). Less importance is given to other objectives.

5.66   There is evidence of good practice among procurers in identifying suitable ICT products and services before the tendering process, with the majority of procurers undertaking new evaluations of products and solutions and engaging with the ICT industry (see paragraph

5.11).[190] A non-trivial minority of procurers, however, do base new purchases on existing ICT contracts or products without necessarily undertaking an evaluation of their appropriateness; this is also highlighted as a common practice in previous studies discussed in the literature, whereby ICT procurement decisions are based purely on historical decisions. This practice can increase the risk of vendor lock-in and reduce the ability of suppliers to compete if the existing products on which decisions are based are proprietary brands. Feedback from suppliers also suggests that more use could be made of pre-market engagement by public authorities to develop ICT requirements that more realistically meet the organisation's needs.

5.67   The skills available to public authorities in deciding on the ICT needs of the organisation and in writing technical specifications are largely internal or independent IT skills, and the role of procurement officers in this regard appears to be small (see paragraph 5.21).[191] This implies a good use of relevant skills, but also a possible disconnect between IT and procurement expertise within organisations. Good practice in ICT procurement therefore needs to be communicated to both IT managers and procurement officers in order to bridge this gap.

5.68   Public authorities demonstrate in general good tender writing practices, although a non-trivial minority do refer to brand names or proprietary technical specifications within tenders that restrict suppliers' ability to participate in the tenders (see Figure 5.2 and Figure 5.3). Difficulties in developing tender specifications that accurately reflect the organisation's ICT need are evident from feedback from both suppliers and procurers, leading to inappropriate outcomes or restricting the ability of suppliers to offer solutions.

5.69   This suggests that while the majority of procurers demonstrate good practice when drawing up ICT tenders, this process is still a complex area that poses difficulties for procurers.

Lock-in and legacy systems

5.70   Lock-in is defined as a situation where an organisation may wish to migrate to another system or vendor but the costs of doing so are prohibitively high, or migration is not technically possible. Lock-in can also be defined as a situation in which the ties to the original vendor extend beyond the initial contract period. Lock-in can also arise from non-technical factors such as organisational inertia.

5.71   There is evidence of public authorities being locked-in to their current ICT systems, vendors or brands (see Figure 5.4).Reasons for lock-in given include technical factors (the need to adapt interrelated systems, or concerns about losing information) and institutional factors (the associated costs of re-training staff to work with a new system).

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[190]   Corresponding chart in the Appendix Figure A2. 19
[191]   Corresponding chart in the Appendix Figure A2. 20 and Figure A2. 21

Some procurers do take steps to avoid such lock-in, such as including requirements for future data transfer or handover of systems within their tenders.

5.72   Whilst some respondents to the survey do not consider lock-in a problem, it is important to note that the *perception* of lock-in is likely to underestimate the reality as an organisation is unlikely to be aware of being locked-in if it has not explicitly attempted a migration. Lack of awareness of the possibility of lock-in is concerning, given the long-term consequences of reduced choice and value for money.

5.73   Requests for backwards compatibility with existing systems within tenders is extensive, revealed by respondents to both the procurer and supplier surveys, and the tender analysis (see Figure 5.5). The extent to which this restricts suppliers' ability to respond to the tender is significant, which suggests that the compatibility requests refer to proprietary brands or systems developed by particular suppliers. Compatibility requirements are described by some suppliers as 'excessive', i.e. requests for compatibility that are not in fact necessary for the operation of the new system.

5.74   The need for backwards compatibility is a complex area. Specifying technical constraints into which the procured ICT must fit is reasonable for individual procurement decisions, as procurers need to ensure that what they buy fits in with what they already have. However, requesting compatibility with existing proprietary systems is likely to favour suppliers of these systems (in particular if these proprietary systems are not based on standards and only products from the same brand will in fact be compatible). This in turn carries the risk of locking the public authority into the existing system. If certain brands are favoured in new tenders because they score well on backwards compatibility grounds, this in effect extends the authority's ties beyond the original tender. The implications of lock-in compared with having more open systems should be taken into account before the ICT procurement decision.

5.75   The evaluation of long-term costs of ICT purchases such as exit costs appears to be widespread among procurers (see Figure 5.6). This is considered good practice to avoid the unexpected future costs of migrating to another system or vendor. However, literature does suggest that a proper assessment of exit costs can be very difficult, in particular when the future need for migration may not be clear (e.g. the risk that existing applications will no longer exist in the future). The fact that such a large proportion of the sample considers backward compatibility an important feature of new ICT purchases suggests that long-term evaluations of the purchases have not in fact taken place.

Interoperability

5.76   The majority of procurers often request interoperability between the new ICT purchase and products or systems from different brands or suppliers. The way in which this is requested in tenders is largely through functional requirements rather than the use of

standards. Difficulties were perceived in requesting such interoperability (see paragraph 5.45). However it appears that a significant proportion of the sample considers interoperability the same as compatibility with proprietary or previously purchased systems.[192] Interoperability is concerned with the ability of ICT systems to communicate and share data with other systems, regardless of whether these systems work together in the same environment. An example would be the ability of a document in a certain file format developed by one supplier to be accessed by a word processing system developed by another supplier. Compatibility, on the other hand, concerns the ability of two or more systems or components to perform their required functions while sharing the same environment; for example the ability of a new piece of software to function within an existing ICT system. Requesting that a new ICT purchase is compatible with an existing proprietary system has no relation to whether the new purchase will be interoperable with other systems, and is generally a more restrictive requirement. [193]

5.77   Interoperability between public sector ICT applications and citizens was not considered a problem by the majority of respondents to the survey, with a small proportion stating that citizens are obliged to use a particular brand of ICT product in in order to access the public system (see paragraph 5.47). However, this does contradict extensive evidence found in literature of this phenomenon. It is likely that respondents to the survey are not aware if they limit citizens' use of ICT to certain brands. Other information from interviews also highlights difficulties in achieving interoperability to avoid citizens being tied to certain ICT products linked to the public authorities' original ICT application — such problems appear to stem from the absence of standards in the relevant technologies.

5.78   However, the perceived absence of standards should not be a reason for public authorities to accept that their ICT applications oblige citizens to use proprietary ICT products. In many cases open access can be built into the original design of the application if such openness is requested, through the use of standards or otherwise. Public authorities could also test their applications (in particular websites and file formats which are the most common form of interaction with citizens) for usability by multiple browsers or office software tools.

5.79   There can be cases where the interoperability of public ICT systems with a wide range of products and applications available to citizens is a difficult to achieve. A number of suppliers have highlighted that with complex ICT systems it is often not possible to stipulate that the system developer makes the system compatible with any accompanying hardware or software as this would incur very high costs and would require the system to be very bespoke. High costs in these cases should nevertheless be considered as part of a wider business case when developing the ICT need and weighed up against the advantages of having maximum accessibility for consumers.

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[192]   When asked how they requested interoperability these respondents said they referred to the brand names of products with which the new ICT needed to operate.
[193]   However, the survey does not distinguish whether requests for interoperability and compatibility were made within the same tender, or in different tenders.

Use of brand names and proprietary specifications

5.80   The use of brand names in tenders appears to be more extensive than reported in literature as revealed by both the tender analysis and survey responses. Brand names are used to request specific named ICT products or systems; to describe the technical nature of such products or systems; or to specify the technical constraints in terms of compatibility (see Figure 5.7).

5.81   The use of brand names in tenders is only allowed under the Procurement Directive in "exceptional circumstances", when there are no other possible descriptions that are both sufficiently precise and intelligible to potential tenderers.[194] Even a functional requirements of compatibility with branded software is not a legitimate functional requirement according to the Directive. Instead, good practice for software procurement suggests that such compatibility requirements should refer solely to compatibility based on standards.

5.82   The use of proprietary or restrictive technical specifications also appears to be fairly common in public sector tenders (see Figure 5.8).

Use of standards

5.83   The use of standards by public procurers appears to be extensive (see paragraph 5.55).[195] However, there is evidence that in-depth knowledge of standards is lacking and that significant improvement could be made in terms of the frequency and way in which they are used. Difficulties in the use of standards are perceived by a number of procurers and also evident in feedback from suppliers. The use of standards by public authorities in Member States with specific policies to promote standards does not appear to be extensive, either in absolute terms or in comparison to procurers in other Member States.

5.84   The use of standards is also perceived as a difficulty by respondents (see Figure 5.9). These included both the existence of too many standards to make sense of, and the absence of standards in many domains. Procurers consider that standards do not always guarantee quality and that sometimes the products or solutions complying with standards can be the least appropriate ones.

Other Difficulties and Recommendations

5.85   In addition to the problems and difficulties with ICT procurement that emerge from the analysis of procurement practices, our information gathering collected evidence of specific difficulties experienced by procurers when tendering for ICT products and services. These are summarised below.

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[194]   Directive 2004/18/EC, Article 23.
[195]   Corresponding figure in the Appendix Figure A2. 35 and Figure A2. 36

(a) The most commonly cited difficulty among survey respondents relates to the lengthy procurement process and required administrative and legal burdens for suppliers responding to the tenders. This can limit the ability of suppliers, in particular smaller firms, to respond to bids. In addition, the length of the tendering process can inhibit the procurer to respond rapidly to changing ICT needs or to innovation in the market; one respondent claimed that by the time the procedure has been completed the solution originally tendered for is often obsolete.

(b) Difficulties in assessing the technical offers appear to pose a significant problem for a small number of procurers. Tenders are often not compliant with the specifications or provide too many innovative or alternative elements, which makes evaluating the tenders very difficult.

(c) The writing of technical specifications is considered a significant difficulty by a small number of procurers, the majority of whom were local procurers. This is largely linked to translating the ICT needs into specifications to be included in the tender. This is exacerbated when the tender is for additional components for an existing system, when detailed knowledge of the system requirements is needed before the tender process can begin. The difficulty in changing the ICT requirements once the tender process has begun was also cited as a problem, as this requires comprehensive knowledge of the ICT needs well in advance.

(d) The use of framework contracts was cited by some as a barrier to flexibility. Problems highlighted included that fact that framework agreements did not cover either an adequate scope of products or suppliers.

(e) The up-front detailing of requirements and specifications in framework agreements limits the ability of the procurers to cater for developments in the ICT market or in their own ICT needs.

(f) Other problems highlighted by survey respondents include difficulties in not mentioning brand names when describing the technical specifications of the ICT need and limited competition among suppliers of required ICT products.

Useful guidance

5.86 In the absence of available guidance, procurers were asked what would be most useful to them in helping them to use standards when drawing up tenders. A total of 30 respondents described the types of guidance that would be useful. These included:

(a) Documentation of best practice on the use of standards, in particular feedback on where standards have been used and what the outcomes and effects have been. This was recommended by 11 of the 30 respondents (37 per cent).

(b) Reference lists or database of useful standards, cited by seven respondents). The most frequently mentioned was a guide to which standards are applicable to which solutions, products or requirements (e.g. security, quality, documentation etc) and

which standards are most widely and commonly used. Other information to be included could be advice on the limitations of standards (things to be aware of), as well as a comparative overview on different standards available for the same products or solutions. Awareness of national and international sources of guidance about standards was also considered useful for procurers who only are aware of local guidance.

(c) Tender writing templates, in particular documents that help specify minimum requirements (security, environment, social), or that contains all legal references necessary when purchasing specific products or services.

Recommendations

5.87   In addition to useful guidance, procurers cited a range of recommendations to promote the use of ICT standards in public sector tenders. A total of 77 respondents mentioned nine general recommendations:

(a) Help in accessing and using standards in tenders (20 respondents — 26 per cent of sub-total for this question). This could include templates according to the categories of standards; online search tools with information on which standards are applicable to specific technologies; a database should be created where standards can be promoted according to specific types of products or technologies; the creation of a representative body, able to conduct, review and provide guidance to authorities, and both public as well as independent organizations which can help procurers to use standards.

(b) Share experiences and best practice on the use of standards (8 respondents – 10 per cent of sub-total for this question).

(c) The quality of standards (12 respondents – 16 per cent of sub-total respondents for this question). This includes developing standards in areas where they are lacking, promoting interoperability through standards by focusing on the qualitative description of ICT products, and limiting the "optional" features of standards, to ensure best use of standards. Standards should also enable suppliers to reduce costs and be widely implementable. An effective regulatory and compliant system, which suppliers are willing to follow, could help to guarantee standards' reliability.

(d) Increased coordination between the standards used and supported by public authorities and those implemented by suppliers (11 respondents – 14 per cent of sub-total for this question). Suppliers and procurers should agree on which standards are the most common, effective and useful to use, in order to use these standards at a market level. Some procurers believe the use of standards should be mandatory when writing tender calls and in addition to this, suppliers should be compliant with such established and/or regularized standards.

Recommendations by suppliers

5.88   Suppliers were also asked to give recommendations on how the use of standards in public procurement of ICT could be improved. Responses given by 64 suppliers include:

(a) Nineteen suppliers suggest that commonly accepted standards should be implemented, such as ISO Quality Standards, Open Standards ODF, W3C Standards, SOAP, XML, or other commonly accepted Programming Standards e.g. CMMI. In addition to this suppliers mention there should be a limited number of standards used because if numerous standards are used, documentation, project planning, system testing and other duties can be highly time-consuming and inefficient. Other suggestions include: making mandatory use of Open Standards when procuring for ICT; bringing together existent national standards to be enforced; and forcing contracting authorities to justify deviation from existent National Procurement Recommendations.

(b) A number of suppliers (five) believe standards are not always useful or helpful as sometimes standards can have specifications which may restrict competition. In addition to this, suppliers recommend using functional specifications instead of standards and preventing standards from causing restrictions on the innovation of solutions.

(c) A recommendation for improved procurement skills was made by five suppliers, including a suggestion for the use of experts with governments to promote the use of standards.

(d) Suppliers also recommended the creation of a competent body (e.g OSOR) to act as a knowledge platform and lead discussions with and training of public procurement officials on public procurement procedures in ICT, software interoperability, and best practices, which should be documented. Furthermore, suppliers insist in developing links between European programmes like ISA and national procurement entities to create a centralized management of procurement which can promote an overall strategy for the EU.

(e) Suppliers also recommend publishing documents to promote the implementation of standards. These published documents could include: a catalogue which includes the definition of standards, and a list of European most widely used and reliable standards, (published by a study group supported by the European Commission); a short handbook about the minimum set of each standard each supplier should adhere to, since generally using a complete standard is too costly; and success stories when standards have been implemented correctly.

6 CONCLUSIONS

6.1 We conclude the overview of ICT procurement practices in the EU with a summary of the key difficulties experienced by procurers and evidence of poor practice. We also summarise the recommendations to address these difficulties suggested in the literature and by survey respondents.

6.2 The key difficulties and recommendations will form the basis for the guidelines to be developed as part of D3, and the problem definition for the impact assessment as part of D4.

Key Difficulties

6.3 The main difficulties and poor practices identified in the study are:

(a) The use of standards:

– Difficulties in evaluating the appropriateness of the standard and their likely effect on the solution proposed by bidders

– Too many standards to choose from, with little knowledge concerning the extent to which each standard is implemented in any system or producy

– Poorly referenced standards in tenders

– Use of inappropriate standards (e.g. those that restrict suppliers' ability to compete)

– Use of widely accepted technical specifications or brand names that are considered standard

(b) Difficulties translating the ICT need into clear specifications and requirements that both allow suppliers the flexibility to provide solutions and ensure that the solution meets the organisation's needs.

(c) Frequent requests for backwards compatibility of new purchases with existing products and systems which though reasonable in some circumstances can favour exiting suppliers and disadvantage competing bidders, and perpetuate the use of certain suppliers beyond the original timeframe of the contract.

(d) Inability to migrate to new ICT systems given various forms of lock-in (technical, vendor-dependent lock-in as well as organizational inertia).

(e) Difficulties procuring additional ICT to fit in with existing legacy systems without specifying proprietary products.

(f) Use of brand names or proprietary specifications to explicitly request certain products, or describe the technical specifications of the ICT need.

(g) Possible lack of awareness of obligations regarding the use of certain products placed on citizens when interacting with public sector ICT.

Recommendations

(a) Accessible information about the range of standards available and most appropriate (by area); their level of implementation by suppliers; and their limitations. This could be through online tools or the creation of a central body of expertise, as well as catalogues of standards.

(b) Documentation and sharing of experience and best practice in the use of standards in tenders, in particular on the effects of using certain standards.

(c) Increased coordination between the standards supported by public authorities and those used by suppliers.

(d) Encourage the EU-wide sharing of standard selection (e.g. through an initiative like CAMSS) so that 'approved' standards can be shared among Member States.

(e) Publicise work on the development of standards in specific policy areas so that procurers and suppliers are aware of new standards or toolkits on how to use standards.

(f) Tender writing templates that help describe common technologies in vendor-neutral ways. Templates for describing open standards or way to request open solutions in the absence of formal open standards.

(g) Increased engagement between procurers and suppliers to develop more appropriate solutions for ICT needs.

(h) Increase awareness among procurers and IT managers on the existence of lock-in:

- Likely to be perpetuated by constraining new ICT to be compatible with existing products and systems, or explicitly requesting products from the same vendor as those currently used

- Lock-in to systems can also result from organisational inertia, without real technical justifications

- The consideration of the full life-time costs associated with a purchase is important, including the costs required and feasibility of migrating both systems and digital artefacts (such as documents and data) to another system during the full life-cycle of the system and the digital artefacts. If a contract is for a certain time frame procurers must be confident they can change suppliers after this time frame. Awareness of the risks in making decisions based on short-term budgetary constraints.

(i)   Increase awareness of the possibility of obliging citizens to use proprietary products to access public IT systems. Consider the costs of making such systems open when designing them.

(j) Increase awareness on how to assess the full costs of ICT procurement decisions and conduct proper business evaluations, taking into account existing legacy systems; the life of the purchase; and organisational risk preferences.

(k) Promote the mandatory use of common open standards for data and file formats in eGovernment.

APPENDIX 1: DATA GATHERING METHODOLOGY

A1.1   In addition to the review of literature, information for the study was gathered in three ways:

(a) Surveys of procuring authorities and ICT suppliers

(b) Follow-up interviews and discussions with procuring authorities, suppliers and experts in the field or ICT procurement

(c) Analysis of ICT tenders

Sample Selection

A1.2   The data gathering covered all 27 EU Member States. In order to manage the administration of the survey and interviews, a sub-sample of Member States was chosen on which to focus the data-gathering effort. The survey was distributed widely among procurers and suppliers across the EU via email (see below for more detail), but personal follow-up with procurement authorities, and in-depth interviews, were undertaken within our sub-sample.

A1.3   To ensure a representative sample, we chose 12 Member States on the following criteria:

(a) ICT manufacturing as proportion of GDP

(b) Wealth (GDP per capita)

(c) Region (e.g. western Europe, eastern Europe, Mediterranean, Scandinavian)

(d) Governance (using the World Bank's corruption index as a proxy)

A1.4   The sample represents a range across all criteria, as shown in the table below.

Table A1. 1: Sample of 12 Member States

Member State	ICT manufacturing (%share in EU value added)		GDP (€2010 total)		GDP (p.c.)		Governance (corruption index)
	Value	*Rank*	*Value (€million)*	*Rank*	*Value (€)*	*Rank*	*Value*
Belgium	1.70%	9	352,941	8	32,400	6	7.1
Estonia	<0.1%	25	14,501	26	10,800	21	6.5
France	0.10%	3	1,932,802	2	29,800	10	6.8
Germany	30.20%	2	2,476,800	1	30,300	9	7.9
Ireland	5.50%	10	155,992	15	34,900	5	8
Italy	9.30%	4	1,548,816	4	25,600	12	3.9
Netherlands	3.50%	6	588,414	6	35,400	4	8.8
Romania	0.30%	18	121,942	17	5,700	26	3.7
Poland	1.30%	13	354,318	7	9,300	23	5.3
Spain	2.50%	4	1,062,591	5	23,100	13	6.1
Sweden	4.90%	7	346,669	9	37,000	3	9.2
UK	12.30%	1	1,696,583	3	27,400	11	7.6

Sources: Eurostat and World Bank

Definition of Information and Communications Technology used

A1.5   By **ICT** (Information and Communications Technology) products and services, we refer to the following categories:

(a) IT equipment — e.g. computers, servers and information systems.[196]

(b) Software — e.g. system infrastructure software, applications.[197]

(c) IT services — e.g. software development, web-based applications, cloud computing.[198]

(d) Communications equipment.[199]

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[196]   All CPV sub-codes within 48800000 and 30000000
[197]   All CPV sub-codes within 48000000 (except sub-codes 48800000)
[198]   All CPV sub-codes within 72000000, 50300000, 51300000, 51600000, 45314000
[199]   All CPV sub-codes within 32000000

Surveys

Questionnaire design

A1.6   Two questionnaires were designed — one for procuring authorities and one for ICT suppliers — in order to gather information on how public bodies undertake ICT procurement (in particular the procurement of ICT based on standards), how these procurement practices affect suppliers, and what key difficulties procurers face when tendering for ICT products and services.

A1.7   The survey covered the following topics:

(a) The development of the business case for the ICT purchase, including the evaluation of the ICT need

(b) How tender specifications are developed

(c) The involvement of IT and procurement expertise in drawing up tender documents

(d) Experience of lock-in to suppliers, products, file formats

(e) Requirements for compatibility and interoperability

(f) The use of standards in tender specifications and their impact on suppliers

(g) Difficulties faced in developing tenders or responding to tenders

(h) Recommendations to promote the use of standards and to improve the procurement process

A1.8   The questionnaires are included in Appendix 4 and 5. A number of similar questions were asked of both procurers and suppliers in order to obtain a more balanced view of procurement practices.

A1.9   The content of the questionnaires was influenced by discussions with experts in the field, including team members CETIC and Paul Davis, and a review of the available literature, to identify the key areas of procurement practice to explore.

Survey administration

A1.10 The questionnaire was administered through the European Commission's Online Interactive Policy making Tool. The questionnaire was in English; however, cover letters were sent to recipients in their national language.

A1.11 Individual respondents were identified through the MAPPS database, provided by DG MARKT.[200] The database contains email addresses of the procuring authorities involved in the tenders as well as those of the winning contractor. The database was filtered according to Common Procurement Vocabulary (CPV) codes to extract contract award notices related to ICT procurement from 2008 to 2010, from which lists of email addresses were compiled.

A1.12 Emails, in the national language of all Member States, were sent to all procuring authorities and suppliers including a link to the online survey, a description of the study and a letter of support from the European Commission DG INFSO. A privacy notice was also attached to the email enabling the addresses to request removal from the mailing list.

A1.13 A total of 7,100 suppliers and 12,000 procuring authorities were emailed in the first instance. Of these, approximately 55 per cent of email addresses either were undeliverable or returned other error messages (e.g. the contact had moved away from the organisation).

A1.14 The survey was live for five and a half weeks from the 5 October 2011 until 14 November 2011. A follow-up reminder email was sent to all remaining addresses on the email list (excluding the requests for removal) two weeks before the deadline.

A1.15 In order to increase the sample size of procuring authorities, and to reach those unlikely to be captured by the MAPPS database (e.g. small public bodies), national procurement organisations within our twelve Member State sample were contacted to assist in the promotion of the survey among procurers. These included eProcurement centres, public procurement offices, and ministries for the regulation of procurement. Contacts were telephoned to establish support for the study, and asked to promote the survey on their websites or via communication with procurers.

A1.16 The questionnaire was also distributed via supplier organisations. Email requests were sent to the main ICT supplier trade associations within each Member State informing the associations of the study and requesting them to raise awareness among their members, either through posting the link on the website or including it within member communication.

A1.17 EU-wide organisations were also approached to promote the survey. Those that advertised the survey, either on their websites or through direct communication with their members, include:

(a) E-Forum (Forum for eGovernment in Europe)

(b) Open Forum Europe

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[200] A database derived from Contract Award Notices published in the Official Journal of the European Union (OJEU).

(c) Eurocities (network of local governments across Europe)

(d) CEMR (Council of European Municipalities and Regions)

(e) ELANET

(f) PIN-SME(The Pan European ICT & eBusiness Network for SMEs)

(g) European Commission (survey published on DG INFSO website)

A1.18 The summary statistics from the surveys are presented in Appendix 2.

Interviews

A1.19 Follow-up interviews were conducted with a selection of ten procuring authorities responding to the questionnaire. The aim of the interviews was to explore the responses in more detail, in particular difficulties experienced with ICT procurement and recommendations for guidance. Interviews were conducted via teleconference. Ahead of the interview, interviewees were sent an outline of the topics for discussion, which expanded on certain questions in the survey. The interview notes were written up and, if so wished, sent to the interviewee for confirmation.

A1.20 Interviews were drawn from a range of respondents across Member State, size and sector, as summarised on the table below:

Table A1. 2: Summary of Interviews

Name of organisation	Member State	Size (ICT procurement spend)[201]	Sector	Level
National Procurement Office	Sweden	n/a	National government	National
Fontys University of Applied Sciences, Netherlands	Netherlands	Large	Education	Local
Ministry of Social Affairs, Estonia	Estonia	Large	Social Protection	National
Welsh Local Government Association	UK	n/a	Local government	Regional
National Procurement Service Ireland	Ireland	Medium	National government	National
Trenitalia, Italy	Italy	Small	Transport	National
Ministry of Finance	France	Large	Economic affairs	National
Sea Fisheries Service, Department of Agriculture and Fisheries	Belgium	Small	Agriculture	National
Hospital District for Helsinki and uusimaa	Finland	Large	Health	Regional
Ministry of Economic Affairs (Procurement)	Netherlands	Large	National government	National

A1.21 Discussions were also held with a number of ICT suppliers and experts in the field, and. These included:

(a) Netherlands Open in Connection programme team

(b) Microsoft

(c) Balidea, Spain (ICT SME)

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[201] Small ICT spend is classified as less than €200,000 in the last year; medium between €200,000 and €1 million; large over €1 million.

(d) Björn Lundell, University of University of Skövde (expert in Swedish municipalities' procurement)

Tender Analysis

A1.22 The objective of the tender analysis was to develop an insight into how standards are used in public tenders and to determine whether their use has implications in terms of lock-in, interoperability and supplier competition. The analysis also investigates poor procurement practices, such as the use of brand names, although this is a secondary aim given the existence of similar investigations in other studies.[202] Given the depth to which the tenders are examined this analysis is not designed to provide a representative overview of current procurement practices; rather to highlight key examples or good and poor practice and provide additional insights to our more comprehensive survey analysis.

A1.23 We identified tenders for the analysis through the following process

(a) We identified a list of products and services related to the ICT field. To do this, we relied on the definition of ICT on the European Information Technology Observatory (EITO) website.[203]

(b) We manually matched the list of ICT products and services to Common Procurement Vocabulary (CPV) codes used in public procurement.

(c) We searched the Tenders Electronic Daily website[204] for all current tenders (in the week of 10-14 October 2011) relating to the relevant CPV codes. The country coverage was restricted to the UK, Ireland (IE), Netherlands (NL), Belgium (BE), France (FR) and Greece (EL) for reasons of linguistic capability. For some tenders, tender documentation was available freely online; for some registration and expressions of interest were required, and for some email requests needed to be sent to the procuring authority. We attempted to ensure a representation across the various kinds of ICT products and services.

A1.24 The tenders were analysed by CETIC according to a structured framework that included:

(a) Organisation

(b) Sector

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[202] See, for example, Ghosh, R.A (2005) 'An economic basis for open standards'; Glott, R. and Ghosh, R. A. (2005) 'Usage of and Attitudes towards Free / Libre and Open Source Software in European Governments', FLOSSPOLS Report Deliverable D03, FLOSSPOLS project, European Commission; OpenForum Europe (2011) 'OFE Procurement Monitoring Report: EU Member States practice of referring to specific trademarks when procuring for Computer Software Packages and Information Systems between the months of February and April 2010' and R.A Ghosh, R. Glott, P.E Schmitz, A. Boujraf, (2008) 'OSOR guidelines public procurement and open source software', IDABC Dissemination of Good Practice in Using Open Source Software (GPOSS),

[203] http://www.eito.com/definitionsICT.htm

[204] http://ted.europa.eu/TED/main/HomePage.do

(c) Brief description of ICT need and level of customisation

(d) How the technical specifications   and functional requirements are written

(e) Use and referencing of standards, including what standards are used and what their effect s could be

(f) Requests for compatibility with existing systems?

(g) Request for interoperability

(h) Use of brand names used explicitly, to specify all or part of product, or with the words 'or equivalent'.

(i) Evaluation criteria

(j) Overall assessment of openness of tender

A1.25   The full tender analysis can be found in Appendix 3.

APPENDIX 2: SURVEY RESULTS

Analysis of Survey Results

A2.1   The results from the two surveys were extracted from the Interactive Policy Making tool into excel. The data were cleaned to remove repeat and unusable[205] entries. Where options existed for respondents to reply 'other', for example type of sector or regional level, responses were coded and additional categories added to the results.

A2.2   Summary charts and tables were created for each question, as presented below. Responses per question include 'N/A' when the respondent did not answer the question. Unless otherwise stated, responses to questions are expressed as a proportion of the total sample size (e.g. 244 for procurers and 172 for suppliers) and not as a proportion of only those answering the question.

A2.3   The sample covered respondents from a range of sizes and regional levels. Statistical tests of significance were run to test whether responses to any questions varied significantly across size or regional level (for example, were large procurers more likely to answer in a certain way to certain questions). Significance tests for Member State and sector were undertaken on a case-by-case basis, given the small sample sizes within each Member State/sector.

A2.4   In order to run such tests, larger categories than those used in the survey for size needed to be created. These are:

(a) Size in terms of ICT expenditure (procurers)

–   Small = "less than €50,000" and "€50,000-€200,000"

–   Medium = "€200,001-€750,000" and "€751,000-€1 million"

–   Large = "€1 million – €4 million" and "more than €4 million"

(b) Size in terms of annual turnover (suppliers)

–   Small = "less than €1 million" and "€1 million to €5 million"

–   Medium = "€5 million – €10 million" and "€10 million – €50 million"

–   Large = "more than €50 million"

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[205]   Those that included only a few of the organisational details

A2.5   In addition, tests of significance were conducted on a sample of cross-tabulated responses, for example to see if those answering (a) to Question 12 were statistically more likely to also answer (d) to Question 18.

A2.6   Tests of significance were conducted using the Fisher's exact test (2-tail). The Fisher test is similar to the Chi-square test with the capability to handle small sample sizes. It tests whether respondents' answers to questions are significantly different across certain groups (e.g. size categories or answers to other questions).

A2.7   In general, variations in responses to questions according to different groups of respondents were insignificant. We therefore report only those variations that are significant in the main discussion of the survey results.

Overview of Respondents

A2.8   Surveys of public procurers and ICT suppliers were undertaken in order to gather information on how public bodies undertake ICT procurement, how these procurement practices affect suppliers, and what key difficulties procurers face when tendering for ICT products and services.

A2.9   The survey was open from 5 October 2011 until 14 November 2011.

A2.10   The sample of respondents indicates that a wide range of public authorities are captured by the survey, including across all Member States, sizes, types of public body, sector and regional level. Similarly, a wide range of suppliers were surveyed across size and ICT sector.

Procuring authorities

A2.11   Responses were received from 244 procuring authorities. The best represented Member State is Italy, with 25 respondents (10 per cent of all respondents), followed by the UK with 20 respondents, Finland (19) and Spain (18). There were nine from Germany and 10 from France, so all five of the largest economies were adequately represented.

Question 2: Member State in which your Organisation is located

Figure A2. 1: Number of Procuring Authorities by Member State
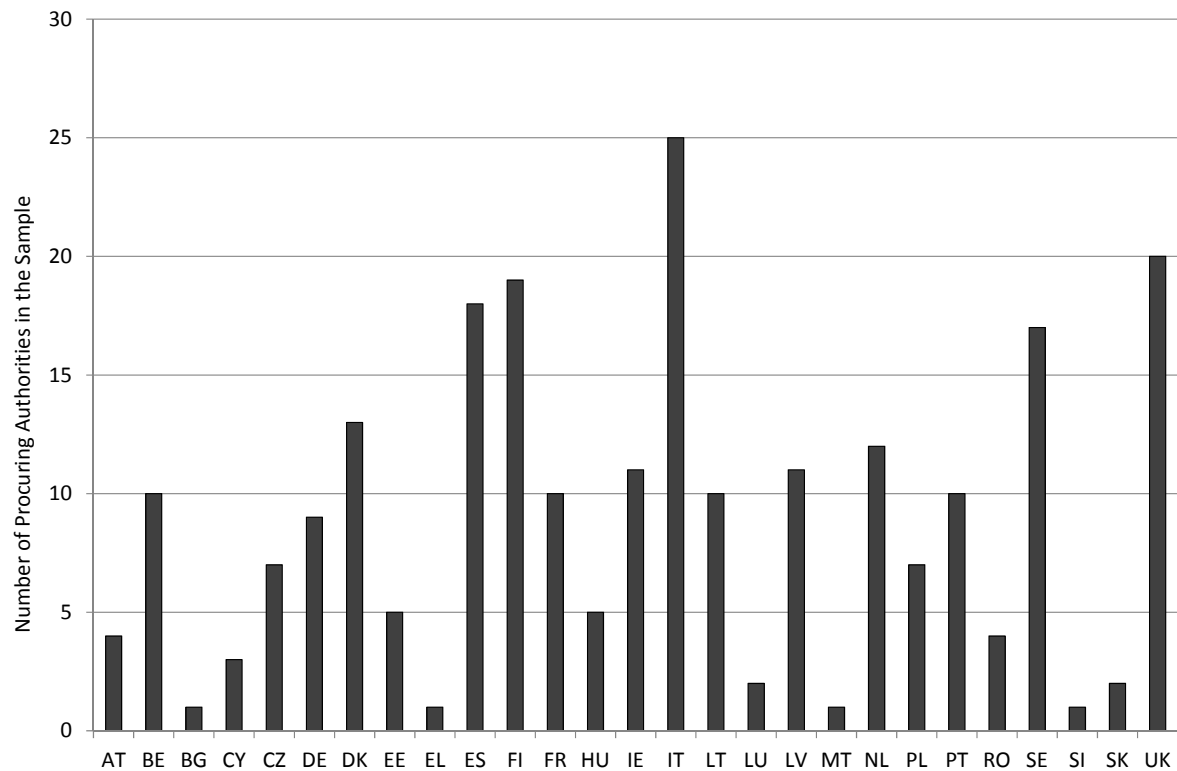
Source: Europe Economics Procuring Authorities Survey Question 2

A2.12 Table A2.1 below shows the size of the responding organisations ranges from less than ten employees to over 1000. Large organisations[206] (over 1000) make up the majority of the sample (39 per cent). Small organisations (less than 50) made up eight per cent of the sample.

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[206] Large is classified as over 1000 employees, medium as between 50 and 1000, and small as less than 50

Question 7: Size of organisation (number of employees)

Table A2. 1: Proportion of Procuring Authorities by Size (employees)

Number of employees	Number of respondents	Percentage of respondents
Less than 10	2	1%
11 – 50	18	7%
51 – 250	36	15%
251 – 500	38	16%
501 – 1000	32	13%
More than 1000	96	39%
N/A	22	9%
Total	**244**	**100%**

Source: Europe Economics Procuring Authorities Survey Question 7

A2.13 The size distribution according to annual expenditure on ICT is similarly weighted towards the large expenditure.

Question 9: What was the total value of ICT procurement for your organisation in the last year for which you have records? (Expressed as euro)

Figure A2. 2: Proportion of Procuring Authorities by Size (ICT expenditure)
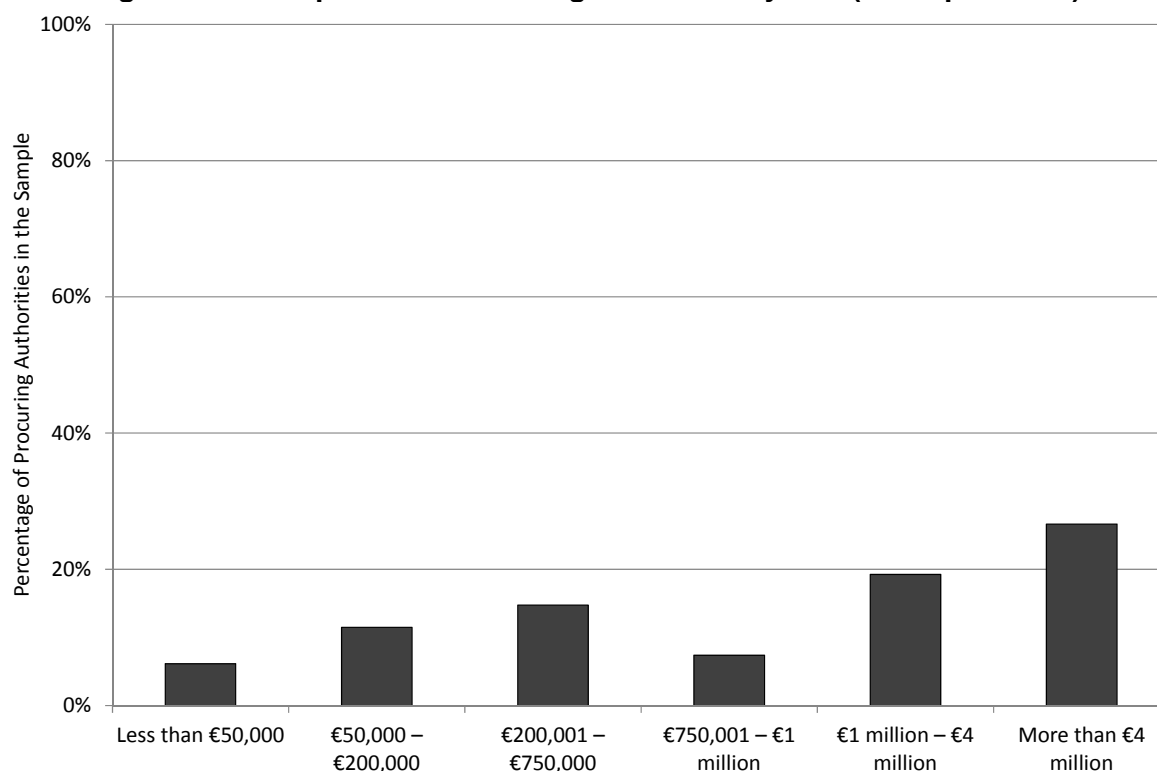
Source: Europe Economics Procuring Authorities Survey Question 9

A2.14 The table below presents the size distribution in terms of our small/medium/large categories.

Table A2. 2: Proportion of Procuring Authorities by Size (ICT expenditure)

Size of ICT expenditure	Number of respondents	Percentage of respondents
Small (Less than €200,000)	43	18%
Medium (€200,000- €1 million)	54	22%
Large (Greater than €1 million	112	46%
N/A	35	14%
Total	**244**	**100%**

Source: Europe Economics Procuring Authorities Survey Question 9 (expenditure on ICT within the last year)

A2.15 A likely reason for the high proportion of large organisations is the existence of central or national procurement services that undertake procurement of ICT in behalf of smaller public bodies, such that these bodies are not directly involved in ICT procurement. Another reason could relate to the sample, where the majority of respondents were sourced from the OJEU database and thus may be overrepresented by above-threshold purchases.

A2.16 The type of ICT procured by public authorities responding to our survey is relatively evenly distributed across the four categories. The degree of customisation mainly includes a combinations of custom-made solutions with off-the-shelf components.

Question 10: What is the main type of ICT you are responsible for procuring for your organisation? Please tick more than one option if relevant.

Figure A2. 3: Type of ICT Procured by Public Procurers
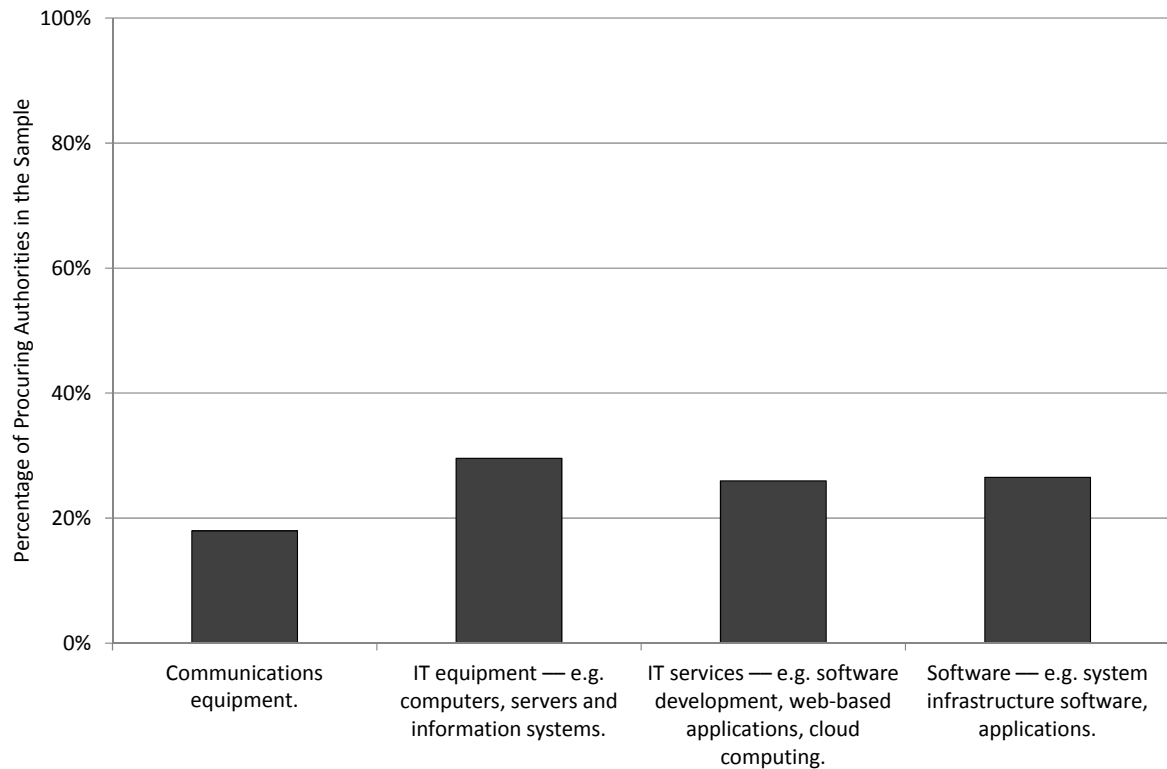
Source: Europe Economics Procuring Authorities Survey Question 10

Question 11: How would you describe the ICT products or services for which you usually tender?

Figure A2. 4: Degree of Customisation of ICT Procured
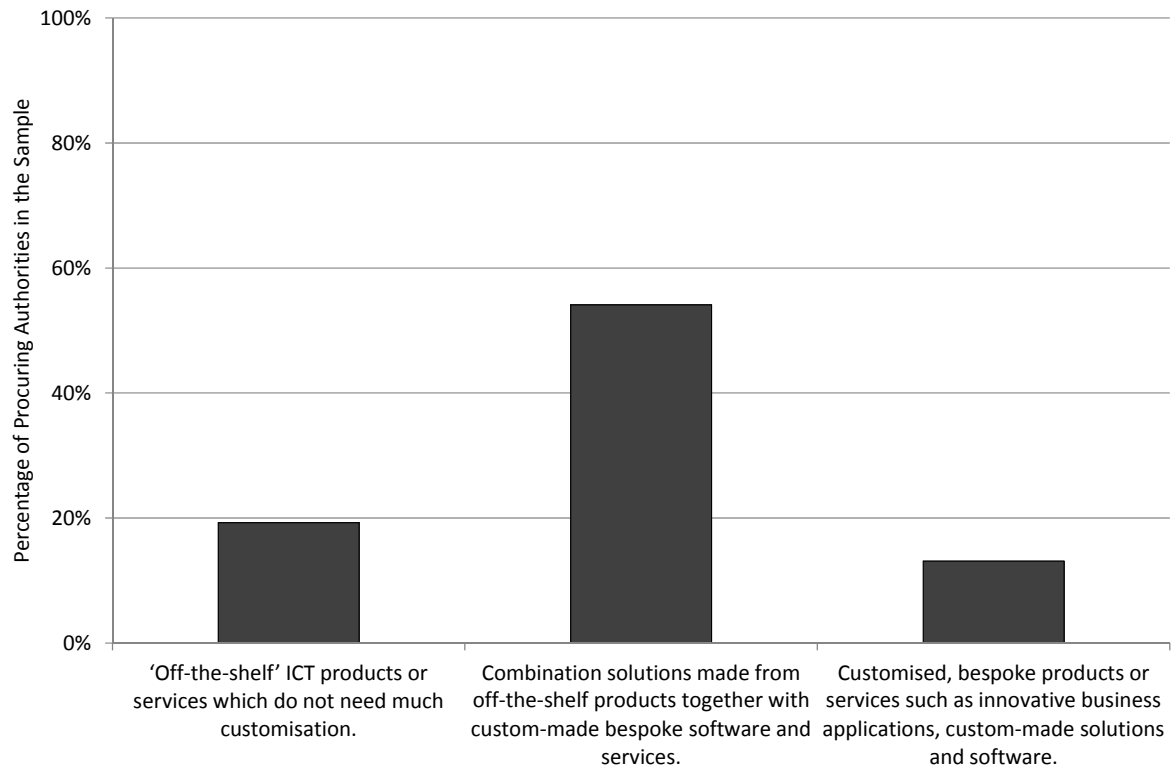
Source: Europe Economics Procuring Authorities Survey Question 11

A2.17   Respondents were drawn from a wide range of sectors, as shown in the table below.

Question 8: In which sector does your organisation operate?

Table A2. 3: Public Procurers' Sectors[207]

Sector of Organisation	Number of respondents	Percentage of respondents
Economic affairs	18	7%
Education	32	13%
Environment/Agriculture	18	7%
Health	31	13%
Housing and community amenities	6	2%
Local authority	12	5%
Municipality	11	5%
National Government	18	7%
Public order and safety	27	11%
Recreation, culture and religion	8	3%
Social Protection	10	4%
ICT/Media	13	5%
Transport	12	5%
Other	8	3%
N/A	20	8%
Total	**244**	**100%**

Source: Europe Economics Procuring Authorities Survey Question 8

A2.18   Each sector includes a range of public bodies. For example:

(a) 'Education' includes responses from universities, schools, libraries and government education ministries.

(b) 'Health' includes hospitals, blood transfusion services and government health ministries.

(c) 'Economic affairs' includes central banks, government financial ministries and development organisations.

(d) 'Public order and safety' includes police departments, fire departments, prison services, and ministries of justice.

(e) Social protection includes pension, insurance departments and departments of social affairs.

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[207]   Sectors defined using the United Nations 'Classification of the Functions of Government', and include additional sectors where there were commonly identified by respondents, such as transport, national government; municipality and local government.

(f) Local authorities, municipalities and general government departments are also represented.

A2.19 Responses from the survey were analysed to determine level at which the public authority operates, be it nationally, regionally or locally. Public authorities were categorised as national if they covered the whole country, for example government ministries and agencies, central banks, regulators, national libraries and police services. Public authorities were categorised as regional if they operated on a provincial level or encompassed a number of districts, such as regional government agencies, regional broadcasters, regional regulators, district hospitals etc. Public authorities were categorised as local if they operated within a single city or town, such as municipalities, universities, schools, hospitals, police stations, local authorities, and prisons.

Figure A2. 5: Distribution of Public Procurers by Area
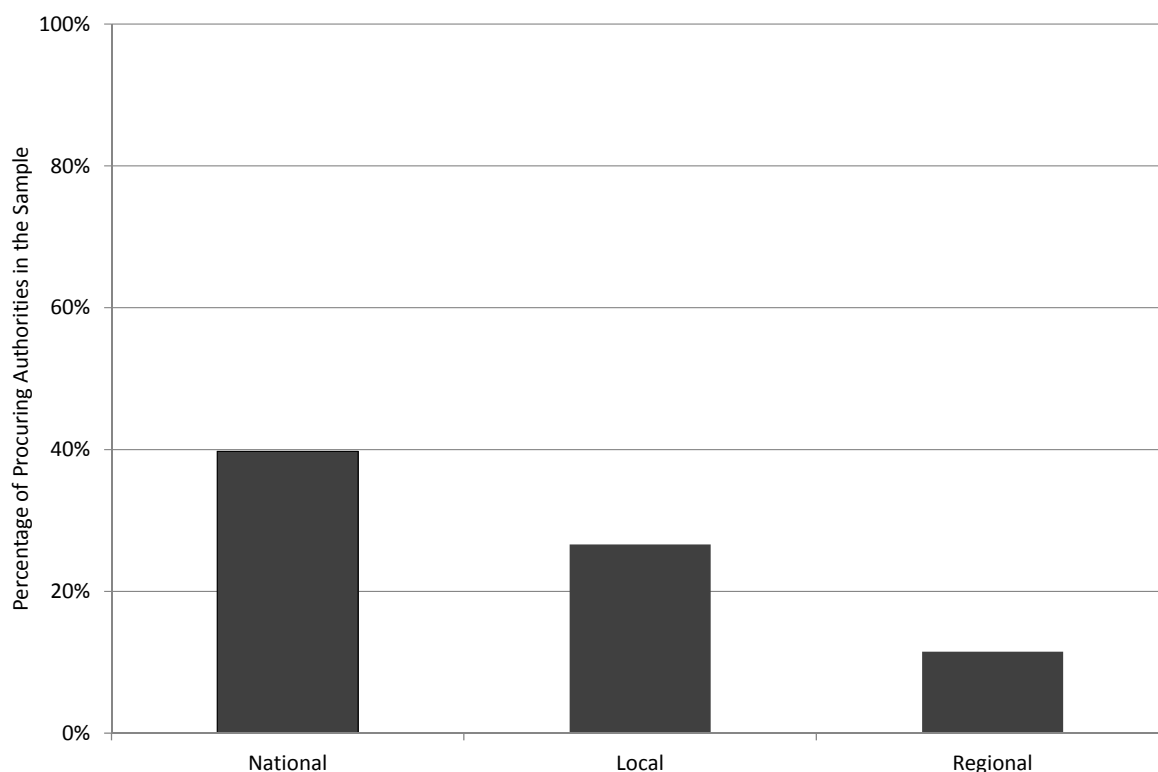
Source: Europe Economics Procuring Authorities Survey Question 8

A2.20 The sample of respondents indicates that a wide range of public authorities are captured by the survey, including across all Member States, sizes, types of public body, sector and regional level.

A2.21 Responses to the questions in the survey were tested to investigate whether the size, sector, Member State or regional level of the responding authorities influenced the responses given. In general, there were no statistically significant differences in

responses across different types of authority. Where interesting and significant variations do exist, these are highlighted in the analysis below.

Suppliers

A2.22   Responses were received from 172 suppliers in all but three Member States.[208]

A2.23   Figure A2. 6 below shows that the most responses were received from suppliers with their headquarters in the UK (15) followed by Germany, Denmark, Spain, the Netherlands (13 respectively). There were also respondents with head offices from outside the EU but subsidiaries within the EU.

Question 6: Location of your organisation's head office.

Figure A2. 6: Number of Suppliers by Member State (head office)
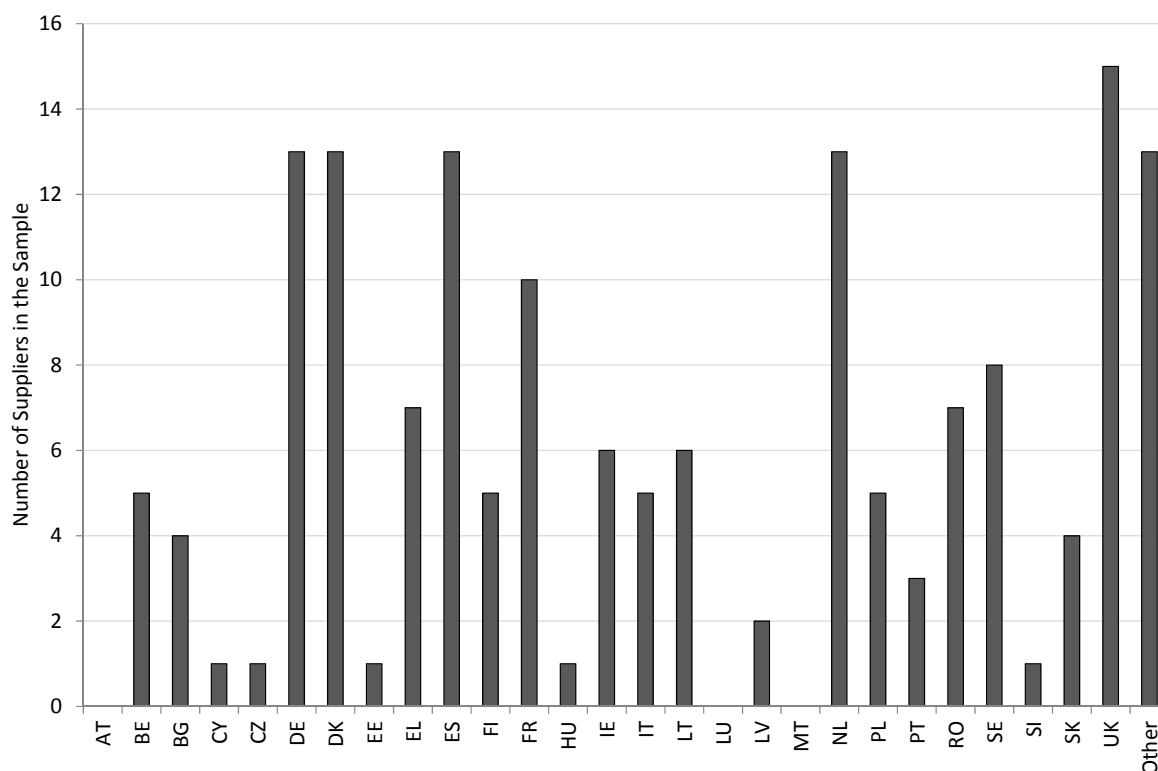
Source: Europe Economics ICT Suppliers Survey Question 6

A2.24   Suppliers were also asked to list the Member State of the branch or subsidiary in which they were based. However, this question received a much lower response rate than the previous.

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[208]   No responses were received from Austria, Luxembourg and Malta

Question 7: Location of you organization's branches and subsidiaries

Figure A2. 7: Number of Suppliers by Member State (Branches and Subsidiaries)
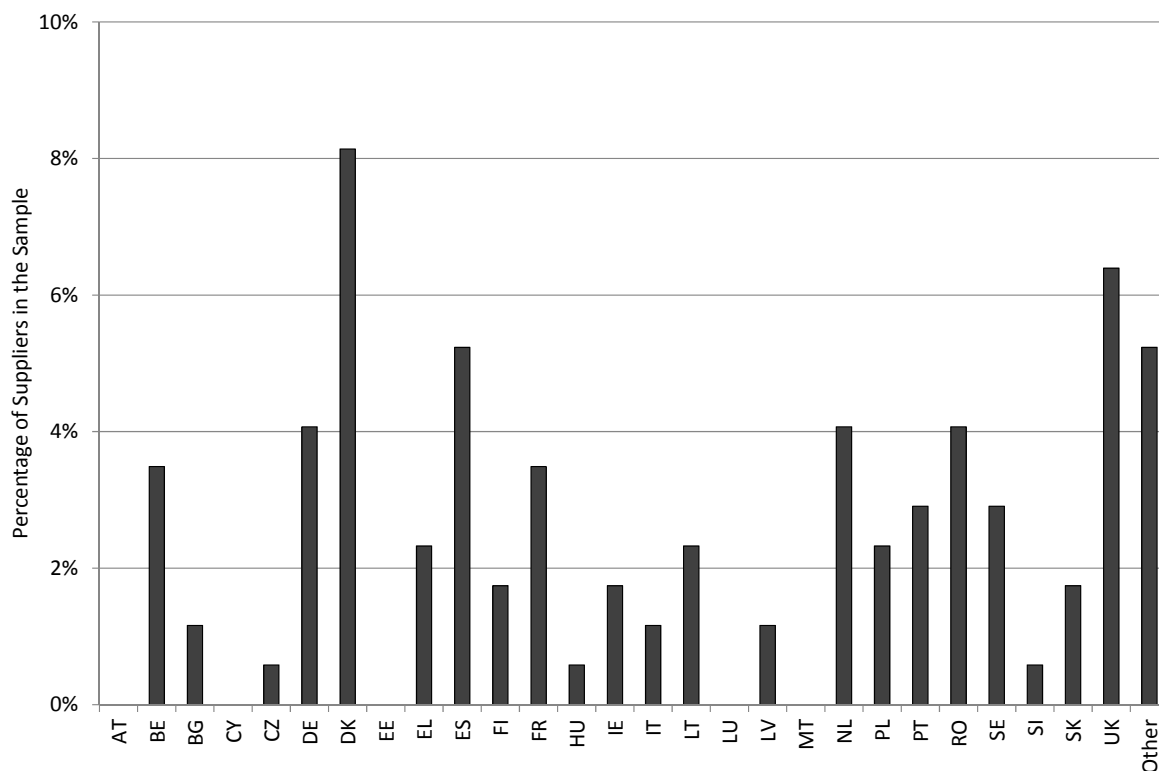
Source: Europe Economics ICT Suppliers Survey Question 7

A2.25 The size of responding firms ranges from less than ten to more than 1000. As can be seen in Table A2. 4 below small and medium-sized enterprises (SMEs), which are firms with fewer than 250 employees, make up the majority of the respondents (67 per cent).

A2.26 The size distribution according to turnover is similar, as shown in Table A2. 5 below.[209] Again, the majority of respondents (68 per cent) can be classified as SMEs, with a turnover of less than €50 million.

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[209] Annual turnover for latest year for which records are available

Question 9: Size of organisation (number of employees)

Table A2. 4: Size Distribution of Suppliers (employees)

Size of firm	Number of respondents	Percentage of respondents
Less than 10	22	13%
11 – 50	47	27%
51 – 250	46	27%
251 – 500	15	9%
501 – 1000	4	2%
More than 1000	29	17%
N/A	9	5%
Total	**172**	**100%**

Source: Europe Economics ICT Suppliers Survey Question 9

Question 10: Annual turnover for the last set of audited accounts (expressed in euro).

Table A2. 5: Size Distribution of Suppliers (turnover)

Turnover	Number of respondents	Percentage of respondents
Less than €1 million	27	16%
€1 million – €5 million	47	27%
€5 million – €10 million	15	9%
€10 million - €50 million	28	16%
More than €50 million	31	18%
N/A	24	14%
Total	**172**	**100%**

Source: Europe Economics ICT Suppliers Survey Question 10

A2.27 As seen inFigure A2. 8, the majority of ICT suppliers responding to the questionnaire are ICT solution providers and systems integrators (64 per cent). This includes organisations that specify and create complex IT solutions and advise on hardware, software, service and system choices across market sectors. ICT service providers and ICT software vendors make up the majority of the remaining firms.

Question 8: Type of Organisation (please tick more than one if relevant)

Figure A2. 8: Proportion of Suppliers by Organisation Type
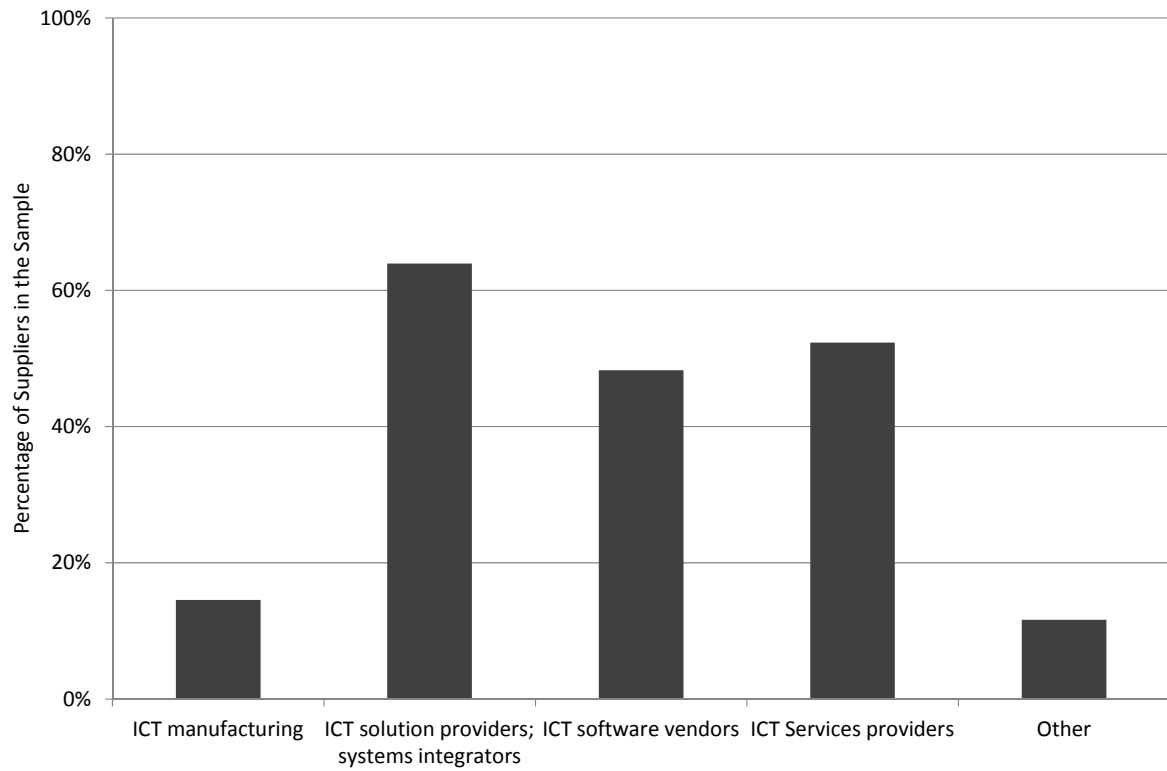
Source: Europe Economics ICT Suppliers Survey Question 8

Question 11: Please tick the types of products / services you provide.

Figure A2. 9: Type of ICT Provided by Suppliers
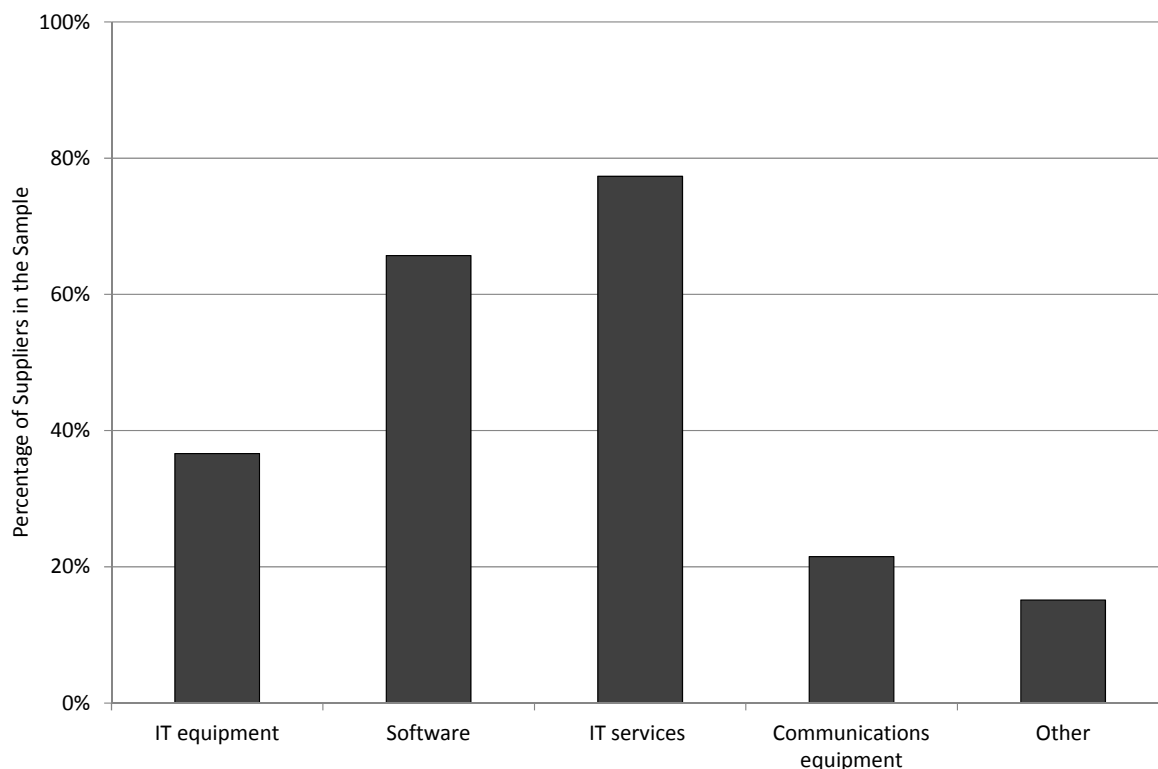
Source: Europe Economics ICT Suppliers Survey Question 11

Analysis of Current Practice

A2.28   This section presents the results of the surveys, interviews and tender analysis across a number of themes. These reflect key issues in public procurement of ICT identified through literature and initial discussions with experts in the procurement and ICT fields.

Objectives for procurement

A2.29   The objectives of the public authorities in undertaking ICT procurement are likely to have a bearing on the procurement process and experience. For example, if the objective is value for money then this may have a different influence on the nature of the procurement compared with an objective of (say) promoting new technology, or encouraging SMEs.

A2.30   Figure A2. 10 below indicates that securing the project outcome and achieving value for money are the most important objectives for the majority or procuring authorities.

A2.31   Lowering barriers to entry for SMEs was not considered important by the majority of respondents.[210] This is interesting in light of the recently adopted European Parliament Resolution on public procurement that emphasises the importance of SME access to public procurement and recommends a number of ways in which access can be enabled by public procurers and the European Commission.[211]   It is possible that national requirements on procurers to achieve value for money take precedence over EU-level support for SME participation.

A2.32   In general there are no significant differences in responses across different sizes or public authorities. An exception is the importance of value for money as an objective. Large procuring authorities are more likely to consider value for money extremely important than medium or small authorities, whilst small authorities are most likely to consider value for money as not very important.

Question 12: When starting the procurement process, how important are the following objectives? (Extremely important; Important; Not very important; Not relevant).

Table A2. 6: Importance of Value for Money by Procuring Authority Size

Value for money	Percentage of large respondents	Percentage of medium respondents	Percentage of small responde
Extremely important	61%	49%	48%
Important	37%	47%	43%
Not very important	1%	4%	10%
Not relevant	2%	na	na

Source: Europe Economics Procuring Authorities Survey question 12

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[210]   Only 42 per cent considered this extremely important or important.
[211]   European Parliament, 'Resolution on Modernisation of Public Procurement (2011/2048(INI))' adopted texts 25 October 2011 http://www.europarl.europa.eu/sides/getDoc.do?type=TA&language=EN&reference=P7-TA-2011-0454

Figure A2. 10: Objectives for Procurement
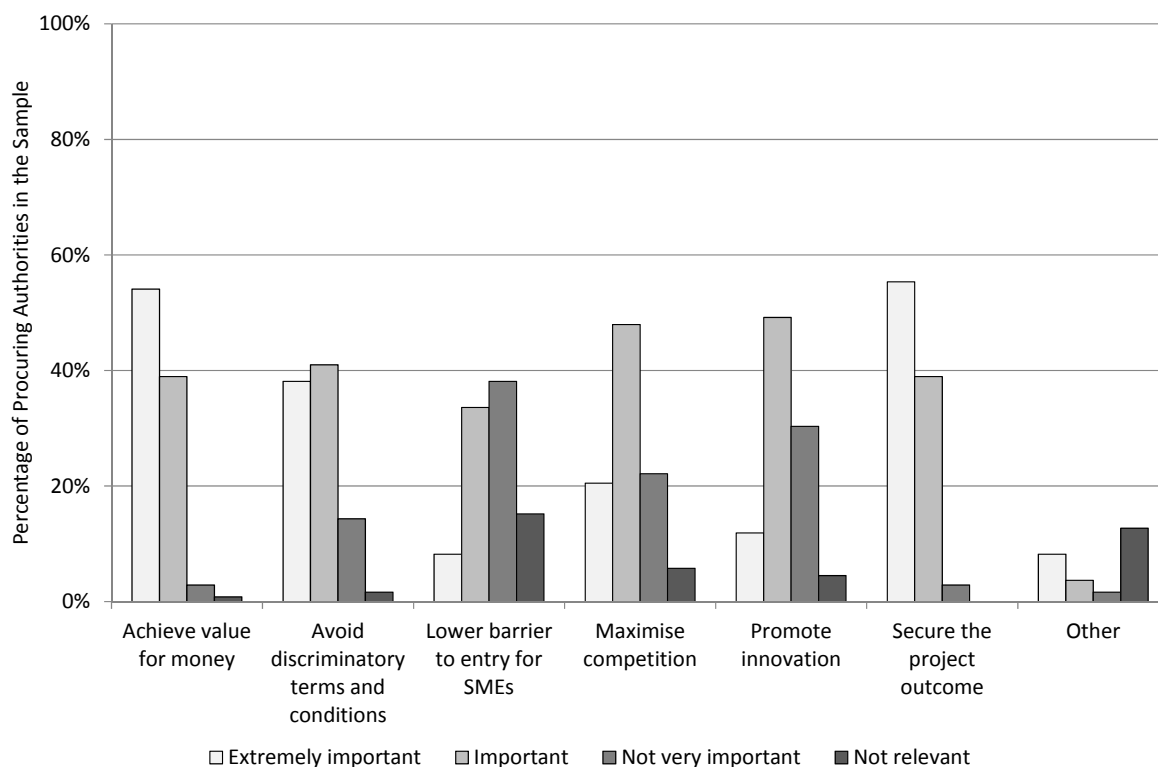
Source: Europe Economics Procuring Authorities Survey Question 12

A2.33 Maximising competition as a procurement objective was considered extremely important or important by 68 per cent of responding procuring authorities.

A2.34 We investigated whether this objective had a significant influence on the way in which public authorities prepared their ICT tenders.[212] Procurers for whom maximising competition was an important consideration were more likely to write open tenders using technology-neutral language than procurers who did not consider competition important.[213]

A2.35 There was no significant relationship between the objective of maximising competition and other practices in writing tenders, such as avoiding the use of brand names; not including detailed and restricted technical specifications; or using widely-implemented standards.

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[212] Procuring Authorities Survey question 18a,b,c and question 33b
[213] This relationship is significant at the 10 per cent level

A2.36 The proportion of procurement that takes place through framework agreements is significant, with more than half of procurers stating that more than half of their procurement takes place through framework agreements.

Question 19: What proportion of your ICT procurement takes place through framework contracts?

Figure A2. 11: Proportion of ICT Procurement through Framework Contracts
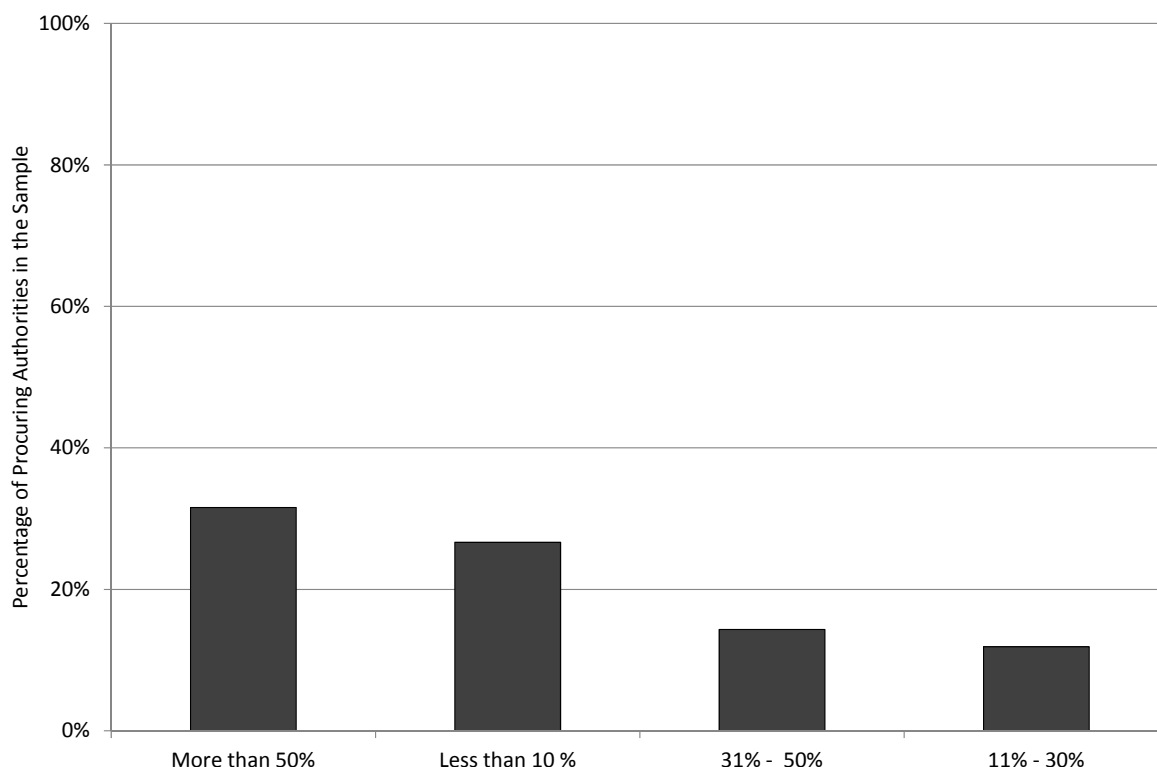
Source: Europe Economics Procuring Authorities Survey Question 19

Enhancing competition in the supplier market

A2.37 Maximising competition as a procurement objective was considered extremely important or important by 68 per cent of responding procuring authorities. The supplier survey assesses the views of firms on the extent to which public procurement affects competition, in particular how important public sector contacts are to firms, and the ability of suppliers to access these contracts. The participation of SMEs is also examined.

Access to public sector contracts

A2.38 The majority of suppliers responding to the questionnaire are SMEs. Figure A2. 12 below indicates that the type of organisation with the greatest share of small firms is 'software vendor'; the organisation type with the greatest share of large firms is ICT manufacturing. However, these differences across the size of firm are not statistically significant.

Question 8: Type of Organisation (please tick more than one if relevant)

Figure A2. 12: Size Distribution across Organisation type
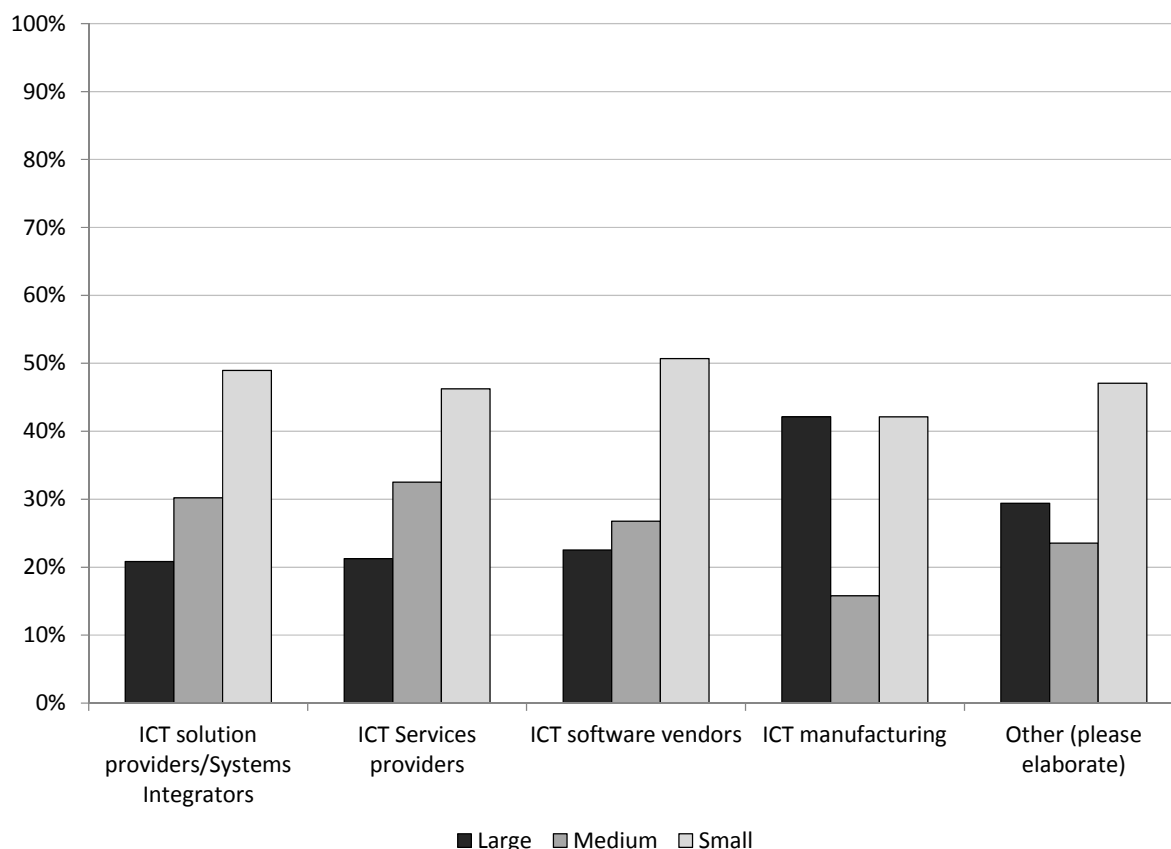
Note: Size categories are expressed as turnover in the last year. Large = more than €50 million; Medium = between €5 million and €50 million and small = less than €5 million

Source: Europe Economics Suppliers Survey Question 8

A2.39 For the majority of suppliers responding to the questionnaire (60 per cent), public sector contracts make up less than half of their total ICT contracts by number, as shown in Figure A2. 12. Differences in the importance of public sector contracts across firm size are not statistically significant (i.e. it is not possible to say that small firms are less reliant on public sector contracts than large firms), although a preliminary look at the data does suggest this, as shown in Figure A2. 14.

Question 17: Approximately what proportion of your ICT contracts come from public sector work compared with private sector work?

Figure A2. 13: Relative Importance of Public Sector ICT Contracts for Suppliers
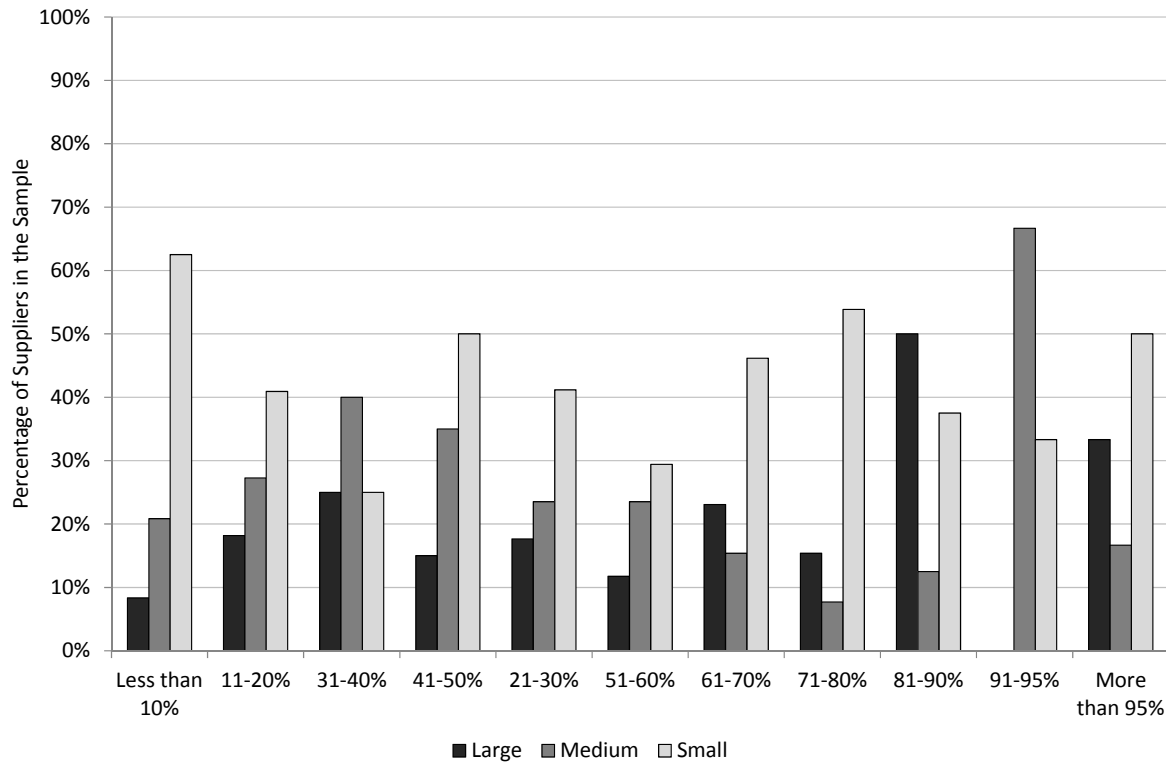
Source: Europe Economics ICT Suppliers Survey Question 17

Figure A2. 14: Importance of Public Sector Contracts by Firm Size
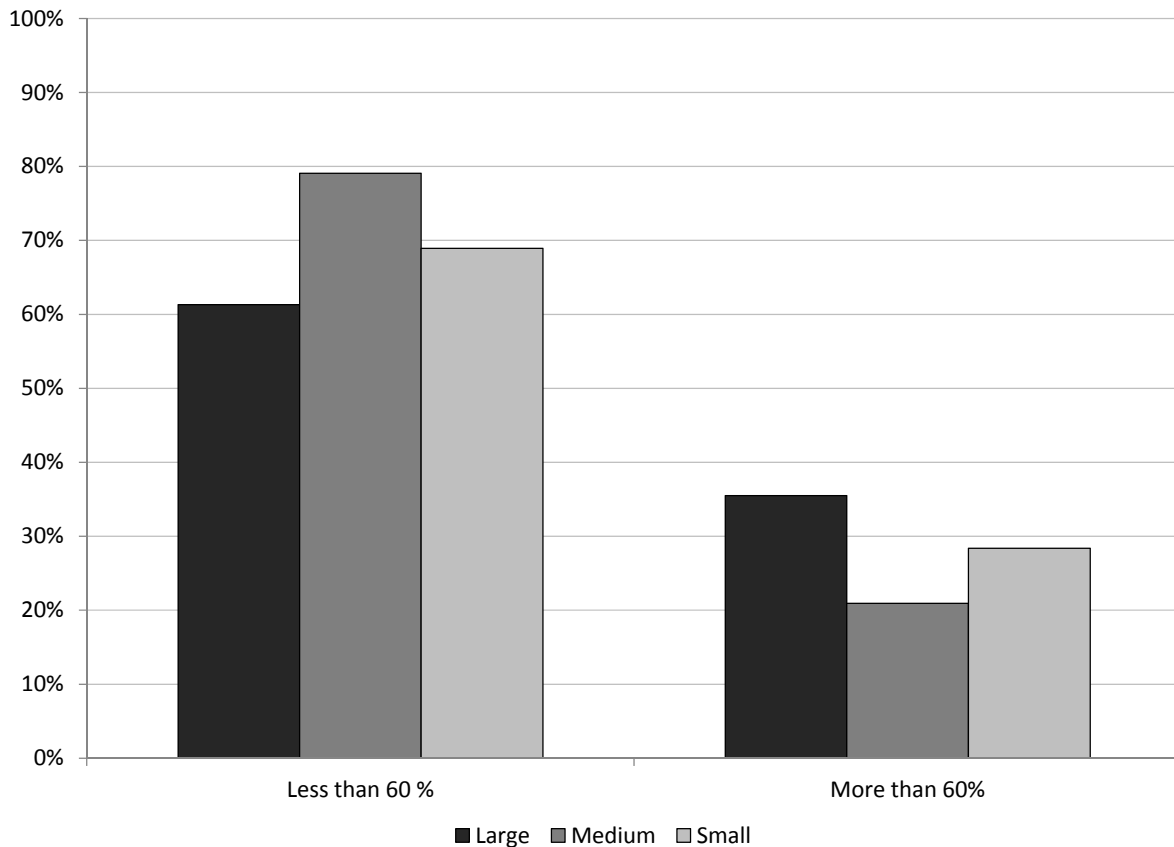
Source: Europe Economics ICT Suppliers Survey Question 17

A2.40   Figure A2. 15 below shows that the majority of suppliers responding to the questionnaire (76 per cent) access public procurement tendering opportunities from publically available tender sources, excluding the Official Journal of the European Union (OJEU). It is interesting to note that a significant proportion (52 per cent) find out about tender opportunities through direct engagement with public authorities.

A2.41   This corresponds with the practices of procuring authorities: of the 242 responding authorities, just under half have engaged with the ICT private sector other than through public tendering.[214]

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[214]   Procuring Authorities Questionnaire Q16

Question 18: What is the most common way in which you find out about public ICT procurement opportunities? Please tick more than one if relevant.

Figure A2. 15: Source of Public Sector Tender Opportunities for Suppliers
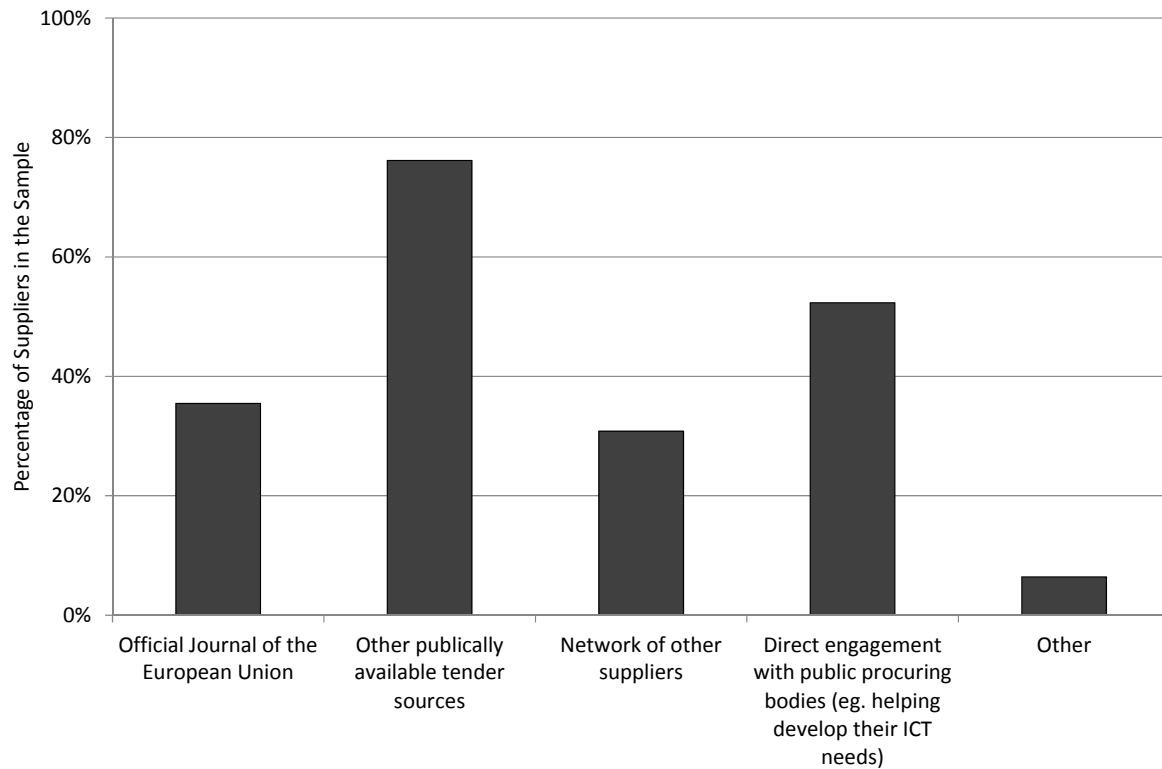
Source: Europe Economics ICT Suppliers Survey Question 18

A2.42 The figure below shows the size distribution of firms stating which sources of tender opportunities they use. The use of networks of other suppliers appears to be most commonly used by small suppliers. However, these variations in responses across the size categories are not statistically significant.

Figure A2. 16: Source of Public Sector Tender Opportunities for Suppliers, by size
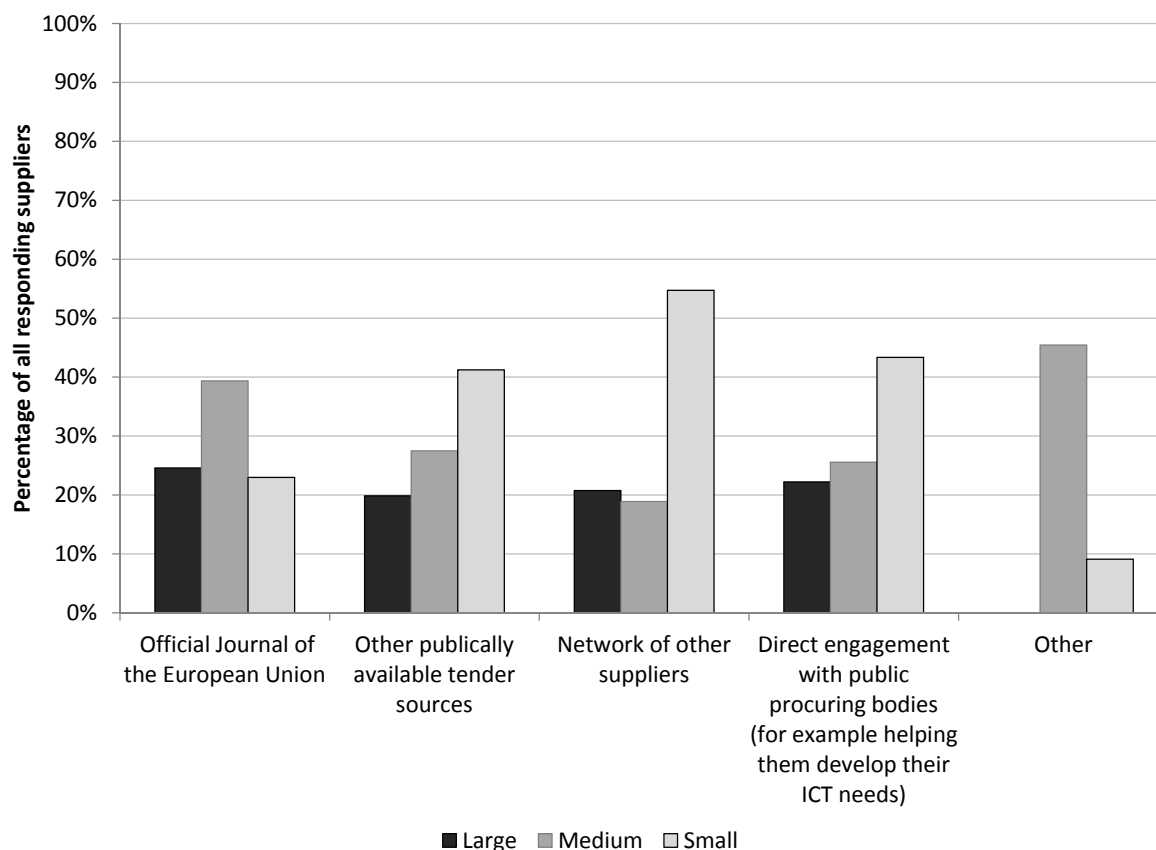
Source: Europe Economics ICT Suppliers Survey Question 18

A2.43 The majority of suppliers in our sample — 56 per cent — experience, at least sometimes, difficulties in engaging with public sector procurers and finding out about tender opportunities.

Question 19: Do you have any difficulties in engaging with public procurers and finding out about tender opportunities?

Table A2. 7: Suppliers Facing Difficulties in Engaging with Public Sector Procurers

Difficulties in engaging with public sector procurers	Number of respondents	Percentage of respondents
Yes	31	18%
No	72	42%
Sometimes	65	38%
N/A	4	2%
Total	**172**	**100%**

Source: Europe Economics ICT Suppliers Survey Question 19

Difficulties in participating in public sector contracts

A2.44   Once public sector ICT tender opportunities have been sourced, suppliers can still experience difficulties in participating in the tenders.

A2.45   The way in which public sector tenders are written can also restrict supplier participation. Figure A2. 17 below shows that suppliers often perceive restrictive practices in public sector tenders. Just under 60 per cent of suppliers consider that tenders either always or often refer to very specific technology that only a few suppliers can provide; just over 50 per cent of respondents reported that tenders either always or often refer to proprietary technical specifications.

Question 21: How frequently do the following occur (drawing on your own experience)? (Always, Often, Seldom, Never)

Figure A2. 17: Restrictive Nature of Public Sector Tenders
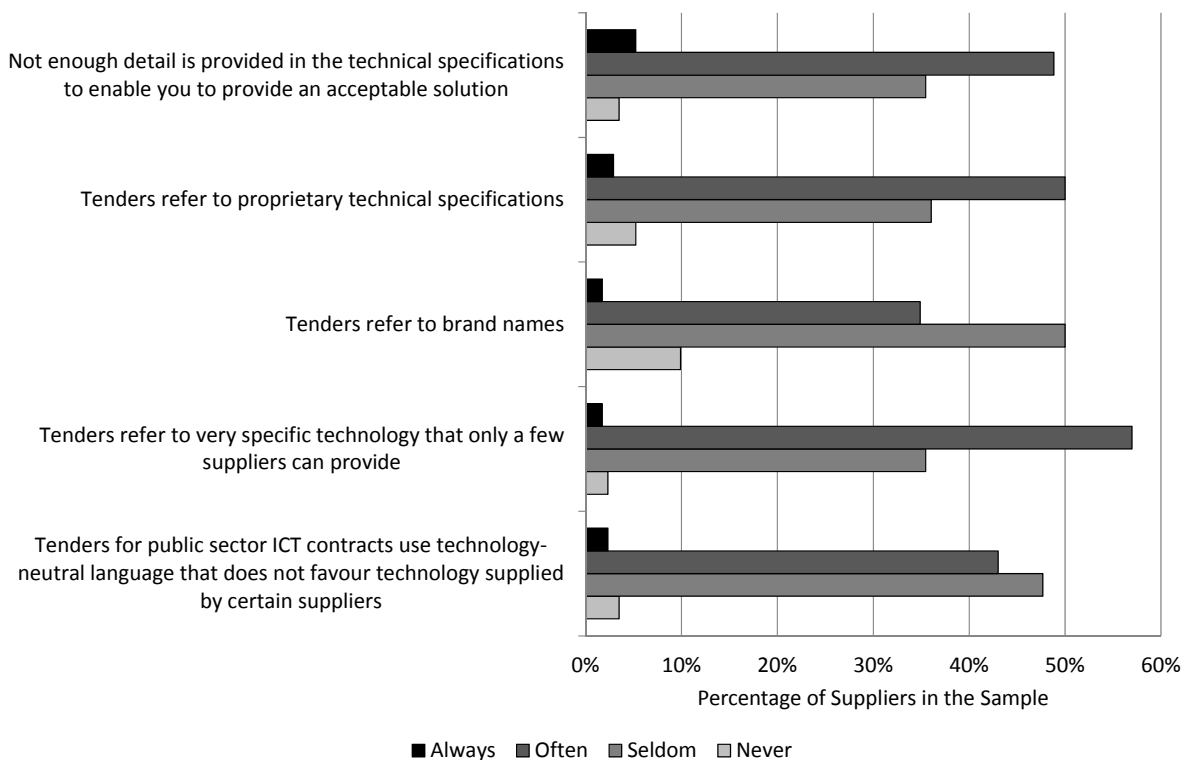
Source: Europe Economics ICT Suppliers Survey Question 21

A2.46   The majority of suppliers states that procurers either seldom or never use brand names in a restrictive way in tenders.

A2.47   The use of standards by public procurers can also restrict suppliers' ability to compete for tender opportunities, as shown in Figure A2. 18 below. Just under 40 per cent of responding suppliers felt that public sector tenders made use of standards that either

favoured technologies that only certain suppliers are able to provide, or gave other unfair advantage to certain suppliers.

Question 33: Of the Standards that you have come across in public ICT tenders, have any:

Figure A2. 18: Restrictive Nature of Standards Referenced in Public Sector Tenders
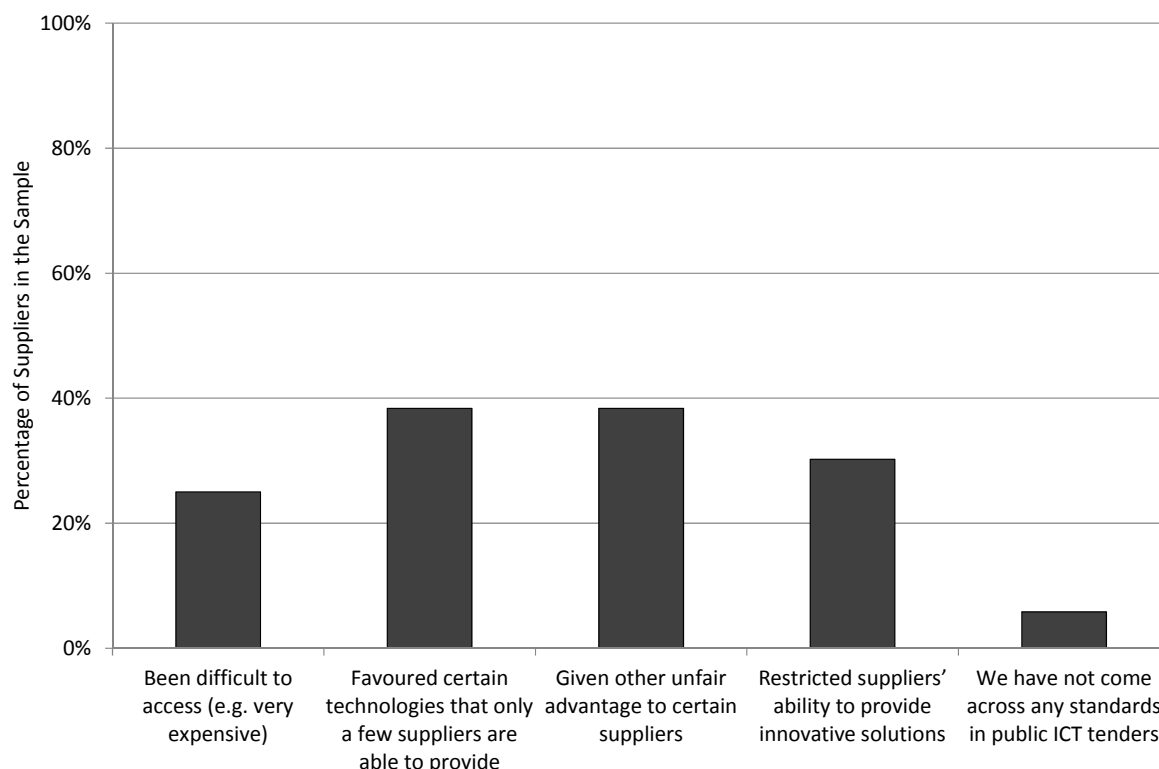
Source: *Europe Economics ICT Suppliers Survey Question 33*

A2.48   Question 22 in the supplier survey enables suppliers to detail other ways in which tenders restrict competition.   Suppliers mention eight ways as to how competition is restricted by tenders. A total of 64 suppliers responded this question:

(a) Twenty respondents cite poorly written tender specifications as a barrier for participation in tenders.   Descriptions of the required ICT need are often too technically detailed, allowing little room for innovation or alternative solutions. Suppliers state that better use of functional requirements should be made to enable them to propose an appropriate solution, rather than a pre-define solution being described in detail.

(b) Eighteen respondents view tenders as being obviously discriminatory, making use of vague evaluation and award criteria, specifications that clearly favour an incumbent supplier, or requests for irrelevant business details that exclude certain (usually smaller) companies.

(c) Eighteen respondents consider the tendering process makes participation by SMEs or new market entrants difficult, particularly the inclusion of requirements such as various years in business, long delivery records, trading volumes and other type of experience related requirements . An additional problem is the growing existence of large, wider frameworks, which do not allow smaller providers to participate.

(d) Eleven respondents consider that references to standards, specifications or certain products is restrictive in the tendering process.

(e) Six suppliers consider that the budget available for the project often restricts competition. Respondents argue that very low budgets restrict their ability to offer an appropriate solution and transfer significant risk onto them.

(f) Language was also mentioned as a barrier to participation. Some tenders require offers to be presented in their national language, which can act as a barrier to cross-border competitors.

A2.49 Suppliers were also asked how the tendering process could be made more open. Many of the solutions, suggested by 83 suppliers who respondents to this question, raise similar issues to those mentioned above.

(a) Nineteen respondents believe tenders should specify in tender calls the main problem for which they seek a solution, in order for suppliers to list the possible solutions, instead of tenders asking for a specific solution themselves, as this restricts innovation and can result in less optimal solutions. Suppliers believe that procurers should avoid asking for specific brand names, trademarks, and large supplier companies, and instead should focus on finding suppliers with more innovative solutions and lower costs of ownership than established firms.

(b) Fifteen respondents mention the need increased dialogue between suppliers and procurers to develop more feasible and appropriate solutions and increase the chance for smaller firms to participate (rather than procurers always going to large, familiar suppliers).

(c) Thirteen respondents believe the tender specifications are too vague, lack clarity and details, and that procurers should clearly specify what the ICT need is. If technical specifications are included, these could be written more clearly and appropriately.

(d) Twelve respondents suggest tenders can be more open by avoiding the use of brand names or specific technical specifications. When standards or specific certifications are used, they should be relevant and appropriate for the contract in question, because sometimes tenders use standards in order to limit competition even when they are not necessary.

(e) Sixteen respondents consider that the procurement process could more efficient and better organized. The administrative burden imposed by lengthy and detailed tender processes make participation difficult and costly particularly for SMEs. SMEs also

SMEs struggle to be on larger frameworks and they do not possess much experience, unlike procurer's first choice of engaging in contracts with large experienced suppliers. Contracts should be modular and tenders should always request open standards, so that procurers are obliged to at least consider open source software (usually provided by smaller companies).

(f) Eight respondents suggest the evaluation criteria are inappropriate when choosing a supplier, and should be based upon quality, product, and only according to what is being presented in the tender content (as opposed to other requirements for previous experience and turnover).

Identifying the ICT need

A2.50 The way in which ICT procurement needs are assessed and developed into tenders is likely to influence the quality of the tender process and the final outcome for the procuring authority, as well as the ability of suppliers to respond to the tenders.

A2.51 As shown in Figure A2. 19 below, procuring authorities responding to our survey in general undertake a new evaluation of the products and suppliers in the market to identify the most suitable products or services for their needs (72 per cent always or often do this). However, 44 per cent of respondents always or often take examples from existing or previous contracts or sources without undertaking any new product evaluation.

Question 15: When deciding on the requirements (needs) of your ICT products or services, how often do you (Always, Often, Sometimes, Never):

Figure A2. 19: Evaluation of new ICT Need by Procurers
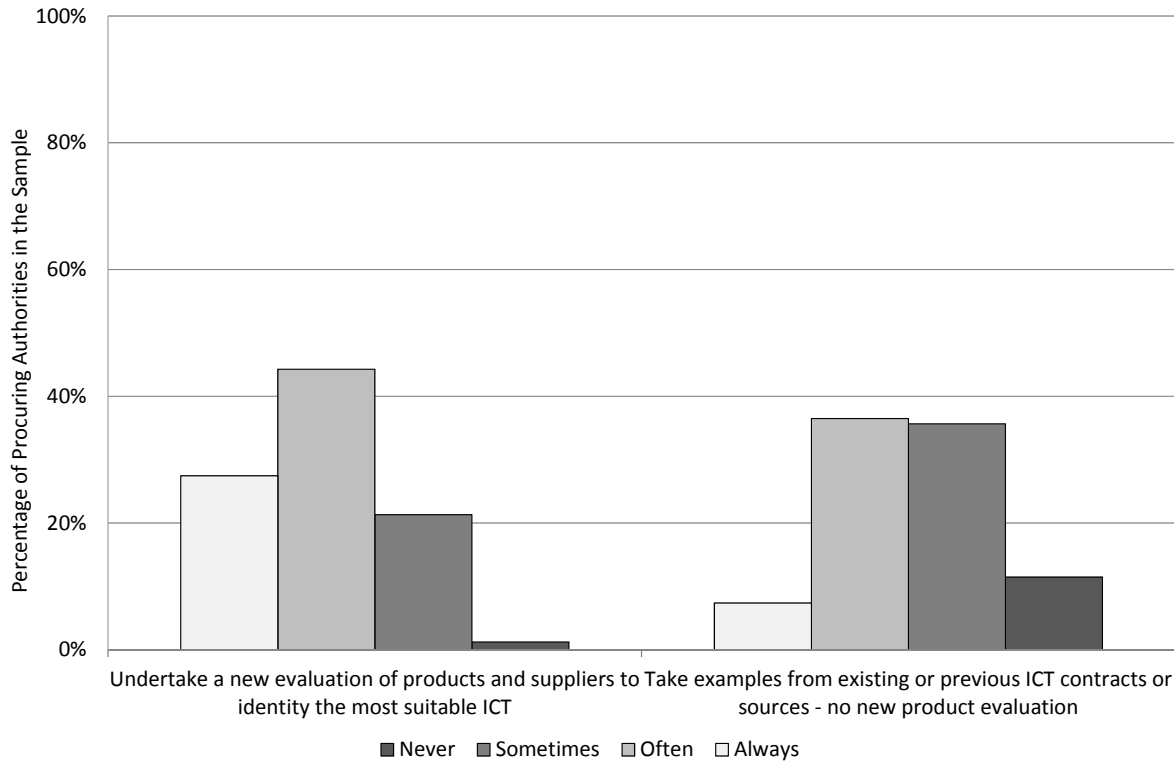
Source: Europe Economics Procuring Authorities Survey Question 15

A2.52   In order to assess whether the level of evaluation had an impact on the likelihood of being locked-in to a particular vendor or supplier, we assessed whether those respondents who always or often undertook a new product evaluation were less likely to experience lock-in than those who seldom or never undertook new evaluation.[215]   However, there was no statistically significant variation across the groups.

A2.53   Just under half of procures responding to our survey also often engage with the ICT industry other than through public tendering, such as through collaboration and research, whilst just under 40 per cent have never done so.

Levels of expertise in developing tenders

A2.54   Figure A2. 20 shows that the majority of public authorities make use of internal IT skills then determining their ICT needs.

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[215]   Lock-in represented by answers to Question 23 of the Procuring Authorities questionnaire

Question 14: Which of the following sources of expert knowledge are most important in deciding the requirements (needs) of your ICT products or services? Please tick more than one if relevant.

**Figure A2. 20: Sources of Knowledge when Deciding ICT Needs**
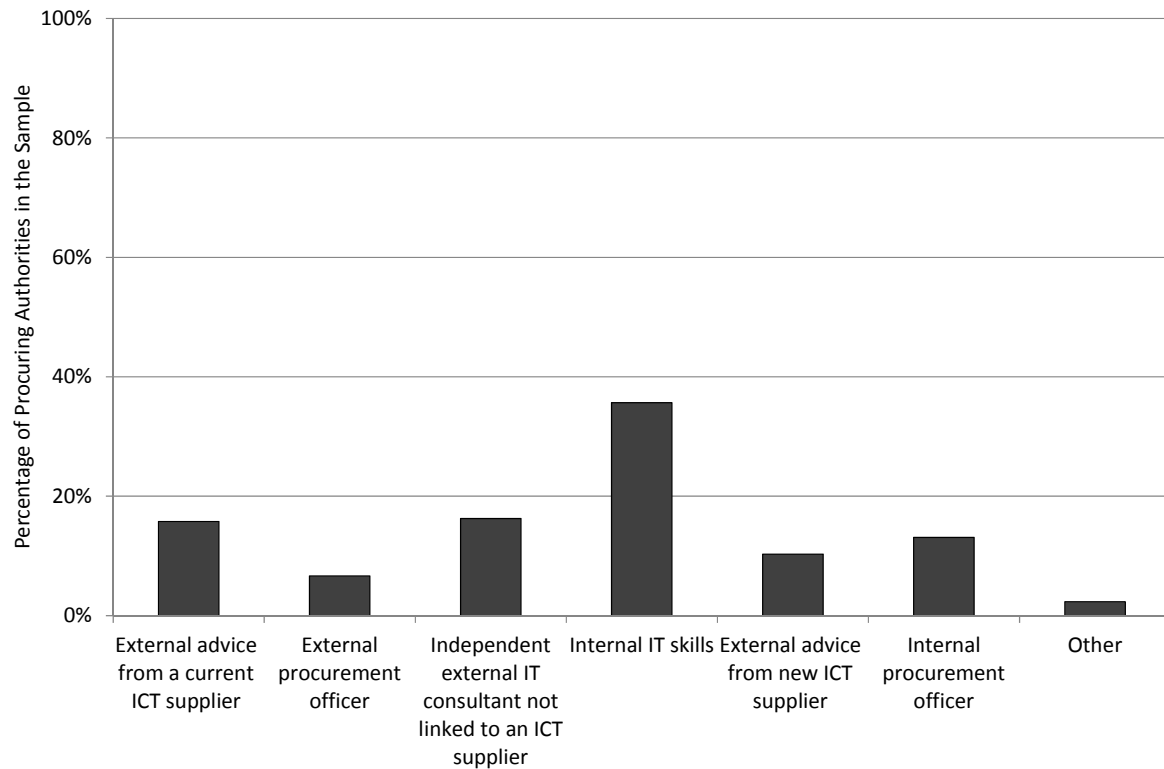
Source: Europe Economics Procuring Authorities Survey Question 14

A2.55   The available expertise in drawing up technical specifications are significantly more concentrated on internal IT skills.

Question 17: Who in your organisation usually writes the technical specifications for the ICT tender? Please tick more than one if relevant.

Figure A2. 21: Individual Responsible for Writing Technical Specifications
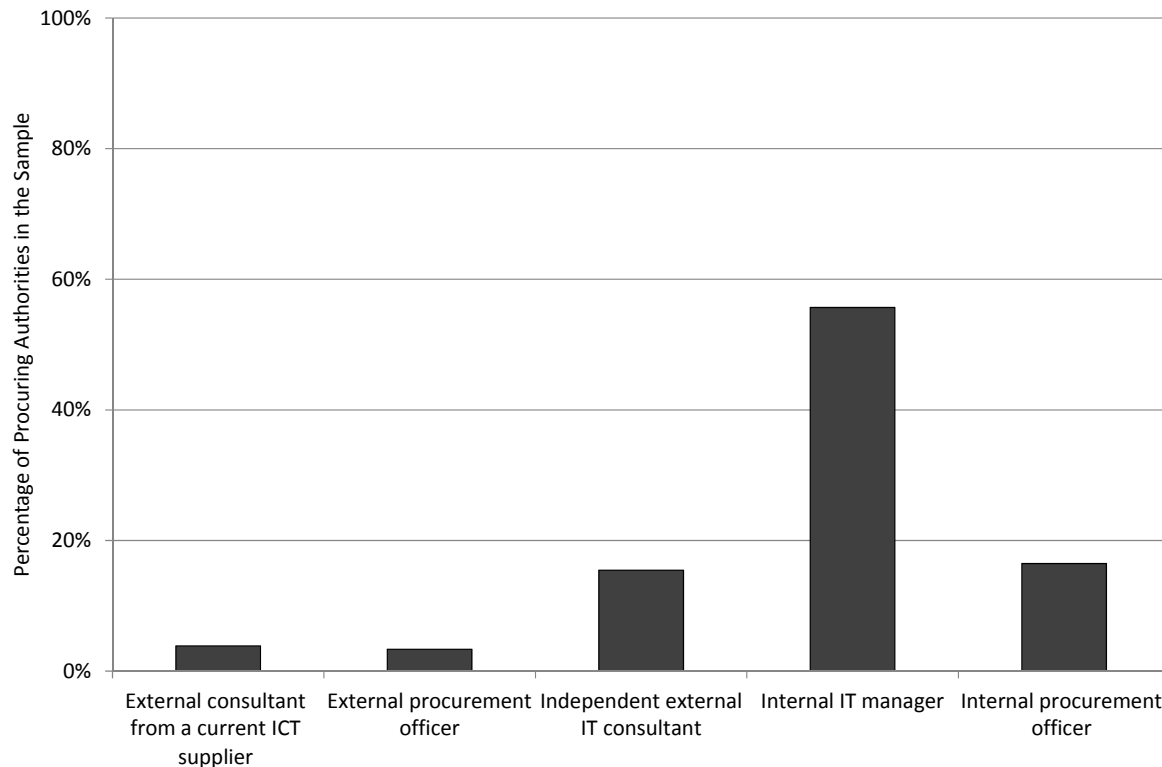
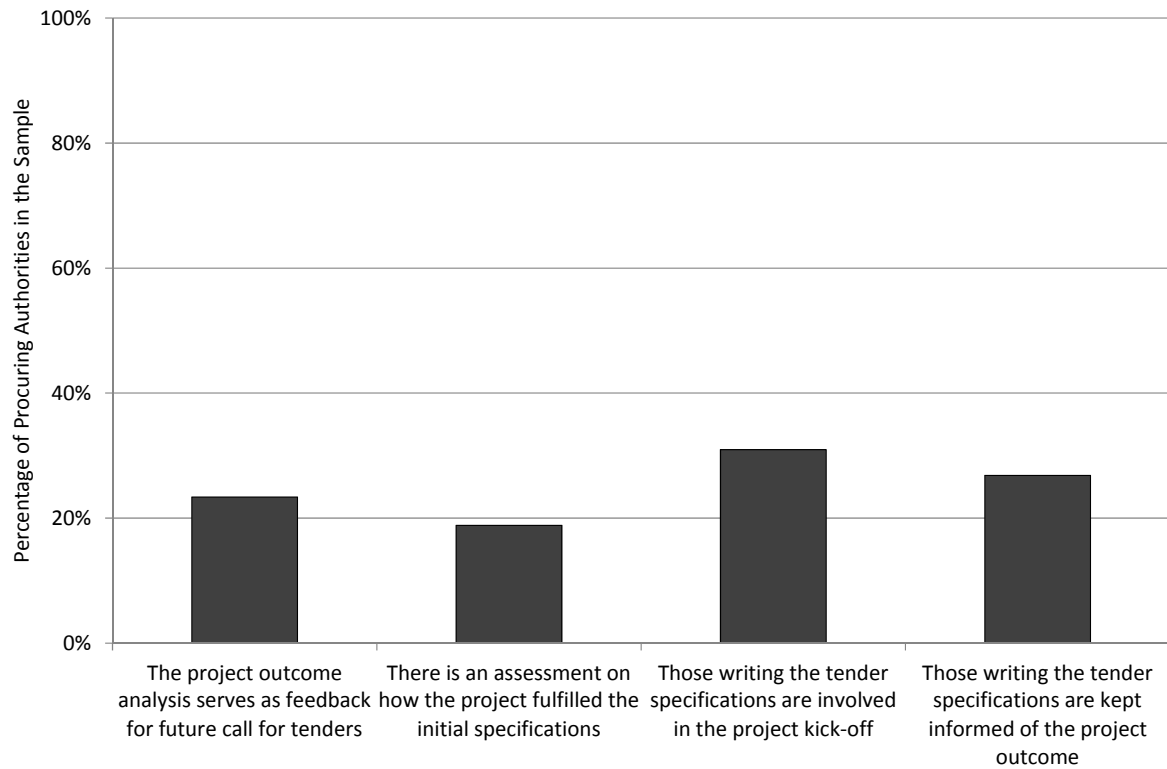*Source: Europe Economics Procuring Authorities Survey Question 17*

A2.56 In order to assess whether the types of skills used to draw up technical specifications was related to the use of standards, we tested whether public authorities using only procurement skills were less likely to make use of standards in tenders compared with authorities using IT skills. However, there was no statistical variation across groups.

A2.57 Figure A2. 22 shows that in a relative minority of cases are those who are involved in developing the tenders are also involved in the rest of the IT project. Review of the tender and how the specifications are fulfilled also does not occur often.

Question 20: Do the following apply to the usual contract follow-up? Please tick more than one if relevant.
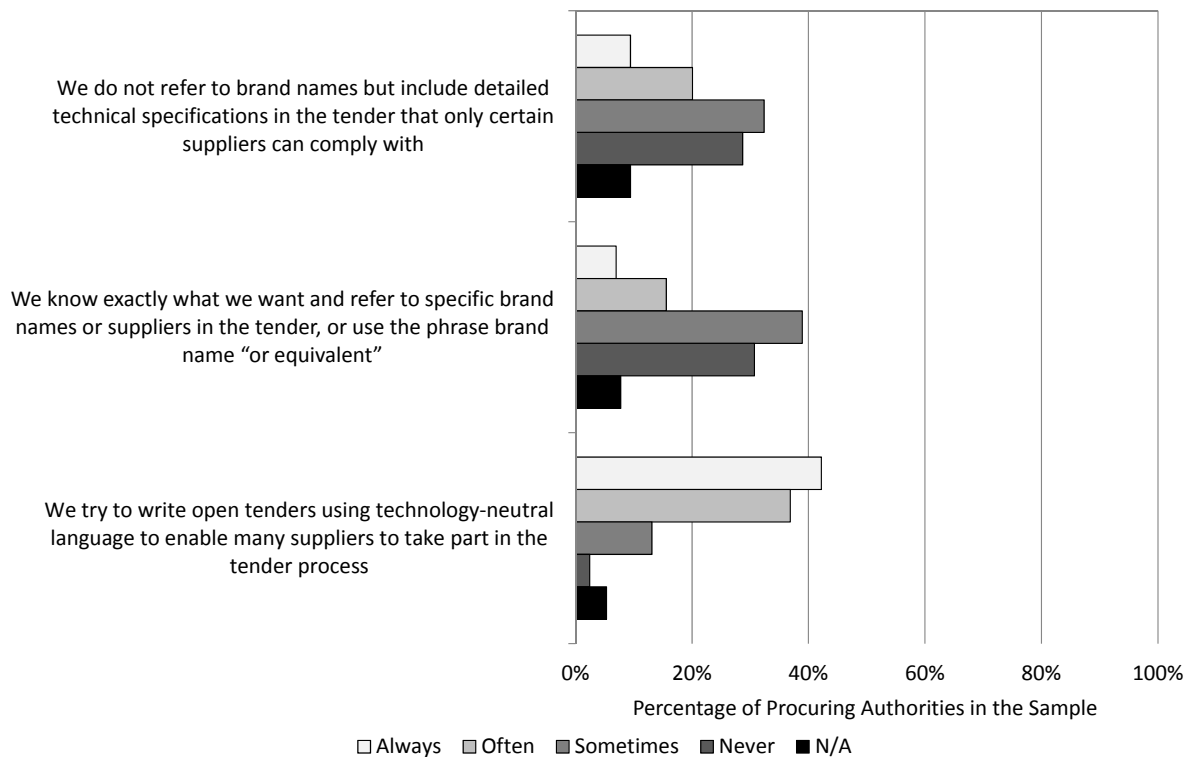
Figure A2. 22: Follow-up of Tenders

Tender writing practices

A2.58 Procurers were asked about the way in which they describe their ICT needs within tenders.

Question 18: When preparing tenders for ICT contracts, how often do you do the following: (Always; Often; Sometimes; Never)?

Figure A2. 23: Tender Preparation

Source: Europe Economics Procuring Authorities Survey Question 18

Evaluation of Costs of ICT Procurement

A2.59 Developing the business case for ICT procurement is an important element of ensuing that the ICT meets the organisation's needs.

A2.60 Figure A2. 24 below shows that acquisition costs (the direct costs incurred to bring the product/service into operation) and operational costs (all the costs likely to be incurred throughout the life of the ICT product or service, such as maintenance and updates, as well as staff training and project management costs) are the most important consideration for procuring authorities. A smaller proportion of procuring authorities consider exit costs to be either extremely important or important; however this is still a significant majority (66 per cent).

Question 13: When deciding your budget for the ICT purchase, how important are the following elements in your Total Cost of Ownership? (Extremely important; Important; Not very important; Not relevant).

Figure A2. 24: Importance of Cost Categories
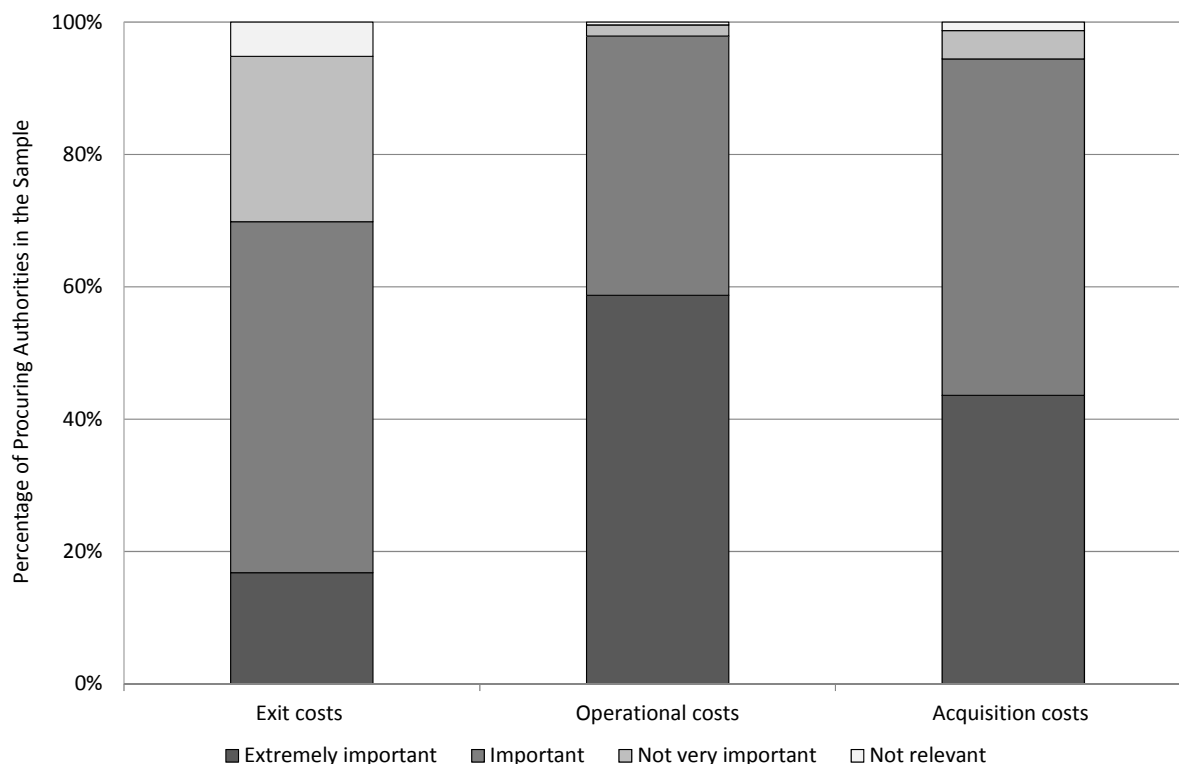
A2.61   This is somewhat contradicted by the suppliers responding to the survey, who report that procurers seldom or never require them to include 'exit costs' in their price (for example, likely costs required to hand the system over to an alternative supplier in the future).

A2.62   We investigated whether a consideration of exit costs reduced the likelihood of lock-in.[216] However, there was no statistically significant variation in evidence of lock-in between those procurers who considered exit costs to be important and those that did not.

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[216]   Procuring Authorities Survey question 23

Question 26: How often do tenders require you to include 'exit costs' in your price (for example, likely costs required to hand the system over to an alternative supplier in the future)?

Figure A2. 25: Requests for Exist Costs in Tenders
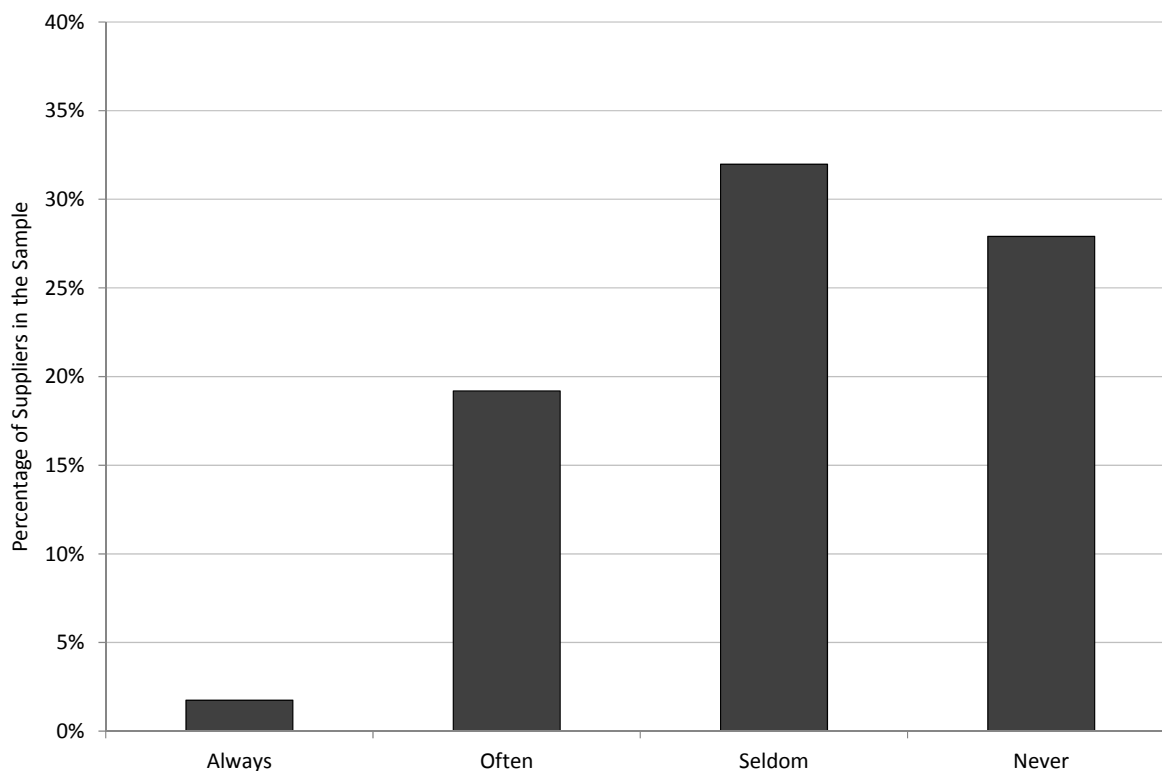
Source: Europe Economics ICT Supplier's Survey Question 26

Evidence of lock-in

A2.63   Figure A2. 26 below suggests that a non-trivial proportion procuring authorities responding to the questionnaire consider themselves 'locked-in' to their existing ICT solutions and suppliers. Just under 40 per cent state that changing their existing brand of solution would be too costly as other systems would need to be adapted as well, and 34 per cent considered such a change too costly given the current levels of training among staff

A2.64   Lock-in resulting from incompatible data formats appears to be less of a problem, although a quarter of respondents still felt that they would not be able to change their ICT solutions due to fears that their information would not be transferable.

A2.65   On the whole, however, lock-in is not perceived to be a large concern among public procurers.

Question 21: Do you agree with any of the statements below (Strongly agree; agree; neutral; disagree; strongly disagree).

Figure A2. 26: Experience of Lock-In by Procuring Authorities
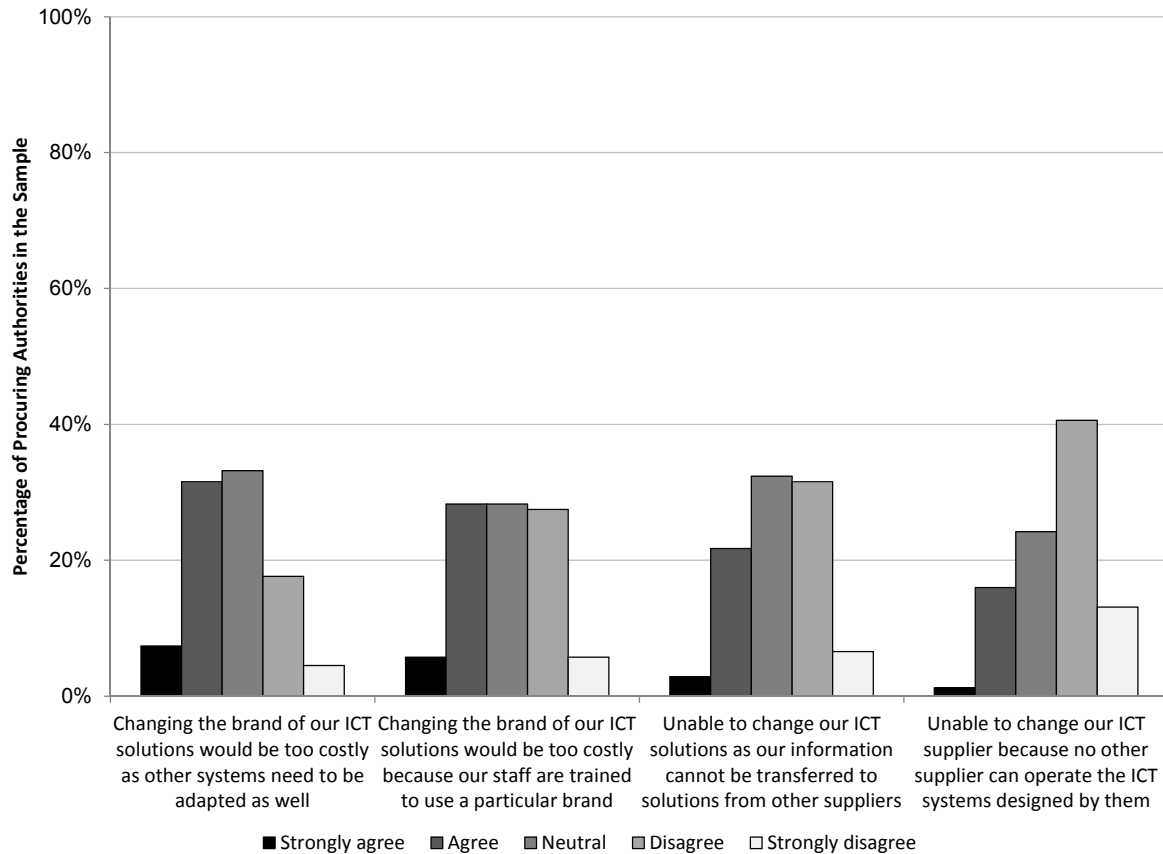
Source: Europe Economics Procuring Authorities Survey Question 21

A2.66   Respondents were invited to comment on other experiences of being locked-in to certain ICT products or brands.[217]   Just over 35 per cent of our sample (86 respondents) stated that they had had experience of being locked-in, which is broadly similar to the extent of lock-in implied by the responses recorded in the figure above. Ten per cent said that they had not had any such experience.[218]

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[217]   In addition to those in the figure above
[218]   Fifty-five per cent did not respond to the question.

Question 23: Have you any experiences of being "locked into" a certain ICT brand, product or supplier (i.e. unable to easily change even though you would like to)? Please elaborate.

Table A2. 8: Prevalence of Being 'Localed-In"

	Number of respondents	Percentage of respondents
Yes	86	35%
No	20	10%
N/A	138	55%
Total	**244**	**100%**

Source: Europe Economics Procuring Authorities Survey Question 23

A2.67 The main sources of lock-in given by respondents with additional experience of lock-in related to:

(g) Software (cited by 36 per cent of the sub-sample of 86 respondents). Software lock-in was often linked to an inability to transfer information to other types of software, as well as to the dominant nature of certain software firms which made it difficult to identify and purchase suitable software from smaller competitors.

(h) Database systems (22 per cent of the sub-sample of 86 respondents). Particular reasons for lock-in were that many systems used by respondents do not integrate well with systems developed by other vendors. Overall costs of changing systems, in addition to technical limitations, were not justified by any additional capabilities of new systems.

(i) Bespoke solutions (15 per cent of the sub-sample of 86 respondents). Lock-in to bespoke ICT appears to be largely related to transfer the specific technical knowledge to other suppliers. A lack of proper documentation by suppliers when developing the bespoke systems means that is it very difficult for other suppliers to know the history of the system and to provide the same services. This creates very high risk in switching suppliers

(j) ICT hardware and equipment (nine per cent of the sub-sample of 86 respondents). However, some respondents did state that hardware is increasingly supplier independent and less likely to result in lock-in.

A2.68 Suppliers were also asked to describe evidence of public procurers being locked-in to certain suppliers or brands.[219]   Twenty-six per cent of suppliers (45 of the sample of 172) were aware of evidence of lock-in displayed in public sector ICT tenders, or felt that the tenders would serve to perpetuate existing lock-in.

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[219] Supplier Survey question 30

A2.69 Procurers were asked about the regulatory with which they include licence renewals within their tenders. The majority of respondents do so. Requesting licence renewals is not necessarily considered poor practice, provided such requests are made after a proper evaluation of the ICT need and not just on historical practice.

Question 22: Do you regularly buy licence extensions or upgrades?

Table A2. 9: Purchasing of License Extensions or Upgrades

	Number of respondents	**Percentage of respondents**
Yes	193	79%
No	28	11%
N/A	23	9%
Total	**244**	**100%**

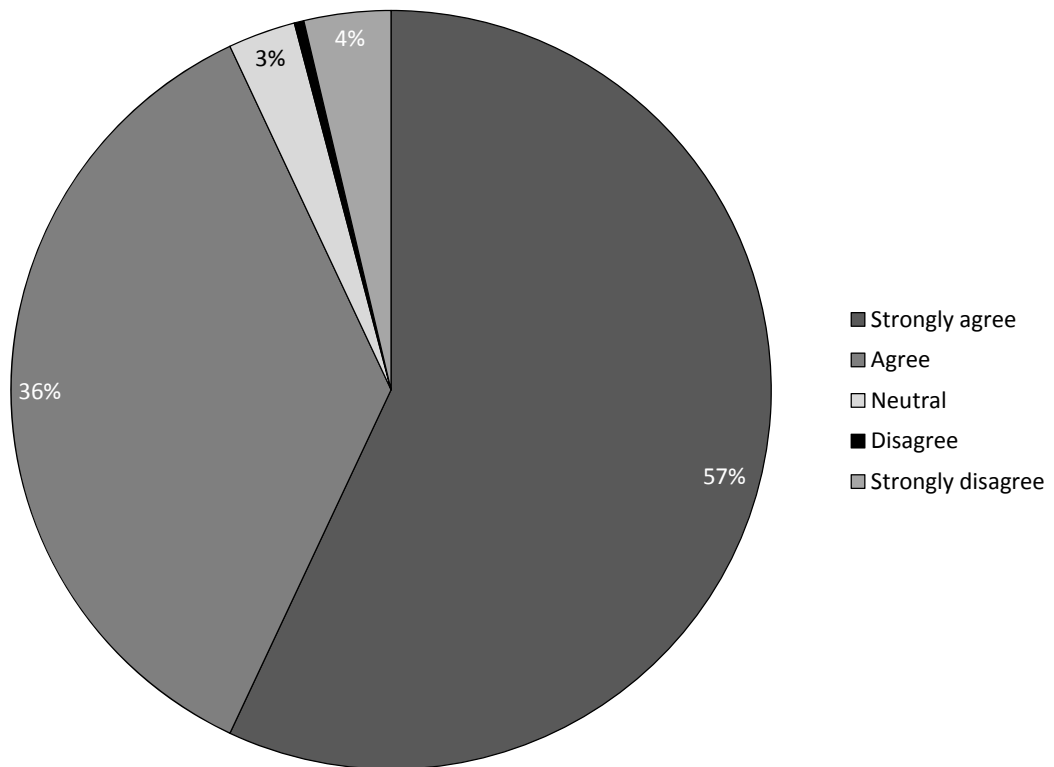*Source: Europe Economics Procuring Authorities Survey Question 22*

Compatibility

A2.70 Figure A2. 27 below shows that a significant majority of procuring authorities agree or strongly agree that when buying ICT solutions, compatibility with existing solutions is a very important criterion.

Question 21: Do you agree with any of the statements below (Strongly agree; agree; neutral; disagree; strongly disagree).

Figure A2. 27: Importance of Compatibility of new ICT with Existing Systems for Procuring Authorities


Source: Europe Economics Procuring Authorities Survey Question 21

A2.71 Suppliers responding to the survey also experience frequent requests for the new products or services being tendered for to be compatible with existing solutions and systems.

Question 24: How often do tenders require the new product or service being tendered for to be compatible with existing ICT products or systems?

Figure A2. 28: Frequency with which Tenders Require New ICT to be Compatible with Existing Systems
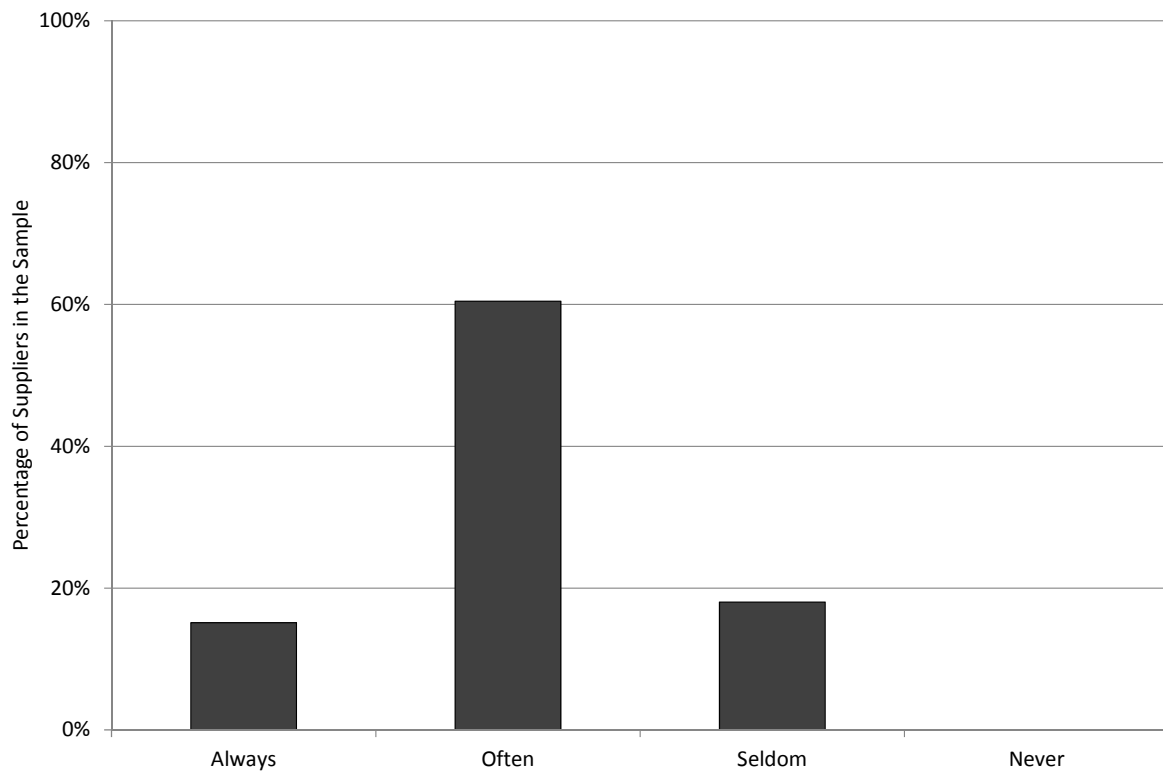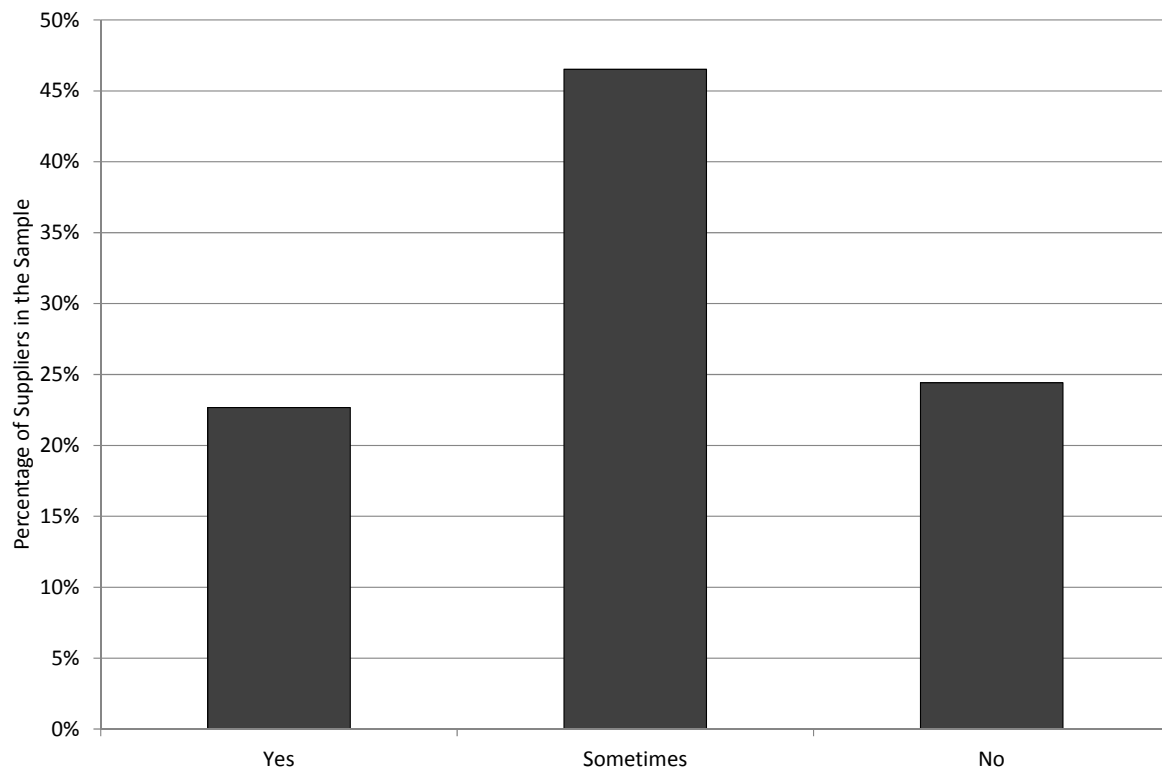

Source: Europe Economics ICT Supplier's Survey Question 24

A2.72 These requests for compatibility are considered by the majority of suppliers to either always or sometime restrict their ability to participate in the tender, and shown in Figure A2. 29. This suggests that compatibility requests from procurers often refer to specific proprietary products that certain suppliers were not able to provide, which could increase the likelihood of the procuring authority being continually locked-in to the original vendor products.

Question 25: Do such requirements of compatibility restrict your ability to participate in the tender?

Figure A2. 29: Compatibility Requests Restrict Participation in Tender

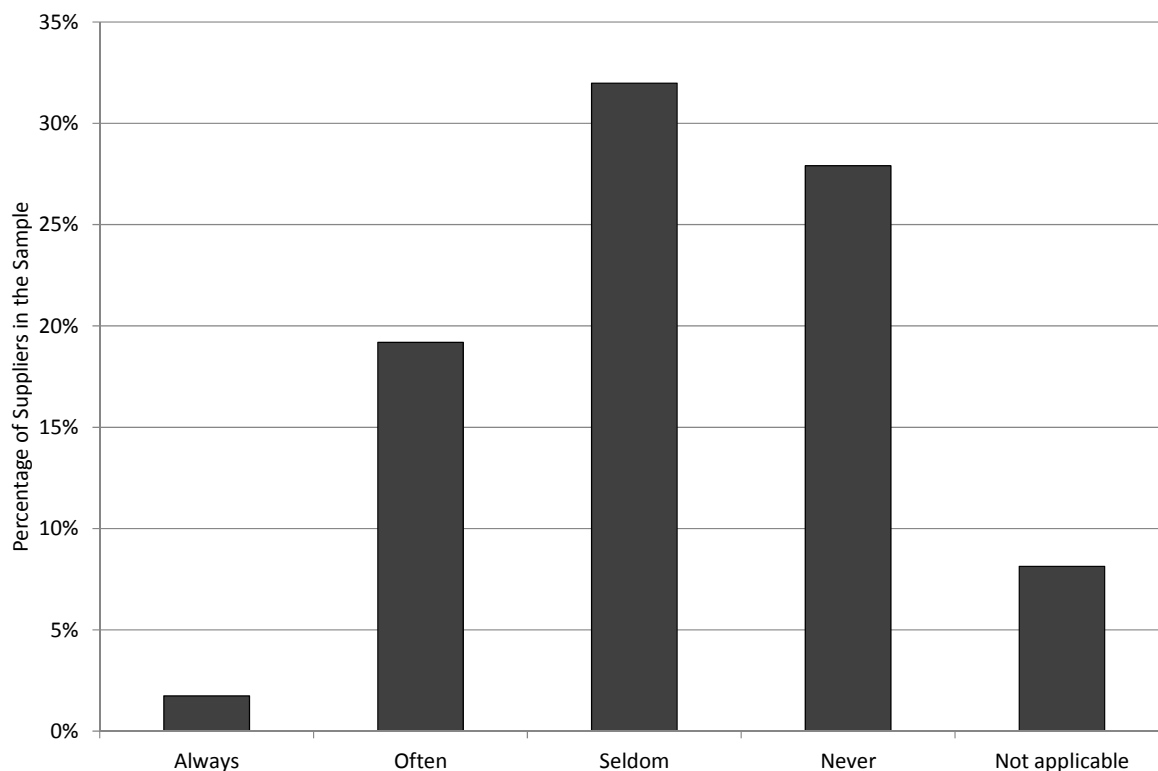*Source: Europe Economics ICT Supplier's Survey Question 25*

A2.73 The reasons given for how requests for compatibility restrict suppliers' ability to participate in tenders mainly included a lack of detail on existing systems for which compatibility is required, thus providing the supplier of the existing systems with an advantage in the tender. In addition, compatibility requirements are often excessive, either requiring exaggerated knowledge of existing solution (which again can favour the original supplier), or requesting compatibility that is not necessary.

A2.74 Respondents to the supplier survey also indicate that public procurers seldom request open data formats, which is considered good practice to avoid lock-in.

Question 28: How often are open data formats (data formats using a published specification that can be implemented by anyone) required in tenders?

Figure A2. 30: Requirements for Open Data Formats in Public Tenders

Source: Europe Economics ICT Supplier's Survey Question 28

Requirements for interoperability

A2.75   Procuring authorities often specify in their tenders that the ICT products or services being procured must be interoperable with products or systems form different brands and suppliers.   Of our respondents to the procuring authorities' survey, 70 per cent had specified the need for such interoperability.   The most common way of doing so, as cited by 16 per cent of respondents, was through specifying the existing systems or products (often by brand name) with which the new ICT must be compatible with.   Only nine per cent said they requested interoperability through the use of standards.

A2.76   The majority of suppliers (56 per cent) reported that tenders either always or often request interoperability.

Question 24: Have you ever specified in a tender that the ICT product/service you want to purchase must be compatible with other products or services from different suppliers or brands?

Table A2. 10: Requests for Interoperability by Procurers

	Number of requested records	% of total number records (249)
Yes	175	70%
No	50	20%
N/A	24	10%
Total	**249**	**100%**

Source: Europe Economics ICT Procuring Authorities Survey Question 24

A2.77 Of those authorities that have had the need to specify interoperability within their tenders, 45 per cent (77 respondents, 32 per cent of the total sample) have experienced difficulty in doing do. Reasons given include:

(a) Difficulty in specifying the all technical details necessary to achieve interoperability. Systems have many different functions and describing how each one is required in operate with other systems can be too challenging. In addition, where systems involve proprietary elements it can be difficult to access the detailed specifications to include in the tender to help the bidders develop interoperable solutions.[220]

(b) Inability to quote brand names made requesting interoperability with other products or brands particularly difficult.[221]

(c) Lack of adequate standards as an impediment to describing the need for interoperability.[222]

A2.78 Suppliers were also asked on the frequency with which interoperability was requested in tenders.

[220] Cited by 15 respondents, six per cent of total sample
[221] Cited by eight respondents, three per cent of total sample
[222] Cited by five respondents, two per cent of total sample

Question 29: How often do tenders require the product or service being tendered for to be interoperable with a wide range of products or services?

Figure A2. 31: Interoperability of Tendered Product or Service
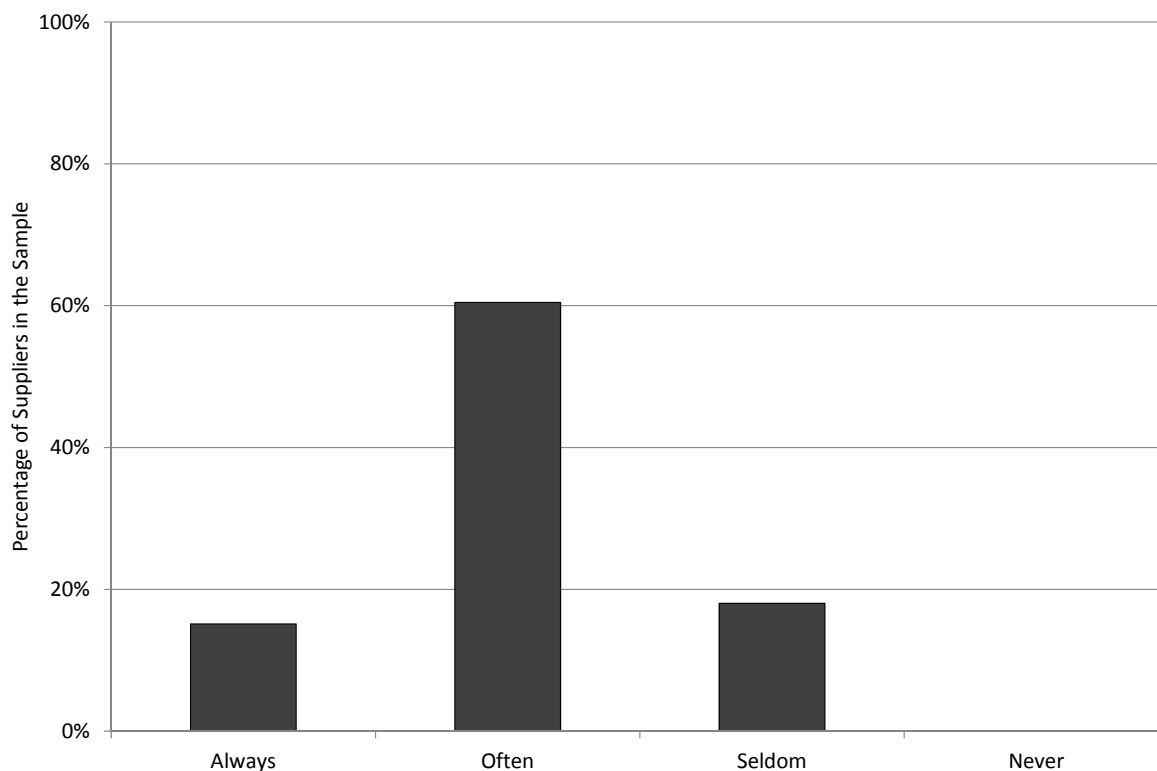
Source: Europe Economics ICT Supplier's Survey Question 29

Applications to citizens

A2.79   The majority public authorities responding to the survey (55 per cent) make ICT applications available to citizens. Of these, ten per cent (a total of 14 respondents, six per cent of the total sample) state that citizens are obliged to use a particular brand of browser or software to access the ICT application.

Use of Brand Names and Restrictive Specifications

A2.80   According to procurement respondents, the majority use brand names in tenders, with 23 per cent either always or often referring to brand names, and just under 40 per cent only sometimes doing so.

A2.81   Figure A2. 32 shows that suppliers consider the use of brand names within public tenders to be more extensive, with 37 per cent stating that brand names are always or often used by procurers. However, over 50 per cent of suppliers state that procurer either seldom or never use brand names, which suggests that this practice, although it occurs, is not widespread.

Question 18b: When preparing tenders for ICT contracts, how often do you do the following: (Always; Often; Sometimes; Never)? [Refers to "We know exactly what we want and refer to specific brand names or suppliers in the tender, or use the phrase brand name "or equivalent"" only].

Figure A2. 32: Use of Brand Names by Procuring Authorities
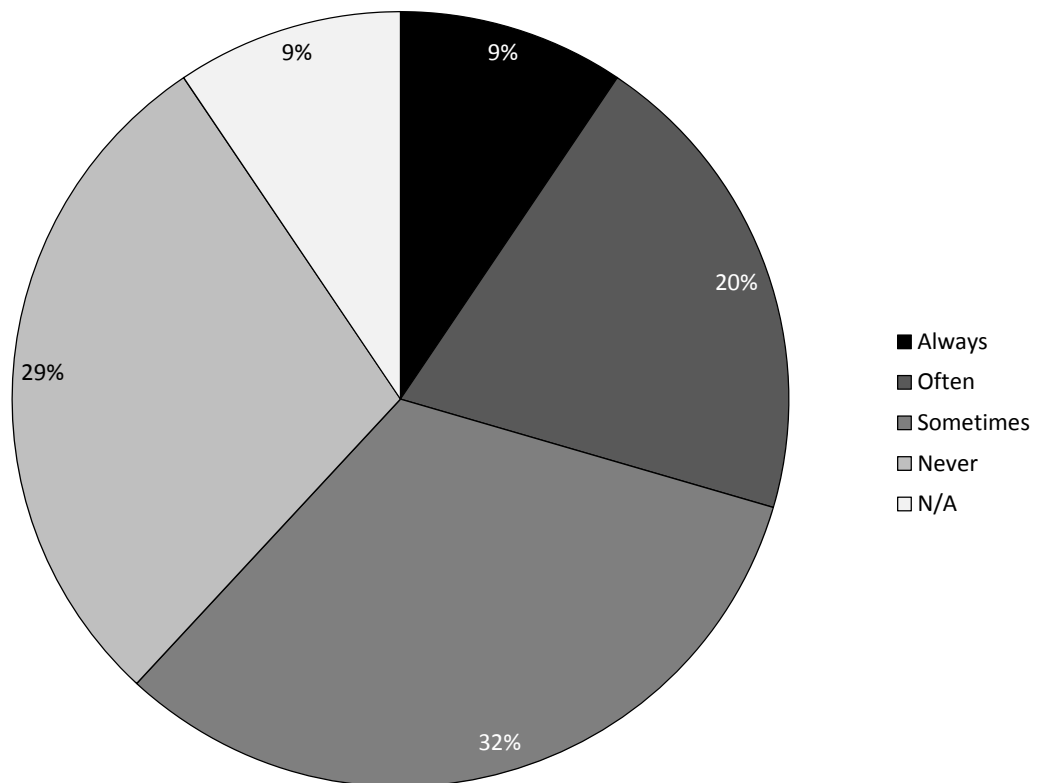
Source: Europe Economics Procuring Authorities Survey Question 18b

Question 21c: How frequently do the following occur (drawing on your own experience)? (Always, Often, Seldom, Never) [Refers to "Tenders refer to brand names" only].

Figure A2. 33: Use of Brand Names by Procuring Authorities (according to suppliers)
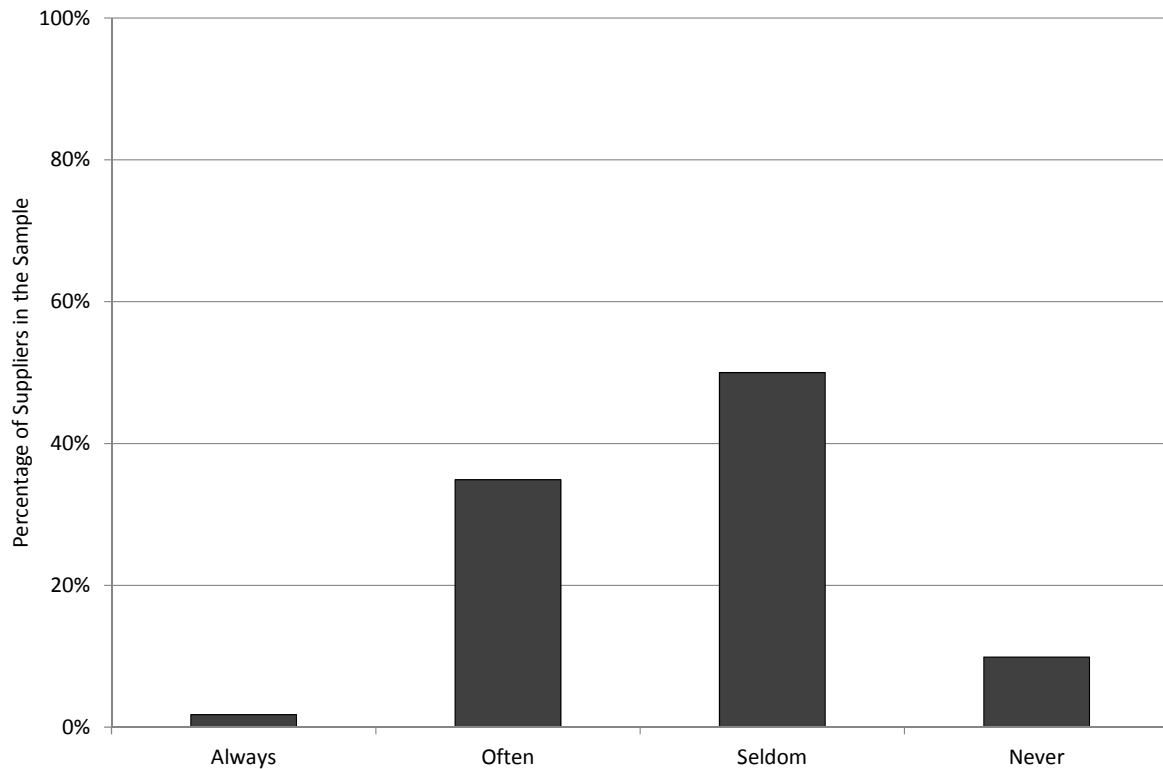
Source: Europe Economics ICT Supplier's Survey Question 21c

A2.82   Suppliers also consider that proprietary technical specifications and restrictive references to technology that only a few suppliers can provide, are often included in public procurement tenders.

Question 21 b,d: How frequently do the following occur (drawing on your own experience)? (Always, Often, Seldom, Never)

Figure A2. 34: Use of Proprietary Specifications by Procuring Authorities (according to suppliers)
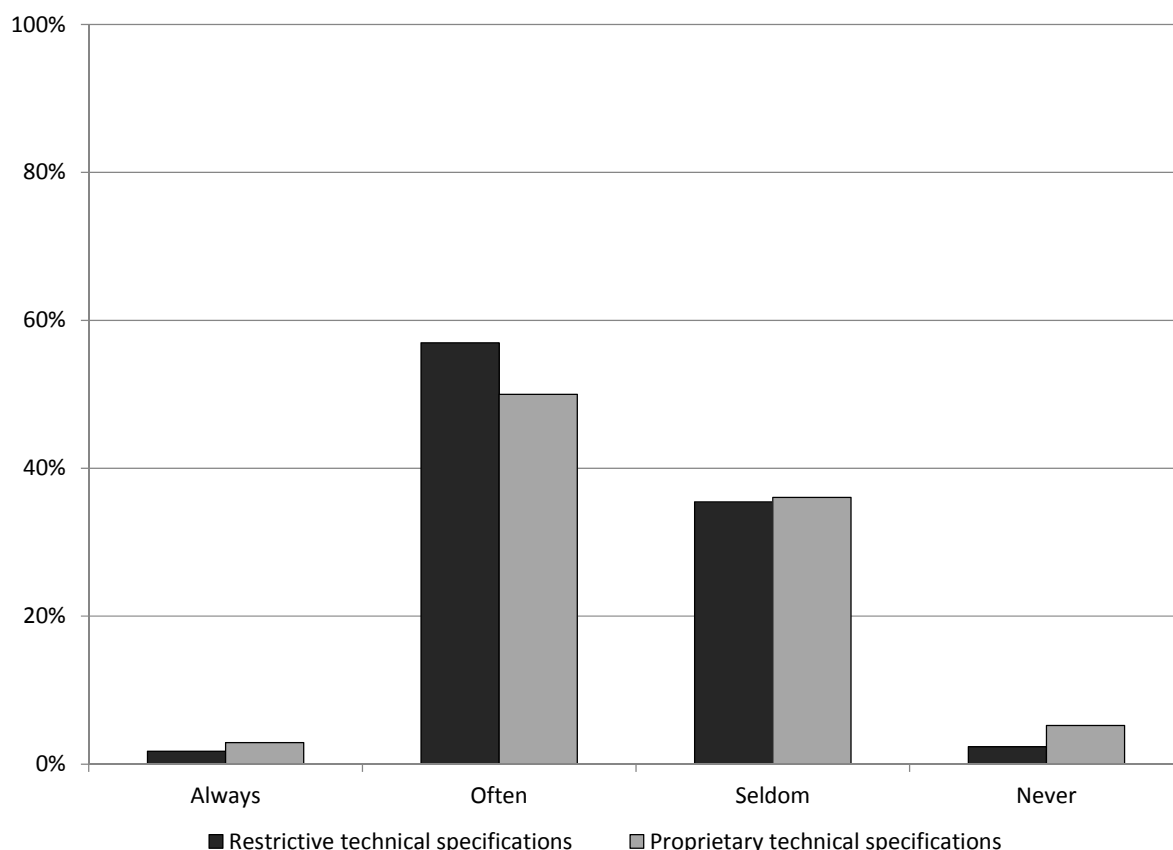
Source: Europe Economics ICT Supplier's Survey Question 21b,d

Awareness and use of standards

A2.83 The use of ICT standards in tenders by the public authorities responding to our survey appears to be extensive, with 67 per cent stating that they always or often refer to standards, as shown in Figure A2. 35. This is similar the views of suppliers, 52 per cent of whom said that public tenders either always or often refer to standards as shown in Figure A2. 36.

Question 30: How often do you refer to ICT Standards when you are writing tenders for ICT products or services?

Figure A2. 35: Public Procurers' Use of Standards in Tenders
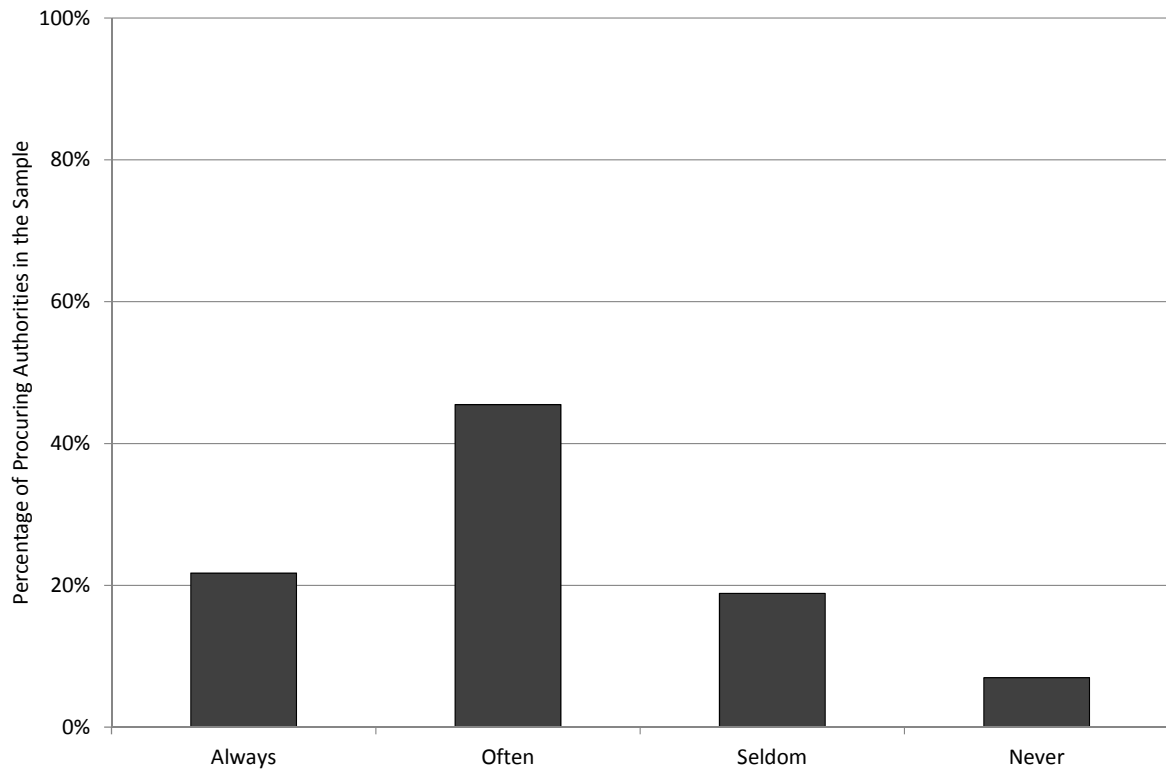
Source: Europe Economics Procuring Authorities Survey Question 30

Question 31: How often do you refer to ICT Standards when you are writing tenders for ICT products or services?

Figure A2. 36: Public Procurers Use of Standards in Tenders (according to suppliers)
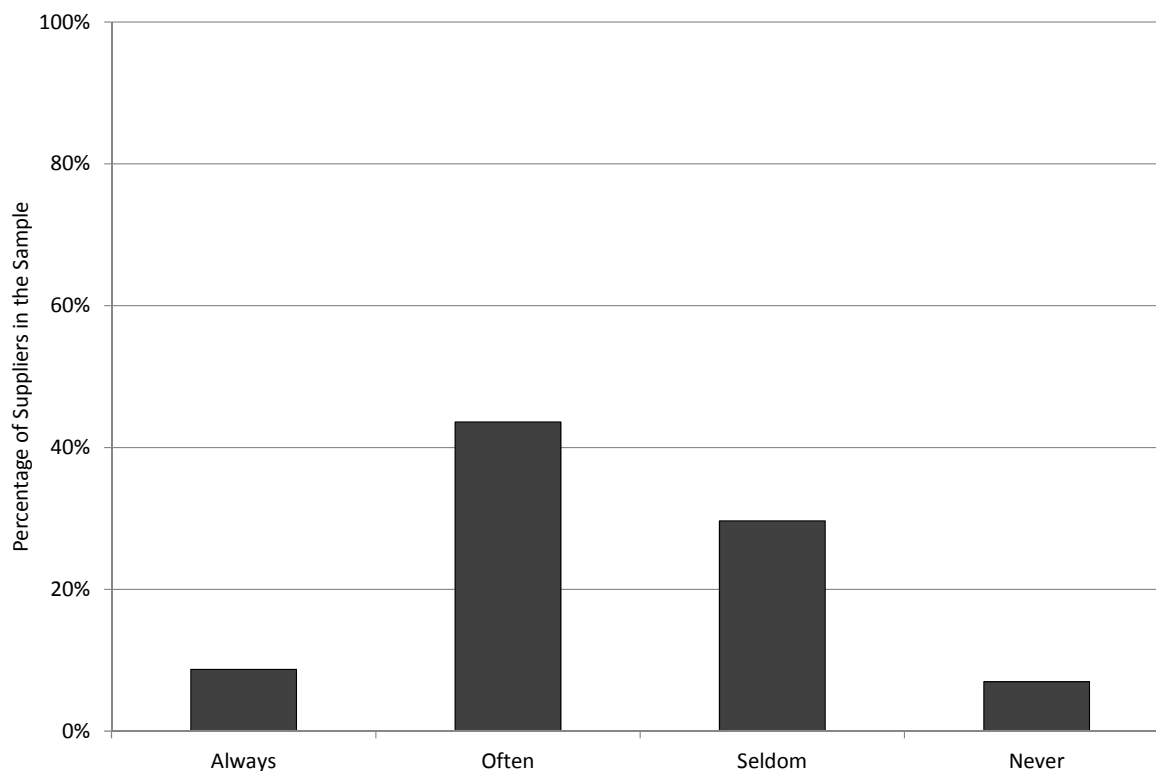
Source: Europe Economics ICT Supplier's Survey Question 31

A2.84 Procuring authorities were asked to list the standards most often used within tenders.[223] A total of 103 respondents (42 per cent) listed at least one standard. Although it cannot be assumed that the way in which the standards were referenced in the questionnaire corresponds to how they are referenced in tenders, we analysed the referenced standards to develop an idea of how knowledgeable of standards the respondents appear to be.

A2.85 A significant proportion of respondents only included the name of the standardisation body (e.g. ISO, W3C, etc) or a common set of general best practice (e.g. ITIL), without specifying any actual standard. Of the remainder, a significant proportion again only listed

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[223] Procuring Authorities' Survey question 32

very common, 'general knowledge' standards (e.g. HTML, XML, ISO9000, CMMI) with no relevant details, such as the version of the standard.[224]

Question 31: If you do refer to ICT Standards, please tick the main Standardisation bodies you refer to.

Figure A2. 37: Main Standardisation Bodies
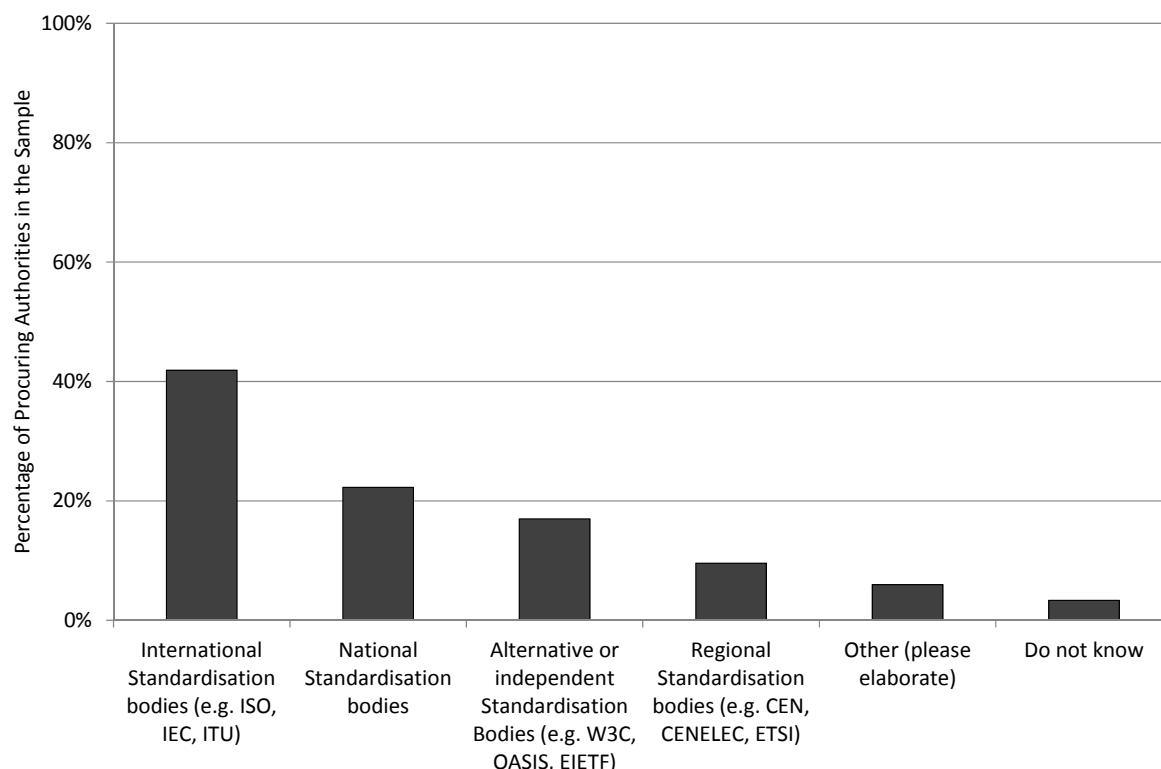
Source: Europe Economics ICT Procuring Authorities Survey Question 31

A2.86 Based on this assessment, in our opinion only between 10 and 20 respondents demonstrated a detailed, comprehensive knowledge of how to use standards when procuring ICT.

A2.87 Further analysis of the standards referenced enabled a disaggregation into categories of use, as shown in the table below. It is interesting to note that the range of standards relating to process is much narrower than the range of standards relating to products (15 individual process standards references compared to 52 product standards).

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224 Although these two elements are important, they can be considered general knowledge among IT and the procurer referencing them may still not know much about standards.

Table A2. 11: References to Standards by Category

Type of standard	Total number of times referenced	Number of different references
Reference to Std Body	91	21
Reference to Stds on Process	79	15
Reference to Stds on Product	76	52

Note: Process Standards are standards related to working method and practices. An organisation that complies with such standards must show that the adequate working methods/practices are in place. (eg ISO9000)

Product Standards are standards that impose technical constraints on hardware/software product whether they are off-the-shelf or custom made. (eg IEEE802.11 or UTF-8)

Source: Europe Economics Procuring Authorities' Survey question 32, CETIC analysis

A2.88 The most frequently referenced standards are presented in the table below, together with the number of references.

Table A2. 12: Most Frequently Referenced Standards

Body		Process		Product	
ISO	39	ISO9000	20	IEEE802.11	6
(General)		(Quality management)		(Implementing WLAN computer communication)	
W3C	14	ISO27000	17	W3C WIA	4
(Web-based applications)		(Security management)		(Web Accessibility standard)	
ETSI	4	ITIL	13		
(Telecommunications)		(Good practices for IT service management)			

Source: Europe Economics Procuring Authorities' Survey question 32, CETIC analysis

A2.89 A similar exercise was conducted with the suppliers' responses about what standards are commonly referenced by procurers. Similar results were obtained relating to the level of detailed knowledge demonstrated in public tenders. Interestingly, six supplier respondents reported that procurers use product names as standards.

A2.90 Procuring authorities' use of standards appears to be largely driven by the role standards can play in specifying the technical specifications to be met by ICT products or services, as seen in

A2.91 Figure A2. 38 below shows that under 30 per cent of respondents consider that the use of standards makes it easier for more suppliers to participate in the tenders. The use of standards as required by national law or policies was highlighted by 25 per cent of respondents.

Question 33: If you do refer to ICT Standards, what are the main reasons for doing so?

Figure A2. 38: Procuring Authorities' Reasons for Using Standards
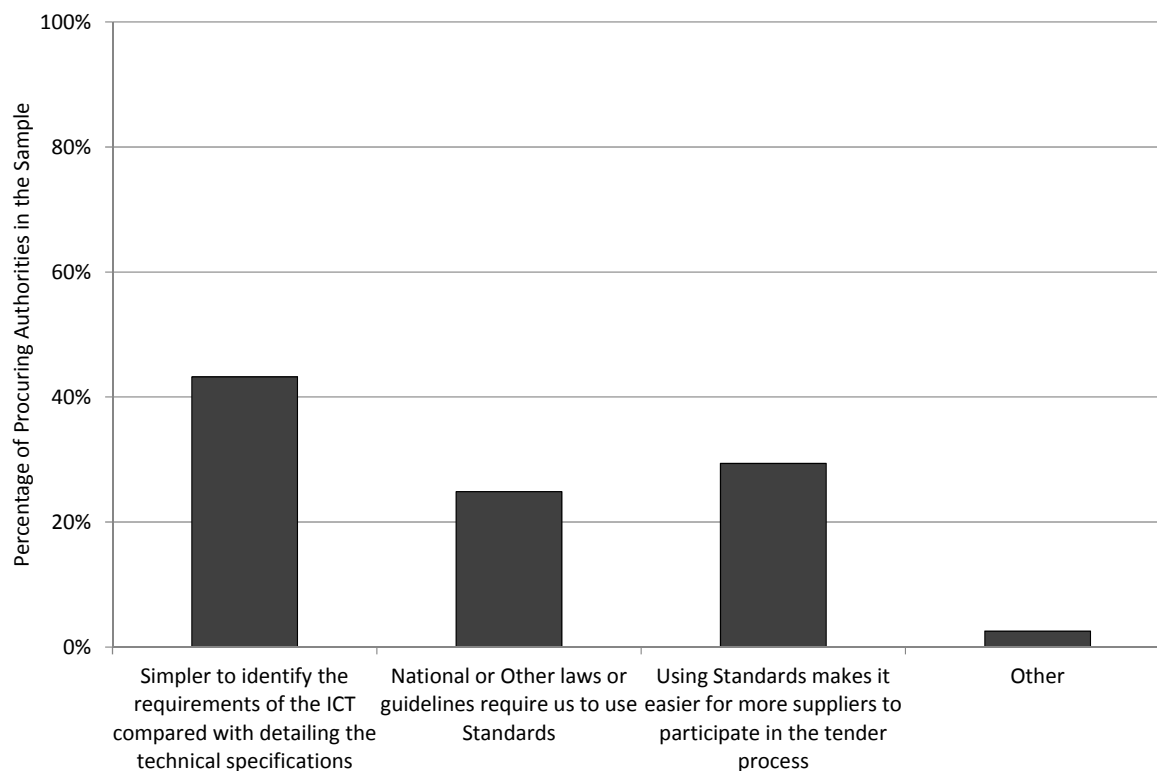
Both procurers and suppliers consider there to be disadvantages to the use of standards. Question 34: Are you aware of any disadvantages in using ICT Standards when drawing up tenders? Please tick more than one if relevant.

A2.92   Figure 6.38 below shows that the most frequently cited reason by 28 per cent of procuring authorities is that standards can restrict the ability of some supplier to participate in bids.

A2.93   This contradicts the perception illustrated in Figure A2. 38 that the use of standards makes it easier for more suppliers to participate in the tender process. However, these differing views are not shared by many respondents (of those who consider standards beneficial to the participation of more suppliers, only nine per cent also state that standards can restrict suppliers ability to participate in the tender process).

A2.94   The perceived complexity of standards and this impact on cost was cited by 17 per cent or respondents as a disadvantage. The restrictive nature of standards, both in terms of adequately defining the ICT needs and in terms of enabling suppliers to provide innovative solutions, was cited by 15 per cent of the respondents.

Question 34: Are you aware of any disadvantages in using ICT Standards when drawing up tenders? Please tick more than one if relevant.

Figure A2. 39: Disadvantages of Using Standards Perceived by Procurers
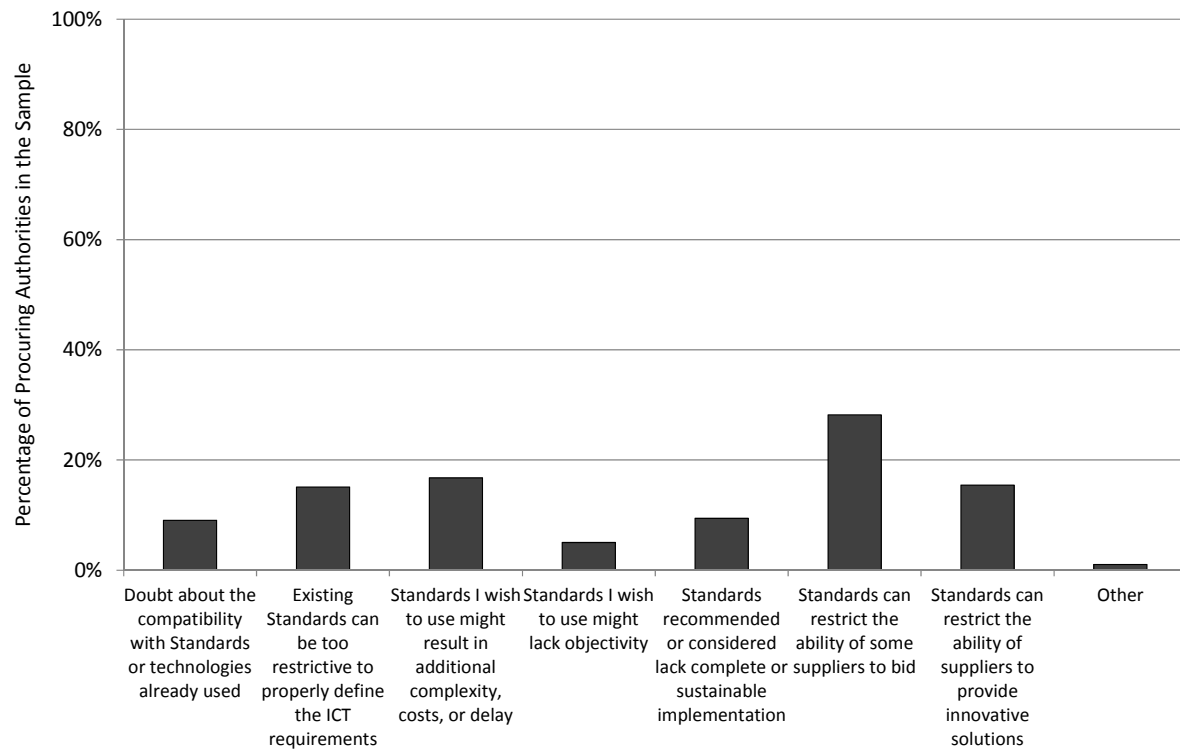
Source: Europe Economics Procuring Authorities Survey Question 34

A2.95 Suppliers were also asked what they thought the main disadvantages of the use of standards in ICT tenders are. The two most commonly cited reasons — that standards can favour technologies only provided by certain suppliers, or give other unfair advantages to certain suppliers — suggests that procuring authorities' use of restrictive standards does pose a problem.

Question 33: Of the Standards that you have come across in public ICT tenders, have any:

Figure A2. 40: Disadvantages of Using Standards Perceived by Suppliers
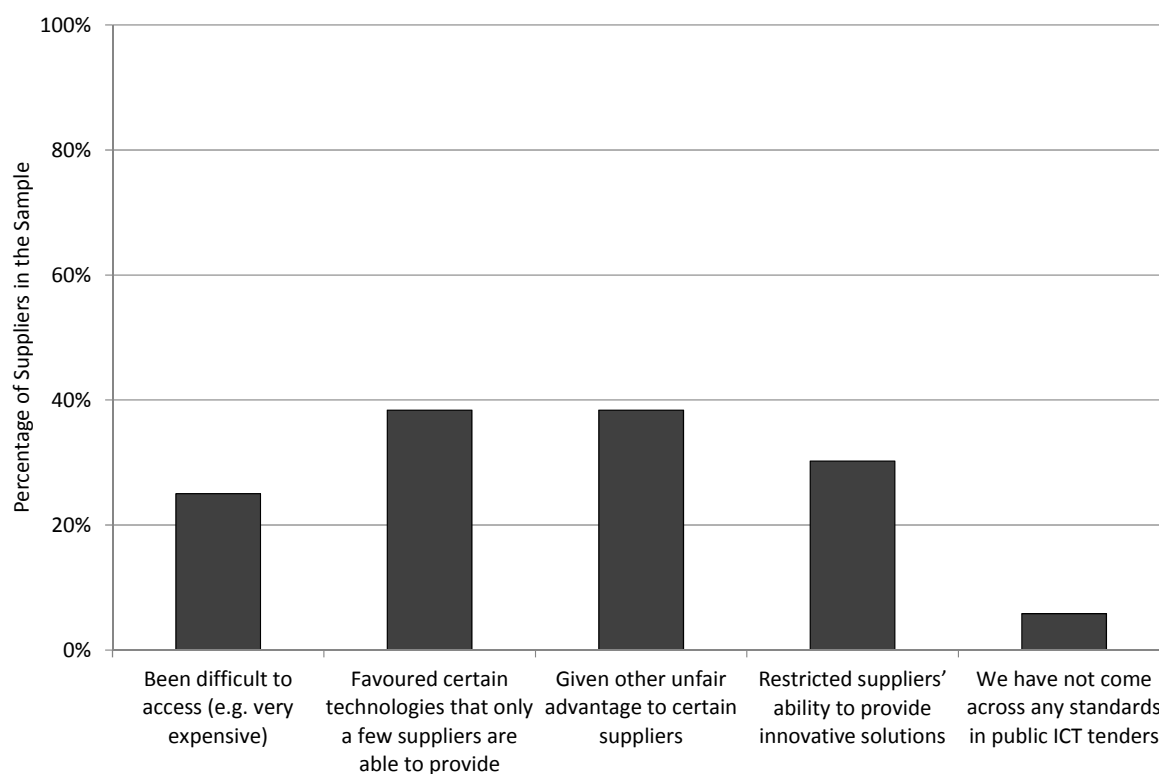
Source: Europe Economics ICT Supplier's Survey Question 33

In addition to the disadvantages for suppliers posed by the use of standards in public sector tenders presented in Question 33: Of the Standards that you have come across in public ICT tenders, have any:

A2.96   Figure 6.39 above, 14 respondents to the supplier survey mentioned other difficulties. These include:

   (a) Standards can create a 'false security' where their use does not lead to the optimal outcome for the procurers and can limit innovation.

   (b) Standards are often incorrectly used and can imply high costs for suppliers to provide compliant solutions.

   (c) The cost of accessing standards or certification can be prohibitively high.

   (d) Often 'standards are used which are in fact restrictive.

   (e) Commercial organizations often do not implement government supported standards.

A2.97 Figure A2. 41 presents the difficulties that public procurers have using standards in their ICT tenders. The most commonly cited reason by 47 per cent of all respondents is a lack of expertise to decide which standards are relevant and appropriate for the particular ICT need. A small proportion, 12 per cent, stated that their difficulties stemmed from the fact that their organisation did not support the use of standards in their ICT.

A2.98 Other reasons given included the difficulty in knowing how standards are interpreted by suppliers and the risk of potential misunderstanding leading to products or services being offered or delivered that do not fully meet the needs of the procurer.

Question 37: What other difficulties do you have in using Standards when drawing up ICT tenders?

Figure A2. 41: Difficulties Procurers Have in Using Standards
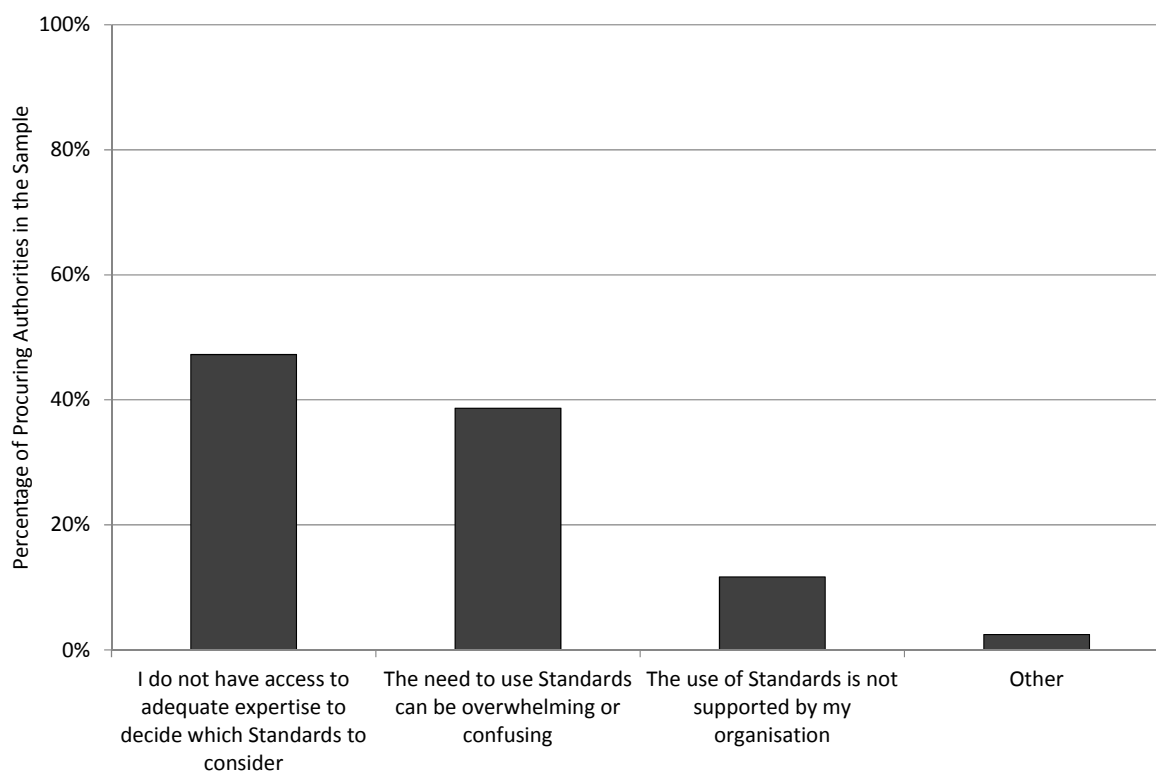
Source: Europe Economics Procuring Authorities Survey Question 37

A2.99 The views of procuring authorities and suppliers on the use of standards is very similar. The majority of suppliers and procurers (47 per cent respectively) feel that more use should be made of standards in public ICT tenders, whilst 27 per cent of suppliers and 20 per cent of procurers consider that this is not necessary.

Other difficulties in procurement

A2.100 In addition to difficulties using standards in tenders, procurers were asked to describe any other difficulties they experience when tendering for ICT products and services.

A2.101 Of the respondents, 17 per cent cited other difficulties in tendering for ICT products and services. These include:

(a) The most commonly cited difficulty (12 respondents) related to the lengthy procurement process and required administrative and legal burdens for suppliers responding to the tenders. This can limit the ability of suppliers, in particular smaller firms, to respond to bids. In addition, the length of the tendering process can inhibit the procurer to respond rapidly to changing ICT needs or to innovation in the market; one respondent claimed that by the time the procedure has been completed the solution originally tendered for is often obsolete.

(b) The use of standards was again linked to difficulties by eight respondents. These included both the existence of too many standards to make sense of, and the absence of standards in many domains. Procurers consider that standards do not always guarantee quality and that sometimes the products or solutions complying with standards can be the least appropriate ones.

(c) Difficulties in assessing the technical offers appeared to pose a significant problem for a small number of procurers. Tenders are often not compliant with the specifications or provide too many innovative or alternative elements, which makes evaluating the tenders very difficult.

(d) The writing of technical specifications was considered a significant difficulty by five respondents, the majority of whom were local procurers. This was largely linked to translating the ICT needs into specifications to be included in the tender. This is exacerbated when the tender is for additional components for an existing system, when detailed knowledge of the system requirements is needed before the tender process can begin. The difficulty in changing the ICT requirements once the tender process has begun was also cited as a problem, as this requires comprehensive knowledge of the ICT needs well in advance.

(e) The use of framework contracts was cited as a barrier to flexibility. Problems highlighted included that fact that framework agreements did not cover either an adequate scope of products or suppliers. In addition, the up-front detailing of requirements and specifications in framework agreements limits the ability of the procurers to cater for developments in the ICT market or in their own ICT needs.

(f) Other problems included difficulties in not mentioning brand names when describing the technical specifications of the ICT need and limited competition among suppliers of required ICT products.

Useful guidance and recommendations on the use of standards

Existing guidance

A2.102 Procurers were asked whether they are aware of any guidance available to help them use standards when drawing up ICT tenders, such as guidelines, best practice, tender writing templates or help desks. A third of respondents (72) were aware of such guidance. The awareness of guidance appears to be positively related to size in terms of the importance of ICT expenditure.   Of all large procuring organisations (with ICT expenditure of more €1 million in the last year), 32 per cent are aware of guidance on the use of standards, compared with 30 per cent of medium-sized organisations and 26 per cent of small organisations.[225]   The type of guidance available includes:

(a) General guidelines on the use of standards and procurement (mentioned by 17 respondents — 40 per cent of the sub-sample of respondents describing the available guidance)

(b) Best practice, including shared examples of how standards are used, and 'question and answer' resources (eight respondents, or 19 per cent of the sub-sample)

(c) Templates for technical specifications and other procurement text (26 per cent of sub-sample)

A2.103 The guidance is available largely through national procurement or standardisation bodies (cited by 42 per cent of the sub-sample), although 19 per cent of the sub-sample referred to internal guidance and advice provided by their organisation.

Useful guidance

A2.104 In the absence of available guidance, procurers were asked what would be most useful to them in helping them to use standards when drawing up tenders. A total of 30 respondents described the types of guidance that would be useful. These included:

(a) Documentation of best practice on the use of standards, in particular feedback on where standards have been used and what the outcomes and effects have been. This was recommended by 11 of the 30 respondents (37 per cent).

(b) Reference lists or database of useful standards, cited by seven respondents). The most frequently mentioned was a guide to which standards are applicable to which solutions, products or requirements (e.g. security, quality, documentation etc) and which standards are most widely and commonly used. Other information to be included could be advice on the limitations of standards (things to be aware of), as

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[225]   'Medium' organisations are categorised as those with ICT expenditure of between €200,000 and €1 million in the last year; 'small' organisations are categorised as those with ICT expenditure of less than €200,000 in the last year.

well as a comparative overview on different standards available for the same products or solutions. Awareness of national and international sources of guidance about standards was also considered useful for procurers who only are aware of local guidance.

(c) Tender writing templates, in particular documents that help specify minimum requirements (security, environment, social), or that contains all legal references necessary when purchasing specific products or services.

Recommendations

A2.105 In addition to useful guidance, procurers cited a range of recommendations to promote the use of ICT standards in public sector tenders.

A2.106 Question 41 of the procuring authorities survey asked respondents to list recommendations to promote the use of ICT Standards in public sector tenders. A total of 77 respondents mentioned nine general recommendations:

(a) Help in accessing and using standards in tenders (20 respondents — 26 per cent of sub-total for this question). This could include templates according to the categories of standards; online search tools with information on which standards are applicable to specific technologies; a database should be created where standards can be promoted according to specific types of products or technologies; the creation of a representative body, able to conduct, review and provide guidance to authorities, and both public as well as independent organizations which can help procurers to use standards.

(b) Share experiences and best practice on the use of standards (8 respondents – 10 per cent of sub-total for this question).

(c) The quality of standards (12 respondents – 16 per cent of sub-total respondents for this question). This includes developing standards in areas where they are lacking, promoting interoperability through standards by focusing on the qualitative description of ICT products, and limiting the "optional" features of standards, to ensure best use of standards. Standards should also enable suppliers to reduce costs and be widely implementable. An effective regulatory and compliant system, which suppliers are willing to follow, could help to guarantee standards' reliability.

(d) Increased coordination between the standards used and supported by public authorities and those implemented by suppliers (11 respondents – 14 per cent of sub-total for this question). Suppliers and procurers should agree on which standards are the most common, effective and useful to use, in order to use these standards at a market level. Some procurers believe the use of standards should be mandatory when writing tender calls and in addition to this, suppliers should be compliant with such established and/or regularized standards.

Recommendations by suppliers

A2.107 Suppliers were also asked to give recommendations on how the use of standards in public procurement of ICT could be improved. Responses given by 64 suppliers include:

(a) Nineteen 19 suppliers suggest that commonly accepted standards should be implemented, such as ISO Quality Standards, Open Standards ODF, W3C Standards, SOAP, XML, or other commonly accepted Programming Standards e.g. CMMI. In addition to this suppliers mention there should be a limited number of standards used because if numerous standards are used, documentation, project planning, system testing and other duties can be highly time-consuming and inefficient. Other suggestions include: making mandatory use of Open Standards when procuring for ICT; bringing together existent national standards to be enforced; and forcing contracting authorities to justify deviation from existent National Procurement Recommendations.

(b) A number of suppliers (five) believe standards are not always useful or helpful as sometimes standards can have specifications which may restrict competition. In addition to this, suppliers recommend using functional specifications instead of standards and preventing standards from causing restrictions on the innovation of solutions.

(c) A recommendation for improved procurement skills was made by five suppliers, including a suggestion for the use of experts with governments to promote the use of standards.

(d) Suppliers also recommended the creation of a competent body (e.g OSOR) to act as a knowledge platform and lead discussions with and training of public procurement officials on public procurement procedures in ICT, software interoperability, and best practices, which should be documented. Furthermore, suppliers insist in developing links between European programmes like ISA and national procurement entities to create a centralized management of procurement which can promote an overall strategy for the EU.

(e) Suppliers also recommend publishing documents to promote the implementation of standards. These published documents could include: a catalogue which includes the definition of standards, and a list of European most widely used and reliable standards, (published by a study group supported by the European Commission); a short handbook about the minimum set of each standard each supplier should adhere to, since generally using a complete standard is too costly; and success stories when standards have been implemented correctly.

(f) Recommendations were also made concerning procurement laws and how the procurement process could be made more efficient.

APPENDIX 3: TENDER ANALYSIS

Introduction

A3.1   The objective of the tender analysis is to develop an insight into how standards are used in public tenders and to determine whether their use has implications in terms of lock-in, interoperability and supplier competition.   The analysis also investigates poor procurement practices, such as the use of brand names, although this is a secondary aim given the existence of similar investigations in other studies.[226]   Given the depth to which the tenders are examined this analysis is not designed to provide a representative overview of current procurement practices; rather it aims to highlight key examples of good and poor practice and provide additional insights to our more comprehensive survey analysis.

A3.2   We identified tenders for the analysis through the following process:

   (a) We identified a list of products and services related to the ICT field. To do this, we relied on the definition of ICT on the European Information Technology Observatory (EITO) website.[227]

   (b) We manually matched the list of ICT products and services to Common Procurement Vocabulary (CPV) codes used in public procurement.

   (c) We searched the Tenders Electronic Daily website[228] for all current tenders (in the week of 10-14 October 2011) relating to the relevant CPV codes. The country coverage was restricted to the UK, Ireland (IE), the Netherlands (NL), Belgium (BE), France (FR) and Greece (EL) for reasons of linguistic capability. For some tenders, full documentation was available freely online; for some registration and expressions of interest were required, and for some email requests needed to be sent to the procuring authority. We attempted to ensure a representation across the various kinds of ICT products and services.

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[226]   See, for example, Ghosh, R.A (2005) 'An economic basis for open standards'; Glott, R. and Ghosh, R. A. (2005) 'Usage of and Attitudes towards Free / Libre and Open Source Software in European Governments', FLOSSPOLS Report Deliverable D03, FLOSSPOLS project, European Commission; OpenForum Europe (2011) 'OFE Procurement Monitoring Report: EU Member States practice of referring to specific trademarks when procuring for Computer Software Packages and Information Systems between the months of February and April 2010' and R.A Ghosh, R. Glott, P.E Schmitz, A. Boujraf, (2008) 'OSOR guidelines public procurement and open source software', IDABC Dissemination of Good Practice in Using Open Source Software (GPOSS),
[227]   http://www.eito.com/definitionsICT.htm
[228]   http://ted.europa.eu/TED/main/HomePage.do

Descriptive Statistics

A3.3   In all, we analysed 32 tenders.[229] Of these, 10 were from the UK, nine from FR, six from BE, three each from NL and EL and one from IE.   The tenders analysed covered authorities from varied fields, including law, culture, health, media, tourism, education, local authorities and central government.

A3.4   In terms of the ICT goods and services covered by the tenders, we focussed exclusively on IT to the exclusion of communications related goods and services.   Within the IT sector, there was a broad representation, with 21 tenders relating to either bespoke or off-the-shelf software (or a combination), 13 relating to hardware and 13 to IT related services.[230]

A3.5   The use of standards in the tender documents was not very widespread, with only 17 tenders mentioning standards.   Here, we define 'standards' as those developed either through formal standard setting organisations or through an alternative fora or consortia. We do not include proprietary specifications in this number.

A3.6   Proprietary specifications supported by companies were used as well, for the specification of solutions like networking equipment (e.g. Cisco), IT hardware (e.g. Intel processors) and off-the-shelf software (e.g. Microsoft Office).   Proprietary specifications were not visibly used more than other standards.

A3.7   A number of common technologies, especially related to open source software or the internet were also named.   While the technical specifications for these are widely available, they do not fully comply with the definition of a standard.

A3.8   Two tenders used significantly open standards, and three made an explicit reference to the word "open standards" in the tender.

A3.9   An extremely large proportion of tenders (25 out of 32) requested compatibility[231] with existing hardware or software, at varying level.   Five tenders requested that the solution provided be interoperable[232] with other systems.

A3.10   The use of brand names within tenders was relatively widespread.   Brand names were used in three contexts: (i) in 17 cases, to name (part of) the existing solution, often with

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[229]   At the end of the search process we retrieved 50 tender documents, but 18 of these could not be analysed for a variety of reasons. For instance, some were simply calls for expressions of interest, and in other cases a response had to be sent to obtain full specifications.

[230]   Several tenders related to more to more than one category of good or service, e.g. both hardware and software.

[231]   We take compatibility to mean that the proposed solution generates output that is understandable by existing hardware or software, and that it understands output created by existing hardware or software. E.g. A word processing software might be required to be compatible with the existing word processing software used by the procuring authority so that files generated on the new system may be read and edited by machines with the old software and vice versa.

[232]   We take two systems to be interoperable when they have the ability to share information. It is different from compatibility in that the two systems could represent entirely different work streams. For instance, an internal library management system for a particular organisation might be required to generate output that feeds into a pan-organisation management system.

compatibility requirements; (ii) in two cases to describe the product to be procured; and (iii) in nine cases directly requiring that specific brand/product. Two tenders accepted open source software as an equivalent solution.

A3.11   The tenders themselves were generally available in PDF (ISO 32000-1:2008), but in two cases documents were provided using de facto office standards. Five tenders placed restrictions on file formats to be used to respond, but in most cases, the PDF document format was allowed as one of the formats together with office documents: de-facto Microsoft format or Office Open XML (ISO/IEC IS 29500).

A3.12   The table below summarises the key statistics of the tender analysis. Note that some tenders fell into more than one category and thus numbers may not sum to the total of 32.

Table A3. 1: Summary of Key Statistics of Tender Analysis

Member State	Belgium	France	Greece	Ireland	Netherlands	UK
	6	9	3	1	3	10
Type of ICT	Software	Hardware	IT services			
	21	13	13			
Degree of customisation	Off-the-shelf	Bespoke	Combination			
	10	16	6			
Use of standards	Standards used		Standards not used			
	17		15			
Use of brand names	To name part of solution		To describe product to be procured		To directly require product	
	17		2		9	
Requirements and specifications	Mainly functional requirements		Mainly technical specifications			
	12		9			

Source: Europe Economics Tender Analysis

Discussion

Type of ICT

A3.13   Due to the fact that the primary field of interest for the analysis is procurement practice in IT related fields, while searching for tenders to analyse we did not consider communications related tenders. The 32 tenders we analysed represent a wide variety of IT related goods and services: 21 tenders related to software, 13 to hardware and 13 to IT services. Several tenders related to more than one field. For instance, a tender from a French local authority asked both for IT and networking equipment, as well as installation and maintenance services.

A3.14   There was also a good mix over the degree of customisation asked for by the tenders. Ten asked for off-the-shelf hardware or software, 16 asked for bespoke or customised solutions,[233] while six allowed for a combination of off-the-shelf and bespoke elements. The proportion of requests for bespoke or customised solutions is in line with general trends in ICT procurement towards increasingly service-based and bespoke contracts.[234] The bespoke nature of the tenders is also likely to be related to the needs of the public sector. As discussed in the OSOR guidelines on procuring open source software, much of the software in the public sector is custom-built or developed in-house due to the specific application areas typical to the public sector (e.g. records management; interaction with citizens etc).[235]

Requirements and specifications

A3.15   A key consideration in the openness of a tender is how requirements and specifications are expressed. Requirements describe the purpose for which the IT solution is needed. There may be a risk that requirements are so narrow as to limit the solution to certain products or suppliers. Requirements for compatibility with previously purchased IT solutions may also be restrictive or increase the risk of locking the buyer into the products and solutions provided by specific suppliers or vendors. Requirements are important, especially if there are specific constraints or needs regarding the IT architecture and technologies with which the solution must fit.

A3.16   Specifications detail the functionality the IT solution is expected to provide, and its technical properties. Technical specifications are the key part of the tender, and are a subset of the requirements. They may be complex and are important if the procuring authority is to describe the solution in an exhaustive manner. The use of brand names in technical specifications particularly reduces the openness of a tender. It may be argued that a good approach would be to omit specifications altogether, and simply express functional requirements. However, this approach may be infeasible, especially in the context of interoperability and compatibility requirements.

A3.17   Technical specifications, by their nature, only relate to hardware and software; tenders relating to services can only express requirements. Of the 13 tenders concerning IT services, three asked to develop bespoke software in-house. Two of these tenders are similar to others in the sense that knowledge of products and brands are requested, along with some standards. It is also worth noting that both products and standards are usually referred by a common name, and not a complete reference.

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[233]   All requests for services have been classified as bespoke.
[234]   For example, the share of proprietary packaged software in European software spending is only 19 per cent compared with custom-built software (52 per cent) and internal software development (29 per cent). See European Commission DG Enterprise (2006) 'Study on the economic impact of open source software on innovation and the competitiveness of the Information and Communication Technologies (ITC) sector in the EU, p124
[235]   R.A Ghosh, R. Glott, P.E Schmitz, A. Boujraf, (2010) 'Guideline on public procurement of Open Source Software', IDABC Programme. http://www.osor.eu/idbac-studies

A3.18   Of all the tenders relating to hardware and software, 12 contained primarily functional requirements while nine relied primarily on technical specifications. Interestingly, six of the tenders relying on technical specifications explicitly named branded products to be procured.

A3.19   Requests for compatibility with a specific product were more common than specifying the actual compatibility need in a technology neutral way. The brand names of the existing solutions were often used instead of using standards.

A3.20   An interesting requirements issue may arise in relation to intellectual property rights (IPR). It is common practice for public authorities to expect and request that the IP resulting from bespoke solutions (such as the writing of specific code) to be transferred to the procuring authority; indeed, several tenders within this analysis made this request. This may have the effect of excluding certain solutions based on open source software, as open source code can be released under a licence that requires the IPR for any customisation to belong to the open source community, rather than the buyer.

Compatibility and interoperability

A3.21   Compatibility and interoperability are mainly considered as part of the requirements that have to be fulfilled by the solution, and can narrow the field of possible solutions.

A3.22   Of the 32 tenders analysed, 25 required compatibility with some existing hardware, software or systems.   The large majority of these are concerned with backwards compatibility, i.e. that the proposed solution must work with the legacy systems in place. Five expressed the needed compatibility with some file formats, either for operation (example: Geographic Information System) or reporting (office format).

A3.23   As regards the other occurrences of compatibility, the situations vary in each case: support of current network equipment, current off-the-shelf software (whose tender actually renew/extend with same brand, used for deployment, virtualisation, monitoring, management software, processor hardware),   reuse the current bespoke developed solution, name some exiting tools to be used, of end user (citizen) software/equipment (browser, smart-phone).

A3.24   Compatibility with previously purchased IT solutions can be a valid technical requirement, but it can also be a way of perpetuating the consequences of previous purchasing decisions, increasing the risk of vendor lock-in and preventing an unbiased procurement based on real organisational needs. Compatibility criteria that are tied to previously purchased proprietary solutions can lock the buyer into that solution indefinitely, making its vendor's one-time win in a single contract effectively a win for a much longer period of future procurements. This may limit the choice of the buyer after the originally planned

lifetime for the original purchase.[236]   However, no evidence of this was found in this analysis.

A3.25   The IT strategy of the procurer is crucial in addressing compatibility constraints, but this is actually not visible in the tenders. As an example, a tender from the UK named products that were used for 10 per cent of an existing solution to be bought for the remaining 90 per cent. It is not known if the initial installation was procured in an open manner (e.g. an open competitive pilot), or simply deployed without open competition.

A3.26   However, requiring compatibility with the existing solutions may be the most cost-effective option available to the procurer, at least for the current specific tender, and determining the extent to which requests for compatibility reflect 'poor practice' is difficult.

A3.27   It is necessary to enable alternative brands or suppliers to compete rather than to specify the exact products needed to ensure compatibly.

A3.28   It is interesting to note that the two tenders also required alternative suppliers to mention training and transition costs induced by the use of their product, compared to the use of the named brand.

A3.29   Requests for compatibly are closely linked to the network effects arising from many ICT technologies.   These network effects (i.e. where the benefits to a single user are significantly enhanced if there are many other users of the same technology) create network externalities — the value of the network over and above the value of a single copy of the technology. In order to maintain the network externalities arising from the previous purchases of ICT applications or products, procurers can request compatibility of new purchases. Indeed, the value of the network externalities may be such as to make the request for compatibility the most efficient action for the procurer.

A3.30   Several cases of backward compatibility requirements, about maintenance and licence extensions, are typical cases of after-market competition, which arises when certain products or services may only be used with a particular existing product. Printer toners are a classic example — once a certain brand of printer is bought, only toners compatible with that printer are useful. Traditional thinking on after-market monopolisation is that it is not harmful to competition, as the competition is merely 'shifted' to the before-market. In the printer example, it means that when consumers buy a printer, suppliers price keeping in mind not only the product itself, but also the expected gains from after-market monopolisation. Effective competition in the before-market would force suppliers to subsidise the price of printers by an amount equivalent to the expected profits made on the monopolised after-market for toners. Therefore, a high price for printer toners is not

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[236]   R.A Ghosh, R. Glott, P.E Schmitz, A. Boujraf, (2010) 'Guideline on public procurement of Open Source Software', IDABC Programme. http://www.osor.eu/idbac-studies

necessarily a sign of imperfect competition. In our analysis, there are several examples of an example of licence renewal of existing systems.

A3.31 In terms of interoperability, five tenders required the proposed solution to be interoperable with existing systems. Interoperability is defined as the ability of two systems to share information, also, two interoperable systems form part of different work streams/IT systems, while compatibility usually involves a dependency inside the work stream/IT system (no boundary identified).

A3.32 Interoperability is better expressed than compatibility, mainly in the way that the interface must identified in order to specify the requirement, rather than simply giving a technical dependency. Several tenders (at least four) give a list of interaction: accounting system, connection to remote databases (like libraries), security, telephony, for instance Interaction with, XML interface (like MuseumDatXML).

A3.33 However, interoperability can be heavily dependent on brands, and it can be mentioned that the interoperability is required with a named product. For instance, in addition for networking equipment to be compatible with the existing one, one tender required the management to be seamless, requiring interoperability of new and existing solution as regards management. Another example required the solution to be connected to Siemens EPR system (Electronic Patient Record).

A3.34 With regard to file formats required to respond to call for tenders, it must be noted that compatibility may not create serious problems, as several kinds of software can now produce output in file formats traditionally associated with proprietary software (although in some cases functionality can be of low quality). For instance, Open Office (a free alternative to the Microsoft Office suite) has the capability to produce outputs in the '.doc' format, traditionally associated with Microsoft Word.

Use of brand names

A3.35 Several tenders gave the brand and product names of the actual product to be procured. The use of standards in that context is completely bypassed. Brand names are used in three different contexts:

A3.36 First, brands are used to name (part of) the existing solution, often with compatibility requirements. This has been discussed at length in the previous section on compatibility, and as such this may represent a legitimate use of brand names if adequate allowances are made for alternative products. However, without including any requirements for functionality or openness the procurers risk being locked into proprietary brands. Even if suppliers adhere to widely implemented standards they can make (relatively small) additions that make interoperability, the sharing of data or the move to other systems difficult. Interoperability and openness therefore often need to be explicitly requested, in addition requiring adherence to standards.

A3.37 A tender from a centralised procurement body for UK universities requested licence procurement services for Microsoft and Adobe products — this tender was particularly

restrictive as it allowed for no competition on products at all, rather a continuous supply of two brands with no mention of the specific need for the products. The contract was addressed to service providers, and the service around the licence management. There is however no competition on the products provided by these brands, and not even competition on the actual purchased amount, only on the margins and side services.

A3.38 Second, there were examples of brand names used explicitly to directly mention the products to be procured. This included a tender from a Dutch university specifically requesting iPads, instead of requesting a tablet computer with certain functional features. Several tenders used the brand and product names in order to specify the actual product to be procured, but equivalent products could be proposed but had to justify their specification against the product. The use of standards in that context is also bypassed, at varying levels.

A3.39 Lastly, a branded product may be used as a proxy for lengthy technical specifications. A number of tenders used brand names to describe what they wanted, but specified that equivalent products were also acceptable. For instance, a tender from a French local authority for new hardware specified the desired 'Cisco' product (including the product reference number) that would be incorporated into the existing Cisco infrastructure. If suppliers wanted to propose alternative products they had to demonstrate in detail that the specifications of their product would fit with the existing Cisco-based infrastructure. Whilst this practice does favour suppliers of Cisco products (in terms of the effort required in responding to the tender) it is open enough to enable suppliers to propose alterative products.

A3.40 Two tenders suggested specific open source software as equivalent solutions. This is similar to the practice of naming a branded product, with the difference that the named open source solution is available to anybody. However naming standards, and using the same approach as for closed source software would be better. The procuring authority can separately request the provided solution to be open source.[237]

Use of standards

A3.41 Of the 32 tenders, 17 mentioned any kind of standards. These include a range of standard types, including open standards, other formal standards (e.g. those developed through international, regional or national standardisation bodies such as ISO, CEN and NSBs), standards developed by alternative fora and consortia (e.g. W3C and OASIS), and commonly accepted technical specifications developed through informal industry processes, including those based on proprietary technologies. We encountered several standards and technologies during the analysis. These may be broadly divided into the following categories:

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[237] See for example the OSOR guidelines on procuring open source software: R.A Ghosh, R. Glott, P.E Schmitz, A. Boujraf, (2010) 'Guideline on public procurement of Open Source Software', IDABC Programme. http://www.osor.eu/idbac-studies

(a) Proprietary technologies (also referred as "de-facto standards")

– Java: the Java language was introduced by Sun Microsystems (now Oracle) in 1995. Sun started but withdrew from standardisation process in 1997, the Java Community Process was put in place to control the language evolution. The proprietary implementation was then mostly available free of charge. The Java technology was released as open source in 2006-2007. Java is a widely accepted technical specification (i.e. not defined as a standard), but the technology is available as open source, although with some disputes (open source implementation cannot access the Java Test Compatibility Kit (TCK))

– USB: In the tenders analysed, an Universal Serial Bus Interface was required for servers. USB is a widely accepted technical specification (i.e. not defined as a standard), originally defined in 1996 by seven manufacturers. A non for profit organisation was set-up: USB Implementers Forum (USB-IF). The first release of USB, Intel owned some rights that had to be licensed. Following reactions from industry, subsequent norms were royalty free. This is an example of de-facto standard, which is however opened for implementers. Access (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 format (Micro-USB) has been chosen as standard plug for mobile phone chargers sold in the European Union.

– FLV: required by a tender for mobile video broadcasting for a public body. Flash Video is a container format for video developed by Macromedia/Adobe. This is the de-facto format used by numerous web based video sites. The container only defines the format of the inside sound and video streams which can use many encoding schemes, which are apparently proprietary (like Sorenson Spark, H26 etc). A common encoding is using a proprietary variant of the H.263 video standard (UIT-T Q.6/SG16). Newer F4V format is based ISO base media file format (ISO/IEC 14496-12), but it does seem that most of the encoding inside the container is not covered by standards. It has to be noted that H264 which is mention by tenders is a standard defined jointly by UIT-T Q.6/SG16 et ISO/CEI, but is covered by patents. It is a set of proprietary technologies, some are extended from standards.

– SCORM: Sharable Content Object Reference Model (SCORM) is a collection of standards and specifications for web-based e-learning initiated by the United States Secretary of Defence.

(b) Open standards (as defined by IDABC)

– HTML: a physicist from CERN published the first version of HTML in 1990. From 1993, the standard evolved via the IETF (Internet Engineering Task Force) body, and from 1996, via the W3C. In 2000 it also became ISO/IEC 15445:2000. HTML is an open standard.

– PDF Portable Document Format is a file format originally created by Adobe as an evolution of PostScript (also defined by Adobe). The format progressively became a de-facto standard for publishing text document on the Internet. In 2008 PDF has been published as an open standard: ISO 32000-1:2008. PDF started as proprietary technology, then "de-facto standard", and is now an open standard.

(c) Other standards (including technologies maintained by regulation, open source but non-standardised technologies, etc)

– IAS

– ECC

– CEN 1580

– Various ISO standards

– SQL: Structured Query Language is a database querying language created in the seventies, and standardised by ISO in 1987 (ISO 9075). However, portability code between major products still exist due to different interpretations of the standard, due to room for interpretation and complexity of the standard. There is therefore a chance of lock-in.

– HL7 is the name of a non-profit organization and a series of standards for the health sector. Founded in 1987, the association was accredited as standard organisation by ANSI in 1994. Standards can be covered by patents, but must be licensed under RAND conditions. HL7 is now partnering with ISO. HL7 is a formal standard, but not an open standard.

– EnergyStar: it is initially an US initiative (Environmental Protection Agency) of voluntary labelling program for energy efficient products. Energy Star specifications differ for each item. There is an European counter part managed by the European Commission (DG Energy). This is not implemented via standards, but regulations like: Energy Labelling Framework Directive (92/75/EEC) and Council Decision (2006/1005/EC).

– ITIL started from a British government initiative in the eighties in order to raise quality of services provided. ITIL is a registered trademarks of the UK Office of Government Commerce (OGC). Although different, ISO20000 now covers and extend most of ITIL as regards IT service management. ITIL starts from a regulation, but IT service management is now covered by standards.

– Various SAML standards

– HTML

– CSS

- XACML

- USB

- PXE

- H.264

- FLV

- PCI DSS v2

- PDF

- XML

A3.42 Our analysis suggests that significant improvement could be made of the use of standards in ICT procurement.

(a) Standards were seldom referenced properly. For instance, simply specifying 'HTML' or 'XML', which often occurred, is not sufficient, as the exact nature of the standard may differ according to the organisation through which it is developed, and the version. High level standards are often used where more specific standards are required to be assured of quality control or interoperability. For instance, an Irish government tender mentions 'standard spreadsheet formats', which leaves much room for ambiguity and interpretation. Incomplete referencing of standards could result in suppliers providing products and solutions that incorporate different versions of the standard to what was intended by the procurer, which could have the unintended consequence of a solution that does not meet the procurer's needs.

(b) Incomplete referencing may arise from a separation between the IT project managers responsible for writing the technical specifications and the procurement officials designing the tender, whereby the IT manager could use informal language to refer to a standard and the procurement officer, with no knowledge of what the correct form should be, simply uses the incomplete, informal reference in the tender document. An area of useful guidance could be for procurers to ensure that the full details of any standards are referenced by those writing the technical specifications.

(c) Sometimes, standards were not used at all, even in cases where the inclusion of standards was possible and would have been beneficial. This was an issue especially in the IT service area where several ISO standards are available to ensure quality in IT service management (ISO 20000); information security (ISO 27000) and computer software development process (ISO 15504). Given the increasing trend towards IT service procurement, more use of service-orientated quality standards is likely to be beneficial.

A3.43   A general limitation of standards is that they do not always exist for certain applications or technologies. For example, standards seldom exist for defining the user interfaces of applications as these do not affect the functionality of an application. This, however, has a very significant impact for end users who are accustomed to the use of a specific product (for instance an office suite). This is also the case for management or configuration interfaces of IT solutions (for instance of networking equipment).

A3.44   Where standards do not exist and it is difficult for procurers to describe their requirements in open functional specifications, the benefits of referring to a specific brand or product can be tempting.   The lack of standardisation relating to application interfaces poses an issue particularly with 'education lock-in', whereby the members of a public organisation are familiar with the way in which a certain product or application works and the training costs associated with another application would be high. Therefore, even though alternatives may perform equally well or better than the original, and even though there may not be any technical barriers to change, the costs related to organisational change may be sufficiently high for the procurement to request specific, proprietary interfaces.

Good practice in the use of standards

A3.45   Several tenders visibly paid attention to standards and technology neutral technical descriptions. Some went into detailed list of standards covering storage of information, user interfaces (standards for web browsers, accessibility standard, etc), technology neutral description of interoperability with other systems, etc. These tenders are related to with custom developments (maybe partially based on off-the-shelf software).

A3.46   Some tenders written in the context of dependencies with current solutions manage to make a clear distinction between these dependencies (compatibility/interoperability) and the desired functionality, generally expressed through standards.

A3.47   Some tenders mention explicitly the preference for open standards, and a Dutch one applies the "comply or explain" policy with open standards.

A3.48   Standards are not always used, even when openness in the tender is clearly visible. A Dutch tender made a detailed study of possible (HRM) solutions, open to interested companies, which served as a basis for the procurement. Openness was clearly expressed, while not relying first on standards. In a similar manner, a tender for severs was clearly agnostic in term of CPU and operating system, but did not used standards, but rather technology neutral description.

Recommendations from Tender Analysis

A3.49   Although the tender analysis is not based on a representative or comprehensive sample of tenders, a number of useful recommendations can be made based on the practices observed:

(a) When constrained by compatibility requirements it is important to enable alternative

(b) brands or suppliers to compete rather than to specify the exact products needed to ensure compatibly.

(c) Standards, if used, must be referenced fully and include the full details (such as version number). IT managers writing technical specifications should not assume that procurement officials are familiar with what specific standards the more high-level standard names (e.g. XML) relate to.

(d) Awareness of the nature of standards is important, in terms of whether they are widely accepted technical specifications, open standards or other formal standards.

(e) Openness can be requested and clearly stated without the use of standards. For example, using technology neutral descriptions or stating the need for openness in the requirements.[238] Awareness of barriers to open tenders other than technical limitations is important, such as the costs associated with changing user preferences (in particular relating to application interfaces). For example, even though alternatives may perform equally well or better than the original, and even though there may not be any technical barriers to change, the costs related to organisational change may be sufficiently high for the procurement to request specific, proprietary interfaces.

(f) Requests for IPR ownership in the context of bespoke solutions might exclude certain solutions based on open source software, as open source code can be released under a licence that requires the IPR for any customisation to belong to the open source community, rather than the buyer.

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[238] A Dutch tender analysed made a detailed study of possible (HRM) solutions, open to interested companies, which served as a basis for the procurement. Openness was clearly expressed, while not relying first on standards. In a similar manner, another tender for severs was clearly agnostic in term of CPU and operating system, but did not used standards, but rather technology neutral description.

APPENDIX 4: PROCURING AUTHORITIES' QUESTIONNAIRE

Introduction

Thank you for participating in this survey. The purpose of the survey is to gather your views and experiences of procuring ICT products and services.

The survey is in English. If you require help reading it please contact Deborah Kelly (contact details below). When answering open questions and you are able to use English, please do so, but in other cases please feel free to use any of the official languages of the European Union.

Your response to this survey will enable the European Commission to develop useful guidelines to help all public bodies when procuring ICT products and services to achieve the best outcome. Your experiences and views are therefore very important.

This questionnaire should be filled in by a person responsible for writing ICT procurement tenders, in particular the technical specifications.

This survey is divided into three parts.

> (a) Part 1 provides some simple definitions to help you answer the questions

> (b) Part 2 asks about your organisation and how you procure ICT products and services.

> (c) Part 3 asks your views on certain ICT procurement practices.

Your participation in this survey is very important for this study. If you have any problems in answering the questionnaire please contact Deborah Kelly on +447852 797 319 or by email at **ict@europe-economics.com**.

Your responses will remain completely confidential for reporting purposes.

Part 1 - Definitions

By **ICT** (Information and Communications Technology) products and services, we refer to the following categories:

> (a) IT equipment — e.g. computers, servers and information systems.[239]

> (b) Software — e.g. system infrastructure software, applications.[240]

> (c) IT services — e.g. software development, web-based applications, cloud computing.[241]

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[239] All CPV sub-codes within 48800000 and 30000000
[240] All CPV sub-codes within 48000000 (except sub-codes 48800000)

(d) Communications equipment.[242]

In this questionnaire, a **Standard** will be referred to as a published, available document that contains a technical specification for an ICT product, application or service. These may possibly require royalty payments.

This includes Standards published by global, European or national standards bodies (e.g. CEN; CENELEC) or alternative established standards bodies (e.g. OASIS; W3C). This also includes more open definitions, especially "Open standards" which are published and maintained by a not-for-profit organisation through an open decision-making procedure, available without charge or at a nominal fee, are royalty free, and without constraint on their reuse.

Please note this definition of Standard **does not** include technical specifications that are widely adopted but relate to proprietary products and brands and are **not** published or accessible to the market or recognised by an official organisation. These are sometimes referred to as "de facto standards" or "industry standards" but are not considered as standards for this questionnaire. Where we refer to these in the questionnaire we will call them "proprietary technical specifications".

Part 2 – Your Organisation and ICT Procurement

Name of Your Organisation

Member State in which your Organisation is located [drop down box of Member States will be included]

Your name

Your role within the organisation

Email address

Contact telephone number

Size of organisation (number of employees)

      (a) Less than 10

      (b) 11 – 50

      (c) 51 – 250

      (d) 251 – 500

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[241]   All CPV sub-codes within 72000000, 50300000, 51300000, 51600000, 45314000
[242]   All CPV sub-codes within 32000000

(e) 501 – 1000

(f) More than 1000

In which sector does your organisation operate?

(a) Public order and safety

(b) Economic affairs

(c) Environmental protection

(d) Housing and community amenities

(e) Health

(f) Recreation, culture and religion

(g) Education

(h) Social protection

(i) Other (please describe)

What was the total value of ICT procurement for your organisation in the last year for which you have records? (Expressed as euro)

(a) Less than €50,000

(b) €50,000 – €200,000

(c) €200,001 – €750,000

(d) €750,001 – €1 million

(e) €1 million – €4 million

(f) More than €4 million

What is the main type of ICT you are responsible for procuring for your organisation? Please tick more than one option if relevant.

(a) IT equipment — e.g. computers, servers and information systems.

(b) Software — e.g. system infrastructure software, applications.

(c) IT services — e.g. software development, web-based applications, cloud computing.

(d) Communications equipment.

How would you describe the ICT products or services for which you usually tender:

(a) 'Off-the-shelf' ICT products or services which do not need much customisation.

(b) Customised, bespoke products or services such as innovative business applications, custom-made solutions and software.

(c) Combination solutions made from off-the-shelf products together with custom-made bespoke software and services.

Identifying the ICT need

When starting the procurement process, how important are the following objectives? (Extremely important; Important; Not very important; Not relevant).

(a) Achieve value for money

(b) Secure the project outcome

(c) Maximise competition

(d) Promote innovation

(e) Lower barrier to entry for small and medium-sized enterprises

(f) Avoid discriminatory terms and conditions

(g) Other (please describe)

Developing the business case

When deciding your budget for the ICT purchase, how important are the following elements in your Total Cost of Ownership? (Extremely important; Important; Not very important; Not relevant).

(a) Acquisition costs (the direct costs incurred to bring the product/service into operation).

(b) Operational costs (all the costs likely to be incurred throughout the life of the ICT product or service, such as maintenance and updates, as well as staff training and project management costs).

(c) Exit costs (the costs likely to be required to be able to migrate to another ICT product, service or supplier).

Defining the Requirements and the Specifications

Which of the following sources of expert knowledge are most important in deciding the requirements (needs) of your ICT products or services? Please tick more than one if relevant.

(a) Internal IT skills (e.g. yourself or a colleague)

(b) External advice from an ICT supplier who is currently supplying your organisation with similar products or services

(c) External advice from an ICT supplier who is **not** currently supplying your organisation with similar products (e.g. new market engagement)

(d) Independent external IT consultant not linked to an ICT supplier

(e) Procurement officer within your organisation

(f) External procurement officer (e.g. from another organisation or from a central public authority)

(g) Other (please describe)

When deciding on the requirements (needs) of your ICT products or services, how often do you (Always, Often, Sometimes, Never):

(a) Undertake a new evaluation of products and suppliers in the market to identity the most suitable products or services for your needs

(b) Take examples from existing or previous ICT contracts or other sources without undertaking a new product evaluation

Do you ever engage with the ICT private sector other than through public tendering? e.g. collaboration, research, below-threshold purchasing?

(a) Yes

(b) No

7   Please explain briefly.

Who in your organisation usually writes the technical specifications for the ICT tender? Please tick more than one if relevant:

(a) Internal IT manager

(b) Independent external IT consultant

(c) External consultant from an ICT supplier who is currently supplying your organisation with ICT products or services

(d) Procurement officer within your organisation

(e) External procurement officer (e.g. from another organisation or from a central public authority)

(f) Other (please describe)

When preparing tenders for ICT contracts, how often do you do the following: (Always; Often; Sometimes; Never)?

(a) We try to write open tenders using technology-neutral language (e.g. describing what the product or service should do without specifying the particular technology that should be used) to enable many suppliers to take part in the tender process.

(b) We know exactly what we want and refer to specific brand names or suppliers in the tender, or use the phrase brand name "or equivalent"

8   If so, please list the five brand names you use most frequently [space for each name]

(a) We do not refer to brand names but include detailed technical specifications in the tender that only certain suppliers can comply with.

9   If so, please list the technical specifications you use most frequently

Contract awarding and follow-up

What proportion of your ICT procurement takes place through framework contracts?

(a) Less than 10 %

(b) 11% - 30%

(c) 31% - 50%

(d) More than 50%

Do the following apply to the usual contract follow-up? Please tick more than one if relevant.

(a) Those writing the tender specifications are involved in the project kick-off

(b) Those writing the tender specifications are kept informed of the project outcome

(c) There is an assessment on how the project fulfilled the initial specifications

(d) The project outcome analysis serves as feedback for future call for tenders

Part 3 – ICT Procurement Practices

Lock in

Do you agree with any of the statements below (Strongly agree; agree; neutral; disagree; strongly disagree).

(a) When buying new ICT solutions (e.g. products or services), compatibility with existing solutions is a very important criterion.

(b) We are unable to change our ICT solutions (e.g. custom or proprietary software) because we know our information cannot be transferred to solutions from other suppliers.

(c) We are unable to change our ICT supplier because no other supplier can operate the ICT systems designed by the existing supplier.

(d) Changing the brand of ICT solutions we use would be too costly because our staff are trained to use a particular brand.

(e) Changing the brand of ICT solutions we use would be too costly as other systems need to be adapted as well.

Do you regularly buy licence extensions or upgrades?

(a) Yes

(b) No

Have you any experiences of being "locked into" a certain ICT brand, product or supplier (i.e. unable to easily change even though you would like to)? Please elaborate.

Interoperability

Have you ever specified in a tender that the ICT product/service you want to purchase must be compatible with other products or services from different suppliers or brands?

(a) Yes

(b) No

If yes, please describe how you do this.

Have you experienced any difficulties in specifying the need for this kind of compatibility in your tenders?

(a) Yes

(b) No

If Yes please describe briefly

Does your organisation make ICT applications available to citizens?

(a) Yes

(b) No

(c) Do not know

Are citizens obliged to use a particular brand of browser or desktop application to access the application?

(a) Yes, please specify which ones

(b) No, explain how you achieve this

(c) Do not know

Standards

As defined at the beginning of the questionnaire, a **Standard** is a published, available document that contains a technical specification for an ICT product, application or service. This definition of Standard **does not** include proprietary technical specifications or brand names of specific products that are widely adopted but are not published or accessible to the market.

The advantage of referring to Standards when writing tenders is that all suppliers should have a clear understanding of what is required from the product or service, and this may increase the number of suppliers that are able to participate in the tender process. Using certain Standards when writing tenders can help to procure ICT products and services that are interoperable, and can avoid lock-in to a product or service that only one supplier can offer.

However, some Standards are not good Standards for various reasons, and some may favour certain suppliers. For example, such standards may refer to a certain technology that in practice only one supplier can produce.

How often do you refer to ICT Standards when you are writing tenders for ICT products or services?

(a) Always

(b) Often

(c) Seldom

(d) Never

If you do refer to ICT Standards, please tick the main Standardisation bodies you refer to [drop down list of bodies].

If you do refer to ICT Standards, please list the ten most frequent Standards to which you refer [a space for each standard]

If you do refer to ICT Standards, what are the main reasons for doing so?

(a) It is simpler to identify the requirements of the ICT to be procured using Standards, rather than detailing all the technical specifications

(b) Using Standards make it easier for more suppliers to participate in the tender process

(c) National or other laws or guidelines require us to use Standards

(d) Other (please elaborate)

Are you aware of any disadvantages in using ICT Standards when drawing up tenders? Please tick more than one if relevant.

(a) Existing Standards can be too restrictive to properly define the ICT requirements.

(b) The use of Standards can restrict the ability of some suppliers to bid for the contract.

(c) The use of Standards can restrict the ability of suppliers to provide innovative solutions.

(d) The Standards recommended or considered lack complete or sustainable implementation

(e) Doubt about the compatibility with Standards or technologies already used

(f) Fear that the Standards recommended or considered might result in additional complexity, costs, or delay.

(g) Fear that the Standards you might wish to use lack objectivity

(h) Other (please elaborate)

Are you aware of any advice (e.g. guidelines; best practice; help desks; tender writing templates) available to help you use Standards when drawing up tenders?

(a) Yes (please describe)

(b) No (please elaborate what sort of guidance would be useful)

If it exists, does it help you and how often do you use it?

What other difficulties do you have in using Standards when drawing up ICT tenders?

(a) The need to use Standards can be overwhelming or confusing.

(b) I do not have access to adequate expertise to decide which Standards to consider.

(c) The use of Standards is not supported by my organisation

(d) Other (please elaborate)

Do you think that suppliers of ICT technology make it difficult to use Standards in public procurement?

    (a) Yes

    (b) No

10   Please explain briefly.

Please describe any other difficulties you have experienced when tendering for ICT products or services.

Is it your view that more use should be made of Standards in the procurement of ICT by public authorities such as your own?

If you wish, please give four recommendations to promote the use of ICT Standards in tenders for Public Sector Bodies.

    1. _____

    2. _____

    3. _____

    4. _____

Confidentiality

Responses to the survey will be treated as strictly confidential and will remain anonymous for reporting purposes. The anonymous responses will be shared with our client, DG INFSO, unless otherwise specified. Please **tick the box** if you would prefer your anonymous responses **not to be shared** with our client.

Further Contact

Thank you for your participation in our survey. We may wish to contact you in order to clarify your answers. Please tick the box **only if** you would prefer us **not** to do this.

Thank you for participating in our survey!

APPENDIX 5: SUPPLIERS' QUESTIONNAIRE

Introduction

Thank you for participating in this survey. The purpose is to gather your views and experiences of responding to tenders for public ICT procurement contracts. Of particular importance are any difficulties you may have experienced in tendering for contracts as a result of the way in which public sector buyers write tenders.

The survey is in English. If you require help reading it please contact Deborah Kelly (contact details below). When answering open questions and you are able to use English, please do so, but in other cases please feel free to use any of the official languages of the European Union.

Your response to this survey will enable the European Commission to develop useful guidelines to help all public bodies buy ICT products and services in a more open and competitive way. Your experiences and views are therefore very important.

This questionnaire should be filled out by a person responsible for responding to calls for tender for public authorities.

This survey is divided into three parts.

(a) Part 1 provides some simple definitions to help you answer the questions

(b) Part 2 asks questions about your organisation and the way in which you respond to tenders for ICT products and services.

(c) Part 3 asks your views about some common problems in ICT procurement and how these affect your ability to respond to tenders.

Your participation in this survey is very important for this study. If you have any problems in answering the questionnaire please contact Deborah Kelly on +447852 797 319 or by email at **ict@europe-economics.com**.

Your responses will remain completely confidential for reporting purposes.

Part 1 – Definitions

Our definition of **ICT** (Information and Communications Technology) includes:

By **ICT** (Information and Communications Technology) products and services, we refer to the following categories:

(a) IT equipment — e.g. computers, servers and information systems.[243]

(b) Software — e.g. system infrastructure software, applications.[244]

(c) IT services — e.g. software development, web-based applications, cloud computing.[245]

(d) Communications equipment.[246]

In this questionnaire, a **Standard** will be referred to as a published, available document that contains a technical specification for an ICT product, application or service. These may possibly require royalty payments.

This includes Standards published by global, European or national standards bodies (e.g. CEN; CENELEC) or alternative established standards bodies (e.g. OASIS; W3C). This also includes more open definitions, especially "Open standards" which are published and maintained by a not-for-profit organisation through an open decision-making procedure, available without charge or at a nominal fee, are royalty free, and without constraint on their reuse.

Please note this definition of Standard **does not** include technical specifications that can be widely adopted but relate to proprietary products and brands and are **not** published or accessible to the market or recognised by an official organisation. These are sometimes referred to as "de facto standards" or "industry standards" but are not considered as standards for this questionnaire. Where we refer to these in the questionnaire we will call them "proprietary technical specifications".

Part 2 – Your Organisation

1   Name of Your Organisation

2   Your Name

3   Your role within the organisation

4   Email address

5   Contact telephone number

6   Location of Your Organisation head office [Drop-down list of all Member States]

7   Location of your branch or subsidiary [Drop-down list of all Member States]

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[243]   All CPV sub-codes within 48800000 and 30000000
[244]   All CPV sub-codes within 48000000 (except sub-codes 48800000)
[245]   All CPV sub-codes within 72000000, 50300000, 51300000, 51600000, 45314000
[246]   All CPV sub-codes within 32000000

Please note: if you represent a branch or subsidiary of a larger company, please answer the following questions as they relate to your branch or subsidiary.

8   Type of Organisation (please tick more than one if relevant)

      (a) ICT manufacturing: companies that make and sell infrastructure (servers, PCs, storage, network equipment etc.)

      (b) ICT solution providers / Systems Integrators: organisations that specify and create complex IT solutions and advise on hardware, software, service and system choices across market sectors

      (c) ICT software vendors: companies that make and sell software products and services that run on one or more hardware platforms/operating systems

      (d) ICT Services providers: companies that sell ICT management services, support, helpdesk, outsourcing, off-shoring etc.

      (e) Other (please elaborate)

9   Size of organisation (number of employees)

      (a) Less than 10

      (b) 11 – 50

      (c) 51 – 250

      (d) 251 – 500

      (e) 501 – 1000

      (f) More than 1000

10   Annual turnover for the last set of audited accounts (expressed in euro).

      (a) Less than €1 million

      (b) €1 million – €5 million

      (c) €5 million – €10 million

      (d) €10 million - €50,000

      (e) More than €50,000

11   Please tick the types of products / services you provide

      (a) IT equipment — e.g. computers, servers and information systems.

(b) Software — e.g. system infrastructure software, applications.

(c) IT services — e.g. software development, web-based applications.

(d) Communications equipment.

(e) Other (please elaborate)

12   Does your organisation use your own software packages/products in the ICT solutions you offer?

(a) Yes

(b) No

13   Does your organization partner with Software vendors to build the ICT solutions you offer?

(a) Yes (please list which vendors and for what products)

(b) No

14   Are you aware of which ICT Standards are satisfied by the ICT products you offer, both for data format standards and other types of standards?

(a) Yes

(b) No

15   If yes, please list the important standardisation bodies that set the main standards to which you refer

16   If yes, please list the main standards that your products satisfy (maximum ten)

Part 3 – Your Bidding Experience

The purpose of this section is to gather information about the way in which public tenders are written and of how the way they are written affects your ability to respond to tenders.

Engaging with public sector procuring authorities

17   Approximately what proportion of your ICT contracts come from public sector work compared with private sector work?

(a) Less than 10%

(b) 11-20%

(c) 21-30%

(d) 31-40%

(e) 41-50%

(f) 51%-60%

(g) 61%-70%

(h) 71%-80%

(i) 81% - 90%

(j) 91-95%

(k) More than 95%

18   What is the most common way in which you find out about public ICT procurement opportunities? Please tick more than one if relevant.

(a) Through Official Journal of the European Union

(b) Through other publically available tender sources

(c) Through a network of other suppliers

(d) Through direct engagement with public procuring bodies (for example helping them develop their ICT needs)

(e) Other (please describe)

19   Do you have any difficulties in engaging with public procurers and finding out about tender opportunities?

(a) Yes

(b) No

(c) Sometimes

Please give a reason for your answer above.

20   Does your organisation engage with the public sector other than through tendering? e.g. collaboration, research, below threshold purchasing

(a) Yes, (Please elaborate)

(b) No

Openness of public tenders

The way in which tenders are written can affect the ability of suppliers to compete in the market for public sector ICT products and services.

21   How frequently do the following occur (drawing on your own experience)? (Always, Often, Seldom, Never)

  (a) Tenders for public sector ICT contracts use technology-neutral language that does not favour technology supplied by certain suppliers

  (b) Tenders refer to very specific technology that only a few suppliers can provide.

  (c) Tenders refer to brand names.

  (d) Tenders refer to proprietary technical specifications

  (e) Not enough detail is provided in the technical specifications to enable you to provide an acceptable solution.

22   If you wish, please describe any other ways in which the writing of public ICT tenders restricts the ability of suppliers to compete.

23   If you wish, please describe how the tendering process for public sector ICT contracts can be more open and competitive.

Evidence of lock-in

'Lock-in' is a situation which arises where the ICT products or systems currently used by an organisation are incompatible with those from other brands or suppliers. The organisation might want to purchase new ICT products or services from a different brand or supplier, but it is unable to do so for fear that the new ICT will not be compatible with the existing systems and equipment. The organisation is therefore 'locked in' to the existing brand or supplier and its choice of supplier inefficiently constrained.

24   How often do tenders require the new product or service being tendered for to be compatible with existing ICT products or systems?

  (a) Always

  (b) Often

  (c) Seldom

  (d) Never

25   Do such requirements of compatibility restrict your ability to participate in the tender?

(e) Yes (Please elaborate)

(f) No,

(g) Sometimes (Please elaborate)

26 How often do tenders require you to include 'exit costs' in your price (for example, likely costs required to hand the system over to an alternative supplier in the future)?

(a) Always

(b) Often

(c) Seldom

(d) Never

27 How often do tenders make a distinction between required functionality and required data formats?

(a) Always

(b) Often

(c) Seldom

(d) Never

28 How often are open data formats (data formats using a published specification that can be implemented by anyone) required in tenders?

(a) Always

(b) Often

(c) Seldom

(d) Never

29 How often do tenders require the product or service being tendered for to be interoperable with a wide range of products or services?

(a) Always

(b) Often

(c) Seldom

(d) Never

30   Please describe briefly any evidence of public procurers being 'locked in' to certain suppliers or brands that you are aware of.

Use of ICT Standards

As defined at the beginning of the questionnaire, a **Standard** is a published, available document that contains a technical specification for an ICT product, application or service. This definition of Standard **does not** include technical specifications that are widely adopted but are **not** published or accessible to the market.

In principle, the advantage of referring to published Standards when writing tenders is that all suppliers should have a clear understanding of what is required from the product or service, and this increases the number of suppliers that are able to participate in the tender process. Using certain standards when writing tenders can help to procure ICT products and services that are interoperable, and can avoid lock-in to a product or service that only one supplier can offer.

However, some standards are not good standards and some may favour certain suppliers. For example, such a standard may refer to a certain technology that only one supplier can in practice produce, or it may include unnecessary features.

31   How often are ICT Standards used in the public sector tenders for which you compete?

        (a) Always

        (b) Often

        (c) Seldom

        (d) Never

32   Please list the most commonly referenced standards in public ICT tenders (maximum ten) [space for each standard].

33   Of the Standards that you have come across in public ICT tenders, have any:

        (a) Been difficult to access (e.g. very expensive)

        (b) Favoured certain technologies that only a few suppliers are able to provide

        (c) Given other unfair advantage to certain suppliers

        (d) Restricted suppliers' ability to provide innovative solutions

34   If you wish, please describe any other difficulties you have experienced resulting from the use of Standards in in the public sector tenders for which you compete.

35   Do you think that Standards should be used more widely in public procurement tenders?

(e) Yes

(f) No

If yes, please give four recommendations to increase awareness of ICT standards for Public Sector Bodies.

1. _____

2. _____

3. _____

4. _____

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