ELECTRONIC CATALOGUES IN ELECTRONIC PUBLIC PROCUREMENT

Final Report	**State of Play**	September 2007

Executive summary

The new EU legislative framework of public procurement Directives 2004/17/EC and 2004/18/EC, adopted in 2004, introduces for the first time a coherent and comprehensive framework for the use of electronic public procurement in the EU. Amongst its most innovative provisions, it authorises the use of electronic catalogues (eCatalogues) as a tool for the electronic submission of tenders. In line with its Action Plan for eProcurement, also adopted in 2004, the European Commission commissioned this Study to analyse rules and current practices for the use of eCatalogues in both the public and the private sectors, with a view to formulating requirements and recommendations for their further development in public procurement.

The present study is split into three parts:

- **State of Play**: the current report, presenting eCatalogue initiatives in the public sector in the EU and in private companies, highlighting common points, differences, needs and requirements

- **Standardisation Activities**: presents current standardisation activities on eCatalogues as well as product description and classification schemes, and makes recommendations for the adoption of appropriate standards to increase interoperability

- **Functional Requirements**: defines preliminary functional and non-functional requirements for establishing eProcurement systems which may use eCatalogues as a tool for tender submission

The attached report presents the findings of the State of Play analysis.

In accordance with the new legislative public procurement framework, electronic catalogues constitute electronic documents that may form tenders (or parts of them), that describe offered products and prices. In this context, eCatalogues may be considered as "supplier prospectuses", similar to those already used in commercial transactions either on paper or in an electronic format.

Current eProcurement implementations in Member States tend to overlook this use of eCatalogues and rather focus on the implementation of ICT eProcurement systems capable of storing products and prices, to enable eOrdering and eInvoicing. In all cases investigated in this project, format and content of "supplier prospectuses" are specified by contracting authorities, introducing significant overheads for suppliers in the tender creation process. In addition, the mechanisms used for the submission of "eCatalogue prospectuses" would not always satisfy the requirements of the EU Directives, if performed in the pre-awarding phases, particularly those related to security, confidentiality, and trace-ability.

As a starting point for the analysis, it was observed that the eCatalogue prospectuses currently available on the market can be grouped into those created according to buyer specifications (i.e. the buyer specifies the content and format of eCatalogues that suppliers must abide to) and those created according to supplier specifications. The latter type of prospectuses can be further divided into those created for retail use (i.e. addressed to consumers for B-2-C transactions) and for wholesale use (i.e. addressed to enterprises for B-2-B transactions), the latter of which appear to be more suitable for public procurement as such prospectuses are closer to contracting authority needs than those of the former type.

Agreement on certain minimum functional requirements and standards could be expected to remedy the risk of IT applications on the market not meeting the requirements of the public sector and of barriers to the Internal Market, and increase both public buyers' and businesses' trust in the new electronic procedures, systems and tools. The central tenet of this approach is not to drive a wedge between developments in the public sector and the private sector; eCatalogues suitable to be used as valid offers in a public procurement procedure should be used in, and be interoperable with those used in, a standard electronic commerce environment.

In order to reduce transactional costs and increase competition, it would thus be desirable for eCatalogue prospectuses to become more interoperable. Hence, a suitable organisational and technical framework for the efficient exchange of eCatalogue prospectuses should be established. This can be achieved by the standardisation of eCatalogue prospectuses, in particular by creating rules for standardising eCatalogue content and their format/presentation, as well as eCatalogue message exchange.

With a view to stimulating greater standardisation, the public sector in the EU should seek to standardise more its requirements for the creation and use of eCatalogues in public procurement, thus enabling suppliers to create "eCatalogue prospectuses" by re-utilising their existing commercial ones. Such an approach should lead to a shared framework for eCatalogue prospectus creation, maintenance and transmission.

There are currently two promising standards which could form a suitable technical solution for the interoperable exchange of eCatalogue data. UBL 2.0 and c-Catalogue make use of XML, and define processes and messages for the exchange of business documents. Initial focus was given to accommodating the needs of private sector procurement, primarily addressing post–award phases like eOrdering. UBL is an official OASIS standard, while c-Catalogue is a standard under development by UN/CEFACT. These standards can be further enhanced to also accommodate the needs in pre-awarding procurement, making eCatalogue prospectuses more interoperable across Europe. Through the use of interoperable eCatalogue prospectuses, all involved parties could better achieve the anticipated efficiency gains in eProcurement.

Apart from the need for standardising processes and messages for conducting business electronically through the use of eCatalogues, which are addressed by UBL and c-Catalogue, the adoption of additional standards seems necessary for standardising the manner in which products and services are described in an eCatalogue prospectus. This should also make use of existing product description and classification schemes such as the CPV, UNSPSC, eCl@ss,GPC, NCS and eOTD.

The findings of the three project reports are summarised below. They relate to the actions/initiatives to be undertaken by Member States, Standardisation Bodies and the European Commission in order to improve the current setting:

- Establish a suitable framework for the use of eCatalogue standards for the creation, management and exchange of eCatalogue prospectuses, also covering the standardisation of eCatalogue content/format in the pre-award phases of public procurement. In this context, the current initiatives for the convergence of UBL and c-Catalogue should be endorsed, and the converged standard should be promoted in both the private and public sectors. Further extensions to UBL and c-Catalogue (or their unified standard) should be completed, in order to also cover the need for standardising eCatalogue content, other than that related to product/service descriptions. (Actors: Standardisation Bodies, Member States, European Commission)

- Establish suitable standards as regards eCatalogue contents for describing products/services, including for a more interoperable use of product classification and description schemes. (Actors: Standardisation Bodies, Member States and Private Sector)

- Review existing eProcurement systems with a view to establishing "eCatalogue stock management systems" which utilise standardised, interoperable "eCatalogue prospectuses" (i.e. based on industry-wide standards), in order to support all phases of the procurement cycle, both for pre and post-awarding purposes (Actors: Member States)

- Establish appropriate procedures for the "active collection of tenders" (i.e. "punch-out") as an alternative submission technique. The active collection of tenders is a new technique allowed under the EU Directives, based on which contracting authorities can actively collect tenders from suppliers' websites. This technique offers opportunities for automation, however its current use does not always meet all the requirements set by the EU Directives on the receipt of tenders (Actors: Member States and European Commission)

- Establish specifications for Dynamic Purchasing Systems (DPS), which define in a more detailed way how a DPS should function in line with the EU Directives. Under the EU Directives, DPS systems are solely based on electronic means and expected to offer efficiency gains and transparency. However, in practice the exact operation of such systems still remains unclear for many procurement actors (Actors: Member States and European Commission)

- Establish a suitable legal, organisational and technical framework for the submission of proof documents in electronic format. This can offer efficiency gains through cost-reduction and acceleration to public procurement procedures. Current EC initiatives investigating this topic should be supported, in order to establish such an appropriate environment (Actors: European Commission, Standardisation Bodies and Member States)

- Educate both the public and private sectors on the new eProcurement rules of the EU Directives, as well as, procedures and tools. In this context, particular attention should be given to training on standards and the efficient use of eCatalogues. Through such initiatives, suppliers should gain a better understanding of the potential benefits in conducting business with the public sector, in particular when performed through electronic means and eCatalogues. (Actors: Member States and European Commission).

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1 Introduction

In April 2004, the European Parliament and the Council adopted the new public procurement Directives 2004/18/EC and 2004/17/EC (hereafter the "EU Directives"), the former related to the procurement of goods, supplies and services in the public sector, and the latter related to procurement in the utilities sector. This legislative package forms for the first time a coherent EU framework for the transparent and non-discriminatory use of electronic means in the public procurement process ("eProcurement"). In this context, the EU Directives specify that tenders may take the form of electronic documents, and that under certain conditions offers may take the form of electronic catalogues ("eCatalogues").

Electronic catalogues emerge as a cost-effective tool, expected to help streamlining the purchasing process. They can facilitate the work that suppliers need to perform for preparing their tenders for a procurement competition. In addition, they can contribute to computerising to a great extent the tender evaluation process, and be the method of choice for presenting specific contracts under Framework Agreements and Dynamic Purchasing Systems (DPS).

Prior to the adoption of the new EU public procurement Directives, the use of electronic means, including eCatalogues, was not permitted. Their introduction therefore constitutes one of the innovative features of the new EU legislative framework. However, there is a need to define more clearly the notion of "eCatalogue" and under which conditions this new tool may be used.

Whilst contracting authorities are starting to use eCatalogues in the wake of implementing eProcurement processes, these are primarily being considered only as a management tool for the storage of supplier product lists. This approach often constitutes a first step towards establishing electronic ordering systems within the public sector. However, the new EU legislative framework on public procurement explicitly defines eCatalogues as a new tool for forming tenders or parts of a tender. Hence, eCatalogues may also be understood as "supplier prospectuses", i.e. electronic documents exclusively established by suppliers describing their individual products/services and prices within the context of specific contracts/agreements with the public sector.

It is generally accepted that the use of eCatalogues in public procurement processes can offer significant efficiency gains to all involved parties. The current use of eCatalogues is primarily limited to the post-awarding phases of public procurement, where eCatalogues are used to enable electronic ordering and invoicing. Through this use of eCatalogues, the exchange of necessary ordering and invoicing business documents is supported electronically, saving time, reducing costs and increasing the effectiveness in post-awarding.

Apart from their current use however, great opportunities for achieving efficiency gains are also apparent in the pre-awarding phases of public procurement, where eCatalogues assume the role they were traditionally intended to play i.e. to constitute documents detailing available products and prices. Such use can simplify the processes for different parties to establish business relationships (e.g. a public authority to receive tenders, evaluate and award a contract), rather than only support processes after such relationships are established. Potential benefits of this type of use comprise, amongst others, further cost and time savings, increased participation in public procurement competitions, and the re-use of eCatalogue prospectuses for several purposes.

The efficient use of eCatalogue prospectuses in the initial e-Tendering phase of a public procurement procedure, in conformity with the requirements of the EU Directives, poses new organisational and technical challenges. The content of eCatalogue prospectuses, their format, their presentation, exact processes for their creation, verification and practical use, their use for cross-border transactions, as well as, many more aspects, may constitute barriers to be overcome before the expected benefits can be reached. All the above must be addressed in a manner that ensures the establishment of a suitable and interoperable framework for the use of eCatalogues, without compromising efficiency.

There are currently two standards which seek to provide a framework for the use of eCatalogues, namely UBL 2.0 and c-Catalogue. Both focus primarily on providing solutions for post-awarding procurement. These standards define processes and messages to be used by trading partners for ordering, invoicing, payment and other post-awarding activities, using standardised electronic means. The two standardisation bodies that created UBL and c-Catalogue (OASIS and CEN/ISSS - UN/CEFACT) are currently working towards the convergence of the two standards. Their intention is to create a new harmonised standard that would consolidate and benefit from both existing ones. Nevertheless, these standards (or a future-harmonised one) do not yet fully address the needs in the pre-award phases of the procurement process.

Apart from the need to standardise the format and exchange mechanisms of eCatalogues, which can be addressed by UBL 2.0 and c-Catalogue, there is additionally a need to standardise the content of eCatalogue prospectuses. Content contained in eCatalogue prospectuses can be split into that for describing products/services and content for describing other necessary information, not related to product/service descriptions (e.g. supplier information, financial, handling and invoicing data). The former type can be accommodated by product description and classification schemes (e.g. CPV, eCl@ss, etc), however the existence of several widely-used schemes creates a further interoperability gap. The latter type can be accommodated by UBL and c-Catalogue, however extensions to these standards is necessary in order to cover all needs for pre-awarding.

In 2006, the European Commission (EC) therefore initiated a project (hereafter the "study") to analyse the state of play as regards current eCatalogues uses and practices in the EU in both public and private sector procurement; to review relevant initiatives on standardisation and to identify functional requirements for their further development in public procurement. The study contributes to the implementation of the Action Plan on electronic public procurement, adopted by the European Commission in 2004, which seeks to assist the introduction of efficient and compliant eProcurement solutions by the EU Member States.

More specifically, the study focuses on:

– Clarifying the advantages of using eCatalogues in eProcurement, and especially as tenders (i.e. as supplier prospectuses), as opposed to their current limited use as post-award management systems

– Investigating the current uses of eCatalogues in various public administrations in the EU and also in private companies, in order to identify re-usable good practices

– Identifying functional and non-functional requirements under a suitable technical framework for eCatalogues

– Highlighting areas suitable for further standardisation in order to establish a framework for the use of eCatalogues in public procurement

The findings of the study are documented in three parts:

– **State of Play:** the present document describes current eCatalogue initiatives and practices in the EU, and deduces trends, common features, difficulties, requirements and good practices

– **Standardisation Initiatives:** this part presents standardisation initiatives on electronic catalogues, and makes recommendations on how they can be used for the further development of eCatalogues in public procurement

– **Functional Requirements:** this part presents functional and non-functional requirements and recommendations, to assist EU Member States in implementing eCatalogues in public procurement

The conclusions of the present "State of Play" report are based on desk research as well as on the analysis of selected eCatalogue systems operated in various European public administrations. Systems of private companies are also being considered. The emphasis is on how to define eCatalogues that can be used in a public procurement context, specific requirements for eCatalogues, as deduced from the general principles and the EU Directives, and the analysis of current practical uses in Europe. The objective of the report is to form a basis upon which functional requirements and areas for standardisation for eCatalogues can be defined. To this end, trends, common points, difficulties, requirements and good practices in the investigated systems are identified.

The structure of the State of Play report is as follows:

– Legal background on electronic catalogues: presents the legal framework for eCatalogues through references to the two EU Directives on public procurement, as well as, to the EC explanatory document on conducting eProcurement

– What is…? eCatalogue abstract types: presents the two ways in which eCatalogues can be interpreted (referred to as "abstract types"), as well as, the current eCatalogue practices in Europe

– Scope of eCatalogue prospectuses and expected benefits: presents the types of procurement eCatalogues are suited for, as well as, expected benefits from an optimal use of eCatalogues

– State of Play I: eCatalogue practices by public purchasers in the EU: contains a comparative analysis of the eCatalogue initiatives studied in selected EU Member States and EEA countries, including common features, differences, needs, requirements and good practices

– State of Play II: eCatalogue practices in the private sector in the EU: examines selected private systems and identifies common features, benefits and frequent practices. Private sector eCatalogue initiatives and systems do not follow the procurement rules that apply in the public sector; hence these differences are also discussed

– Analysis on content: reviews some existing eCatalogue prospectuses, as well as, specifications imposed by contracting authorities in order to analyse the requirements (format and content) according to which eCatalogues and tenders in general should be created and to identify aspects that could be standardised when using eCatalogues

– Interoperability and standardisation of eCatalogue prospectuses: discusses the importance of establishing interoperable eCatalogue prospectuses, and presents in brief current relevant initiatives in standardising eCatalogues and product classification schemes, as well as, relevant standardisation bodies

– Conclusions: summarises the findings of the analysis and proposes steps to improve the current use of eCatalogues in public procurement

– Annex I: eCatalogue initiatives / projects in European public administrations: presents information on the investigated countries and systems, through standardised "country sheets"

2   Legal background on electronic catalogues

This section provides information on the legal background for the electronic submission of tenders, in particular those taking the form of electronic catalogues, as set out in [2004/18/EC] and [2004/17/EC] (the "EU Directives"). Directive 2004/18/EC relates to the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts and Directive 2004/17/EC relates to the coordination of the procurement procedures of entities operating in the water, energy, transport, and postal services sectors. Furthermore, information relevant to eCatalogues and the electronic submission of tenders originating from [Explanatory document] is also presented in the current chapter.

Under certain conditions, tenders can take the form of electronic catalogues. Hence, all rules and requirements for the use of electronic means in eProcurement and the electronic submission of tenders also apply to the use of eCatalogues.

This chapter first provides an overview of the available public procurement procedures. Then, it discusses the rules and requirements for the use of electronic means, the electronic submission of tenders and finally, the aspects that are specific to the use of electronic catalogues.

2.1   Public procurement procedures under the EU legal framework

The EU Directives envisage procurement through two main types of purchases: one-off purchases and repetitive purchases. Procurement is performed by the completion of well-defined procedures, namely Open and Restricted procedures (one-off purchases), and Framework Agreements and Dynamic Purchasing Systems[1] (repetitive purchases)[2]. The activities performed for the completion of any procurement procedure can be roughly grouped into three distinct phases, namely Notification, Tendering and Awarding. Subsequent activities usually relate to contracting, ordering and invoicing.

Figure 1 presents these various phases. Depending on the exact procedure followed, the activities performed in each phase may vary slightly from the descriptions of the core activities depicted in **Figure 1**. In addition, **Table 1** provides an overview of the procurement procedures available for either one-off or for repetitive procurements.
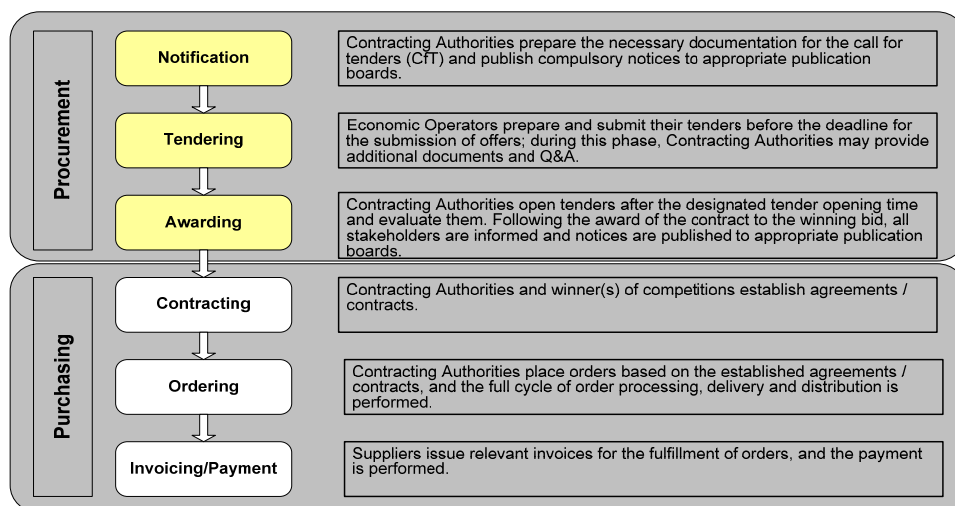
Figure 1: Main phases of public procurement procedures

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[1] Only the rules of the Open procedure apply to Dynamic Purchasing Systems

[2] The EU Directives also envisage procurement through the Negotiated and Competitive Dialogue procedures. As the use of electronic catalogues is not relevant to these, they are not further discussed in the report.

Type of procurement	Procedure	Definition in Directives 2004/17/EC and 2004/18/EC	Activities performed
One-off procurement	Open procedure	Those procedures whereby any interested economic operator may submit a tender	Notification: see Figure 1 Tendering: see Figure 1 Awarding: see Figure 1
	Restricted procedure	Those procedures in which any economic operator may request to participate and whereby only those economic operators invited by the contracting authority may submit a tender	Notification: see Figure 1 Tendering: during this phase tenderers submit their requests to participate in a competition, and contracting authorities short-list tenderers based on pre-defined criteria. Only short-listed tenderers (at least five) may submit tenders, following the activities described in Figure 1. Awarding: see Figure 1
Repetitive procurement	Framework agreements (FA)	An agreement between one or more contracting authorities and one or more economic operators, the purpose of which is to establish the terms governing contracts to be awarded during a given period, in particular with regard to price and, where appropriate, the quantity envisaged	**Establishment of FA** An FA is established by completing an one-off procedure. For the activities of Notification, Tendering and Awarding in order to establish an FA, see Figure 1 **Conclusion of specific contract** In case the competition is re-opened, the Notification, Tendering, Awarding phases run, with no variations from the activities described in Figure 1. If the competition is not re-opened direct ordering from the best placed operator takes place.
	Dynamic Purchasing Systems (DPS)	A completely electronic process for making commonly used purchases, the characteristics of which, as generally available on the market, meet the requirements of the contracting authority, which is limited in duration and open throughout its validity to any economic operator which satisfies the selection criteria and has submitted an indicative tender that complies with the specification	**Establishment of DPS** Notification: no variations from the activities described in Figure 1 . In order for a DPS to be established, an authority must create and publish a respective Contract Notice, as well as, establish the electronic virtual area which will be used for storing all DPS information (including the contract notice, contract documents for the DPS, indicative tenders, simplified contract notices for specific contracts within the DPS, tender for specific contracts, Q&As, etc.) Tendering: see Figure 1 Awarding: see Figure 1 **Conclusion of specific contract** Notification: see Figure 1 Tendering: see Figure 1 Awarding: see Figure 1

Table 1: One-off and repetitive procedures

Particularly for Framework Agreements, the conclusion of specific contracts can be achieved in three different manners, depending on the number of participants in the Framework Agreement and the specifications of the specific contract:

- Single Operator: when a Framework Agreement is established with a single operator, then specific contracts can be concluded by direct ordering.

- Multiptle operators, when competition is not re-opened: by application of the terms laid down in the Framework Agreement without reopening competition. The process followed is referred to as "cascading" and is described in detail in section 3.1.3 of [FReq].

- Multiple operators, when competition is re-opened: where not all the terms are laid down in the Framework Agreement, when the parties are again in competition on the basis of the same and, if necessary, more precisely formulated terms, and, where appropriate, other terms referred to in the specifications of the Framework Agreement (see section 3.1.3 of [FReq]).

More details on the conclusion of specific contracts within a Framework Agreement are available in [FReq] (sections 3.1.3 and 4.3.1).

2.2   Use of electronic means

The use of eCatalogues for the submission of tenders relies on the use of electronic means. Directives 2004/17/EC and 2004/18/EC provide a definition of "electronic means".

Directive 2004/17/EC Art 1. Par. 12 and Directive 2004/18/EC Art 1. Par. 12

'Electronic means' means using electronic equipment for the processing (including digital compression) and storage of data which is transmitted, conveyed and received by wire, by radio, by optical means or by other electromagnetic means.

In addition, according to the [Explanatory document], issued by the European Commission in 2005, "*electronic means typically rely on a computer network and those software components that can electronically perform all necessary functions for the operation of a public procurement system*". Today, such widely accessible means can be offered by the Internet and its practical uses, including web-based applications, email, file-sharing, news-feeds, etc.

The EU Directives explicitly refer to the principles of equal treatment, non-discrimination and transparency. In addition, they stipulate that the used systems and tools must be generally available and interoperable as well as respect the integrity, confidentiality, security, traceability of data and transactions. All these principles form the cornerstones of the rules and requirements for public procurement in the EU. **Table 2** provides an overview of these principles, presenting in parallel their associated rules and requirements to be taken into account by contracting authorities when establishing/operating procurement systems which rely on the use of electronic means[3].

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[3] The principles discussed in Table 2 are derived from the general principles of the Treaty, and in particular those related to the freedom of movement of goods, the freedom of establishment and the freedom to provide services. Apart from the principles discussed in Table 2, the principles of proportionality and mutual recognition can also be derived from the EU Directives on public procurement; however they are not discussed in the current section, as they are not related to the use of electronic means.

Principle	Rule / Requirement
General availability and non-discrimination	– Electronic means must be widely accessible and easily usable, ensuring equal treatment and non-discrimination, offering the grounds for effective competition.
	– The operations of an eProcurement system that do not require interaction (e.g. downloading, searching, etc.) should in principle be available round the clock (24x7x365). Operations that do require interaction (e.g. an eAuction event) need to be supported only during normal working hours of the contracting authority.
	– All fees required by the contracting authority for allowing economic operators to access the system must be justified, proportional to contracts and should not discriminate or restrict access to the procurement procedure. In addition, payment should be possible to take place instantaneously.
	– To achieve unrestricted and full direct access to the Contract Documents, all relevant documents must be accessible round the clock, from the date of publication of the notice until the expiry of the deadline for submitting tenders.
	– Contracting authorities must provide free, available and reliable access to the contracting authority's connection to an open network, in order to guarantee that access to the tendering procedure is not restricted and to ensure equal treatment and effective competition.
Equal treatment	– The information provided by contracting authorities must be the same for all economic operators.
	– The criteria for the award of the contract should enable tenders to be compared and assessed objectively.
	– The necessary electronic tools and means that economic operators must use for taking part in a public competition must be equally accessible to suppliers.
Transparency	– The criteria for the award of the contract must be stated in advance and be made available to all interested economic operators.
	– The rules and conditions set by contracting authorities to be met by economic operators for taking part in a public procurement procedure, must be generally available and ensure equal treatment.
Interoperability	– The electronic means used and any electronic tools made available by the contracting authority must be interoperable (i.e. tools to function and interact with commonly used equipment and applications, exchange of information or services to be performed satisfactorily between systems and users).
	– Contracting authorities' electronic public procurement ICT systems should have the capability to exchange information or services directly and satisfactorily between other systems and/or users, so as to operate effectively. This requires the capability to provide interchange of electronic data among, e.g. different signal formats, transmission media, applications or performance levels.

Integrity, confidentiality and security	– The system should provide mechanisms for limiting (or if possibly eliminating) unauthorised access aimed at disrupting its normal operation (e.g. malicious attacks), and offer a reasonable level of protection and guarantee of security to economic operators.
	– Any technical problems of an eProcurement system within the remits of control of the contracting authority must be resolved by the authority. The resolution might involve not only its technical remedy (e.g. fix a network problem), but also non-technical provisions (e.g. extend the deadline of submission of tenders). The exact steps to be taken by the contracting authority must be decided depending on the technical problem and the effect it has on a competition, always respecting the principles of non-discrimination and equal treatment.
	– The contracting authority shall not disclose information forwarded to it by economic operators.
Traceability	– eProcurement systems must be capable of documenting the progress of award procedures conducted by electronic means.
	– The original version of all documents and a true and faithful record of all data exchanges with economic operators should be preserved, in order to provide any of the evidence which might be needed in case of litigation.
	– It should be possible to verify what message/data has been transmitted or made available, by whom, to whom, and when, including the duration of the communication. It should also be possible to reconstitute the sequence of events, including any automatic data processing or automated calculations.
	– It should be possible to establish whether the site hosting the procurement process has been compromised or tampered with.

Table 2: Rules and requirements for the use of electronic means

2.3   *Electronic submission of tenders*

According to the EU Directives, electronic catalogues may, under specific conditions, form valid tenders or part of them. In this case, all rules and requirements related to the electronic receipt of tenders must be fully respected. Hence, before considering specific rules for eCatalogues, **Table 3** enlists these general rules and requirements as defined in Annex X of [2004/18/EC], Annex XXIV of [2004/17/EC] and [Explanatory document].

Topic	Rule / Requirement
Prior to tender submission	– The chosen means of communication, data exchange and storage should guarantee data integrity and confidentiality. – The deadline for submitting tenders should be clearly specified either by using the Coordinated Universal Time (UTC) or by using the "local time" of the contracting authority. – Information about data encryption of tenders, requirements for usage of electronic signatures in tenders, and other specifications for the electronic submission of tenders should be made available to all interested parties.
During tender submission	– Tenders should be accepted only until the designated tender submission deadline. Tenders received afterwards should be rejected by the system. – Contracting authorities may reject tenders (or generally messages) that could harm their systems (e.g. files containing viruses). Reception devices should take appropriate steps to this end. – The tender reception device should provide appropriate information to tenderers in case the tender submission process is not successful. – When a tender is successfully received, an acknowledgement should be automatically sent to the tenderer. – All received tenders should be securely locked and protected against unauthorised access. Trace-ability operations should record the exact date and time of receipt of tenders. – The system should record all operations performed during the tender submission period, and confirm that no unauthorised access has been detected. – If electronic signatures are used, usage must comply with Directive 1999/93/EC. – To preserve anonymity of tenderers until tender opening, the tender reception device should guarantee that information of the tenderer remains confidential.
During tender opening	– Tender opening should be performed only when the designated tender opening time has been reached. This opening time should be set or changed only by authorised persons. – Tenders should be opened following the "four eyes" principle, whereby at least two authorised persons of the contracting authority perform simultaneous action of unlocking the tenders. – If tenders are to be opened in separate parts (e.g. first opening of technical offers and then opening of financial offers), the tender opening device should ensure that the opening of the different parts is performed as for non-electronic tenders (sealed envelopes).
After tender opening	– Information contained in tenders remains confidential even after the tender opening process. Restrictions to data access should be applied for all tenders, whereby only authorised persons can view/download tenders. Tenders should be made available to authorised persons only in read-only mode (e.g. information in tenders cannot be modified, tender documents cannot be overwritten).

Table 3: Rules and requirements for the electronic submission of tenders

2.4   Specific aspects of the use of electronic catalogues

Directives 2004/17/EC and 2004/18/EC do not define the term "eCatalogue", but rather identify it as an authorised tool for tender submission. According to preamble 20 of Directive 2004/17/EC and preamble 12 of Directive 2004/18/EC, electronic catalogues, under specific conditions, may form valid electronic tenders. Hence, all rules related to the use of electronic means (see section 2.2) and all rules related to the electronic submission of tenders (see section 2.3), also apply to eCatalogues.

Directive 2004/17/EC (preamble 20) and Directive 2004/18/EC (preamble 12)

*Certain new electronic purchasing techniques are continually being developed. Such techniques help to increase competition and streamline public purchasing, particularly in terms of the savings in time and money which their use will allow. Contracting authorities may make use of electronic purchasing techniques, providing such use complies with the rules drawn up under this Directive and the principles of equal treatment, non-discrimination and transparency. To that extent, a tender submitted by a tenderer, in particular where competition has been reopened under a framework agreement or where a dynamic purchasing system is being used, **may take the form of that tenderer's electronic catalogue** if the latter uses the means of communication chosen by the contracting authority in accordance with* [Article 48 for 2004/17/EC and Article 42 for 2004/18/EC].

[Explanatory document] describes specific rules and requirements for the use of eCatalogues. The relevant section from [Reqs. for eProcurement] is hereby presented in its entirety.

Requirements for conducting public procurement using electronic means under the new public procurement Directives 2004/18/EC and 2004/17/EC - Section 4.2.1: The electronic receipt of tenders in repetitive procedures and electronic catalogues

*The stage of re-opening of competition in particular allows for the use of electronic catalogues (e-catalogues). Electronic catalogues are **electronic documents established by the suppliers** which describe products and prices which may, **under certain conditions**, **constitute a tender**; these are either transmitted or uploaded to the contracting authority website or made available in the suppliers' website.*

*Economic Operators may use e-catalogues to present their tenders provided they **comply with the above mentioned requirements for electronic communication tools** as well as with **possible requirements set by the contracting authority** (i.e. the use of a specific format). In such cases appropriate indications following Articles 42(5)(a) and 48(5)(a) shall be provided.*

*In theory, e-catalogues **can also be used to present the tender in a one-off procedure or the initial tender in a repetitive procedure**. However, it is precisely when the supplier and products have already been admitted that e-catalogues may easily be used to update the indicative tender for a DPS or to submit a new tender.*

*In running framework agreements and DPSs, **e-catalogues shall refer to the tender/product for which the supplier has been selected** and shall not contain substantial amendments to the terms laid down in the framework agreement (Article 32(2)). At the stage of setting up the multi-supplier framework agreement or of setting up or joining the DPS, **e-catalogues can only be submitted in a "frozen" or "snapshot" format** under the conditions specified in Articles 42 and 48 and Annexes X and XXIV, because the public purchaser operates in an open environment to which anyone must have access.*

2.5 Active collection of tenders

Apart from the traditional tender submission process, the EU Directives can be understood as allowing an additional way of using eCatalogues, by which contracting authorities may collect tenders from suppliers, called "active collection of tenders". This process is occasionally referred to as "punch-out". The [Explanatory document] explains:

> **Requirements for conducting public procurement using electronic means under the new public procurement Directives 2004/18/EC and 2004/17/EC - Section 4.2.2: The active collection of tenders**
>
> *Provided the catalogues are in conformity with the requirements of the contracting authority (in terms of their content, presentation, format, and tools), and that all the requirements of Annexes X and XXIV are satisfied,* ***the contracting authority may decide to have exclusive access to the catalogue on a dedicated platform or, if the supplier agrees, to have access to it via the supplier's website.***

The "active collection of tenders" may be considered as an alternative way to organise tender submission. Hence, all rules and requirements of the EU Directive mentioned in the previous sections for the use of electronic means and the electronic submission of tenders also apply.

This means that the active retrieval of tenders must be done in an equitable, fully transparent and non-discriminatory way. Thus it should be performed only once an appropriate notification has been given to all suppliers, and always within the context of a Framework Agreement or DPS. The "active collection" should be performed on a "frozen" or "snapshot" format of the supplier's system at a specific point in time and pre-defined in the notification of the call for the competition[4]. Moreover, contracting authorities must seek the consent of the concerned suppliers before proceeding to collect tenders in this way.

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[4] To ensure the "frozen" or "snapshot" format, an eCatalogue should not contain dynamic links to external files or Internet locations.

3   What is …? eCatalogue abstract types

Chapter 2 above discussed the explicit requirements set out in the EU Directives for the use of electronic means and for the electronic submission of tenders, in the context of a public procurement procedure. These provide a uniform framework for conducting public eProcurement across Europe, whilst at the same time leaving Member States and EEA countries free to implement the appropriate electronic systems and tools as best suited to their practical needs and national legal systems. However, the EU Directives do not provide a precise definition of, or specific rules for, eCatalogues. Although it is implied that eCatalogues constitute electronic documents which may form tenders, and consequently all relevant rules and requirements apply, these do not cover all possible uses for eCatalogues.

Building on the general rules and requirements, this chapter presents more specific definitions and uses of eCatalogues in the public procurement process.

The EU Directives authorise the use of eCatalogues as a new tool for submitting tenders for calls for competition. Therefore, they can be defined as electronic documents that are explicitly created by suppliers and can be used in reply to a specific call for competition, which describe the offered products and prices. They contain information similar to information included in tenders submitted on paper or in an electronic (non-eCatalogue based) format. In the following, this interpretation of eCatalogues will be referred to as "eCatalogue prospectuses".

However, different practices have today emerged, due to buyers' practical needs, e.g. for recurring low-value purchases. eCatalogues are widely perceived as computer systems, capable of storing products and prices of suppliers, based on which public entities can place orders. This interpretation of eCatalogues may be tolerated for repetitive procurements provided that the way information is imported and used in such a system is compliant with the EU Directives. In the following, this interpretation of eCatalogues will be referred to as an "eCatalogue stock management system".

Based on the above, two abstract types of eCatalogues can be defined:

-   "eCatalogue prospectus" abstract type: refers to an electronic document describing products and prices of a supplier. It forms a tender or part of a tender in reply to a specific call for competition, exclusively created and maintained by a supplier, in accordance with the rules and requirements of the EU Directives (see section 2.3).

-   "eCatalogue stock management system" abstract type: refers to an ICT system of a contracting authority, which allows suppliers to submit eCatalogue prospectuses within the context of a call for competition. Such systems ensure the appropriate handling and storage of eCatalogue prospectuses, in accordance with the rules and requirements set in the EU Directives (see section 2.3). Post-awarding activities, such as eOrdering, may be supported.

The following sections discuss the two identified eCatalogue abstract types.

3.1   eCatalogue prospectus

An "eCatalogue prospectus" constitutes an electronic document, which is exclusively created by a supplier and submitted to a contracting authority in reply to a call for competition. It may thus form a tender or part of it. This includes offers (i.e. in a one-off procedure or a specific offer under a repetitive procurement procedure), as well as an initial offer for a Framework Agreement or an indicative offer for a DPS. Therefore, eCatalogue prospectuses can constitute binding legal documents, which must describe in an accurate and complete manner the products/services offered by a supplier.

In a public procurement procedure, the establishment, maintenance and/or modification of an eCatalogue prospectus fall under the sole responsibility of a supplier, in compliance with the specifications of the given call for tenders. The contracting authority has the right to specify the format and standards to be followed, as is the case for tenders submitted on paper. However, it would be desirable for eCatalogues to be based on existing supplier product catalogues, all or part of which are submitted in accordance with the specifications of a given call for competition.

An eCatalogue prospectus can take the form of spreadsheet worksheets, portable databases, text files in predefined structured (e.g. comma separated), or advanced data-interoperable formats (e.g. XML files following industry-wide standards). There are already a number of industry-wide standards for forming and exchanging eCatalogue prospectuses (see chapter 8).

Table 4 describes possible uses for eCatalogue prospectuses in the context of public procurement, taking into account the legal requirements of chapter 2.

Procedure	Usage of eCatalogues
One-off purchases (open, restricted)	eCatalogue forms an one-off offer/ tender or part of it
Framework agreement (establishment phase)	eCatalogue forms an initial offer or part of it
Framework agreement (re-opening of competition under a specific contract)	Under re-opening of competition, eCatalogue forms a specific offer or part of it
Dynamic Purchasing System (establishment of DPS - tenderer admission to system)	eCatalogue forms an indicative offer or part of it
Dynamic Purchasing System (submission of specific offer for specific contract)	eCatalogue forms a specific offer or part of it

Table 4: Public procurement procedures under which eCatalogue prospectuses may be used

Figure 2 presents a pictorial view of the abstract model "eCatalogue prospectus".
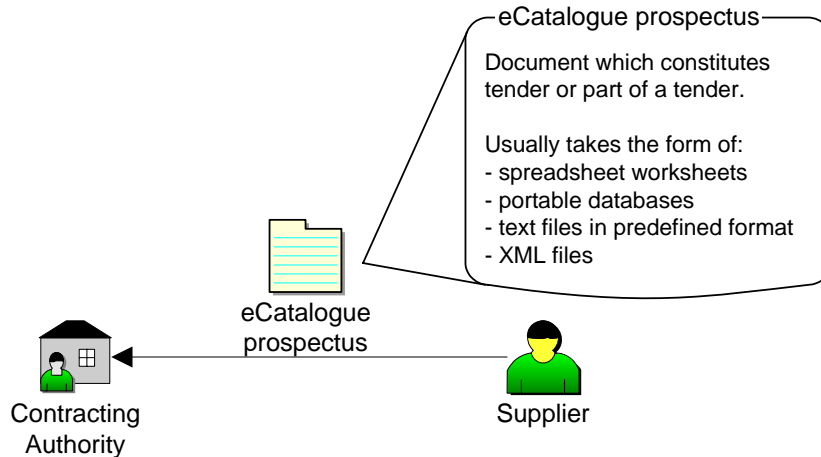
Figure 2: "eCatalogue prospectus" abstract model

Currently, the process followed by suppliers for creating their tenders (eCatalogue-based or not) in reply to a public call for competition requires considerable time and effort, whilst the financial benefit of taking part in the competition is not guaranteed. Hence, the "investment" made by suppliers for participating in public procurement competitions is frequently disproportionate to the corresponding gain; this may affect the level of competition.

To reduce operational costs for creating tenders, the EU Directives intend to allow suppliers to easily create and maintain offers, through the use of eCatalogue prospectuses. However, current practices in the EU indicate that eCatalogue prospectuses are most often custom-made documents, which suppliers create according to - largely varying - specifications of contracting authorities. This approach does not offer any real benefits to suppliers and implies additional work for them.

eCatalogue prospectuses can thus be categorised into those created entirely based on suppliers' own specifications and those created on particular specifications by contracting authorities. eCatalogue prospectuses based on supplier specifications can be further divided into those created for general consumers for retail use (e.g. prospectuses for Business-to-Customer transactions, such as for use in eCommerce sites) and prospectuses created for professional or wholesale use (e.g. prospectuses for Business-to-Business transactions, such as for eBusiness sites).

Figure 3 depicts the different groupings of eCatalogue prospectuses.
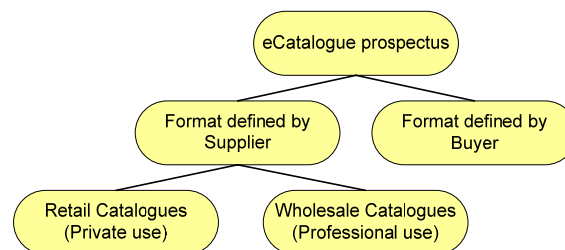
Figure 3: Categorisation of eCatalogue prospectuses

3.1.1   eCatalogue prospectuses whose format is defined by suppliers

As shown in **Figure 3**, eCatalogue prospectuses in a format defined by suppliers can be grouped into those created for consumer/retail use and those created for professional/wholesale use. Prospectuses created for retail use are primarily addressed to consumers, whilst those for professional/wholesale use are addressed to businesses. The former type is usually deployed for eCommerce applications, supplier product inventories available to the general public and business-to-consumer applications (B-2-C), whilst the latter type is primarily used for business-to-business (B-2-B) system communications.

Depending on their target group and purpose, the content of an eCatalogue prospectus is likely to vary. However, regardless of type, eCatalogue prospectuses are created with the intention to describe the products/services offered by a supplier, including some general common elements such as pricing and delivery.

The core information that is usually included in eCatalogue prospectuses for both retail and wholesale use comprises[5].

- – trading partner identification code
- – product identification item / Stock Keeping Unit (SKU)
- – product description
- – product manufacturer
- – product categorisation
- – pricing details
- – delivery details

In addition, prospectuses for wholesale use normally incorporate extra information, such as[6]:

- – product handling and packaging terms
- – warranty and contracting information
- – catalogue and product validity start and end dates
- – ordering quantity terms
- – trading terms
- – invoicing terms

Due to the B-2-B nature of prospectuses intended for professional/wholesale use, it is recognised that such prospectuses must be interoperable. In this context, interoperability describes the capability of eCatalogue prospectuses to be transferred from one party (e.g. the supplier) to another (e.g. the buyer) via electronic means. A prospectus displays high interoperability when it can be easily transferred from one party to another, whereas it displays low interoperability when such transfer requires complicated transformations (possibly necessitating manual operations), or is not feasible at all.

Currently, some industry segments (for instance the chemical and automobile industry) have implemented standards for the creation and exchange of eCatalogue prospectuses. Hence, considering established B-2-B electronic commerce processes, specific industry segments have achieved adequate interoperability using eCatalogue standards for purchasing and invoicing. However, there is ground to further extend these standards and implement common

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[5] Sources: eCommerce sites www.ebay.com, www.fnac.com, www.mistergooddeal.com, www.3suisses.fr, www.sainsburys.co.uk

[6] Sources: eCommerce site: www.dell.com, www.samsung.com, www.globalsources.com, www.alibaba.com, www.grainger.com and content of eCatalogue prospectus standards: UBL 2.0, c-Catalogue

standard frameworks globally, in order to achieve greater interoperability. This could focus on how eCatalogue prospectuses can be used for their initially intended purpose, which is to promote the available products/prices of a supplier (i.e. the equivalent of pre-awarding phase of public procurement). Specifically, as discussed in section 6.3, the investigated eCatalogues in the private sector for both retail and wholesale use demonstrate a series of common features. These indicate to some extent that in the private sector a similar approach has been followed for the use of eCatalogues for procurement purposes. In addition, eCatalogues used in the private sector present significant commonalities to those used in the public sector, both in terms of their core content, and the way they are used in the procurement process.

Although high interoperability is also a desired attribute for prospectuses for use by the general public, i.e. individual consumers, it may not be as important as for professional /wholesale prospectuses.

3.1.2   eCatalogue prospectuses whose format is defined by buyers

Electronic prospectuses whose format is defined by buyers imply that suppliers follow specific buyer specifications, either for creating their own eCatalogue prospectus or by filling a form on the buyer's platform. Under this approach, the buyer imposes to the supplier the rules for presenting product/service information in a specified format, which fits buyer practices and facilitates the automation of internal processes, including evaluation.

Although very common in the public sector in the EU and in large private companies, this approach may not be the most interoperable and thus beneficial one, as the creation of prospectuses in this manner necessitates substantial work to be performed by suppliers and may discourage them from participating in competitions. Buyers have different needs, mostly resulting from the use of specific ICT solutions that necessitate a specific eCatalogue format and content. Hence, the specifications buyers impose to suppliers for eCatalogue prospectuses may be quite diverse. This diversity requires suppliers that wish to participate in competitions of different buyers to dedicate considerable effort to form their prospectuses in accordance with the imposed specifications, although the requested information remains to a large extent identical. Such prospectuses demonstrate low interoperability and re-usability.

In most cases, eCatalogue prospectuses created according to buyer specifications contain information similar to the standard one (also discussed in section 3.1.1). Nevertheless, the way of formatting/presenting this information obliges suppliers to transform the information of their existing product catalogues into the required format. Data field "mapping" between supplier product lists and buyer prospectus specifications may prove troublesome, especially for dealing with issues such as:

- information requested by buyers that is unknown/unclear to suppliers

- information requested by buyers necessitating manual processing by suppliers

- language barriers

- currency barriers

- product classification translations

It is also quite common that prospectuses created by suppliers following buyer specifications to be of low quality. Despite the dedicated efforts, suppliers do not have the detailed know-how and mechanisms in place for easily creating quality prospectuses that meet buyer specifications. Therefore, multiple verification and improvement iterations are usually required for the finalisation of such prospectuses, generating extra work for both parties (buyers and suppliers). Moreover, such interactive verification and improvement processes, if performed in the pre-awarding phases of a public procurement procedure, would not comply with the requirements of the EU Directives for the electronic submission of tenders, e.g. as regards confidentiality and integrity of the transmitted data.

3.2   eCatalogue stock management system

An "eCatalogue stock management system" constitutes an ICT system of a contracting authority which stores the eCatalogue prospectuses submitted by suppliers. It allows the submission of eCatalogue prospectuses in response to specific calls for competition, in compliance with the rules and requirements of the EU Directives and particularly those related to security and confidentiality. Services for viewing/browsing eCatalogue prospectuses should be supported, whereas further functionality can be foreseen for verifying their technical soundness and for evaluating them.

The information of eCatalogue prospectuses stored in such systems is confidential and only authorised persons should be able to access it. In addition, catalogue information contained in such systems should be read-only. Integration of "eCatalogue stock management systems" with greater-scope systems of contracting authorities may be provided, thus enabling the electronic support for eContracting, eOrdering, and eInvoicing. Such systems facilitate the use of electronic catalogues in the pre-award phases of public procurement. At the time of writing this report, there are no systems in Europe which support the complete functionalities for an "eCatalogue stock management system".

Figure 4 presents a typical structure of the "eCatalogue stock management system".
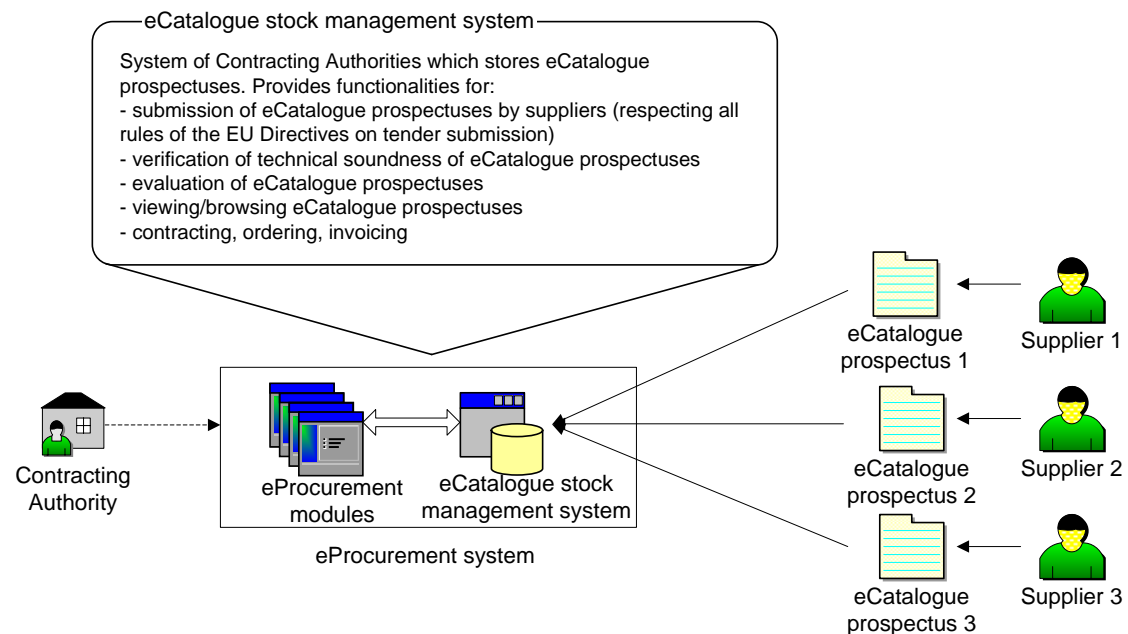
Figure 4: "eCatalogue stock management system" abstract model

The particular functionalities supported by the "eCatalogue stock management system" may vary considerably among contracting authorities. **Figure 5** presents the full set of possible main functionalities that can potentially be supported by such systems in pre-award and post-award eProcurement phases
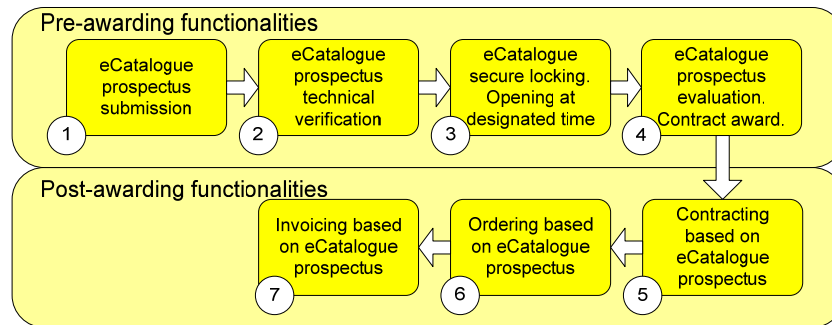
Figure 5: Main functionalities supported by "eCatalogue stock management systems"

3.3   Current eCatalogue practice

Current practice by public purchasers in the EU differs from the varied possible uses of eCatalogues described above. At present, they do not conceive eCatalogue prospectuses as a tool for forming tenders; their primary operation is for populating marketplaces, providing support for eOrdering. Thus attention is oriented towards eCatalogue stock management systems even though, in general, the practical use of such comprehensive stock management systems is limited. The majority of public procurement systems in the EU using eCatalogues support only a few of the functionalities depicted in **Figure 5**. In particular, implementations focus on the support of post-award functionalities (5, 6 and 7 of the figure above), whereas support for pre-award functionalities (1 to 4 of the figure above) is to a large extent under-developed and overlooked. For the purpose of the present document, this type of systems is referred to as "eCatalogue current practice" and is further presented in chapter 5 ("State of play I: eCatalogue practices by public purchasers in the EU") and in Annex I.

4   Scope of eCatalogue prospectuses and expected benefits

This section discusses the types of contracts eCatalogues are most suited for, and enlists the expected benefits from their use. Parameters to be considered for conducting a cost-benefit analysis are also presented.

4.1   *Scope of eCatalogue prospectuses*

The use of eCatalogue prospectuses is not equally suitable for all types of procurement. Electronic catalogue prospectuses would seem to be well-suited for procuring standard commodities and possibly simple services, which can be well and unambiguously defined in a finite and standardised set of data fields. Their use would seem to appear less appropriate for work contracts, which tend to be of a more complex nature.

As detailed in section 2.1, the EU Directives foresee four procedures/instruments for one-off and repetitive purchases; Open and Restricted for the former type, Framework Agreements and DPS for the latter[7]. Electronic catalogue prospectuses are well suited for all four procedures/instruments.

Commonly, it is considered that the most promising use of eCatalogues is in repetitive purchases. Indeed, Framework Agreements and DPS allow for procurements via specific contracts, which, depending on the scope and nature of purchases, can (in theory at least) be solely based on eCatalogue prospectuses. In addition, the full electronic use of eCatalogue prospectuses allows to automate ordering, invoicing and payment. In particular, Dynamic Purchasing Systems, which by definition must operate in a fully electronic manner, would benefit from the use of eCatalogue prospectuses.

Nevertheless, it is equally important that eCatalogue prospectuses be more extensively utilised for one-off purchases. Their appropriate use can simplify the work suppliers must perform in order to participate in a procurement procedure, and thus form the ground for effective competition. In this sense, the use of eCatalogue prospectuses should be promoted for both one-off and repetitive purchases.

4.1.1   General characteristics of well-formed eCatalogue prospectuses

Well-formed eCatalogue prospectuses should demonstrate certain characteristics to allow a complete, accurate, and uniform description of the offered products/prices facilitating their automated processing. These characteristics can be generic, regarding the whole eCatalogue prospectus, and more specific, regarding particular products/services within an eCatalogue prospectus (referred to as "product lines").

▪ Generic characteristics for an eCatalogue prospectus comprise:

− An eCatalogue prospectus must contain generic information that identifies it within the context of a specific contract/agreement. Identification elements should include Catalogue ID, Catalogue Version, Contract ID, and Supplier ID. In addition, if the eCatalogue prospectus is the update of an existing one, explicit reference to the previous Catalogue ID should be made.

− In order to facilitate their efficient evaluation by contracting authorities, eCatalogue prospectuses should be comparable; this can be achieved through structured data (standardisation).

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[7] As discussed in section 2.1, in addition to the above procedures, the EU Directives also envisage the Negotiated and Competitive Dialog procedures. Electronic catalogues are not suited for these two procedures, which are mainly conducted off-line, hence they are not hereby considered.

- The specifications of an eCatalogue prospectus could be flexible, in order to allow its extension to accommodate custom properties (e.g. extra fields); thus meeting the specific needs of the underlying contract/agreement.

- An eCatalogue prospectus should include the specific products/services offered by the supplier, providing information on their pricing and terms of delivery.

- Product line characteristics for specific products/services within an eCatalogue prospectus comprise:

  - A product line should be classified and described using classification/dictionary schemes. This permits to associate products/services to one or more categories of a classification scheme, and to describe them by one or more references to a dictionary.

  - A product line should clearly include pricing and ordering information, as well as, terms of delivery (e.g. price per unit and order unit).

  - A product line may include references to multimedia resources, such as pictures, manuals, multimedia presentations, and Internet URL hyperlinks.

  - A product line may refer to other product lines, also specifying their relation. It should also be possible to specify whether a product line forms part of another product line.

4.1.2   Possibilities for re-using eCatalogue prospectuses

As discussed above, it is desirable that eCatalogue prospectuses be interoperable; this may open up a wide-range of possibilities for their re-use in several different areas. **Table 5** presents some of these options.

Possibility for re-using eCatalogue prospectuses	Applicable for
Use the same eCatalogue prospectus for tendering to more than one call for competition (both public and private sector procurement)	Supplier
Create a new eCatalogue prospectus based on an existing one	Supplier
Upload eCatalogue prospectus data into several internal supplier ICT systems, for the electronic support of sales, production, warehousing, distribution, etc.	Supplier
Upload eCatalogue prospectus data into several internal supplier and external buyer ICT systems, for the electronic support of post-award ordering, payment, remittance etc.	Supplier and Buyer
Use eCatalogue prospectus data for promoting available products in external third-party ICT systems (i.e. marketplaces, eCommerce portal sites, etc.)	Supplier

Table 5: Possibilities for re-using eCatalogue prospectuses

4.2   *Expected benefits from the use of eCatalogues*

The introduction of eCatalogues in the EU public procurement regime as a tool for tender submission is expected to, ultimately, further and considerably simplify public procurement processes. Generally speaking, the use of electronic means is understood to make procurement procedures more efficient for both sides, buyers and suppliers, as automated transmission and the re-use of data can produce faster and more standardised transactions at lower costs. Lower transaction costs and increased transparency should contribute to higher numbers of participants, which in turn means greater competition and improved offers.

Electronic catalogues, and particularly those abiding to industry-wide standards, may reinforce these general benefits as they further increase the possibilities for the automation and re-use of data, and thus the automation of additional phases of procurement procedures, limiting manual interventions on all sides. In addition, such eCatalogues standard would increase the possibilities for cross-border transactions, through their native support for multilingualism, particularly when supplemented with the use of standardised classification schemes.

More specifically, eCatalogues offer to suppliers the possibility to save time in preparing tenders, incur lower transaction costs, participate easily in a greater number of public competitions, and introduce more efficient processes for conducting business with the public sector. Contracting authorities can also significantly benefit, as use of eCatalogues may contribute to cutting "red tape", offer possibilities for improved prices (through better levels of participation to public competitions), incur lower administrative costs, run faster processes, achieve better monitoring control, and introduce procedures which comply with the EU Directives.

Table 6 enlists the most important benefits expected for both buyers and suppliers from the use of eCatalogues in the main eProcurement phases. As discussed throughout the report, these benefits can be achieved once an "optimum" use of eCatalogue prospectuses in public procurement is achieved, following the standardisation of their use. Chapter 8 of the current document provides details on eCatalogue standardisation, while chapter 2.2 of [FReq] presents two evolution phases for achieving such benefits. In the first phase (Evolution Phase I, acceptance of supplier-defined eCatalogue prospectuses), the main cost of use of eCatalogues will be transferred from suppliers to buyers, providing however benefits to the public sector due to increased participation in public procurement competitions, while in the second phase (Evolution Phase II, eCatalogue prospectuses based on standards / full automation), both buyers and suppliers can benefit due to full automation.

Operation / Process	Expected benefits for Suppliers	Expected benefits for Buyers
Creation of tenders	– Tenders can be created in a (fully or partially) automated manner, based on existing supplier product inventories. – Effort and time for tender creation can be reduced. – Suppliers can participate in calls for competition from different contracting authorities and countries[8]. – Reduce effort and time for translation of tenders into different languages. – Quality of tenders is increased, as they are based on existing (Quality-Assured) product inventories.	– Possibility for reducing costs and time for the creation of tender specifications – Easier participation of suppliers in public procurement competitions should lead to a greater number of participating suppliers. Effective competition can be more easily achieved.
Submission of tenders	– Tender submission can be performed fully electronically.	– Use possibilities for reducing time-limits for tender submission.

[8] This description of benefits is based on the assumption that contracting authorities either authorise the receipt of "supplier-defined" eCatalogue prospectuses, or define the specifications of eCatalogue prospectuses in line with industry-wide standards. Based on this, suppliers are enabled to re-use their eCatalogue prospectuses in more than one Call for Tenders, and in Calls for Tenders by different contracting authorities. Interoperability aspects of eCatalogue prospectuses are discussed in chapter 8.

Operation / Process	Expected benefits for Suppliers	Expected benefits for Buyers
	– The exact electronic means of communication for tender submission can be well-defined for all competitions, be open and easily used[8]. – In case of technical problems or incompatibilities during tender submission, suppliers can be informed instantaneously.	– Predefined and open specifications for the electronic means of communication for tender submission, which guarantee equal treatment and non-discrimination. – Automated receipt of tenders – Received tenders can be automatically verified for their technical compliance. It can be guaranteed that accepted tenders fulfil the technical standards set.
Submission of tenders for specific contracts (for repetitive procurement)	– Suppliers can maintain their tenders for repetitive contracts by re-submitting parts of their eCatalogue prospectuses. Only updating specific eCatalogue fields is necessary, eliminating the need to re-create entirety an eCatalogue prospectus.	– Re-submitted eCatalogue prospectuses within the context of repetitive contracts can be automatically verified for ensuring that they meet the pre-agreed terms (e.g. terms of a Framework Agreement). The necessary effort required for such verifications can be reduced or even eliminated.
Evaluation of tenders	– Results for the evaluation of tenders can be published faster. – More transparent evaluation procedures. – Standardised documentation of evaluation results.	– Standardised evaluation process as routines and mathematical formulas can be used to automatically check and compare received tenders (in the form of eCatalogues). – Reduce time and effort for tender evaluation, preserving equal treatment to all participants. – Automatic process for documentation of tender evaluation and reporting. – Automatic notification of results to suppliers.
Benefits from supplementary services	– Simplify processes for contracting, ordering, invoicing, whereby specific terms for all three functions explicitly reference submitted eCatalogues. – Establish system-to-system interoperability for contracting, ordering, invoicing, through the use of well-established, specialised standards.	– Simplify processes for contracting, ordering, invoicing, whereby specific terms for all three functions explicitly reference submitted eCatalogues. – Establish system-to-system interoperability for contracting, ordering, invoicing, through the use of well-established, specialised standards.

Table 6: Expected benefits from the use of eCatalogues in public procurement

4.3 Parameters for conducting a cost-benefit analysis

Cost-Benefit Analysis (CBA) is a widely-used policy-making technique for deciding whether to make an investment in a particular field for introducing a certain change. As suggested by its name, the use of this technique adds up the value of the anticipated benefits from this certain change and subtracts the associated costs. There can be one-off costs (incurred only once during the implementation of relevant projects), and ongoing costs (incurred recurrently for instance for the provision of particular services). Benefits are generally achieved over a certain period of time, referred to as "payback period". The cost-benefit analysis can be performed using solely financial terms (i.e. expenditure and financial gains), or can also consider non-financial (or intangible) costs and benefits.

Table 7 presents the expected benefits and envisaged costs for both the public and private sectors for moving from the current use of eCatalogues in public procurement to the "optimum" use of eCatalogues. The benefits and costs discussed in this table constitute core parameters to be considered for performing a cost-benefit analysis on establishing a framework for using eCatalogues in public procurement (i.e. procedure, system, standard, etc.).

As expected, the "optimum" use of eCatalogues would offer great benefits to both the public and private sectors. However, to achieve the "optimum" use of eCatalogues, common appropriate industry-wide standards must be established and widely adopted for the creation and exchange of eCatalogues. In addition, current practices and processes must be adjusted to meet the rules and requirements for using eCatalogues in public procurement. This necessitates certain financial and other investments to be made in both, the public and private sectors.

It is reasonable to expect that private companies will be reluctant to invest in standards, systems and change management initiatives before being in a position to evaluate the tangible benefits of using eCatalogues in public procurement. Therefore, the public sector should do both, commence initiatives aimed at establishing appropriate standards / systems / processes and create incentives for private sector-driven initiatives.

	Costs to establish the "optimum use" of eCatalogues in comparison to "current practice"	Benefits of the "optimum use" of eCatalogues in comparison to "current practice"
Buyer's view point	One-off/direct costs: – Selection/creation and adoption of particular eCatalogue format and exchange standard(s) and product classification standard(s) – Translation of the selected standard(s) into official EU languages – Customisation of existing ICT systems in the public sector, for utilising the selected eCatalogue technical framework Ongoing/indirect costs: – Training of the public (and private) sectors on the use of eCatalogues in public procurement – Provision of new services (system evolution/hosting/ maintenance) for the use of eCatalogues	Tangible benefits: – Reduction of current processing costs – Elimination of current eCatalogue prospectus verification costs – Reduction of procurement costs, based on improved offers and lower catalogue creation costs – Elimination of costs for defining specifications for eCatalogue formats and electronic means – Significant reduction of costs for evaluation of tenders, through their automated processing

Buyer's view point (cont...)		Significant reduction of costs for verifying the compliance of re-submitted prospectuses in the context of specific contracts within Framework Agreements and DPS (to ensure that they meet the pre-agreed terms) – Further reduction of processing time – Re-utilisation of eCatalogue prospectuses Intangible benefits: – Improvement of participation rates in competitions (including cross-border suppliers) – Harmonisation of the technical eCatalogue framework in Europe, accommodating the re-usability of eCatalogue prospectuses for many different purposes – Compliance with the EU Directives
Supplier's view point	One-off/direct costs: – Customisation of existing ICT systems in the private sector, for utilising the selected eCatalogue technical framework Ongoing/indirect costs: – Training on the use of eCatalogues in public procurement – Provision of new services (system evolution/hosting/ maintenance) for the use of eCatalogues	Tangible benefits: – Reduction of eCatalogue prospectus creation/maintenance costs because of re-use of existing prospectuses/catalogue data – Re-use of catalogues/catalogue data for commercial transactions in both public sector (B-2-G) and private sector (B-2-B) – Further reduction of costs of post-award transactions, through the electronic support of ordering, invoicing and eventually payment – Increased participation in public procurement competitions (especially as regards cross-border opportunities) – Further reduction of processing time. Less time needed to participate in public procurement competitions Intangible benefits: – Better quality of eCatalogue prospectuses – Harmonisation of the technical eCatalogue framework in Europe, accommodating the re-usability of eCatalogue prospectuses for many different purposes

Table 7: Parameters for conducting a cost-benefit analysis

5 State of play I: eCatalogue practices by public purchasers in the EU

This section considers current eCatalogue uses in various European public administrations in order to identify frequent practices as well as Member States' requirements and needs. A selected group of European public administrations was investigated. The information collected for each country is presented in detail in Annex I ("eCatalogue initiatives / projects in European public administrations").

The most noticeable conclusion following the analysis of the collected information relates to the understanding of the concept of "what is an eCatalogue". Today, electronic catalogues used in public administrations in the EU are primarily translated as ICT systems that contain product information and prices in electronic format. Using the eCatalogue abstract type definitions of chapter 3, the public sector has predominantly focused on establishing "eCatalogue stock management systems" (see section 3.2).

Nevertheless, their limited functionality in supporting core pre-award operations for eCatalogue prospectuses (limited support for eCatalogue submission, automated technical verification, secure locking, secure opening and automated evaluation) has effectively resulted in the "eCatalogue current practice", also discussed in section 3.2. The environment for exchanging interoperable "eCatalogue prospectuses" is under-developed. In all investigated cases, the format and content of "eCatalogue prospectuses" are created based on specifications defined by contracting authorities; an approach which, as discussed in chapter 8, demonstrates significant limitations, such as the low interoperability of prospectuses.

Most procurement practitioners understand/perceive eCatalogues as being eOrdering systems which contain information of various products and prices. This is probably due to their practical experience with current Internet-based applications available on the market, such as electronic shops and marketplaces. In addition, most commercial procurement systems primarily confer this meaning to eCatalogues.

Hence, current practical implementations of eCatalogues do not make full use of the potential of the EU Directives. Greater efforts should be provided by all stakeholders in order to promote the development of a suitable environment for the establishment and use of interoperable "eCatalogue prospectuses".

The current section first considers common points and differences in the approaches to the use of eCatalogues in the investigated countries. These approaches are then further assessed to identify whether the existing eCatalogue prospectuses allow for electronic processing, and whether they meet the principles of interoperability and equal treatment of the EU Directives. Finally, a comparative analysis is performed in order to identify the experienced needs, requirements, and current practices.

5.1 Comparative overview of case studies

This section examines the approaches observed in the investigated European public administrations, and identifies common points and differences. From this, frequent uses and trends are deduced, including both emerging common standards as well as gaps in the implementation of eCatalogues.

5.1.1   Summary tables of the case studies

This section summarises some of the information of Annex I. Through this, an initial evaluation of the current state of play in Europe will be established. In a first step, relevant aspects of the national legal frameworks are presented. Then, the different types or uses of existing eCatalogue systems are looked at, including their scope of application. Finally, an overview of the processes supporting the "life-cycle" of eCatalogue prospectuses is presented.

The summary tables in this section are followed by a detailed analysis in section 5.1.2 below.

5.1.1.1   Legal framework

Table 8 presents an overview of the legal framework for eProcurement and, in particular, for eCatalogues in the investigated countries.

	Hungary	Italy	Latvia	Norway *	Scotland	Sweden
Implementation of EU Directives	YES	YES	YES	YES New regulation is expected to come to force in Jan '07	YES	IN PROGRESS Transposition is expected to be completed by mid-2007
Specific requirements for eCatalogues in the implementation of the Directives	NO	NO	NO	NO	NO	NO
Provision for the active collection of tenders "punch-out"	YES	NO	NO	YES	YES	Depends on choice of contracting autorities

* Norway is an European Economic Area (EEA) country and has a different deadline that Member States for implementing the Directives.

Table 8: Overview of relevant legal aspects in selected EU Member States and EEA countries

5.1.1.2   Product classification/description schemes

Figure 6 presents the various product classification/description schemes used in the investigated systems for the creation and management of eCatalogues.
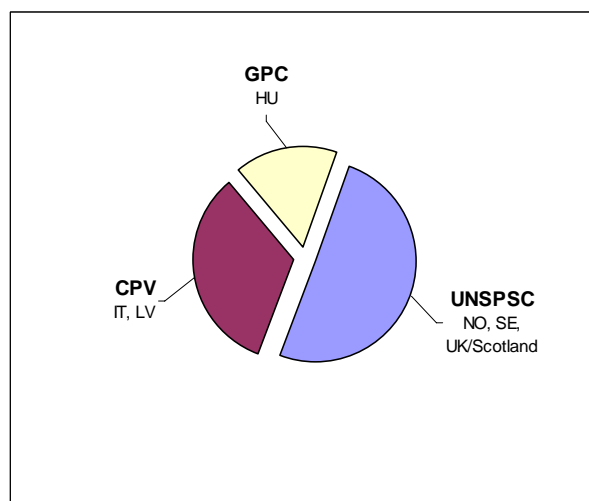
Figure 6: Overview on the use of classification/description schemes for eCatalogues

5.1.1.3   Scope of application of existing eCatalogue systems

Table 9 summarises the scope of application of "eCatalogue current practices" in Europe, in terms of available public procurement procedures.

	User Authentication	Support for the active collection of tenders ("punch-out")	One-off contracts		Framework Agreements		Dynamic Purchasing Systems	
			Below threshold	Above threshold	Below threshold	Above threshold	Below threshold	Above threshold
Hungary	User credentials	No				�		
Italy	Digital certificates	No			▰			
Latvia	User credentials and software PIN	No			▰▰			
Norway	User credentials	Yes Not endorsed			▰▰			
Scotland	User credentials	Yes Endorsed	▰▰▰▰					

Table 9: Summary of "eCatalogue current practice" in selected EU Member States and EEA countries

5.1.1.4   eCatalogue processes supported by the investigated systems

In all investigated systems, "eCatalogue prospectuses" are created by suppliers abiding to specifications set by the contracting authorities (see section 3.1.2). These prospectuses, in all cases, take the form of spreadsheets, except in Latvia where prospectuses are created in XML format. **Table 10** provides an overview of the main processes followed in the investigated systems during the "life-cycle" of eCatalogue prospectuses, from their creation to their maintenance and re-utilisation.

		Hungary	Italy	Latvia	Norway	Scotland
Pre-awarding	Defining eCatalogue templates	Spreadsheet templates defined by the contracting authority	Spreadsheet templates defined by the contracting authority	XML specifications defined by the contracting authority	Spreadsheet templates defined by the contracting authority	Spreadsheet templates defined by the contracting authority
	Create eCatalogues	Spreadsheets populated by suppliers	Spreadsheets populated by suppliers	XML file created by suppliers	Spreadsheets populated by suppliers	Spreadsheets populated by suppliers
	Submitting eCatalogues	Submitted in CD-Rom	Upload in the system by suppliers	Upload in the system by suppliers	Submitted via email	Submitted via email
	Uploading eCatalogues	Performed by procurement officers	Performed by specialised group	Performed by suppliers	Performed by specialised group	Performed by procurement officers
	Evaluating eCatalogues	No	No	No	No	No
	Re-utilisation of eCatalogues	No	Yes, but only compliant for below-threshold contracts	No	Either the product or price file can be re-used	No
Post-awarding	Maintaining eCatalogues	Identical to initial eCatalogue creation and submission	Identical to initial eCatalogue creation and submission	Identical to initial eCatalogue creation and submission	Identical to initial eCatalogue creation and submission	Identical to initial eCatalogue creation and submission
	Ordering through eCatalogues	Yes	Yes	Yes	Yes	Yes
Other	eCatalogue verification process	Automated and manual performed by contracting authorities	Automated and manual performed by contracting authorities	Automated and manual performed by contracting authorities	Automated and manual performed by contracting authorities	Automated and manual performed by contracting authorities

Sweden is not included in this list, as due to the de-centralised governmental model of the country there is no central system to support electronic catalogues

Table 10: Processes for the "life-cycle" of eCatalogue prospectuses in selected EU Member States and EEA countries

5.1.1.5   Standards and technical aspects

None of the investigated implementations uses particular standards, whilst all but one system are based on commercial products with customisations, as presented in **Figure 7.**

	Hungary	Italy	Latvia	Norway	Scotland
eCatalogue exchange standards	No. eCatalogues submitted via CD-Rom	No. eCatalogues uploaded in system by suppliers	No. eCatalogues uploaded in system by suppliers	No. eCatalogues submitted via email	No. eCatalogues submitted via email
eCatalogue formatting standards	No Spreadsheets templates	No Spreadsheets templates	No XML specifications	No Spreadsheets templates	No Spreadsheets templates
Security provisions	User credentials HTTPS	Digital certificates HTTPS	User credentials Software PIN HTTPS	User credentials HTTPS	User credentials HTTPS
System implementations	Tailor made Based on initial Intranet application	Oracle Exchange server with significant customisations	Microsoft Commerce server with BizTalk support	CommerceOne, SAP and Post	Off-the-shelf application with some customisations

Sweden is not included in this list, as due to the de-centralised governmental model of the country there is no central system to support electronic catalogues

Figure 7: Standards and technical aspects of eCatalogue systems in selected EU Member States and EEA countries

5.1.1.6 Comparison of catalogue contents

Table 11 compares the content defined in the eCatalogue prospectus specifications of the investigated countries. The data fields are grouped into different categories of content[9], as presented in section 3.1.1. Mandatory fields (where known) are depicted by an asterisk (*) next to the field name.

	Categories	Hungary	Italy	Latvia	Norway	Scotland
1.	Trading partner ID	- Supplier ID - Supplier Name	- Supplier Name - Supplier Part Number	- Supplier ID	- Supplier ID*	- DUNS number*
2.	Product Identification	- Supplier Product ID	- Product ID	- Product ID - Supplier Product Code	- Product Number*	- Product Number / SKU*
3.	Product Description	- Product Name - Definition of Product Service - Product Description URL	- Product Name - Product Description (Long & Short) - Picture Name - Picture URL - Product Description URL	- Product Name - Product Definition - Product Description - Technical specification - Picture Name	- Product Name* - Product Description* - Picture - Product Description URL	- Product Type* - Product Description* - Picture - Product Description URL
		- Role of Product - Main Parameters		- Barcode - Product Variant - Variant ID	- Attachment - Generic Article Register Name - Generic Article Register Number - HAMS - Risk Indicate*	- Page Number - Product sub
4.	Manufacturer	- Manufacturer Name (Trademark Owner)	- Manufacturer Part Number - Brand Name	- Manufacturer Name - Manufacturer Product Code	- Manufacturer Name - Manufacturer Article Number	- Manufacturer Name - Manufacturer Part Number
5.	Product Categorisation	- GS1 ID - Trademark owner GLN ID - Source of data GLN ID	- CPV Code	- CPV Code - UNSPSC Code - Parent Category	- UNSPSC Code* - Synonyms	- UNSPSC Code* - Catalogue key name*
6.	Product Quantity	- Unit of Measure - Minimum Quantity (Smallest delivery)	- Unit - Quantity per Unit - Orderable Units		- Minimum Quantity*	- Unit of measure* - Minimum Quantity

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[9] Table 11 intends to provide a high-level overview of comparative information in eCatalogue prospectuses in the investigated countries; hence the comparison is based solely on the name of each field. It does not consider "composite fields" (i.e. more than one field to describe one piece of data, such as dates, where one eCatalogue may have one field and another more than one fields) and data types (i.e. the type of information to be included in a particular field, such as numerical value, or textual description from a finite set of available descriptions).

7.	Pricing & Discount	- Price - VAT - Currency - Currency rate - Discount	- Price per Unit - VAT	- Price - VAT - Currency (LVL) - Prices according to regions (5) - Discount (Quantity) - Discount (Delivery Term)	- Price per Unit* - VAT* - Currency Code*	- Price - Customer Price* - Transaction type* - Discount
8.	Delivery information	- Delivery Time (weeks)	- Delivery Time - Stock Quantity - Distribution area	- Delivery Time - Stock Quantity - Amount update date	- Delivery Time*	
9.	Handling & Packaging				- Package Quality* - Units in Package	
10.	Warranty and contracting Information	- Warranty - Lot ID	- Warranty - Services - Notice - Initiative	- Warranty	- Buyer Specific Information - Buyer ID*	
11.	Catalogue Validity Dates				- Revision Date - Application Date	- Start and End date
12.	Invoicing					- Receipt required

Table 11: Comparison of eCatalogue contents in the investigated countries

5.1.2   Common approaches to eCatalogue use in the investigated countries

The different investigated eCatalogue systems display a great number of common features across legal, organisational and technical aspects. The most prominent common points are that European countries consider eCatalogues as ICT "eCatalogue stock management systems", not as "prospectuses" to be used for the submission of initial offers. In addition, eCatalogues are not used in the tendering (i.e. pre-award) phases of public competitions. This results in the under-development of appropriate organisational and technical frameworks for the interoperable and efficient use of eCatalogue prospectuses in those phases. **Table 12** enlists the common features identified throughout the investigated countries.

Area	Topic
Legal setting	▪ No specific requirements for eCatalogues
Organisational setting and general approach	▪ Similar content categories of eCatalogue prospectuses ▪ eCatalogues are understood as "eCatalogue stock management systems" ▪ eCatalogues are not used in initial tendering phases ▪ Inadequate and manual mechanisms for ensuring eCatalogue data quality ▪ No DPS systems ▪ Education in new public procurement rules
Technical approach	▪ Systematic use of standardised product classification schemes ▪ Exchange of eCatalogue data through the use of spreadsheets ▪ Submission techniques for eCatalogues, if used in pre-award phases, would not always fully comply with the requirements of the EU Directives ▪ General use of commercial eProcurement platforms with specific customisations

Table 12: Common features in the approaches of the investigated countries

In the following, the identified common features are further discussed:

▪ Legal setting

– <u>No specific requirements for eCatalogues</u>: the implementation (or planned implementation) of the EU Directives does not seem to be translated into specific requirements for the use of eCatalogues. Following the adoption of the EU Directives in April 2004, Member States were given a period of two years, until 31 January 2006, to implement them in their national legislative framework. At the time of writing, this transposition process was not yet complete in all Member States.

In most investigated countries, eCatalogues are admitted as a new tool for tender submission, although in some cases they are not explicitly mentioned. None specify however how electronic catalogues may be used in practice. This can be interpreted in two ways. Either Member States prefer not to specify in their legal system how eCatalogues should function, leaving freedom to other instruments to define it, or there is limited practical knowledge.

In either case, further insight into the practical use of eCatalogues in the context of public procurement would seem desirable, in order for all Member States to define and utilise eCatalogues in a similar way. This could be supported by initiatives at EU level.

▪ Organisational setting and general approach

– <u>Similar content of eCatalogue prospectuses</u>: In all investigated systems, it is observed that eCatalogue prospectuses are required to include a common set of core data. In addition, the required structures of the prospectuses, although buyer-specific, present similarities. For instance, some similar data concern Trading partner ID, Product Identification, Product Description, Product Categorisation/Classification, etc. The core data of eCatalogues is discussed in detail in section 7.1 (see also **Table 18:** "Common denominator" of eCatalogue prospectus content in Europe).

– eCatalogues are understood as "eCatalogue stock management systems": the investigated public sector systems generally seek to function as "eCatalogue stock management systems", but are limited to some form of "eCatalogue current practice" (see section 3.2). They establish marketplaces allowing procurement officers to place orders. Some systems support the full ordering/invoicing/payment cycle, whilst others support only parts of this cycle. In most cases, the investigated systems provide support, in the post-award phases, for repetitive procurements (i.e. specific contracts) within Framework Agreements.

Three out of five investigated systems are exclusively used by Central Purchasing Bodies, whilst the other two operate as portals for both Central Purchasing Bodies and individual contracting authorities. Another observation is that in three investigated systems, eCatalogue prospectuses are not submitted within the context of specific contracts/agreements.

The prospectuses used for acquiring product information from suppliers conform to the specifications of contracting authorities (see section 3.1.2). They take the form of XML files, or they constitute simple[10] spreadsheets. Thus suppliers can only populate contracting authorities' templates but cannot by themselves establish/use their own advanced "eCatalogue prospectuses".

In sum, all investigated countries have systems that attempt to emulate the "eCatalogue stock management system" conceptual model. Some are very advanced while others offer only limited functionality, but none covers all functionalities a full "eCatalogue stock management system" could support. In addition, all of the investigated approaches make use of "eCatalogue prospectuses" whose specifications are defined by buyers (buyer-defined), imposing interoperability limitations for the re-usability of such prospectuses.

– eCatalogues are not used in initial tendering phase: the investigated systems use eCatalogues to electronically support post-award needs, i.e. for populating marketplaces, and enabling procurement officers to electronically place orders. The constitution of initial tenders or parts of tenders in the form of eCatalogues is not supported by any system and/or implementation.

As an exception to this, the Norwegian implementation uses eCatalogues for the submission of offers for specific contracts within Framework Agreements (when re-opening competition). In addition, in Italy procurement officers can issue Requests for Quotation (RFQ) to invite specific offers for specific purchases. Nevertheless, even in those implementations, the use of eCatalogues for specific offers is limited and requires suppliers to provide their eCatalogues according to the prospectus specifications of contracting authorities.

– Inadequate and manual mechanisms for ensuring eCatalogue data quality: in the investigated systems, "eCatalogue prospectuses" take the form of spreadsheets or XML files created by suppliers, in line with contracting authorities' specifications. Due to their bespoke nature, eCatalogue prospectuses often contain erroneous information, or their format/content does not fully match the specifications of the contracting authority.

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[10] The meaning of "simple" in this context implies that the use of spreadsheets cannot offer the interoperability attributes that eCatalogues would be desirable to demonstrate, as envisaged in the EU Directives.

When receiving eCatalogues, contracting authorities therefore often engage in eCatalogue prospectus verification processes in order to assess their quality. The verification process is usually split into a technical verification, during which Authorities verify that a received eCatalogue prospectus is in the expected format (i.e. is fit for automated processing, in accordance with buyer-defined specifications), and a content verification, during which Authorities verify the "quality" of content (i.e. reviewing that product descriptions are adequate, product classification is correct, etc.). The verification process is commonly performed by both automated and manual checks.

The eCatalogue prospectus verification process is time-consuming and demands significant effort by the contracting authority. In addition, such processes would seem contrary to the EU Directives; these require that offers should not be accessed before the official opening deadline, nor modified at any stage by contracting authorities, the content of any offer being the exclusive responsibility of the supplier. Therefore, this approach would not be admissible in the case where an electronic catalogue is used to submit an initial tender or parts of an initial tender. Contracting authorities must still be especially vigilant in how eCatalogue prospectuses are treated in order to preserve their confidentiality and integrity, i.e. who obtains access to them, at what stage, what changes may be done and by whom.

– No DPS systems: the investigated "eCatalogue current practice" systems primarily support Framework Agreements and the management of specific contracts within them. Dynamic Purchasing Systems (DPS) are not - yet - supported. DPS constitutes a new, fully electronic procedure for repetitive procurements introduced by the new EU Directives in 2004 (see section 2.1). DPS differ from Framework Agreements in that they are open systems, to which suppliers may be admitted throughout the duration of a given DPS. In addition, DPS systems must function in a fully electronic manner, and would therefore considerably benefit from the use of electronic catalogues. However, whilst all investigated countries have implemented legal provisions on the use of DPS, only a few have initiated work for defining specifications for such systems.

– Education in new public procurement rules: the adoption of the new EU Directives and their implementation have led in all the investigated countries to the introduction of educational programmes aimed at both buyers and suppliers, in order to raise awareness on the new possibilities available for electronically conducting public procurement.

Most of the investigated countries conduct training programmes that emphasise on specific rules and procedures for "on-boarding", i.e. to familiarise suppliers with the existing public sector systems and, as regards eCatalogues, the buyer-defined prospectus specifications. In comparison, educational programmes on the new public procurement rules are relatively limited.

▪ Technical approach

– Systematic use of standardised product classification schemes: all investigated systems use specialised nomenclatures for the abstract description of intended procurements. The EU Directives require the use of the Common Procurement Vocabulary (CPV) classification scheme in the notices advertising the calls for competition. There are no specific requirements on product classifications to be used for electronic catalogues.

The adoption of an appropriate product classification scheme is the basis for the succinct and uniform description of intended procurement; it facilitates the management of eCatalogues and allows the generation of structured statistics. Although all investigated countries use a selected product classification standard, there is no common standard. Italy and Latvia use CPV, Norway and Scotland favour UNSPSC, whilst Hungary utilises GPC.

Product classifications are further discussed in section 8.4.

- Exchange of eCatalogue data through the use of spreadsheets: in all investigated systems, except that of Latvia, eCatalogue prospectuses take the form of spreadsheet files. Suppliers are required to provide details of their products and prices in pre-defined spreadsheet templates (see section 3.1.2).

  Learning how to use tools for creating eCatalogue prospectuses in spreadsheet format is simple, making their use easy for suppliers. Nevertheless, the desired interoperability, which is necessary for the use of eCatalogues for different purposes and automated processing (see section 8.1), is not met by such an approach. All eCatalogue prospectuses produced in this way are tailor-made for specific needs of contracting authorities and systems. Suppliers that are interested to participate in more than one competition (of different Authorities) need to create multiple prospectuses / spreadsheets, to match the imposed specifications each time. Moreover, regardless of the overall format they may take, eCatalogues must be submitted only in frozen or snapshot format. In this respect, the eProcurement system checks and ensures that the received eCatalogues (in spreadsheet or other formats) do not have dynamic links or references to other files or online resources (e.g. URLs). In case offers are not in frozen format, the eCatalogues should not be accepted as valid offers and tenderers should be automatically notified.

- Submission techniques for eCatalogues, if used in pre-award phases, would not always fully comply with the requirements of the EU Directives: In most investigated systems, the use of eCatalogues is limited to purchasing under specific contracts, following the establishment of an initial framework agreement. Since this constitutes a closed circuit (all participants in the Framework Agreement are known) the requirements of the EU Directives related to the transmission of tenders via electronic means (hence also eCatalogue prospectuses) do not apply. In most cases, suppliers transmit their eCatalogue prospectuses via non-secure email or CD-Rom (which is not the most efficient transmission mechanism). In some cases, suppliers also directly upload their eCatalogues onto the systems of contracting authorities. None of the systems makes provisions for the secure locking of prospectuses (until the designated tender opening time).

  These submission techniques would not be considered to fully satisfy all the requirements of the EU Directives for the electronic receipt of initial tenders; however, they may be tolerated if used in the post-award phases, i.e. after the contract has been awarded/the Framework Agreement has been established according to the proper procedures.

  The standardisation of eCatalogue prospectus messaging could form the basis for advancing the submission techniques for eCatalogue prospectuses (see chapter 8).

- General use of commercial eProcurement platforms with specific customisations: all of the investigated systems, except that of Hungary, are based on commercial applications which have been customised in order to match the particular needs of each contracting authority. Commonly, these customisations relate to security issues (e.g. in Italy for the support of digital signatures) and to the integration with external systems (e.g. in Norway for integration with eOrdering modules).

5.1.3   Differences in approaches to eCatalogue use in the investigated countries

Next to the many similar features of the eCatalogue systems used in the investigated countries, some differences could also be identified between them, again categorised into legal, organisational and technical aspects. Four out of the six identified ones are fundamental differences. They demonstrate the variable approaches followed by Member States for establishing eProcurement procedures more generally. **Table 13** enlists these differences.

Area	Topic
Legal setting	▪ Varying acceptance of active collection of tenders (i.e. "punch-out")
Organisational setting and general approach	▪ Varying rules for verification of eCatalogue quality ▪ Varying rules for eCatalogue access management rights ▪ Varying rules for user authentication
Technical approach	▪ Varying formatting and exchange standards ▪ Varying standards for product classification

Table 13: Differences in the approaches in the investigated countries

In the following, the identified differences are further discussed:

▪ Legal setting

– <u>Varying acceptance of active collection of tenders (i.e. "punch-out")</u>: the active collection of tenders (section 2.5), constitutes a new technique for tender submission, by which contracting authorities may collect eCatalogue information from supplier systems. This operation is commonly referred to as "punch-out". In some of the investigated countries, this technique is endorsed and implemented in national law. In others, it is strictly forbidden or, even if foreseen in the national legal implementation, is not endorsed in practice.

▪ Organisational setting and general approach

– <u>Varying rules for verification of eCatalogue quality</u>: in all investigated countries, significant effort is dedicated to the verification of eCatalogues. This is usually performed by both the use of automatic tools and manual checks.

In some countries, this verification process is performed by buyers and/or third parties (appointed by contracting authorities), whilst in others it is done by the suppliers themselves. Electronic catalogues constitute tenders, which bind the supplier. As such, intervention by contracting authorities is contrary to the requirements of the EU Directives. Electronic catalogues should be treated in exactly the same way as paper tenders, therefore the creation and maintenance of eCatalogue prospectuses should always remain in the full responsibility of suppliers.

– <u>Varying rules for eCatalogue access management rights</u>: in some implementations, access to eCatalogues is given to all users, while in others only users of the specific contracting authority related to a contract are given access to the relevant eCatalogue.

Electronic catalogues form tenders (or parts of them); hence their content is confidential and should be treated appropriately. Only authorised procurement officers should be allowed to gain access to eCatalogue data. The implementations which do not ensure the confidential nature of eCatalogue information (and hence permit all procurement officers to obtain access to them) risk not being compliant with the EU Directives.

– <u>Varying rules for user authentication:</u> in some implementations, user authentication is based on simple user credentials, while in others, more advanced methods are used. On the one hand, the latter offer increased security but on another they may be considered to generate interoperability barriers for users. The topic of user authentication is a complex issue not solely related to eCatalogues, but to eProcurement and governmental ICT systems in general. It falls outside the scope of the Study, and hence is not analysed further in the current document. However, user authentication is briefly presented within the context of the non-functional security requirements in section 5.2 of the [FReq] report.

- Technical approach

  – <u>Varying formatting and exchange standards</u>: no specific standards are used in the investigated systems for the format and exchange of eCatalogues. Formatting of prospectuses is based on spreadsheet templates or XML specifications, defined by contracting authorities. Exchange of prospectuses is performed using web-forms (direct upload in a system), email or CD-Rom.

  – <u>Varying standards for product classification</u>: the EU Directives mandate the use of the Common Procurement Vocabulary (CPV) product classification scheme for advertising, via procurement notices, all calls for competition falling within their scope. There are no specific rules as regards product classification schemes for eCatalogues.

    Although, as mentioned in section 5.1.2, all investigated countries require the use of a product classification scheme in their eCatalogues, there are differences as to which specific one. Two countries use CPV, another two use UNSPSC, whilst one is using GPC. Aspects on product classifications are discussed in section 8.4.

5.2   Assessment of current practices

This section assesses current eCatalogue practices in the EU against two relevant public procurement principles, namely interoperability and equal treatment, as well as against efficiency considerations.

5.2.1   Assessment against the principle of interoperability

The form eCatalogue prospectuses currently take in public procurement in the EU meets only partially the interoperability requirements of the EU Directives.

The [Explanatory document] interprets the concept of interoperability as the capability of ICT systems to exchange information in a satisfactory and effective manner. Thus, any tools used by suppliers for participating in eProcurement must be able to function and to interact with "commonly used equipment and applications". Section 2.2 outlines the rules and requirements an eProcurement system must feature in order to be interoperable. Solutions that render suppliers' access to systems impossible or discourage their participation, because of additional difficulties or increased costs, are deemed to be non-interoperable.

Currently, in the majority of cases, eCatalogue prospectuses in European public procurement take the form of spreadsheet files. This kind of files can indeed be created and maintained by commonly used tools. There are a number of computer applications, both commercial and freeware, which are easy to install and use for creating and maintaining spreadsheet files[11]. In fact, spreadsheet is a very common file format, with numerous practical uses. Hence, it is reasonable to assume that all private companies, including SMEs, possess the necessary tools and experience for creating/maintaining such files, particularly considering that eCatalogue prospectuses would be created by companies interested in conducting business with the public sector electronically.

On the other hand however, the use of buyer-defined spreadsheets has significant interoperability limitations, as the templates for eCatalogue prospectuses are very diverse in structure, format, and content. Suppliers must dedicate significant resources and time in order to, based on the templates, create their tailor-made prospectuses. This may discourage participation.

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[11] Some of the available applications are: Microsoft Excel, OpenOffice, Lotus 1-2-3 and QuattroPro

In short, although current eCatalogue use is based on commonly available tools, it does not satisfy the interoperability requirements as discussed in section 2.2. For this reason, the current use of eCatalogues does not offer many benefits / incentives to suppliers. In order to remedy this and incite greater participation, the interoperability of prospectuses should be increased through the use of common formatting and exchanging standards.

5.2.2 Assessment against the principle of equal treatment

Current eCatalogue practice would seem to meet the requirement for equal treatment. According to this principle, all suppliers, regardless of size or origin, must be treated by contracting authorities in the same way. Equal information must be provided to all suppliers at the same time and tenders must be treated in the same secure manner. The evaluation of tenders, and where applicable, the short-listing of tenderers, must be performed based on well-defined, pre-stated evaluation criteria, while any tools and electronic means necessary for taking part in a public procurement competition must be equally accessible to all suppliers (see also section 2.2).

The above would seem to be broadly satisfied by current eCatalogue practice; none of the investigated countries restricts participation of cross-border suppliers. Prospectus specifications are provided to all suppliers requesting them. Commonly, the electronic tools used for creating eCatalogues rely on widely-used software applications (spreadsheet editors), while the electronic means required for eCatalogue submission are also easily available (in most cases submission is performed through email).

One potential limitation is that eCatalogue prospectus specifications, as defined by contracting authorities, are usually in the language of the Authority itself and tenders are requested in the language of the contracting authority. Although this practice does not, of course, infringe the rules of equal treatment, it makes participation by cross-border suppliers more complex than for suppliers residing within the country of the contracting authority.

The use of industry-wide standards for the creation, format and exchange of eCatalogue prospectuses in public procurement would reduce the need for defining tailor-made specifications, as well as, for translating them from one language to another. In addition, the existing industry-wide standards on eCatalogues already support multilingualism, permitting suppliers to create their prospectuses in more than one language, while the use of standardised product classification and description schemes for describing products in an eCatalogue prospectus can accommodate the automatic translation of parts of a prospectus (e.g. the code "32423000" of CPV in English is "Network hubs", which can be automatically translated in German to "Netzwerkspeichen"). Moreover, considering that the use of standards can allow suppliers to re-use their prospectuses for several purposes, it is reasonable to assume that suppliers would be more willing to "invest" in translating parts of their prospectuses in different languages, in order to benefit from cross-border business opportunities of several contracting authorities.

5.2.3 Assessment against efficiency considerations

A core objective for introducing the use of electronic means in the EU public procurement regime is to increase the efficiency of Member States' public procurement procedures. The EU Directives explicitly foresee that ICT should be put on a par with traditional means of communication and information exchange. In reality, the transition from traditional procurement to eProcurement requires a sizeable initial investment in both the public and private sectors. Therefore, the introduction of electronic means in public procurement should offer more benefits than traditional procurement, based on improved practices and the automation of processes.

Automated processing of data in the context of public procurement can be particularly beneficial in the eTendering and eAwarding procurement phases (see section 2.1), especially when tenders take the form of eCatalogues. During these phases, suppliers create and submit their eCatalogue prospectuses within the context of an one-off contract, Framework Agreement (during establishment), DPS (for admission), or a specific contract within a FA or DPS.

Nowadays, most suppliers, and particularly those interested in eProcurement, use ICT systems for storing information of their available products/services. Regardless of their sophistication, such ICT systems either feature or can be enhanced with modules/tools that support "automated processing" functionalities for public procurement. As discussed in section 4.2, such automated processing of eCatalogues can offer benefits to both buyers and suppliers and can be summarised in the following at four levels of automation:

– Prospectus creation: This level of automation concerns the creation of eCatalogue prospectuses by suppliers in an automated manner, based on existing product inventories.

– Prospectus submission: This level of automation concerns the processes followed by a supplier's ICT system for submitting an eCatalogue prospectus to the respective system of a contracting authority, within the context of a contract/agreement (including re-opening of competition in FA or DPS).

– Prospectus evaluation: This level of automation concerns the evaluation of eCatalogue prospectuses, submitted within the context of a contract/agreement, in an automated manner, based on pre-defined evaluation criteria.

– Prospectus post-award use: This level of automation concerns use of eCatalogue prospectuses for operations after the award of a contract (or agreement). This may entail the automated maintenance of eCatalogue prospectuses, and support for eContracting, eOrdering, and eInvoicing.

Currently, required eCatalogue prospectuses are not fully suitable for automated processing (except, possibly, within the specific application they were created for); hence processes for using eCatalogues in public procurement are not as efficient as they could be. As discussed in section 5.1.2, eCatalogue prospectuses constitute tailor-made solutions, based on specifications defined by contracting authorities. The submission of eCatalogue prospectuses is performed according to bespoke rules of each contracting authority and does not follow a common approach. eCatalogue prospectuses, in most cases, are not submitted within the context of specific contracts/agreements, but are rather submitted on an ad-hoc basis for populating eCatalogue systems. Thus, in particular the first three levels of automation described above are not satisfied.

5.3   Needs, requirements and good practices

Based on the above analysis of existing practices, this section identifies needs and requirements in the investigated countries with regards to the further development of eCatalogues in public procurement. It focuses on those ones that may be resolved through initiatives at European level, offering a common solution for Member States and EEA countries. In addition, some interesting current national practices are discussed.

5.3.1   Needs and requirements expressed by Member States

Table 14 provides an overview of the needs and requirements as expressed by the investigated countries/systems.

		Hungary	Italy	Latvia	Norway	Scotland	Sweden
Organisational	Address change management issues	🟩			🟩	🟩	🟩
	Training the public sector on the new public procurement procedures			🟩	🟩		
	Establishment of acceptable and efficient mechanisms for eCatalogue quality verification	🟩	🟩	🟩	🟩		
	Clarifications of eCatalogue maintenance processes and conditions for supliers					🟩	
	Clarification of requirements for Dynamic Purchasing Systems (DPS)		🟩				
Technical	Standards and product classifications	🟩			🟩	🟩	🟩
	Localising eCatalogue prospectuses				🟩		

Table 14: Needs and requirements of investigated countries

In the following, the identified needs and requirements are further discussed:

▪ Organisational aspects

–   Address change management issues: as a prerequisite for the submission of tenders in the form of eCatalogues, significant change management issues can be identified (as for the transition from paper-based procurement to eProcurement more generally). In the public sector, roles and responsibilities need to be redefined, whilst procurement procedures and practices need to be adjusted. For the private sector also, this transition requires effort; particularly for suppliers to be given confidence that the electronic submission of tenders is as secure as paper-based tendering.

–   Provide generalised training on the new electronic procedures: users, public procurement staff and businesses need to be educated on the new electronic public procurement procedures generally, and eCatalogues in particular, in order to raise awareness on the new possibilities. At present, the greatest effort goes into training buyers and suppliers on specific eProcurement systems. While this should help promote supplier adoption, emphasis needs to be put on general functional requirements and interoperable, easy-to-use systems, in order to avoid further entrenching particular applications.

–   Establishment of acceptable and efficient mechanisms for eCatalogue quality verification: commonly the eCatalogue prospectuses used in public procurement are of low quality, primarily due to their tailor-made nature (buyer-defined). In this respect, contracting authority procedures to verify the quality of received eCatalogue prospectuses are de facto. Such procedures are costly, time-consuming and risk contravening the security, integrity and confidentiality of the transmitted data. Contracting authorities need to identify mechanisms by which the quality of eCatalogue data is increased without engaging in such verification checks.

- Clarification of eCatalogue maintenance processes and conditions for suppliers: in most investigated systems, the process followed for maintaining (i.e. updating) eCatalogues is identical to the process for creating them. In most cases, the maintenance process is initiated by the buyer, who requests the supplier to update his/her eCatalogue prospectus information, usually within the context of a "re-opening of competition" between the suppliers that are party to a Framework Agreement. Competition is re-opened when the specifications for the specific contract to be procured go beyond the terms laid down within the Framework Agreement, i.e. the specifications are further refined. Thus, the suppliers that participate in the Framework Agreement are again in competition. Under the current practice, an eCatalogue prospectus must be (re-)created and re-submitted to the contracting authority by the supplier. Then, verification checks take place before the prospectus is uploaded to the ICT system (the party responsible for uploading the eCatalogue onto the ICT system varies, as described in **Table 10**). Such eCatalogue updating procedures need to be optimised, clearly specifying the conditions and timing of such updates, as well as, aspects relating to the re-utilisation of eCatalogues. Preliminary functional requirements for this aspect are included in [FReq].

  - Clarification of requirements for Dynamic Purchasing Systems (DPS): the investigated systems do not support DPS for repetitive procurements. In order to further Member States' use of DPS, more elaborate functional requirements, explaining the "do's" and "don't's" as well as the practical benefits Authorities and suppliers may derive from such systems, should be established.

- Technical aspects

  - Standards and product classifications: the adoption of suitable industry-wide standards for the formatting as well as the exchange of eCatalogue prospectuses are pre-requisites for the use of eCatalogues as they ensure the semantic interoperability of contents. Product classification and description schemes are also important aspects for eCataloguing, as they greatly enhance the usability and interoperability of prospectuses.

  - Localising eCatalogue prospectuses: this concerns the attributes eCatalogues should have to support multiple currencies and languages. Suppliers and buyers should be able to use their preferred currency and language when forming / viewing eCatalogue prospectuses. For this purpose, it should be possible to create eCatalogue prospectuses in different currencies/languages, especially considering countries that have more than one official language (e.g. Belgium) or do not use the Euro currency (e.g. Norway). Common industry-wide standards support eCatalogue formats with multiple currencies and languages and may be more widely used.

5.3.2   Good practices

The investigation of public sector approaches and systems highlighted some frequent good practices:

- eCatalogue verification tool (Norway): in Norway, a tool is made available to suppliers which can automatically verify the correct formatting of eCatalogue prospectuses to be submitted. It also provides indicators on the content quality of prospectuses, for instance their search-ability, and relevance to the competition. This specialised tool enables suppliers to verify the quality of their prospectuses, both in terms of format and content, prior to their submission. This contributes to automating the verification process, improving supplier confidence.

– <u>Re-utilisation of eCatalogues (Norway)</u>: suppliers should be able to re-use their eCatalogue prospectuses to submit tenders in multiple competitions originating from different contracting authorities. Even in the current environment, without the use of common standards, such a re-utilisation is possible. In Norway, an eCatalogue prospectus is built on two different files: the Product File and the Price File. The supplier sets up a universal Product File (including all relevant information about the offered product(s)) and multiple Price Files (referencing the Product File) where prices for specific competitions/authorities are included. This facilitates the effective management of eCatalogue prospectuses by suppliers and minimises their manual work.

– <u>Restriction of access to supplier details (Latvia)</u>: buyers in the Latvian eCatalogue system can access products and prices of submitted prospectuses, but not supplier details. Such information (e.g. name, address, VAT number, etc.) is disclosed only after the placing of an order (i.e. first an order for a product is placed and then the buyer is made aware of the supplier of that product). This contributes to ensuring that orders are placed in a non-discriminatory way.

6   State of play II: eCatalogue practices in the private sector in the EU

In addition to reviewing approaches, initiatives and projects in European public sectors, the present study investigates intelligence from the private sector. This investigation focuses on eProcurement systems of large, private, multi-national companies, in an attempt to identify interesting practices which could also be used in the public sector. In particular, the investigation focused on the automobile, technology and food industries. The findings of the analysis in the current chapter, along with an investigation in chapter 7 on indicative tenders based on existing wholesale (professional) eCatalogues, aim to conclude whether current eCatalogue prospectuses can meet the needs of contracting authorities for eCataloguing in public procurement.

Electronic procurement systems of large, private companies are commonly fully integrated to their Enterprise Resource Planning (ERP) platforms, and are capable of handling the full range of supply-chain needs, covering sourcing, ordering, contracting, invoicing and fulfilment. The use of eCatalogues in the private sector primarily aims to minimise the costs incurred by the extensive use of electronic means and to eliminate errors through limited manual intervention. Furthermore, such systems tend to offer specialised services to easily identify top-performing suppliers, commonly referred to as "eIntelligence" or "Supplier evaluation" tools.

Such systems (except "eIntelligence") also exist in the public sector applications in the EU; nevertheless their operation does not always conform to the EU Directives. European contracting authorities must identify where they can benefit from functionalities proven in the private sector, while respecting the requirements of the EU Directives.

eCatalogues used in the private sector tend to exhibit the same features as public sector "eCatalogue current practice" (see section 3.2). This can possibly be explained by the fact that public sector applications emulate private sector practices.

6.1   eProcurement in private and public sector regimes

Before discussing common features and trends in private sector eCatalogue systems, some core differences between private sector and public sector procurement regimes will be examined. These differences should be kept in mind when considering eCatalogue uses in the different arenas.

	Topic	Private sector	Public sector
Legal	Legal framework	Private companies are not stricken by any specific rules and regulations on how procurement must be conducted. Private companies need only to adhere to rules imposed by generic commerce and eCommerce laws.	The public sector must respect well-defined rules and regulations on public procurement, as set in the EU Directives and national law. In addition, eBusiness, eGovernment and other rules and regulations must also be respected.

	Procurement principles	Although openness to suppliers, equality of treatment and transparency are important, such principles may not form "blocking factors" in establishing systems and procedures. A large, multi-national private company is in a position to "impose" specific rules on how procurement is conducted (and also computerised), and have the possibility to restrict the number of suppliers it considers for business.	The principles of equality of treatment, non-discrimination and transparency are cornerstones to the whole public procurement framework, and must be rigorously respected.
Organisational	Physical presence and structure of procurement	In case of large, multi-national companies, there may be different locations worldwide, with however well-defined procurement needs in each location. For instance, a company in the automobile industry may have several factories worldwide, but it is well defined which is the "raw material" for each factory. Sourcing for the different locations can be accommodated either by large (or specialised) suppliers based on other countries/continents, or from local suppliers.	Well-defined presence, generally within the remits of the country. Procurement needs may however be less well-defined and are subject to the annual budgetary exercise. Sourcing is often local.
	eProcurement use and objectives	Private companies introduced eProcurement several years ago, to benefit from the rise of Internet usage and now seem to be a position to capitalise on their investments. eCatalogues are used before 2000. Major achievements comprise the reduction of delivery times, reduction of stock, elimination of obsolescence costs and saving in billing/invoicing. Current objectives focus on further reducing costs by fully computerising all supply-chain processes. The integration of eProcurement systems with complex and diverse ERP systems seem to provide the means to achieve these goals.	The majority of European public administrations seem to be making their first steps towards eProcurement and eCatalogues, although pilot experiences have been undertaken for several years The main objective at this stage is the implementation of the legal and technical infrastructure in accordance with the new rules on eProcurement adopted in 2004. As the Directives are relatively new, all countries need to achieve a certain level of maturity before substantial benefits can be seized. The current form of electronic catalogues in the public sector is used since about 2003.
	Procurement procedures	No set procedures for procuring through eCatalogues. Procedures are internal to buyers, flexible to their needs and vary from company to company, also depending on the type of contract. At large, the usual procurement procedure in the investigated companies follows a "pre-evaluation" phase, during which supplier eCatalogues are reviewed and made acceptable (or not) for "enrolment". Then, depending on the type and volume of a particular purchase, bespoke evaluation procedures are followed (evaluation committees, high-ranked officers, etc.) before placing an order.	Well-defined set of procedures which must also be followed for procuring through eCatalogues.

	Interaction with suppliers	Private companies intend to know their suppliers, especially top-performing ones, and aim to form lasting strategic buyer-supplier partnerships. Business intelligence tools for identifying such top-performing suppliers are not uncommon. eCatalogue systems integration between buyers and suppliers is frequently established. In addition, eProcurement systems of the private sector commonly operate as closed circuits with specific (strategic) suppliers.	The award of contracts must be performed based on fair, non-discriminatory, transparent, pre-defined evaluation criteria. Investigation for top-performing suppliers and the forming of permanent alliances/partnerships is strictly forbidden. System integration between public authorities and suppliers may be "unequal" and "discriminatory" treatment. In theory, systems of the public sector for the initial eTendering for public procurement should operate as open systems, being accessible to all suppliers. Due to the lack of standards however, such systems may be considered to operate as close circuit, focusing on supporting post award needs amongst known and registered suppliers.
	Control of procurement-related initiatives	Private companies, regardless of size, usually centralise control of large-scale organisational initiatives. For instance, the establishment of new procedures and ICT systems to improve/enhance the utilisation of eCatalogues can be achieved through central control (e.g. formation of a specialised department, coordinated through the company headquarters, etc.)	Governments may follow a "centralised approach" (systems/practices for public procurement are established at national level), or a "more decentralised approach" (leaving freedom to contracting authorities to implement their solutions). Both approaches demonstrate advantages and disadvantages. A lack of coherence (both at national and contracting authority level) may however cause interoperability barriers for the established solutions.
Technical	Standardisation	eCatalogues used to cover procurement needs of a company are usually solely related to the particular industry segment of the company. This may facilitate the selection of eCatalogue format and exchange standards. There are specialised eCatalogue exchange standards covering specific industry segments. For instance, in the automobile industry the EDIFACT, ODETTE and VDA standards are widely used. The technology industry has developed and uses the Rosetta standard, while the chemical industry makes use of the CIDX standard (Chemical Industry Data eXchange). All aforementioned standards focus on eOrdering, eInvoicing and ePayment processes.	eCatalogue specifications and exchange standards must cover the procurement of a wide range of products and services. European public purchasers currently take the first steps towards adopting common industry-wide eCatalogue standards, particularly working on the customisation of UBL 2.0. Current standardisation initiatives, as also detailed in chapter 5 of [SIR], focus on adopting, (and where necessary customising) a suitable standard for post-award needs, and in particular eInvoicing.

Table 15: Differences in the public and private sector with regard to procurement

As summarised in **Table 9,** private sector buyer-supplier relationships as well as procurement practices are very different from, and sometimes even diametrically opposed to, those applied in the public sector. This affects the use of electronic means and particularly of innovative purchasing techniques, such as eCatalogues. Not all private sector practices can be imported one-to-one into the public sector procurement regime. The following section attempts nonetheless to identify what seem to be standard current industry practices as regards eCatalogues, and which of these might be considered or even be applied to public sector procurement.

6.2 *Common approaches to eCatalogue use in the private sector*

The investigated private sector systems demonstrate a series of common features, indicating, at least to some extent, similar approaches to the use of eCatalogues for procurement purposes. Private companies have established solutions modernising the ordering, invoicing and payment processes for their procurements by electronic means. This approach necessitated the establishment of interoperable ICT solutions amongst companies in a cost-effective manner, resulting in the development of specific standards for specific industry segments. The public sector recognises and currently works towards the adoption and / or enhancement of existing industry eCatalogue standards, covering those for the exchange of eCatalogues, as well as, those for product classification and description.

Not all the common approaches encountered in the private sector are, however, relevant for public sector usage. In the following, outstanding common practices that are specific to private sector regimes are highlighted:

– Industry eCatalogue systems resemble "eCatalogue current practice" systems: utilisation of eCatalogues in the private sector mirrors the system features identified as "eCatalogue current practice" (see section 3.3). The private sector focuses on systems that support "repetitive purchasing", similarly to framework agreements. Much effort is dedicated to fully automate supply-chain processes, minimising manual intervention as much as possible. To this end, eCatalogue systems are commonly parts of a greater ERP system. The use of eCatalogues is generally limited to populating marketplaces, rather than forming stand-alone tenders (eCatalogue prospectuses). Private companies do not follow procurement procedures similar to those defined for the public sector, therefore there seems not to have been, until now, the need or scope to implement full "eCatalogue stock management systems", as defined in section 3.2.

– eIntelligence or Supplier evaluation tools: private companies are interested to know their top-performing suppliers, in order to conduct business with them more frequently. Such eIntelligence/supplier evaluation tools are integrated to eProcurement or ERP systems, enabling the re-utilisation of data on product catalogues and performed transactions. The ranking of suppliers is based on indicators, so as to provide adequate control for future orders. Whilst sought after in the private sector to establish long-standing relationships with suppliers or to form strategic alliances, such tools are obviously of limited use in public procurement. Their technical set-up could however be reviewed, under strict conditions, in the context of the automatic ranking of suppliers in a Framework agreement or a DPS.

– <u>Distinction between different supplier types</u>: suppliers of a large, private manufacturing company are commonly separated into "production" and "non-production" suppliers. The former group relates to suppliers which provide commodities, services and "raw material" for the production environment of the company. For instance, for an automobile company, a "production supplier" supplies parts for the gearbox of a particular car. The latter group incorporates suppliers which provide commodities and services for the operation of the company (e.g. computer equipment and office stationary). The two groups are usually treated differently. For "production suppliers" strict rules apply as regards their registration in systems and the receipt of indicative tenders, whilst evaluation and ordering through their product catalogues is usually performed by evaluation committees or highly-ranked individuals. For "non-production suppliers" rules are somewhat looser, particularly in the processes of evaluation and ordering. This feature is not relevant for public procurement.

– <u>Product classification standards</u>: in the investigated systems common product classification schemes are used for the same industry segment by both buyers and suppliers. This seems to be a strong area, which facilitates the establishment of efficient procurement links. A common product classification scheme can accommodate full electronic procurement processes, through the accurate description of product lines and the automated generation of contractual items. Furthermore, it can regulate facility management, structured statistical analysis, and significantly increase the usability of electronic catalogues.

Two main schemes seem to be favoured. One is the eCl@ss standard, which is primarily used for heavy industries; the other is the Global Product Classification (GPC) standard, which is used for consumer goods. For example, in the food industry, the GPC standard is widely used, while in the chemical industry eCl@ss is more relevant. Moreover, the two schemes appear to be complementary, so they can be used in parallel. Thus, in industries that cover a wide range of products and services, such as the automobile sector, a combination of both standards is used (e.g. for "light-automobile applications", covering products one could find in a super-market, the GPC; for "hard-automobile applications", which cover parts for a specific car model, the eCl@ss standard).

Product classifications are discussed in section 8.4.

– <u>eCatalogue exchange ("messaging") standards</u>: similarly to product classification standards, a strong point in the investigated companies is the use of standards for the exchange of eCatalogue information. In the automobile industry EDIFACT, ODETTE and VDA Verband der Automobilindustrie (German, translating to "German Automotive Association") are widely used, as they are specialised standards to cover that particular industry segment. In the technology industry, several computer and consumer electronics, electronic components, semiconductor manufacturing, telecommunications and logistics companies have developed and use the Rosettanet standard, while the chemical industry makes use of the CIDX standard (Chemical Industry Data eXchange), a specialised framework for the exchange of B-2-B documents.

– <u>Implementation of tailor-made systems</u>: the majority of eProcurement systems in the private sector are tailor-made solutions, and meet the particular needs and requirements of a given company. The use of commercial platforms tends to be avoided, although components/modules of a specific commercial system may be used. Tailor-made systems are thought to optimise the already established cooperation processes between the investigated companies and their suppliers. Commercial platforms offer the "lowest common denominator" in order to accommodate the expected needs of many potential companies.

– Supplier registration: private companies seem to place great care in processes for supplier registration, with strict procedures on how suppliers register in their ICT systems. Commonly, for a supplier to register in an eProcurement system of a large private company, some pre-evaluation/pre-agreement process must be performed. It is not uncommon for a supplier not to be allowed to enrol in such a system.

The applications encountered in the private sector thus illustrate mainly the use of eCatalogue systems by large multinational firms, with which sellers (i.e. sub-contractors) have to comply. Thus these systems constitute closed circuits, based on proprietary systems, the adjustment costs for the use of which are borne by the sellers. Using eCatalogues for the submission of offers in a public procurement procedure should seek to avoid this type of closed circuit and instead, open up systems by using common standards.

6.3   eCatalogues for wholesale and retail use

As discussed in section 3.1, "eCatalogue prospectuses" constitute electronic documents exclusively created by suppliers, which can be divided into those created according to the specifications of the buyer (i.e. contracting authority) and those created according to supplier specifications. Those created in accordance with supplier specifications can be further divided into eCatalogues created for retail (i.e. general consumer) use and those created for wholesale (i.e. professional) use. **Table 16** describes the purpose and attributes of the two different types.

	eCatalogues for retail use	**eCatalogues for wholesale use**
Purpose	Consumer-oriented electronic commerce (C-2-B)	Business-oriented electronic commerce (B-2-B)
Attributes	▪ Consumer interacts directly with supplier system ▪ eCatalogues advertise available products ▪ eCatalogues form the basis for electronic retailing (ordering, simplified invoicing, payment) ▪ No specific standards are followed	▪ Brings businesses together in virtual (i.e. electronic) marketplaces ▪ eCatalogues advertise available products ▪ eCatalogues form the basis for streamlining processes for manufacturing, supply-chain and procurement. They tend to be used to attract, develop and retain relationships with business partners ▪ eCatalogues commonly necessitate the use of large ICT infrastructures and electronic systems and are created according to industry-wide standards, or standards agreed between the supplier and other trading partners
Typical products	Typically they contain common consumer goods (e.g. books, CD's, IT products, etc.) and services (e.g. travel itineraries, etc.)	Typically they cover any type of product (e.g. consumer goods, raw material for industries, etc.)

Table 16: Purpose and attributes of eCatalogues for retail (private) and wholesale (professional) use

In general, for both consumers and businesses, eCatalogue prospectuses constitute the primary entry point to the offered products and services of a supplier. eCatalogue prospectuses are commonly available within the context of a web-based application, enabling interested parties to search products, to view product information, as well as, to place orders electronically.

Electronic catalogues for both retail and wholesale use vary with regard to the description of products. One supplier will describe a specific product in its eCatalogue in a completely different manner than a competitive supplier that supplies the same (or similar) product. For instance, as demonstrated in **Table 17**, two suppliers use different attributes for describing an LCD Monitor. But even within the supplier eCatalogue containing different types of products, one product type may be described in a completely different way than another product of a different type (e.g. an LCD Monitor and a Computer Server will describe different technical characteristics).

In order to illustrate the variances in product descriptions, **Table 17** presents the product description of an LCD Computer Monitor (ICT product). There are three descriptions for the same product type sourced from three different eCatalogue prospectuses, one for professional/wholesale B-2-B use (GlobalSources) and two for retail B-2-C use (Dell and Samsung)[12]. Considering the information of **Table 17**, the following can be observed:

- Many of the attributes and characteristics in all three eCatalogues are similar

- Catalogue content, presentation and attributes used for product description vary according to supplier-specific preferences

- Although many of the product description fields are similar in all three eCatalogues, different attribute names are used for the investigated product "LCD Monitor" (e.g. in Globalsources "Resolution", in Dell "Max Resolution" and in Samsung "Native Resolution").

- Two eCatalogues may present the same information using a different number of fields (e.g. in Globalsource and Samsung the description of the LCD dimensions is one field, while in Dell four fields are used)

- The eCatalogue for wholesale use contains a considerable amount of information for Shipping/Packaging and Payment terms (this part includes payment terms, minimum order, delivery details, product certifications, specific packaging information, etc.). On the contrary, eCatalogues for retail use detail product specifications and characteristics

- In the wholesale eCatalogue prospectus, there is no item price, which is agreed by the trading partners during negotiations

As a result, although the descriptions in the three investigated eCatalogues concern the same product type, if these eCatalogues were intended for public procurement use, the automated evaluation or processing by the contracting authority would not be feasible. Such automated processing of eCatalogues could only be achieved by standardising not only the structure and messaging of eCatalogues, but also the attributes for describing products. In this context, it is important to establish and utilise interoperable product description and classification schemes (discussed in section 8.4).

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[12] Disclaimer: Reference herein to any specific products, specifications, process, or service by trade name, trademark, manufacturer, or otherwise, does not constitute or imply its endorsement, recommendation, or favouring by the European Commission.

	www.globalsources.com	www.dell.com	www.samsung.com
Similar information	- Product Description	- Product Description	
	- Resolution	- Max Resolution	- Native Resolution
	- Viewing Angle	- Image Max H- View Angle - Image Mac V-View Angle	- Viewing Angle
	- Brightness	- Image Brightness	- Brightness
	- Pixel Pitch	- Dot Pitch	
	- High Contrast	- Image Contrast Ratio	- Contrast Ratio
	- Input Signal	- Connectivity Technology - Port(s) Total Free/ Connector Type	- Input Connectors - Input Video Signal
	- Viewable screen	- Viewable Size	- Viewable Size
		- Display Type	- Panel Type
	- Power Consumption		- Power Consumption
	- Response Time		- Response Time
	- Dimensions	- Height - Depth - Width - Diagonal Size	- Dimensions
	- Colour	- Colour Support - Enclosure Colour	- Maximum Colours
		- Max Sync Rate (V x H)	- Sync Type
	- Power Supply	- Voltage required	
		- Weight	- Net Weight
	- Multimedia (images)	- Multimedia (images, video)	- Multimedia (images, video)

Additional information	- Speaker
	- Control Manner
	- Country of Origin
	- Brand Name
	- Primary competitive advantages
	- Main export markets
	- Payment Details (Terms, Minimum Order)
	- Delivery Details (FOB Port, Lead Time)
	- Product Certifications
	- Shipping/Packaging Information
	  - Individual Packaging Details
	  - Gross/Net Weight
	  - Selling Inner Packing Quantity
	  - Selling Inner Packing Type
	  - Selling Packing Type/Quantity of Master/Export Carton
	  - Unit Per Master/Export Carton
	  - Length of Master/Export Carton
	  - Width of Master/Export Carton
	  - Height of Master/Export Carton
	  - Master/Export Carton Volume Cu. Meter
	  - Quantity per 20 Foot Container
	  - Quantity per 40 Foot Container
	  - Delivery Method
	- Other Information
		- Product description
		- Device Type
		- Compatibility
			- Aspect Ratio
			- Interface
			- Wall Mount Interface
			- Regulation
			- Available Cabinet Colour
			- Magic Technologies
			- Other features
			- Warranty

Table 17: LCD Monitor description

7   Analysis on content

As discussed throughout the report, and in particular in chapter 4, the main objective for using eCatalogue prospectuses in public procurement is to establish full and autonomous tenders in a cost-effective manner, so as to achieve efficiency-gains as enlisted in **Table 6**. At present, eCatalogue prospectuses used by public purchasers in the EU take the form of spreadsheet files, with specifications entirely defined by contracting authorities, i.e. they are "buyer-defined". As discussed in chapter 3, this common practice provides only limited support for achieving the optimum use of eCatalogue prospectuses in public procurement.

The objective of the current chapter is to review some existing eCatalogue prospectuses, as well as, specifications imposed by contracting authorities, so as to analyse the requirements (format and content) according to which eCatalogues and tenders in general should be created and to identify aspects that could be standardised when using eCatalogues. The chapter is based on the analysis of a number of indicative public calls for tenders from various industry sectors, covering the procurement of products, services and/or works. In the first place, the core data suppliers are required to provide in the templates for eCatalogue prospectuses are presented (see also section 5.1). Then, an analysis follows investigating the content of indicative public calls for tenders.

Specifically, the analysis is conducted in two phases. First the content and structure of ToRs and tenders are analysed, based on four indicative calls for tenders in the ICT sector, as summarised below:

– Analysis of the content, structure and main parts of both ToRs and indicative tenders, including:

  o the common sections of ToRs, including the typical tender specifications they contain, as well as, the format in which requirements for products/services to be procured are described

  o the common sections in typical tenders

  o the parts of typical tenders that could be included in eCatalogues, those that could be included in electronic tenders in general and those that must separately accompany the tender (in hard-copy form)

– Analysis of product descriptions and classifications, including:

  o the way contracting authorities define the manner in which products/services should be described in tenders

  o the way common information and presentation of product descriptions are included in existing eCatalogue prospectuses, in order to identify information/presentation gaps

  o the product attributes available by a product classification scheme (eCl@ss is used for the current analysis), which could be used by both authorities and suppliers in order to describe their requirements and offers respectively, focusing on identifying competencies and limitations of the scheme. The use of the eCl@ss scheme for this analysis does not constitute a recommendation by the EC or the contractor. As discussed in section 8.4 and in more detail in [SIR], eCl@ss is considered to be a "high-end" product classification and description scheme, and is only used in the analysis of the current chapter in order to draw out high-level conclusions on how such schemes may accommodate the needs for describing products in eCatalogue prospectuses.

The second phase of the analysis covers a wider scope, including different industry segments and types of contracts based on five indicative calls for tenders. The objective of the second phase was to verify the findings of the first phase of analysis and, in addition, to identify further information requirements to be included in tenders (other than those related to product/service descriptions). The aim here is to identify whether these requirements can be

met or integrated within eCatalogue prospectuses or whether they constitute descriptive or separate parts which must accompany suppliers' offers (in electronic or paper-based format).

7.1   A common denominator for public eCatalogue contents

Electronic catalogues and their content are a central element enabling efficient purchasing transactions. In order to maximise the efficiency of these transactions, it is essential that catalogue data be consistent and of good quality. This section describes and compares the core data suppliers are required to provide in the templates for eCatalogue prospectuses, as currently accepted, respectively, by the system of each investigated country (see also summary in section 5.1.1.6 and detailed analysis in Annex I).

The information in **Table 18** can be considered as the "common denominator" of data required for eCatalogue prospectuses in the investigated countries[13].

Categories	Common Catalogue Contents	Description
1. Trading partner ID	- Supplier Identification	Identification code of the supplying organisation
2. Product Identification	- Product Identification code	Unique code for a specific product/service
3. Product Description	- Product Name - Product Description - Technical Information - Picture - Product Description URL	Description of the product and its characteristics
4. Manufacturer	- Manufacturer Name - Manufacturer Part Number	Name and identification code of the product manufacturer
5. Product Categorisation	- CPV Code - UNSPSC Code	Class or category of the product according to a classification system
6. Product Quantity	- Unit - Quantity per Unit - Measurement Unit - Minimum Quantity (Smallest delivery	Quantity ordering details such as: - Package type or physical unit in which the product is sold - Minimum number of orderable units of this product the supplier will accept on a purchase order
7. Pricing & Discount	- Price - VAT - Price per Unit - Currency Code (Type) - Discount	Information about prices, discounts, taxes, terms of payment, delivery charges
8. Delivery information	- Delivery Time - Stock Quantity	Information about lead time and delivery dates, stock availability, billing addresses, contact information, etc.
9. Handling & Packaging	- Units in Package	Quantity of units of use inside the orderable package size of the product.
10. Warranty and contracting Information	- Warranty - Contracting Information	Agreement terms
11. Catalogue Validity Dates	- Start Date - End Date - Revision date	Attributes for the entire catalogue, specifying from and until when the offered products are available
12. Invoicing	- Invoicing Information	Information for issuing invoices in electronic format

Table 18: "Common denominator" of eCatalogue prospectus content in Europe

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[13] The identification of "core data" for eCatalogue prospectuses is based on the comparison of contents of the investigated systems of EU Member States and EEA countries, as depicted in Table 11.

The information included in the "common denominator" data of investigated eCatalogue prospectuses, as depicted above, describes available products/services and prices, as well as, associated commercial terms (such as handling and invoicing information). This broadly corresponds to the information usually contained in the technical and financial parts of an offer in a public procurement procedure. In this direction, the following sections, and in particular section 7.2.2, comprise an analysis of typical content of responses to public calls for tenders against content of existing wholesale eCatalogue prospectuses in order to conclude their suitability for public procurement.

It is identified that in terms of content, public sector eCatalogue prospectuses contain a common set of core data, including, e.g. Trading partner ID, Product Identification, Product Description, Product Categorisation/Classification, prices as well as handling and invoicing details. Similarly, in private sector eCatalogues, content, presentation and attributes for product description, while modelled on supplier specific preferences, also refer to the same common core data. All examined private sector eCatalogue samples contain, e.g. Trading partner ID, Product Identification, Product Description, Product Categorisation/Classification and financial information. While B-2-C eCatalogues (i.e. retail use) focus on the customer, presenting information that interests end-user buyers, B-2-B eCatalogues (i.e. wholesale use) contain additional detailed information regarding payment terms, minimum order terms, delivery details and specific packaging information, etc.

Hence, it is observed that all types of catalogues include similar data; this is not surprising as the objective for all types is to present products and their characteristics. Content requirements for public sector (buyer-defined) eCatalogues seem to be more similar to those of private sector wholesale catalogues (B-2-B), than of private sector retail eCatalogues (B-2-C). At the same time, eCatalogues used both for public procurement and private retail/wholesale procurement commonly contain the same core data. As a consequence, the content of existing retail/wholesale eCatalogue prospectuses would, in principle, appear to be adequate for the needs of public procurement.

However, despite the common features identified in all eCatalogue types, the manner in which products/services are described within eCatalogue prospectuses varies substantially. Attributes/properties used for describing catalogue items depend on the preferences of the entity defining the specifications of the eCatalogue. In addition, although the use of product classifications is quite common, different standards are used by different industries.

In short, it is observed that the current environment presents significant barriers in establishing mechanisms for the full automated processing of eCatalogues. The only exception to this are some supplier-defined wholesales catalogues created for professional/wholesale use (B-2-B purposes), where a number of industry segments have implemented suitable standards for creating/exchanging eCatalogues. Nevertheless, these standards are industry segment specific. Thus they cannot be widely adopted for all purposes, as they primarily serve bilateral communications between already acquainted buyers and sellers.

In order to move towards a fully electronic public procurement environment, the standardisation of eCatalogue content and exchange is a key factor. In this direction, the two prevailing standards for forming and exchanging eCatalogues, UBL and c-Catalogue, are currently being converged in order to accommodate the need for the automation of eCatalogues use, by standardising processes and messages of eCatalogues. Considering the content related to supplier information, financial, handling and invoicing data, these can also be accommodated by the converged standard (extensions to UBL and c-Catalogue) in order to cover also additional information needed. As far as it concerns the content relating to product/service descriptions, it can be accommodated by product classification and description. All these aspects are discussed further in chapter 8.

7.2 Analysis of requirements for product description and classification

In this section, an analysis of requirements for product description and classification is attempted, based on information from indicative public calls for tenders, as well as indicative tenders formed as wholesale eCatalogue prospectuses. In this direction, focus was given on identifying the main sections included in public calls of tenders, as well as, the main parts within the Terms of Rederence documents. In addition, the way contracting authorities describe products/services they procure was investigated, together with the manner in which suppliers construct their respective responses to calls for tenders.

7.2.1 Analysis of indicative public calls for tenders

This section considers an indicative set of public calls for tenders and highlights the main sections of their documentation. A call for competition starts when a contracting authority advertises its forthcoming intended procurement by means of a suitable notification[14]. In parallel, contracting authorities may publish supplementary documents. These are commonly referred to as Terms of Reference (ToR) and describe more granularly the exact procedure to be followed, the subject of the call, as well as, all parameters to be taken into account by suppliers in order to create their tenders.

The ToR documents of a call for tenders contain standard documents, which are however customised for each specific call, describing relevant needs and requirements. A typical ToR contains three types of requirements, which determine how to create tenders in reply:

–   <u>ToR - requirements relating to exclusion and selection criteria ("proof documents")</u>: This part contains specifications for the required set of documents economic operators must submit in order to be accepted for participation in the competition. In this part, the minimum selection criteria and conditions for participation are presented, as well as the criteria based on which tenderers are automatically excluded. Generally, a list of "proof documents" to be submitted by interested suppliers evidencing their eligibility is presented. These documents are of administrative nature and provide information on the personal situation of economic operators, their suitability for the contract, their economic/financial standing, the relevant technical/professional capacity and other administrative information necessary to fulfil the conditions for participation.

–   <u>ToR - requirements for the technical offer</u>: This part contains the general and specific requirements related to the subject of the contract. In addition, this part of the ToR commonly includes a "requirements matrix", which summarises/groups all requirements to facilitate the understanding of economic operator and help them ensure the compliance of their tenders against the requirements of the call. Common requirements include a summary of the company profile of the economic operator, a summary of the technical offer, a detailed technical offer as well as reference documents. Additionally, the ToR may include requirements on the presentation of the technical offers, e.g. for the expected tender structure, and forms to be completed by suppliers. Lastly, the criteria that the authority will use to evaluate the technical offers are presented in detail.

–   <u>ToR - requirements for the financial offer</u>: This part contains the requirements for forming the financial offer, based on the technical offer. In addition, the ToR commonly describes in detail the complete evaluation formula used for evaluating the tenders, taking into account both the technical and financial offer of each supplier. This section of the ToR may include specific forms, according to which economic operators may create their financial offer.

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[14] As discussed in [FReq], for one-off contracts and the establishment of DPS or Framework Agreement, a Contract Notice must be published. For specific contracts within a DPS, a Simplified Contract Notice must be published, while for re-opening competition within Framework Agreements, a notification must be dispatched to all participants, in accordance with the terms of the Framework Agreement. The only exclusion to the above relates to the Negotiated procedure without call for competition.

To sum up, ToRs typically include the following type of information:

– Contracting authority details: contains information on the identity of the contracting authority, location, contact points, etc.

– Subject of the contract: describes the subject-matter and context of the contract, main needs to be addressed, general and specific requirements and any other terms of technical nature

– Contract deliverables: describes the work program and expected deliverables. In case of complex contracts (e.g. service or works) detailed project-related information is included

– Contract duration: indicates the duration of the contract and core contractual terms

– Contract: in some cases the full contract to be signed between the potential contractor and the contracting authority may be included

– Budgetary information: may describe the indicative financial resources allocated for the contract and gives information on payment terms, terms for financial guarantees, etc., if any

– Administrative/financial penalties: enlists rights and obligations of both parties in case the contractor fails to perform his/her obligations under the contract

– Conditions for participation: describes conditions for participation in terms of professional information, financial/economic capacity, technical background and expertise, relevant experience, etc., including necessary declarations and certificates required to prove them

– Award criteria: presents the mechanisms to be used for evaluating tenders, through the description of criteria, indicators and their weighting, evaluation formula(s), etc.

– Additional provisions: describe terms and conditions covering additional aspects such as property rights, subcontracting, etc.

In general, the requirements included in ToRs are grouped into sections, e.g. requirements for the Technical Solution, Quality Assurance, Delivery Time-plan, etc. Commonly, the requirements for the contract are presented in the form of lists and are categorised as mandatory, optional, additional, etc.

To further investigate the content of ToRs and tenders, indicative ToR documents were analysed regarding the execution of ICT-related contracts. The analysed contracts include both the procurement of products (e.g. ICT equipment) and services (e.g. software, support, maintenance, training and project management). As expected, the ToR documents for calls involving the procurement of services present a higher degree of complexity than those involving the procurement of products.

As explicitly prescribed by the EU Directives, contracting authorities may not request specific products, brands, makes, models, technologies, etc. Therefore, in the ToR, contracting authorities may only describe their needs and draw a picture of preferred high-level solutions and minimum specifications. In such a non-discriminatory environment, economic operators can propose tailor-made solutions according to their expertise and experience.

The format and templates to be used by suppliers for creating tenders are usually defined by contracting authorities in the ToR documents.

In the following, extracts of an indicative ToR document are presented, which relate to the definition of requirements for an ICT contract, in the form of a descriptive listing and requirements matrixes.

C1.   ICT equipment and software

- C1.1 perform the Application Development Services in accordance with all applicable provisions of the Assignment Contract which shall include without limitation the development, supply and implementation of the Specially Written Software in accordance with the Services Order and the contractor's Proposal (where a proposal is issued by the contractor);

- C1.2 perform the Support and Maintenance Services in accordance with all applicable provisions of the Assignment Contract. The Support and Maintenance Services shall commence on the Support and Maintenance Commencement Date and shall, subject to the termination provisions herein, continue during the term of the Assignment Contract;

- C1.3 supply the Products and the Documentation as specified on the Services Order and ICT Equipment as specified on the Product Order;

- C1.4 supply at least the following ICT Equipment
  - o   Two clustered application servers
  - o   Two clustered database servers
  - o   The operating system of all servers must be Windows Server 2003 or Solaris 9, and meet at least the following specifications:

	For a server running Windows operating system	For a server running Unix operating system
Processor Type	Intel Zeon compatible	64bits
Processor Speed	At least 3 GHz	At least 1.2 GHz
Number of processors	At least 2	At least 2
L3 Cache memory	At least 1 MB per processor	At least 8 MB per processor
Controller	Dual-channel Ultra3 SCSI	Dual-channel Ultra3 SCSI or Fibre Channel
Memory size	At least 4 GB	At least 4GB
Memory expandability	At least 32 GB	At least 8 GB
Network card	10/100/1000 network adapter	Ethernet 100 base-T
Number of hot-swappable power units	At least 2	At least 2
Number of PCI channels	At least 6	At least 4
Number of hard disks	At least 4	At least 4
Hard disk space	At least 70 GB	At least 70 GB
Hard disk interface	Ultra 3 SCSI	Ultra 3 SCSI or FC-AL
Hard drive RPMs	At least 15000 RPM	At least 10000 RPM
Support for RAID 1 and RAID 5	Yes	Yes
Optical Drives	At least 1 DVD-ROM 40x and 1 CD-ROM 40x	At least 1 DVD-ROM 10x and 1 CD-ROM 10x

Table 19: Specifications table for an ICT server from an indicative public call for tenders

- C1.5 supply of a professional scanner to meet at least the following specifications:

Type	Flatbed
Resolution	4800 x 4800 dpi
Bit depth	48-bit
Document feeder	At least 50 sheets and 20 ppm
Interface	Hi-speed USB or SCSI connectivity

Table 20: Specifications table for a scanner from an indicative public call for tenders

Req. #	Description	Compliance	Comments
C1.1	Application Development Services in accordance with the Assignment Contract, and include without limitation the development, supply and implementation of the Specially Written Software		
C1.2	Support and Maintenance Services in accordance with the Assignment Contract		
C1.3	Services Order includes Products and Documentation, while the Product Order includes ICT Equipment		
C1.4	Four server in clustered configuration (two for application and two for data), operating under the Windows Server 2003 or Solaris 9 operating systems, abiding to minimum technical specification		
C1.5	One professional scanner, abiding to minimum technical specifications		

Table 21: Example of a requirements matrix of an indicative public call for tenders

7.2.2 Analysis of indicative tenders based on existing wholesale eCatalogues (professional use)

After publication of the Contract Notice in the EU Official Journal (or an equivalent notification for specific contracts within DPS or Framework Agreement), economic operators have a designated time period to submit proof documents showing that they comply with the exclusion and selection criteria, and their tenders[15]. The format, submission mechanism and deadlines for tenders must comply with the terms of the call, as described in the Contract Notice and ToRs[16]. The objective for suppliers is to create and submit tenders, which fully match and respond to the technical and financial terms described in the Contract Notice and ToRs. In service and work contracts, which commonly involve the implementation of a project, tenders describe not only the proposed solution and end-goal, but also aspects such as project time-plan, project management activities, reporting, etc.

Taking into consideration the current form ToR documents usually take, and their descriptive character, it is quite complex for suppliers to respond to a call for competition by submitting solely a tender in the form of an eCatalogue prospectus. According to the analysis, it can be observed that the tender responses to descriptive ToRs (non eCatalogue-based documents), are also descriptive documents. However, ToRs that contain requirements matrixes, do so in tabular format, which would resemble an eCatalogue. In such cases, the respective responses are also in such format, hence creating some opportunities for automated processing. It can thus reasonably be assumed that if ToRs were in tabular or eCatalogue format, the respective responses from suppliers would also be similar, allowing the evaluation of tenders to be automated to some extent.

What is more, this practice would be very similar to current practice used in the eCatalogue solutions of several EU Member States, according to which contracting authorities provide suppliers with specifications for creating tenders in the form of eCatalogues through pre-defined spreadsheet templates. These are referred to as "buyer-defined" eCatalogue prospectuses, and are further discussed in chapter 3.

Table 22 depicts an example of a supplier response to a ToR requirements matrix.

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[15] According to the EU Directives, depending on the procedure, the exact workflow and time period for the submission of offers may vary. This is further analysed in [FReq] and [Func. Reqs Vol. I].

[16] In competitions for specific contracts under a DPS or Framework Agreement, the specifications for forming tenders may already be defined in the initial terms of the DPS or Framework Agreement.

Req. #	Description	Compliance	Comments
C1.1	Application Development Services in accordance with the Assignment Contract, and include without limitation the development, supply and implementation of the Specially Written Software	*Yes*	*Section 4.3 of technical offer*
C1.2	Support and Maintenance Services in accordance with the Assignment Contract	*Partially*	*Section 4.2 and 6.3 of technical offer. Support is provided during normal business hours*
C1.3	Services Order includes Products and Documentation, while the Product Order includes ICT Equipment	*Yes*	*Section 4.3 and chapter 5 of technical offer*
C1.4	Four server in clustered configuration (two for application and two for data), operating under the Windows Server 2003 or Unix Operating systems, abiding to detailed technical specification	*Yes*	*Chapter 5 of technical offer*
C1.5	One professional scanner, abiding to minimum technical specifications	*Yes*	*Chapter 5 of technical offer*

Table 22: Example of an indicative tender in response to a public call for tenders

As observed in section 7.2.1, the format and core content of the investigated calls present certain common features. Likewise, the format and core content of offers created by suppliers also present similarities. Specifically, the different sections of a tender will mirror the corresponding parts of the ToR. A typical indicative tender thus includes the following core sections:

– Supplier details: supplier identity, VAT number and country, registered offices, details of sub-contractors or consortiums, etc.

– Summary of the proposed solution: general presentation of the offer and links to detailed product specifications, general research methods, design methodologies, etc.

– Contract execution: description of the proposed execution of the contract, including duration, project management method(s), dependencies, quality assurance method(s), documentation, training, etc.

– Detailed description of the offer: description of the suppliers' understanding of the requirements, requirements matrixes with references to technical solutions, detailed description of the proposed technical solutions, links to external documentation, etc.

– Financial offer: detailed presentation of the proposed financial costs of the products/service/work

– Proof documents: set of documents to prove that the conditions for participation in the call for tenders are satisfied

Furthermore, the "Detailed description of the offer" section, as observed in the investigated responses to ICT calls, commonly includes information on the following:

– Requirements for requested services and proposed solutions

– Functional and non-functional requirements and proposed solutions

– Requirements for ICT systems and sub-systems (basic functions, data management, users interface, special characteristics)

– Hardware requirements and proposed solutions

– Maintenance and support solutions

– Training plan

– Budgetary management

With respect to describing ICT products in eCatalogue format, an analysis has been performed on existing indicative wholesale eCatalogues (i.e. targeted at professional users), in order to conclude whether the attributes used in these eCatalogues would suffice for tendering in a public call for tenders. In **Table 23**, the initial minimum specifications of one public call for tenders for ICT equipment is depicted (left column), along with available product descriptions for wholesale purposes from two ICT vendors (middle and right column). As can be observed, all attributes of the public call for describing an ICT server are also used in the private sector for describing such equipment. It may therefore be concluded that the attributes already used in the private sector would suffice for forming eCatalogues for tendering in public procurement calls for competition.

Attributes used in indicative public sector calls for describing an ICT server	Dell (Windows-based server)	Sun Microsystems (Unix-based server)
Server Name	Poweredge 1955	Sun Fire V490
Processor Type	Intel Zeon 5100	UltraSPARC IV
Processor Speed	3 GHz	2.1 GHz
Number of processors	2	4
L3 Cache memory	8 MB of Level 2 cache	– Level 1: 64-KB data and 64-KB instruction per pipeline – Level 2: 2 MB shared on-chip – Level 3: 32 MB shared external
Controller	SAS 5/iR (H/W based)	FC-AL disk controller
Memory size	24 GB	32 GB
Memory expandability	8 GB	64 GB
Network card	Dual port embedded Broadcom® NetXtreme II™ 5708 Gigabit1 Ethernet NIC with load balancing and failover	Two 10/100/1000 Mbps Ethernet
Number of hot-swappable power units	2+2, 2100W, hot-pluggable redundant power	2 inputs of 1600 watts per power supply
Number of PCI channels	Six PCI slots	Six PCI slots compliant with PCI specification Revision 2.1 (2 @ 66 MHz, 64 bits wide, 3.3 volts; 4 @ 33 MHz, 64 bits wide, 5 volts)
Number of hard disks	2 SAS/SATA drives	2 hard disks
Hard disk space	Up to 146GB: 1 73GB hot-plug 2.5"	146-GB capacity per disk, providing a maximum total capacity of 292 GB
Hard disk interface	SATA	FC-AL
Hard Drive RPMs	10000 RPM	15000 RPM
Support for RAID 1 and RAID 5	No. Only RAID 1 support	Yes
Optical Drives	1 DVD-ROM 48x and 1 DVD-RW 48x	1 DVD-ROM 48x and 1 DVD-RW 48x
Additional specifications which are available to the investigated wholesale eCatalogues (professional use)	Interfaces	Serial standard interface
		USB standard interface
	Power supply	Power supplies – Maximum AC
		Power suppliers – Maximum DC
		AC power
	Operating temperature	Operating temperature
		Non-operating temperature
	Chassis dimensions	Dimensions
	Starting Price	Price
	Chassis form factor	
		Warranty
		Architecture
		Regulations

		Safety
		Ergonomics
		RFI/EMC
		Immunity
		Telecommunications
		X-ray (for monitors)
		Regulation marking
Enclosure I/O modules		
Motherboard chipset		
Take backup options		
Video		
Remote management		
Rack support		
Operating system		

Table 23: Attributes used in indicative tender describing an ICT server

It can be observed that the investigated wholesale eCatalogue prospectuses contain significantly more attributes describing the offered product, than the attributes used by the contracting authority to describe its needs (i.e. the minimum specifications). Furthermore, the attributes available in the investigated wholesale eCatalogue prospectuses, as well as, the value/format some attributes contain, may vary significantly (e.g. see attributes "Network card" and "Number of PCI channels"). This confirms the findings of a similar analysis conducted in section 6.3. It is interesting to further investigate the attributes supported by a currently advanced product classification and description scheme, such as eCl@ss. This kind of investigation can help identify whether eCl@ss would suffice for fully describing an ICT server, according to the "tailor-made" attributes used by the contracting authority in the indicative call for tenders analysed above[17].

As can be seen in **Table 23**, the contracting authority describes the minimum specifications for the ICT server using 17 attributes, while the two suppliers describe their servers using 30 and 36 attributes respectively. It can moreover be observed that certain distinct components of the server, such as the processor, memory, and hard disk, are described in **Table 23** as attributes of the server. Alternatively, these could be represented as different catalogue items that need to be purchased for composing the server. This in fact is the approach followed by the eCl@ss standard, which provides 34 attributes for describing the server alone, while there are supplementary classes for describing in more detail certain modules of the server, such as classes "processor" (5 attributes), "memory" (18 attributes), "hard disk" (24 attributes), etc.

As can be observed in **Table 24**, despite the fact that eCl@ss offers a large number of attributes for describing an ICT server, still it cannot yet meet in full the requirements of the contracting authority for describing the ICT server. In particular, the current class for a "processor" does not have suitable attributes as regards the processor's speed and cache memory. However, this is considered to be only a small gap, considering that the vast majority of necessary attributes for describing an ICT server are already covered by eCl@ss.

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[17] The use of the eCl@ss scheme for this analysis does not constitute a recommendation by the EC or the contractor. As discussed briefly in section 8.4 and in more detail in [SIR], eCl@ss is considered to be a "high-end" product classification and description scheme, and is only used in the analysis of the current chapter in order to draw out high-level conclusions on how such schemes can accommodate the needs for describing products in eCatalogue prospectuses.

Attributes used in indicative public sector calls for describing an ICT server	eClass class	eClass attribute
Server Name	Server (19-01-01-03)	- Article number - BAA059001 - EAN code - BAA271001 - Manufacturer's name - BAA001001 - Product name - BAA316001 - Product type description - BAA002001
Processor Type	Server (19-01-01-03)	- Type of processor - BAE636001
Processor Speed	Processor (19-03-03-05)	**Not available**
Number of processors	Not applicable	Included in the catalogue line quantity details
L3 Cache memory	Processor (19-03-03-05)	**Not available**
Controller	Server (19-01-01-03)	- Controller storage - BAG112001
ECC memory Memory expandability	Memory (19-03-03-08)	- Access time - BAG308001 - Clock frequency of the bus - BAG142001 - Data integrity check carried out (Y/N) - BAF067001 - Data transfer rate - BAF068001 - Data width of module - BAF736001 - Form factor - BAF253001 - Memory capacity - BAC981001 - Number of module chips - BAE739001 - Product certification (Y/N) - BAF850001 - Required sockets (Y/N) - BAF763001 - Service (Y/N) - BAG017001 - Supply voltage - BAC860001 - Type of package - BAF817001 - Type of performance characteristics - BAF580001 - Type of support - BAA261001 - Type of surface - BAF786001 - With guarantee (Y/N) - BAF340001 - Type of extension / expansion - BAF173001
Network card	Server (19-01-01-03)	- Networking possible (Y/N) - BAF750001
	Network card (19-03-01-07)	- Bandwidth - BAF069001 - Connection technology - BAE715001 - Data connection protocol - BAF062001 - Data transfer rate - BAF068001 - Mass - BAE617001 - Memory - BAG064001 - Min. capacity of hard disc storage - BAF722001 - Min. operating system - BAF721001 - Min. processor design - BAF723001 - Min. working storage - BAF719001 - Network and transport protocol - BAF753001 - Number of req. connections and outputs - BAF166001 - Number of selectable channels per antenna - BAE726001 - Performance rate for conductor coding format - BAF581001 - Product certification (Y/N) - BAF850001 - Remote administration protocol - BAF238001 - Required sockets (Y/N) - BAF763001 - Service (Y/N) - BAG017001 - Software included (Y/N) - BAG053001 - Status display (Y/N) - BAG101001

		- System requirement - BAG131001 - Total number of available connections - BAE712001 - Type of current supply - BAG120001 - Type of interface - BAF973001 - Type of package - BAF817001 - Type of performance characteristics - BAF580001 - Type of peripheral device - BAF829001 - Type of processor - BAE636001 - Type of support - BAA261001 - With guarantee (Y/N) - BAF340001
Number of hot-swappable power units	Server (19-01-01-03)	- Power - BAF846001 - Current consumption in operation state - BAF847001
Number of PCI channels	Server (19-01-01-03)	- Number of unused expansion bays - BAF177001 - Total number of available connections - BAE712001 - Type of communication - BAF502001
Number of hard disks **Hard disk space** **Hard disk interface** **Hard Drive RPMs** **Support for RAID 1 and RAID 5**	Server (19-01-01-03)	- Hard disk storage - BAG114001 - Max. installable main storage capacity - BAF407001
	Disk Drive (19-03-02-01)	- Acceptance standard - BAE887001 - Cables included (Y/N) - BAF464001 - Data transfer rate - BAF068001 - External and internal transmission speed - BAF178001 - Formatted storage capacity - BAF258001 - Interface for CD and DVD - BAF050001 - Mass - BAE617001 - Max. buffer size of intermediate storage - BAG322001 - Mean access time - BAF731001 - Mean downtime - BAF733001 - Memory capacity of formatted CD and DVD - BAF047001 - Min. operating system - BAF721001 - Number of req. connections and outputs - BAF166001 - Product certification (Y/N) - BAF850001 - Service (Y/N) - BAG017001 - Software included (Y/N) - BAG053001 - Speed of reading from CD and DVD - BAF049001 - Total number of available connections - BAE712001 - Type of CD and DVD - BAF051001 - Type of connection - BAE711001 - Type of medium - BAF703001 - Type of noise development - BAF352001 - Type of support - BAA261001 - With guarantee (Y/N) - BAF340001
Optical Drives	Server (19-01-01-03)	- CD and DVD storage - BAG111001
	DVD (19-03-02-05) CD (19-03-02-03)	- Acceptance standard - BAE887001 - Audio output (Y/N) - BAE862001 - Data transfer rate - BAF068001 - Dimensions - BAE156001 - External and internal transmission speed - BAF178001 - Interface for CD and DVD - BAF050001 - Max. buffer size of intermediate storage - BAG322001

		- Mean access time - BAF731001
		- Memory capacity of formatted CD and DVD - BAF047001
		- Min. processor design - BAF723001
		- Min. working storage - BAF719001
		- Number of media - BAF482001
		- Number of req. connections and outputs - BAF166001
		- Product certification (Y/N) - BAF850001
		- Service (Y/N) - BAG017001
		- Software included (Y/N) - BAG053001
		- Speed of reading from CD and DVD BAF049001
		- Speed of writing to CD and DVD - BAF052001
		- Total number of available connections - BAE712001
		- Type of CD and DVD - BAF051001
		- Type of connection - BAE711001
		- Type of current supply - BAG120001
		- Type of interface - BAF973001
		- Type of medium - BAF703001
		- Type of support - BAA261001
		- With guarantee (Y/N) - BAF340001

Table 24: Comparison of attributes used in an indicative call for tenders (ICT server) and respective available eCl@ss attributes

7.2.3   Preliminary findings

Existing supplier-defined eCatalogue prospectuses cannot yet be used to respond to a public call for tenders, as according to current practice, contracting authorities usually define in full the structure and other strict requirements on how tenders should be created. In addition, specifications by contracting authorities generally do not follow any standards; instead they are tailor-made in accordance to the exact needs of the contracting authority formulated for itself. It is identified that this common practice is not the most efficient and interoperable one. Therefore, all stakeholders should aim at evolving the current setting to a more standardised one. The process towards the achievement of fully standardised eCatalogues can be envisaged in two phases. In the first phase, suppliers should be enabled to submit their existing eCatalogue prospectuses (created by them according to their own needs). Due to the expected diversity in content and format, this approach would limit the possibilities for automation, however would make the use of eCatalogues in public procurement more convenient for suppliers. The second step would be the wide adoption of relevant eCatalogue standards, in order to achieve an interoperable environment for the use of eCatalogues in public procurement, through the standardisation of format, content and exchange. Standardisation can support full or partial automation of eCatalogue processing, depending on the complexity of both, the call for tenders and the corresponding offer.

However, product/service descriptions cannot, on their own, support in full the needs for responding to a public call for tenders, although they are a core part of an eCatalogue forming an offer in response to a call for competition. Contracting authorities commonly require from suppliers many other additional specifications to ensure the proper execution of a public contract and the successful procurement of the products, services and/or works. These additional requirements are further analysed in section 7.3.

7.3   Brief analysis of other requirements for tenders

The analysis of indicative tenders for ICT-related procurements, as presented in sections 7.2.1 and 7.2.2, focused on identifying requirements and specifications for product description. It presented the way in which contracting authorities structure their call for tenders, along with the respective responses by economic operators. It showed that under current practice, contracting authorities need to define in full all specifications in order to enable economic operators to formulate their responses. Product description can be expressed through descriptive text, identifying the features, requirements and characteristics of the products/services to be procured. However, product/service descriptions can also be supported in a more organised manner than through free-text descriptions, e.g. through tables precisely defining the specific attributes to be used by suppliers in order to describe their offered products (see section 7.2.2).

This section presents different ad hoc case studies, going beyond product/service description and requirement specifications, to identify relevant additional requirements for information that must accompany tender responses. The case studies entail the procurement of simple products, products with supporting services, as well as a more complex "works" project. In all terms of references, the description of requirements for the subject of the procurement is included. In general, the main parts of the ToR documents concern the description of the product, services or works to be procured, thus confirming the findings of section 7.1.

7.3.1   Case Study 1: Renal Replacement Therapy equipment (product and service)

This case study is associated with the procurement of equipment, consumables and supporting services within the Health Service sector. The required product concerns Renal Replacement Therapy equipment, along with the associated consumables, as well as the supporting services which include installation, commissioning, maintenance and continuous staff training on the use of the medical equipment.

The specifications for the product are described in the ToR as free-text, however, the ToR also include a table-based questionnaire to be filled in by tenderers on product description, covering reference sites, conformance to standards, delivery details, training, etc. A part of the questionnaire, regarding the reference sites, is presented in **Table 25**.

Reference Sites	Oldest reference site using this equipment	Reference site, in region of two years usage, of this product.
Year of supply.		
Year of CE approval		
Name of Hospital		
Hospital Address		
Medical / Surgical Contact		
Purchasing Contact		

Table 25: Case study 1 - Sample of questionnaire

In parallel, additional requirements which tenderers must meet in their tenders, apart from describing their offered products/services and financial offer, are enlisted below:

–   Company profile form

–   Tax clearance certificates

–   Declaration documents

–   Preliminary tender form

–   Statement for assurance

–   Insurance form

–   Reference to previous experience

–   Maintenance questionnaire

–   Environmental statement

The above requirements for forming tenders under case study 1 have been grouped and assessed in order to draw high-level conclusions, as summarised in **Table 26**.

Requirement for information to be included in tenders	Assessment of requirement (for including the respective information in an eCatalogue prospectus)
Requirements of proof documents (including): - Company Profile form: A structured form depicting the company profile, including the company details, registration details, VAT number, company type, list of directors, number of employees, financial and economic standing, etc. - Tax clearance certificates: Documents supporting the financial status of the tenderer's organisation - Declaration documents: Structured documents for necessary declarations/ statements, to be signed by competent public authorities regarding the current status of the tenderer organisation on various legal/ financial aspects, the assurance of information included in proof documents, etc. - Preliminary tender form: A structured form defining the obligations and terms for product delivery, prices and other terms, which must be officially signed by all tenderers in order to commit that they are in position to deliver the contract in line with the requirements and their tenders	These documents carry significant legal validity, and under the current environment, must be submitted in hard-copy. Thus they cannot be incorporated within eCatalogues. However an eCatalogue prospectus could contain references to these documents (i.e. function as a "table of contents" for the paper-based proof documents to be provided).
Statement of assurance: proof of the Country of Origin where each item of the equipment was manufactured.	The statement of assurance of the origin of the offered products could be included as an attachment in eCatalogue prospectuses. In fact, the current eCatalogue standards contain attributes for such information. However, if a contracting authority views this information as a "proof document" (i.e. the statement to be signed and acquire significant legal validity), then such information under the current setting could only be sent in hard-copy.

Insurance form: document including liabilities during the execution of the contract, and any insurance offered thereafter.	Insurance provisions could be integrated in eCatalogue prospectuses and in addition standardisation of insurance and liability types could be identified. However, in case justifications are required or scenarios analysis depending on different cases, then eCatalogues can not cover this topic.
Reference to previous experience: documents presenting where the offered equipment has been implemented and used in the past by the tenderer.	This information could be included in an eCatalogue. However, if the contracting authority requires official certificates for previous experience (from other authorities or public entities), then this information should also be treated as "proof documents".
Questionnaires covering specific aspects: maintenance requirements were additionally required in tabular format, responses to which regard compliance or not.	Additional maintenance requirements could be integrated in an eCatalogue-based document. However, this would most probably require a specialised structure in eCatalogues, currently not available in standards. Furthermore, official justifications/certificates requested by the questionnaire should again be treated as "proof documents" and be submitted in hard-copy until the electronic submission of "proof documents" is authorised.
Environmental statement: document describing the impact of the equipment on the environment, the total electric consumption of each offered item of equipment, as well as, the total heat gain to the room from the equipment.	Information on environmental aspects of tenders could be integrated in an eCatalogue-based document. However, similarly to questionnaires, this would most probably require a specialised structure in eCatalogues, currently not available in standards. Official justifications/certificates of environmental aspects should be treated as "proof documents" and be submitted in hard-copy until the electronic submission of "proof documents" is authorised.

Table 26: Case study 1 - High-level findings

7.3.2   Case Study 2: Coast Guard Footwear (simple product)

This case study regards the provision of footwear for a Coast Guard Services. In this call for tenders, no supporting services are included. The ToR describes the product specifications in free-text format. In addition, it entails a table-based form to be filled in by tenderers, comprising basic fields for product description and size availability. The tables for product description are presented below.

Item No.	Specification	Item Description	Estimated Requirement	Price per Unit €	Name and Address of Manufacturer
1	CPS 1188	Coast Guard Shoe No 6	900		

Item	From Size	To Size	Width Fittings Availability
Coast Guard Shoe (Male)			
Coast Guard Shoe (Female)			

Table 27: Case study 2 - Sample of product description tables

In parallel, additional requirements which tenderers must meet in their tenders, apart from describing their offered products/services and financial offer, are enlisted below:

–   Tax clearance certificate

–   Preliminary form of tender

–   Submission of samples accompanying the submission of tender

–   Additional specifications for products, other than those included in the tailor-made tables of the contracting authority for describing products

–   Case analysis (details on lead time and modification on prices in case of needed modifications to standard design)

The above requirements for forming tenders under case study 2 have been grouped and assessed in order to draw high-level conclusions, as summarised in **Table 28**.

Requirement for information to be included in tenders	Assessment of requirement (for including the respective information in an eCatalogue prospectus)
Requirements of proof documents (including): - Tax clearance certificates: as described in Table 26 - Preliminary form of tender: as described in Table 26	As described in Table 26, these documents currently cannot be included in eCatalogues, as they need to be submitted in hard-copy.
Requirements for samples provision: in this case study suppliers are required to send samples of boots, as this is necessary for tender evaluation, for checking material robustness, texture, interior quality, practicality, etc.	Obviously this requirement cannot be fulfilled in the context of an eCatalogue (or any type of electronic submission)
Additional product specifications not included in the tailor-made tables for product description: Besides basic product description provided in tabular format, in this case study the contracting authority requires the description of products to cover additional features, such as upper leather, tongue, quarters and socks, vamp lining, counter lining, outsole, insole, heel, toe puff, laces, design, care and maintenance instructions and packaging.	These characteristics could be integrated in the product description contained in an eCatalogue and be further standardised. Aspects requiring information and guidelines such as maintenance instructions should be included in separate descriptive documents, which may be included as attachments in eCatalogue prospectuses.
Case analysis: in the context of the investigated call for tenders, suppliers should provide additional information on lead time and costs, based on possible forthcoming modifications on aspects such as stock-out, alteration in design, etc	This information can be provided on the basis of a case analysis and thus could not be incorporated in eCatalogues, unless is integrated as an attached document

Table 28: Case study 2 - High-level findings

7.3.3   Case Study 3: Pharmaceutical Refrigerator (complex product)

This case study is concerned with the provision of a pharmaceutical refrigerator within the Health Service Sector. In this case, no supporting services are included and thus the ToR are simple, however the product itself is quite complex to describe (as mentioned in section 6.3.1 of [SIR], to provide a basic description of a refrigerator, roughly 75 properties are necessary). The product specifications are included fully in descriptive form, following a structured point-by-point analysis. Suppliers are requested to present their offers in the format required within the ToR documents.

Besides product description requirements, additional requirements which tenderers must meet are enlisted below:

– Preliminary form of tender

– Tax clearance

– Specific guidelines for the format of the offer

– Additional information on contact details of tenderers and other parties involved

– Documents indicating any discounts to which the Pharmacy Department of the Hospital would be entitled

The above requirements for forming tenders under case study 3 have been grouped and assessed in order to draw high-level conclusions, as summarised in **Table 29**.

Requirement for information to be included in tenders	Assessment of requirement (for including the respective information in an eCatalogue prospectus)
Requirements of proof documents (including): - Tax clearance certificates: as described in Table 26 - Preliminary form of tender: as described in Table 26	As described in Table 26, these documents currently cannot be included in eCatalogues, as they need to be submitted in hard-copy.
Specific guidelines for the format of offers: Within the ToRs of this case study, specific requirements on the format of the responses are provided, which tenderers must strictly respect in order for their tenders to be accepted. The format is text-based on a point-by-point basis, outlining and describing how tenderers must meet and respond to the requirements.	These requirements, entailing specific guidelines for the format of offers, reflect current practice, where contracting authorities fully define the specifications for the creation of tenders by suppliers. There is no room for standardising eCatalogue formats. Contracting authorities should refrain from defining specific guidelines for the format and content of offers, particularly regarding the description of products, permitting suppliers to use their existing eCatalogues. Alternatively, contracting authorities could adopt product description and classification schemes for moving towards the standardisation of eCatalogues.
Additional information on contact details: Tenderers must supply contact information, including name, address, telephone number, e-mail and fax number of tenderers, as well as contact details of any third parties involved in the tender.	This information on contact details could be easily integrated in an eCatalogue and be further standardised.
Documents presenting discount details: These documents include details and indicate any discounts to which the Pharmacy Department of the Hospital would be entitled, including public sector discounts, early payment discounts, forward contract discounts and any other discounts.	This type of additional information can be included in the financial part of eCatalogues. However, in case detailed descriptions are necessary for describing the types of discounts based on specific payment terms, or ordering terms, as well as on the parties providing the discounts (e.g. public sector, suppliers etc), these descriptions are likely to be achieved only in free-text, descriptive documents. In this way, they cannot be incorporated in eCatalogues, unless they are included as an attached document.

Table 29: Case study 3 - High-level findings

7.3.4   Case Study 4: Standard class B Water tender ladder (complex product)

This case study concerns the procurement of a more complex product and in particular a vehicle (namely "Standard class B Water tender ladder"). This procurement is for the Fire Brigade and in parallel to the procurement of the vehicle, additional services are required, such as training on specific features.

The ToR describes in full detail all vehicle specifications, requiring descriptive responses and justifications. The ToR includes a number of table-based forms, according to which tenderers must present their offers. An indicative table supporting the product description is presented below:

Section	Required Information	Price Variation €
3.2	Permissible total laden Mass _____ kg	
3.3	Between walls Actual _____ m Inner circle Actual _____ m	
3.4	Actual Width _____ m	
3.5	Actual Height _____ m	
3.6	Between axles Actual _____ m Under axles Actual _____ m	
3.7	Approach angle Actual _____ degrees Departure angle Actual _____ degrees	
3.8	Actual _____ degrees	
3.9	Actual _____ degrees	
3.10	Actual _____	
3.11 a	Actual engine capacity to be stated _____ Actual BHP to be stated _____ Actual torque to be stated _____ 0-64km/h acceleration to be stated _____ sec Actual top road speed to be stated _____ km/h	

Table 30: Case study 4 - Sample of product description tables

Besides product description requirements, additional requirements which tenderers must meet are enlisted below:

−   Preliminary form of tender

−   Tax clearance certificate

−   Presentation of guarantee provisions

−   Report in writing, describing the supply of spares for the life of the appliance

−   Training staff information

−   Fully detailed drawings of specific parts of the vehicle

−   Provision of handbooks on the functioning of the equipment

The above requirements for forming tenders under case study 4 have been grouped and assessed in order to draw high-level conclusions, as summarised in **Table 31.**

Requirement for information to be included in tenders	Assessment of requirement (for including the respective information in an eCatalogue prospectus)
Requirements of proof documents (including): - Tax clearance certificates: as described in Table 26 - Preliminary form of tender: as described in Table 26	As described in Table 26, these documents currently cannot be included in eCatalogues, as they need to be submitted in hard-copy.
Guarantee provisions: Tenderers must include in their tenders and describe all guarantee provisions for the vehicle parts and all associated equipment. Full guarantee should be provided for faulty materials, workmanship and all other related aspects. In addition, a report for spares supply for the whole lifecycle of the appliance is required.	Guarantee provisions could be integrated in eCatalogue prospectuses and in addition certain guarantee types might be standardised. However, in case justifications are required or scenario analysis depending on different cases, eCatalogues can not cover this topic. Still, this information could be integrated in eCatalogues as attached document. The report relating to the supply of spares for the whole life of the vehicle can only be included in eCatalogues as an attachment.
Training staff information: Tenderers should include in the cost of the appliance, a one day visit by a qualified instructor for training Brigade staff in the complete use of the appliance, its fittings, including mast, winch, etc.	In this case, training on the use of the appliance (as part of the vehicle) is not considered as a separate service with specific cost but suppliers must incorporate it in the cost of the appliance. In this way, the cost could be incorporated in an eCatalogue, however if details are needed on what exactly the instructor will include in the training course and other information, then descriptive documents can not be avoided, but could also be integrated in an eCatalogue as an attached document. This raises the issue of incorporating the description of "heterogeneous information types" with the same eCatalogue prospectus, as discussed in "Tenders may contain heterogeneous content, rendering the use of spreadsheets unsuitable" in section 7.4.
Detailed drawings describing specific parts of the vehicle: The contracting authority requires tenderers to present and accompany their tenders with detailed drawings of specific parts of the vehicle, such as the chassis and body showing all body and locker dimensions.	Drawings serve for depicting the functionality of specific parts as well as previewing the architecture of these parts. Such drawings could be included in eCatalogues as attached documents, however there cannot be any standardisation of eCatalogues to achieve their automated treatment
Provision of handbooks on the functioning of the equipment: This information covers service and functionality of the vehicle and equipment, detailed repair manuals, spare parts list and operating instructions for specific aspects of the appliance such as chassis, lighting mast, anti-lock braking, engine and gearbox, ladder gantries, winch, ASR traction control, etc.	In case of complex products, handbooks may be required as part of the offer in order for contracting authorities to assess the suitability and usability of the equipment as well as to compare between different proposed equipments. This type of additional information needs documentation as they include information on the functioning of the equipment covering many aspects. In this way they could not be incorporated in eCatalogues, unless they are integrated as attached documents.

Table 31: Case study 4 - High-level findings

7.3.5   Case Study 5: Construction of Playground (works and products)

This case study concerns the procurement of a works project, which entails the design, supply of parts, installation and maintenance of a playground along with surfacing formulation. ToR specifies in full detail all project specifications, requiring descriptive responses from the tenderers, as well as a preliminary model of the intended work. In addition, indicative tables for incorporating in tenders equipment schedule and financial details are provided.

Besides specifications for the parts and services description, additional requirements defined by the contracting authority are enlisted below:

- Preliminary tender form
- Tender accompanied by a 1:200 scale plan and model showing the detailed layout of the finished construction
- Schedule of parts used in the construction (included in specific form)
- Assembly and installation instructions
- Manufacturer's recommendations for the maintenance of the equipment where appropriate
- Information on post-installation inspection
- Project plan
- Detailed descriptive response in both hard-soft copy

The above requirements for forming tenders under case study 4 have been grouped and assessed in order to draw high-level conclusions, as summarised in **Table 32.**

Requirement for information to be included in tenders	Assessment of requirement (for including the respective information in an eCatalogue prospectus)
Requirements of proof documents (including): - Preliminary form of tender: as described in Table 26	As described in Table 26, this document currently cannot be included in eCatalogues, as it needs to be submitted in hard-copy.
Plan and model of the construction: Tender should be accompanied by a 1:200 scale plan and a model maquette, showing in detail the layout of the finished construction	When a call for tenders regards complex projects where construction is also included, model maquettes are commonly required as a part of the tender response. Models can serve the award decision as they provide a view on design plans for works contracts. This requirement cannot be fulfilled in the context of an eCatalogue (or any type of electronic submission).
Instructions on installation and assembly along with schedule of parts: The construction comprises many parts and the contracting authority requires installation and assembly manuals to be included within the tender response.	In the case of complex products, handbooks may be required as part of the offer in order for contracting authorities to assess the suitability and usability of the equipment as well as to compare between different proposed equipments. Although the schedule of parts can be included in eCatalogues, the instructions on installation and assembly are descriptive, free-text documents which can only be included as attached documents.
Information and requirements on maintenance and post-installation inspections: In case the parts of the construction need maintenance, suppliers must include all relative information on maintenance requirements and recommendations in their response.	Details on post-installation inspections must be provided to ensure safety of the construction, while details on maintenance procedures must also be included in the offers. This information cannot be part of eCatalogues, unless included as attached documents.
Project Plan: A document used to define both project execution and project control. The primary uses of the project plan are to document planning assumptions and decisions, facilitating communication between the contracting authority and the suppliers.	These documents are necessary for project planning, especially for contracts related to works and complex services. They comprise descriptive, free-text documents which can only be included in eCatalogues as attachments.

Table 32: Case study 5 - High-level findings

7.4   *Observations and conclusions on eCatalogue content*

Based on the analysis above, a number of observations and conclusions can be drawn on the use of eCatalogues in public procurement. Particular attention was given to requirements regarding product description (Phase 1 of the content analysis) as well as to necessary additional requirements (beyond minimum product description) (Phase 2 of the content analysis).

Table 33 presents an overview of the analysis of content requirements, including the main objectives of the two phases, the main sources and the main findings for the analysis.

Objective	Analysis based on	Main findings
Phase 1: Focus on ICT sector		

Focus on analysing requirements and practices for product description
 	
– Identify attributes used by buyers to describe their requirements
 	
– Identify the attributes used by suppliers in existing wholesale/professional eCatalogues, and assess whether the available information is in principle adequate for public procurement requirements
 	
– Compare the product attributes required in public calls against the respective attributes available in a classification scheme
	– Indicative public calls for tenders within the ICT sector:
	  o content requirements included in ToRs
	  o other requirements relevant to eCatalogues
	
	– Indicative tenders, including existing wholesale professional eCatalogues
	
	– Existing product description and classification schemes
		– Currently tenders comprise a number of documents, and eCatalogue prospectuses are viewed only as a small part of them. The emphasis seems to be on free-text documents and references to manuals/technical specifications of products
		
		– Existing product classification and description schemes could cover the majority of the needs of an authority for specifying the attributes used to describe products within eCatalogues prospectuses
		
		– Specifications for product descriptions do not follow existing classification / description schemes
		
		– Both buyers and suppliers must perform significant manual work, the former for creating the ToR and the latter for transforming their existing eCatalogues to the required format
		
		– Information in existing wholesale eCatalogue prospectuses would seem adequate for tendering in public procurement. However, significant work is necessary for eCatalogue transformation.

Phase 2: Focus on additional industries		
Verify the correctness of the findings of phase 1, based on additional public calls for tenders and industries: – Identify additional requirements, not related to eCatalogue content (i.e. not related to how products should be described in eCatalogues) – Assess whether observed requirements can potentially be met or integrated within eCatalogue prospectuses (i.e. identify standardisation	Indicative public calls for tenders related to the procurement of products, services and works from various industries: – Case study 1, procuring Renal Replacement Therapy equipment – Case study 2, procuring footwear – Case study 3, procuring pharmaceutical refrigerators – Case study 4, procuring fire-fighting vehicles – Case study 5, procuring	– In all cases the content of ToRs and (at large) the expected form of tenders is the same for all public calls for tenders – The analysis confirms the findings of phase 1, related to the content of ToRs and the content of tenders – All public calls for tenders require from suppliers to complete and sign/stamp the "form of tender", constituting a binding statement of the tenderer that s/he has the

needs)	equipment and construction works for a playground	ability/capacity to perform the contract. This statement cannot currently be included in an eCatalogue (see conclusion on "proof documents" below)
		– Many requirements fall under the scope of "proof documents", such as tax clearance certificates, declaration documents, statements of assurance, etc. These documents must today be submitted in hard-copy, as their legal validity cannot be ensured otherwise. Hence an eCatalogue could be submitted without "proof documents" and contain references to these documents. In the future it is expected that proof documents may be submitted electronically
		– A number of calls require physical samples of offerings (e.g. case study 2 "footwear" or case study 5 "model maquette"), which cannot be included in eCatalogues (or in electronic tenders in general)
		– A number of items required in tenders would need the extension of existing standards in order to be incorporated in eCatalogues, e.g. insurance and liability statements, questionnaires and training plans
		– Topics that require necessarily extensive analysis, such as previous experience reports, handbooks, environmental analysis reports, case analysis report, etc. can be integrated in eCatalogues only as attachments.

Table 33: Objectives and main findings of the content analysis

Based on the analysis on the content of eCatalogues, a series of preliminary observations and conclusions can be further analysed and discussed.

– <u>Wholesale professional eCatalogue prospectuses contain adequate information for tendering in the public sector:</u> Based on the findings of the example of section 7.2.2, suppliers' existing wholesale professional eCatalogue prospectuses appear to contain adequate information for tendering in public sector calls for tenders. In the aforementioned example, the contracting authority requires the offered ICT server to be described using 17 attributes. The investigated wholesale professional eCatalogues are not only adequate to respond to these 17 attributes, but also contain additional attributes to further describe the server.

However, it is immediately obvious that the formats used by the contracting authority and the suppliers are completely different, thus imposing limitations for automated processing. In particular, the names of attributes used by the contracting authority are different to the names used by suppliers. For instance, the contracting authority uses the attribute "Network card", while one supplier names this field as "Network interface card" and another as "Network". In addition, the values entered by suppliers in attributes may also limit the possibilities for automated processing. For instance, the values entered at the "Network card" attribute are completely different for the two suppliers, one describing technologies and added-value services, while the other only describes the speed of communication supported by the network card.

In short, although the level of information currently available in wholesale professional eCatalogue prospectuses appears to be adequate for tendering in the public sector, the format requested by contracting authorities limits the possibilities for automated processing. This is even more apparent when free-text values to eCatalogue attributes are requested (i.e. suppliers are not provided with a finite list of values to select for a particular attribute). In contrast, automated processing could be performed in a number of attributes, requiring a yes/no answer or a numerical answer (for instance the "number of processors" attribute and the "Support for RAID 1 and RAID 5" attribute). The adoption of suitable product classification and description schemes, to standardise the attributes for describing products, their names and their potential values could significantly assist towards establishing a more suitable environment for automated processing.

– <u>Tenders must include more than just product/service descriptions:</u> The response to a call for tenders usually contains significantly more information than only describing the products/services offered. Even in calls where simple products are required, still there is a need for eCatalogues to contain more details than just describing the offered products. For instance, a typical tender contains information on the supplier competencies, previous projects and experience, ISO certifications, etc. Such information is not commonly available in existing wholesale professional eCatalogue prospectuses, while relevant standards are not usually fit for this type of information.

Efforts should be dedicated to standardising further all these attributes, along with their parameters so that they can be included in eCatalogue prospectuses. However, in case such topics require further descriptive case analysis or presentation of information, additional documents are needed to accompany the tender. Such additional documents could be included in eCatalogue prospectuses as attachments; however this approach does not allow their automated processing.

Following the analysis performed in the context of the current study, several common requirements for such additional information to be included in tenders can already be identified. A more targeted analysis, in the context of a new initiative, could be undertaken towards identifying further common requirements for tenders, which could then form input for standardising eCatalogue prospectuses for use in public procurement. Extensions to eCatalogue standards could foresee the inclusion of such additional information either within new specific eCatalogue attributes, or through the attachment of free-text documents. The already identified requirements for additional information (other than those strictly related to the description of offered products/services) are enlisted below:

- o Case analysis
- o Company profile form
- o Declaration documents
- o Documents indicating any discounts
- o Environmental statement
- o Fully detailed drawings, scale plans/model
- o Handbooks, manuals, assembly and installation instructions
- o Insurance form
- o Maintenance questionnaire and/or plans
- o Reference to previous experience
- o Description of the supply of spares
- o Preliminary tender form
- o Presentation of guarantee provisions
- o Project plan
- o Statement for assurance
- o Submission of samples
- o Tax clearance certificates
- o Training staff information

Furthermore, in some cases it is observed that parts of a tender must be submitted in non-electronic form, for instance model maquettes and samples of products to be procured. Obviously, these requirements cannot be accommodated in eCatalogues (or any other form of electronic submission).

– The current manner in which needs are described in ToRs is not suitable to be met by tenders in the form of eCatalogues: Considering the content of terms of references for public calls, it is identified that these free-text documents describe primarily needs and not product/service specifications. In cases where product/service specifications are included, these usually take the form of "minimum characteristics"; still these represent only a small part of the complete ToR specifications, which focus on needs.

Despite the obvious benefits of describing needs rather than specifications, this approach creates difficulties for suppliers to respond in the form of eCatalogue prospectuses. Electronic catalogues are suitable tools for accurately describing products and services. In this sense, regarding the current setting, eCatalogues do not constitute the most suitable tool for suppliers to create their tenders with. Contracting authorities should focus more on describing needs and requirements in a form which is suitable for respective responses to be in eCatalogue format. For example, in cases where contracting authorities describe their "minimum characteristics" in eCatalogue format, suppliers should be able to respond also in eCatalogue format.

Nevertheless, there is currently a significant amount of requirements, for which eCatalogues are not suitable. Apart from the requirements identified above (see "Tenders must include more than just product/service descriptions"), there may be additional requirements specific to the nature of the procurement. For instance, considering again the case of procuring an ICT server, suppliers would have to include in their tenders a lot more information than just describing the ICT equipment to be sold. In particular, a contracting authority, when procuring ICT hardware, would for example require this hardware to be suitable for / compliant with its existing ICT infrastructure. Using an eCatalogue prospectus, suppliers are capable to fully describe the ICT equipment to be offered to the contracting authority in response to the call. However, they cannot easily describe in an eCatalogue format the suitability of the equipment in relation to the existing infrastructure. Including this information in a tender would seem to be possible only in additional descriptive documents, as attachments to an eCatalogue prospectus.

To conclude, although the structure and content of ToRs does not need to be entirely standardised (leaving room to contracting authorities to describe their specific needs) the presentation of requirements should be done in such a manner as to be suitable for responses to take the form of eCatalogue prospectuses.

– Common use of requirements matrix and financial offer forms in ToRs: The majority of the investigated calls for tenders contained a requirements matrix, summarising all requirements described in the ToRs. These matrixes resemble a simple catalogue and form a tool for a supplier to quickly review all requirements of the call. In addition, it serves the purpose of allowing suppliers to self-evaluate their offers against the complete list of requirements.

Furthermore, it is common for ToRs to contain the forms to be completed by suppliers for creating their financial offers. Similarly to the requirements matrix, these forms also resemble simple catalogues, presenting in different columns the various types of costs, as well as, VAT costs, delivery costs, etc.

For calls which specify forms for requirements matrixes and financial offers, some form of automated evaluation could possibly be achieved. Based on these types of forms, contracting authorities could automatically process the number of requirements a supplier meets by his/her offer (based on self-evaluation), as well as, perform a full financial evaluation of a tender. Obviously, this approach does not use a full eCatalogue prospectus and only allows providing some aspects of a tender in tabular format. The creation and completion of the requirement matrix and form for the financial offer still requires manual work, while they do not contain detailed description of products and services offered by the tender. Nevertheless this example shows that advancements in the use of eCatalogues could benefit public procurement due to the possibilities offered by automated processing.

– Proof documents are required in hard-copy: A core part of a tender consists of the set of administrative documents, certifications and declarations that a supplier has to present in order to show that he/she meets the conditions for participation in a public call, referred to here as "proof documents". At this stage, suppliers must usually submit their proof documents to contracting authorities in hard-copy, as their electronic version does not have legal validity, due to current legal, organisational and technical limitations in the field. However, eCatalogue prospectuses could be submitted without those proof documents (which could be submitted separately) without affecting their functionality and usability. In addition, eCatalogue prospectuses could contain references to these documents, functioning as a "table of contents", enlisting the proof documents submitted on paper.

The obvious way forward would be to enable the electronic submission of proof documents. First steps towards achieving this goal are currently under review by the European Commission, e.g. a feasibility study on the electronic provision of certificates and attestations usually required in public procurement procedures[18].

Once a suitable legal, organisational and technical environment for the electronic submission of proof documents across Europe is established, electronic catalogues could potentially constitute full and autonomous tenders. Until that moment, it is likely that eCatalogues may only form parts of a tender.

–   <u>When defining minimum specifications for products/services to be procured, contracting authorities use tailor-made attributes:</u> When procuring products/services, contracting authorities occasionally describe the minimum set of specification through the use of attributes. In turn, the same attributes (and possibly more) are used by suppliers to describe their offered products/services.

The analysis confirms that the attributes used in public calls for tenders comprise a custom-made set, defined by the contracting authority for the specific needs of the call. This way, contracting authorities in effect impose to suppliers the exact attributes by which they should describe their offered products/services; this effectively renders any eCatalogue prospectuses used for tendering "buyer-defined". It is identified that this results in overheads to suppliers, as they must transform information from their existing eCatalogue prospectuses to the format imposed by the contracting authority. Additionally, some attributes defined by contracting authorities may not be clear to suppliers, or the information requested may not be available to them, generating even more complexities.

As shown in section 7.2.2, contracting authorities, instead of defining custom sets of product attributes, could also adopt a suitable product description and classification scheme. As in the example of section 7.2.2, the product attributes available by the eCl@ss scheme for describing an ICT server are very granular and could satisfy the majority of product attribute requirements of the public purchaser. Contracting authorities could base their requirements on such classification schemes, and only define custom-made attributes for aspects of the products to be procured that are not covered by the schemes (e.g. the "L3 Cache memory" attribute of **Table 23**). This approach might be a first step towards prompting suppliers to create their eCatalogue prospectuses in line with an advanced product description and classification scheme, which would then render their prospectuses suitable for re-use.

–   <u>Tenders may contain heterogeneous content, rendering the use of spreadsheets unsuitable:</u> An eCatalogue forming a tender may be used for describing different types of both products and services. In the example of section 7.2.2, the examined indicative call for tenders requires the procurement of ICT services for software implementation, maintenance, and training, as well as, the procurement of different ICT products (i.e. ICT servers and professional scanners). It is obvious that to adequately describe the offered products/services in an eCatalogue prospectus, different product/service attributes must be used. For instance, the description of an ICT server can be performed through the attributes "processor type" and "number of hard disks", while a professional scanner can be described by attributes such as "resolution" and "document feeder".

The common practice in EU Member States of authorising the use of eCatalogue prospectuses in the form of spreadsheet files is not suitable for describing heterogeneous products/services, as each row (i.e. product) in a spreadsheet file can only be described using a pre-defined and common set of columns (i.e. attributes). For this reason, an eCatalogue prospectus in spreadsheet form cannot describe in an effective way products/services of different types. The readability and search-ability of items included in such eCatalogues are limited.

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[18] Study by DG Internal Market and Services, which seeks to examine the possibilities for developing the electronic supply of business information and certificates that would be usable and acceptable, across borders, in public procurement in the EU Member States.

In cases where eCatalogue prospectuses are created using XML, the limitations apparent in spreadsheets do not apply. An eCatalogue in XML format can have all types of products/services, and each type to contain specific set of attributes for the description of the product/service. It is therefore recommended for contracting authorities to evolve from the use of eCatalogue prospectuses in spreadsheet format, and instead adopt more suitable technologies (such as XML).

–   <u>Evaluation of tenders in two phases:</u> In some EU Member States it is mandated (or common practice) that the evaluation of tenders should be performed in two phases; one for the technical evaluation of the tenders and one for the financial evaluation. In such cases, access by authorised personnel to the technical and financial information included in eCatalogue prospectuses should be possible only when certain conditions are met (e.g. financial information is accessible only after the technical evaluation is complete). This can be achieved either through the encryption of technical and financial information using different encryption/decryption keys. Alternatively, the technical and financial offers could be physically separated into two different documents (in eCatalogue format) which reference one another.

–   <u>Terms of References are descriptive documents:</u> Today, terms of reference, describing the needs and requirements for a public call for tenders are descriptive and detailed free-text documents. Contracting authorities need to present all necessary information to suppliers for tendering, including the description of the subject for the call, conditions for participation, awarding criteria and detailed needs. All this information is a necessary resource for suppliers, in order to ensure their successful participation in the competition and execution of the contract. (For a detailed list of topics commonly included in ToRs see section 7.2.1.)

Due to this descriptive free-text character, the creation of ToRs for public calls requires considerable manual work from the contracting authority. In parallel, also due to this descriptive, customised character of ToRs, suppliers also need to dedicate significant effort to understand and appropriately respond to ToRs.

However, at large ToRs contain similar information to describe in full the terms and conditions for participation as well as the parameters and objectives for executing the contract. In this respect, there could be an effort to standardise more the content of ToRs, in particular when simple products are procured. Such effort would simplify the work to be done by contracting authorities for creating ToRs, and enhance the readability of such documents.

8 Interoperability and standardisation of eCatalogue prospectuses

In order to develop a suitable eCatalogue environment in public procurement, interoperability is probably the most important aspect to consider. Chapter 5 and Annex I draw a picture of the current state of play as regards the use of eCatalogue prospectuses in the investigated European countries. At present, standards are not yet widely used for forming and exchanging eCatalogue prospectuses. At large, each contracting authority defines tailor-made eCatalogue prospectus specifications, which suppliers must abide by, in order to take part in their calls for tenders. This approach imposes interoperability limitations for the use of eCatalogues, and prevents full exploitation of the potential benefits eCatalogues can offer (see chapter 4).

In addition, eCatalogue prospectuses are currently transmitted through the use of electronic means which do not always meet all the requirements of the EU Directives (see section 2.2), if used during pre-award phases. For instance, in most investigated systems, there are no appropriate measures to ensure the confidentiality and traceability of transmitted prospectuses. This is primarily caused by the lack of a suitable technical framework to accommodate the secure exchange and storage of eCatalogue prospectuses.

The main drawbacks in the current use of eCatalogue prospectuses include:

– Suppliers need to create eCatalogue prospectuses in different formats for each call for competition, although the required contents are often similar. This means that they must dedicate significant resources to creating tenders in the form of eCatalogue prospectuses for each different call. This in turn prevents greater use of eCatalogues, which means foregoing the benefits of more efficient public competitions.

– Tailor-made eCatalogue prospectuses, created for public competitions under the current practice, very often do not meet the quality standards envisaged by buyers. Contracting authorities therefore routinely verify the quality of received eCatalogue prospectuses and frequently alter the information contained in them in order to improve subsequent automated processing. This practice, apart from generating a substantial workload for contracting authorities, would seem contrary to the EU Directives, especially if applied to the initial submission of tenders. eCatalogue prospectuses should be treated as binding offers, whose content has to be entirely confidential until the opening date, and, afterwards, accessible to authorised personnel only.

– The variety of product classification schemes currently in use in both the private and the public sector creates interoperability gaps for electronic prospectuses.

It is widely recognised that standardisation is the only way forward in order to surmount the above limitations, in particular with a view to cross-border transactions. This would imply the use of common, industry-wide standards, defining the content and format of eCatalogue prospectuses, as well as, their exchange / transmission procedures. Currently, when eCatalogue prospectuses are used to form offers, they are fully defined and custom-made according to specific needs of the contracting authority and of the tender subject. In this direction, and in order to move towards a more interoperable environment for the use of eCatalogues in public procurement, a two-phased evolution scenario is identified (see section 2.2 of [FReq]). In the first phase (Evolution Phase I), buyer-defined eCatalogues would give place to supplier-defined eCatalogues, while in the second phase (Evolution Phase II), eCatalogue prospectuses would be created based on suitable and widely adopted standards. The second evolution phase represents the optimum use of eCatalogues in public procurement, where interoperability is achieved, eliminating thus the need to create tailor-made eCatalogue prospectuses. Aspects on the standardisation of processes, messages and content of eCatalogue prospectuses are discussed in detail in [SIR].

8.1 Defining interoperable eCatalogue prospectuses

Interoperability is one of the non-functional requirements explicitly prescribed by the EU Directives on public procurement. As analysed in [Explanatory document], interoperability describes the capability of ICT systems to exchange information in a satisfactory and effective manner. Thus, any tools used by suppliers to participate in eProcurement must be able to function and to interact with commonly used equipment and applications. Section 2.2 outlines the rules and requirements an eProcurement system must feature in order to be interoperable. Solutions that render suppliers' access to systems impossible or discourage their participation due to additional difficulties or increased costs, are deemed to be non-interoperable. According to the European Interoperability Framework (EIF)[19], interoperability can be divided into three levels:

- Organisational Interoperability: Concerns organisational processes, such as business goals definition, business processes modelling, etc. Moreover, organisational interoperability aims at addressing the requirements of the user community by making services available, easily identifiable, accessible and user-oriented.

- Semantic Interoperability: Aims at ensuring that the precise meaning of exchanged information is understandable by any other application that was not initially developed for this purpose. It attempts to ensure that one system can not only transmit information to another, but also be certain that the other system appropriately understands the transmitted information.

- Technical Interoperability: Covers technical issues of linking computer systems and services; in addition, it includes key aspects such as open application interfaces enabling the interaction between different systems, interconnection services, data integration, accessibility and security services.

In order to illustrate the importance of operating in an interoperable environment using eCatalogue prospectuses, **Figure 8** presents a case of three trading partners, who face typical problems experienced by the lack of interoperability. As discussed in [SIR], standardisation of processes, messages and content of eCatalogues is the way forward to resolve current interoperability issues, which can be achieved through the use of industry-wide standards.

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[19] EIF is the result of an extensive consultation process within the European Commission and the Member States, thus representing the highest ranking module for the implementation of European eGovernment services, which addresses information content and recommends technical policies and specifications to help connect public administration information systems across the EU for supporting G-2-G, B-2-G and C-2-G services.

	– A supplier sells his products. His main customers are Buyer 1 (40% of total sales) and Buyer 2 (30% of total sales).
	– Buyer 1 implements an eProcurement system based on the use of eCatalogues and requests from its Supplier to render his system compliant in order to cooperate effectively using electronic means.
	– The Supplier must either implement his systems accordingly, or face the possibility of losing business with Buyer 1. – Implementation requires significant costs. Nevertheless, Buyer 1 represents 40% of the Supplier's total sales, so such an investment is justified. – In parallel, the Supplier continues to cooperate with his second biggest buyer (Buyer 2) using still manual operations.
	– Buyer 2, identifying the advantages of electronic commerce and automated operations, decides to also implement an eProcurement system based on eCatalogues. – However, the specifications for forming eCatalogues for the newly implemented system of Buyer 2 are totally different to those of Buyer 1.
	– Consequently, the Supplier now faces an even more difficult choice than before. – On the one hand, not implementing the new system potentially means losing 30% of his business. On the other hand, the necessary investment for implementing new software and concurrently maintaining two systems is not affordable. – But what if the eCatalogue specification of the two Buyer systems were the same? In this case, the Supplier could maintain this business and potentially work with even more Buyers. In addition, Buyer 1 and Buyer 2 could also easily conduct business between each other if such needs arose.

Figure 8: Issue of interoperability

The private sector remains the pioneer for achieving interoperability of ICT systems to meet market needs. In this way, many standards concerning eCatalogue exchange and content as well product description and classification schemes have already been developed and implemented for several industry sectors. Despite such efforts however, markets are still fragmented, as they are dependant upon sector-specific applications. The same problems are also faced in procurement in the public sector.

To further appreciate the importance of interoperability, it is interesting to consider a number of findings of [CEN.15045]. The analysis for this report considers input from 251 enterprises from all industry sectors and organisation types in the EU. A very important conclusion is that over 85% of enterprises use more than two eCatalogue formats to accommodate their internal needs. This immediately imposes additional overheads for the use and management of the different eCatalogue formats. Another interesting finding is that 80% of the investigated companies use proprietary (tailor-made) formats for their eCatalogues, while the 20% that abide to standards use more than 22 different standards, also increasing the interoperability gap of eCatalogues. Based on the above, as well as, numerous other findings of the report, it is clear that there is a need to standardise the specifications for the format and exchange of eCatalogues in order to achieve their interoperable use. This is also recognised by the findings of the [CEN.15045] report, where 68% of the investigated companies believe that there is an important need for eCatalogue standardisation.

8.2 Standardisation bodies involved in the establishment of eCatalogue standards

Three standardisation bodies / fora have started initiatives for developing and maintaining common standards for eCatalogue prospectuses in public procurement: OASIS, UN/CEFACT and CEN/ISSS. Their objective is to establish suitable standards for the creation and exchange of business documents and eCatalogues in particular, which also accommodate the needs of public procurement. Current efforts focus on converging existing eCatalogue exchange standards into a single standard, and on providing assistance to interested parties for the practical use of these standards. In parallel, standardisation bodies work on improving existing product classification schemes.

The main available standards for forming and exchanging eCatalogue prospectuses comprise UBL 2.0 (an official standard of OASIS) and c-Catalogue (currently under development by UN/CEFACT). Both define business processes, messages and information entities for the use of eCatalogue prospectuses, primarily in support of the post-award phases of procurement procedures. The aforementioned standards are discussed in section 8.3, while a summary of the three main relevant standardisation bodies is presented below:

  – Organisation for the Advancement of Structured Information Standards (OASIS) is a non-profit international consortium, bringing together various enterprises and industry players, aiming at the establishment and adoption of open standards in the eBusiness domain. OASIS has dedicated significant effort to the standardisation of eBusiness documents exchange. Specifically, it developed, with the cooperation of UN/CEFACT, the electronic business Extensible Markup Language (ebXML) for the electronic exchange of interoperable business documents, followed by the Universal Business Language (UBL). UBL provides a standard set of business documents for the exchange of catalogue information between trading partners, i.e defining business processes and messages for eCatalogue prospectuses. The UBL 2.0 has undergone three public reviews and in December 2006 was approved as an official OASIS standard.

  – The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) is part of the United Nations Economic Commission for Europe (UN/ECE). Its objective is to develop and promote international trade standards for the effective use of electronic business transactions. UN/CEFACT has developed several standards, available in the form of business and technical specifications, for the interoperable exchange of business information. Specifically, it has issued the United Nations rules for EDI For Administration, Commerce and Transport framework (UN/EDIFACT), and the ebXML framework; the latter in collaboration with OASIS. Most recently, it developed the Business Requirements Specification (BRS) for cross-industry eCatalogue prospectuses, which defines processes and messages. Other activities of UN/CEFACT comprise the development of the PRICAT (Price/Sales

Catalogue) and the PRODAT (Product Data) business messages for the exchange of catalogue information.

– The Comité Européen de Normalisation (CEN) / European Committee for Standardisation (CEN) is a non-profit organisation established by the European Economic Community and European Free Trade Association (EFTA) countries. CEN is a multi-sector organisation and serves different business domains in different ways. At present CEN contributes to the objectives of the EU and EEA with voluntary technical standards. CEN established the Information Society Standardisation System (ISSS) which focuses on standardisation services and products in the ICT domain, including eProcurement. CEN/ISSS cooperates with UN/CEFACT on the promotion of the ebXML framework and the BRS for the development of cross-industry eCatalogue prospectuses. Furthermore, it organises workshops that focus - among others - on the identification of standardisation needs and gaps in eCataloguing and product description and classification schemes.

8.3 Standards for eCatalogue formats and transmission: UBL and c-Catalogue

8.3.1 UBL and c-Catalogue

Two trading partners, in order to collaborate and transact, follow specific business processes and exchange specific information. The majority of business processes followed for the collaboration of all companies is similar, hence common business process patterns can be identified. Business process patterns are models of business activities, which are general, adaptable and can be applied to the collaboration of many companies. Likewise, there are information patterns contained in business documents, which are used to support business processes.

Standards harmonise business and information patterns through the definition of processes and information documents, by which companies can cooperate using electronic means. The two most prominent initiatives for the standardisation of the above for the context of public procurement are Universal Business Language (UBL) and c-Catalogue. Specifically, UBL is an approved standard (currently in version 2.0) developed by OASIS, while c-Catalogue is a standard initiated by the eBES working group of CEN/ISSS and is currently under development by UN/CEFACT.

The focus of both standards is mainly on processes and on the information structure of messages (i.e. in which format and when data should be exchanged) and less on how products are described within an eCatalogue (i.e. what attributes eCatalogues should contain). Furthermore, both standards concentrate on supporting post-award needs, such as eOrdering and eInvoicing. Thus, they provide support for different organisation which have "agreed to cooperate" e.g. within a Framework Agreement. The term "agreeing on cooperation" can be interpreted as technical cooperation (e.g. what eCatalogues should contain, how information is transmitted, how information should be interpreted by both parties, etc.), as well as procedural cooperation (e.g. when should communication take place, under what conditions, what should be done before and after a particular event takes place, etc.). Therefore, these standards currently offer only limited support for the pre-award phases of public procurement, i.e. initial tendering, where different competing parties perform various (electronic) transactions prior to agreeing on cooperation, in a decentralised way and with limited possibilities for information exchange.

Figure 9 and **Figure 10** give a graphical representation of what the UBL 2.0 and c-Catalogue standards seek to achieve.

Cooperation of trading partners **without** the use of standards (**Figure 9**)

The Originator company needs to transact with Trading Partner 1 and Trading Partner 2. This is achieved by exchanging certain business documents. The Originator has its own business information, upon which his particular business processes are run, leading to the creation of business documents. Depending on the Trading Partner, and the rules upon which business is conducted, different business documents and transmission methods must be followed. Hence, the Originator must generate Business Document 1 for Trading Partner 1 and transmit it in a certain way and Business Document 2 for Trading Partner 2 also to be transmitted in the agreed manner. The receiving ends must process the received business documents accordingly in order to complete the transaction.

As is clear, all three parties have their own business information and processes. To achieve cooperation, the Originator company has established a working framework with Trading Partner 1 upon which business documents can be exchanged (and hence transactions be completed), and a different framework with Trading Partner 2.

The agreed cooperation framework between the Originator and Trading Partner 1 relates to:

- the business documents exchanged must be equally understandable by both parties (i.e. semantic information in business documents is clear to both parties)

- both parties are aware under what conditions a certain business document must be exchanged (i.e. when, why, who, how, what information it contains, what are the pre-conditions, what are the results of exchanging the document, etc.).

However, the Originator must maintain a different working framework with Trading Partner 2, as different business documents and processes have been adopted for their cooperation. This obviously leads to inefficiencies and increased costs.
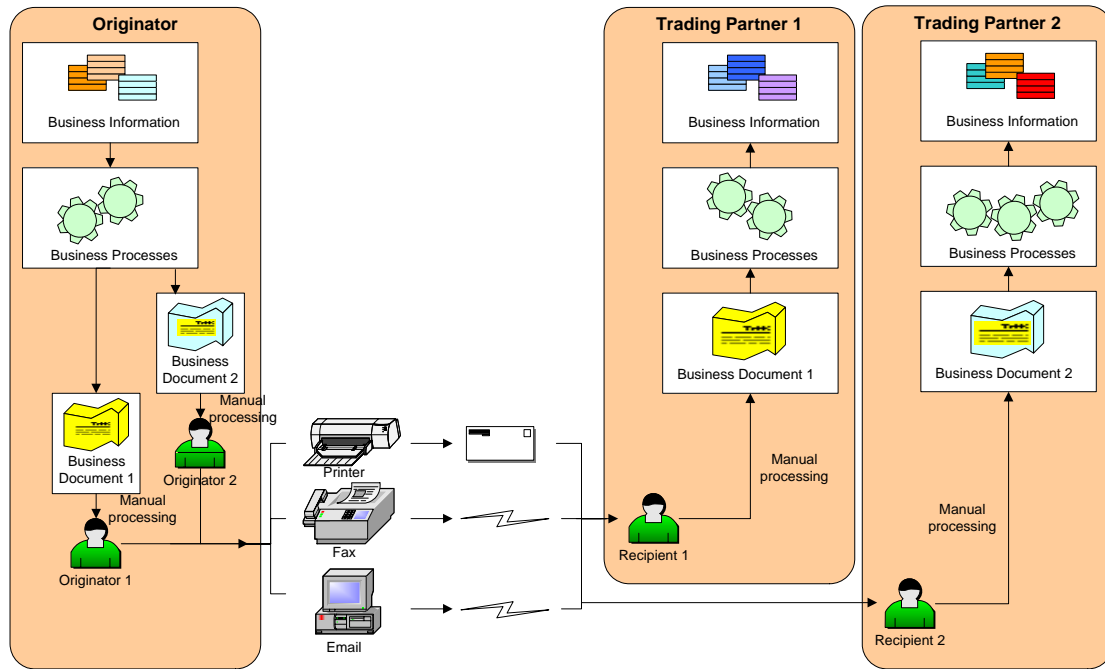
Figure 9: Cooperation of trading partners without the use of standards

<u>Cooperation of trading partners **with** the use of standards (**Figure 10**)</u>

Under this approach, a well-defined set of processes and business documents is available based on standards (UBL 2.0 or c-Catalogue) defined by Standardisation Bodies (OASIS, UN/CEFACT, CEN/ISSS). The standards accommodate the majority of needs of any trading partner, as the needs of different industry segments were intensely studied and analysed. The three companies can now minimise manual work by using standardised processes and business documents for their cooperation. Based on such a scenario, the three trading partners can seize opportunities for more automation, as they can now conduct business using the same cooperation framework. As shown in **Figure 10**, the UBL and c-Catalogue standards provide a solution for the cooperation of different business partners without however imposing specific internal business processes and practices.
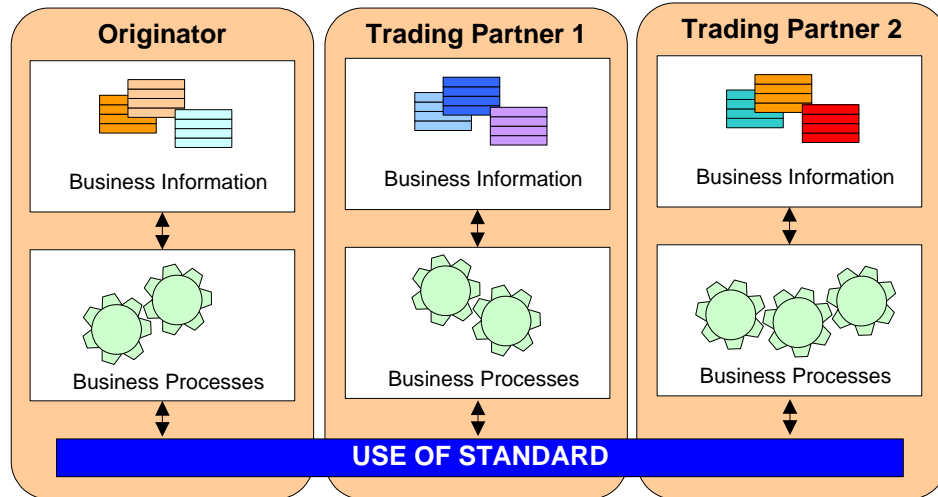
Figure 10: Cooperation of trading partners using standards

Below, a summary of each standard is provided:

– Universal Business Language (UBL): UBL constitutes a standard XML vocabulary for business documents, the implementation of which is based on the ebXML Core Components Technical Specification (CCTS) v2.01. The XML vocabulary incorporates XML-based business documents (e.g. purchase orders, invoices) from different XML libraries (e.g. cXML, xCBL) and industry sectors into a central repository. In addition to the XML vocabulary, UBL provides XML schemes as well as UML modelling concepts to define the business documents and messages used for information exchange, taking also into account the IDA e-Procurement protocol XML schemes initiative on e-Ordering and e-Invoicing. By identifying and standardising 20 percent of all possible data elements, UBL envisaged to cover about 80 percent of the usage scenarios. Apart from the order-to-invoice document types, UBL standardises code lists (controlled vocabularies), specifications for the development of software components, support for defining taxation requirements and a variety of business documents. Several initiatives support the development and practical use of UBL 2.0 in the EU. In particular, six Northern European countries (Denmark, Finland, Iceland, Norway, Sweden, and the UK) have formed the "Northern European UBL 2.0 Subset Working Group" (NES) for the promotion and use of UBL. The focus of the group is on implementing specific UBL-based ICT solutions for electronic invoicing.

– c-Catalogue: The c-Catalogue project was initiated by the eBES European Expert Group 1 (EEG1) of CEN/ISSS and received a contribution from the IDA e-Procurement protocol XML schemes initiative on e-Ordering and e-Invoicing. The project aims to identify the core components (basic blocks) that describe the structure and the content of a catalogue. It seeks to define globally consistent cataloguing processes, using Universal Modelling Methodology (UMM) and Universal Modelling Language (UML) to create and present supply-chain and eProcurement specifications that can be used worldwide. In May 2006, the UN/CEFACT released the first version of its Business Requirements Specification (BRS), which describes the business processes for how to establish and manage catalogue messages (exchange of catalogue information, catalogue updates, information flow, etc). The BRS also defines processes and specifications for scheduling, shipping, invoicing, remittance, and payment. Currently the BRS version undergoes internal CEN/ISSS validation before being issued as an official BRS of the group. Other groups are working on the establishment of XML schemes describing the processes as well as the structure and the content of a catalogue.

8.3.2   Convergence of UBL and c-Catalogue

The two standards present a series of similarities as they are both based on ebXML core components. This led OASIS and CEN/ISSS to work on their convergence, with the intention to establish a new, harmonised standard that incorporates the best features of both. Extensive work has already been completed for the convergence of eInvoicing processes and messages; it is anticipated that the technical work for complete convergence of the two standards will be achieved by the end of the fourth quarter of 2007 (see also section 6.4 of [SIR]). As mentioned above, both standards (and therefore the anticipated unique standard) focus on the post-award phases of public procurement. The current processes and messages should therefore be evaluated, to identify and where necessary, define those required for initial e-tendering (pre-award). It is anticipated that to support the pre-award phases of public procurement, several existing information models of the two standards can be re-used, saving significant effort.

More importantly still, UBL and c-Catalogue deal with the processes and messages for the *exchange* of eCatalogue data. They do not define/standardise the *content* of eCatalogues and in particular on how to describe products/services. Although most current eCatalogue prospestuses, regardless of their type (i.e. buyer-defined and supplier-defined, wholesale use and retail use) contain similar information, the options for automated processing are minimal, due to the limited use of standards. In order to improve the current setting for the automated processing of Catalogues, specifications for their content should be standardised. Additional effort should therefore be invested in the standardisation of data structures (product attributes). In conclusion, UBL and/or c-Catalogue must be used in conjunction with other complementary standards, which are referred to as product description and classification schemes. These schemes can standardise the content of eCatalogues and particularly the content related to the description of offered products/services (see chapter 7).

8.4   Standards for eCatalogue contents

Diverse and flexible schemes are required for the efficient definition, storage, retrieval, and management of catalogue/product information throughout the eProcurement process. Therefore, specific standardisation activities, apart from those related to standardising eCatalogue messages and exchange format (i.e. UBL and c-Catalogue) are being undertaken for categorising, classifying and describing products.

As discussed in section 7.1, all eCatalogue prospestuses investigated contain a common set of information, referred to as "core data". This core data, although presents the same information on party details, product details, contractual details, etc., it is presented in the various prospestuses in different format, limiting the possibilities for automated processing. This gap can be addressed by the use of product description and classification schemes.

Product description and classification schemes describe products in a standardised manner, referring to a common scheme of product definitions, classes, characteristics and attributes. A product description scheme commonly provides a set of product definitions and a set of attributes that can describe a product, while a product classification scheme provides a common hierarchy of groups and sub-groups of products, categorising them into families of products. The use of product description and classification schemes can offer:

- transactional clarity

- effective communication

- data integration

- interoperability

- reduction of maintenance costs

8.4.1   Product description and classifications schemes

A product description and classification scheme forms the backbone of any eCatalogue and its automated processing, as it allows the succinct, standardised description of intended procurements. Procurement notices advertising public contracts must, according to the EU Directives, use the Common Procurement Vocabulary (CPV) classification scheme[20]. For eCatalogues there are no specific requirements regarding the use of such schemes, hence a number of options are available to eventually complement the use of the CPV.

– CPV: The Common Procurement Vocabulary provides a single classification system to be used in the notification phase of public procurement. The CPV is a unified EU public procurement classification that exists in all official EU languages. It is mainly intended for advertising calls for competition. Thus it offers a main vocabulary for defining the subject of a contract, as well as a supplementary vocabulary allowing adding further qualitative information. The CPV comprises a considerable list of product groups, classes and categories within the classes, which is updated and more detailed in its latest proposed version (not yet publicly issued at the time of writing)[21]. In addition, the latest version of the supplementary vocabulary enlists product characteristics (e.g. purpose of use, construction material, dimensions, lot size, etc.). These characteristics will refer to a specific product type, in order to create a standard set of attributes for each product type. As a result, the CPV in its forthcoming version should be much better suited to manage complex standardised procurement descriptions, including in eCatalogues. Even if the CPV at present does not yet always seem to be adequate on its own for managing electronic catalogues and would therefore need to be complemented by another classification standard, its use has many advantages for public purchasers. The CPV is unique in that it is buyer-oriented, truly multilingual and features an extensive coverage in particular of services. However, up to now the CPV is not widely used in the private sector/B-2-B commerce.

– UNSPSC: The United Nations Standard Products and Services Code is an international, widely-adopted and highly-detailed classification standard. The UNSPSC is an open, global and cross-industry standard, free and available with no use restrictions or fees. It provides codes in 11 languages, which can be easily "localised" (i.e. adjusted to local needs) in any language upon request. It provides a high level of detail (five-level hierarchy). It is easy to customise to accommodate new products and services. In addition, it retains a straightforward naming process to insure consistency of classification. However, its main drawback lies in the fact that it does not support attributes and synonyms for products.

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[20] This applies only for contracts that fall within the scope of the EU Directives on public procurement 2004/17/EC and 2004/18/EC.

[21] It is expected that towards the end of 2007 the European Commission will propose a new Regulation on CPV. According to this new Regulation, the CPV will contain an enhanced Supplementary Vocabulary, which will provide better support for product attributes.

- eCl@ss: The eCl@ss is a supplier driven standard primarily used for specific industry segments. It can be freely used across industry domains, supported by a strong industry community in Europe. It focuses on efficient support of all business processes throughout the entire product lifecycle. It provides a complete product description and classification system, including a well-designed class hierarchy for categorising products (4-level hierarchy, with more than 25,000 classes) and clear multi-lingual textual definitions for the classes. Standard sets of properties allow a detailed description of the categorised products and services. Apart from this, it also enables the description of products through attributes and synonyms. This feature can enhance the search-ability of eCatalogue prospectuses that use this standard. eCl@ss was traditionally focused on heavy industry products, nevertheless, in the recent past, steps have been taken to extend the standard to include commercial products, by creating hierarchies and product attributes for the automobile after-market sector (i.e. high-street products). This extension was performed in collaboration with GS1, the company responsible for the GPC scheme. In addition, eCl@ss provides a complete hierarchy and attributes for services.

- GPC: The Global Product Classification is a global product identification standard which provides a granular hierarchical scheme and rules for the consistent categorisation and identification of products and their consistent mapping between existing internal classification systems. In addition, GPC supports attributes of products, supporting consumer goods. Access to the GPC standard is available without any fees, restrictions, or contractual arrangements. However, it is currently available only in English. The need for localisation and multilingual support of the GPC scheme has been identified and the necessary adjustments and translations are currently in process. In view of covering the complete range of consumer goods, GS1 collaborated with eCl@ss in order to provide a classification and description scheme for the automobile after-market sector.

- NATO Codification code: standard for logistics information exchange, used by several systems including logistics, supply, and procurement systems. It was designed to meet the needs of NATO, with an aim to promote the interoperability both at national and international level. It provides a hierarchical structure comprised of groups and classes. It focuses on the provision of uniform codification in support of standardisation and interoperability within NATO, with the purpose to enhance global military co-operation and military logistics. The default language of NCS is English but it also supports the use of 15 additional languages (French, Czech, Dutch, German, Italian, Polish, Spanish, Hungarian, Bulgarian, Slovak, Slovenian, Korean, Greek, Ukrainian and Finnish). NCS, although it supports an efficient classification structure, it lacks product attributes.

- ECCMA Open Technical Dictionary (eOTD): is a global dictionary for describing individuals, organisations, locations, goods and services. Most of the Item Names and attributes supported by eOTD are defined and translated in seven languages. At large, eOTD is a collection of terms for cataloguing, which averts ambiguity by allowing the creation of standard descriptions. eOTD is the commercial representation of the NATO NCS scheme. It can be used, copied and distributed without a license and in this way any individual or organisation may contribute to its further development. Unlike classification schemes, eOTD does not include a class hierarchy and constitutes a horizontal product description scheme. Despite this, eOTD concepts can be assigned to several external class hierarchies, including eCl@ss, CPV and UNSPSC.

8.4.2   Interoperability of product classification and description schemes

Trading partners have realised the need to cooperate more efficiently by defining products and their properties in the same way. Sub-groups of industry sectors established and use common classification and description languages between them. However, this practice does not ensure interoperability, as many classification and description languages exist only for specific industry segments. Each classification scheme, according to its purpose, presents advantages and disadvantages. Thus, it is recognised that existing customised classification schemes can not fully meet the needs of all industries. It is therefore necessary to increase the interoperability and usability of such schemes to make better use of eCatalogue prospectuses.

Two main scenarios can be envisaged for this:

–   the establishment of one common classification scheme that may be used across all industries and the public sector, or

–   a cross-referencing/mapping of the existing schemes

Both solutions enable suppliers and buyers to conduct business electronically using the "same language" as regards eCatalogue content. However, there are also limitations to both scenarios. In the case of one common scheme, apart from the time required to establish it, significant effort and investment would be required by all stakeholders in order to practically use and adjust to it. Therefore, the recent position of CEN/ISSS ePDC workshop on eCataloguing to create an "optimum" interoperable solution using one single all-purpose classification scheme for both the public and private sectors based on the eCl@ss complemented with GPC, should be thoroughly studied. The choice of a nomenclature standard should be assessed in light of the various related political, economic and legal aspects and incentives.

On the other hand, the creation of mappings is also a complicated task, considering the difficulty to fully understand and map the semantics of the different schemes. For instance, the parent node of one class within one classification scheme may not exist in another scheme. In addition, some classes or items of one scheme may not have a direct map to another. Finally, each new release/version of a scheme requires new mappings to other schemes. However, if there is sufficient demand, emerging market actors might be expected to provide such continuous and customised mapping and updating services.

A detailed presentation of the standards for product classification and description as well as interoperability and mapping issues, is available in the [SIR] report.

9   Conclusion

The new EU Directives 2004/17/EC and 2004/18/EC on public procurement authorise the use of eCatalogues as a new tool for tender submission. Electronic catalogues in this context are defined as "supplier prospectuses", i.e. electronic documents, which are exclusively created and maintained by suppliers and which describe the offered products/services and prices in reply to a specific call for competition. eCatalogue prospectuses may, under certain conditions, form tenders (or parts of them) in a public procurement competition.

Current practice by European public purchasers shows that eCatalogues are interpreted as ICT systems, storing information on supplier products and prices, with the objective to support the management of framework agreements and post-award functionalities, such as eOrdering and eInvoicing. The same approach is being encountered in the private sector. These practices however fall short of other possible uses of eCatalogue prospectuses in public procurement, in particular for the submission of initial offers. It is expected that such use of eCatalogue prospectuses in public procurement could ultimately offer substantial benefits and efficiency gains. However, these benefits can only be achieved by the use of interoperable eCatalogue prospectuses, offering opportunities for re-using data and for automating procedures for catalogue creation, management and processing. Such interoperability for eCatalogue prospectuses can be achieved through the adoption and wide use of industry-wide eCatalogue standards.

At present, specifications for eCatalogue prospectuses to be used in a public procurement procedure are, if admitted at all, fully defined by the contracting authority. This report describes these types of eCatalogues as "buyer-defined" eCatalogues; their specifications are tailor-made to the needs of the public purchaser and generally do not make use of any existing / industry eCatalogue standards. Under this current practice, contracting authorities request suppliers to fill in eCatalogue templates (usually in spreadsheet files). These spreadsheet files are then submitted by the suppliers using various, often inappropriately secured, electronic means (e.g. e-mail, CD-Rom, etc). This approach creates additional costs for all involved parties: for suppliers in order to create appropriate individual prospectuses instead of re-using their existing ones and for contracting authorities in verifying the technical compliance of those prospectuses against the imposed specifications.

Current approaches thus overlook more efficient means for automated processing, e.g. structured transmission formats, and do not always provide for the interoperability, equal treatment and general availability of electronic means required by the EU public procurement directives. This is largely due to the limited use of standardised elements for building eCatalogue prospectuses, which leads public purchasers in the EU to impose bespoke eCatalogue specifications. To make better use of eCatalogues in public procurement, it is therefore necessary to establish a more interoperable operational and technical framework. Contracting authorities should adopt common industry-wide standards for eCatalogue format and content as well as for methods and tools for eCatalogue data exchanges. Such standards should as much as possible be the same for all commercial transactions, whether they concern exchanges between business-to-business (B-2-B) or business-to-government (B-2-G).

Comparing the procurement practices of the public and private sectors, it is evident that the relationship between suppliers and buyers is different, as well as the overall procedures followed for procurement. The private sector does not need to satisfy strict rules on how procurement is performed and the relationships between buyers and suppliers are established. Hence, the pre-award phases, and in particular the initial tendering phase, do not need to be addressed in the same manner as in public procurement. Private sector companies tend to focus on post-award procurement phases, as reflected in their early adoption of electronic means and ICT applications for ordering, invoicing and fulfilment. This is achieved by most large private companies by the use of closed systems; i.e. systems which limit their use to known and "qualified" suppliers, making use of industry-specific standards. As a result, there are a number of sophisticated specifications/standards for creating and exchanging eCatalogues, which however only deal with specific industry segments. It is considered that these could be further evolved and implemented in order to establish suitable, common standards covering all industries, in order to achieve an environment for the interoperable use of eCatalogues both for the private and public sectors.

Current standardisation activities are characterised by the existence of two main standards suitable for the creation and exchange of eCatalogues: "UBL 2.0" and "c-Catalogue", the former created by OASIS and the latter initiated by eBES working group of CEN. In addition, there are initiatives attempting to promote, utilise and support the convergence of these standards. Both UBL and c-Catalogue focus on standardising the processes to be followed by two parties for performing business transactions, particularly in the post-award phases of public procurement. Hence, both standards can provide solutions for the electronic support for ordering and invoicing. In addition, both UBL and c-Catalogue standardise the formatting and content of business documents for performing business transactions.

The standardisation work currently performed by standardisation bodies, the private sector and / or EU Member States primarily seeks to provide standards for the electronic support of post-award phases of procurement. Consequently there is limited advancement on standardising processes and business documents for the initial e-Tendering phases. UBL 2.0 and c-Catalogue, either as one harmonised standard or two converged standards, need further enhancements in order to accommodate these needs. In addition, the purpose of both is to standardise processes and formatting/content of business documents. However, they do not standardise the content of eCatalogue prospectuses (e.g. a set of products), as well as, the way in which such products are described (e.g. attributes, characteristics, classifications, etc.). Thus, while UBL, c-Catalogue and their future versions could be extended to exchanging messages related to e-Tendering, there appears to be a need for other content-related standards to be used together with UBL / c-Catalogue.

With a view to standardising product descriptions for eCatalogue prospectuses, some initiatives already seek to standardise schemes for product description and classification. Through the use of such schemes, product descriptions in eCatalogue prospectuses could be made more interoperable. Although standardised nomenclatures are widely used in the public sector within the EU, there is currently neither a common nomenclature, nor mechanisms to reference/map one nomenclature to another and especially CPV, which is mandated by the EU Directives for all procurement notices. Consequently, trading parties which use different nomenclatures or different versions of the same nomenclature are facing yet another interoperability issue. The establishment of one common classification scheme for both the public and private sectors, although tempting, might be a very challenging goal, considering the different purposes of existing schemes (e.g. buyer-driven, supplier-driven). On the other hand, the establishment of a framework mapping these different existing classification schemes also poses barriers to be overcome.

Table 34 presents recommendations to improve the use of eCatalogues in public procurement.

	#	Recommendations	Actors
Organisational	1.	**Establish requirements and adopt standards for using eCatalogues for the submission of offers ("pre-awarding")** Need: A suitable organisational and technical environment is needed, where eCatalogue prospectuses are used for forming initial offers in pre-awarding. Accommodating factors / steps forward: UBL 2.0 and c-Catalogue standardise messages and processes for eCatalogues in the post-award phases of procurement. Any future work supporting pre-award needs could be based on these two standards. It is estimated that the work already dedicated to creating UBL and c-Catalogue can be re-used to a great extent. Member States and the EC are recommended to take as active a role in these developments as possible. Also, the adoption of either of these standards (or the expected unified one) could assist in obtaining real-life experiences on advantages and limitations in view of their further improvement.	Member States European Commission
	2.	**Establish requirements and, optionally, specifications for DPS** Need: Although all national legal implementations of the EU Directives envisage DPS systems, only a limited number of initiatives define practical specifications for their use. Accommodating factors / steps forward: DPS could significantly benefit from the use of eCatalogues. As envisaged by the EU Directives, a DPS system shall operate using only electronic means. The use of eCatalogues may thus form a stepping stone for more detailed DPS specifications. The EC and Member States should specify functional requirements for DPS systems and encourage initiatives implementing DPS.	Member States European Commission
	3.	**Establish requirements for the "active collection of tenders"** Need: The "active collection of tenders" or "punch-out" can be a userful tender submission technique, but only if use appropriately. There is a need to perform the collection of tenders respecting the rules of non-discrimination and equality of treatment. Accommodating factors / steps forward: If the "active collection of tenders" is envisaged by the national legislation of a Member State, its use should ensure that the "active collection" is performed in a transparent and non-discriminatory way that complies with the legal requirements for the electronic receipt of tenders. Member States should adjust the operation of existing "punch-out" devices in line with the functional requirement for their appropriate use, as discussed in Functional Requirement 21 of [FReq].	Member States European Commission

4.	**Reduce the need for eCatalogue verification processes and, when used, to be performed outside the context of specific calls**	Member States
	Need:	
	Existing processes for the verification of eCatalogue quality, apart from proving very costly to contracting authorities, in most cases does not conform to the provisions of the EU Directives. There is a need to ensure the quality of eCatalogue prospectuses without infringing the confidentiality principle of the EU Directives.	
	Accommodating factors / steps forward:	
	The standardisation of specifications for eCatalogue prospectuses would justify suppliers' investment in the creation of high quality eCatalogue prospectuses. This would minimise the need for contracting authorities to verify eCatalogues. EU Member states are recommended to endorse industry-wide standards for creating eCatalogue prospectuses rather than use tailor-made specifications. In addition, appropriate incentives could be given to private companies in order to invest into creating prospectuses abiding to the selected industry-wide standards. This is expected to result in high-quality eCatalogue prospectuses, eliminating the need to perform expensive verification checks.	
	Until then, Member States could provide offline tools to enable suppliers to check the quality of their catalogues by themselves. In addition, similar tools could also be used by contracting authorities for the evaluation of tenders in the form of eCatalogues. Nevertheless, there are limitations in establishing such tools until the specifications for eCatalogues are standardised. Functional requirements to cover these aspects are discussed in [FReq] (Functional Requirements 15 and16).	
5.	**Establish a suitable legal, organisational and technical framework for the electronic submission of proof documents (in relation to exclusion & selection criteria)**	European Commission
		Standardisation Bodies
	Need:	Member States
	At present, suppliers participating in public calls for tenders are required to submit proof documents to contracting authorities in hard-copy. This hard-copy submission process ensures the legal validity of proof documents, yet generates inefficiencies due to manual processing and additional costs.	
	Accommodating factors / steps forward:	
	Standardisation bodies and Member States are recommended to cooperate in formulating a suitable legal, organisational and technical framework for incorporating proof documents in eCatalogues. In order for this to be achieved, first there is a need to establish an appropriate environment for the electronic provision and submission of such administrative proof documents. Current EC initiatives investigating this topic should be supported.	
6.	**Educate the public and private sectors on the functional requirements for electronic public procurement and eCatalogues**	Member States
		European Commission
	Need:	
	There is a need for buyers and suppliers in Member States and EEA countries to be educated on the new rules for eProcurement and particularly in the use of eCatalogues in public procurement.	
	Accommodating factors / steps forward:	
	EU Member States have already started training programmes to improve awareness of and expertise on eProcurement of concerned staff in the public and private sectors. These could be extended to cover the use of eCatalogues in public procurement and their standardisation.	

Technical	7.	**Converge UBL 2.0 and c-Catalogue to create one unified eCatalogue standard for messages and processes. Extend the standard to cover all needs for public procurement pre-award phases.** Need: There is a need to standardise the use of eCatalogues in public procurement, in order to evolve from the current use of spreadsheets and bespoke XML specifications to advanced and interoperable solutions. Only through such evolution can eCatalogues be used in public procurement in a truly efficient and effective way. Accommodating factors / steps forward: Support the convergence efforts for the two existing standards initiated by OASIS and UN/CEFACT, with the intention of establishing one common standard that benefits from the advantages of both UBL and c-Catalogue, and covers both pre- and post-award phases. In this respect, the converged standard must be extended in order to cover all requirements for the content of eCatalogues, which cannot be accommodated by product description and classification schemes (i.e. cover the requirements for eCatalogue content which are not related to product/service descriptions). The Standardisation Bodies and the EC could contribute towards the promotion of these standards amongst the EU Member States. Furthermore, all stakeholders could take any active role towards giving incentives to the public and private sector towards using industry-wide standards for the use of eCatalogues in public procurement.	Standardisation bodies European Commission Member States
	8.	**Promote and make interoperable the use of product classification and description schemes** Need: There is a need to resolve the current interoperability gap created by the existence of several product description and classification schemes. Accommodating factors / steps forward: A framework for the co-existence and interoperability of product classification and description schemes could enhance the interoperability of eCatalogues. Standardisation bodies should drive the establishment of such a framework, with the cooperation of EU Member States (i.e. public sector) and private companies from different industry segments. Alternatively the use of one common product classification and description scheme may be supported.	Standardisation bodies Member States Private sector
	9.	**Establish Open Source software applications/tools, which can be re-used by many Member States and authorities** Need: There is a need across many Member States to establish software applications/tools which can support eProcurement processes. The necessary cost for establishing such ICT systems can be substantial, but can be reduced through collaborations/synergies, where one ICT system is implemented and used by multiple public entities, Accommodating factors / steps forward: The use of eCatalogue standards and classification schemes in ICT systems presumes the development of appropriate software applications and tools. The EC and Standardisation bodies could base the development of any such tools/applications on Open Source software, to enable their re-utilisation by Member States. In addition, Member States are also recommended to share their Open Source tools and applications.	European Commission Standardisation bodies Member States

| 10. | **Review existing systems with a view to establishing "eCatalogue prospectuses" and "eCatalogue stock management systems" which support all phases of the procurement cycle, including submission of tenders, based on industry-wide standards**

Need:

Currently "eCatalogue current practice" systems support only a small part of the functionalities that should be supported by full "eCatalogue stock management systems" (see Figure 5 and section 3.3). In addition to eOrdering and eInvoicing, there is a need to develop functions for the submission of prospectuses, their automated technical verification, security locking and evaluation.

Accommodating factors / steps forward:

Member States should consider the functional requirements discussed in [FReq] for the establishment of eProcurement systems which make use of eCatalogues and review as well as enhance/adjust their existing systems accordingly in order to operate with supplier-defined prospectuses.

In addition, EU Member States are recommended to assess existing standards and/or initiatives to identify whether any of these can be used for the implementation of eCatalogue messages and processes in the "post" and "pre" awarding phase of procurement. Priority should be given to the work of the Standardisation Bodies (UBL 2.0 and c-Catalogue) | Member States |

Table 34: Steps forward

In conclusion, Table 34 provides a number of recommendations for the improvement of the current environment on the use of eCatalogues in public procurement towards a more efficient and beneficial one. These recommendations aim at establishing a more standardised environment on forming and using eCatalogues in public procurement. In order to move from the current, inefficient buyer-defined eCatalogues towards a more standardised environment, taking into consideration the current limitations in the use of eCatalogues, a two-phase scenario is suggested (discussed in more detail in section 2.2 of the [FReq] report). In the first phase (Evolution Phase I), buyer-defined eCatalogues would be replaced by supplier-defined ones. In other words, suppliers should have the possibility to submit their existing eCatalogue prospectuses (with only slight adjustments, if any) as tenders for public procurement competitions. In this phase, there would still be only limited opportunities for automation; however, it is anticipated that this practice would lead to more effective competitions, with increased participation.

In the second phase (Evolution Phase II), contracting authorities will require from suppliers to structure their tenders based on widespread industry standards for eCatalogue, addressing specifications for the format, content and exchange of eCatalogue prospectuses. In this manner, the current need of contracting authorities for defining tailor-made specifications will be minimised, and will relate only to the parts of tenders that cannot be included in the content of eCatalogue prospectuses. Contracting authorities should be able to manage tenders in a semi or fully automated manner, to save cost and time.

References

Short name	Full document name	Description/Location	Reference number / Year
[2004/17/EC]	Directive 2004/17/EC of the European parliament and of the council of 31 March 2004 for coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors	EC Directive 2004/17/EC on public procurement for the utilities sector http://ec.europa.eu/internal_market/publicprocurement/legislation_en.htm#package	OJ L 134, p.1 of 30.4.2004
[2004/18/EC]	Directive 2004/18/EC of the European parliament and of the council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts	EC Directive 2004/18/EC on public procurement for works, supplies and services http://ec.europa.eu/internal_market/publicprocurement/legislation_en.htm#package	OJ L 134, p. 144 of 30.4.2004
[Action Plan]	Action plan for the implementation of the legal framework for electronic public procurement	Commission programming document aimed at assisting Member States in implementing the new legal framework for eProcurement. The Action plan identifies problems and suggests measures to be taken by the Commission and the Member States in the years 2005-2008. In particular it suggests coordinating efforts along three axis: 1) ensure a well functioning Internal Market in electronic public procurement 2) achieve greater competition and efficiency in public procurement markets and improve governance 3) work towards an international framework for electronic public procurement. http://ec.europa.eu/internal_market/publicprocurement/docs/eprocurement/actionplan/actionplan_en.pdf	COMM(2004) 841
[Explanatory document]	Requirements for conducting public procurement using electronic means under the new public procurement Directives 2004/18/EC and 2004/17/EC	Explanatory document presenting the rules and principles governing eProcurement under the new public procurement Directives http://ec.europa.eu/internal_market/publicprocurement/docs/eprocurement/sec2005-959_en.pdf	SEC(2005) 959

[Func. Reqs Vol.I]	Functional requirements for conducting electronic public procurement under the EU framework (Volume I)	A study report that "translates" the legal requirements for eProcurement into a set of preliminary functional requirements. The document includes information and activity flows for all procedures using eProcurement preliminary functional requirements, complementary non-functional requirements, an overview of technical specifications with a conceptual model and high-level Use Caes, and an open issues sectoin related to eProcurement. http://ec.europa.eu/idabc/servlets/Doc?id=22191	2005
[Func. Reqs Vol II]	Functional requirements for conducting electronic public procurement under the EU framework (Volume II)	Volume II of the Functional Requirements study report presenting an in-depth technical analysis (Use Case analysis) for the main actors and functionalities of an eProcurement system supporting all eProcurement procedures. http://ec.europa.eu/idabc/servlets/Doc?id=22192	2005
[CEN.15045]	Multilingual catalogue strategies for eCommerce and eBusiness	The report gives an overview and guidance in the usage of existing electronic product catalogues for eBusiness, providing an overview of relevant eCatalogue formats on quantitative level, as well as, a comparison of existing catalogue formats to show differences of the content in detail. ftp://ftp.cenorm.be/PUBLIC/CWAs/e-Europe/eCat/CWA15045-00-2004-Jul.pdf	2004
[SIR]	Standardisation Activities	Overview of standardisation activities relevant to electronic catalogues. It is created in the same project as the current report.	2006
[FReq]	Functional Requirements	A study report that translates the legal requirements for eCatalogues into preliminary functional requirements. It completes the general Functional Requirements report (see above) The document includes information and activity flows for all eProcurement procedures, using eCatalogues: functional requirements, complementary non-functional requirements, an overview of specifications and an "open issues" section with regards to the usage of electronic catalogues in eProcurement. It is created in the same project as the current report.	2006

Acronyms

Acronym	Description
B-2-B	Business to Business
B-2-C	Business to Consumer
B-2-G	Business to Government
BRS	Business Requirements Specification
C-2-G	Consumer to Government
CA	contracting authority
CBA	Cost-Benefit Analysis
CCTS	Core Data Technical Specification
CEN/ISSS	European Committee for Standardisation / Information Society Standardisation System
CIDX	Chemical Industry Data eXchange
CPV	Common Procurement Vocabulary
CS	Classification Scheme
DPS	Dynamic Purchasing System
DUNS	Data Universal Numbering System
ID	Identification
ebXML	Electronic Business Extensible Markup Language
EC	European Commission
ECCMA	Electronic Commerce Code Management Association
EDIFACT	Electronic Data Interchange For Administration, Commerce And Transport
EEA	European Economic Area
EFTA	European Free Trade Association
eOTD	ECCMA Open Technical Dictionary
ePDC	electronic Product Description and Classification
ERP	Enterprise Resource Planning
EU	European Union
FA	Framework Agreement
G-2-G	Government to Government
GLN	Global Location Number
GPC	Global Product Classification
HTTP/HTTPS	HyperText Transfer Protocol / HyperText Transfer Protocol (SSL)
ICT	Information and Communication Technology
LCD	Liquid Crystal Display
LVL	Latvia Lat

MEAT	Most Economically Advantageous Tender
NES	Northern European UBL 2.0 Subset Working Group
OASIS	Organisation for the Advancement of Structured Information Standards
ODETTE	Organisation for Data Exchange by Tele Transmission in Europe
PRICAT	Price/Sales Catalogue
PRODAT	Product Data
RFQ	Request for Quotation
SKU	Stock Keeping Unit
SME	Small-Medium Enterprise
UBL	Universal Business Language
UML	Unifying Modelling Language
UMM	Universal Modelling Methodology
UN/CEFACT	United Nations Centre for Trade Facilitation and Electronic Business
UN/ECE	United Nations Economic Commission for Europe
UNSPSC	United Nations / Standard Products and Services Codes
URL	Uniform Resource Locator
UTC	Coordinated Universal Time
VAT	Value Added Tax
VDA	DA Verband der Automobilindustrie (German, translating to "German Automotive Association")
VIES	VAT Information Exchange System
xCBL	XML Common Business Library
XML	eXtendable Markup Language

10 Annex I – eCatalogues initiatives / projects in European public administrations

The observations and conclusions discussed in chapter 5 "State of play I: eCatalogue practices by public purchasers in the EU" are based on the investigation of a selected number of initiatives and projects from various European public administrations. The purpose of this investigation was to appreciate the objectives each public sector organisation has in terms of utilising and further developing its current eCatalogue environment and set-up, also understanding systems, practices and needs. The information for each country was primarily received from central procurement agencies of European countries, as well as, publicly available information.

The following section presents an overview of the investigated initiatives in the form of comparative "country sheets" for the following EU and EEA countries:

- – Hungary
- – Italy
- – Latvia
- – Norway
- – Scotland
- – Sweden

The encountered systems usually offer eOrdering services through marketplaces or electronic shops and can thus be considered to fall under the model of "eCatalogue current practice" (see section 3.2).

Disclaimer

> The author has taken all measures to ensure that the information included in the current Annex is accurate and representative of the information collected from various sources.
>
> The information included in some parts of the "country sheets", specifically those describing needs and requirements, constitutes personal views of the Member State representatives that contributed for this Study. The European Commission, Member States, contributors and authors do not guarantee that this information is conclusive.
>
> The European Commission does not guarantee the accuracy of the information included in the current Annex, nor does it accept any responsibility for any use thereof.

10.1   Explanation of a "country sheet"

The processed information is presented in standardised "country sheets", one for each investigated EU and EFTA Member State. This should facilitate comparison of the various approaches, in particular of similarities and dissimilarities. Below each section used in the country sheets is briefly explained.

10.1.1   Public procurement legal framework

This section of the Country Sheet offers a general overview of a country's legal framework on public procurement. It identifies where applicable specific rules and requirements for the use of eCatalogues are identified, as well as, other relevant legal provisions such as the mandatory use of specific product categorisation schemes and rules for user authentication in public sector ICT systems.

Implementation of EU Directives	This is a Yes / No answer, indicating whether the EU Directives 2004/17/EC and 2004/18/EC are fully implemented in the country, with particular regard to eProcurement related provisions. In case they are not, the date by which they are expected to be implemented is also included, if known.
Requirements for eCatalogues	This is a Yes / No answer, indicating whether the implementation of the EU Directives in the country imposes specific rules and requirements for the use of eCatalogues. If yes, an overview of these requirements is provided.
Use of specific product classification scheme(s) for eCatalogues	This is a Yes / No answer, indicating whether the implementation of the EU Directives in the country imposes the use of a specific product categorisation scheme in public procurement for eCatalogues (i.e. not for the advertisement of calls)
User authentication in ICT Business-to-Government (B-2-G) systems	This is a Yes / No answer, indicating whether there are specific legal provisions for user authentication in ICT systems and in particular the ones supporting B-2-G business. If yes, details of these provisions are provided, whilst aspects on their practical implementation are discussed.
Active collection of tenders ("punch-out")	This is a Yes / No answer, indicating whether there are specific legal provisions for utilising the active collection of tenders (i.e. "punch-out") for updating eCatalogues from supplier systems. If yes, details are provided.

Table 35: Country Sheet section 1: Public procurement legal framework

10.1.2   eProcurement programmes and initiatives

This section of the Country Sheet draws a picture on public sector programmes and initiatives regarding relevant current/future projects in the area of eProcurement, and eCatalogues in particular. It helps identifying common trends in the development of eProcurement.

Initiatives in eProcurement, particularly in the use of eCatalogues	This is a Yes / No answer, indicating whether the country is currently running, or planning to run, any projects related to eProcurement and in eCatalogues. If yes, details are provided.
Training	This is a Yes / No answer, indicating whether the country has a programme related to the education of suppliers in eProcurement and in particular to the use of eCatalogues (e.g. so-called supplier adoption programmes).

Table 36: Country Sheet section 2: Public procurement programmes and initiatives

10.1.3 Operations and processes followed for the utilisation of eCatalogues through established ICT systems

This section of the Country Sheet provides information on specific ICT implementations. It concentrates in particular on functional aspects for the utilisation of eCatalogues, from their creation to ordering. The section helps identifying commonalities and differences in the practical usages of eCatalogues.

Public procurement procedures supported in the system	Specifies the procedures supported in the system: one-off procedures or repetitive procedures (DPS or Framework Agreements).
Actors supported in the system for eCatalogues	Identifies the various stakeholders involved for the creation and utilisation of eCatalogues within the system.
Pre-awarding processes	Provides information on the processes followed for: defining catalogue templates, creating catalogues, submitting catalogues, evaluating catalogues. Also, information on the number of necessary contacts between suppliers and buyers (or designated third parties) for establishing an eCatalogues is presented, where known.
Post-awarding processes	Provides information on processes followed for: maintaining catalogues, ordering through submitted catalogues and information on whether eInvoicing and payment are supported by the system.
eCatalogue verification	Provides information regarding the mechanisms used (if any) for verifying the content of submitted catalogues, considering both format and content.
Re-utilisation of eCatalogues	Provides information on mechanisms supported for the re-utilisation of eCatalogues in different contracts.
Catalogue access	Provides information on who has access to the eCatalogues, and at what stage in the procurement cycle.
Application of eCatalogues	Provides information on specific rules for the use of eCatalogues with regards to the nature of purchases and the EU thresholds

Table 37: Country Sheet section 4: Operations and processes followed for the utilisation of eCatalogues through established ICT systems

10.1.4 Obstacles/issues in establishing eCatalogues systems

This section of the Country Sheet enlists obstacles and issues encountered in the utilisation of eCatalogues , as well as, identified needs and requirements, particularly focusing on the ones that may be resolved through actions at a European level. This section should allow identifying common problems and factors blocking the development of efficient eCatalogue prospectuses in Europe.

Obstacles	Provides main obstacles identified in the use of eCatalogues. If resolved, obstacles are also accompanied with information on the steps followed for their resolution.
Needs and requirements	Provides a list of the main needs and requirements for enabling/improving the use of eCatalogues, primarily enlisting actions that can be taken at a European level.

Table 38: County Sheet section 3: Obstacles/issues in establishing eCatalogues systems

10.1.5 Technical aspects of eCatalogues systems

This section of the Country Sheet documents the technical standards used in the various eCatalogue systems and how the systems themselves where established. It offers a better understanding of the prevailing technical approaches used, and identifies areas in which coordination and cooperation at a European level would be beneficial.

eCatalogue data exchange standards	Provides information on technical standards used for the transmission of eCatalogues between suppliers and buyers.
eCatalogue formatting standards	Provides information on formatting standards used for the creation of eCatalogues.
Security considerations on transmitting and handling eCatalogues	Provides information on any specific security standards used for the transmission and handling of eCatalogues.
System implementation	Provides information on the platforms used for establishing the ICT eCatalogue system in a given country.

Table 39: Country Sheet section 5: Technical aspects of eCatalogue systems

10.1.6 Content of eCatalogues

This section of the Country Sheet enlists the content requirements in the various eCatalogues. Through the comparison of the different eCatalogue data models, it highlights the core data contained today in eCatalogues, to help identifying similarities and differences.

Data fields	Enlists the data fields of the eCatalogues. Where known, the mandatory and optional fields are described.

Table 40: Country Sheet section 6: Content of eCatalogues

10.1.7 Statistics

This section of the Country Sheet depicts general statistical information on public procurement, as well as, specific statistical information on the main national eCatalogue system. The section should help appreciate the level of maturity and usage of the described eCatalogue system.

eCatalogues used since	Provide the year in which the country's main eCatalogues management system was established.
Number of registered authorities	Provides an estimate of registered authorities in the country's main eCatalogue management system.
Number of registered suppliers	Provides an estimate of registered suppliers in the country's main eCatalogue management system.
Number of eCatalogues	Provides an estimate of eCatalogues or product items in the country's main eCatalogue management system.
Number of transactions	Provides an estimate of transactions performed in the country's main eCatalogue management system. Transactions are primarily identified as purchase orders through eCatalogues stored in the eCatalogue management system.

Table 41: Country Sheet section 7: Statistics

10.2 Hungarian approach

The government of the Hungarian Republic has established the current legal framework of centralised public procurement in 2003, authorising eProcurement and the use of eCatalogues. Centralised public procurement is performed by the Central Services Directorate General, acting as a central contracting body. The Directorate collects procurement requirements from about 1800 public sector entities, advertises, organises and runs calls for tender, establishes contracts and manages framework agreements. The scope of activities of the Directorate is determined on the one hand by the financial resources of the institutes and on the other hand by national procurement objectives ("State Normativa"). Usually central procurement is performed for general and widely-used office equipment, computer software, and ICT services.

To computerise and electronically manage procurement, an ICT system has been put in place, which utilises eCatalogues. The system offers the ability to its users to upload (suppliers) and browse eCatalogues (customers) and place orders based on eCatalogues. The system functions as an "eCatalogue current practice" implementation, as discussed in section 3.2, in effect establishing a marketplace of available products. Electronic catalogues are received by suppliers which have framework agreements (or framework contracts) with the Directorate, and are available for all registered procurement officers to see and place orders upon.

Significant focus in Hungary has been given to eCatalogue product classification. The classification of products is viewed to follow the hierarchy:

- Procurement/market segment
- Procurement procedures
- Contract
- Product groups, and product sub-groups

A combination of the Global Product Classification (GPC) and UNSPSC classification standard is being used in Hungary, offering the possibility to classify products based on their "hard attributes" (i.e. static attributes of products). Then, suppliers can create eCatalogues by referencing products' classification category in the actual classification hierarchy ("GPS"). In addition they can define "soft attributes (delivery conditions, parity)", such as price, location, etc.

10.2.1 Public procurement legal framework

Implementation of EU Directives	Yes. The EU Directives were implemented in 2005.
Requirements for eCatalogues	No.
Use of specific product classification scheme(s) for eCatalogues	No. CPV is mandatory for contract publication. For eCatalogues, a combination of GPC and UNSPSC classifications is used.
User authentication in ICT Business-to-Government (B-2-G) systems	No. The current implementation does not support electronic signatures for buyers. There is an existing certificate issued by the Government, only for buyers; therefore there are no needs for their cross-border interoperability.
Active collection of tenders ("punch-out")	Yes. The Hungarian approach foresees the use of "punch-out". There has been an initiative in order to establish a punch-out service for users, through the use of eCatalogues. However, this initiative failed due to financial reasons. Currenlty there are current plans to implementing new applications, focusing on XML communication with ERP systems. This mechanism is not currently used in the main Hungarian system, and will be one of its further enhancements in the future.

Table 42: Hungary - Public procurement legal framework

10.2.2 eProcurement programmes and initiatives

Initiatives in eProcurement, particularly in the use of eCatalogues	Yes. ▪ Particular focus is on product classification, and the establishment of a complete product Dictionary with appropriate product classification. A combination of GPC and UNSPSC classification schemes together with GTIN/GLN is also used
Training	Yes. ▪ Training covers primarily rules and regulations for using the system.

Table 43: Hungary - Public procurement programmes and initiatives

10.2.3 Operations and processes followed for the utilisation of eCatalogues through established ICT systems

Public procurement procedures supported in the system	Use primarily in Framework Agreements and framework contracts where repeated procurement cycles appear. eCatalogues are available for all procurement officers of all registered contracting authorities for placing orders.
Actors supported in the system for eCatalogues	▪ Supplier: responsible for populating and submitting eCatalogue files ▪ Buyer: responsible for uploading eCatalogues (their frames), in the system

Pre-awarding processes	▪ Defining eCatalogue templates: a set of standard forms exist for creating eCatalogues in the form of spreadsheets as follows:
	   ▪ Offer form
	   ▪ Contract form
	   ▪ Price management form
	   ▪ Product description management form
	   ▪ Product life cycle management form
	   ▪ Performance report form
	▪ Creating eCatalogues: suppliers are responsible for populating the standard eCatalogue forms
	▪ Submitting eCatalogues: suppliers submit eCatalogues with closing checksum code on CD-Roms. Closing checksum code is provided by a special application, handed over or downloaded together with tender documentation. The code is used to ascertain the correct receipt of eCatalogues. Traceability of actions for submission is offered only via non-electronic means (post office)
	▪ Uploading eCatalogues in system: procurement officers upload eCatalogues in the system. Electronic control of provided file and checksum code follows, confirming the source and format/content acceptability.
	▪ Automatic evaluation of eCatalogues: some particular and partial support exists.

Post-awarding processes	▪ Maintaining eCatalogues: suppliers can maintain their eCatalogues by providing simplified eCatalogue files (in CD-Rom), which only contain the updated data (for instance prices). Specialised verification routines are run in such cases for ensuring that the new catalogues are in according to pre-agreed terms ▪ Ordering through eCatalogues: Registered buyers create (but do not sign) the basket of products to be procured. ▪ Online invoice and payment: Suppliers fulfil the order but do not create electronic invoice. Buyers confirm the delivery of goods and perform the relevant payment electronically.
eCatalogue verification	A semi-automated eCatalogue verification process is followed. Some automated procedures verify the correct format of eCatalogues, and perform checks on data types, product classification, etc. Then, manual work is involved for verifying the quality of content, including appropriate descriptions, classification, etc.
Re-utilisation of eCatalogues	No explicit support for eCatalogue re-utilisation. For the maintenance of eCatalogues, suppliers do not need to re-create eCatalogues in their entirety, but they can rather update specific information of products (for instance only prices). The updating process however is performed as for new catalogues, requiring the re-submission of data through CD-Rom, which must be verified and uploaded in the system by the contracting authority. There are no specific rules on when updates to eCatalogue data can take place (contracts contain certain guidelines).
Catalogue access	All procurement officers of all registered contracting authorities have the same access rights in eCatalogues.
Application of eCatalogues	The system is primarily used for above EU threshold contracts. The same processes as described above are also used for below threshold contracts, although such utilisation is relatively limited.

Table 44: Hungary - Operations and processes followed for the utilisation of eCatalogues through established ICT systems

10.2.4 Obstacles/issues in establishing eCatalogues systems

Obstacles	▪ Supplier, and customer adoption ▪ Terminology and product classification management
Needs and requirements	▪ A common terminology of public procurement and eProcurement terms across Europe could assist towards common understanding across EU and EEA countries ▪ The development of a free catalogue classification solution for all EU countries (with the contribution of manufacturers and trade mark owners) could assist eCatalogues development. Buyers could establish "master catalogue dictionaries" which would be common for the whole of Europe, while suppliers would only need to create eCatalogues in terms of "soft attributes" ▪ eCatalogue formatting standards ▪ Tool for automated verification of eCatalogues, both in terms of format and content

Table 45: Hungary - Obstacles/issues in establishing eCatalogues systems

10.2.5 Technical aspects of eCatalogues systems

eCatalogue data exchange standards	eCatalogues are submitted by suppliers via CD-Rom, although the system supports direct spreadsheet upload. This feature is being used only during the management of contracts, since in the phase of offers submission, the protection of individual properties is secured by the "offline" procedure.
eCatalogue formatting standards	eCatalogues are created based on standardised spreadsheet forms, abiding to buyer specifications
Security considerations on transmitting and handling eCatalogues	There are not specific security provisions, since eCatalogues transmitting and handling is carried out "offline". Concerning the electronic part of eCatalogue management, is secured by entry codes and passwords.
System implementation	The Hungarian system was built based on an early Intranet application which could support some public procurement statistical needs. Currently, and following numerous enhancement, the system is an Internet application. Hungary is considering reengineering the application, especially the architecture, the data as well as the business models, possibly utilising commercial applications and platforms. Objectives for the new system would be to support industry-wide standards, a workflow engine supporting the customisation of business processes, and data mining/evaluation. Product history reporting, and transactions reporting through a statistical module would be a goal.

Table 46: Hungary - Technical aspects of eCatalogue systems

10.2.6 Content of eCatalogues

Data fields	
	▪ Supplier name
	▪ Supplier ID
	▪ Lot ID
	▪ Supplier product ID number
	▪ GS1 ID
	▪ Trademark owner GLN ID
	▪ Trademark owner name
	▪ Source of data GLN ID
	▪ Name of data source
	▪ Definition of product service
	▪ Role of product
	▪ Smallest delivery unit
	▪ Measurement unit
	▪ Price
	▪ VAT
	▪ Discount
	▪ Currency
	▪ Currency rate
	▪ Main parameters
	▪ Details product description URL
	▪ Guarantee period in months
	▪ Delivery time in weeks

Table 47: Hungary - Content of eCatalogues

10.2.7 Statistics

eCatalogues used since	2004 Q3
Number of registered authorities	7468
Number of registered suppliers	425
Number of eCatalogues	670 (available number of products:894737)
Number of transactions	670550

Table 48: Hungary - Statistics

10.3   Italian approach[22]

The Italian implementation of the EU Directives has been put into force in 2006, authorising the use of electronic means for public procurement. The implementation of the EU Directives is only the third step of the "evolution path" towards the complete adoption of eProcurement within the Italian Public Sector. The previous two steps were:

- The financial act 2000 (December 23, 1999 n.488) which laid down the foundations of the "Program for Public Spending Rationalization of Goods and Services" in the Public Sector. Article 26 says: <<[...] The Ministry of Economy and Finance, according to the regulations available at that time, regarding suppliers selection, drew up national "framework contracts" with providers. Within the framework contracts, the selected providers had to accept any order coming from public administrations. [...]>>.

- In year 2002, the Italian Government has approved and signed an innovative Decree (DPR 101) which regulates the use of digital procedures for public procurement, anticipating some of the contents of the EU Directives. By means of this Decree, public administrations were able to use digital procedures as a whole or partial replacement of steps foreseen in traditional tenders. Two different digital procedures for goods & services purchasing have been taken into consideration:

  – on-line auctions, for purchasing contracts both above and below the European threshold limits, whereby the whole tendering process is managed on-line

  – B-2-G marketplace, only for purchasing below the European threshold limit

Consip SpA, an independent agency formed in 1997 and totally owned by the Italian Ministry of Economy, is responsible for providing consultancy and ICT solutions to Italian public entities for their procurement needs.

By means of 2 Ministerial Decrees (February 2000, May 2001), the Ministry of Economy and Finance entrusted Consip with the development and management of the "Program for Public Spending Rationalisation of Goods and Services" in the Public Sector and, in particular, of an eProcurement ICT system facilitating the purchasing of goods and services for the public sector. The ICT system is based on the implementation of the three eProcurement models, as depicted in **Figure 11**.

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[22] This part describes the current "Consip approach" to eCatalogues. There are few other on-going public eProcurement initiatives in Italy, sponsored by Local Authorities, Public Health-bodies, Regions, etc. that may implement eCatalogues differently.

1.		2.	3.
FRAME CONTRACTS (TENDERING) DEMAND AGGREGATION		**SUPPORT TO PA SPECIFIC NEEDS**	**MARKETPLACE**

ELECTRONIC SHOPS		**ON LINE AUCTIONS**	**E-MARKETPLACE**

▪**Paper-based technical proposals and economic bids evaluation**
▪**Direct Purchase within Frame Contracts**
▪**Many-to-one approach**
▪**Purchase scope:**
  ❖ Large volumes
  ❖ Standardized Demand
  ❖ Low price volatility
  ❖ Slow obsolescence
	▪**On-line technical proposals and economic bids evaluation (sealed bid + single round)**
	▪**Direct Purchase within Frame Contracts**
	▪**Many-to-one approach**
	▪**Purchase scope:**
	  ❖ Large volumes
	  ❖ Standardized Demand
	  ❖ High price volatility
	  ❖ Rapid obsolescence
		▪**Sourcing supporting**
		▪**On-Line Auction (ASP mode)**
		▪**Legal supporting**
		▪**Consulting**
		▪**System Dialogue and/or Integration**
			▪**Purchases below the EU threshold**
			▪**e-Catalogue Model**
			▪**Direct Purchase or RFQ within the e-Catalogue**
			▪**Many-to-many approach**
			▪**Purchase Scope:**
			  ❖ Small volumes
			  ❖ No-standardized Demand
			  ❖ Low cost
			  ❖ Highly fragmented

Above and Below EU Threshold			**Below EU Threshold**

Figure 11: The three eProcurement models of the Consip SpA ICT system

The e-marketplace is the "eCatalogue current practice" system, as defined in section 3.2. The system forms a marketplace for storing and publishing the eCatalogues of all interested suppliers, including those that do not have framework contracts with the Italian public sector. The e-marketplace allows all Italian public sector organisations to view the published eCatalogues and place orders.

Buyers can purchase commodities in two ways. One way is to make a direct purchase selecting goods and services from the eCatalogue, handling on-line the entire purchasing process and digitally signing the order. The other way is to negotiate the product quality and service levels with qualified suppliers (Request for Quotation), handling on-line the entire purchasing process, awarding the bid and digitally signing the contract.

The e-marketplace is strictly used for contracts below the EU threshold, because it has been thought, designed and implemented within the previous legislative framework on eCatalogues (DPR101) that was related only to below threshold contracts.

10.3.1 Public procurement legal framework

Implementation of EU Directives	Yes. "Transposing" act (called "codice dei contratti pubblici dei lavori, servizi e forniture", DLgs. 163/2006) came into force on 01/07/2006. While, the "Implementing into practice" decree is planned for 2007.
Requirements for eCatalogues	No. The previous legislative framework on eCatalogues (DPR101) was related only to below threshold contracts; hence the current Italian eCatalogue system is used only for below threshold procurement.
Use of specific product classification scheme(s) for eCatalogues	No. CPV is mandatory for contract publication. In addition, CPV is used for eCatalogues, however some problematic issues were identified in its use with reference to both services and products. Currently, no standard classification schemes are adopted, because the benchmark analysis carried out in 2002 among the standards available at that time (e.g. UNSPSC; eCL@ss; etc.) evidenced that no standard could address all requirements.
User authentication in ICT Business-to-Government (B-2-G) systems	Yes. User authenticity is performed through the use of digital certificates. The accepted certificates must issued by an Italian Certification Authority, constituting a blocking factor for cross-border suppliers.
Active collection of tenders ("punch-out")	No. Punch-out is explicitly forbidden under the rules set by Consip SpA for the use of eCatalogues. Any eCatalogue must be actively submitted by a supplier and stored within governmental systems.

Table 49: Italy - Public procurement legal framework

10.3.2 eProcurement programmes and initiatives

Initiatives in eProcurement, particularly in the use of eCatalogues	Yes. ▪ model for practically using the Italian acts implementing the EU Directives ▪ work-flow to manage the life-cycle of the suppliers' indicative offers to feed the eCatalogue ▪ mechanisms to automatically verify the quality of eCatalogues, both in terms of technical compliance with buyer-specifications and in terms of content
Training	Yes. ▪ Strong supplier adoption programme, called "supplier onboarding" for educating suppliers to the Consip e-marketplace (peak year in 2004-05). It focuses on SMEs, prompting them to register and provide their indicative offers. ▪ General education of suppliers to public procurement rules and regulations.

Table 50: Italy - Public procurement programmes and initiatives

10.3.3 Operations and processes followed for the utilisation of eCatalogues through established ICT systems

Currently, e-marketplace operations are partially based on semi-manual processes (e.g. verifying / improving the quality of eCatalogues, etc.) because no standard software package addresses all the requirements. A "full custom" work-flow to manage the life-cycle of the suppliers' indicative offers to feed the eCatalogue, with embedded mechanisms to automatically verify the quality of the eCatalogue, are planned in 2007 and technical trials are, already, on-going (see **Table 50**).

Public procurement procedures supported in the ICT systems	Direct purchase and request for quotation from non-pre-selected, multi-vendor indicative offers (in the form of eCatalogues) for below threshold contracts only. The indicative offers qualification process to the e-marketplace is an "open procedure" similar to the DPS "setting-up" phase.
Actors supported in the ICT systems for eCatalogues	▪ <u>Category Manager</u>: centralised role for producing the Call for Qualification documents and for supervising the eCatalogues life-cycle in the system. ▪ <u>On Boarding Factory</u>: specialised role for reviewing the content of eCatalogues and improving their quality (i.e. normalise items, standardise descriptions, etc.) ▪ <u>Catalogue Factory</u>: specialised role for producing eCatalogue spreadsheet templates and for uploading eCatalogues in the system ▪ <u>Buyer</u>: any procurement officer of any registered contracting authority, responsible for placing orders and issuing RFQs ▪ <u>Supplier</u>: responsible for populating and submitting supplier eCatalogue prospectuses
Pre-Awarding processes	▪ <u>Call for Qualification</u>: the Category Manager is responsible for producing and publishing documents (technical specifications and commercial terms and conditions) and for supervising the overall suppliers' qualification process ▪ <u>Defining eCatalogue templates</u>: the "Catalogue Factory" actor is responsible for creating appropriate spreadsheet templates for the various products/services. (850 different templates currently managed) ▪ <u>Creating eCatalogues</u>: suppliers are responsible for the creation of eCatalogues, based on predefined eCatalogue spreadsheet templates. eCatalogues take the form of spreadsheet files. ▪ <u>Submitting eCatalogues</u>: suppliers submit their eCatalogues in the system. The eCatalogue constitutes the "indicative offer" of a supplier that requests qualification in the e-marketplace. Traceability of actions for submission are offered by the system. ▪ <u>Upload eCatalogues in the e-marketplace</u>: Category Manager responsible for uploading eCatalogues in the e-marketplace. In order to upload eCatalogues, items described in the eCatalogue have to meet in full the criteria set in the technical specifications attached to the Call for Qualification. ▪ <u>Automatic evaluation of eCatalogues</u>: no particular support is provided
Post-awarding processes	▪ <u>Maintaining eCatalogues</u>: the process followed for maintaining eCatalogues is identical to the process for creating them. There is no specific control on when the updating of eCatalogue data can take place. Suppliers must create a full eCatalogue prospectus.

	▪ Ordering through eCatalogues: Buyers can select an item from an eCatalogue and import it in the basket. Then, they can either purchase, or request an RFQ from one or more suppliers. Suppliers can choose whether to reply or not. If they choose to reply, they send a Quotation in the form of an eCatalogue. The offer is sealed and stored in the system. When the opening time is reached, the system unlocks the tenders. Buyers then can compare the eCatalogues received and evaluate them, in order to select the winner. The related documents are signed using the higher level of digital signatures. ▪ Online invoice and payment: not supported.
eCatalogue verification	Great efforts are dedicated to eCatalogue verification, both automated and manual. There are commonly a lot of errors in the received eCatalogues in terms of format (spreadsheets are not filled in correctly), as well as, inadequate detail in content (poor product descriptions). All changes performed in eCatalogues are made known to the supplier. These limitations are corrected by the On Boarding Factory role, wither-working the eCatalogue prospectus of the supplier. The supplier must review and digitally sign the spreadsheet file and send it back to Consip before being uploaded onto the system, in order to acquire legal validity.
Re-utilisation of eCatalogues	All eCatalogues in the e-marketplace are available to all contracting authorities, and therefore re-utilisation is by default available (i.e. all contracting authorities can place orders on the same eCatalogues). This way of re-utilising eCatalogues is not the one intended by the EU Directives, as an eCatalogue must be submitted (to form a tender) for a particular call. The Italian public sector use this e-marketplace solely for contracts below the EU threshold, and therefore the current operation can be considered as compliant to the EU Directives.
Catalogue access	All public sector officers can see the eCatalogues in the e-marketplace, also referred to as "indicative offers". Once an RFQ is issued for particular items, only authorised procurement officers, related to the call, have access to the received eCatalogues.
Application of eCatalogues	Below threshold contracts only

Table 51: Italy - Operations and processes followed for the utilisation of eCatalogues through established ICT systems

10.3.4 Obstacles/issues in establishing eCatalogues systems

Obstacles	▪ Mechanisms for verifying the quality of eCatalogues, both in terms of technical compliance with buyer-specifications and in terms of content. Currently continuous significant effort is dedicated to manual processes for verifying/improving the quality of eCatalogues ▪ lack of confidence with eProcurement enabling tools like digital certificates, both in the public, and in the private sector (SMEs), but, in particular, in the Public Sector.
Needs and requirements	▪ Common standards (at a EU level) and functional requirements in the field of Electronic Catalogues for establishing a DPS and for enabling the cross-border suppliers "on-boarding". ▪ requirements for establishing a DPS

Table 52: Italy - Obstacles/issues in establishing eCatalogues systems

10.3.5 Technical aspects of eCatalogues systems

eCatalogue data exchange standards	eCatalogues are uploaded in the e-marketplace by suppliers. This entails a manual, file-upload process. No specific standards are used. A specialised group must verify and "publish" the eCatalogue before it is available to buyers.
eCatalogue formatting standards	eCatalogues are spreadsheet files, based on spreadsheet templates. There are different templates for different products/services. No specific formatting standards are used.
Security considerations on transmitting and handling eCatalogues	Digital signature certificates are used, issued by Italian Certification Authorities.
System implementation	The e-marketplace is based on the Oracle Exchange Software package. It includes many customisations e.g. for security (digital signatures), integration (normally this platform does not support integration capabilities) and document storage management.

Table 53: Italy – Technical aspects of eCatalogue systems

10.3.6 Content of eCatalogues

Products/services are fully described by a set of standardised data fields. Each data field represents an "attribute" of the product/service. Two different kinds of "attributes" are defined:

- Common attributes: Commercial information (e.g. price, lead time, shipping area, etc.) that are common to all categories

- Specific attributes: Technical features (e.g. weight, length, electrical power consumption, etc.) that are referred to a specific category of all its attributes (commercial and technical)

The following table contains only the common attributes:

Data fileds (Common Attributes Data)	▪ Supplier name
	▪ Supplier part number
	▪ Short description
	▪ Brand name
	▪ Manufacturer part number
	▪ Commercial name
	▪ Image name
	▪ Image URL
	▪ Attachment URL
	▪ Long description
	▪ Distribution area
	▪ Lead time
	▪ Unit
	▪ Quantity per unit
	▪ Orderable units
	▪ Price per unit
	▪ CPV code
	▪ Stock quantity
	▪ VAT
	▪ Warranty
	▪ Services
	▪ Notice
	▪ Initiative

Table 54: Italy - Content of eCatalogues

10.3.7 Statistics

eCatalogues used since	2002	
Number of registered authorities	3.270 (1.100 active buyers)	2005
Number of registered suppliers	771 (about 50% are SMEs with less than 10 employees)	2005
Number of eCatalogues	190.484 product lines (more than 80% are ICT and Office supplies)	2005
Number of transactions	9.677 (about €29,9 million)	2005

Table 55: Italy – Statistics

10.4 *Latvian approach*

In 2002 Latvia adopted the eGovernment Conception, aimed at modernising state administration through the use of ICT. It complements the Latvian State Public Government Reform Strategy 2001-2006, set to introduce optimised/modernised rules and processes for state administration. Based on the reform strategy, in 2006, public procurement in Latvia should be centrally controlled. In line with these legal provisions, the eGovernment Development Program 2005-2009 was initiated, for improving state and municipal information technology infrastructure and collaboration between public sector entities. The new Electronic Procurement State Agency is set to provide a single portal for all public sector procurements and for monitoring procedures.

The Latvian eProcurement system was put in production in 2006. It operates as an "eCatalogue current practice" system, as described in section 3.2, primarily focusing on achieving the following goals:

– Reduce costs

– Achieve transparency

– Introduce benefits to suppliers through automated processing

The system is primarily used for contracts below the EU threshold. Suppliers create their eCatalogues in the form of spreadsheet, which are then uploaded to the system. eCatalogue data is accessible by all registered procurement officers, which can place orders. Before placing an order, an officer cannot see the supplier of a specific product.

10.4.1 Public procurement legal framework

Implementation of EU Directives	Yes. The implementing act for Directive 2004/18/EC entered into force in 2006, and for Directive 2004/17/EC in 2005.
Requirements for eCatalogues	No. Similar to the EU Directives, the legislation includes references to eCatalogues but no specific requirements for their use.
Use of specific product classification scheme(s) for eCatalogues	No. CPV is mandatory for contract publication. It is considered that CPV is too wide, and hence this classification scheme is primarily used for notifications and statistics. No other scheme is used for eCatalogues.
User authentication in ICT Business-to-Government (B-2-G) systems	Yes. Apart from user credentials (i.e. username and password), users are also provided with a code-card. This is a software-based 16-digit code, which can be specified by the user. At every login, the system asks the user to provide the username, password and one digit from that code (e.g. 5th digit). In ICT implementations, all communication between the client-browser and the system is done under HTTPS.
Active collection of tenders ("punch-out")	No. Punch-out is not supported as it is not foreseen by the Latvian legislation.

Table 56: Latvia - Public procurement legal framework

10.4.2 eProcurement programmes and initiatives

Initiatives in eProcurement, particularly in the use of eCatalogues	Yes. ▪ There is no regulation decided about eCatalogues system as catalogues system currently are working under framework agreement.
Training	Yes. ▪ online help for suppliers in the system ▪ public documentation ▪ seminars for supplier and buyer training, free of charge, organised by the Electronic Procurement State Agency (EPSA)

Table 57: Latvia - Public procurement programmes and initiatives

10.4.3 Operations and processes followed for the utilisation of eCatalogues through established ICT systems

Public procurement procedures supported in the system	The system supports Framework Agreements
Actors supported in the system for eCatalogues	▪ Supplier: responsible for populating and submitting eCatalogue prospectuses ▪ Buyer: responsible for eCatalogue browsing and placement of orders ▪ Electronic Procurement State Agency (EPSA):a special agency which replaced Procurement Monitoring Bureau, being responsible for the overall management of system data, including suppliers, buyers, and eCatalogue format
Pre-awarding processes	▪ Defining eCatalogue templates: Electronic Procurement State Agency (EPSA) has 7 specific eCatalogue templates for different products/services ▪ Creating eCatalogues: suppliers are responsible for populating the eCatalogue template files with products/services and prices ▪ Submitting eCatalogues: suppliers are responsible for uploading new eCatalogues in the system. The system automatically performs verification and can either accept the new catalogue, or inform the supplier of specific errors. Traceability of actions for submission is ensured by the system. ▪ Automatic evaluation of eCatalogues: no particular support is provided
Post-awarding processes	▪ Maintaining eCatalogues: the process followed for maintaining eCatalogues is identical to the process for creating them. In addition to the actual updating process, a new process ensures that the new prices of goods (if changed) do not exceed the prices specified in the framework contract. ▪ Ordering through eCatalogues: Buyer can search products or navigate using the hierarchical structure of available eCatalogues. Products to be purchased are included in a "basket". When an order is placed, and following some checks by the system (e.g. minimum required volume levels per supplier), purchase orders are created and sent to suppliers via email. While products have not been added in "basket", information amount provided by the system about product is limited according to law requirements. However, provided information concern only technical specification and there are no information about

	Supplier and so on. System generates product list only with lowest price (lowest price defined for products with same specifications) and Buyer can select only products with lowest price. ▪ <u>Online invoice and payment</u>: the system supports the issuing of invoices and payment through electronic means using the xCBL standard
eCatalogue verification	There are automated and manual checks for eCatalogue verification. Overnight automated checks validate data types (i.e. if a numerical field is indeed numerical), as well as eCatalogue format. Manual eCatalogue content checks are also performed by the contracting authority. If needed, the supplier is officially informed with a deadline for updating/correcting the catalogue.
Re-utilisation of eCatalogues	No explicit support for eCatalogue re-utilisation.
Catalogue access	The Central Purchasing Body has read-only access to all eCatalogues. All product information and prices are available, but one cannot see the name of the supplier. Only after ordering, the name of the enterprise supplying the goods is disclosed.
Application of eCatalogues	The system is used for contracts both above and below threshold, however it is more commonly used for below threshold contracts

Table 58: Latvia - Operations and processes followed for the utilisation of eCatalogues through established ICT systems

10.4.4 Obstacles/issues in establishing eCatalogues systems

Obstacles	▪ eCatalogue quality, correction of technical errors and improvement of eCatalogue content ▪ training the public sector on to how to buy electronically
Needs and requirements	▪ establish mechanisms for verifying the quality of eCatalogues (both technical compliance and content)

Table 59: Latvia - Obstacles/issues in establishing eCatalogues systems

10.4.5 Technical aspects of eCatalogues systems

eCatalogue data exchange standards	No particular data exchange standards are used. The Latvian system uses a bespoke communication protocol through the use of Microsoft BizTalk. It is estimated that the importing/exporting mechanisms can be relatively easily changed to support specific industry-wide standards if required.
eCatalogue formatting standards	Electronic catalogues are formatted in XML.
Security considerations on transmitting and handling eCatalogues	There are no specific security provisions, other than the utilisation of HTTPS.
System implementation	The system is based on the Microsoft Commerce server, tailor-made to match particular needs. The utilisation of BizTalk as an external interface to other systems offers flexibility and good interoperability

Table 60: Latvia – Technical aspects of eCatalogue systems

10.4.6 Content of eCatalogues

Data fields	
	▪ Product Definition
	▪ Listprice
	▪ Product_id
	▪ Amount_at_store
	▪ Amount_update_date
	▪ Barcode
	▪ CPV_classifier
	▪ Currency (in LVL)
	▪ Delevery_period
	▪ Image_filename
	▪ Manufacturer – product manufacturer
	▪ Manufacturer_product_code
	▪ Notes – product description
	▪ Supplier Product Code
	▪ Technical_specification
	▪ UNSPC_classifier
	▪ Warranty
	▪ Variant_id
	▪ SupplierID
	▪ VAT
	▪ PriceForRegion1
	▪ PriceForRegion2
	▪ PriceForRegion3
	▪ PriceForRegion4
	▪ PriceForRegion5
	▪ Discount By Quantity
	▪ Discount By Delivery Term
	▪ ParentCategory
	▪ Description Value
	▪ Title Value
	▪ ProductVariant

Table 61: Latvia - Content of eCatalogues

10.4.7 Statistics

eCatalogues used since	2005	
Number of registered authorities	100	2006
Number of registered suppliers	17	2006
Number of eCatalogues	4	2006
Number of transactions	459	2006

Table 62: Latvia – Statistics

10.5   Norwegian approach

The Norwegian ICT eCatalogue system is in place since 2001, developed by the Government Administration Services. It constitutes an advanced eOrdering and eInvoicing system, following the "eCatalogue current practice" approach discussed in section 3.2, where eCatalogues form the basis for eOrdering, eInvoicing and ePayment.

The main use of eCatalogues in Norway is in the context of framework agreements. Under framework agreements, eCatalogues are used both in situations where agreements are concluded with a single economic operator and several economic operators, including the support for re-opening competitions.

For framework agreements and when the product(s) to be purchased are of low value and/or limited number, eCatalogues are considered as valid tenders, forming the basis for entering into a contract (i.e. purchasing). In situations where several economic operators are involved, the contract is awarded to the one whose eCatalogue offers the best price or most economic advantageous tender (MEAT), as also foreseen in the European Directives on public procurement. The exact evaluation mechanism of tenders for specific contracts is determined by the awarding terms specified in the framework agreement. When the value of the contract or the quantity of items purchased exceeds a certain amount, competition is re-opened. The specificities for the re-opening of competitions are defined at the terms of the framework agreement. When a competition is re-opened, all interested economic operators involved in the framework agreement submit tenders, which must be based on their initial eCatalogues, refining their offers in terms of quantity, delivery timeframe, delivery address, etc

The Norwegian eCatalogue system supports "punch-out" operations; nevertheless this approach is not endorsed.

10.5.1   Public procurement legal framework

Implementation of EU Directives	No.
	As an EEA member, Norway must implement the Directives, however under a different timeline than the EC countries. In particular the 2004/17/EC and 2004/18/EC directive must be implemented by 01/01/2007.
Requirements for eCatalogues	The new set of regulations for implementing the Directives is already in place and approved by the Cabinet. However it is not yet put into force. There is no specific reference to eCatalogues and how they should be used.
	In addition there are no other legal instruments specifying rules and regulations for eCatalogues. Currently, there is work for compiling a Guidance document, which examines the practical uses of eCatalogues. This document is based on real experience gains in Norway from the utilisation of eCatalogues in recent years.
Use of specific product classification scheme(s) for eCatalogues	No.
	CPV is mandatory for contract publication.
	UNSPSC is used for eCatalogues.
User authentication in ICT Business-to-Government (B-2-G) systems	No.
	The main users of the Norwegian eProcurement system are public sector users. Suppliers are only able to visualise their eCatalogues, but no other functionality is provided to them.
	Testing the usage of digital certificates was successful. However, it is considered that digital certificates should not be mandatory, and

	should be offered only as an option. In Norway there are some national solutions for the use of certificates. Nevertheless, at the EU level those solutions would form blocking factors for oversees suppliers.
Active collection of tenders ("punch-out")	Yes. Punch-out is allowed (and supported by the Norwegian system) but not recommended. It is considered that punch-out can be implemented as a supplement to the main flow, but should not be the common practice. The practical implementation of a "punch-out" system raises a number of issues which need to be addressed before its wider utilisation can be envisaged, for example: - There might be no effective control of prices and products, possibly leading to eCatalogues which fall outside the terms of specific framework agreements - There can be different content and information for similar products, even when common product classifications are used - This approach promotes loyalty to suppliers rather than to framework agreements - This approach supports one-to-one relations with suppliers, while one of the primary objectives of the new public procurement rules is to increase competition and to handle many-to-many relations. - Punch-out can result in the utilisation of different user interfaces. This might involve additional training for buyers, as well as, higher costs when integrating with other ICT systems - Increased probability for instability and longer search times within a system

Table 63: Norway - Public procurement legal framework

10.5.2 eProcurement programmes and initiatives

Initiatives in eProcurement, particularly in the use of eCatalogues	Yes. ▪ completion of a Guidance document, detailing how eCatalogues should be used in practice ▪ follow up of a 2001 initiative, which was put into force in 2002, on further improving the Norwegian system, providing additional practical uses of eCatalogues ▪ introduction of standards and processes which are convenient for suppliers
Training	No. ▪ there is no national training programme for supplier or buyers. There was such programme in 2001-2002. Nevertheless there are regional programmes for introducing suppliers to public procurement and eProcurement. The operator of the electronic service for public procurement provides weekly courses. ▪ the government deems it more important to educate administration on public procurement rules generally, rather than having a specific national programme on supplier adoption.

Table 64: Norway - Public procurement programmes and initiatives

10.5.3 Operations and processes followed for the utilisation of eCatalogues through established ICT systems

Public procurement procedures supported in the system	The system is used for contracts both above and below the EU thresholds (Norway introduced national thresholds corresponding to the EU ones).
Actors supported in the system for eCatalogues	▪ Buyer: responsible for placing orders through the approved eCatalogues ▪ Supplier: responsible for creating eCatalogues, improving eCatalogues based on feedback from the Marketplace Provider, and for processing orders. ▪ Catalogue Factory: organisational entity responsible for verification, normalisation and classification of eCatalogue content. All changes to eCatalogues are performed by suppliers, therefore the role of the Catalogue Factory is to provide feedback to suppliers for improving the quality of eCatalogues
Pre-awarding processes	▪ Defining eCatalogue templates: the Catalogue Factory issues templates for Product and Price files. These are spreadsheet files, the former describing product lines of an eCatalogue, and the latter providing prices. ▪ Creating eCatalogues: the supplier is required to populate the Product and Price files. It is possible for the supplier to create two eCatalogues re-utilising the same Product file. So, for instance, if a supplier has framework agreements with two different Authorities, which include the same products, it is feasible to create one Product file and two Price files. ▪ Submitting eCatalogues: eCatalogues are commonly submitted to the Catalogue Factory via email. There is no support for traceability of actions. ▪ Upload eCatalogues in the system: the eCatalogues are uploaded by the Catalogue Factory ▪ Automatic evaluation of eCatalogues: no particular support is provided
Post-awarding processes	▪ Maintaining eCatalogues: the process for the creation and maintenance of eCatalogues is similar, however due to the two spreadsheet files used, it is possible for suppliers to update only products or only prices. eCatalogues can be re-used, as the same Product file can be used for the creation of more than one eCatalogue ▪ Ordering through eCatalogues: buyers can place orders through eCatalogues. In most cases, suppliers enrolled in the system have full system integration with the Norwegian system, hence permitting the further electronic process of orders. ▪ Online invoice and payment: the system supports the issuing of invoices and payment through electronic means using the xCBL standard
eCatalogue verification	A specialised tool generates eCatalogue scorecards. It can review the content of an eCatalogue and through indicators provide information on their quality, e.g. relevance and search-ability. This tool is made available to suppliers in order to allow them to evaluate the quality of their eCatalogues prior to submission. Furthermore, the Catalogue Factory group verifies eCatalogue quality through manual checks. It does not however perform any

	changes to supplier eCatalogues but only provides guidance with regard to its approval.
Re-utilisation of eCatalogues	A supplier can have one product description file and several price files. This allows suppliers to have different prices for the same products in different agreements. Furthermore, some products maybe be available in one agreement but not in another.
Catalogue access	Access to eCatalogues is based on the role of each user and the framework agreement that user has access to.
Application of eCatalogues	The Norwegian system handles eCatalogues for both above and below the EU threshold.

Table 65: Norway - Operations and processes followed for the utilisation of eCatalogues through established ICT systems

10.5.4 Obstacles/issues in establishing eCatalogues systems

Obstacles	▪ lack of public procurement training; this is the prerequisite for use of eProcurement and eCatalogues in particular
	▪ significant change management issues from moving to eProcurement.
	▪ quality of eCatalogue prospectuses
	▪ supplier on-boarding
	Norway launched activities for educating the public sector on public procurement, and asked public sector entities to enter agreements for the use of electronic procurement. It is estimated that by 2009-2010 most public sector entities will be fully aware and practically be using eProcurement. Currently the achievement is to stimulate public sector employees on public procurement and "gain their attention".
Needs and requirements	▪ adoption of industry-wide standards, particularly focusing on how these can simplify processes for suppliers
	▪ adoption of an appropriate product classification scheme
	▪ localisation issues in the use of eCatalogues. In some business areas such as health, it is more convenient for the public sector to acquire eCatalogues in the English rather than the Norwegian language.

Table 66: Norway - Obstacles/issues in establishing eCatalogues systems

10.5.5 Technical aspects of eCatalogues systems

eCatalogue data exchange standards	The majority of eCatalogues are submitted by suppliers via email. No particular exchange standards are used.
eCatalogue formatting standards	Most eCatalogues take the form of spreadsheet files. The new version of the eProcurement system, which is currently being defined, will support more advanced eCatalogue submission techniques, through the use of UBL 2.0. The messaging framework for eOrdering and eInvoicing is the same in Norway, the UK, and Sweden, all of which are working on customising UBL 1.6. The objective is to introduce a solution which is more advanced that spreadsheet files, but still not complicated for suppliers.
Security considerations on transmitting and handling eCatalogues	There are no specific security provisions.
System implementation	The Norwegian system is based on CommerceOne, SAP and Poet technologies.

Table 67: Norway – Technical aspects of eCatalogue systems

10.5.6 Content of eCatalogues

Data fields	Mandatory fields: ▪ Supplier ID ▪ Buyer ID ▪ Product File ID (field of the Price file, referencing the appropriate Product File) ▪ Price File ID (field of the Product file, referencing the appropriate Price File) ▪ Article Number ▪ Article Name ▪ Product Description ▪ Price Unit ▪ Delivery Time ▪ VAT Rate ▪ Risk Indicate ▪ Package Quality ▪ UNSPSC Code ▪ Unit Price ▪ Currency Code ▪ Minimum Quantity Optional fields: ▪ Revision Date ▪ Application Date ▪ Units in Package ▪ Picture

	▪ Attachment
	▪ Manufacturer
	▪ Manufacturer Article Number
	▪ Generic Article Register Number
	▪ Generic Article Register Name
	▪ URL
	▪ HAMS
	▪ Synonyms
	▪ Buyer Specific Information

Table 68: Norway - Content of eCatalogues

10.5.7 Statistics

eCatalogues used since	2001	
Number of registered authorities	30	2004
Number of registered suppliers	164	2004
Number of eCatalogues	450.000 product lines	2004
Number of transactions	34.000	2004

Table 69: Norway – Statistics

10.6   Scottish approach

The ICT eCatalogue system has been implemented by Scottish Executive. It forms an "eCatalogue current practice" system, discussed in section 3.2, focused in procurement cost reduction through eOrdering and eInvoicing. The system is used for procuring contracts both above and below the EU threshold.

The system is used by contracting authorities for managing Framework Agreements they have with suppliers, particularly for the procurement of goods and services. Electronic catalogues take the form of spreadsheet files. The buyer is responsible for upload eCatalogues in the system, enabling procurement officers to place orders using electronic means. In recent procurements, more sophisticated functionalities were used, permitting buyers to define worksheet spreadsheets in the system, requesting suppliers to populate them accordingly. By this, it is possibly for the system to perform some analysis for the evaluation of the received eCatalogues. Nevertheless there is very limited experience in this field, as this approach does not constitute the common way in which eCatalogues are used.

The Scottish system supports the use of "punch-out". Under this approach, eCatalogue data is actually stored in private sector systems. Procurement officers can, through the Scottish system, access eCatalogues which are reside in remote systems (commonly supplier websites). There, they can create a "basket" of goods to be purchased. For placing an order, the "basket" information is transmitted from the supplier system back to the Scottish eProcurement system, which can then commence the related eOrdering processes. Scottish Executive offers suppliers with the possibility to implement the "punch-out" method at no cost. Nevertheless, suppliers must incur the integration costs. Although the support of "punch-out" is open to all suppliers, in reality the necessary integration work tends to be long and costly for the private sector. Consequently, only large companies see the benefit to invest in such an approach. Currently, only about 30 of the 10.000 private sector companies have completed the "punch-out" integration.

10.6.1 Public procurement legal framework

Implementation of EU Directives	Yes. The EU Directives were implemented in the UK in January 2006.
Requirements for eCatalogues	No. The focus of Scottish legislation is on eTendering procedures and particularly on DPS. There are no specific requirements for eCatalogues
Use of specific product classification scheme(s) for eCatalogues	No. CPV is mandatory for contract publication (regarding pre-awarding phases). UNSPSC is used for eCatalogues (regarding post-awarding phases).
User authentication in ICT Business-to-Government (B-2-G) systems	No.
Active collection of tenders ("punch-out")	Yes. The Scottish approach foresees the usage of "punch-out". PECOS, the Scottish eCatalogue system, is capable to connect to supplier web-sites in order to display products. No product data is transferred to the PECOS system. Only when an order is placed, the system can transfer the order data back to PECOS. The integration process between PECOS and a supplier web-site is long and technical knowledge is required. Only large suppliers usually perform this integration, and currently only 30 suppliers have implemented the punch-out. While there are no connection costs, suppliers incur de facto relatively high costs for implementing the integration

Table 70: Scotland - Public procurement legal framework

10.6.2 eProcurement programmes and initiatives

Initiatives in eProcurement, particularly in the use of eCatalogues	Yes. ▪ the next initiative will be to provide for full suppliers system integration. A repository will be built were all eCatalogues are stored. Furthermore, suppliers will be able to authenticate and maintain their eCatalogues in the portal, or transmit them in a fully automated manner
Training	Yes. ▪ Scotland attaches great importance to educating suppliers in public procurement rules and the possibilities of the system. There is a common process for supplier adoption, hence there is consistency and equality of treatment for all suppliers.

Table 71: Scotland – Public procurement programmes and initiatives

10.6.3 Operations and processes followed for the utilisation of eCatalogues through established ICT systems

Public procurement procedures supported in the system	Usage primarily for Framework Agreements. The system permits the submission of eCatalogues as tenders for one-off procurements, however this is not used in practice.
Actors supported in the system for eCatalogues	▪ Supplier: responsible for populating and submitting eCatalogue spreadsheet files ▪ Buyer: responsible for reviewing eCatalogues and uploading in the system
Pre-awarding processes	▪ Defining eCatalogue templates: the Scottish Executive has one standard template for eCatalogues which is made available to suppliers ▪ Creating eCatalogues: suppliers are responsible for populating the standard eCatalogue spreadsheet template ▪ Submitting eCatalogues: suppliers are responsible for submitting eCatalogues to the buyer. The submission of eCatalogues is performed via email. The buyer performs quality checks and validates the data formats using a third party content management solution. ▪ Uploading eCatalogues in the system: the buyer uploads the eCatalogue in the system ▪ Automatic evaluation of eCatalogues: no particular support is provided
Post-awarding processes	▪ Maintaining eCatalogues: the processes for maintaining eCatalogues is the same as for their creation ▪ Ordering through eCatalogues: buyers are responsible for placing orders. For each buyer there are different order approval workflows, based on the particular needs of the authority. Hence, there are mechanisms to support simple or advanced approval of orders, through the usage of user profiling and workflows for obtaining budgetary and procurement approval ▪ Online invoice and payment: the system supports the issuing of invoicing and payment through electronic means using the cXML standard
eCatalogue verification	Scotland features a tool which can automatically validate the format of an eCatalogue. Furthermore it can verify the content of an eCatalogue, for instance by performing a comparison of an eCatalogue with its previous version and verifying the validity of a UNSPSC code. Some processes for data verification are performed manually.
Re-utilisation of eCatalogues	No explicit support for eCatalogue re-utilisation.
Catalogue access	There are different eCatalogues for different public sector organisations. User profiling with different access rights is supported.
Application of eCatalogues	The system is used for both above and below EU threshold contracts.

Table 72: Scotland - Operations and processes followed for the utilisation of eCatalogues through established ICT systems

10.6.4 Obstacles/issues in establishing eCatalogues systems

Obstacles	▪ Supplier adoption
	▪ The format by which products/services should be described in eCatalogues, to enable re-usability and further processing
	▪ The processes and conditions under which suppliers may maintain their eCatalogues
Needs and requirements	▪ Full interpretation of eCatalogues, what they entail and how they should be used
	▪ Adoption of appropriate industry-wide standards for eCatalogue formatting and exchange, without creating barriers for suppliers (and in particular SMEs)

Table 73: Scotland - Obstacles/issues in establishing eCatalogues systems

10.6.5 Technical aspects of eCatalogues systems

eCatalogue data exchange standards	Currently no specific message exchange standard is used. Electronic catalogues are submitted via email. Analysis is currently underway for identifying more suitable exchange formats. The most important aspect for selecting a standard is the ease of use for suppliers.
eCatalogue formatting standards	There are no specific message formatting standards. Currently, standardised spreadsheet templates are used.
	To move forward, Scotland would first like to make sure that any standards used in the area will:
	▪ offer benefits in terms of ensuring the quality of eCatalogues, through the use of automated tools
	▪ do not form blocking factor for suppliers, and particularly SMEs
Security considerations on transmitting and handling eCatalogues	There are no specific security provisions.
System implementation	The Scottish eProcurement system is an off-the-shelf application called PECOS, developed by elcom. The service is managed by CAPGemini.

Table 74: Scotland - Technical aspects of eCatalogue systems

10.6.6   Content of eCatalogues

Data fields	Mandatory fields:
	▪ Transaction type
	▪ DUNS number
	▪ Catalogue key name
	▪ Item type
	▪ Item number / SKU
	▪ Item description
	▪ Customer price
	▪ Unit of measure code
	▪ UNSPSC Code
	Optional fields:
	▪ Manufacturer
	▪ Manufacturer part number
	▪ Image
	▪ URL
	▪ List price
	▪ Minimum quantity
	▪ Start and End date
	▪ Discount
	▪ Page number
	▪ Item sub
	▪ Receipt required

Table 75: Scotland - Content of eCatalogues

10.6.7   Statistics

eCatalogues used since	2001	
Number of registered authorities	17.000 public sector users	2006
Number of registered suppliers	13.000	2006
Number of eCatalogues	8.000	
Number of transactions	831.764 transaction (value of orders is £709 million)	2006

Table 76: Scotland – Statistics

10.7 Swedish approach

Sweden follows a de-centralised approach to eProcurement, providing full autonomy to local authorities and municipalities[23]. The governance of the government agencies in Sweden is based on the principle that each agency must fulfil the goals set by the government. Each agency has its own budget and is responsible to appropriately manage internal processes and tasks as long as they fulfil the national goals and regulations in Sweden. Therefore, each agency can handle its own procurement activities independently from others.

As a result, there is no national eCatalogue ICT application. Instead there are various eCatalogue systems, which function as "eCatalogue current practice" systems, discussed in section 3.2. Most implementations utilise the EDI standard for ordering through framework agreements.

Due to this de-centralised structure, with many different vendor or third-party driven solutions, the use of industry-wide standards is understood to be of great importance. Sweden participates actively in the Northern European UBL 2.0 Subset Working Group, discussed in detail in [SIR].

Many agencies in Sweden use the UNSPSC product classification scheme. Through cooperation between public and private stakeholders, there is now a Swedish translation of the UNSPSC scheme, inline with the translations made in other Nordic countries.

Due to this de-centralised approach in Sweden, only the relevant sections of the country sheet are presented.

10.7.1 Public procurement legal framework

Implementation of EU Directives	No. The EU Directives will be implemented by a Mandatory part and an Optional part. The former will be put in force in 2007, while the latter, focusing on eAuctions and DPS, will probably be put in force by 2008.
Requirements for eCatalogues	No.
Use of specific product classification scheme(s) for eCatalogues	No. In practice, UNSPSC is utilised by most public entities for eCatalogues.
User authentication in ICT Business-to-Government (B-2-G) systems	No. Each public entity can decide the best authentication scheme for its system(s).
Active collection of tenders ("punch-out")	Not yet discussed.

Table 77: Sweden - Public procurement legal framework

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[23] This autonomy is a fundamental principle, written into the instrument of Government, one of the central pillars of the Swedish Constitution. Although authorities and municipalities must act in line with the Swedish parliament and government decision-making, municipal autonomy gives them the right to make decisions independently and to levy the necessary municipal taxes.

10.7.2 eProcurement programmes and initiatives

Initiatives in eProcurement, particularly in the use of eCatalogues	Yes. eCatalogues are used. ▪ the main objective in Swedish is the full implementation of the EU Directives 2004/17/EC and 2004/18/EC.
Training	Yes. ▪ there are programmes that aim to educate the public and private sectors on the new rules and regulations of public procurement. ▪ a number of public entities offer specialised training for their particular systems.

Table 78: Sweden - Public procurement programmes and initiatives

10.7.3 Obstacles/issues in establishing eCatalogues systems

Obstacles	▪ Training ▪ Coexistence of different product classification schemes ▪ Adoption of industry-wide standards for eCatalogue formatting and exchanging ▪ A lot of suppliers lack product structures, or have poorly defined ones ▪ Product structures that exist, lack normalisation. Third party services are needed to build vendor-neutral catalogues
Needs and requirements	▪ Convergence of standards generally and, notably, by UN/CEFACT and UBL activities. Due to the nature of work such efforts should not be left to individual countries' initiatives.

Table 79: Sweden - Obstacles/issues in establishing eCatalogues systems