ELECTRONIC CATALOGUES IN ELECTRONIC PUBLIC PROCUREMENT

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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 preliminary requirements and recommendations for their further development.

The present study is split into three parts:

- **State of Play**: presents eCatalogue initiatives in the public sector in the EU and in private companies, highlighting common features, differences, needs and requirements

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

- **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 Functional Requirements analysis.

The report starts by providing an overview of the legal background for the use of eCatalogue prospectuses in public procurement, based detailed presentation of the [SoP] report. This is followed by an overview of the available procedures for one-off and repetitive purchases, as set out in the EU Directives, and supplemented with the identified legal requirements for the use of eCatalogue prospectuses for the submission of offers. Based on the identified legal requirements, preliminary functional and non-functional requirements related to the use of eCatalogues prospectuses in eProcurement systems are identified. The former describe the functionality and operation of such systems given specific input, while the latter describe general attributes of ICT systems which are not bound to a specific functionality.

The report identifies preliminary functional requirements for the procurement of both, one-off contracts (open and restricted procedures) and of repetitive contracts (Framework Agreements and Dynamic Purchasing Systems) through the use of eCatalogue prospectuses. In addition, functional requirements for the use of eCatalogues in eAuction events are discussed. Finally requirements related to the content of eCatalogues are examined, comprising those for forming tenders and those for describing products/services within eCatalogue prospectuses. In terms of the so-called "non-functional requirements", eProcurement systems should particularly take into account requirements of interoperability and security; other subsidiary requirements such as availability and scalability should also be considered.

The identified legal and functional preliminary requirements are summarised below, followed by the most important technical recommendations for Member States, Standardisation Bodies and/or the European Commission.

Identified preliminary legal requirements for the use of eCatalogues in public procurement

#	Legal Requirements	Status
1	Ensure equal treatment, non-discrimination and transparency	Mandatory
2	Use interoperable electronic means and tools for communication	Mandatory
3	Provide non-discriminatory specifications for creating tenders in the form of eCatalogue prospectuses	Mandatory
4	Provide additional information after publication in a non-discriminatory way	Mandatory
5	Apply rules for the device for the electronic receipt of tenders/eCatalogues	Mandatory
6	If used, fully automate eCatalogue prospectus verification	Optional
7	Provide rules and guidelines for performing eCatalogue updates	Mandatory, however only applicable for Framework Agreements and DPS
8	Provide rules and guidelines for the active collection of tenders in the form of updated eCatalogues (punch-out)	Optional

Identified preliminary functional requirements for the use of eCatalogues in public procurement

#	Functional Requirements	Status
6	Provide standards-based tender specifications for eCatalogue prospectuses	Optional but recommended
7	Define a tender evaluation mechanism for eCatalogue prospectuses	Mandatory
8	Prepare official procurement notices including eCatalogue informaton	Mandatory if eCatalogues are authorised
12	Publish Contract Documents	Mandatory
15	Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses	Optional
16	Make available to suppliers tools for assessing the quality of their eCatalogue prospectuses	Optional
19	Support creation of initial offers in the form of eCatalogue prospectuses	Mandatory if eCatalogues are authorised by the call for tenders
20	Allow for the interoperable and secure submission of tenders in the form of eCatalogue prospectuses	Mandatory
21	Support a device for the electronic receipt of tenders (including eCatalogue prospectuses)	Mandatory
25	Automate the evaluation of tenders in the form of eCatalogue prospectuses	Optional
28	Verify eCatalogue prospectus format outside specific calls for competition and request refinement if needed	Optional
29	Support the refinement of eCatalogue prospectus format	Optional
30	Support creation of specific offers in the form of eCatalogue prospectus update (in view of re-opening of competition)	Mandatory if eCatalogues are authorised
31	Archive submitted eCatalogue prospectuses prior to any updates	Mandatory
32	Support an appropriate device for the active collection of tenders ("punch-out")	Optional
33	Support creation of specific offers in the form of eCatalogue prospectus update (under re-opening of competition)	Mandatory if eCatalogues are authorised
34	Automate verification of technical format and quality of eCatalogue update	Optional
35	Automate placing an order based on an eCatalogue prospectus	Optional
38	Create indicative Tenders in the form of eCatalogue prospectuses in a DPS	Mandatory if eCatalogues are authorised
40	Rank tenderers based on the automated evaluation of bids in the form of eCatalogue prospectuses in an eAuction	Mandatory in case an eAuction event takes place

One of the main findings of the analysis relates to the overall environment for eCatalogues in public procurement. The current setting demonstrates significant limitations for both the public and private sectors. The report briefly suggests two Evolution Phases in order to improve this.

In a first Evolution Phase, suppliers should be enabled to use their already established eCatalogue prospectuses, instead of creating and submitting eCatalogue prospectuses in line with buyer specifications. This could increase the use of eCatalogues. However, eCatalogue Evolution Phase I might imply increased manual effort for contracting authorities, since it is expected that the received tenders would be quite diverse in format and content. Evolution Phase II refers to an 'optimum' use of eCatalogue prospectuses based on widely adopted standards, which would define industry-wide specifications for eCatalogue exchange, format and, to some degree, presentation of content. The use of such standards would allow eCatalogue prospectuses to be created and processed in an automated or semi-automated way, offering the expected efficiency gains.

Recommendations

- Adopt industry-wide standards for formatting and exchanging eCatalogue prospectuses (both for "pre" and "post" award phases) as well as standards for product classification and description. (Actors: Member States)

- Extend existing standards in order to incorporate in eCatalogue prospectuses all information necessary for tendering in public procurement. In addition to the description of offered products and/or services, a typical response to a call for tenders commonly includes many more additional and necessary information. (Actors: Standardisation Bodies, Member States, European Commission)

- Adopt mechanisms for establishing and bidding in eAuctions through the use of eCatalogues. eCatalogues appear to be suitable for forming bids as an eAuction device must be capable to automatically process bids without any manual intervention (Actors: Member States)

- Formulate a suitable legal, organisational and technical framework for the electronic submission of proof documents. Currently, suppliers participating in public calls for tenders are required to submit proof documents to contracting authorities in hard-copy, in order for them to retain their legal validity. This step is necessary in order for eCatalogue prospectuses to form complete tenders, rather than only parts of them (Actors: European Commission, Standardisation Bodies, Member States)

- Establish specifications for Dynamic Purchasing Systems (DPS), which clearly define how a DPS should function in line with the EU Directives, i.e. solely based on electronic means. Currently, the exact operation of such systems still seems not to be well understood (Actors: European Commission)

- 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 foreseen under the EU Directives, based on which the contracting authority can actively collect tenders. It offers opportunities for automation, however its current use does not always meet all the requirements of the EU Directives for the receipt of tenders (Actors: Member States)

- Customise existing eProcurement systems with a view to establishing "eCatalogue stock management systems" which utilise standardised, interoperable "eCatalogue prospectuses", in order to support all phases of the procurement cycle, both for "pre" and "post" award purposes (Actors: Member States)

- Establish Open Source software applications/tools, which can be re-used by many contracting authorities and Member States. (Actors: Member States)

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Legal Requirement 4	Provide additional information after publication in a non-discriminatory way
Legal Requirement 5	Apply rules for the device for the electronic receipt of tenders/eCatalogues
Legal Requirement 6	If used, fully automate eCatalogue prospectus verification
Legal Requirement 7	Provide rules and guidelines for performing eCatalogue updates
Legal Requirement 8	Provide rules and guidelines for the active collection of tenders in the form of updated eCatalogues (punch-out)

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Functional Requirement 40	Rank tenderers based on the automated evaluation of bids in the form of eCatalogue prospectuses in an eAuction

1   Introduction

In April 2004, the European Parliament and the Council adopted the new public procurement Directives 2004/18/EC and 2004/17/EC (the "EU Directives"), the former related to the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts, and the latter related to the coordination of the procurement procedures of entities operating in the water, energy, transport, and postal services sectors. This legislative package provides for the first time a coherent EU framework for the transparent and non-discriminatory use of electronic means in the public procurement process ("eProcurement"). Amongst its most innovative provisions, it envisages the creation and submission of tenders in the form of electronic catalogues (eCatalogues).

In 2006, the European Commission (EC) initiated a project (hereafter the "study") to analyse the current state of play regarding eCatalogue practices in the EU, to review relevant standardisation initiatives and to identify preliminary functional requirements for their further development in the context of public procurement. The study contributes to the implementation of the Action Plan on electronic public procurement, adopted by the Commission in 2004, which aims to assist the introduction of efficient and compliant eProcurement solutions by the Member States.

The present "Functional Requirements report" documents the identified preliminary functional and non-functional requirements for the use of eCatalogues in public procurement. The analysis follows the same approach used also in [Func. Reqs Vol. I], which presented an initial set of requirements for eProcurement systems, without however emphasising on the use of electronic catalogues. The present report adapts the findings of [Func. Reqs Vol. I] and incorporates new preliminary requirements for the use of electronic catalogues. More specifically, it includes:

- A legal background chapter on possible uses of eCatalogue prospectuses under the available public procurement procedures. Relevant information from [SoP] and [Func. Reqs. Vol. I] is also included in this section, providing an overview of legal requirements and rules. These are formalised in eight legal requirements for the use of eCatalogues in public procurement.

- A set of preliminary functional requirements for ICT systems and tools, with specific focus on the use of eCatalogues in the different public procurement procedures and phases

- A set of non-functional requirements for ICT systems and tools, with specific focus on interoperability and security

- A list of good practices and recommendations for Member States, Standardisation Bodies and the European Commission

The analysis results to the identification of eight legal requirements on the use of eCatalogues in public procurement, as well as, forty preliminary functional requirements. About half of the functional requirements are directly related to the use of eCatalogues in public procurement, while the rest concern functionalities for supporting eProcurement in general and are included in the current document for completeness. The identification of preliminary functional and non-functional requirements relies on the following assumptions:

- National, regional and/or local legal requirements contracting authorities have to adhere to are similar to the ones described in the EU Directives.

- The analysis presented in this report does not consider the negotiated procedure or competitive dialogues, as the use of electronic catalogues for both of these procedures is considered not suitable.

- The analysis considers the procurement of public contracts that fall within the scope of Directives 2004/17/EC and 2004/18/EC. For the procurement of contracts that fall outside their scope, the general principles of these Directives should be respected.

All identified functional requirements are marked either as "mandatory" or "optional". Mandatory are those requirements that are explicitly mentioned in the EU Directives. Optional on the other hand are the requirements which are not explicitly described in the Directives, nevertheless could usefully be implemented in eProcurement systems supporting eCatalogues so as to increase transparency and efficiency or to offer added-value services.

The report should be understood as a set of indicative guidelines assisting EU Member States in transposing the EU public procurement legislation and in setting up and managing eProcurement systems that are compliant with it, in particular when making use of eCatalogues. Moreover, the report aims to serve as a reference for designing new eProcurement systems or for adapting existing ones, as well as, for guiding standardisation activities.

2   Use of eCatalogue prospectuses in public procurement

Before proceeding to the analysis and identification of specific preliminary legal, functional and non-functional requirements for the use of eCatalogues, this chapter seeks to provide a general overview. Section 2.1 briefly discusses the notion of eCatalogues, in particular the two eCatalogue types analysed in detail in [SoP], and their deployment in a public procurement context. Section 2.2 suggests a two phase scenario for evolving from the current use of eCatalogues, which is primarily based on "buyer-defined" eCatalogue prospectuses, to their "optimum" use which would be based on industry-wide eCatalogue standards.

2.1   The notion of eCatalogue prospectuses in public procurement

According to the EU Directives, electronic catalogues may, under certain conditions, constitute a tool for submitting tenders. They are electronic documents describing products/services and prices that are exclusively created by suppliers in response to a public call for competition. An eCatalogue may form a full tender or part of it. This includes both, initial offers (i.e. in a one-off procedure, for a Framework Agreement or an indicative offer for a DPS) and specific offers under a repetitive procurement procedure. Therefore, eCatalogues may constitute binding legal documents, and must describe in an accurate and complete manner the products/services offered by a supplier.

However, in practice eCatalogues are usually interpreted as ICT systems rather than electronic documents. Two different eCatalogue interpretations can therefore be distinguished (referred to as "abstract types"):

-   "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 and is exclusively created and maintained by a supplier in reply to a specific call for competition, in accordance with the rules and requirements of the EU Directives

-   "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 should ensure the appropriate handling and storage of eCatalogue prospectuses in accordance with the rules and requirements of the EU Directives for the electronic submission of tenders. Post-award activities, such as eOrdering, may be supported.

Current public sector practice in the EU focuses on implementing "eCatalogue stock management systems" and less on "eCatalogue prospectuses". eCatalogues are not commonly used to form initial offers; their primary operation is for populating marketplaces, and for providing support for eOrdering and eInvoicing i.e. after a contract has been awarded. The specifications used for forming eCatalogue prospectuses are defined by buyers ("buyer-defined" in **Figure 1**) to match their specific needs, usually taking the form of spreadsheet templates. eCatalogue prospectuses created by suppliers according to their own internal needs ("supplier-defined" in **Figure 1**) are not commonly accepted. This leads suppliers to dedicate significant effort to create and manage prospectuses. In addition, the quality of such prospectuses, due to their bespoke nature, is usually low, requiring contracting authorities to perform manual eCatalogue data verification checks. Such checks often do not fully meet the requirements of the EU Directives.
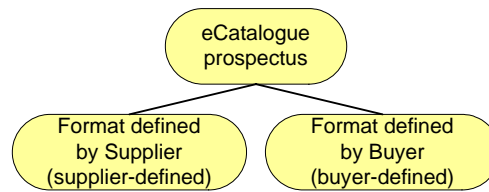
Figure 1: Categorisation of eCatalogue prospectuses

Thus the current use of eCatalogues is thought to demonstrate significant limitations, the most important of which include:

- Complex requirements for suppliers in creating and managing eCatalogue prospectuses, which may affect participation in public procurement competitions

- Low interoperability of eCatalogue prospectuses, especially for cross-border transactions

- Limited possibilities for re-usability of eCatalogues for different purposes and ICT systems

- Limited possibilities for the automated processing of eCatalogue prospectuses (e.g. creation, evaluation, etc)

The use of more standardised eCatalogue prospectuses for the submission of offers, as envisaged by the EU Directives, could offer greater benefits and opportunities for both buyers and suppliers. **Table 1** enlists some of the anticipated benefits.

	Expected benefits for Suppliers	Expected benefits for Buyers
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	– 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 – 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	– Better quality of eCatalogue prospectuses – Harmonisation of the technical eCatalogue framework in Europe, accommodating the re-usability of eCatalogue prospectuses for many different purposes	– 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

Table 1: Potential benefits from the use of eCatalogues in public procurement

As outlined in **Table 1** above, the potential benefits from a more efficient use of eCatalogues in public procurement may be significant for both suppliers and buyers. Achieving these benefits requires however a more harmonised framework for the use of eCatalogues (i.e. format, exchange and content) throughout Europe, both in the public and private sectors. Information on on-going standardisation needs and activities is presented in chapter 5 and, in more detail in [SIR] and [SoP].

2.2 Towards a more efficient and interoperable use of eCatalogue prospectuses in public procurement

In light of both, current limitations to the use of eCatalogues in public procurement, as well as the potential benefits eCatalogues may offer if used more efficiently, it is evident that the current setting must be evolved. A possible scenario for this could be implemented in two evolution phases, as summarised in **Figure 2**:

- **Evolution Phase I (acceptance of supplier-defined eCatalogue prospectuses):** The first step towards achieving a better use of eCatalogues is to reach the point where suppliers, instead of creating and submitting buyer-defined eCatalogue prospectuses, may use their own, already established supplier-defined electronic prospectuses. Based on such a development, suppliers would probably save a lot of time in creating tenders (in the form of supplier-defined eCatalogues), which could be expected to result in more effective competitions with increased participation. As discussed in section 2.1, existing supplier-defined eCatalogue prospectuses cannot currently meet all the requirements of contracting authorities for the content of tenders. In this respect, under this Evolution Phase, suppliers would be allowed to use their existing eCatalogues to form parts of their tenders while they would still need to manually prepare some tender documentation on a case-by-case basis. Furthermore, it might be anticipated that contracting authorities would also need to dedicate, at least in the short term, more effort for processing/evaluating received tenders, as such tenders, in the form of supplier-defined eCatalogues are likely to be diverse in both format and content. However, the manual workload incurred in the tendering process would be shared between suppliers and contracting authorities, in contrast to the current situation, which requires suppliers to perform, and bear the costs of most of the manual work for participating in a competition.

- **Evolution Phase II (eCatalogue prospectuses based on standards / full automation):** The optimum use of eCatalogue prospectuses would be achieved by a further evolution of their use, through the adoption of industry-wide eCatalogue standards for their format, exchange and possibly, contents. Through the adoption of standards, it would be easier to create and process eCatalogue prospectuses in an automated (or semi-automated) manner, offering efficiency gains as describe in **Table 1**. During this phase, contracting authorities might request eCatalogue prospectuses to abide to existing standards, motivating suppliers to adjust their existing prospectuses in line with such standards. The expected convergence of the two most prominent eCatalogue standards (i.e. UBL and c-Catalogue, as discussed in [SIR]) is anticipated to lead suppliers to establish eCatalogue prospectuses that could be re-used in many (public and private) procurement competitions and in various countries. Furthermore, the standardisation of eCatalogue prospectuses could be expected to result in the establishment of commercial tools and applications for the creation and management of eCatalogue prospectuses.

Figure 2 depicts the current situation and the two evolution phases envisaged to achieve optimum use of eCatalogues.

CURRENT PRACTICE

Buyer-defined eCatalogue prospectuses
- eCatalogues prospectuses are created by suppliers in accordance to the tailor-made specifications of contracting authorities
- There is limited room for suppliers to automate any processes for the preparation of such prospectuses, effectively introducing significant barriers to suppliers to form tenders

EVOLUTION PHASE I

Supplier-defined eCatalogue prospectuses
- eCatalogues prospectuses accepted by contracting authorities comprise those that are already created by suppliers in accordance to their own needs
- This saves significant time for suppliers, as the base for forming tenders in public procurement competitions constitutes their already existing eCatalogues
- The possibilities available to Contracting Authorities for automating any evaluation (and subsequent) processes is more limited, nevertheless their competitions are more effective as there is increased competition

EVOLUTION PHASE II

eCatalogue prospectuses based on standards (full automation)

- Admissible eCatalogues prospectuses are those which comply with industry-wide standards both for their format and exchange methods
- Contracting authorities save time in the specifications for creating tenders in the form of eCatalogues
- Possibilities for both buyers and suppliers to automate processes in order to achieve efficiency gains
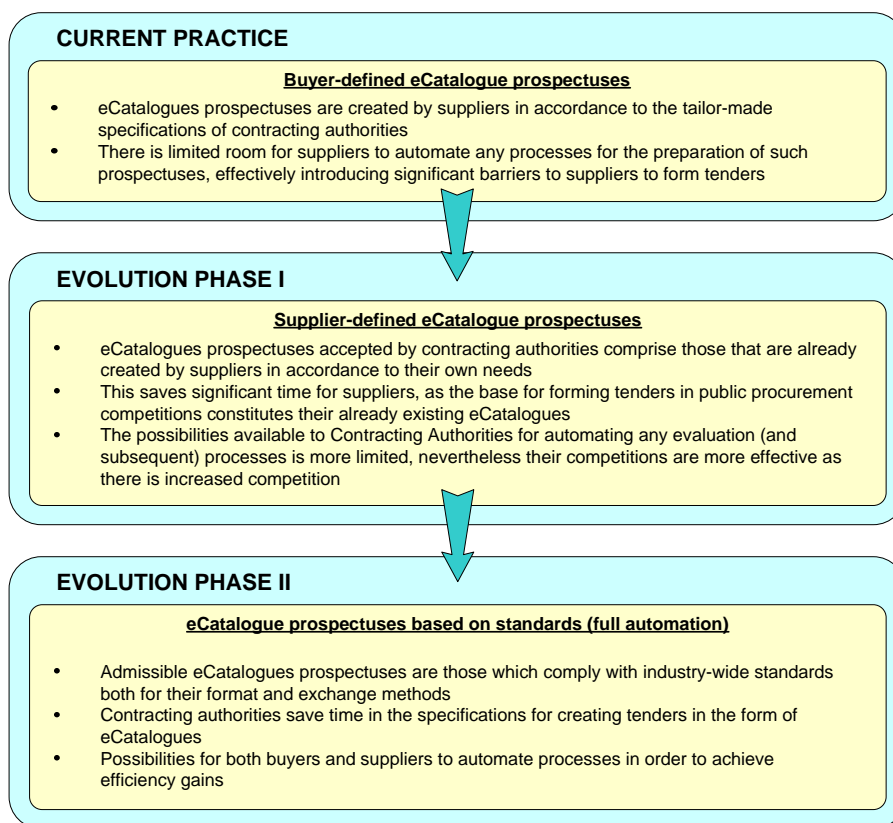
Figure 2: Envisaged evolution of eCatalogue use in public procurement

3   The legal framework for eCatalogues

The legal framework for the electronic submission of tenders taking the form of electronic catalogues is described in detail in chapter 2 of [SoP]. This legal framework emerges from the EU Directives on public procurement [2004/17/EC] and [2004/18/EC]. The first Directive relates to the procurement of works, supplies, and services by entities in the utilities sector and the latter relates to the procurement of works, supplies, and services by entities in the public sector.

This chapter presents an overview of the legal framework for electronic catalogues and their use in public procurement. Section 3.1 recalls and describes the available procurement procedures and phases in order to facilitate understanding. This description does not specifically refer to eCatalogues, and simply treats them as electronically submitted offers. The following section 3.2 then discusses aspects and legal requirements specific to the use of eCatalogue prospectuses in public procurement.

3.1   Public procurement procedures under the EU directives

The EU Directives envisage procurements through two main types of purchases: so-called 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).

In the following, the different public procurement procedures are outlined, based on the requirements of the EU Directives, as well as, the findings of the [Func. Reqs Vol. I] report. As mentioned in section 2.1, eCatalogues may constitute tenders (or parts of them), therefore should be used in the context of public procurement only through one of the procurement procedures described hereunder.

3.1.1   Open Procedure

Directives 2004/17/EC and 2004/18/EC define the open procedure as the procedure "whereby any interested economic operator may submit a tender". It is the only procedure under which any interested economic operator is directly invited to submit a tender, without the contracting authority performing a prior selection of participants, i.e. reduction of the number of participants based on objective and non-discriminatory criteria.

The open procedure can be split into three main phases, namely Notification, Tendering, and Evaluation/Awarding, as depicted in **Figure 3**.

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

Figure 3: Phases of the Open Procedure

Notification Phase: During this phase the contracting authority prepares the documentation to be published for advertising the call for tenders, as well as, the contract documents (or terms of references) for the contract. The preparation of the contract notice includes, amongst others, the definition of the award criteria. At the end of this phase, the contract notice is dispatched to the Official Journal of the European Union (OJEU) for publication under its S-series. Subsequently, the notice may also be published on other national publication boards and the purchaser's electronic "buyer profile". **Table 2** depicts the main activities taking place during this phase.

Activities	Actor
Prepare contract documents	Contracting Authority
Prepare contract notice (includes the definition of award criteria)	Contracting Authority
Dispatch contract notice to the OJEU S-series for publication (and subsequently, to other publication boards)	Contracting Authority

Table 2: Open procedure - Notification phase

Tendering Phase: Once the contract notice is published, the tendering phase starts. All information for the call for tenders is made publicly available in an easily accessible, open and non-discriminatory manner to all economic operators. During this phase contracting authorities may issue additional information and/or documents following requests by economic operators (commonly referred to as "questions and answers"). In addition, economic operators prepare and submit their tenders. This phase runs until the designated tender submission deadline. **Table 3** depicts the main activities taking place during this phase.

Activities	Actor
Publish contract documents	Contracting Authority
View call details (including all published information/resources for the Call for Tenders)	Economic Operators
Request additional information/documents (questions by economic operators)	Economic Operators
Provide additional information/documents (answers by contracting authority to questions posted by suppliers)	Contracting Authority
Prepare and submit tenders before the tender submission deadline	Economic Operators
Receive and securely store tenders until opening	Contracting Authority

Table 3: Open procedure - Tendering phase

Evaluation / Award Phase: This phase can be initiated only after the designated tender opening time has been reached. During this phase, the contracting authority opens the received tenders following the "four-eyes principle", and evaluates them based on the pre-defined tender evaluation criteria. An eAuction event (reverse electronic auction) may take place if foreseen at the beginning of the procedure and indicated in the contract notice. At the end of the process, the contract is awarded to the winner(s) of the competition (i.e. to the best tenderer(s) in terms of lowest price or Most Economically Advantageous Tender (MEAT)). Subsequently, a contract award notice is prepared and dispatched to OJEU S-Series for publication. **Table 4** depicts the main activities taking place during this phase.

Activities	Actor
Open tenders following the "four-eyes principle"	Contracting Authority
Evaluate tenders based on pre-defined evaluation criteria	Contracting Authority
Initiate eAuction event (if foreseen in the contract notice)	Contracting Authority
Participate in an eAuction event	Economic Operators
Award contract	Contracting Authority
Inform participants and generate reporting	Contracting Authority
Prepare Contract Award Notice and dispatch to OJEU S-Series for publication	Contracting Authority

Table 4: Open procedure - Evaluation / Award phase

3.1.2   Restricted Procedure

Directives 2004/17/EC and 2004/18/EC define the restricted procedure as the procurement procedure in which "economic operators may request to participate and whereby only those economic operators invited by the contracting authority may submit a tender".

The restricted procedure can be split into three main phases, namely Notification, Tendering, and Evaluation/Awarding, as depicted in **Figure 4**.
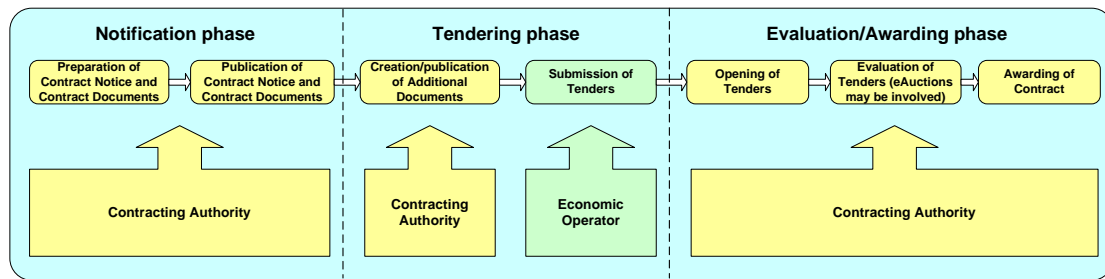

Figure 4: Phases of the Restricted Procedure
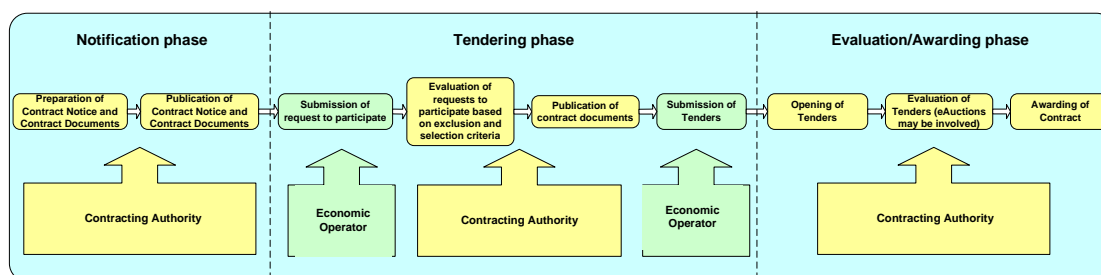
Notification Phase: During this phase the contracting authority prepares the documentation for advertising the call for tenders, and dispatches the contract notice to the OJEU S-series for publication. In addition, the contract documents (or terms of reference) for the contract document may be produced. **Table 5** depicts the main activities taking place during this phase.

Activities	Actor
Prepare contract documents (this can be completed at a later stage)	Contracting Authority
Prepare contract notice (includes the definition of award criteria)	Contracting Authority
Dispatch contract notice to the OJEU S-series for publication (and subsequently, to other publication boards)	Contracting Authority

Table 5: Restricted procedure - Notification phase

Tendering Phase: Once the contract notice is published, the tendering phase starts. All information for the call for tenders is made publicly available in an easily accessible, open and non-discriminatory manner to all economic operators. During this phase contracting authorities may issue additional information and/or documents following requests from economic operators (commonly referred to as "questions and answers"). In addition, economic operators prepare and submit requests to participate (including proof documents evidencing their compliance with exclusion and selection criteria). Subsequently, contracting authorities evaluate the requests to participate and shortlist (if applicable) at least five economic operators according to predefined criteria. If not already done in the previous phase, contracting authorities now publish the full contract documents. Following the short-listing of tenderers, contracting authorities invite those that are selected to submit tenders. The invited tenderers prepare and submit their tenders. This phase runs until the designated tender submission deadline. **Table 6** presents the main activities taking place during this phase.

Activities	Actor
Publish contract documents	Contracting Authority
View call details (including all published information/resources for the Call for Tenders)	Economic Operators
Request additional information/documents (questions by economic operators)	Economic Operators
Provide additional information/documents (answers by contracting authority on questions posted by suppliers)	Contracting Authority
Submit Requests to participate before the designated submission deadline	Economic Operators
Receive and securely store requests to participate and associated proof documents	Contracting Authority
Open and evaluate requests to participate and short list tenderers (if applicable)	Contracting Authority
Publish contract documents (if not done during the Notification phase)	Contracting Authority
Invite tenderers to submit tenders	Contracting Authority
Prepare and submit tenders before the tender submission deadline	Economic Operators
Receive and securely store tenders until opening	Contracting Authority

Table 6: Restricted procedure - Tendering phase

Evaluation / Award Phase: This phase entails exactly the same steps and activities to the Evaluation and Awarding phase of the Open procedure, as discussed in section 3.1.1.

3.1.3   Framework Agreements

Directives 2004/17/EC and 2004/18/EC define the Framework Agreement as "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".

The Framework Agreement can be split into two main phases, namely the Framework Agreement Establishment phase, and the Conclusion of a Specific Contract phase, as described in **Figure 5**.
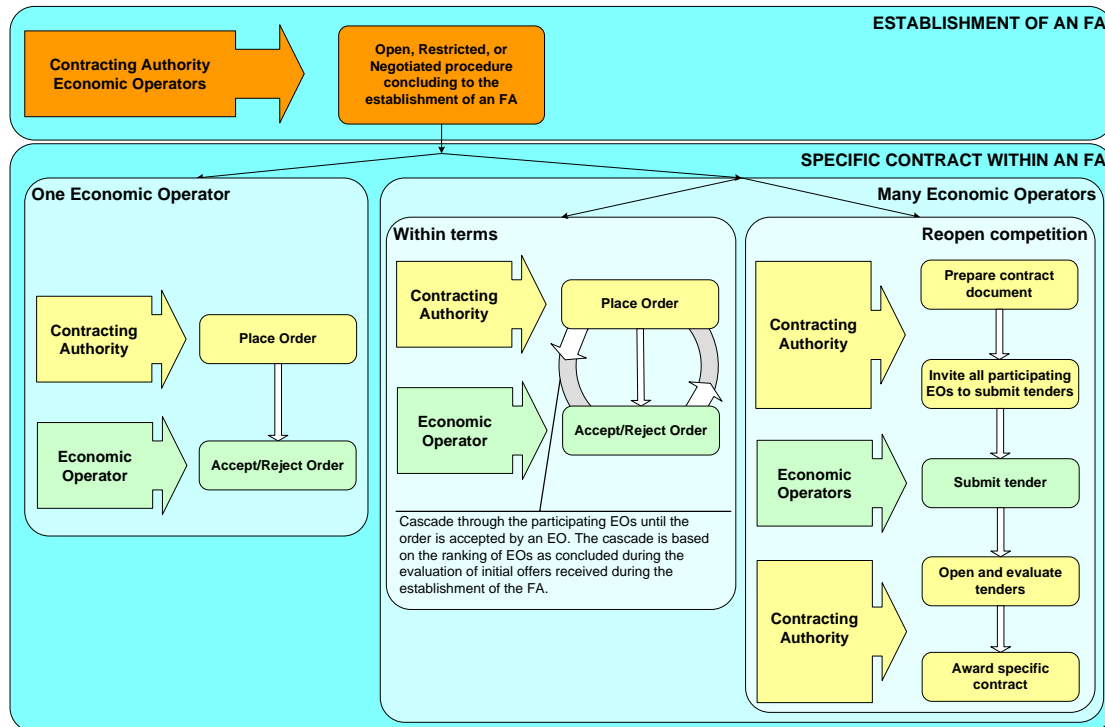
Figure 5: Phases of the Framework Agreement Procedure

A Framework Agreement may be established through one of the procedures available for one-off procurements. In particular, when a contracting authority wishes to establish a Framework Agreement, the Open, Restricted or Negotiated procedure must be used. The Contract Notice published for such procedures must specify that the procedure relates to the establishment of a Framework Agreement. This is described in Section II (Object of the Contract) of the Contract Notice, and in particular under section II.1.3, which specifies whether the notice involves a public contract, the setting up of a DPS or the establishment of a Framework Agreement. In parallel, in section II.1.4 of the Contract Notices, contracting authorities also specify whether the FA to be established will contain one or multiple economic operators (and how many), the expected duration of the FA (which except in cases duly justified by the contracting authorities should not exceed four years) and the estimated total value of purchases.

The procedures followed for the establishment of a Framework Agreement (i.e. Open, Restricted or Negotiated procedure) are run in full until the final ranking of tenderers. During the execution of such a procedure, economic operators submit their "initial tenders", which constitute full, binding tenders based on which contracting authorities can procure when there is no need to re-open competition. The ranking of tenderers is based on pre-stated evaluation criteria defined in the Contract Notice, and initial tenders are evaluated based on lowest price or MEAT. The ranking determines the cascading to be followed for concluding specific contracts within the Framework Agreement, when the FA is established with multiple operators and a specific contract does not require the re-opening of competition (see **Figure 5** above).

The procurement of specific contracts when a single operator is included in the FA is performed through direct ordering from the contracting authority, for which the operator can either accept or reject the order. On the other hand, the procurement of specific contracts within FAs including multiple operators can be performed in two different manners, depending on the exact nature of the specific contract.

-   Cascading: When the specific contract can be procured by application of the terms laid down in the FA, without reopening competition, the contracting authority may place an order to the best placed economic operator as concluded during the evaluation of the initial tenders (i.e. the ranking of tenderers during the establishment of the Framework Agreement). In case the best placed economic operator does not accept the order (e.g. cannot accommodate the exact order of the contracting authority), the authority may place an order to the second best placed operator, and so forth, until either the order is accepted by an operator, or it is concluded that it is not possible for the contracting authority to procure within the FA. This procedure is commonly referred to as "cascading".

-   Re-opening competition: The economic operators participating in a Framework Agreement may again be put into competition in view of supplying a specific contract. Competition is held on the basis of the same and, if necessary, more precisely formulated terms of the Framework Agreement, and, where appropriate, other terms referred to in the specifications of the Framework Agreement. The procedure followed resembles a restricted procedure following the short-listing of economic operators. The contracting authority may issue specific documents to refine the exact terms. Operators may request additional documentation (Q&A) for the specific contract. Tenders for the specific contract are submitted by participating operators, which are then evaluated by the authority following the terms of the Framework Agreement in order to conclude the winner of the "re-opened" competition.

Establishment of the Framework Agreement: The establishment of Framework Agreements is performed following the activities described in section 3.1.1 (open procedure) or section 3.1.2 (restricted procedure).

Specific Contract – Notification phase: As explained above, the activities of this phase vary depending on whether there are one or more suppliers in the Framework Agreement, and whether there is a need for re-opening the competition or not. In case the Framework Agreement has one single operator, direct ordering takes place. If many operators take part, the contracting authority must decide whether the specific contract falls within the terms of the Framework Agreement, or whether it is necessary to re-open competition. In the former case, "cascading" takes place, while in the latter case, competition is "re-opened" for all participants

Table 7 entails all activities for re-opened competitions.

Activities	Actor
Prepare contract documents (in case of re-opening of competition)	Contracting Authority
Invite in writing all economic operators included in the Framework Agreement to submit tenders, and simultaneously distribute the contract documents	Contracting Authority

Table 7: Framework Agreements - Specific contract when re-opening competition- Notification phase

Specific Contract – Tendering phase: During this phase, if the competition is not re-opened, the solicited supplier must accept or reject the order. If the order is rejected and the Framework Agreement includes several operators, an order to the next best placed operator is placed (i.e. "cascading"). In case the competition is re-opened, suppliers prepare and submit their tenders for the specific contract. In addition, for re-opened competitions, requests for clarifications may be submitted by operators. **Table 8** presents the main activities taking place during this phase for "re-opened" competitions.

Activities	Actor
View specific contract details (including all distributed information/resources)	Economic Operators
Request additional information/documents (questions by economic operators)	Economic Operators
Provide additional information/documents (answers by contracting authority on questions posted by suppliers)	Contracting Authority
Prepare and submit tenders before the tender submission deadline	Economic Operators
Receive, verify and securely store tenders until opening	Contracting Authority

Table 8: Framework Agreements - Specific contract - Tendering phase

Specific Contract - Evaluation / Award Phase: This phase can be initiated only after the tender submission deadline has been reached for re-opened competitions. During this phase, the contracting authority opens the received tenders following the "four-eyes principle", and evaluates them based on the pre-defined tender evaluation criteria, as defined in the terms of the FA (lowest price tender or Most Economically Advantageous Tender (MEAT)). An eAuction event may be organised, if foreseen in the terms of the Framework Agreement. At the end of the process, the specific contract is awarded to the winner(s) of the (re-opened) competition. **Table 9** depicts the main activities taking place during this phase.

Activities	Actor
Open tenders following the "four-eyes principle"	Contracting Authority
Evaluate tenders based on the evaluation criteria pre-defined in the terms of the Framework Agreement	Contracting Authority
Initiate eAuction event (if foreseen in the terms of the Framework Agreement)	Contracting Authority
Conclude specific contract	Contracting Authority

Table 9: Framework Agreement - Specific contract - Evaluation / Awarding phase

3.1.4   Dynamic Purchasing System (DPS)

Directives 2004/17/EC and 2004/18/EC define the Dynamic Purchasing System as "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 entity, 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".

The DPS can be split into three main phases: Establishment of the DPS, Admission of suppliers to the DPS and Conclusion of specific contracts, as described in **Figure 6**.
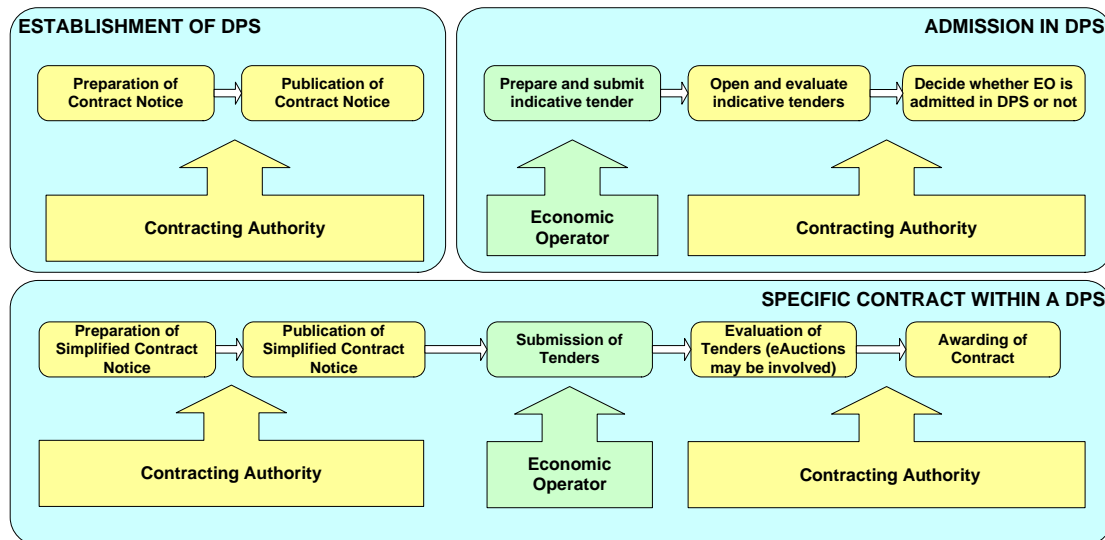
Figure 6: Phases of Dynamic Purchasing System (DPS) Procedure

The Dynamic Purchasing System (DPS) constitutes an innovative, completely electronic process, for making commonly used purchases, introduced in 2004 with the adoption of the EU Directives. It seeks to achieve efficiency gains for both suppliers and contracting authorities, by taking advantage of electronic means and the automations they can offer, e.g. by accelerating and simplifying the processes followed to cover repetitive and (commonly) low-value procurement needs.

In order to establish a DPS, contracting authorities must publish an official EU Contract Notice. Under Section II (Object of the contract), the authority must specify that the Contract Notice involves the establishment of a DPS (section II.1.3). Apart from this information, the Notice should provide information for all other fields which are necessary for suppliers in order to understand the object, duration, expected value, etc. of the DPS, as well as, the admission criteria. Immediately after such a Contract Notice is published in the OJEU S-Series, the DPS is considered to be established and economic operators may submit indicative offers in order to be admitted to it.

An indicative offer constitutes a complete technical and financial offer which is however non-binding. Indicative offers serve for the admission of participants into the DPS. Contracting authorities evaluate the indicative tenders based on the pre-stated admission criteria as defined in the Contract Notice. The tenderers whose indicative tenders comply with the admission criteria are admitted to the DPS and may participate in competitions taking place within the DPS for procuring specific contracts. Therefore, the evaluation of a supplier's indicative offer provides only a decision on compliance with exclusion and selection criteria, either admitting the supplier to the DPS or not. Under no circumstances can indicative tenders form the vehicle for concluding the ranking of suppliers; indicative offers should only function as a vehicle for qualification for admission. Suppliers may submit indicative offers for admission to the DPS at any time during its duration (which except in cases duly justified by the contracting authority should not exceed four years), allowing non-admitted suppliers to update and re-submit their indicative tenders for admission.

A contracting authority which has established a DPS may initiate a competition for a specific contract within it. This is performed by the EU-wide publication of an official Simplified Contract Notice, which is published in the OJEU S-Series and made available to all interested economic operators (regardless of whether they are already admitted to the DPS or not). Tendering for a specific contract within a DPS implies the submission of a specific tender by an admitted economic operator, which is received and securely locked until the designated tender opening time. Such tenders, submitted for a specific contract within a DPS, comprise complete technical and financial offers, which however in such cases are binding. An offer for a specific contract within a DPS may be identical to the indicative offer. Nevertheless, it may also differ from the indicative offer on which it is based, as long as it complies with the specifications imposed by the contracting authority. In particular, specific offers may differ on technical conditions (e.g. characteristics or prices of the purchase), providing that these conditions are in line with the specifications of the DPS or correspond to more refined terms of reference established for the specific contract. In case a specific offer is not in line with the DPS specifications, this offer will not be considered for the specific contract; nevertheless, the participant still remains a participant of the DPS and may participate in a re-opening of competition for other specific contracts.

The Tendering phase for a specific contract cannot start less than 15 days after the publication of the Simplified Contract Notice, so as to allow economic operators which are not yet admitted to the DPS to form indicative tenders and apply for admission. The evaluation of tenders for a specific contract within a DPS is performed based on the pre-stated evaluation criteria, as defined in the Contract Notice for the establishment of the DPS.

The conclusion of a specific contract within a DPS must be published via a contract award notice in the OJEU-s. Contracting authorities may however group the information of several specific contracts concluded within a DPS system, and publish contract award notices on a quarterly basis.

In short, a DPS constitutes an "open marketplace", for which any economic operator may apply to participate (and compete for specific contracts) during its whole duration. This differs significantly from Framework Agreements, which constitute "closed marketplaces", for which only the selected economic operators during establishment may participate in specific contracts. In addition, initial tenders submitted within a Framework Agreement constitute full, binding offers, while the indicative offers received for admission in a DPS are also full offers, but are not binding.

The use of indicative offers is expected to provide additional benefits to both buyers and suppliers, as it saves time for the prior evaluation of compliance against the exclusion and selection criteria (admission in DPS). The process for the admission of participants to the DPS is organised once, at the first submission of the indicative offers by economic operators in view of competition. The validity of compliance with the exclusion and selection criteria is not again verified in following submissions of updated indicative offers, unless the contracting authority has a reasonable doubt. In such cases, the contracting authority may verify the personal situation of the economic operator in question.

However, apart from saving time during the evaluation of tenders for specific contracts, indicative tenders can also save time during the creation of such specific tenders, as economic operators can base their offers (partially or fully) on their indicative tenders. In this respect, economic operators admitted to a DPS may update their indicative tenders at any time. The updating of an indicative offer of an operator admitted in a DPS may result in the exclusion of the operator from the DPS only in the case where his/her indicative offer does not longer fulfil the admission criteria, i.e. does not conform to the specifications of the DPS and/or does not respect the exclusion and selection criteria. However, in such cases, a participant may re-submit a revised indicative offer at any time, in order to conform again to those DPS admission criteria.

Establishment of the DPS / eNotification: During this phase, the contracting authority prepares the contract documents and contract notice for the establishment of the DPS. Once all information for the DPS is made publicly available in an easily-accessible, open and non-discriminatory manner, the DPS is considered established. In short, **Table 10** depicts the main activities taking place during this phase.

Activities	Actor
Prepare contract documents	Contracting Authority
Prepare contract notice (includes the definition of award criteria)	Contracting Authority
Dispatch contract notice to the OJEU S-series (and subsequently, national publication boards)	Contracting Authority
Establish the DPS Workspace (and publish all contract documents)	Contracting Authority

Table 10: DPS - Establishment of DPS/eNotification

Admission of suppliers to the DPS: During this phase, suppliers prepare and submit their indicative tenders to the contracting authority. Indicative tenders are complete or "full" tenders of the supplier, which however are not binding. They must be treated in the same confidential and secure manner as any other submitted tender. Contracting authorities evaluate the indicative tender of a supplier. If it meets the pre-defined criteria for exclusion and selection, the supplier is admitted in the DPS and can participate in the re-opening of competition for future specific contracts. Admission to the DPS can be requested at any point in time during the lifecycle of the system.

Table 11 depicts the main activities taking place during this phase.

Activities	Actor
View DPS details (including all published information/resources for the DPS)	Economic Operators
Prepare and submit indicative tender	Economic Operators
Evaluate indicative tenders based on pre-defined evaluation criteria	Contracting Authority
Inform Economic Operators whether admitted to DPS	Contracting Authority

Table 11: DPS - Admission of suppliers in DPS

Specific contract – Notification phase

During this phase, the contracting authority prepares the contract documents for a specific contract under the DPS and publishes a simplified contract notice in the OJEU S-series. **Table 12** depicts the main activities taking place during this phase.

Activities	Actor
Prepare contract documents	Contracting Authority
Prepare Simplified Contract Notice	Contracting Authority
Dispatch Simplified Contract Notice to the OJEU S-series (and subsequently, national publication boards)	Contracting Authority

Table 12: DPS - Specific contract - Notification phase

Specific contract – Tendering phase: this phase starts at least 15 days after the date of publication of the simplified contract notice. This "standstill period" is foreseen in order to allow new economic operators to submit indicative tenders and be admitted to the DPS.

During this phase, the contracting authority invites all economic operators admitted to the DPS to submit tenders for the specific contract. At this point, the contracting authority may issue additional information and/or documents following requests from economic operators (commonly referred to as "questions and answers"). An economic operator then prepares and submits his/her tenders for the specific contract, which at this stage is binding. The tender of an economic operator for a specific contract can be identical to the indicative tender of the operator, or may reference specific elements of the indicative tender. In this respect, it is envisaged that the creation of tenders can be simplified by re-using information already existing in the indicative tender of an economic operator. This phase runs until the designated tender submission deadline. **Table 13** depicts the main activities taking place during this phase.

Activities	Actor
View specific contract details (including all distributed information/resources)	Economic Operators
Request additional information/documents (questions by economic operators)	Economic Operators
Provide additional information/documents (answers by contracting authority on questions posted by suppliers)	Contracting Authority
Prepare and submit tenders	Economic Operators
Receive, verify, and securely store tenders until opening	Contracting Authority

Table 13: DPS - Specific contract - Tendering phase

Specific contract – Evaluation / Award Phase: this phase is similar to the equivalent evaluation phase of the open procedure, as described in section 3.1.1. The main difference regards the preparation and publication of the contract award notice for the specific contracts under a DPS. In particular, contracting authorities should send a contract award notice advertising the award result of a specific contract within 48 days of the award. They may, however, group such notices on a quarterly basis. In that case, they should send the grouped notices within 48 days of the end of each quarter.

3.1.5   Extension: Electronic Reverse Auctions (eAuctions)

Directives 2004/17/EC and 2004/18/EC define the electronic auction as "a repetitive process involving an electronic device for the presentation of new prices, revised downwards, and/or new values concerning certain elements of tenders, which occurs after an initial full evaluation of the tenders, enabling them to be ranked using automatic evaluation methods". The types of eAuctions envisaged under the EU Directives are also referred to as "reverse auctions".

Electronic auctions are considered as an extension to the procedures for one-off or repetitive procurements. They do not constitute stand-alone procedures by themselves, but rather can be used to complement the evaluation of tenders under other procedures in order to obtain improved offers. This can be performed only if eAuctions are initially foreseen in the contract notice of the respective call for competition. In particular eAuctions can be used for the Open, Restricted and Negotiated procedure for one-off contracts, for the procedure followed for the establishment of a Framework Agreement, for re-opened competitions under Framework Agreements when procuring specific contracts, and for the conclusion of specific contracts under a DPS. eAuction events must be performed in a fully electronic manner; during the execution of an eAuction event there should be no manual intervention from contracting authorities.

The eAuction can be split into two phases, namely the establishment of an eAuction workspace and the eAuction event itself as depicted in **Figure 7**.
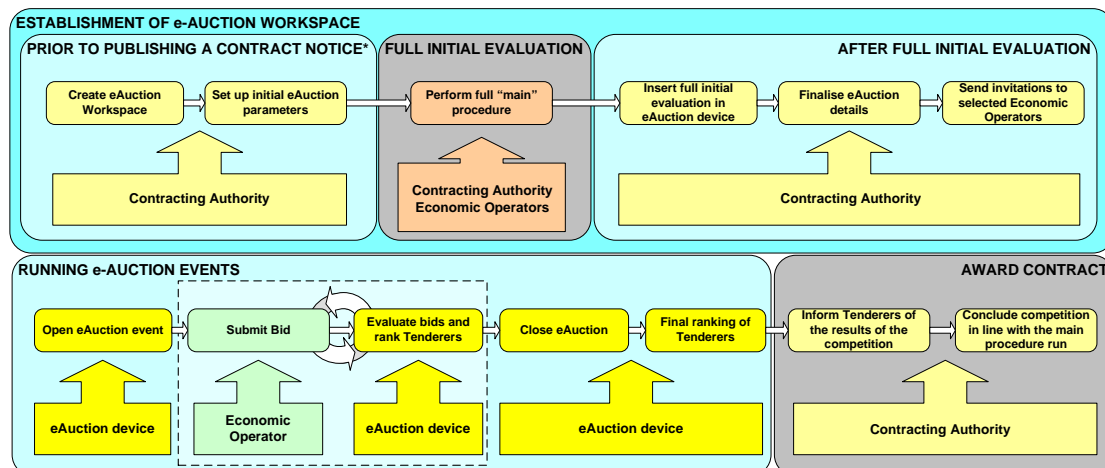
* Depending on the main procedure followed, the commencement of the procedure may not require the publication of a Contract Notice. For instance, in case a specific contract is procured within a DPS, then a Simplified Contract Notice must be published. Furthermore, in case a specific contract within a Framework Agreement is procured by re-opening competition, then there is no need to create and publish an official EU procurement notice.

Figure 7: Phases of eAuction process

Establishment of eAuction workspace: The organisation and execution of eAuction events (reverse electronic auctions) requires the setting up of a fitting virtual workspace, where all eAuction information will be stored. Aside from creating this virtual workspace, the eAuction parameters must also be established, defining in full the exact operation of the eAuction device. The exact parameters can be defined in two different phases, a main one when creating the Contract Notice of the main procedure to be run, and a more contingent one after the full initial evaluation. Indicative parameters to be set comprise:

- Prior to publishing the Contract Notice
  o Bidding fields, which must be measurable/quantifiable, permitting automated evaluation of bids
  o Evaluation formula for automatically calculating the evaluation score of each bid
  o Other bidding parameters (e.g. minimum increments/decrements of bidding fields)
  o Type of eAuction (e.g. executed in rounds, or for a specific time period)
  o Configuration on the information which will be visible to Economic Operators and Procurement Officers during the event
  o Currency to be used for the financial offers
  o Indicative starting date/time for the event
- Following the full initial evaluation and prior to launching the eAuction event
  o Final starting date/time for the event
  o Initial ranking following the full initial evaluation

Table 14 depicts the main activities taking place during this phase.

Activities	Actor
Create workspace and initial parameters for the eAuction (quantifiable values)	Contracting Authority
Set up or liaise with eAuction device	Contracting Authority
Publish eAuction parameters in contract notice and tender documents	Contracting Authority
Run procedure	Contracting Authority
Set concrete eAuction details (if applicable)	Contracting Authority
Invite tenderers to participate prior to start of the auction	Contracting Authority

Table 14: eAuction - Workspace establishment

eAuction event: During this phase, the eAuction event takes place, i.e. tenderers can place bids in order to improve their offers. The bids must be automatically evaluated and ranked by the eAuction device. When the conditions for terminating the eAuction are met, the eAuction event must be stopped, presenting to the contracting authority the ranking of the tenderers based on their improved offers. **Table 15** depicts the main activities taking place during this phase.

Activities	Actor
Participate in eAuction and place bids	Economic Operator
Evaluate bids	eAuction device
Close eAuction event	eAuction device
Present tenderers ranking	eAuction device

Table 15: eAuction – Running of eAuction event

3.2 Specific legal requirements for the use of eCatalogue prospectuses in public procurement

The EU Directives authorise the submission of electronic catalogues as tenders in a public procurement competition. In this respect, all principles that relate to tenders equally and fully apply to the use of eCatalogues as offers. Chapter 2 of [SoP] presents in detail the general principles and rules governing the use of electronic means, the electronic submission of tenders and specific rules for the use of eCatalogues, including the active collection of tenders ("punch-out"). In this chapter, these rules are further considered to define specific legal requirements for the use of eCatalogues in public procurement.

3.2.1   General principles for the use of electronic means and tools

Tenders in the form of eCatalogues rely exclusively on the use of electronic means. These means include ICT hardware and software devices/components, as well as, the use of the Internet and its practical applications. The EU Directives explicitly mention the general principles the use of such means must abide to, comprising equal treatment, non-discrimination, and transparency. From these, a set of supplementary principles are deduced for specialised eProcurement systems and electronic means in general. These principles are summarised below (for more information see section 2.2 of [SoP]):

- Non-discrimination: All rules and conditions for a public call for tenders must ensure that no economic operators from another Member State is discriminated against. For example, the electronic tools and means that economic operators must use for taking part in an electronic public competition must be equally accessible to all. Fees required by contracting authorities for allowing economic operators to access the system and/or information about a call for tenders, if any, must be justified, proportional to its estimated value and should not discriminate or restrict access to the procurement procedure. The criteria used for the award of contracts should enable tenders to be compared and assessed objectively.

- Equal treatment: All economic operators shall be treated in exactly the same way. For example, the information provided by contracting authorities must be the same for all economic operators.

- Transparency: The criteria for the award of a public contract must be stated and be made available in advance to all interested economic operators. Procedures must be conducted in a manner that ensures that all processes are transparent and fair.

- General availability: Any electronic means used must be widely accessible and easily usable, ensuring equal treatment and non-discrimination, and offering the grounds for effective competition.

- Interoperability: The electronic means used and any electronic tools made available by a contracting authority must be interoperable with commonly used hardware and software equipment of suppliers. They should not present barriers for cross-border suppliers and certain groups of suppliers (e.g. SMEs).

- Integrity: The tools and means used for the transmission and storage of all information for a call for tenders should safeguard the integrity of transmitted data, ensuring that data exchanged between two parties or stored within an eProcurement system is not modified or tampered with (maliciously or accidentally).

- Confidentiality: Sensitive information should not be disclosed to unauthorised parties.

- Security: Any eProcurement processes/systems should provide mechanisms for offering a reasonable level of protection and guarantee of security to procurement data. Strict provisions should be implemented for securely locking received tenders prior to their authorised opening (four-eyes principle).

- Trace-ability: eProcurement systems must be capable of documenting all activities performed by all users during a public procurement competition.

In relation to these general principles, two legal requirements may be defined as follows:

Number	**Legal Requirement 1**
Name	**Ensure equal treatment, non-discrimination and transparency**
Source	New requirement, based on: - General principles of [2004/18/EC] and [2004/17/EC]; Art. 2 of [2004/18/EC] and Art. 10 of [2004/17/EC] - Section 2.1.1 of [Explanatory document]: General availability and non discrimination
Actors	Contracting Authority
Status	Mandatory
Description	In all public procurement calls, contracting authorities must specify the conditions and rules for the creation and submission of tenders. These must ensure equal treatment, non-discrimination and transparency. Contracting authorities may require eCatalogues to be the exclusive means for tender submission, provided that the specified conditions do not violate the above principles. Any specifications for creating and submitting eCatalogues in the context of public procurement should be based on simple and wide-spread formats, which can be accommodated through the use of eCatalogue standards.
Relevant requirements	Functional Requirement 6: "*Provide standards-based tender specifications for eCatalogue prospectuses*" Functional Requirement 7: "*Define a tender evaluation mechanism for eCatalogue prospectuses*" Functional Requirement 9: "*Use the Common Procurement Vocabulary (CPV) classification*" Functional Requirement 12: "*Publish Contract Documents*" Functional Requirement 14: "*Provide electronic access to call for tenders specifications (Visualise/Download)*" Functional Requirement 17: "*Publish additional information/documents*" Functional Requirement 21: "*Support a device for the electronic receipt of tenders (including eCatalogue prospectuses)*" Functional Requirement 22: "*Securely store tenders in the form of eCatalogues*" Functional Requirement 23: "*Open tenders following the four-eyes principle*" Functional Requirement 24: "*Ensure the confidentiality of tenders*"

Number	Legal Requirement 2
Name	**Use interoperable electronic means and tools for communication**

Source	New requirement, based on:
	
	  - Article 42 of [2004/18/EC]: Rules applicable to communication
	
	  - Article 48 of [2004/17/EC]: Rules applicable to communication
	
	  - Section 2 of [Explanatory document]: Rules applicable to communications

Actors	Contracting Authority
Status	Mandatory
Description	The tools to be used for communicating by electronic means, as well as their technical characteristics, must be non-discriminatory, generally available and interoperable with the information and communication technology products in general use. Interoperability is one of the non-functional requirements explicitly prescribed by the EU Directives. It refers to the capability of ICT systems to exchange information in an efficient and effective manner. Any tools used for participating in eProcurement using eCatalogues must be able to function and to interact with commonly used equipment and applications. Open source software and standards can be used for developing such applications supporting eCatalogue-related processes, thus enabling their re-usability. For example, the communication channel which must be used by suppliers in order to interact with an eProcurement system should comply with commonly-used standards, rendering it as generally available as possible. In parallel, any tools offered by a contracting authority which assist economic operators to validate the technical compliance of their eCatalogues against the specifications of a call for tenders should also operate under widely-used software and hardware equipment.
Relevant requirements	Non-functional requirements described under section 5.1.2 "*eProcurement tools and means to be interoperable*" Most of the Functional Requirements described in chapter 4 should respect the current Legal Requirement.

There are no specific rules regarding the type of procedure eCatalogue prospectuses should be used under. However, as discussed in section 4.1 of [SoP], there appears to be limited scope for the use of eCatalogues in the negotiated procedures and competitive dialogue. In addition, eCatalogues appear to be most suitable for the procurement of products and simple services, and less so for works and complex services.

3.2.2   Specifications for the format and content of eCatalogues

When issuing a call for tenders which authorises offers to take the form of eCatalogue prospectuses, contracting authorities usually specify the expected tender structure (including format and content), as well as, the acceptable submission techniques. The specifications may define the use of particular widely-used standards for forming and exchanging eCatalogues, or may comprise specific rules of the contracting authority. As discussed in section 2.1, current practice in the EU for forming and exchanging eCatalogues relies on tailor-made specifications of contracting authorities (i.e. "buyer-defined" eCatalogues). As this poses significant overheads to suppliers, contracting authorities should refrain as much as possible from defining tailor-made specifications and instead either allow suppliers to submit their existing eCatalogue prospectuses in their chosen structure/format or define specifications which are in line with relevant standards. The different options are described in section 2.1 and **Figure 2**.

The following legal requirements must be respected by contracting authorities when issuing calls for tenders.

Number	**Legal Requirement 3**
Name	**Provide non-discriminatory specifications for creating tenders in the form of eCatalogue prospectuses**
Source	New requirement, based on: - General principles of [2004/18/EC] and [2004/17/EC]
Actors	Contracting Authority
Status	Mandatory
Description	When issuing calls for tenders, contracting authorities provide information to economic operators on how to format and submit tenders. Similarly, in calls where contracting authorities authorise/request tenders in the form of eCatalogues, it is necessary to provide specific instructions to suppliers. These instructions may detail the exact standards to be used for forming and submitting/updating eCatalogues, or other requirements. eCatalogue specifications should include the technical mechanisms for submitting eCatalogue prospectuses (e.g. a specialised web interface of an eProcurement system), as well as, other information that tenders should include but which, most probably, are not part of any existing supplier eCatalogues (e.g. the compliance of an offered product against a specific ISO or national standard). The use of eCatalogues can offer great benefits when manual work is limited and the necessary processing is performed automatically. This can be achieved through the use of relevant standards. Based on such standards, eCatalogues could have the same structure and products/services could be described in a similar manner, simplifying the process for their evaluation and re-utilisation. Once eCatalogue standards are widely adopted across Europe, the specifications that a contracting authority needs to issue for tenders in the form of eCatalogues would be limited. As such, contracting authorities should as much as possible use standards for specifying the way tenders (in the form of eCatalogue prospectuses) should be created and transmitted. Until however this maturity level is reached, contracting authorities should consider proceeding from the current practice of "buyer-defined" eCatalogues to letting suppliers use their existing eCatalogues to form tenders (or parts of them). The expected diversity of eCatalogue contents and formats might possibly render such eCatalogues less suitable for automated processing. Nevertheless, it is expected that this would help promote the use of eCatalogues in public procurement, increasing the participation in public procurement competitions.
Relevant requirements	Functional Requirement 6: "*Provide standards-based tender specifications for eCatalogue prospectuses*"

Number	**Legal Requirement 4**
Name	Provide additional information after publication in a non-discriminatory way
Source	New requirement, based on: - General principles of [2004/18/EC] and [2004/17/EC] - Article 39 of [2004/18/EC]: Technical Specifications - Article 46 of [2004/17/EC]: Technical Specifications
Actors	Contracting Authority
Status	Mandatory
Description	Contracting authorities should provide suppliers with all the information and specifications necessary for creating and submitting tenders in the form of eCatalogues at the beginning of a competition, when issuing the Contract Notice and/or Contract Documents. If necessary, additional information may be published at a later stage, e.g. following requests for clarifications by suppliers, provided that such information is distributed to all suppliers in a non-discriminatory and transparent manner. Such additional information should be published in the same location as the Contract Documents; all suppliers that have expressed interest should be explicitly notified. Additional information may relate to further explanatory documentation on the technical means for forming and/or submitting eCatalogues, tools to be used by suppliers for completing/verifying their eCatalogues, and mechanisms for eCatalogue encryption. Such information should not significantly alter the terms of the competition. When issuing important additional information after the definition of tender specifications, contracting authorities should consider extending the tender submission deadline or even re-publication of the notice, in order to ensure fair treatment of all suppliers.
Relevant requirements	Functional Requirement 12: "*Publish Contract Documents*" Functional Requirement 18: "*Support automated notifications*"

The EU Directives do not set any specific rules for the technical format and electronic transmission of eCatalogue prospectuses. Instead, they leave it to contracting authorities to specify the exact conditions for the creation and exchange of tenders, if any, including eCatalogues. Contracting authorities thus have the right to define content requirements and may request specific formats for eCatalogues, providing that these specifications ensure equality of treatment, non-discrimination and transparency.

As summarised in section 2.1, as well as in [SoP] and [SIR], the anticipated benefits for both buyers and suppliers from the use of eCatalogues can only be achieved once manual work is limited to the greatest possible extent and replaced by automated processing, i.e. when the significant manual overheads both authorities and suppliers currently face for defining eCatalogues specifications and for creating tailor-made eCatalogues can be eliminated. This is expected to be possible once common format and exchange standards for eCatalogues are widely adopted, minimising the need for custom-made specifications from each contracting authority. Furthermore, the adoption of advanced classification schemes, supporting attributes, is expected to simplify the techniques used for describing products/services within eCatalogue prospectuses (see Evolution Phase II in section 2.2).

Section 5.1.3 presents an overview of existing standards which could form the basis for achieving full automation. These standards are further discussed in [SIR].

3.2.3   Submission of eCatalogues

If tenders are submitted in the form of eCatalogue prospectuses, all rules and requirements related to the electronic receipt of tenders must be fully respected. These requirements relate to the procedures to be followed prior to tender submission, during tender submission, as well as during and after tender opening. These rules and requirements are presented in section 2.2 of [SoP], and are grouped into the following legal requirement.

Number	**Legal Requirement 5**
Name	**Apply rules for the device for the electronic receipt of tenders/eCatalogues**
Source	New requirement, based on: - Article 42 of [2004/18/EC] and article 48 [2004/17/EC]: Rules applicable to communication - Annex XXIV of [2004/18/EC] and Annex X of [2004/17/EC]: Requirements relating to devices for the electronic receipt of tenders - Section 4.2.1 of [Explanatory Document]: The electronic receipt of tenders in repetitive procedures and electronic catalogues
Actors	Contracting Authority
Status	Mandatory
Description	The device for the electronic receipt of tenders/eCatalogues must ensure that all relevant rules of Directive 2004/17/EC (Art. 48 and Annex XXIV) and Directive 2004/18/EC (Art 42 and Annex X) are respected: - prior to tender submission - during tender submission - during tender opening - after tender opening The following specific rules apply: - The device should accept tenders only until the designated tender submission deadline. Tenders received afterwards should be rejected by the device. - The device may reject tenders (or generally messages) that could harm their systems (e.g. files containing viruses). - The device should provide appropriate information to tenderers in case the tender submission process is not successful. Re-submission may be allowed until the expiry of the tender submission deadline. - The device should send acknowledgements of receipts to economic operators that have successfully submitted tenders. - The device should securely lock tenders and protect them against unauthorised access. Trace-ability operations should record the exact date and time of receipt of tenders. - The device should record all operations performed during the tender submission period, and confirm that no unauthorised access has been detected. - The device should guarantee that information of tenders remains confidential. - The device should unlock tenders only after the designated tender opening time has been elapsed and the "four-eyes principle" is applied.

	Regardless of the communication channel between the contracting authority and a supplier, an eCatalogue should only be accepted by the device for the electronic receipt of tenders/eCatalogues in a "frozen" or "snapshot" format. In order to ensure the "frozen" or "snapshot" format, an eCatalogue should not contain dynamic links to external files or Internet locations. This effectively implies that the content of an eCatalogue during submission should comprise the exact information upon which evaluation will be performed.
Relevant requirements	Legal Requirement 8: *"Provide rules and guidelines for the active collection of tenders in the form of updated eCatalogues (punch-out)"*
	Functional Requirement 20: "*Allow for the interoperable and secure submission of tenders in the form of eCatalogue prospectuses*"
	Functional Requirement 21: "*Support a device for the electronic receipt of tenders (including eCatalogue prospectuses)*"
	Functional Requirement 22: "*Securely store tenders in the form of eCatalogues*"
	Functional Requirement 23: "*Open tenders following the four-eyes principle*"
	Functional Requirement 24: "*Ensure the confidentiality of tenders*"

3.2.4   eCatalogue "verification"

The EU Directives do not envisage a process for eCatalogue "verification". Indeed, tenders received by a contracting authority must be securely stored until the designated tender opening time and evaluated according to pre-defined criteria. Following tender evaluation, the winning tender(s) form part of the contract/agreement to be concluded between the contracting authority and the supplier(s). Therefore, tenders, whether they take the form of eCatalogues or not, should not undergo any verification checks, as they cannot change (being part of a contractual agreement).

Nevertheless, primarily due to their tailor-made nature, current eCatalogue prospectuses commonly present low format and/or content quality. Because of this, in general they are not immediately suitable for automated processing by the contracting authority and verification checks may therefore be considered necessary by the latter.

When eCatalogue verification processes are used, they commonly cover processes for both technical and content verification. During technical verification, contracting authorities verify that a received eCatalogue prospectus is in the expected format, and in accordance with the defined specifications (e.g. the description of an eCatalogue for an ICT server includes for instance the "supply voltage"). During content verification, contracting authorities verify the quality and compatibility of the content according to specifications of the call (e.g. verifying that the eCatalogue corresponds to the specific subject of the call, that the product descriptions are adequate, that the product classification is valid, etc). The two different types of verification are detailed in two respective functional requirements described in chapter 4 (Functional Requirement 15: "*Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses*" and Functional Requirement 16: "*Make available to suppliers tools for assessing the quality of their eCatalogue prospectuses*")

In cases where the verification of eCatalogues is deemed necessary, contracting authorities shall run eCatalogue verification checks only outside the context of specific calls for tenders. Hence, eCatalogue verification checks may take place within Framework Agreements and DPS but only outside specific contracts. This guideline is graphically presented in **Figure 10** and **Figure 11** which contain, respectively, the activity diagrams for Framework Agreements (section 4.3.1) and DPS (section 4.3.2).

Current eCatalogue verification processes are performed primarily by manual checks, which require contracting authorities to dedicate significant effort and cost. If suppliers were enabled to submit their existing eCatalogue prospectuses or prospectuses based on standard requirements, the need for verification could be reduced. The optimum use of eCatalogues would see verification as a fully automated process.

Number	**Legal Requirement 6**
Name	**If used, fully automate eCatalogue prospectus verification**
Source	New requirement, based on: - Article 32 of [2004/18/EC] and Article 14 of [2004/17/EC]: Framework Agreements - Article 33 of [2004/18/EC] and Article 15 of [2004/17/EC]: Dynamic Purchasing Systems - Section 4.2 of [Explanatory Document]: The electronic receipt of tenders in the re-opening of competition under multiple suppliers framework agreements and dynamic purchasing systems – the use of electronic catalogues
Actors	Contracting Authority
Status	Optional
Description	eCatalogue verification checks may be permitted, provided that any such checks are fully automated and there is no human intervention. Contracting authorities should implement their systems in a way that if tenders in the form of eCatalogues are scanned for verifying their compliance against the specifications prior to their locking (as soon as they are submitted by suppliers), the scans must be fully automated and not disclose any of the content of the tenders. eCatalogues that do not meet the technical specifications should not be deleted from the system, but instead be stored in a specialised and secure area for trace-ability purposes. In this respect, contracting authorities must be especially vigilant in how eCatalogue prospectus verification tools are used, in order to preserve the confidentiality and integrity of eCatalogue data. Any verification tools may be integrated with the device for the electronic receipt of tenders/eCatalogues, in order to ensure that no one can obtain access to tenders until the designated tender opening time.
Relevant requirements	Functional Requirement 15: "*Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses*" Functional Requirement 16: "*Make available to suppliers tools for assessing the quality of their eCatalogue prospectuses*" Functional Requirement 34: "*Automate verification of technical format and quality of eCatalogue update*"

3.2.5   eCatalogue update

An "eCatalogue update" refers to the process followed by Economic Operators to update their eCatalogue under a repetitive procurement procedure, e.g. Framework Agreements or DPS, in order to revise their initial offers or indicative offers in the form eCatalogues in view of tendering for a specific contract. The EU Directives do not specify any conditions on how or when eCatalogues may be updated, however any updates must always respect the specific terms agreed under Framework Agreement or DPS.

It is recommended for a contracting authority, when setting up a Framework Agreement, to define specific time periods, during which suppliers may update their eCatalogues. These update periods may be at a specific point in time preceding the competition for a specific contract within the Framework Agreement (e.g. 3 weeks in view of a competition) or periodically after specific time intervals (e.g. every 3 months)[2]. This ensures equal treatment and transparency for all suppliers. When the frequency of updates is pre-defined, all suppliers can plan forward on committing resources for such updates, giving an equal chance to both large and SME suppliers to update their eCatalogues in the optimum manner (equal treatment). Furthermore, pre-defined time-periods for updating eCatalogues guarantee that no supplier may update his/her eCatalogue, only to be awarded a specific contract immediately afterwards based on that update (transparency).

For DPS, as prescribed by the EU Directives, admitted suppliers may update their indicative offers at any time. Indicative offers form the basis upon which suppliers create their tenders for specific contracts within the DPS. The process for the evaluation of indicative offers is organised once, at the first submission in view of competition. Compliance of a tenderer with the selection criteria is not again verified in subsequent updates of an indicative offer, unless the contracting authority has a reasonable doubt.

The update request may contain rules for regulating the whole process, ensuring that general principles are not violated. When concluding a DPS or Framework Agreement the contracting authority may also specify conditions which clearly define which parts of an eCatalogue prospectus may be updated, i.e. which future eCatalogue updates are admissible (e.g. the authority may specify that only product prices may be updated).

Number	**Legal Requirement 7**
Name	**Provide rules and guidelines for performing eCatalogue updates**
Source	New requirement, based on: - Section 4.2 of [Explanatory Document]: The electronic receipt of tenders in the re-opening of competition under multiple suppliers framework agreements and dynamic purchasing systems – the use of electronic catalogues
Actors	Contracting Authority
Status	Mandatory, however only applicable for Framework Agreements and DPS
Description	In order to form a Framework Agreement with a contracting authority or be admitted in a DPS, suppliers must first submit an initial or indicative offer respectively. Subsequent offers made by suppliers for specific contracts within the Framework Agreement or DPS are based on these initial or indicative offers. Suppliers that have formed a Framework Agreement with a contracting authority, and in particular where their initial offers take the form of eCatalogue prospectuses, may be requested to revise/refine their initial offers under a re-opening of competition. Although initial offers are binding, the terms of the Framework Agreement may foresee the updating of initial offers. Such updates may be admissible, e.g. to address aspects for improving the format and usability of the initial offers (in the form of eCatalogue prospectuses), or to update specific attributes of the offered products/services. In such cases, the exact period during which suppliers may update their eCatalogues can be pre-defined at the establishment of the Framework Agreement, along with the frequency of updates and duration for committing an update. Suppliers should be given reasonable and adequate notice before the start of an updating period.

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[2] The terms setting up the Framework Agreement or DPS should clearly define the specific conditions for updating eCatalogues, when these foresee the periodical update after specific periods (e.g. every 3 months) while at the same time there are ongoing competitions for a specific contracts within the Framework Agreement or DPS.

	Contracting authorities can initiate such an update period through an "eCatalogue update" request. The request is addressed to all suppliers within a Framework Agreement, clearly defining the time period available to suppliers to respond with an updated eCatalogue prospectus. Such requests should also contain the specific rules and conditions, if any, under which updated prospectuses are considered admissible. Suppliers are not bound to reply to the update request; nevertheless, in case they do, the response should contain an updated eCatalogue prospectus, meeting all the terms and conditions included in the initial request. Both the "eCatalogue update" request and any respective responses should always be in line with the pre-agreed terms of the Framework Agreement. The operation for updating eCatalogue prospectuses in the context of Framework Agreements is applicable both for updating initial offers and for creating offers for specific contracts within Framework Agreements.
	Similarly, the eCatalogue prospectuses submitted by suppliers as indicative offers in a DPS may also be updated. The period for such updates, in contrast to Framework Agreements, should not be regulated, allowing suppliers to update their indicative offers whenever they wish. Nevertheless, the authority may specify rules and conditions for such updates, primarily related to admissibility criteria, when establishing the DPS. When submitting a tender for a specific contract within a DPS, a supplier may base its tender on its indicative tender. In such case, the process for creating the tender is similar to updating an indicative tender. In effect, a copy of the indicative tender is created for the specific contract, which is updated accordingly by the supplier, leaving the original indicative tender unmodified.
	In short, in order to simplify the updating process for suppliers, as well as, the subsequent evaluation by contracting authorities of the specific offers, the terms of both Framework Agreements and DPS may include guidelines or rules on the specific eCatalogue prospectus parts which may be updated. Such rules may require that only specific fields may be revised, for instance the price of a product. Contracting authorities are not obliged to define such specific rules for eCatalogue updates. Nevertheless, it is recommended that permissible eCatalogue prospectus updates be regulated, clearly defining which parts of an eCatalogue may be modified and in which manner. Automated verification checks may then be applied to ensure that updated eCatalogue prospectuses meet the terms and conditions set at the establishment of the Framework Agreement and DPS. In addition, evaluation of eCatalogue prospectus updates can be performed automatically.
	As for non-eCatalogue based tenders, information included in eCatalogue prospectus updates must remain confidential and only authorised personnel may obtain access to it. The exact rules applicable to access rights (i.e. who has access to what information and when) should be handled by the device for the electronic receipt of tenders/eCatalogues and other security modules of the eProcurement system, ensuring full compliance with the EU Directives.
Relevant requirements	Functional Requirement 29: "*Support the refinement of eCatalogue prospectus format*"
	Functional Requirement 30: "*Support creation of specific offers in the form of eCatalogue prospectus update (in view of re-opening of competition)*"
	Functional Requirement 33: "*Support creation of specific offers in the form of eCatalogue prospectus update (under re-opening of competition)*"

From a technical viewpoint, the update of an existing eCatalogue prospectus results in a new version of the eCatalogue. Both prominent standards for forming and exchanging eCatalogues, UBL and c-Catalogue, support such multi-versioning, as well as specialised messages for performing eCatalogue updates. These messages relate to "catalogue item specification updates" and "price updates", as detailed in Annex III.3.3 of [SIR] report.

Number	**Legal Requirement 8**
Name	**Provide rules and guidelines for the active collection of tenders in the form of updated eCatalogues (punch-out)**
Source	New requirement, based on: - Section 4.2.2 of [Explanatory Document]: The active collection of tenders - Legal Requirement 7: *"Provide rules and guidelines for performing eCatalogue updates"*
Actors	Contracting Authority
Status	Optional
Description	The EU Directives may be interpreted as permitting contracting authorities to obtain tenders in an alternative way, referred to as "active collection of tenders". It implies that the eProcurement system of a contracting authority may actively collect tenders directly from suppliers' ICT systems. This new submission process is occasionally referred to as "punch-out" and appears to be suitable in cases where there is a need for continuous updates of tenders; this would be allowed (under specific conditions) only within Framework Agreements or DPS. From a technical viewpoint, the establishment of procedures by which a contracting authority's eProcurement system may obtain information from supplier systems pre-supposes an agreement between the two parties on the technical details for such communication. Based on this agreement, ICT system communication interfaces can be built and/or interconnected. The "punch-out" technique can therefore be considered appropriate only for suppliers taking part in a Framework Agreement or DPS, where the terms and conditions for co-operation are allowed and already agreed. It should be clearly understood that "punch-out" does not imply an open, real-time access to supplier catalogues; the active retrieval of tenders must be performed in an equitable, fully transparent and non-discriminatory way. Thus, it should be performed only once all suppliers have been appropriately notified, and always within the context of a specific call for competition, Framework Agreement or DPS. The "active collection" should be performed on a "frozen" or "snapshot" format of the supplier system at a specific point in time, which is pre-defined in the notification of the call for the competition, or within the terms of an established Framework Agreement or DPS. Moreover, contracting authorities must seek the consent of the concerned suppliers before proceeding to collect tenders in this way. In short, when performing an "eCatalogue update" with the use of punch-out, the same rules, conditions and guidelines apply as for "eCatalogue updates" without punch-out. In effect, the traditional submission technique (i.e. supplier submits a tender) can be thought of as "push" of information from the supplier to the contracting authority, while the use of punch-out can be thought of as "pull" (i.e. the authority retrieves a tender from a supplier). Regardless of a "push" or "pull" type of collecting information, the content of eCatalogues remains the same. Thus, a contracting authority should provide specifications to suppliers on the eCatalogue parts they may modify, as well as, on the specific conditions for such updates. In addition, the contracting authority should provide reasonable and adequate notice before the start of an update period, regardless if punch-out is allowed or not.
Relevant requirements	Functional Requirement 32: "*Support an appropriate device for the active collection of tenders ("punch-out")*"

4   Functional requirements

This chapter examines preliminary functional requirements for the public procurement procedures described in chapter 3, focusing in particular on those related to the use of electronic catalogues. Thus the chapter includes both, preliminary requirements that are generic to eProcurement, and preliminary requirements specific to the use of eCatalogue prospectuses for the submission of offers in a public procurement procedure. The relevant requirements defined in [Func. Reqs Vol. I] are reproduced and/or adapted; in addition new preliminary requirements are defined, following the same approach used in the aforementioned report.

The preliminary requirements in the current report are marked either as "mandatory" or "optional". Mandatory are those requirements that are explicitly mentioned in the EU Directives. Optional on the other hand are the requirements which are not explicitly described in the Directives, nevertheless can be implemented in eProcurement systems supporting eCatalogues to offer added-value services, or that contribute to making processes more efficient and transparent.

The identified preliminary functional requirements should be understood as a set of indicative guidelines. They aim to assist EU Member States and EEA countries in setting up and managing eProcurement ICT systems which make use of eCatalogue prospectuses, in compliance with the EU public procurement Directives. Thus they should serve as a reference for designing new eProcurement systems or for adapting existing ones, as well as, for guiding standardisation activities.

4.1   Business framework

The modelling of public procurement procedures in this chapter is based on the following assumptions.

-   One or more contracting authorities offer(s) online eProcurement services, using a commonly accessible electronic platform. This platform operates as a single access point for users (e.g. procurement officers and economic operators). For instance, such a platform might be a web-portal, openly accessible via the Internet. The eProcurement system is capable of receiving and handling/managing eCatalogue prospectuses, therefore functions as an "eCatalogue stock management system", as defined in section 2.1. In the present document, the terms "eProcurement system" and "eCatalogue stock management system" should be viewed as interchangeable terms.

-   Contracting authorities already make use of a certain number of existing information systems (e.g. back-office, legacy, etc.). The integration of the eProcurement platform with such systems can further assist contracting authorities in efficiently performing eProcurement. Whenever such integration with existing information systems is discussed in this document, it is assumed that the communication channel between these systems and the eProcurement platform is technically feasible, secure and reliable.

-   Notices advertising calls for competition are officially published in the OJEU S-series.

The methodology for identifying functional requirements relies on an initial definition of activity diagrams for each procurement procedure. An activity diagram is a common technique used for describing procedural logic, business processes and workflows. Such diagrams are made up from nodes and transitions. A node constitutes a physical action that needs to be performed by a user or system, while transitions describe the sequence of actions to be performed.

At large the different eProcurement procedures envisaged under the EU Directives constitute variations of the open procedure. Therefore the corresponding activity diagrams for each procedure are similar, and the steps and functional requirements identified for the open procedure are relevant for all procedures. Therefore all steps and requirements are described in full for the open procedure, and only cross-referenced for the other procurement procedures. Each activity diagram presents its own numbering of steps and activities (i.e. there is no correlation of the numbering of different procedures). The functional requirements are presented using a unique numbering scheme, identifying requirements for an eProcurement system which supports all procedures/phases. The numbering of each step in the activity diagram of a procedure corresponds to the numbering used for the analysis of the procedure.

4.2   One-off procurements

The aim of this section is to examine the use of electronic catalogues as tenders in procedures for one-off procurements. Detailed activity diagrams depict the sequence of steps in each phase for the open and restricted procedures; subsequently functional requirements are identified for each step. Steps that are specific to eCatalogues are marked in blue in the activity diagrams.

As discussed in chapter 2 of [SoP] and summarised in Legal Requirement 1: "*Ensure equal treatment, non-discrimination and transparency*" the use of eCatalogues does not appear to be relevant to the negotiated procedure; hence this procedure is not hereby discussed.

4.2.1   Open procedure

This section presents in detail the steps to be followed under the open procedure when tenders take the form of eCatalogues. **Figure 8** serialises the steps performed by the main actors (procurement officers, economic operators and an eProcurement system) during the different phases, i.e. for the creation and submission of tenders in the form of eCatalogues (presented in section 3.1.1). It is based on the "Activity diagram for the open procedure" in [Func. Reqs Vol.I]. Specific steps relevant to eCatalogues are marked in blue.
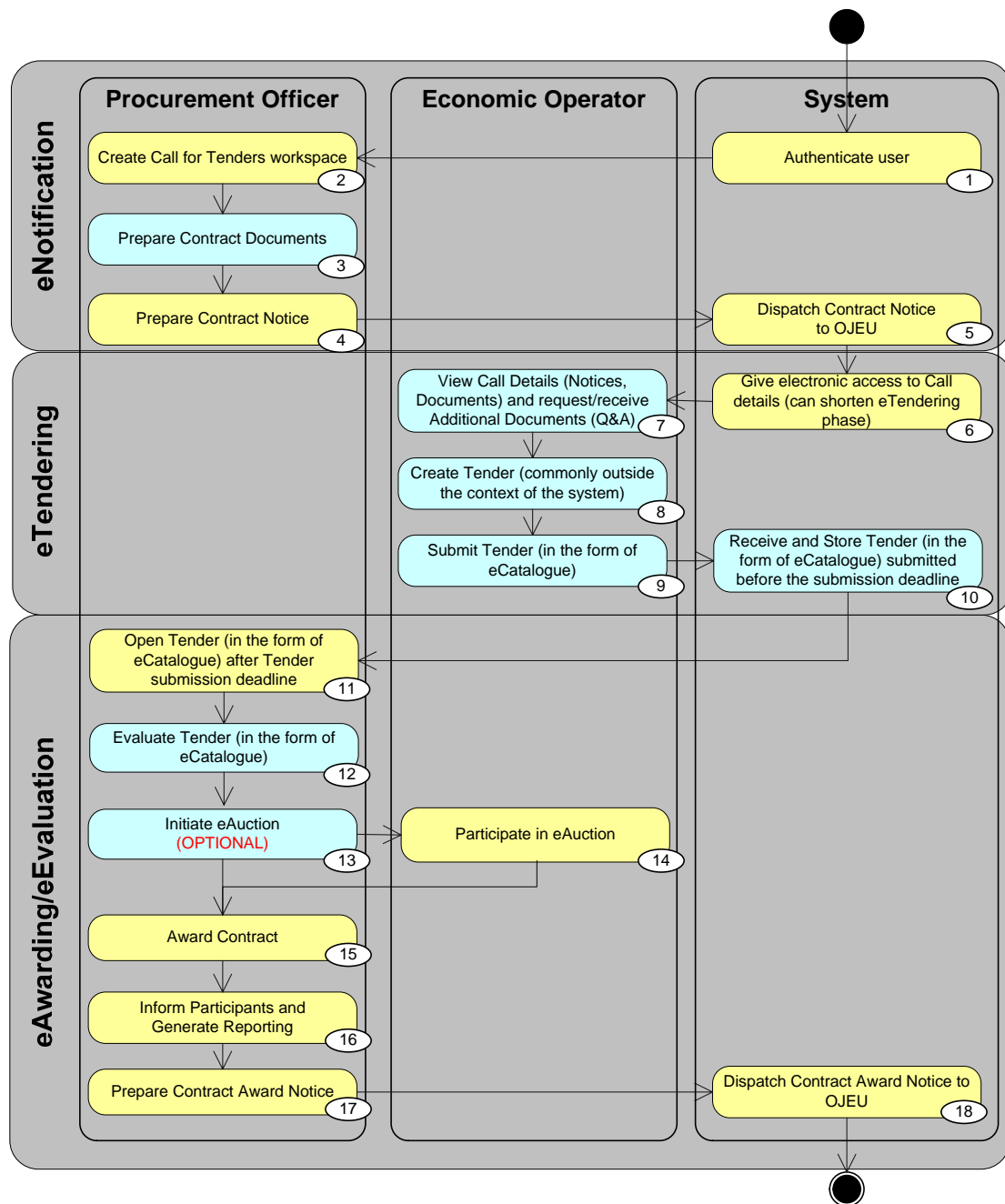
Figure 8: Open procedure activity diagram (offers in the form of eCatalogues)

Building on the above activity diagram, the following functional requirements apply to the different steps of the open procedure.

Step 01. Authenticate user

During this step, users are authenticated by the eProcurement system allowing them to perform activities in the system. This step involves:

- the user registration process, during which users provide personal details (potentially involving processes for activating user accounts)

- user profiling, during which users acquire specific roles in the system

- user authentication which validates the authenticity of users when accessing the system, and

- user authorisation during which users are provided with specific access rights in the system, depending on their specific roles. The activities for user authentication may involve the use of electronic signatures, e.g. digital certificates.

User authentication is performed every time a user accesses the system, regardless of whether the user is a buyer or supplier. For simplicity, this step is hereby presented as Step 01: "*Authenticate user*". In reality, and depending on the exact business flow of an eProcurement system, this step might be repeated several times in an Open (or any other) Procedure.

The functional requirements for this step do not require specific provisions for the use of eCatalogues. All functional requirements for this step facilitate the necessary functions an eProcurement system must feature in order to appropriately recognise its users, and do not depend on whether tenders take the form of eCatalogues or not.

The following functional requirements are identified for this step.

Number	**Functional Requirement 1**
Name	**Register user**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 1] – *"User Registration"*
Actors	Contracting Authority (procurement officers), Economic Operators
Status	Optional
Description	This functional requirement allows new procurement officers and tenderers/economic operators to register and create a profile in the eProcurement system. The registration process must ensure the confidential transfer and secure storage of all personal information of users. Furthermore, mechanisms may be put in place for the validation of the information provided by new users of the system. Hence, the registration process may be performed in two phases. One phase to allow new users to apply for registration to the system, and another phase to allow authorised personnel to validate the submitted information and approve or reject a registration application. Alternatively, electronic signatures/digital certificates may be used for ensuring the authenticity of the person attempting to register. Under the EU Directives, there are no particular provisions related to user registration in eProcurement systems. The primary reason for an eProcurement system to feature a user registration process for suppliers should only be for providing a good service to suppliers, through automated notifications or personalised searches to calls for tenders. The registration process for suppliers should be simple and straight-forward, so as to avoid excluding any supplier from taking part in a competition due to complexity of user registration. If validation checks are necessary before a new user account becomes active, these checks should be performed in a way that they do not restrict a supplier's participation in calls for tenders.
Relevant requirements	Functional Requirement 2: "*Support user profiling*" Functional Requirement 3: "*Support user authentication*" Functional Requirement 4: "*Support user authorisation*"

Number	**Functional Requirement 2**
Name	**Support user profiling**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 2] – *"User Profiling"*
Actors	eProcurement system (eCatalogue stock management system)
Status	Optional
Description	This functional requirement relates to the capacity of an eProcurement system to store personal information of registered users. Users may be able to update their personal information if required. This personal information may be used for several functionalities of the system, including reporting, automated notifications, etc. In addition, each user can be associated to a unique identifier, which can be used by the audit trailing facility of the system, in order to record all user activities, and to identify the initiator/actor of each activity. Moreover, user profiling can allow users to set up their preferences when using the system, in terms of how data is searched, displayed, their preferred language, etc. allowing for advanced system customisation/ personalisation settings.
Relevant requirements	Functional Requirement 1: "*Register user*" Functional Requirement 3: "*Support user authentication*" Functional Requirement 4: "*Support user authorisation*"

Number	**Functional Requirement 3**
Name	**Support user authentication**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 3] – *"User Authentication"*
Actors	eProcurement system (eCatalogue stock management system)
Status	Optional
Description	This functional requirement relates to the mechanisms used by the eProcurement system for identifying users. This is necessary for an eProcurement system to display the appropriate data to users, as well as, to allow users to perform appropriate activities according to their acquired role. User authentication may be performed based on different levels of security, as discussed in section 5.2. Advanced security implementations may make necessary the use of digital certificates (not mandated by the EU Directives however). If digital certificates are used, they must respect the requirements of EU Directive 1999/93/EC on "e-signatures".
Relevant requirements	Functional Requirement 1: "*Register user*" Functional Requirement 2: "*Support user profiling*" Functional Requirement 4: "*Support user authorisation*"

Number	**Functional Requirement 4**
Name	**Support user authorisation**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 4] - "*User Authorisation*"
Actors	eProcurement system (eCatalogue stock management system)
Status	Optional
Description	Each user in an eProcurement system is commonly associated with a certain role, permitting the system to be aware of what data the user may access and what activities the user may perform within its context. User authorisation can be performed only after a user is authenticated by the system, i.e. the system is aware who the user is.
Relevant requirements	Functional Requirement 1: "*Register user*" Functional Requirement 2: "*Support user profiling*" Functional Requirement 3: "*Support user authentication*"

Step 02. Create call for tender workspace

To create a Call for Tenders within the context of an eProcurement system, authorised procurement officers should first define a virtual workspace where all call-related information can be stored. This virtual workspace allows authorised procurement officers to provide relevant information about a call, including documents, data, meta-data, etc. In addition, other procurement officers may be associated to the call. In parallel, this tender workspace can be used for storing received tenders for the call.

The following functional requirement is identified for this step. It does not require specific provisions for the use of eCatalogues.

Number	**Functional Requirement 5**
Name	**Create a call for tenders workspace**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 5] – "*Tender Workspace creation*"
Actors	Contracting Authority (procurement officers)
Status	Optional
Description	When creating a call for tenders, the eProcurement system can make available to procurement officers a virtual workspace for storing all call-related information. This virtual workspace allows the authorised procurement officers to provide core information about the call, such as its title, description, estimated value, etc., and allows storing buyer documents, such as notices, contract documents, additional documents, etc. Moreover, the tender workspace can be used as the area for storing submitted tenders, and all other data related to the call. In order for information stored in a Tender workspace to be accessed and/or modified by authorised users only, the use of a user authorisation module (Functional Requirement 4: "*Support user authorisation*") is essential. Some activities in the tender workspace should be possible only when certain other events (both activity-related and time-related) have been completed. For instance, suppliers should be able to access the contract documents stored in a Tender workspace only after the relevant Contract Notice has been published (i.e. activity-related). Procurement officers should be able to apply the "four-eyes principle" for unlocking the received tenders only after the designated tender opening period has been reached (i.e. time-related).
Relevant requirements	None

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Step 03. Prepare contract documents

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During this step, procurement officers define the contract documents of a call for tenders, commonly referred to as "terms of reference". These documents define more precisely the requirements/specifications of the contracting authority for the subject of the contract. The preparation of the contract documents may be performed either within the context of an eProcurement system (through document approval workflows) or outside such a system.

The requirements described in contract documents shall specify the details for the electronic submission of tenders and the required format and exchange standards to be used. If a contracting authority seeks tender submission in the form of eCatalogues, requirements on processes, format and/or content must be clearly described in the contract documents.

The following functional requirements are identified for this step.

Number	**Functional Requirement 6**
Name	**Provide standards-based tender specifications for eCatalogue prospectuses**
Source	New requirement, based on: - Article 42 of [2004/18/EC] and article 48 of [2004/17/EC]: Rules applicable to communication, point 5 (a)
Actors	Contracting Authority (procurement officers)
Status	Optional but recommended

Description	The contract documents of a call for tenders must clearly describe the subject of the contract and the exact requirements for participating in the competition. In addition they describe the expected content and format of tenders to be received, as well as, processes that suppliers must follow in order to participate in the competition.
	The preparation of contract documents involves an "approval" lifecycle for documents, comprising their creation, validation, approval and publication. The "approval" lifecycle depends on the internal procedures of the contracting authority, and may be supported by an eProcurement system. Under current practice, contract documents of call for tenders which authorise the use of eCatalogues commonly describe:
	- The required eCatalogue format
	- The expected content of eCatalogues
	- The product classification and description scheme to be used (if any)
	- The exact processes to be followed and electronic means of communication to be used for tender submission
	As described in chapter 2, the current use of eCatalogues presents several limitations, and should be improved. Under Evolution Phase I, described in section 2.2, the specifications included in contract documents for the use of eCatalogues in public procurement should only describe the submission techniques for eCatalogues, as well as, the minimum information that should be included in tenders.
	Under Evolution Phase II of section 2.2, the specifications included in contract documents can be even more succinct. Contracting authorities may only define the minimum information that should be included in tenders, as well as, the industry-wide standards that suppliers should abide to in order to submit their eCatalogues (e.g. UBL and eCl@ss). More information about eCatalogue standards is available in section 5.1.3.
	Regardless the exact use of eCatalogue (i.e. Current Practice, Evolution Phase I or Evolution Phase II), contracting authorities are recommended to refrain from defining the exact eCatalogue specifications that suppliers must abide to in order to describe offered products/services (e.g. attributes and potential values).
	Contract documents for calls which authorise the use of eCatalogues should abide to Legal Requirement 3: *"Provide non-discriminatory specifications for creating tenders in the form of eCatalogue prospectuses"*.
Relevant requirements	Legal Requirement 1: *"Ensure equal treatment, non-discrimination and transparency"*
	Legal Requirement 2: *"Use interoperable electronic means and tools for communication"*
	Legal Requirement 3: *"Provide non-discriminatory specifications for creating tenders in the form of eCatalogue prospectuses"*
	Legal Requirement 4: "*Provide additional information after publication in a non-discriminatory way*"
	Functional Requirement 12: "*Publish Contract Documents*"
	Functional Requirement 14: *"Provide electronic access to call for tenders specifications (Visualise/Download)*"
	Functional Requirement 17: "*Publish additional information/documents*"

Number	**Functional Requirement 7**
Name	**Define a tender evaluation mechanism for eCatalogue prospectuses**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 10] – "*Tender Evaluation Mechanism*"
Actors	Contracting Authority (procurement officers)
Status	Mandatory
Description	Contracting authorities should perform the full evaluation of tenders based on either the lowest price or the Most Economically Advantageous Tender (MEAT). In both cases, the evaluation model to be used must be pre-stated in the contract notice or the contract documents at the beginning of a public procurement competition. In the latter case, the contract notice must at least state which of the two evaluation mechanisms will be used. If the evaluation is based on MEAT, contracting authorities should define the exact evaluation criteria to be used, as well as indicate their weightings either within the contract notice or contract documents. In duly justified cases, where the weighting of evaluation criteria cannot be established, contracting authorities should give reasons, and indicate the descending order of importance of all criteria. When the evaluation parameters of a call based on MEAT can be established with precision, a contracting authority may decide that the award of the contract shall be preceded by an electronic auction. The intention of using an electronic auction as part of the awarding procedure must be mentioned in the contract notice of the call. To accommodate the above, an eProcurement system can prompt procurement officers to define the evaluation mechanism to be used, as well as automatically include the details of the evaluation mechanism in the contract notice and/or contract documents. Where tenders take the form of eCatalogue prospectuses, the tender evaluation mechanism may include specific provisions enabling the automated evaluation of eCatalogues. As discussed in Legal Requirement 3: *"Provide non-discriminatory specifications for creating tenders in the form of eCatalogue prospectuses"*, the specifications for forming eCatalogues can either be fully defined by the contracting authority, or in accordance with an eCatalogue standard. In both cases, the contracting authority may define particular quantitative attributes of the expected eCatalogues to be taken into account for automated evaluation. Weights and evaluation formulas can be defined for eCatalogue attributes or groups of them.
Relevant requirements	Legal Requirement 1: "*Ensure equal treatment, non-discrimination and transparency*" Legal Requirement 3: *"Provide non-discriminatory specifications for creating tenders in the form of eCatalogue prospectuses"* Legal Requirement 6: "*If used, fully automate eCatalogue prospectus verification*" Functional Requirement 6: "*Provide standards-based tender specifications for eCatalogue prospectuses*" Functional Requirement 15: "*Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses*" Functional Requirement 16: "*Make available to suppliers tools for assessing the quality of their eCatalogue prospectuses*"

Step 04. Prepare contract notice

During this step, the contract notice for a call for tenders is prepared by the contracting authority. The EU-wide publication of a contract notice in the S-series of the EU Official Journal (OJEU) is mandatory for all contracts falling under the scope of the EU Directives, e.g. for contract volumes above the thresholds set by these directives. In addition, it is possible to create contract notices for other types of contracts (e.g. advertising contracts below the thresholds). Notices must be submitted for publication in the Official Journal in the appropriate format mandated by the Directives and the EU Publications Office. This includes the mandatory use of the CPV classification scheme[3].

The following functional requirements are identified for this step. They do not require specific provisions for the use of eCatalogues in public procurement.

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[3] It should be noted that the EU Directives explicitly mandate the use of the CPV classification scheme for official EU notices. However, there are no particular requirements regarding the use of such schemes for forming tenders or, a fortiori, for eCatalogues. Contracting authorities may select an alternative scheme for product classification and/or description in eCatalogues. A number of options is discussed in detail in [SoP] and [SIR].

Number	**Functional Requirement 8**
Name	**Prepare official procurement notices including eCatalogue information**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 6] - "*Preparation of a Prior Information Notice*" Updated, based on: - Chapter VI, section 1 of [2004/18/EC] and chapter VI, section 1 of [2004/17/EC]: Publication of notices
Actors	Contracting Authority (procurement officers)
Status	Mandatory if eCatalogues are authorised
Description	Procurement officers may be assisted to prepare notices by using specialised ICT applications/tools. Such applications/tools, commonly known as "Form Filling Tools", can be a part of an eProcurement system itself, or an external application/tool integrated into the eProcurement system. At present, the OJEU system of the EU Publications Office offers a number of mechanisms by which notices can be filled and transmitted electronically. Depending on the exact mechanism used by a specific eProcurement system, a different type of "Form Filling Tool" maybe used for the preparation of such notices. Notices can be created using: - the SIMAP Forms application of the EU Publications Office; - specialised OJS e-Sender applications or - tailor-made applications, provided that they can export notices in the appropriate format mandated by the Directives and the EU Publications Office. Procurement officers can be further assisted in preparing notices by automatically utilising information already provided to the eProcurement system within the Tender workspace. The creation of the contract notice takes place at the same time as the preparation of the contract documents. Such documents, described in Functional Requirement 6: *"Provide standards-based tender specifications for eCatalogue prospectuses"* and Functional Requirement 12: *"Publish Contract Documents"* provide detailed information and technical specifications regarding the subject of the contract, as well as, the conditions and rules for preparing tenders, including reference to any standards to be used.
Relevant requirements	Functional Requirement 6: *"Provide standards-based tender specifications for eCatalogue prospectuses"* Functional Requirement 11: "*Electronically dispatch notices to OJS - Interface with OJEU*" Functional Requirement 12: *"Publish Contract Documents"*

Number	**Functional Requirement 9**
Name	**Use the Common Procurement Vocabulary (CPV) classification**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 7] - *"Use of the Common Procurement Vocabulary (CPV) classification standard"* Updated, based on: - Article 1 (14) of [2004/18/EC] and article 1 (13) of [2004/17/EC]: Definitions - Article 36 of [2004/18/EC] and article 34 of [2004/17/EC]: Form and manner of publication of notices
Actors	Contracting Authority (procurement officers)
Status	Mandatory
Description	Under the EU Directives, contracting authorities shall describe the object of the contract in procurement notices by reference to the CPV nomenclature. The CPV scheme is a multilingual European classification standard, which is specifically tailored to describe goods, services or works purchased by public authorities using numerical codes. Its use is mandatory, in order to render a transparent and efficient public procurement environment. The CPV exists in the 22 official languages of the EU. Using this classification scheme, economic operators can easily identify the subject of a contract, regardless of the language. An eProcurement system should prompt procurement officers to make use of the CPV classification standard when creating procurement notices. As the use of CPV is not mandatory for eCatalogue prospectuses, contracting authorities may use an alternative classification and/or description scheme for tenders taking the form of eCatalogues. This in fact may be suitable for both contracting authorities and suppliers, as the CPV does not yet support many attributes for products, while other schemes have advanced features for this[4]. A framework regulating the co-existence of the CPV with other classification schemes could facilitate the automated mapping of contracting authorities needs (expressed in CPV codes) to received eCatalogue offers (potentially expressed using other schemes).
Relevant requirements	Functional Requirement 8: "*Prepare official procurement notices including eCatalogue information*"

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[4] As detailed in [SIR], the CPV classification scheme supports a Supplementary Vocabulary, which can be used to expand the description of a contract by entering extra qualitative information, such as the destination of the products. However, the approach used in CPV is very different to that used in standards that combine a classification scheme and a product description scheme, such as eCl@ss and GPC. The approach followed by CPV does not bind specific attributes to specific product classes (i.e. one can freely define the attributes of the Supplementary Vocabulary for describing a specific product), while the approach followed by eCl@ss and GPC binds specific attributes to specific products.

Number	**Functional Requirement 10**
Name	**Use the Nomenclature of Territorial Units for Statistics (NUTS) classification**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 9] - "*Nomenclature of Territorial Units for Statistics (NUTS) classification standard"*
Actors	Contracting Authority (procurement officers)
Status	Optional
Description	In the contract notice, a contracting authority may specify the NUTS codes for the delivery or execution of the contract to be procured. The NUTS constitutes a classification nomenclature for geographic regions, which uses numerical codes to define locations in Europe. Similarly to the CPV, the inclusion of NUTS codes in notices allows economic operators to easily identify the locations in which they will be required to deliver the goods, services, or works of public contracts, regardless of the language used in the procurement notice. An eProcurement system can prompt procurement officers to make use of the NUTS classification scheme when creating notices. This functional requirement is not mandated by the EU public procurement Directives, nevertheless can significantly increase the interoperability and usability of notices created by an eProcurement system (e.g. support for searching, reporting, system integration, etc.).
Relevant requirements	Functional Requirement 8: "*Prepare official procurement notices including eCatalogue information*"

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Step 05. Dispatch contract notice to OJEU

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During this phase, a contracting authority dispatches the prepared contract notice to the S-Series of the Official Journal of the European Union (OJEU). Only following the dispatch of the notice to the OJEU is the contracting authority allowed to publish information for the call in other publication entities, such as national gazettes and publication boards, the buyers profile, national/local newspapers, etc. Once this step is completed, the notification phase is considered complete, and the tendering phase is initiated.

The following functional requirement is identified for this step. It does not require specific provisions for the use of eCatalogues.

Number	**Functional Requirement 11**
Name	**Electronically dispatch notices to OJS – Interface with OJEU**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 11] - "*Interface with the OJEU"* Updated, based on: - Chapter VI, section 1 of [2004/18/EC] and chapter VI, section 1 of [2004/17/EC]: Publication of notices - Section 3 of [Explanatory Document]: Notices and electronic access to contract documents
Actors	eProcurement system (eCatalogue stock management system)
Status	Optional, although highly recommended for all eProcurement systems
Description	Once the contract notice of a call for tenders is completed, it is made publicly available. For contracts above the EU thresholds, as defined in the EU public procurement Directives, the contract notice needs to be published in the S-Series of the Official Journal of the European Union (OJEU). The EU Publications Office is responsible for the daily publication of the Official Journal. It offers several methods by which a notice can be published in the OJEU. An eProcurement system can support the automated or semi-automated dispatching of notices to the OJEU, through the "SIMAP Forms application". This application constitutes a web-based system of the EU Publications Office, based on which authorised procurement officers and systems can prepare official EU procurement forms and publish them to the OJEU, either through its eForms (for users), or a specialised web interface (for systems). Another alternative relates to the use of OJS eSenders, which form specialised applications, certified by the EU Publications Office for forming and publishing official EU procurement notices to OJEU. In addition to the use of electronic means for the transmission of notices, the EU Publications Office still supports the transmission of notices using non-electronic means (e.g. non-structured forms submitted via email, fax or post). This approach is not recommended, as the use of electronic means can save costs and shorten the time-limits of the competition.
Relevant requirements	Functional Requirement 12: "*Publish Contract Documents*"

Step 06. Give electronic access to call details

This is the first step of the Tendering phase. It involves the publication of contract documents to the general public. As soon as Step 05 "*Dispatch Contract Notice to OJEU* " is completed and the contract notice of the call for tenders is dispatched to the OJEU, the contracting authority can make information for the call publicly available.

The following functional requirement is identified for this step. It does not require specific provisions for the use of eCatalogues.

Number	**Functional Requirement 12**
Name	**Publish Contract Documents**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 12] - "*Publication of Contract Documents*" Updated, based on: - Section 3 of [Explanatory Document]: Notices and electronic access to contract documents
Actors	Contracting Authority (procurement officers)
Status	Mandatory
Description	The contract documents, approved by the contracting authority, shall not be made publicly available until the contract notice of the call for tenders is dispatched to the OJEU for publication. Once the contract notice is published in the OJEU, it may also be published in other publication boards. All interested parties should be given full and unrestricted access to the respective contract documents. Once a set of contract documents is made publicly available, it should not be possible for anyone to remove and/or modify any of the documents of the set. Nevertheless, contracting authorities reserve the right to publish new contract documents, if this is deemed necessary in order to clarify specific points or present new information. The publication of new contract documents must be performed in accordance with the general principles of equal treatment, non-discrimination and transparency, e.g. by extending deadlines for the submission of offers if necessary. If the modification of the contract documents is substantial, re-publication of the notice must be envisaged. Information relative to the submission of tenders by means of an eCatalogue prospectus and/or their subsequent use should be given in detail in the contract documents. In particular, when new information is provided to economic operators regarding specifications for tenders in the form of eCatalogues, the publication of the new contract documents should respect Legal Requirement 4: *"Provide additional information after publication in a non-discriminatory way"*.
Relevant requirements	Legal Requirement 4: *"Provide additional information after publication in a non-discriminatory way"* Functional Requirement 6: "*Provide standards-based tender specifications for eCatalogue prospectuses*" Functional Requirement 11: "*Electronically dispatch notices to OJS - Interface with OJEU*"

Step 07. View call details

During this step, economic operators are permitted to view the details of the call for tenders. From a technical viewpoint this implies that economic operators obtain access to the appropriate tender workspace in the eProcurement system, as discussed in Functional Requirement 5: "*Create a call for tenders workspace*". Apart from allowing economic operators to access tender workspaces, eProcurement platforms may support search mechanisms through which suppliers may locate interesting calls for tenders.

To provide an advanced service to economic operators, an eProcurement system could allow economic operators to register their interest for a particular call for tenders. In this way economic operators can be immediately notified when the documentation for the call for tenders changes, e.g. when a new contract document or additional document is made available (Functional Requirement 17: "*Publish additional information/documents*"). Such registration may be expressed by simply providing an email address and/or fax/phone-number, and performed as per Functional Requirement 1: *"Register user"*.

During this step, economic operators should be given full and unrestricted access to the contract notice and contract documents of the call for tenders, which should contain all specifications for creating tenders, including any specifications for eCatalogues. The technical specifications set by the contracting authority should, to the greatest possible extent, rely on known and widely used standards.

To simplify the tender creation process (see also Step 08: *"Create Tender in the form of eCatalogue"*), contracting authorities may make available to suppliers tools for the automated technical verification of eCatalogues against the tender specifications. In addition, tools which indicate to suppliers the quality level of their eCatalogues may also be provided. These tools may be made available by contracting authorities as web-based applications, or as stand-alone software tools that suppliers can obtain and utilise in their ICT environment. The latter approach appears to be the best option as then the full responsibility for eCatalogue verification lies with the suppliers. Also, there are no complexities with regards to eCatalogue data security and confidentiality, as eCatalogue verification takes place within the ICT environment of suppliers. Such tools, their distribution and usage should comply with Legal Requirement 6: *"If used, fully automate eCatalogue prospectus verification"* and the requirements discussed in section 5.1.2.

The functional requirements for this step relate to the services provided by an eProcurement system to economic operators for obtaining full and unrestricted access to the details of a public call for tenders. The eProcurement system should ensure that all necessary resources for creating tenders in the form of eCatalogues are equally accessible by all economic operators, including specifications and specialised tools for the creation and submission of eCatalogues.

The following functional requirements are identified for this step.

Number	**Functional Requirement 13**
Name	**Provide searching mechanisms for calls for tenders**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 13] - "*Search Calls Mechanism*"
Actors	eProcurement system (eCatalogue stock management system)
Status	Optional
Description	At this step, a call for tender is considered "open", as it is publicly available. An eProcurement system may provide a searching mechanism for calls, so that interesting "open" calls are easily located by suppliers. A search mechanism can be based on details contained in the contract notice, for instance the call title, the CPV or NUTS codes, or the date of publication.
Relevant requirements	Functional Requirement 14: "*Provide electronic access to call for tenders specifications (Visualise/Download)*"

Number	**Functional Requirement 14**
Name	**Provide electronic access to call for tenders specifications (Visualise/Download)**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 14] - *"Visualise/Download Call for Tenders specifications"* Updated, based on: - Section 3 of [Explanatory Document]: Notices and electronic access to contract documents
Actors	eProcurement system (eCatalogue stock management system)
Status	Mandatory
Description	Any interested party should be provided with the functionality to access all publicly available information of a call, comprising the contract notice, contract documents, additional documents, etc. An eProcurement system may require interested parties to provide some personal information, in order to be notified if and when new information about the call is published (e.g. new additional or contract documents) The eProcurement system should ensure that full and unrestricted access to all publicly available information is provided equally to all interested parties, meeting the requirement for equal treatment, non-discrimination and transparency.
Relevant requirements	Functional Requirement 13: "*Provide searching mechanisms for calls for tenders*"

Number	**Functional Requirement 15**
Name	**Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses**
Source	New requirement, based on: - Legal Requirement 6: "*If used, fully automate eCatalogue prospectus verification*"
Actors	Contracting Authority (procurement officers)
Status	Optional
Description	Contracting authorities may provide to suppliers tools for easily verifying the correct formatting of their eCatalogues. Formatting verification can cover several technical checks, for instance: - Correct technical format - Correct data in specific fields of an eCatalogue (based on data types) - Correct value within the bounds of predefined numerical ranges (e.g. value 1 to 10) - Valid product classification codes If such verification tools are hosted by the contracting authority, any verification must be entirely automatic with no access to, nor any intervention on, the eCatalogues by the contracting authority. The use of these tools, apart from assisting suppliers in verifying the technical compliance of their eCatalogues, can also fully automate the verification process of an eProcurement system when receiving tenders in the form of eCatalogues (see Legal Requirement 6: *"If used, fully automate eCatalogue prospectus verification"* and Functional Requirement 25: "*Automate the evaluation of tenders in the form of eCatalogue prospectuses*").
Relevant requirements	Functional Requirement 16: "*Make available to suppliers tools for assessing the quality of their eCatalogue prospectuses*" Functional Requirement 25: "*Automate the evaluation of tenders in the form of eCatalogue prospectuses*"

Number	**Functional Requirement 16**
Name	**Make available to suppliers tools for assessing the quality of their eCatalogue prospectuses**
Source	New requirement, based on: - Legal Requirement 6: "If used, fully automate eCatalogue prospectus verification"
Actors	Contracting Authority (procurement officers)
Status	Optional
Description	The contracting authority may provide to suppliers tools for establishing eCatalogue prospectuses of high quality. Only high-quality eCatalogues allow taking full advantage of the envisaged benefits by making use of electronic means, e.g. enabling buyers to efficiently browse, locate and evaluate products in a non-discriminatory and effective manner. Such tools can include mathematical routines, based on indicators, that highlight to suppliers which fields/products in their eCatalogues are not well described, also estimating the search-ability, usability and relevance of eCatalogues in comparison to the specifications of a call for tenders. Similarly to Functional Requirement 15: *"Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses"*, if such verification tools are hosted by the contracting authority, any verification must be entirely automatic with no access to, nor any intervention on, the eCatalogues by the contracting authority. The use of these tools, apart from assisting suppliers in verifying the quality of their eCatalogues, can also fully automate the verification process of an eProcurement system when receiving tenders in the form of eCatalogues (see Legal Requirement 6: *"If used, fully automate eCatalogue prospectus verification"* and Functional Requirement 25: *"Automate the evaluation of tenders in the form of eCatalogue prospectuses"*.
Relevant requirements	Functional Requirement 15: *"Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses"* Functional Requirement 25: *"Automate the evaluation of tenders in the form of eCatalogue prospectuses"*

Number	**Functional Requirement 17**
Name	**Publish additional information/documents**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 15] - "*Request for Additional Documents"* Updated, based on: - Section 3 of [Explanatory Document]: Notices and electronic access to contract documents
Actors	Contracting Authority (procurement officers)
Status	Mandatory
Description	During the eTendering phase, economic operators may request clarifications from the contracting authority regarding the specifications/subject of the call. The request for clarifications is referred to as request for "additional documents", that any interested party may ask for, without any prerequisites (e.g. registration or official expression of interest to the call), or any future obligations (e.g. obligation to submit a tender). Requests for additional documents may be submitted only within a predefined period of time (i.e. the contracting authority may set a deadline for accepting questions). All requests for additional documents and the additional documents themselves need to be made publicly available to all interested parties, and in due time before the end of the time-limit for submission of tenders to ensure non-discrimination and equal treatment of economic operators. The identities of economic operators posting requests for additional documents should not be disclosed.
Relevant requirements	Legal Requirement 4: "*Provide additional information after publication in a non-discriminatory way*" Functional Requirement 12: "*Publish Contract Documents*"

Number	**Functional Requirement 18**
Name	**Support automated notifications**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 16] - "*Automated Notifications"*
Actors	eProcurement system (eCatalogue stock management system)
Status	Optional
Description	An eProcurement system may support an automated notification mechanism, which automatically notifies its users of interesting events. For instance, users may be automatically notified when new information is made available in a CfT workspace. The EU Directives do not directly foresee for such mechanism. Nevertheless, this can constitute a value-added service for an eProcurement system. Contracting authorities should not fully rely on such notification techniques, as the technologies involved may not guarantee the authenticity of notification recipients, proof of delivery and adequate security. For instance, the use of email notifications (e.g. SMTP) cannot guarantee for any of the above and should not be the only means of notification.
Relevant requirements	None

	Step 08. Create tender in the form of eCatalogue

During this step, economic operators create their tenders, which may take the form of electronic catalogues. The current step comprises only one functional requirement, which supports the creation of an eCatalogue to form a tender (or part of it). This functionality may be supported by an eProcurement system of a contracting authority, or an external ICT service of a supplier. In the latter case, the following functional requirement should be viewed as a process that suppliers must follow in order to create tenders in the form of eCatalogues.

The following functional requirement is identified for this step.

Number	**Functional Requirement 19**
Name	**Support creation of initial offers in the form of eCatalogue prospectuses**
Source	New requirement, based on: - Preamble (12) of [2004/18/EC] and preamble (20) of [2004/17/EC]
Actors	Economic Operators
Status	Mandatory if eCatalogues are authorised by the call for tenders
Description	This functional requirement relates to the creation of initial tenders in the form of eCatalogue prospectuses. This functionality may be supported either internally by an eProcurement system or by external ICT services. In the former case, the eProcurement system may allow suppliers that do not have the necessary ICT capacity, to create eCatalogue prospectuses directly in the system. In such cases, it is recommended that prospectuses abide to industry-wide standards, in order for suppliers to be in position to extract their eCatalogue prospectuses for re-utilising them in other systems (e.g. an eProcurement system of another contracting authority). This can be achieved either through appropriate web forms, or external tools that the contracting authority may provide to suppliers in order to simplify the eCatalogue creation process. In the latter case, when external ICT services are used to create eCatalogues for public procurement, for instance an ICT application of a supplier, this functional requirement should be viewed as a process that suppliers must follow in order to create their tenders in the form of eCatalogues. Use of eCatalogues as well as the process followed towards their adoption must satisfy the principles of equal treatment and non-discrimination. Under no circumstances contracting authorities may view, edit and/or improve eCatalogue prospectuses which form official offers; the confidentiality of tenders must be fully respected.
Relevant requirements	Legal Requirement 1: *"Ensure equal treatment, non-discrimination and transparency"* Legal Requirement 3: *"Provide non-discriminatory specifications for creating tenders in the form of eCatalogue prospectuses"*

Taking into consideration the current use of eCatalogues in public procurement, where specifications are buyer-defined, a common set of core data included in eCatalogue prospectuses is identified in section 7.1 of [SoP]. eCatalogues comprise data combining the technical characteristics of the products/services offered by suppliers, as well as, their financial offerings, also providing associated information, e.g. for handling and invoicing. eCatalogues may be created for tendering for a complete call for tenders, or for a set of lots (or one lot) included in it.

	Step 09. Submit tender in the form of eCatalogue

During this step, economic operators submit their tenders, following the specifications for the use of electronic means as defined by the contracting authority.

The following functional requirements are identified for this step.

Number	**Functional Requirement 20**
Name	**Allow for the interoperable and secure submission of tenders in the form of eCatalogue prospectuses**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 17] - "*Submission of tenders"*
Actors	eProcurement system (eCatalogue stock management system)
Status	Mandatory
Description	Economic operators should have the possibility to electronically submit their tenders in the form of eCatalogue to the eProcurement system of the contracting authority. As discussed in Legal Requirement 2: *"Use interoperable electronic means and tools for communication"*, any tools used for tender submission must be generally available, non-discriminatory, and interoperable. Economic operators that have submitted a tender should be provided with the possibility to update their tender until the designated tender submission deadline. An official time-stamping facility must ensure the exact submission date and time of a tender. Security arrangements for all data transmitted to/from the eProcurement system should ensure the integrity of tenders, as well as, the authenticity of the economic operators that have submitted them, always in line with Legal Requirement 5: "*Apply rules for the device for the electronic receipt of tenders/eCatalogues"* and Functional Requirement 21: "*Support a device for the electronic receipt of tenders (including eCatalogue prospectuses)*".
Relevant requirements	Legal Requirement 2: *"Use interoperable electronic means and tools for communication"* Legal Requirement 5: "*Apply rules for the device for the electronic receipt of tenders/eCatalogues"* Functional Requirement 19: "*Support creation of initial offers in the form of eCatalogue prospectuses*" Functional Requirement 21: "*Support a device for the electronic receipt of tenders (including eCatalogue prospectuses)*".

Step 10. Receive and store tenders in the form of eCatalogues (device for the electronic receipt of tenders/eCatalogues)

Immediately after the submission of a tender in the form of an eCatalogue prospectus, the device for the electronic receipt of tenders must be available for receiving it, and securely storing it until the designated tender opening time in accordance with Legal Requirement 5: *"Apply rules for the device for the electronic receipt of tenders/eCatalogues"*. Tenders that are received after the designated tender submission deadline should not be accepted. This step runs until the tender submission deadline, and the end of this step signifies the end of the eTendering phase.

Number	**Functional Requirement 21**
Name	**Support a device for the electronic receipt of tenders (including eCatalogue prospectuses)**
Source	New requirement, based on: - Legal Requirement 5: "*Apply rules for the device for the electronic receipt of tenders/eCatalogues*" - Section 4 of [Explanatory Document]: Electronic reception devices for

	tenders, requests to participate and plans and projects in contests
Actors	eProcurement system (eCatalogue stock management system)
Status	Mandatory
Description	The two most relevant standards for the exchange of eCatalogues, UBL and c-Catalogue, define specifications on how eCatalogues should be transmitted between parties, through standardised processes and messages, as well as, how transactions can be completed based on already exchanged eCatalogues. At present, common practice in eProcurement systems in Europe is to provide suppliers with contracting authorities' tailor-made specifications for forming and submitting eCatalogues.
	In order to implement an ICT eProcurement system which can receive eCatalogues either based on industry-wide standards or tailor-made specifications, the eProcurement system should feature a suitable communication channel for external ICT systems to be able to communicate with it. That communication channel must, amongst others, be able to accept new/updated eCatalogues. In this respect, the device for the electronic receipt of tenders can support the receipt of both eCatalogues and non-eCatalogue based tenders, as the same communication channel is used for both. Thus, the device for the electronic receipt of eCatalogues must not be considered as a supplementary mechanism to the general device for the electronic receipt of tenders.
	This communication channel should accept the new/updated eCatalogues and immediately transmit them to the device for the electronic receipt of tenders, so that they are securely stored in accordance with Legal Requirement 5: *"Apply rules for the device for the electronic receipt of tenders/eCatalogues"*. In addition, the communication channel (and all other related software modules) should ensure the confidentiality of data, so that the information included in eCatalogues is made available only to the electronic device for the electronic receipt of tenders and no other unauthorised party, including software components and/or human entities. The device for the electronic receipt of tenders should then be in full control to respect all other rules detailed under Legal Requirement 5: *"Apply rules for the device for the electronic receipt of tenders/eCatalogues"*. eCatalogues should be securely stored and be inaccessible to all users until their opening under the "four-eyes principle", as detailed in Functional Requirement 23: "*Open tenders following the four-eyes principle*".
	The device for the electronic receipt of tenders should ensure that tenders in the form of eCatalogues are accepted until the tender submission deadline. Suppliers should be allowed to re-submit an eCatalogue, providing that the re-submission is performed before the tender submission deadline.
	When updating eCatalogues in the context of Framework Agreements or DPS, the device for the electronic receipt of tenders must also ensure that updates are only accepted during the designated eCatalogue update periods (if applicable). The device for the electronic receipt of tenders may be interconnected with official time-stamping systems so that official time-stamps of the exact submission date and time of a tender are recorded. In addition, the device for the electronic receipt of tenders should feature appropriate security arrangements, ensuring the integrity of tenders, including advanced security techniques for data encryption, document signing, and user authentication. To this end, the device for the electronic receipt of tenders may be interconnected with specialised systems of certification authorities if electronic certificates are used. Use of electronic certificates must comply with the provisions of Directive 1999/93/EC.
Relevant requirements	Legal Requirement 5: *"Apply rules for the device for the electronic receipt of tenders/eCatalogues"*
	Functional Requirement 23: "*Open tenders following the four-eyes principle*"

Number	**Functional Requirement 22**
Name	**Securely store tenders in the form of eCatalogues**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 17] - "*Submission of tenders*" Updated, based on: - Section 2.3 of [Explanatory Document]: Integrity and security of data - Section 2.4 of [Explanatory Document]: Traceability - Section 4.1.2 of [Explanatory Document]: Security of data
Actors	eProcurement system (eCatalogue stock management system)
Status	Mandatory
Description	The device for the electronic receipt of tenders/eCatalogues must ensure that all tenders are stored in a secure environment and cannot be accessed until authorised procurement officers proceed to open them, following the "four-eyes principle". This in turn can be performed only after the designated tender opening time has been reached. If the access prohibition is infringed, it should be reasonably ensured that the infringement is clearly detectable.
Relevant requirements	Functional Requirement 23: "*Open tenders following the four-eyes principle*" Functional Requirement 24: "*Ensure the confidentiality of tenders*"

<div style="background-color:yellow">

Step 11. Open tenders after tender submission deadline

</div>

This step marks the beginning of the Evaluation and Award phase. During this step, received tenders are opened through the simultaneous action of two or more authorised procurement officers ("four-eyes principle"). After the opening of tenders, strict confidentiality rules should be applied, ensuring that only authorised users obtain access to the received tenders.

The following functional requirements are identified for this step. They do not require specific provisions for the use of eCatalogues.

Number	**Functional Requirement 23**
Name	**Open tenders following the four-eyes principle**

Source	Updated requirement, originating from:
	
	    - [Func. Reqs. Vol. I]-[Functional Req. 18] - *"Four-eye principle"*
	
	Updated, based on:
	
	    - Article 6 of [2004/18/EC] and article 13 of [2004/17/EC]: Confidentiality
	
	    - Section 4.1.2 of [Explanatory Document]: Security of data

Actors	Contracting Authority (procurement officers)
Status	Mandatory
Description	As discussed in Functional Requirement 22: "*Securely store tenders in the form of eCatalogues*", the device for the electronic receipt of tenders should ensure that access to tenders cannot be obtained by anyone, until authorised procurement officers proceed to the opening of tenders following the "four-eyes principle". To "open" or "unlock" tenders, two or more authorised procurement officers need to perform simultaneous actions. The opening of tenders shall only be performed after the tender submission deadline, and once the designated tender opening time has been reached. Once tenders are opened they can be stored in other specialised modules of an eProcurement system, and be removed from the eProcurement device for the electronic receipt of tenders/eCatalogues. Such specialised modules should ensure the confidentiality rules for received tenders, as discussed in Functional Requirement 24: "*Ensure the confidentiality of tenders*".
Relevant requirements	Functional Requirement 22: "*Securely store tenders in the form of eCatalogues*" Functional Requirement 24: "*Ensure the confidentiality of tenders"*

Number	**Functional Requirement 24**
Name	**Ensure the confidentiality of tenders**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 19] - "*Tender Confidentiality*" Updated, based on: - Article 6 of [2004/18/EC] and article 13 of [2004/17/EC]: Confidentiality
Actors	eProcurement system (eCatalogue stock management system)
Status	Mandatory
Description	The information contained in tenders received within the context of a public procurement competition must remain confidential even after tenders are opened/ unlocked following the "four-eyes principle". As described in Functional Requirement 23: "*Open tenders following the four-eyes principle*", once tenders are unlocked, they can be stored in specialised modules of an eProcurement system and be removed from the eProcurement device for the electronic receipt of tenders/eCatalogues. Such modules should ensure that only authorised users may obtain access to unlocked tenders. In addition, these modules should permit authorised procurement officers to grant access privileges to unlocked tenders to other procurement officer users. As for every other action taken within the context of an eProcurement system, the actions taken by users for accessing received tenders should be traced and logged by the audit-trailing facility of the system.
Relevant requirements	Functional Requirement 23: "*Open tenders following the four-eyes principle*"

Step 12. Evaluate tender in the form of eCatalogue

During this step, the received tenders are evaluated based on the pre-defined tender evaluation criteria. For the evaluation of tenders in the form of eCatalogues, specific tools may be provided, such as eCatalogue comparison tools or browsing/searching eCatalogue tools. These tools should be implemented and used in such manner to fully respect the principle of confidentiality of tenders. The tender evaluation is performed strictly using the pre-defined tender evaluation criteria (lowest price or most economically advantageous tender). The evaluation may be performed automatically or semi-automatically.

In an ideal scenario, eCatalogues are tender documents which have a well-defined, standardised structure. eCatalogues are well-suited for being read and parsed by automated system routines; an option that is almost impossible for non-eCatalogue-based tenders. In this case, such automated system routines can compare different eCatalogues and conclude (or indicate) the best one, based on the pre-defined criteria.

In the current environment, eCatalogues used in public procurement do not follow industry-wide standards but commonly take the form of spreadsheet files, following buyer-defined specifications. Despite the difficulties suppliers may face for creating eCatalogues in this manner, some tools for the automated or semi-automated evaluation of eCatalogue may still be used by contracting authorities, as the structure of received eCatalogues is in computer-friendly format.

The following functional requirement is identified for this step.

Number	**Functional Requirement 25**
Name	**Automate the evaluation of tenders in the form of eCatalogue prospectuses**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 20] - "*Tender Evaluation*"
Actors	eProcurement system / Contracting Authority (procurement officers)
Status	Optional
Description	An eProcurement system may assist procurement officers in performing the evaluation of tenders, either in an automated or semi-automated manner. The evaluation of tenders must be performed according to the pre-defined evaluation criteria and formulas, as stated in the contract notice and/or contract documents of the Call. To enable contracting authorities to evaluate tenders in the form of eCatalogues, support for browsing and searching eCatalogues must be provided. Evaluating procurement officers should be able to view all contents of an eCatalogue prospectus, nevertheless restrictions may apply in case of phased-opening (i.e. first open technical offers and then financial offers). In addition, advanced search functionalities for locating particular product lines in an eCatalogue may be supported. To make the evaluation more efficient, the automated comparison of eCatalogues may be supported. This would enable contracting authorities to select particular products included in eCatalogue prospectuses of different suppliers and compare the values in the different eCatalogue attributes. This however may be only performed if eCatalogues from different suppliers follow the same (or similar) structure, based on the same set of attributes and the same set of possible values (or at least the same format) in each attribute[5]. For contracting authorities that follow a two-phased evaluation of tenders (i.e. technical evaluation followed by financial evaluation), the fields that contain financial information should be inaccessible during the technical evaluation. This could be achieved by encrypting financial information until a specific condition is met (e.g. the technical evaluation is completed).
Relevant requirements	Functional Requirement 7: "*Define a tender evaluation mechanism for eCatalogue prospectuses*" Functional Requirement 13: "*Provide searching mechanisms for calls for tenders*" Functional Requirement 15: "*Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses*" Functional Requirement 16: "*Make available to suppliers tools for assessing the quality of their eCatalogue prospectuses*"

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[5] For instance, in order to compare two eCatalogues describing ICT equipment, both should feature the same attributes for describing the "number of processors" and "size of memory". In parallel, the "number of processors" attribute in both eCatalogues should be described by a number, which could be automatically compared.

Step 13. Initiate eAuction

During this step, the contracting authority may initiate an eAuction event, provided it was foreseen in the contract notice of the call. During an eAuction event, there should be no manual intervention from the contracting authority; bidding and bid evaluation should be performed fully electronically. eCatalogues are well suited for bidding in eAuction events, considering their potential for automated evaluation, as discussed in Functional Requirement 25: "*Automate the evaluation of tenders in the form of eCatalogue prospectuses*".

Prior to commencing an eAuction event, a contracting authority should specify the exact quantifiable criteria on which the evaluation of bids will be performed upon, as well as, establish the exact weighting of these criteria. The initial ranking of tenders is concluded following the Full Initial Evaluation, performed in Step 12 "*Evaluate tender in the form of eCatalogue*".

Electronic auctions are discussed in detail in section 4.4.

Step 14. Participate in eAuction

During this step, the eAuction event takes place in a fully automated manner. Tenderers place their bids according to the specifications, as described in Step 13 "*Initiate eAuction*". The eAuction device should automatically evaluate received bids and ranks tenderers accordingly.

Electronic auctions are discussed in detail in section 4.4.

Step 15. Award contract

Following the evaluation of tenders, the contract is formally awarded by the contracting authorities to the winner(s) of the competition. As described in the preceding steps, the awarding of a contract should be performed in terms of the lowest prices or MEAT, as defined in the contract notice of the call for tenders.

No specific functional requirements are identified for this step, which can possibly be combined with Step 16 "*Inform Participants and Generate Reporting*" and/or Step 17 "*Prepare Contract Award Notice*", depending on the exact implementation of the eProcurement system.

Step 16. Inform participants and generate reporting

Following the award of the contract to the winner(s) of the competition, all involved suppliers should be informed about the results of the competition. In addition, reports should be produced by the contracting authorities regarding the whole process.

This step may be combined with Step 15 "*Award Contract*" and/or Step 17 "*Prepare Contract Award Notice*", depending on the exact implementation of the eProcurement system.

The following functional requirement is identified for this step, which does not provide specific requirements for the use of eCatalogues.

Number	**Functional Requirement 26**
Name	**Create reports**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 21] - "*Creation of Mandatory Reports regulated by the legislation*" Updated, based on: - Article 43 of [2004/18/EC]: Content of reports
Actors	Contracting Authority (procurement officers)
Status	Mandatory
Description	A requirement of the EU Directives relates to the capability of the contracting authority to prepare regulatory reports, which provide information on all aspects of a given competition. As per Article 43 of 2004/18/EC, such reports include information about: - the name and address of the contracting authority, the subject-matter and value of the contract, Framework Agreement, or Dynamic Purchasing System - the names of the successful candidates or tenderers and the reasons for their selection - the names of the candidates or tenderers rejected and the reasons for their rejection - the reasons for the rejection of tenders found to be abnormally low - the name of the successful tenderer and the reasons why his tender was selected and, if known, the share of the contract or Framework Agreement which the successful tenderer intends to subcontract to third parties - if necessary, the reasons why the contracting authority has decided not to award a contract or Framework Agreement or to establish a Dynamic Purchasing System - any other important or mandatory information The contracting authority may be assisted in this process by an eProcurement system which, utilising all information created/stored during the competition, can automatically or semi-automatically produce such reports. The reporting services of an eProcurement system should provide functionality for generating reports on specific eCatalogue operations. For instance these may relate to the updating of eCatalogues, the ordering of products/services based on eCatalogues, the extraction of specific eCatalogue data for being included in reports, etc.
Relevant requirements	Functional Requirement 18: "*Support automated notifications*" Functional Requirement 37: "*Support DPS reporting*"

<div style="background-color:#FFFF99; text-align:center; font-weight:bold;">Step 17. Prepare contract award notice</div>

During this step, the contracting authority prepares the contract award notice. This requires the execution of procedures similar to those for preparing the contract notice discussed in Step 04: "*Prepare Contract Notice*".

This step may be combined with Step 15 "*Award Contract*" and/or Step 16 "*Inform Participants and Generate Reporting*", depending on the exact implementation of the eProcurement system.

The following functional requirement is relevant to this step.

- **Functional Requirement 8: Prepare official procurement notices including eCatalogue information (Mandatory if eCatalogues are authorised)**

Step 18. Dispatch contract award notice to OJEU

The final step for closing the full open procedure cycle is to publish the contract award notice in the OJEU S-series, as prepared in Step 17: "*Prepare contract award notice*". This is similar to the publication of the contract notice in the OJEU as discussed in Step 05: "*Dispatch Contract Notice to OJEU*".

The following functional requirement is relevant to this step.

– **Functional Requirement 11: Electronically dispatch notices to OJS - Interface with OJEU (Optional, although highly recommended for all eProcurement systems)**

4.2.2   Restricted procedure

This section presents in detail the steps to be followed in the restricted procedure, when tenders in the form of eCatalogues are supported. Most functional requirements defined for the open procedure (section 3.1.1) are relevant for the restricted procedure as well.

Figure 9 serialises the steps performed by the main actors (procurement officers, economic operators and an eProcurement system) following the eProcurement phases presented in section 3.1.2. Based on the "Activity diagram for the restricted procedure" presented in the [Func. Reqs Vol. I], the diagram is further elaborated to depict the steps supporting the creation and submission of tenders in the form of eCatalogues; these particular steps are highlighted in blue.
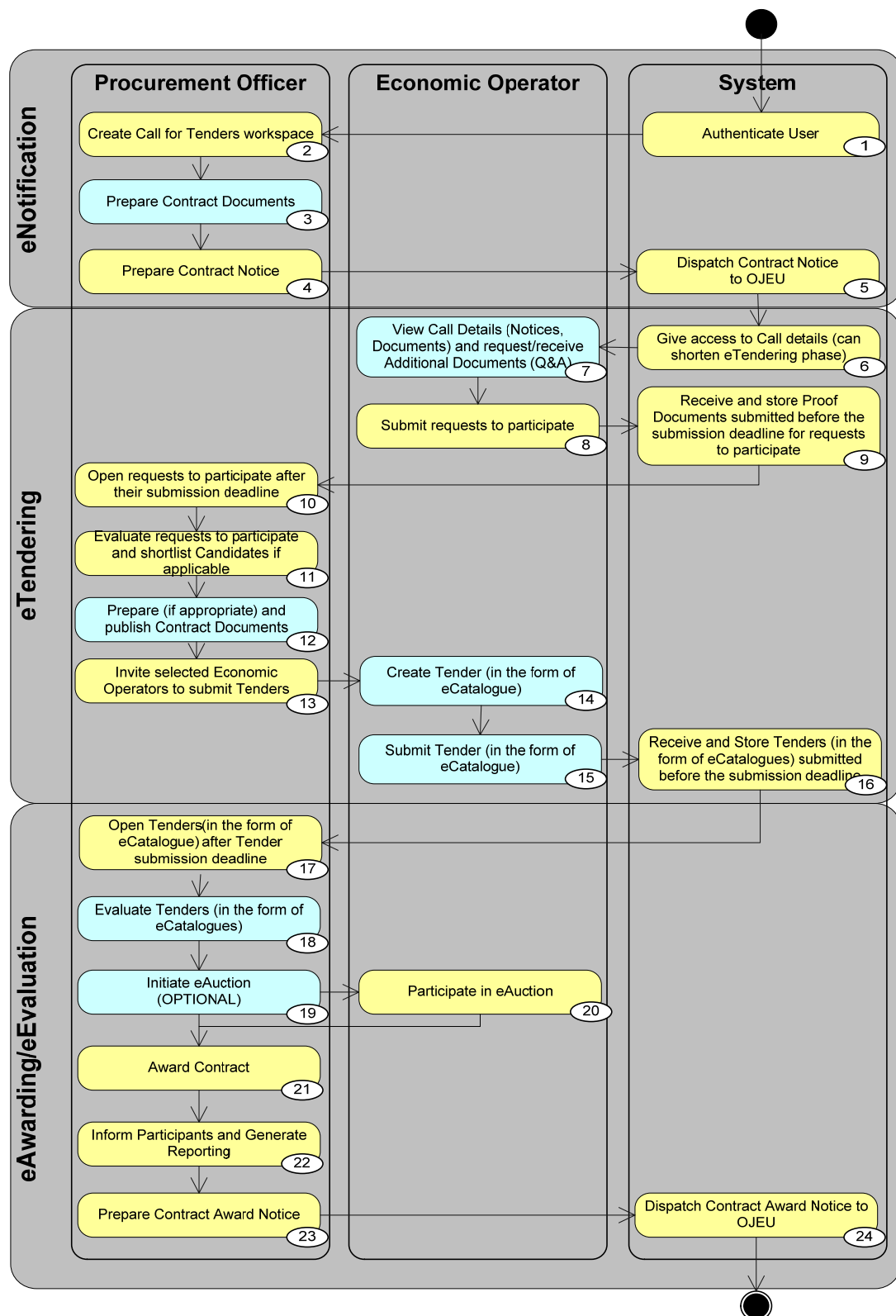
Figure 9: Restricted procedure activity diagram (offers in the form of eCatalogues)

Building on the above activity diagram, the following functional requirements apply to the different steps of the restricted procedure. Since many of the steps are identical to the open procedure and have already been discussed, only the functional requirements of Step 08 "*Submit Request to Participate (if applicable)*", Step 11 "*Evaluate requests to participate and shortlist candidates (if applicable)*" and Step 13 "*Invite selected economic operators to submit Tenders*" that are specific for the restricted procedure are presented.

Step 08. Submit requests to participate (if applicable)

During this step, following the publication of the contract notice by a contracting authority, economic operators submit their requests to participate. Any economic operator may request to participate provided that s/he complies with the exclusion and selection criteria set by the contracting authority, as evidenced by submitting the relevant the legal, technical and financial information ("proof documents"). The preparation of the proof documents is based on the specifications of the call for tenders. During this step, economic operators may request for additional information/documents, which are then provided by the contracting authority.

At present, suppliers must submit their proof documents in hard-copy. Submitting electronic versions of proof documents is generally not yet feasible and/or incurs legal validity issues, due to current legal, organisational and technical limitations in the field (see also chapter 8 of [SoP]). Currently, the European Commission takes steps towards establishing a more efficient environment for the submission of proof documents using electronic means. Until such a suitable environment is established, solutions for Step 08 of the restricted procedure cannot be optimised by the use of eCatalogues.

The following functional requirements are relevant for this step.

– **Functional Requirement 13: Provide searching mechanisms for calls for tenders (Optional)**

– **Functional Requirement 14: Provide electronic access to call for tenders specifications (Visualise/Download) (Mandatory)**

– **Functional Requirement 17: Publish additional information/documents (Mandatory)**

– **Functional Requirement 18: Support automated notifications (Optional)**

Step 11. Evaluate requests to participate and shortlist candidates (if applicable)

After reaching the deadline for requesting participation, contracting authorities can proceed to the opening and evaluation of the received requests to participate. The opening of these requests and attached proof documents should follow the "four-eyes principle", while their evaluation follows the pre-defined criteria, as published in the contract notice and contract documents. Out of the group of all admissible candidates, contracting authorities may produce a shortlist of at least five candidates, so as to reduce the number of economic operators that will participate in the competition.

The following functional requirements are relevant for this step.

– **Functional Requirement 22: Securely store tenders in the form of eCatalogues (Mandatory)**

– **Functional Requirement 23: Open tenders following the four-eyes principle (Mandatory)**

– **Functional Requirement 24: Ensure the confidentiality of tenders (Mandatory)**

Step 13. Invite selected economic operators to submit tenders

After completing the evaluation of requests to participate, contracting authorities invite all selected candidates to submit full tenders, which may take the form of eCatalogues.

The following functional requirement is identified for this step.

Number	**Functional Requirement 27**
Name	**Invite Economic Operators to submit tenders in the form of eCatalogues**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 22] - "*Invitation to Tender*" Updated, based on: - Section 4 of [Explanatory Document]: Electronic reception devices for tenders, requests to participate and plans and projects in contests
Actors	Contracting Authority (procurement officers)
Status	Mandatory
Description	Once all requests to participate (including the provided proof documents) have been examined and, where applicable, candidates have been short-listed, based on objective selection criteria, pre-stated in the contract notice, the contracting authority invites all or some economic operators to submit their tenders until a pre-defined tender submission deadline. From this point onwards, all call related information (comprising contract documents, and additional documents) should be disclosed only to the economic operators selected to submit a tender. Rejected economic operators should be notified that they will not be invited to submit tenders. This process can be simplified for contracting authorities by an eProcurement system, which automatically or semi-automatically calculates the deadline for submitting tenders, as well as, prepares appropriate notification messages for all involved economic operators (Functional Requirement 18: *"Support automated notifications"*). The identity of all economic operators should however remain confidential (Functional Requirement 24: *"Ensure the confidentiality of tenders"*).
Relevant requirements	Functional Requirement 18: *"Support automated notifications"* Functional Requirement 21: "*Support a device for the electronic receipt of tenders (including eCatalogue prospectuses)*" Functional Requirement 24: *"Ensure the confidentiality of tenders"*

4.3   Repetitive procurements

The EU Directives envisage repetitive purchases through Framework Agreements and Dynamic Purchasing Systems (DPS). This section aims to examine the use of eCatalogues for repetitive procurements. It provides an overview of the main phases of Framework Agreements and DPS and identifies the steps to be followed for using eCatalogues as tenders. Subsequently, detailed activity diagrams depict the sequence of steps in each phase, from which functional requirements for each step are deduced.

4.3.1   Framework Agreements

The current section presents in detail the steps to be followed in Framework Agreements when using tenders in the form of eCatalogues. **Figure 10** serialises the steps performed by the main actors (procurement officers, economic operators and an eProcurement system) through the eProcurement phases presented in section 3.1.3. It is based on the "Activity diagram for the Framework Agreement" in [Func. Reqs Vol. I] and is further elaborated to depict the steps supporting the creation and submission of tenders in the form of eCatalogues; these particular steps are highlighted in blue.

Establishment of Framework Agreement

Procurement Officer	Economic Operator	System

Follow Open, Restricted or Negotiated procedure to establish FA with one or several Operators — 1

Invite Economic Operators to submit refined tenders for specific contract (in the form eCatalogues) — 2

Refine and submit tender (in the form of eCatalogue) — 3

Receive, verify and store (refined) specific Tenders (in the form of eCatalogues) — 4

Specific Contract eNotification

Prepare Contract Documents — 5

View/compare/search eCatalogues — 6

Re-open competition? — Yes / NO

Note: Orders must be placed to eCatalogues in "frozen" or "snapshot" format.

Place order to best placed Operator — 7

Invite all FA Operators in writing, to submit Tenders (in the form of eCatalogues) based on the same or refined terms of FA — 9

One or many suppliers? — Many / One

Specific Contract eTendering

Accept or reject order — 8

Order accepted? — No / Yes

Create Tender (in/or outside the context of the system) — 10

Submit Tender (in the form of eCatalogue) — 11

Receive, verify and store Tender (in the form of eCatalogue) submitted before the submission deadline — 12

Specific Contract eEvaluation/eAwarding

Open Tender (in the form of eCatalogue) after Tender submission deadline — 13

Evaluate Tender (in the form of eCatalogue) — 14

Initiate eAuction, if stated in the Contract Notice of the establishment of the Framework Agreement (OPTIONAL) — 15

Participate in eAuction — 16
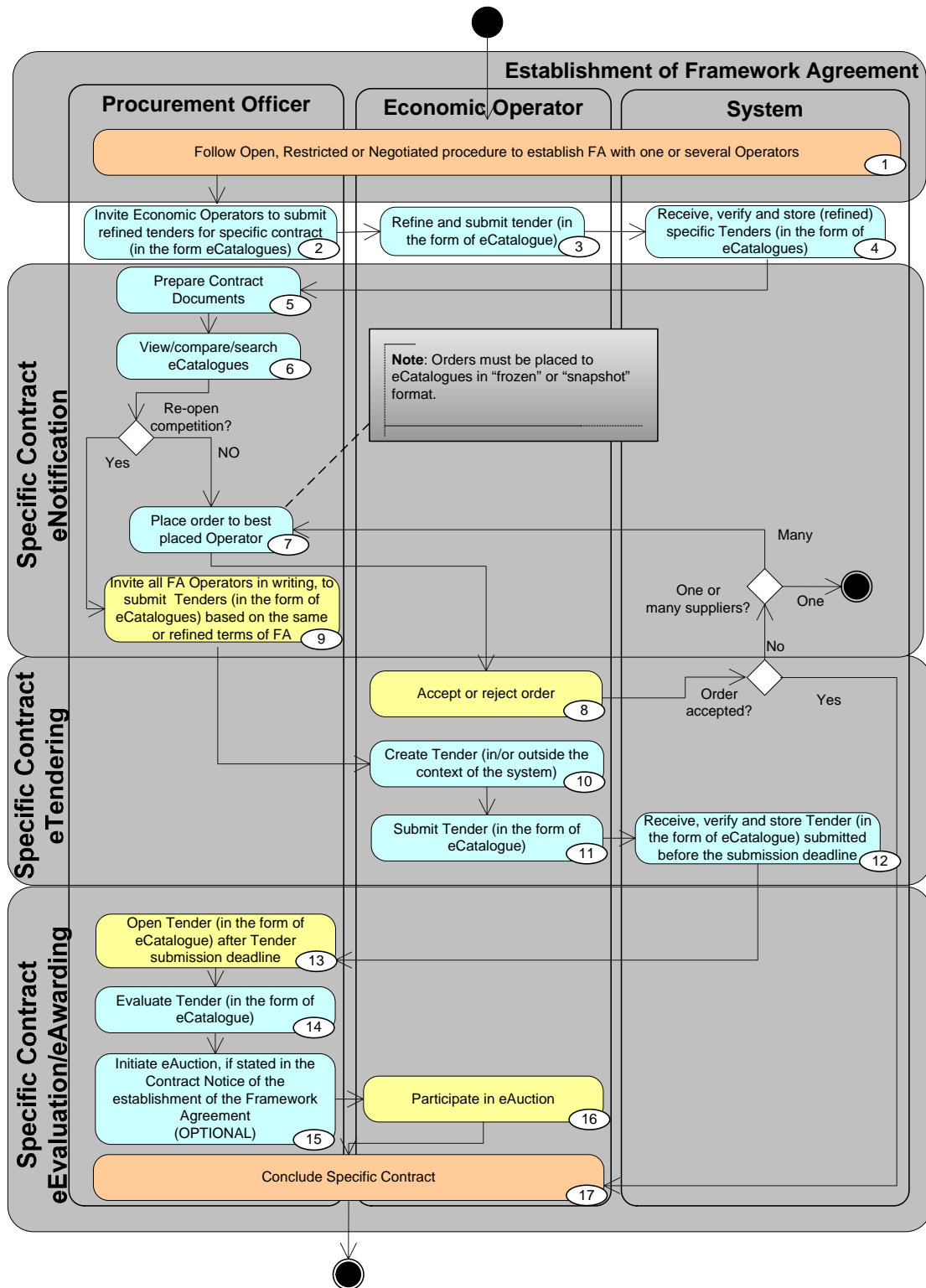
Conclude Specific Contract — 17

Figure 10: Framework Agreement activity diagram (initial offers and specific offers in the form of eCatalogues)

Building on the above activity diagram, the following functional requirements apply to Framework Agreements. Since many of the steps are common to the procedures already presented, the current section enlists only the functional requirements specific to Framework Agreements.

Step 01. Conclusion of Framework Agreement

During this step, a Framework Agreement is concluded between the contracting authority and one or more economic operators. The conclusion of a Framework Agreement follows one of the one-off procedures (open, restricted or negotiated). Hence, the functional requirements for the conclusion of Framework Agreements are identical to the ones discussed in 4.2.

Step 02. Invite economic operators to submit refined tenders for specific contract (in the form of eCatalogues)

During this step, the contracting authority may require tenderers to improve the technical format/presentation of their eCatalogues, for better readability and re-usability. Following the evaluation of the initial offers and the conclusion of the Framework Agreement, the contracting authority may define areas in which a particular eCatalogue prospectus should be improved in a particular way. In this respect, the contracting authority may specify the exact technical areas in which a tenderer should improve the format of the submitted eCatalogue. For instance, the authority may require the description of products contained in an eCatalogue prospectus to be updated in order to be more precise, or request the tenderer to include more accurate CPV codes of the offered products/services. Any changes to the eCatalogue prospectuses should not alter the subject and content of the offer; the performed changes should reflect only format/presentation improvements for the better usability of the eCatalogue by the contracting authority.

This step and Step 03 "*Refine and submit tender (in the form of eCatalogue)*" may be repeated as many times as required, until the desired quality of the eCatalogue is reached. During these steps, the contracting authority must ensure that the content of the initial offer does not change in any way, and that only the format of the eCatalogue is improved for subsequent use. In addition, the information included in the tenders must remain confidential.

The terms of the Framework Agreement may detail the conditions and exact rules to be followed for refining eCatalogues. Such conditions and rules could also detail the exact time-periods foreseen for updating eCatalogues, the aspects of eCatalogues that may be changed, and, if applicable, the use of active collection of tenders ("punch-out").

The following functional requirements are identified for this step.

Number	**Functional Requirement 28**
Name	**Verify eCatalogue prospectus format outside specific calls for competition and request refinement if needed**
Source	New requirement, based on:
	- Legal Requirement 6: "*If used, fully automate eCatalogue prospectus verifications*"
	- Article 32 of [2004/18/EC] and Article 14 of [2004/17/EC]: Framework Agreements
	- Article 33 of [2004/18/EC] and Article 15 of [2004/17/EC]: Dynamic Purchasing Systems
	- Section 4.2 of [Explanatory Document]: The electronic receipt of tenders in the re-opening of competition under multiple suppliers framework agreements and dynamic purchasing systems – the use of electronic catalogues
Actors	Contracting Authority (procurement officers)
Status	Optional
Description	Once the Framework Agreement is established, the contracting authority may verify the format and technical quality of the eCatalogue. This can be performed using automated tools or through manual procedures. In both cases the integrity and confidentiality of data must be preserved at all times, while these verification checks must relate to the presentation/format of eCatalogues.
	In case needs arise, contracting authority may request a supplier to refine/improve his/her eCatalogue prospectus in a particular way. This request should be made after the establishment of the Framework Agreement, and always outside the context of a competition for a specific contract. Contracting authorities should not perform any changes to received eCatalogues, which form the initial offers of suppliers in the context of Framework Agreements, and are binding. Instead, contracting authorities could provide guidance to suppliers on how their eCatalogues may be improved. eCatalogue updates should relate only to their presentation/format for better usability, and not alter the subject and content of the eCatalogue (which forms an initial tender and is binding to the supplier).
	This requirement can be implemented by the message "Request catalogue", supported by both UBL and c-Catalogue standards (see also Annex III of [SIR]).
Relevant requirements	Functional Requirement 15: "*Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses*"
	Functional Requirement 16: "*Make available to suppliers tools for assessing the quality of their eCatalogue prospectuses*"
	Functional Requirement 31: "*Archive submitted eCatalogue prospectuses prior to any updates*"

During this step, tenderers refine their eCatalogue prospectuses in accordance with the initial terms of the Framework Agreement and/or additional specifications defined by the contracting authority. This step, in conjunction with Step 02 "*Invite economic operators to submit refined tenders for specific contract (in the form of eCatalogues)*", constitutes a mechanism by which the quality of eCatalogues can be improved in an iterative process. Mechanisms must be put in place in order to ensure that eCatalogues are in line to the pre-agreed terms.

The following functional requirements are identified for this step.

Number	**Functional Requirement 29**
Name	**Support the refinement of eCatalogue prospectus format**
Source	New requirement, based on: - Functional Requirement 19: "*Support creation of initial offers in the form of eCatalogue prospectuses*" - Section 4.2.1 of [Explanatory Document]: The electronic receipt of tenders in repetitive procedures and electronic catalogues
Actors	Economic Operators
Status	Optional
Description	Contracting authorities may request suppliers to improve their eCatalogues in relation to their presentation/format, which must always be outside the context of a competition for a specific contract. The sole purpose for such updates should be to improve the presentation/format of eCatalogues for their better usability. The "*Verify eCatalogue prospectus format outside specific calls for competition and request refinement if needed*" and the current functional requirement may be repeated as many times as required, until the format/presentation of an eCatalogue reaches the desired quality level, provided this does not violate the terms of the Framework Agreement. In order to update the technical presentation of their tenders, suppliers may submit a new full eCatalogue or only update part of their initial eCatalogue. This depends on the exact terms of the Framework Agreement and the technical readiness of a supplier and the contracting authority. In both cases, a new version of the supplier eCatalogue prospectus should be created in the eProcurement system. The refinement should only relate to the presentation and readability of an eCatalogue prospectus, and there should no be substantial changes to the contents of the offer.
Relevant requirements	Functional Requirement 15: *"Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses"* Functional Requirement 16: *"Make available to suppliers tools for assessing the quality of their eCatalogue prospectuses"* Functional Requirement 19: "*Support creation of initial offers in the form of eCatalogue prospectuses*" Functional Requirement 27: "*Invite Economic Operators to submit tenders in the form of eCatalogues*" Functional Requirement 29: *"Support the refinement of eCatalogue prospectus format"*

Number	**Functional Requirement 30**
Name	**Support creation of specific offers in the form of eCatalogue prospectus update (in view of re-opening of competition)**
Source	New requirement, based on: - Article 32 of [2004/18/EC] and Article 14 of [2004/17/EC]: Framework Agreements - Article 33 of [2004/18/EC] and Article 15 of [2004/17/EC]: Dynamic Purchasing Systems - Section 4.2 of [Explanatory Document]: The electronic receipt of tenders in the re-opening of competition under multiple suppliers framework agreements and dynamic purchasing systems – the use of electronic catalogues
Actors	Economic Operators
Status	Mandatory if eCatalogues are authorised
Description	A supplier may, at its own initiative, update his/her eCatalogue with updated information within a Framework Agreement or a DPS. Such updating may only be performed to the extent that eCatalogue updates have been authorised by the contracting authority prior to the establishment of the Framework agreement or DPS, and within the specific rules and limits defined by it, in respect of the terms of the Agreement or DPS. Such rules may regulate the exact fields to be changed in eCatalogues, the time-periods for such updates and any necessary specific conditions. From a technical point of view, economic operators may either create a new catalogue or they may perform such updates based on their existing eCatalogue. When receiving such eCatalogue updates contracting authorities may utilise automated tools to verify that updated eCatalogues respect the terms of the Framework Agreement.
Relevant requirements	Functional Requirement 19: "*Support creation of initial offers in the form of eCatalogue prospectuses*" Functional Requirement 33: *"Support creation of specific offers in the form of eCatalogue prospectus update (under re-opening of competition)"*

UBL and c-Catalogue provide a wide range of processes and messages for the update of eCatalogues, as well as, special messages for responding to the "request catalogue" message of contracting authorities. In addition, UBL and c-Catalogue support multi-versioning of eCatalogues. However, considering common practices in Europe, i.e. forming buyer-defined eCatalogues in the form of spreadsheet files, it is recommended that updated eCatalogues consist of full eCatalogues, rather than partial updates.

The refinement of eCatalogues may be achieved using the same tools as for the creation of tenders, as specified in Functional Requirement 19: "*Support creation of initial offers in the form of eCatalogue prospectuses*". In addition, tools for verifying the technical compliance of eCatalogues against the terms of the Framework Agreement and tools for their quality verification may be used (see Functional Requirement 15: *"Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses*" and Functional Requirement 16: "*Make available to suppliers tools for assessing the quality of their eCatalogue prospectuses*").

Number	**Functional Requirement 31**
Name	**Archive submitted eCatalogue prospectuses prior to any updates**
Source	New requirement, based on: - Section 4.2 of [Explanatory Document]: Traceability
Actors	eProcurement system
Status	Mandatory
Description	When updating an eCatalogue, suppliers may either submit a new full eCatalogue, or only an updated part of the initial eCatalogue. In both cases it is strongly recommended that the previous version of the eCatalogue be archived for audit trailing and trace-ability purposes, particularly when transactions (e.g. such as purchase orders) have been completed based on the previous version.
Relevant requirements	Functional Requirement 27: "*Invite Economic Operators to submit tenders in the form of eCatalogues*" Functional Requirement 30 : "*Support creation of specific offers in the form of eCatalogue prospectus update (in view of re-opening of competition)*" Functional Requirement 33 : "*Support creation of specific offers in the form of eCatalogue prospectus update (under re-opening of competition)*"

Number	**Functional Requirement 32**
Name	**Support an appropriate device for the active collection of tenders ("punch-out")**
Source	New requirement, based on: - Section 4.2.2 of [Explanatory Document]: The active collection of tenders
Actors	eProcurement system (eCatalogue stock management system)
Status	Optional
Description	The EU Directives authorise the "active collection of tenders" as a new technique for the submission of tenders. According to this technique, also referred to as "punch-out", the eProcurement system of a contracting authority may collect eCatalogue tenders directly from supplier systems. Under this provision, an eProcurement system of a contracting authority may feature a specialised device which can access designated interfaces of supplier ICT systems in order to retrieve and process eCatalogue information. The device for the active collection of tenders and all related operations should be in line with the provisions of the EU Directives, as described in Legal Requirement 8: *"Provide rules and guidelines for the active collection of tenders in the form of updated eCatalogues (punch-out)"*. The use of "punch-out" appears to be suitable only for established Framework Agreements and DPS. The active collection of tenders should respect the following general guidelines: - the "punch-out" device must be open to all supplier systems. In this respect, contracting authorities and eProcurement system implementers should assume suitable technical architectures, in order to guarantee openness and accessibility of the device, in line with open / industry-wide standards. - any costs for the necessary system-to-system communication in order to accommodate this submission technique should be reasonable and the same for all suppliers. In addition, any costs incurred by suppliers should be justifiable considering the total estimated value of the Framework Agreement or DPS. Any technical solutions that suppliers must implement for using this submission technique should not bind suppliers to specific products, platforms, operating

	systems, hardware, etc, unless these are provided at no (or reasonable) cost by the contracting authority. The provisions of Legal Requirement 2: *"Use interoperable electronic means and tools for communication"* and the non-functional requirements for tools and means as discussed in section 5.1.2 should be respected.
	- this tender submission technique should not be used on an ad-hoc basis, as the active collection of tenders is allowed only within the context of a competition. Contracting authorities should ensure that this device is not viewed as a direct link to obtain real-time prices from supplier systems, as punch-out constitutes an innovative and alternative submission technique, which nevertheless must abide to the rules for the submission of tenders received without the use of punch-out (i.e. tenders submitted following a specific notice and before a specific tender submission deadline). As a consequence, a "punch-out" device should ensure that collection of tenders is performed only when foreseen under the rules of an FA or DPS, and collect eCatalogue prospectuses that are in a "frozen" or "snapshot" state (i.e. the eCatalogue should not contain any dynamic links to external files or internet locations).
	- suppliers should be given notice to prepare their eCatalogue prospectuses for a specific competition, before a "punch-out" is used, in line with Legal Requirement 7: *"Provide rules and guidelines for performing eCatalogue updates"*. The notice should define the exact date and time the "punch-out" will be performed. This should be considered by suppliers as the absolute deadline for preparing and storing their "frozen" eCatalogues in their systems, before the "punch-out" device commences the process for collecting tenders. All suppliers should of course have the same deadline.
Relevant requirements	Legal Requirement 2: *"Use interoperable electronic means and tools for communication"*
	Legal Requirement 7: *"Provide rules and guidelines for performing eCatalogue updates"*
	Legal Requirement 8: *"Provide rules and guidelines for the active collection of tenders in the form of updated eCatalogues (punch-out)"*

Step 10. Create tender (in/or outside the context of the system)

This step entails the creation of tenders for specific contracts within a Framework Agreement. The activities for this step are also identical and applicable for creating tenders for specific contracts within DPS. In this respect, Functional Requirement 33: "*Support creation of specific offers in the form of eCatalogue prospectus update (under re-opening of competition)*" entails requirements for both Framework Agreement and DPS.

Number	**Functional Requirement 33**
Name	**Support creation of specific offers in the form of eCatalogue prospectus update (under re-opening of competition)**
Source	New requirement, based on: - Article 32 of [2004/18/EC] and Article 14 of [2004/17/EC]: Framework Agreements - Article 33 of [2004/18/EC] and Article 15 of [2004/17/EC]: Dynamic Purchasing Systems - Section 4.2 of [Explanatory Document]: The electronic receipt of tenders in the re-opening of competition under multiple suppliers framework agreements and dynamic purchasing systems – the use of electronic catalogues
Actors	Economic Operators
Status	Mandatory if eCatalogues are authorised
Description	Under a re-opening of competition, a contracting authority requests suppliers to submit an offer for a specific contract under a Framework agreement or a DPS. The specific offer should respect the initial offer (in a Framework agreement) or indicative offer (in a DPS). The economic operator can either use his/her initial offer or indicative offer to participate in the competition for the specific contract or he/she may update his/her eCatalogue submitted as initial offer or as indicative offer (in a DPS). From a technical point of view, for this the economic operator may create a new eCatalogue, which is largely based (through cross-references) on his/her initial (or indicative) offer. The initial/indicative tender forms a "master copy" of the eCatalogue, which then is updated to generate a "specific copy" to be used for the specific contract. This specific copy does not replace the initial/indicative offer, but only serves for the submission of the eCatalogue for the specific contract. When receiving such eCatalogue updates contracting authorities may utilise automated tools to verify that updated eCatalogues respect the terms of the Framework Agreement or DPS.
Relevant requirements	Functional Requirement 19: "*Support creation of initial offers in the form of eCatalogue prospectuses*" Functional Requirement 30: *"Support creation of specific offers in the form of eCatalogue prospectus update (in view of re-opening of competition)"*

Step 12. Receive, verify and store refined tenders (in the form of eCatalogue updates)

During this step, refined tenders are received by the device for the electronic receipt of tenders/eCatalogues under a re-opening of competition within a Framework Agreement (or specific competitions within a DPS). Before storage, the device for the electronic receipt of tenders/eCatalogues may automatically verify that the tender complies with the specifications set by the contracting authority. These specifications may relate to the format of the eCatalogues, as well as, specific rules on content updates (e.g. checking range of permissible values for specific fields in an eCatalogue).

If an eCatalogue conforms to the pre-defined specifications and passes the verification checks, it may be stored in the eProcurement system and form the supplier's tender for the specific contract. If on the other hand an eCatalogue does not conform to the pre-agreed specifications, that eCatalogue is automatically rejected. The eProcurement system should automatically and immediately inform the suppliers of rejected eCatalogues, as until the deadline for submitting refined eCatalogues, suppliers may re-submit new (and valid) updates.

Provisions must be put in place by contracting authorities for verifying eCatalogues, without however disclosing in any way the details of the received eCatalogues.

The following functional requirement is identified for this step.

Number	**Functional Requirement 34**
Name	**Automate verification of technical format and quality of eCatalogue update**
Source	New requirement, based on:
	- Article 32 of [2004/18/EC] and Article 14 of [2004/17/EC]: Framework Agreements
	- Article 33 of [2004/18/EC] and Article 15 of [2004/17/EC]: Dynamic Purchasing Systems
	- Section 4.2 of [Explanatory Document]: The electronic receipt of tenders in the re-opening of competition under multiple suppliers framework agreements and dynamic purchasing systems – the use of electronic catalogues
Actors	Contracting Authority (procurement officers)
Status	Optional
Description	Once a supplier submits an eCatalogue to an eProcurement system as tender for a specific contract (within an FA or DPS), the received eCatalogue may be automatically checked for its compliance against the terms of the Framework Agreement or DPS. These terms may relate to eCatalogue format and specific rules for permissible values to specific fields in an eCatalogue. Contracting authorities should implement their systems in a way that if tenders in the form of eCatalogues are scanned for verifying their compliance against the specifications prior to their locking (as soon as they are submitted by suppliers), the scans must be fully automated and not disclose any of the content of the tenders. eCatalogues that do not meet the technical specifications should not be deleted from the system, but instead be stored in a specialised and secure area for trace-ability purposes. In addition, a notification procedure may be initiated in order to inform the concerned supplier. The notification may be supported by Functional Requirement 18: *"Support automated notifications"*.
	Tools for such verification must comply with Legal Requirement 6: *"If used, fully automate eCatalogue prospectus verification"*. Through such tools, technical checks to be performed are similar to the ones enlisted in Functional Requirement 15: "*Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses*". The integrity and confidentiality of data must be preserved under all circumstances (Functional Requirement 24: *"Ensure the confidentiality of tenders"*).
Relevant requirements	Legal Requirement 6: *"If used, fully automate eCatalogue prospectus verification"*
	Functional Requirement 15: "*Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses*"
	Functional Requirement 18: *"Support automated notifications"*
	Functional Requirement 24: *"Ensure the confidentiality of tenders"*

	Step 07. Place order to best placed operator

If the contracting authority does not re-open the competition with a Framework Agreement, it may directly place an order to the best placed supplier, as ranked during the establishment of the Framework Agreement.

The following functional requirements are relevant for this step.

–   **Functional Requirement 24: Ensure the confidentiality of tenders (Mandatory)**

Number	**Functional Requirement 35**
Name	**Automate placing an order based on an eCatalogue prospectus**
Source	New requirement, based on:
	- Article 32 of [2004/18/EC] and Article 14 of [2004/17/EC]: Framework Agreements
	- Article 33 of [2004/18/EC] and Article 15 of [2004/17/EC]: Dynamic Purchasing Systems
Actors	Contracting Authority (procurement officers)
Status	Optional
Description	When a Framework Agreement is concluded with a single operator, the contracting authority may conclude a specific contract by directly placing an order with that supplier. Similarly, when multiple operators participate in a Framework Agreement, and the conclusion of a specific contract does not require the re-opening of competition, the contracting authority can again directly place an order. Such an order is placed to the best placed operator, as ranked during the establishment of the Framework Agreement. If the best placed operator cannot fulfil the order (i.e. rejects the order), the contracting authority proceeds by placing the order to the second best operator (and so forth). The competition is re-opened, when it is necessary more precisely formulated terms, and, where appropriate, other terms referred to in the specifications of the framework agreement to be established.
	When industry-wide standards are used, tools for this requirement can be based on specialised processes included in those standards. Both UBL and c-Catalogue feature a wide range of messages for placing orders, and respective responses.
	In any case the exact terms of the Framework Agreement between the contracting authority and the participating suppliers must be respected by any supporting systems/tools.
Relevant requirements	Functional Requirement 20: "*Allow for the interoperable and secure submission of tenders in the form of eCatalogue prospectuses*"

	Step 07. Accept / reject order

If an order is placed by the contracting authority, the solicited supplier must either accept or reject the order. If the supplier rejects the order under a Framework Agreement with a single operator, no specific contract can be concluded. If on the other hand the Framework Agreement has multiple suppliers, the contracting authority may place a new order to the next best placed supplier (Step 06: "*Place order to best placed operator*").

The following functional requirement is relevant to this step.

–   **Functional Requirement 18: Support automated notifications (Optional)**

4.3.2   Dynamic Purchasing System (DPS)

This section presents in detail the steps to be followed in Dynamic Purchasing Systems (DPS) when tenders take the form of eCatalogues. A presentation of legal rules and requirements to be considered for DPS is presented in section 3.1.4. **Figure 11** serialises the steps performed by the main actors (procurement officers, economic operators and an eProcurement system) through the eProcurement phases presented in the aforementioned section. It is based on the "Activity diagram for a Dynamic Purchasing System" in the [Func. Reqs Vol.I] document and further elaborated to depict the steps supporting the creation and submission of tenders in the form of eCatalogues; these particular steps are highlighted in blue.
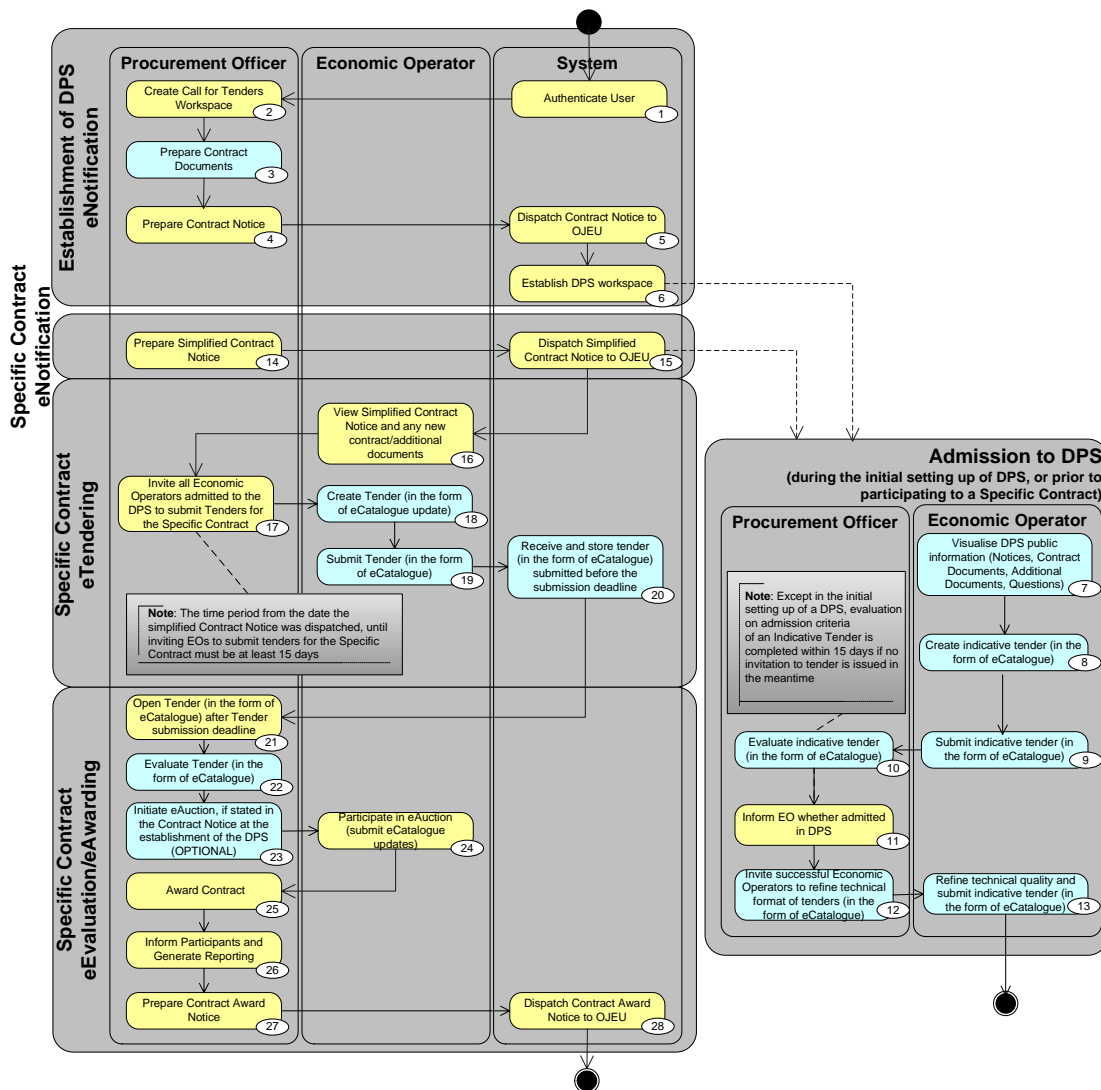
Figure 11: Dynamic Purchasing System activity diagram (indicative offers and specific offers in the form of eCatalogues)

Building on the above activity diagram, the following functional requirements apply for the DPS. Since many of the steps are common in the open procedure and Framework Agreement, and have already been discussed, the current section presents only the functional requirements specific to the DPS.

<div style="background-color:yellow; text-align:center; font-weight:bold;">Step 06. Establish DPS workspace</div>

During this step, a virtual workspace is created by the eProcurement system of a contracting authority for the storage of all information related to the DPS. All economic operators can access the workspace and view/download the information stored in it, including the contract notice for the establishment of the DPS, any available contract documents providing additional information, and additional documents (i.e. questions and answers). Subsequently, based on this information, suppliers can create indicative tenders for admission to the DPS. The DPS workspace is also necessary for storing information for specific contracts within the DPS.

The following functional requirements are relevant for this step.

- **Functional Requirement 1: Register user (Optional)**
- **Functional Requirement 2: Support user profiling (Optional)**
- **Functional Requirement 3: Support user authentication (Optional)**
- **Functional Requirement 4: Support user authorisation (Optional)**

Number	**Functional Requirement 36**
Name	**Create DPS workspace**

Source	Updated requirement, originating from:
	
	    - [Func. Reqs. Vol. I]-[Functional Req. 23] - *"DPS Reporting"*
	
	Updated, based on:
	
	    - Section 6 of [Explanatory Document]: Dynamic Purchasing Systems

Actor	Contracting Authority (procurement officers)
Status	Mandatory

Description	The contracting authority is responsible for creating an electronic virtual space for managing all related data and information for a DPS. The workspace should be accessible by authorised users, while DPS specific parameters should be established and fixed within it.
	
	The DPS effectively constitutes an "umbrella" for the procurement of specific contracts within it. In general, it presents many similarities to Framework Agreements, however with some distinct features, such as:
	
	    – a DPS constitutes a completely electronic process
	
	    – a DPS forms an "open market" that all suppliers are permitted to join, provided that their indicative offers satisfy its terms; this contrasts with Framework Agreements in which only participants admitted at the time of establishment can compete for specific contracts within it
	
	The use of a DPS workspace facilitates procurement officers to manage specific contracts within it as well as to store notices, contract documents, additional information, etc. In addition, the DPS workspace can also serve for storing all submitted indicative tenders as well as tenders for specific contracts concluded within it.
	
	The indicative tenders should be possible to be updated at any time, while tenders for specific contracts could be based on indicative tenders.

Relevant requirements	Functional Requirement 5: "*Create a call for tenders workspace*"

Number	**Functional Requirement 37**
Name	**Support DPS reporting**

Source	Updated requirement, originating from:
	
	    - [Func. Reqs. Vol. I]-[Functional Req. 23] - *"DPS Reporting"*
	
	Updated, based on:
	
	    - Section 6 of [Explanatory Document]: Dynamic Purchasing Systems
	    - Article 43 of [2004/18/EC]: Content of reports

Actor	Contracting Authority (procurement officers)
Status	Mandatory
Description	An eProcurement system can provide the functionality for generating automated reports, based on all information collected during the lifecycle of the DPS and the DPS workspace, for instance user accesses, participants, estimated value, etc. This requirement may be implemented based on Functional Requirements 26: *"Create reports"*. However, the reporting on the DPS should not only cover information about its establishment, but also about specific contracts concluded within it. These reports cover the suppliers admitted in the DPS, the number and value of specific contracts procured within it, etc. This functional requirement is not strictly applicable for the current step (i.e. Step 06: "*Establish DPS workspace*"), nevertheless is included in this step, as DPS reporting facilities should be capable to generate report for the whole DPS workspace or specific contracts within it.
Relevant requirements	Functional Requirement 26 : "*Create reports"*

Step 09. Submit indicative tender

During this step, economic operators electronically submit their indicative tenders, which may take the form of eCatalogues. Indicative tenders constitute complete or "full" tenders, i.e. including full product descriptions, offerings and prices; however they are not binding. Indicative offers serve for the admission of participants into the DPS. In parallel they can help save time in procuring specific contracts within the DPS, as admitted suppliers have already been successfully evaluated against the DPS exclusion and selection criteria.

The following functional requirements are relevant for this step.

Number	**Functional Requirement 38**
Name	**Create indicative Tenders in the form of eCatalogue prospectuses in a DPS**

Source	New requirement, based on:
	
	    - Functional Requirement 20: *"Allow for the interoperable and secure submission of tenders in the form of eCatalogue prospectuses"*
	
	    - Section 4.2 of [Explanatory Document]: The electronic receipt of tenders in the re-opening of competition under multiple suppliers framework agreements and dynamic purchasing systems – the use of electronic catalogues
	
	    - Article 33 of [2004/18/EC] and article 15 of [2004/17/EC]: Dynamic Purchasing Systems

Actors	Economic Operators

Status	Mandatory if eCatalogues are authorised
Description	Economic operators, in order to submit their indicative tenders in the form of eCatalogues for admission to a DPS, have to follow a similar tender submission process to Functional Requirement 20: "*Allow for the interoperable and secure submission of tenders in the form of eCatalogue prospectuses*".
	Indicative tenders constitute "full" tenders, with the only difference being that they are not binding. The support an eProcurement system may provide for creating/submitting tenders is also relevant to the creation/submission of indicative tenders. The information included in indicative tenders should remain confidential, as described in Functional Requirement 24: *"Ensure the confidentiality of tenders"*. As for tenders in one-off procedures, and initial offers for Framework Agreements, indicative offers submitted in form of eCatalogues for admission to a DPS should be received by a device for the electronic receipt of tenders. This device must ensure that indicative tenders remain inaccessible until their evaluation.
	The evaluation of indicative tenders should be performed within a maximum of 15 days after the submission date; a period which may be extended provided that no invitation to tender is issued in the meantime. Furthermore, the EU Directives require that after the publication of a simplified contract notice for the procurement of a specific contract, contracting authorities should allow at least 15 days notice before issuing the invitation to tender. This provides a reasonable time period for new suppliers to create indicative tenders and be admitted in the DPS, in order to participate in the competition for the specific contract. It may be assumed that contracting authorities perform the evaluation of indicative offers just before issuing invitations to tender in specific contracts.
	It is envisaged that indicative tenders, both from suppliers that are admitted in the DPS and from those that are not admitted, may be updated. The conditions and rules on how the update process is performed are not regulated by the EU Directives. In particular, there are no technical specifications. Suppliers may submit full indicative tenders in the form of eCatalogues, or only updated parts of eCatalogues. The exact requirements for updates should be specified at national level and/or by specific rules of the contracting authority. The update of indicative tenders is related to Legal Requirement 7: *"Provide rules and guidelines for performing eCatalogue updates"*.
Relevant requirements	Legal Requirement 7: *"Provide rules and guidelines for performing eCatalogue updates"*
	Functional Requirement 19: "*Support creation of initial offers in the form of eCatalogue prospectuses*"
	Functional Requirement 20: "*Allow for the interoperable and secure submission of tenders in the form of eCatalogue prospectuses*"
	Functional Requirement 24: *"Ensure the confidentiality of tenders"*

- **Functional Requirement 14: Provide electronic access to call for tenders specifications (Visualise/Download) (Mandatory)**

- **Functional Requirement 17: Publish additional information/documents (Mandatory)**

- **Functional Requirement 18: Support automated notifications (Optional)**

- **Functional Requirement 24: Ensure the confidentiality of tenders (Mandatory)**

Step 10. Evaluate indicative tender

After the receipt of indicative tenders, the contracting authority proceeds to their opening and evaluation. Following the evaluation, the contracting authority can conclude which economic operators will be admitted in the DPS or which not. The evaluation is based on the pre-defined selection criteria.

The following functional requirements are relevant for this step.

- **Functional Requirement 38: Create indicative Tenders in the form of eCatalogue prospectuses in a DPS (Mandatory if eCatalogues are authorised)**

- **Functional Requirement 24: Ensure the confidentiality of tenders (Mandatory)**

- **Functional Requirement 25: Automate the evaluation of tenders in the form of eCatalogue prospectuses (Optional)**

Step 11. Inform economic operators whether they are admitted in DPS

During this step, and following the evaluation of indicative tenders, the contracting authority informs all successful economic operators that they are admitted in the DPS.

The following functional requirement is relevant for this step.

- **Functional Requirement 18: Support automated notifications (Optional)**

Step 12. Invite successful economic operators to refine technical format of tenders if applicable (in the form of eCatalogue)

During this step, the contracting authority may require tenderers to improve the technical presentation of their eCatalogues, for improving their readability and re-usability. The operations followed for this step, as well as, the relevant restrictions on what can be changed, are similar to the ones in Step 02: "*Invite economic operators to submit refined tenders for specific contract (in the form of eCatalogues)*" of the Framework Agreement procedure.

The following functional requirements are relevant for this step.

- **Functional Requirement 28: "Verify eCatalogue prospectus format outside specific calls for competition and request refinement if needed" (Optional)**

Step 13. Refine technical quality and submit indicative tender (in the form of eCatalogue)

During this step, tenderers refine their eCatalogues in the way specified by contracting authorities. This step, in conjunction to Step 12 "*Invite successful economic operators to refine technical format of tenders if applicable (in the form of eCatalogue)*", constitutes a mechanism by which the quality level of eCatalogues is improved in an iterative process. The operations followed for this step, as well as, the relevant restrictions on what can be changed by the tenderers, are similar to the ones of Step 03: "*Refine and submit tender (in the form of eCatalogue)*" of the Framework Agreement procedure.

The following functional requirement is relevant this step.

– **Functional Requirement 29: "Support the refinement of eCatalogue prospectus format" (Optional)**

Step 14. Prepare simplified contract notice

During this step, the contracting authority prepares a simplified contract notice, initiating the procedure for procuring a specific contract within the DPS. The process is similar to the preparation of notices, described in the Step 04: "*Prepare Contract Notice*" of the open procedure.

The following functional requirements are relevant for this step.

– **Functional Requirement 8: Prepare official procurement notices including eCatalogue information (Mandatory if eCatalogues are authorised)**

– **Functional Requirement 9: Use the Common Procurement Vocabulary (CPV) classification (Mandatory)**

– **Functional Requirement 10: Use the Nomenclature of Territorial Units for Statistics (NUTS) classification (Optional)**

Step 15. Dispatch simplified contract notice to OJEU

After the preparation of the simplified contract notice, the contracting authorities proceed to its publication in the Official Journal of the European Union (OJEU). This is similar to the publication of contract notice, described in Step 05 "*Dispatch contract notice to OJEU*" of the open procedure.

The following functional requirement is relevant this step.

– **Functional Requirement 11: Electronically dispatch notices to OJS - Interface with OJEU (Optional, although highly recommended for all eProcurement systems)**

Step 17. Invite all economic operators admitted in the DPS to submit tenders for a specific contract

During this step, the contracting authority invites the economic operators admitted in the DPS to submit tenders in the form of eCatalogue for taking part in the competition for a specific contract.

The following functional requirements are relevant for this step.

– **Functional Requirement 12: Publish Contract Documents (Mandatory)**

– **Functional Requirement 27: Invite Economic Operators to submit tenders in the form of eCatalogues (Mandatory)**

Step 20. Receive and store tenders (in the form of eCatalogue) submitted before the submission deadline

During this step, the eProcurement system receives the tenders submitted by economic operators (that are admitted in a DPS) for a specific contract within the DPS. The operations performed during this phase are similar to those of step 10 of the open procedure. In this respect, the tenders received for a specific contract within a DPS must be securely locked by the eProcurement system until the "four-eyes principle" is applied for their unlocking. Furthermore, mechanisms should be established in order to ensure the confidentiality of received tenders. Both of these requirements can be accommodated by Functional Requirement 22: "*Securely store tenders in the form of eCatalogues*", Functional Requirement 23: "*Open tenders following the four-eyes principle*" and Functional Requirement 24: "*Ensure the confidentiality of tenders*" of the open procedure. This operation comes in contrast to the receipt of indicative tenders for admittance to the DPS, for which the "four-eyes principles" does not need to be applied.

The subsequent steps for the conclusion of specific contract within a DPS are very similar to those of the open procedure for procuring an one-off contract. The main difference relates to the content of tenders submitted for one-off contracts and those submitted for specific contracts within the context of a DPS. In the former case, tenders should provide information for the full evaluation of a supplier, including those for the conditions for participation. In contrast, tenders for specific contracts within a DPS do not contain such information, as a "pre-selection" of suppliers is performed when suppliers are admitted in the DPS. In addition, a tender for a specific contract within a DPS may refer to the indicative offer of the supplier; a benefit not applicable for the procedure for procuring an one-off contract.

4.4 Extension: Electronic reverse auctions

This section presents the steps to be followed in electronic reverse auctions, where bids in the form of eCatalogues are supported. **Figure 12** serialises the steps performed by the main actors (procurement officers, economic operators and eProcurement system) for setting up and running an eAuction event, as an extension to the basic procurement procedure. The figure is based on the "Activity diagram for eAuction" in [Func. Req. Vol I]. The diagram is further elaborated to depict the steps (for tools and procedures) supporting the creation and submission of bids in the form of eCatalogues; these particular steps are highlighted in blue.
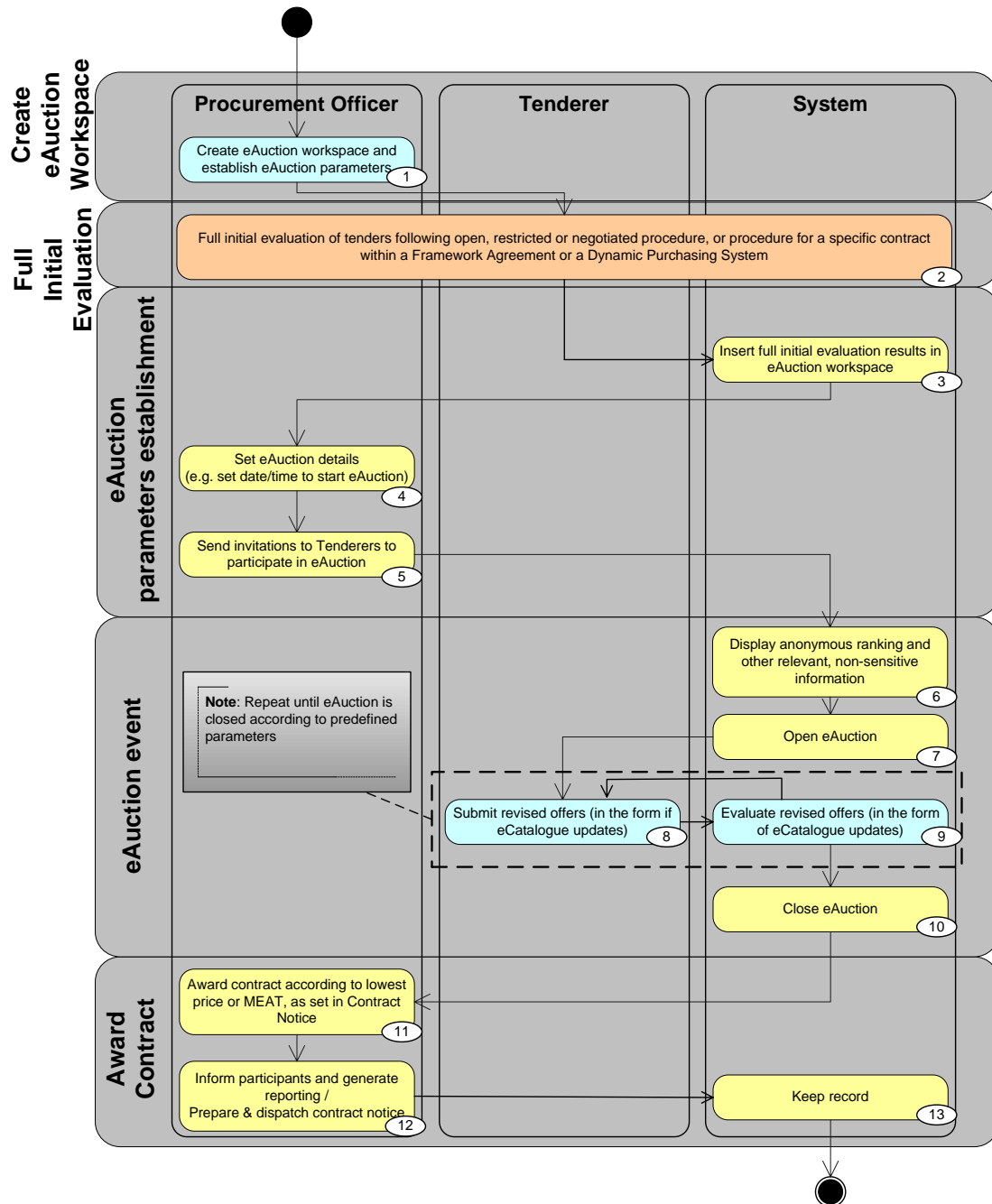
Figure 12: Electronic auction activity diagram (offers in the form of eCatalogues)

Building on the above activity diagram, the following functional requirements apply to eAuctions. Since many of the steps are common to the procedures already presented, this section enlists only the functional requirements of the steps specific to eAuctions.

Step 01. Create eAuction workspace and establish eAuction parameters

This step is performed during the preparation of a Call for Tenders, and in particular when a contracting authority specifies the evaluation mechanisms to be used for evaluating the expected tenders. During this step, the contracting authority sets the initial parameters for the eAuction device, and defines the bid evaluation mechanism. The bid evaluation mechanism must be based on quantifiable and precisely weighted criteria.

The following functional requirements are relevant for this step.

- **Functional Requirement 6: Provide standards-based tender specifications for eCatalogue prospectuses (Optional but recommended)**

- **Functional Requirement 7: Define a tender evaluation mechanism for eCatalogue prospectuses (Mandatory)**

Number	**Functional Requirement 39**
Name	**Create an eAuction workspace and establish eAuction parameters**
Source	Updated requirement, originating from:
	- [Func. Reqs. Vol. I]-[Functional Req. 26] - "*Creation of eAuction workspace and establishing eAuction parameters*"
	Updated, based on:
	- Section 5 of [Explanatory Document]: Electronic auctions
	- Article 54 of [2004/18/EC] and article 56 of [2004/17/EC]: Use of electronic auctions
Actors	Contracting Authority (procurement officers)
Status	Mandatory, if eAuction event is foreseen in the Contract Notice, the terms of FA or terms of DPS
Description	This functional requirement covers the creation of a virtual workspace, used for storing all eAuction related information. This virtual workspace should only be accessible to authorised users; eAuction parameters should be established and fixed within it. The eAuction workspace can benefit from Functional Requirement 5: *"Create a call for tenders workspace"*
	eAuction parameters comprise the bidding fields, the closing conditions, the type of the eAuction, etc. The parameters for the full initial evaluation, the features for auction and the associated evaluation mechanism should be defined prior to launching the procedure and be published in the eAuction specifications along with the contract notice.
Relevant requirements	Functional Requirement 5: *"Create a call for tenders workspace"*

Step 02. Full initial evaluation of tenders

As discussed in section 3.1.5, an eAuction constitutes an "extension" to other public procurement procedure, and forms a mechanism for receiving improved tenders. The eAuction is not a self-contained public procurement procedure and the awarding of contracts cannot be fully based on the execution of such events. In this respect, prior to running an eAuction, a full eProcurement procedure must be run, which can be an Open, Restricted or Negotiated procedure, or a procedure for concluding a specific contracting within an FA or DPS. During this step, a full initial evaluation of tenders is performed on the received tenders, and an initial ranking of these tenders is concluded. Then, prior to awarding the contract, the contracting authority can invite a number of suppliers to participate in the eAuction, and improve their offers.

In order to organise an eAuction event, the contract notice (for Open, Restricted or Negotiated), simplified contract notice (for specific contract within a DPS), or terms of the FA (for specific contracts within an FA) should foresee the use of eAuction for the evaluation of received tenders.

Step 03. Insert full initial evaluation results in eAuction workspace

During this step, the system automatically ranks suppliers based on the full initial evaluation. There are no specific functional requirements for this step. Once contracting authorities have completed the full initial evaluation of tenders, the system should utilise this information for the initial ranking of tenders based on the pre-defined evaluation criteria. Participating suppliers should be provided at least sufficient information to enable them to ascertain their relative ranking.

Step 04. Set Auction details

During this step, the contacting authority finalises all parameters for the eAuction event. These may comprise:

- the values which will be the subject of the eAuction; these must be quantifiable and can be expressed in figures or percentages

- any limits on the values which may be submitted

- the information which will be made available to tenderers in the course of the electronic auction and, where appropriate, when it will be made available to them

- the conditions under which the tenderers will be able to bid and, in particular, the minimum differences which will, where appropriate, be required when bidding

- the relevant information concerning the electronic equipment used and the arrangements and technical specifications for connection

- the date and time for starting the eAuction.

There are no specific requirements for this step, as the operations executed are similar to those in Step 01: "*Create eAuction workspace and establish eAuction parameters*".

Step 05. Send invitations to tenderers to participate in eAuction

During this step, the contracting authority sends invitations to the selected candidates to participate in the eAuction. The information to be provided to the selected candidates includes the details enlisted in Step 04: *"Set eAuction details"*, as well as, information enabling them to ascertain their relative ranking, as mentioned in Step 03: *"Insert full initial evaluation results in eAuction workspace"*.

The following functional requirement is relevant to this step:

– **Functional Requirement 27: Invite Economic Operators to submit tenders in the form of eCatalogues (Mandatory)**

Step 06. Display anonymous ranking and other relevant non-sensitive information

During this step, the eAuction device may allow suppliers access to information about the eAuction event. In addition, the initial ranking of tenders may be published, provided that the disclosed information does not violate the confidentiality requirements of the EU Directives.

The following functional requirements are relevant for this step:

– **Functional Requirement 14: Provide electronic access to call for tenders specifications (Visualise/Download) (Mandatory)**

– **Functional Requirement 24: Ensure the confidentiality of tenders (Mandatory)**

Step 07. Open eAuction

During this step, the system should automatically open the eAuction event at the pre-defined opening date/time. There are no specific functional requirements for this part. Suppliers should be allowed to submit new bids only after the eAuction is opened.

Step 08. Submit Bids (specific offers in the form of eCatalogue/eCatalogue updates)

During this step, suppliers can submit bids (specific offers) to improve their initial offers. Bids should be submitted in a way so that they can be evaluated and ranked by the eAuction device in a fully automatic manner. Electronic catalogues appear to be very suitable for forming eAuction bids, as by default eCatalogues describe offered products and prices in a well-defined structure, permitting systems to automatically parse and evaluate them. The submission of bids in the form of eCatalogue updates is similar in functionality to that of the submission of tenders.

The following functional requirements are relevant for this step:

– **Functional Requirement 19: Support creation of initial offers in the form of eCatalogue prospectuses (Mandatory if eCatalogues are authorised by the call for tenders)**

– **Functional Requirement 34: Automate verification of technical format and quality of eCatalogue update (Optional)**

Step 09. Evaluate Bids (specific offers in the form of eCatalogue/eCatalogue updates)

During this step, the received bids (specific offers) in the form of eCatalogues must be evaluated and ranked. This is performed automatically by the eAuction device and the results

are presented to the participants of the eAuction, without however disclosing sensitive information.

The following functional requirements are relevant for this step:

– **Functional Requirement 18: Support automated notifications (Optional)**

Number	**Functional Requirement 40**
Name	**Rank tenderers based on the automated evaluation of bids in the form of eCatalogue prospectuses in an eAuction**
Source	Updated requirement, originating from: - [Func. Reqs. Vol. I]-[Functional Req. 26] - "*Creation of eAuction workspace and establishing eAuction parameters*" Updated, based on: - Section 5 of [Explanatory Document]: Electronic auctions - Article 54 of [2004/18/EC] and article 56 of [2004/17/EC]: Use of electronic auctions
Actors	eProcurement system (eCatalogue stock management system)
Status	Mandatory in case an eAuction event takes place
Description	An eAuction device should be in position to evaluate received bids and automatically rank the respective tenderers according to the evaluation criteria defined during the establishment of the eAuction workspace. The parameters for bid evaluation should be based on quantifiable criteria and their precise weighting to enable the fully automated evaluation of bids. It is estimated that the use of eCatalogues as tenders can facilitate the running of eAuctions. Before running an eAuction, the contracting authority should specify the product attributes that would be used in order to evaluate the received bids and acceptable value ranges (e.g. product quantity can be between 10 to 20 units). In parallel, it should specify the precise weighting of the various evaluation criteria. The bid evaluation mechanism would automatically read the received eCatalogues and use the pre-defined evaluation formula to perform the evaluation of bids. Considering the technical implementation, this process presents a high level of similarity to the update of eCatalogues as described within Framework Agreements or DPS systems.
Relevant requirements	Functional Requirement 7: "*Define a tender evaluation mechanism for eCatalogue prospectuses*" Functional Requirement 25: "*Automate the evaluation of tenders in the form of eCatalogue prospectuses*" Functional Requirement 33: *"Support creation of specific offers in the form of eCatalogue prospectus update (under re-opening of competition)"* Functional Requirement 38: *"Create indicative Tenders in the form of eCatalogue prospectuses in a DPS "*

Step 10. Close eAuction event

During this step, the eAuction event is automatically closed by the eAuction device. This happens when the pre-defined conditions are met, which for instance can be based on numbers of eAuction rounds, or a pre-defined date/time. No specific requirements are identified for this step.

5   Non-functional and technical requirements

Non-functional requirements of an ICT system, as the name suggests, are not directly concerned with the supported functionality, but rather relate to the general properties and constraints of the system. The EU Directives imply a number of non-functional properties an eProcurement system must demonstrate, such as security. In contrast, the EU Directives do not suggest specific non-functional requirements for eProcurement systems that make use of electronic catalogues.

The [Func. Reqs. Vol. I] identifies and discusses five core non-functional requirements for eProcurement systems, namely interoperability, usability, reliability, scalability and security. Obviously, these requirements also apply for eProcurement systems which make use of eCatalogues (either exclusively or partially).

This chapter presents further details for interoperability and security, as these are explicitly mentioned in the EU Directives and have specific implications for the use of eCatalogues. The other three non-functional requirements (i.e. usability, scalability and reliability) are not directly bound to the use of eCatalogues and therefore are only mentioned here for the sake of completeness of the current report.

The use of interoperable tools and means for an eProcurement system relates to the minimum technical provisions for ensuring openness and general availability of the system.

Security relates to the general property of an eProcurement system to ensure that data is transmitted, stored, disclosed and processed in accordance with the legal requirements for data confidentiality, integrity, trace-ability, etc.

5.1   Interoperability

Interoperability is one of the non-functional requirements explicitly prescribed by the EU Directives on public procurement (see Legal Requirement 2: "*Use interoperable electronic means and tools for communication*"). 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 of [SoP] 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.

This section describes the three levels of interoperability that ultimately need to be satisfied, as defined in [EIF]. Furthermore, it elucidates how the use of standards can increase the interoperability of eProcurement systems making use of eCatalogues. In addition, a brief overview of good practices is presented for establishing interoperable tools and means.

5.1.1   European Interoperability Framework: three levels of interoperability

In June 2002, European heads of state adopted the eEurope Action Plan 2005 at the Seville summit. It called on the European Commission "to issue an agreed interoperability framework to support the delivery of pan-European eGovernment services to citizens and enterprises". The resulting European Interoperability Framework (EIF) is based on an extensive consultation process within the European Commission and the Member States and thus represents the highest ranking module for the implementation of European eGovernment services. This framework addresses information content and recommends technical policies and specifications to help connect public administration information systems across the EU. The EIF is currently under revision with a view to integrating new emerging interoperability requirements across the EU.

According to the [EIF], three levels of interoperability may be distinguished: organisational; semantic and technical interoperability.

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Organisational Interoperability

Definition in [EIF]: This aspect of interoperability is concerned with defining business goals, modelling business processes and bringing about the collaboration of administrations that wish to exchange information and may have different internal structures and processes. Moreover, organisational interoperability aims at addressing the requirements of the user community by making services available, easily identifiable, accessible and user-oriented.

In short, the organisational level of interoperability addresses the need amongst organisations, public entities and trading parties to have a suitable framework for collaboration. Different organisations, in order to conduct business and complete transactions, should be aware of when business documents should be exchanged, by whom, what information they should contain, how the exchange of information should be performed, the previous and next steps for completing a transaction, etc. In this respect, organisational interoperability refers to an environment which enables the collaboration of different business entities, without however imposing specific requirements for the internal processes and structures of these entities. A group of organisations that have achieved interoperability of this level can more easily benefit from the use of ICT systems and tools, through the automation of procedures.

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Semantic Interoperability

Definition in [EIF]: This aspect of interoperability is concerned with ensuring that the precise meaning of exchanged information is understandable by any other application that was not initially developed for this purpose. Semantic interoperability enables systems to combine received information with other information resources and to process it in a meaningful manner. Semantic interoperability is therefore a prerequisite for the front-end multilingual delivery of services to the user.

Semantics is the study of meaning (i.e. instead of describing objects, semantics describe their meanings), while interoperability is the ability to exchange information. Therefore, semantic interoperability relates to the ability of ICT systems to understand the meaning of exchanged information. ICT systems that are semantically interoperable, can not only transmit information one to the other, but also be certain that the other system fully and appropriately understands the transmitted information.

Considering the Graphical User Interface (GUI) of an ICT system (i.e. the interface between users and a system), language is clearly a major factor for the effective collaboration and the efficient delivery of services. However, considering the back-office level, the underlying information architectures should be linguistically neutral, so that multilingualism does not become an obstacle to the delivery of services. Furthermore, communication channels between ICT systems should also be linguistically neutral. Information stored in the back-office of ICT systems should relate to meanings, which all ICT systems can understand, rather than specific linguistic descriptions.

Technical Interoperability

Definition in [EIF]: This aspect of interoperability covers the technical issues of linking computer systems and services. It includes key aspects such as open interfaces, interconnection services, data integration and middleware, data presentation and exchange, accessibility and security services.

In short, this level of interoperability refers to the ability of ICT systems to communicate with each other, independently of their specific technical implementation. The use of open and international standards, as well as, protocols based on cross-platform technologies, can enable cross-systems communication. Currently, across Europe, significant work has been completed on technical interoperability, resulting in broad network connectivity and relevant ICT developments enabling the interconnectivity of ICT systems. A major area for further work is to establish more secure communication means, possibly through the use of interoperable PKI infrastructures.

In most European countries there is a broad ICT network, which forms the backbone of the necessary electronic means on which system communication is built. In addition, several telecommunication technologies are well adopted in Europe, such as system communication protocols, which simplify and/or enhance the available communication means. In this respect, Europe demonstrates a high-level of ICT infrastructure, which at large meets the objectives of the third level of interoperability, i.e. technical interoperability. It seems to be widely recognised that the establishment of interoperable systems should focus on the other two levels of interoperability, i.e. organisational and semantic, especially as regards interoperable authentication methods and technologies.

5.1.2   eProcurement tools and means to be interoperable

As detailed in Legal Requirement 2: *"Use interoperable electronic means and tools for communication"*, Article 42 of 2004/18/EC and Article 48 of 2004/17/EC stipulate the "rules applicable to communication" via electronic means, specifying amongst others that any tools to be used for communicating by electronic means, as well as their technical characteristics, must be non-discriminatory, generally available and interoperable with the information and communication technology products in general use. In addition, these provisions specify the rules for the electronic transmission of data and for the devices to be used for the electronic receipt of tenders/eCatalogues, which have to preserve the integrity of data and the confidentiality of tenders (see also section 2.2 of [SoP]).

If a contracting authority offers to suppliers specialised tools to facilitate any necessary processes for the use of eCatalogues in a public procurement procedure, the use of such tools must comply with the requirements and rules described above. Such tools may, e.g. assist in the creation, submission, update and verification of an eCatalogue, as discussed in Functional Requirement 15: *"Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses"*, Functional Requirement 16: *"Make available to suppliers tools for assessing the quality of their eCatalogue prospectuses"* and Functional Requirement 34: *"Automate verification of technical format and quality of eCatalogue update"*.

The following aspects should be considered for establishing/using interoperable tools and means:

- Adoption of widely used ICT hardware: It must be possible to install and operate any specialised supporting tools under widely used ICT hardware in a commonly acceptable manner; hence no specialised additional hardware tools or equipment should be necessary for participation.

- Use of widely used operating systems and portability of tools: Such tools must not be bound to specific technical requirements and operating systems. Contracting authorities could consider implementing such tools using ICT technologies that increase their portability to several operating systems, e.g. Java. Alternatively, several versions of a tool may be offered to suppliers for support in the most popular operating systems (e.g. a version for Windows NT, Solaris 10, Mac OS X10, etc.).

- Communication and connectivity of supporting tools: In cases where supporting tools are designed to communicate with other specialised supporting tools or third-party technologies/applications/modules, limited (or no) configuration for connectivity should be needed. If configurations are necessary, simplified and common standards should be used, without affecting the functionality of the system and tools, and always aiming at simplifying the activities suppliers must perform in order to use them. In general, the selected communication and connectivity framework should be based on generally available infrastructure (e.g. the Internet) in order to benefit from state-of-the-art integrated technical provisions for interoperability and security (e.g. data transfer protocols such as HTTPS). For all activities that do not require interaction, and in particular for the submission of eCatalogues, it should be possible to use such tools round the clock (24x7x365).

- Use of widely available third-party tools: In cases where contracting authorities do not provide specialised tools, but expect suppliers to use third-party tools for performing eCatalogue related processes (e.g. for forming, submitting, validating eCatalogues, etc.), these tools must be widely available to suppliers at reasonable cost (or for free).

- <u>Submission of eCatalogues:</u> The eCatalogue submission process must not be bound to any specific protocols that are not widely used and/or commonly acceptable, or require specific hardware equipment. The objective is that every economic operator should be able to participate in the competition without limitations imposed from the use of tools or communication technologies.

- <u>Non-functional specifications for supporting tools:</u> Such tools should provide advanced usability, reliability, security, scalability, consistency, etc.

5.1.3 Industry-wide standards for the interoperable use of eCatalogues prospectuses

The objective of developing interoperable eProcurement systems is to deliver widely accessible and efficient services, overcoming language and country barriers, as well as, barriers from the use of different technologies.

However, eCatalogues in public procurement can contribute to the envisaged efficiency-gains only if their use is performed in a manner that satisfies all three levels of interoperability, as discussed above. The objectives of the third level (i.e. technical interoperability) are at large satisfied by the advanced ICT infrastructure in Europe. Hence, the focus should be on achieving organisational and semantic interoperability. This can be achieved through the adoption and use of suitable industry-wide standards.

At present, when eCatalogues are used as offers, they are fully defined and tailor-made according to the needs of the contracting authority. In order to move towards a more efficient and effective environment for the use of eCatalogues in public procurement, a two-phased evolution scenario is identified in section 2.2. In the first phase (Evolution Phase I), buyer-defined eCatalogues would be replaced by supplier-defined eCatalogues, while in the second phase (Evolution Phase II), eCatalogue prospectuses would be created in line with a suitable industry-wide standard. The second evolution phase represents the optimum use of eCatalogues in public procurement, eliminating the need to create tailor-made single-purpose eCatalogue prospectuses (e.g. for a specific contracting authority and a specific call for tenders) and allowing their better re-usability. Thus, standardisation of eCatalogue content and exchange is a key factor for achieving interoperability.

The standardisation of the use of eCatalogues in public procurement should address two main areas: the standardisation of processes/messages (i.e. organisational interoperability) and the standardisation of eCatalogue content (i.e. semantic interoperability). The former area is attempted to be covered in full by several eCatalogue standards, the most prominent of which being UBL and c-Catalogue. The latter area can be further split into content related to product/service descriptions (i.e. the way in which a product is described in an eCatalogue prospectus) and other required content not related to product/service descriptions (e.g. supplier information, financial, handling and invoicing data). The content related to product/service descriptions could be addressed by product description and classification schemes, while the content not related to product/service descriptions should also be addressed by UBL and c-Catalogue.

As already mentioned, several standardisation initiatives seek to address the aforementioned needs. At present, two prominent standards are available for the use of eCatalogues in public procurement, namely UBL 2.0 of OASIS and c-Catalogue of UN/CEFACT. c-Catalogue and UBL both standardise the business processes and data structures supporting the collaboration of companies which make use of eCatalogues. However, apart from the above two initiatives, there are numerous other tailor-made approaches, technologies and standards for making use of electronic catalogues. All these have resulted to an interoperability gap in the use of electronic catalogues. It therefore seems to be widely acknowledged that there is a need to establish one common framework for forming and exchanging eCatalogues, which could accommodate the needs of all industry sectors and close the current interoperability gap. OASIS and UN/CEFACT have recognised this need and are working towards the convergence of their standards, which they expect to complete by the end of the fourth quarter of 2007 (see also section 6.4 of [SIR]).

In addition, there are initiatives establishing product classification and description schemes, which can be used for the succinct description of products contained in eCatalogues. Using such schemes, items contained in an eCatalogue can refer to a common scheme of classes, characteristics and attributes. Product classification schemes provide hierarchies for groups and sub-groups of products (e.g. computer equipment, printers, inkjet printer), while product description schemes provide a standardised set of attributes for each product type (e.g. for an inkjet printer the attributes pages per minute, size of memory, connection type, etc.). Apart from the Common Procurement Vocabulary (CPV), which must be used in public procurement notices (Functional Requirement 9: *"Use the Common Procurement Vocabulary (CPV) classification"*), other popular classification schemes comprise UN/SPSC, eCl@ss, NCS (NATO Codification System), Global Product Classification (GPC) and eOTD. The existence of multiple classification schemes creates an interoperability gap, hence, there is a need to either establish a unique scheme, or a framework for the mapping of multiple schemes.

The relevant standardisation bodies, their activities in the area of eProcurement and eCatalogue standardisation, the use of standards in European countries, as well as, future steps in standardisation, are discussed in detail in [SIR].

5.2 Security

Security relates to the general property of an eProcurement system to ensure that data is transmitted, stored, disclosed and processed in accordance with the legal requirements for data confidentiality, integrity, trace-ability, etc. Furthermore, the security provisions of an ICT system should guarantee the authenticity of its users, commonly referred to as "user authentication". In the following, a non-exhaustive list of aspects that the security modules/provisions of an eProcurement system should feature is presented. In addition, the application of digital certificates in eProcurement systems is briefly discussed.

- Integrity: a security feature that protects data from being modified or corrupted, either maliciously or accidentally. It is recommended that an eProcurement system should feature mechanisms to identify whether data transmitted to/from the system has been corrupted during transmission. In addition, provisions should be put in place for guaranteeing that stored data cannot be corrupted. Automated system processes that may modify data stored in an eProcurement system should be thoroughly tested; in the case where the integrity of data is compromised, authorised users should be provided with tools/procedures in order to recover the system's latest consistent state.

- Confidentiality: the property of the system to guarantee that its data is not disclosed to unauthorised persons or processes. The EU Directives explicitly require that certain information exchanged in eProcurement procedures to remain confidential, e.g. the tenders received and the identities of suppliers participating in a competition. The terms for the confidentiality of tenders are described in Functional Requirement 24: *"Ensure the confidentiality of tenders"*.

- Non-repudiation: the method by which the sender of data is provided with proof of delivery and the recipient is assured of the sender's identity, so that neither can later deny having exchanged the data. This aspect is particularly important for the submission of tenders (including full eCatalogues or partial updates), especially when this is accompanied with official time-stamping, guaranteeing the exact date/time a tender submission has taken place.

- Official time-stamping: a mechanism by which an eProcurement system can obtain and record the exact date and time of an event, certified by an official Time-stamping authority. This feature is particularly important for recording the exact submission date and time of tenders. It should be automatically used by the device for the electronic receipt of tenders/eCatalogues, rejecting all tenders (including full eCatalogues or partial updates) which fall outside the designated tender submission period.

- Secure device for the electronic receipt of tenders/eCatalogues: a specialised device which receives all electronically submitted tenders and securely stores them until their opening, following the "four-eyes principle". The device for the electronic receipt of tenders/eCatalogues should operate in accordance to Legal Requirement 5: *"Apply rules for the device for the electronic receipt of tenders/eCatalogues"* and Functional Requirement 21: *"Support a device for the electronic receipt of tenders (including eCatalogue prospectuses)"*. The device for the electronic receipt of tenders/eCatalogues may make use of digital certificates for verifying the identity of suppliers.

- Audit-trailing / trace-ability: the facility which enables the recording of user or system actions taken within an eProcurement system. This facility should ensure that all actions performed on received/stored data are recorded, keeping track of actors, date/time, input/output data and any other information necessary to allow specialised personnel to full detect a transaction. The audit-trailing facility should trace all operations and transactions, otherwise it will not be able to reconstitute and render a faithful account of them. However, in order to preserve confidentiality of the transmitted data, access to the data collected by the audit-trailing facility is subject to the same rules of access applicable to all data transmitted during the tendering phase and the conditions of Annex X of Directive 2004/18/EC (i.e. access only to authorised personnel after expiry of the tender opening deadline).

- User authentication/authorisation: the process of determining whether a user is in fact who he/she claims to be. User authentication is key to guaranteeing that access to data stored and services offered by an eProcurement system is granted only to authorised users. Aspects related to user authentication are also discussed in Functional Requirement 3 and Functional Requirement 4 (user authentication and authorisation). In order to support these processes, a security infrastructure is required. Contracting authorities may use any of the following security levels summarised in **Table 16**.

Security Level	Advantages	Disadvantages
Level 1 – User credentials This security level is based on the use of user credentials (username and password) provided when a user registers in the system.	- Simple registration process (improved accessibility)	- Basic security (satisfies only limited security provisions)
Level 2 – Basic use of digital certificates This security level provides a reliable user authentication mechanism, using digital certificates. Users are identified by their digital certificates (public key) that are provided to the system at each "user login". A digital certificate for this security level may be issued by a trusted Certification Authority or by a specialised module of the eProcurement system. In the former case, the eProcurement system should be able to communicate with the Certification Authority to verify the validity of certificates; in the latter case, measures should be taken to manage and distribute certificates to users in a secure and reliable manner. Based on this security level, users may also digitally sign and encrypt their documents using their certificates. The certificates for user authentication under this security level are accepted by selected / specific Certification Authorities.	- Increased security through the use of digital certificates - Enables digital signing and encryption of documents	- Complex user registration process - Requires specialised software and hardware modules - Accepts certificates issued by specific Certification Authorities, but interoperability is limited (i.e. cannot accept certificates from all Certification Authorities)
Level 3 – Advanced use of digital certificates (PKI infrastructure) The advanced use of digital certificates requires an advanced security infrastructure, possibly through public-key infrastructures (PKI), which allows digital certificates issued by one Certification Authority to be recognised by other Authorities. Such infrastructures rely heavily on certificate chains and cross-authority certification validity, e.g. where one Certification Authority is able to confirm the validity of a certificate issued by another Certification Authority.	- Highest security level - Digital certificates are accepted by all trusted Certification Authorities - Enables digital signing and encryption of documents	- Complex process for obtaining certificates - Requires specialised software and hardware modules - Requires significant investment to establish such PKIs

Table 16: Security levels

Despite the existing technical know-how on establishing PKIs and using digital certificates, current PKIs in Europe demonstrate significant limitations. The most important technical limitation relates to the divergent practices using existing standards for establishing such infrastructures. This has resulted in different implementations across Europe, which forms a technical barrier to the cross-border recognition of digital certificates. The European Commission is currently reviewing[6] the various issues related to this technology, in order to improve the interoperability of certificates issued by different Certification Authorities.

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[6]Work on the mutual recognition of electronic signatures in eGovernment applications is carried out under the IDABC programme, see http://ec.europa.eu/idabc/en/document/2316

- Digital signing: the process under which a transmitted message is codified, to assure the recipient of the authenticity and integrity of the message. Digital signing can be performed by an entity that owns a digital certificate. The digital signature, which is applied using a digital certificate, proves that the message was indeed signed by the entity that owns the certificate and that the message itself has not been modified in any way since signing. Digitally signed electronic documents could be rendered equivalent to paper documents, provided that the authenticity of the signature (i.e. the authenticity of the digital certificate) itself can be proved. In the context of eProcurement, efficiency-gains may be achieved by using digital certificates, as discussed in "User Authentication/ Authorisation".

- Data encryption: the mechanism by which encryption algorithms are utilised to ensure data confidentiality and integrity when stored in an eProcurement system, or transmitted to/from the system. Data encryption is recommended to be applied to all communications to/from an eProcurement system. Furthermore, it is recommended that tenders be encrypted until their opening through the "four-eyes principle". Until that moment, tenders are encoded in non-readable format and the data they contain cannot be read, even if access to the server(s) hosting the eProcurement system is compromised. The use of digital certificates can accommodate the encryption of tenders before submission, as discussed above (see "User Authentication/Authorisation").

- Other security provisions: apart from the above security measures the eProcurement system could be safeguarded against other aspects. Anti-virus protection is one of these areas, ensuring that uploaded documents do not contain malicious data that could harm the operation of the system. Contracting authorities should implement their systems in a way that uploaded documents (including tenders in the form of eCatalogues) are scanned, locating infected documents. When tender documents are scanned prior to their locking (as soon as they are submitted by suppliers), the scans must be fully automated and not disclose any of its content. Infected files should not be deleted from the system, but instead be stored in a quarantine area for trace-ability purposes, which should be locked and inaccessible. Other security provisions may relate to protection against malicious attacks. These might relate to attacks for: 1) unauthorised access to system services/data, 2) manipulation of security holes of the system (such as SQL injection, buffer overflows, improper error handling, etc.), 3) intrusion to the physical internal network or hosting servers of the system, 4) denial of service, etc. In addition, provisions could be established for securing the data and services of the system against malicious system administrators. The various system services could be implemented in such way, so that two or more administrators need to provide their consent before these services are activated and/or used. For instance, when encrypting received tender documents, the encrypted files and their respective decryption keys could be stored in two different data repositories of the system, which are managed by two different groups of administrators. In addition, the physical location of the hosting servers should also be secured, ensuring that only authorised personnel may access it, and that all such accesses are audited.

5.3   Other non-functional requirements

Apart from the non-functional requirements discussed above, which present some specificities for the use of eCatalogues, there are some additional non-functional requirements associated with eProcurement systems in general. In the following, an overview of these non-functional requirements is provided. In particular, these requirements were identified and described in more detail in [Func. Reqs Vol. I].

5.3.1   Usability

This non-functional requirement relates to the property of an eProcurement system to be user-friendly, allowing its users to easily understand and learn the available functionalities. In particular, usability can be split into the assistance a user gets from the system itself, and the assistance a user can get from additional external services:

– User support through the system: an eProcurement system may be used very rarely by its users, particularly suppliers, therefore all functionalities and procedures must be clear and easy to understand. Multilingualism, respect of industry-wide GUI standards, interoperable GUI technologies and online documentation such as online help, animated demonstrations, etc. may be supported.

– User support via additional external services: entails the support and assistance system users can get from help desks, user educational and training programmes, and documentation (e.g. user manuals). Particularly for eProcurement systems, which may be very rarely used, this kind of support is necessary to ensure openness, equal treatment and non-discrimination.

5.3.2   Reliability

Reliability concerns the property of an eProcurement system to operate in a consistent and trustworthy manner, meaning that for a given input and specific conditions, it will always produce the same results. Non-repudiation of data, integrity of data, security of data, consistency of operations and sustainable system accessibility all require a reliable ICT eProcurement system.

Apart from the consistent and trustworthy operation of an eProcurement system, reliability entails the non-functional requirement of sustainability. According to this, even in the scenario when a system failure occurs, contracting authorities should be in a position to take measures not only for the technical remedy, but also for completing non-technical actions ensuring equality of treatment and non-discrimination of all users (e.g. extend the tender submission deadline for a running call for tenders). Sustainability can be ensured by the creation of appropriate back-up procedures and tools, such as business continuity plans and disaster recovery plans.

5.3.3 Scalability

Scalability refers to the ability of an eProcurement system to respond efficiently to a possible increase of the number of users, data stored and data exchanged. The combination of efficient software architecture along with sufficient hardware components guarantees the good scalability of a system. Scalability can be split into two types of requirements:

–   Availability requirements: an eProcurement system should prevent failures during critical events, being open to all users at any time. Service Level Agreements (SLAs) with system operators and technology providers should set high availability targets. During the implementation of such systems, tangible and appropriate availability targets should be set and achieved through performance tests.

–   Performance requirements: the performance requirements of a system relate to the time it takes for activities to be performed and data to be transferred and stored.

6   Conclusions

The new EU Directives on public procurement 2004/17/EC and 2004/18/EC, adopted in April 2004 by the European Parliament and Council, authorise for the first time the use of electronic means to conduct a public procurement procedure, including the use of electronic catalogues to form and submit tenders.

The [Func. Reqs Vol I] report, issued in 2004, examines the implementation of an electronic public procurement system that would be compliant with the EU Directives through the definition of functional and non-functional requirements. However, it did not consider the specific processes for using electronic catalogues in public procurement practices. The present report follows the same approach as [Func. Reqs Vol I] identifying legal, functional and non-functional requirements for eCatalogues to be used in public procurement procedures. It also takes into account the findings of the [SoP] and [SIR] reports undertaken in the context of this study.

Specifically, this report identifies eight legal requirements for the use of eCatalogues in public procurement and forty functional requirements for the implementation of eProcurement systems which make use of eCatalogues, covering all steps for one-off and repetitive purchases under the foreseen public procurement procedures. In addition, several non-functional requirements for eProcurement systems supporting the use of eCatalogues are discussed. These focus in particular on interoperability and security aspects, which appear to be the most important for the effective and efficient use of eCatalogues in public procurement.

The EU Directives, either explicitly or implicitly, define a number of legal requirements for the use of eCatalogues in public procurement, enlisted in **Table 17**. These Legal Requirements are analysed in detail in section 3.2.

#	Legal Requirements	Status
1	Ensure equal treatment, non-discrimination and transparency	Mandatory
2	Use interoperable electronic means and tools for communication	Mandatory
3	Provide non-discriminatory specifications for creating tenders in the form of eCatalogue prospectuses	Mandatory
4	Provide additional information after publication in a non-discriminatory way	Mandatory
5	Apply rules for the device for the electronic receipt of tenders/eCatalogues	Mandatory
6	If used, fully automate eCatalogue prospectus verification	Optional
7	Provide rules and guidelines for performing eCatalogue updates	Mandatory, however only applicable for Framework Agreements and DPS
8	Provide rules and guidelines for the active collection of tenders in the form of updated eCatalogues (punch-out)	Optional

Table 17: Legal requirements for the use of eCatalogues in public procurement

Roughly half of the forty functional requirements identified for eProcurement systems that make use of eCatalogues are directly and specifically related to eCatalogues. The others define functionalities for eProcurement systems in general and are included in the current report for completeness. The functional requirements directly related to the use of eCatalogues in eProcurement systems are enlisted in **Table 18** below.

#	Functional Requirements	Status
6	Provide standards-based tender specifications for eCatalogue prospectuses	Optional but recommended
7	Define a tender evaluation mechanism for eCatalogue prospectuses	Mandatory
8	Prepare official procurement notices including eCatalogue informaton	Mandatory if eCatalogues are authorised
12	Publish Contract Documents	Mandatory
15	Make available to suppliers tools for verifying the technical format of their eCatalogue prospectuses	Optional
16	Make available to suppliers tools for assessing the quality of their eCatalogue prospectuses	Optional
19	Support creation of initial offers in the form of eCatalogue prospectuses	Mandatory if eCatalogues are authorised by the call for tenders
20	Allow for the interoperable and secure submission of tenders in the form of eCatalogue prospectuses	Mandatory
21	Support a device for the electronic receipt of tenders (including eCatalogue prospectuses)	Mandatory
25	Automate the evaluation of tenders in the form of eCatalogue prospectuses	Optional
28	Verify eCatalogue prospectus format outside specific calls for competition and request refinement if needed	Optional
29	Support the refinement of eCatalogue prospectus format	Optional
30	Support creation of specific offers in the form of eCatalogue prospectus update (in view of re-opening of competition)	Mandatory if eCatalogues are authorised
31	Archive submitted eCatalogue prospectuses prior to any updates	Mandatory
32	Support an appropriate device for the active collection of tenders ("punch-out")	Optional
33	Support creation of specific offers in the form of eCatalogue prospectus update (under re-opening of competition)	Mandatory if eCatalogues are authorised
34	Automate verification of technical format and quality of eCatalogue update	Optional
35	Automate placing an order based on an eCatalogue prospectus	Optional
38	Create indicative Tenders in the form of eCatalogue prospectuses in a DPS	Mandatory if eCatalogues are authorised
40	Rank tenderers based on the automated evaluation of bids in the form of eCatalogue prospectuses in an eAuction	Mandatory in case an eAuction event takes place

Table 18: Functional requirements directly related to the use of eCatalogue prospectuses in public procurement

Apart from functional requirements, eProcurement systems that make use of eCatalogues should also satisfy a number of non-functional requirements. These relate to general properties of an ICT system and are not directly related to its functionality. **Table 19** presents the non-functional requirements that are discussed in chapter 5, primarily related to interoperability and security. The non-functional requirements that an ICT system must satisfy depend on the exact needs the system is expected to address. Relevant parameters in this respect, e.g. the number of users to be supported, the performance of the system, its capabilities for upgradeability/scalability, etc. are driven by specific needs of a country or contracting authority.

#	Non-Functional Requirements

1	Interoperability
	  - organisational
	  - semantic
	  - technical

2	Security
	  - Integrity
	  - Confidentiality
	  - Non-repudiation
	  - Official time-stamping
	  - Secure device for the electronic receipt of tenders/eCatalogues
	  - Audit-trailing / trace-ability
	  - Digital signing
	  - Data encryption
	  - User authentication/authorisation

3	Usability
4	Reliability
5	Scalability

Table 19: Non-functional requirements for systems making use of eCatalogues in eProcurement

The rationale of authorising the use of eCatalogues in public procurement procedures was to provide the means for simplifying the necessary work to be undertaken both by suppliers and buyers to conclude contracts. However, as discussed in section 2.2, current practice in the EU is primarily based on the use of "buyer-defined" eCatalogues. Under this approach, suppliers are required to transform their existing eCatalogue prospectuses in accordance to the imposed specifications (which are different for each individual contracting authority), generating significant additional workload for suppliers in order to participate in a competition. Section 2.2 identifies how this environment could be improved, following a two-phased approach. Evolution Phase I relates to the use of "supplier-defined" eCatalogue prospectuses, based on which suppliers would be permitted to submit their existing eCatalogue prospectuses to participate in a competition. While generating some additional work for contracting authorities (due to the diversity of the received eCatalogue prospectuses and limited opportunities for automation), such an approach might promote the use of eCatalogues in public procurement and increase participation levels. Evolution Phase II relates to the optimum use of eCatalogues, through the use of suitable and widely-used eCatalogue standards, which could facilitate the automation of public procurement procedures. However, the use of eCatalogue standards for public procurement assumes that standards can, first, cover all needs for public procurement and second, that they are widely-adopted, preserving the principles of general availability and equal treatment.

6.1 Good practices

Based on the findings of this study, some good practices have been identified for eProcurement systems making use of eCatalogues prospectuses. These are summarised in **Table 20**, and should be considered as "short-term" remedies for facilitating and making better use of eCatalogues in the current eProcurement environment. The good practices are grouped into two groups, one related to the "use of eCatalogues in public procurement", and another related to "eProcurement in general". The good practices in the former group are enlisted in order of the sequence of event in a public procurement competition (i.e. in line with the procurement phases), while the good practices in the latter group are enlisted in order of importance.

	#	Title	Description	Applicable
Good Practices for the use of eCatalogues	1.	**Exclusive use of eCatalogues upon wide adoption of eCatalogue standards**	In the context of eCatalogue Evolution Phase II, contracting authorities could require the exclusive use of eCatalogue prospectuses in line with industry-wide standards. This measure assumes that standards cover all needs for public procurement and that they are widely-adopted, preserving the principles of general availability and equal treatment.	After the wide adoption of eCatalogue standards (Evolution Phase II)
	2.	**ToRs to include requirements in a way that encourages tenders in the form of eCatalogue prospectuses**	Contracting authorities may work towards standardising the content of ToR documents. This potentially limits the amount of work they must dedicate to creating a call for tenders. Apart from such "standardisation", contracting authorities should attempt to define the specifications for a call in a manner that allows tenders to take the form of eCatalogue prospectuses. For instance, the minimum specifications for a product may be defined using a product description scheme (i.e. use a standardised set of product attributes), while the request for free-text documents in tenders should be limited to a minimum.	Until the wide adoption of suitable eCatalogue standards (Evolution Phase II)
	3.	**Provision of specialised eCatalogue tools to suppliers**	Until the wide adoption of standards for eCatalogue creation and exchange, contracting authorities are recommended to provide tools to suppliers and adopt methods for assisting them as much as possible to create and maintain tenders in the form of eCatalogues. Any tools/methods must always respect the principles of transparency and equal treatment. The wide adoption of eCatalogue standards is expected to lead to the establishment of commercial or other tools and ICT applications that can assist both suppliers and buyers in the creation and management of eCatalogues.	Until the wide adoption of suitable eCatalogue standards (Evolution Phase II)
	4.	**Define terms for permissible eCatalogue updates under Framework Agreements (time periods)**	It is recommended for a contracting authority, when setting up a Framework Agreement, to define specific time periods during which suppliers may update their eCatalogues. This ensures equal treatment of all suppliers to update their eCatalogues in the same frequency, while allowing contracting authorities to control the load on their eProcurement systems when eCatalogues are being updated.	During all eCatalogue evolution phases
	5.	**Define terms for permissible eCatalogue updates under Framework Agreements / DPS (specific attributes)**	Permissible modifications to eCatalogues, e.g. updates under Framework Agreements or DPS, may be regulated; contract documents should clearly indicate which eCatalogue parts may be modified and in which manner. Automated verification checks may be applied to ensure eCatalogue updates respect the terms and conditions set at the establishment of the Framework Agreement or DPS.	During all eCatalogue evolution phases

	6.	**Transmission of official EU procurement Notices to be performed electronically**	The receipt, processing and publication of procurement notices are handled by the EU Publications Office, which since 2005 supports the transmission of structured notices using electronic means (SIMAP Online Forms Filling tool or OJS eSenders). Contracting authorities are recommended to submit notices only in a structured format, and to eliminate non-structured submission (e.g. fax, email, post, etc.).	During all eCatalogue evolution phases
General good practices for eProcurement	7.	**Technical measures to ensure the Integrity of data exchanged and stored in eProcurement**	It is recommended that an eProcurement system feature mechanisms for identifying whether data transmitted to/from the system has been corrupted during transmission. Such mechanisms might be implemented in conjunction with data encryption mechanisms. Similar provisions may also be employed for data stored within the data repositories of an eProcurement system.	During all eCatalogue evolution phases
	8.	**Technical measures to encrypt data, ensuring its security when exchanged or stored in eProcurement**	It is recommended to apply data encryption to all communications to/from an eProcurement system. Furthermore, it is recommended that received tenders (including eCatalogue prospectuses) be encrypted until opened using the "four-eyes principle". Through this, even in the case that access to eProcurement hosting servers is compromised, tenders are encoded in non-readable format.	During all eCatalogue evolution phases
	9.	**The use of digital certificates in eProcurement system to be kept as an option & solve e-signatures/e-authentication issue**	The use of digital certificates may significantly enhance the security levels of any ICT system. However, the EU Directives do not mandate the use of digital certificates. In this respect, and considering the under-developed state of using interoperable digital certificates in Europe, it is recommended that eProcurement systems keep the use of digital certificates (at least for suppliers) only as an option and to ensure equal access to any chosen solution in this regard.

Nevertheless, as a long term objective, EU Member States, the EC and Standardisation bodies should work towards giving a suitable solution of e-Signatures and e-Authentication, as this will significantly increase the security level of all e-Government ICT solutions. This long term objective is discussed in raw 4 of **Table 23** below (see section 6.2). | The use of digital certificates should only be mandated once a suitable legal and technical environment ensures non-discrimination, interoperability and general availability of systems, even for cross-border users |

Table 20: Good practices for eProcurement systems

6.2   Areas for future work and recommendations

Furthermore, the following recommendations for "long-term" initiatives have been identified, suggesting objectives that can be set by Member States, Standardisation Bodies and/or the European Commission, to address current "open issues" and advance the use of eCatalogues in public procurement. Recommendations are grouped in three tables:

- **Table 21** which includes recommendations for a transition from current practice to Evolution Phase I (in order to allow suppliers to submit their existing eCatalogue prospectuses, rather than "buyer-defined" specifications)

- **Table 22** which includes recommendations for a transition from Evolution Phase I to Evolution Phase II (in order for eCatalogue prospectuses to be based on suitable, widely-adopted standards, enabling their re-usability for many purposes)

- **Table 23** which includes recommendations for improving the overall eProcurement environment (not bound to eCatalogues in particular)

These tables comprise both organisational and technical "open issues" and recommendations.

#	Open issues & Recommendations	Actors
1.	**Customise existing systems with a view to establishing "eCatalogue stock management systems" which make use of "eCatalogue prospectuses" and support all phases of the procurement cycle** Current eProcurement systems in the EU focus on "eCatalogue stock management systems" for post-award phases (eOrdering, eInvoicing), overlooking the use of interoperable "eCatalogue prospectuses". Member States are recommended to review their processes and customise their current eProcurement solutions, in order to better meet the legal and preliminary functional requirements defined in this report and to implement "eCatalogue stock management systems" making better use of interoperable and re-usable "eCatalogue prospectuses".	Member States
2.	**Optimise current solutions for the "active collection of tenders"** The "active collection of tenders" (or "punch-out") is a new tender submission technique, through which eProcurement systems directly communicate with supplier systems in order to obtain eCatalogue information. This technique should be used in accordance with Legal Requirement 8: *"Provide rules and guidelines for the active collection of tenders in the form of updated eCatalogues (punch-out)"* and Functional Requirement 32: *"Support an appropriate device for the active collection of tenders ("punch-out")"*. Member States are recommended to review and adapt the operation of currently implemented "punch-out" devices accordingly. In particular, "punch-out" should not be viewed as a direct link to obtain real-time prices from supplier systems. Instead, "punch-out" should be used as an alternative tender submission technique, which should respect all provisions of the EU Directives related to the creation and submission of tenders. Furthermore, "punch-out" should only be used on supplier eCatalogue prospectuses that are in "frozen" or "snapshot" state, ensuring that they do not contain dynamic links to external files or Internet locations.	Member States
3.	**Establish Open Source software applications/tools, which can be re-used by many contracting authorities and Member States** The costs incurred by Member States for establishing eProcurement systems and supporting tools for eCatalogues, but also other ICT systems in general, can be substantial. In most cases, Member States base their eProcurement solutions on existing commercial systems with significant tailor-made customisations. Such customisations often prove to be costly, while authorities may find themselves bound to specific technologies / suppliers. The cost of software development incurred by Member States could be significantly reduced through collaborations/synergies, where one ICT system/tool is implemented and used by multiple public entities. The development of systems/tools with Open Source software can be a strong candidate for forming generalised solutions for many authorities. Furthermore, such systems do not bind authorities to specific suppliers.	Member States

Table 21: Open issues and recommendations for the transition from current practice to Evolution Phase I

#	Open issues & Recommendations	Actors
1.	**Adopt industry-wide standards for forming and exchanging eCatalogue prospectuses (both pre-award/post-award)** The standardisation of eCatalogue prospectuses offers the means to evolve from Current Practice or Evolution Phase I (i.e. use of spreadsheets and bespoke XML specifications) to advanced and truly interoperable solutions. Stakeholders may take an active role in establishing a common technical framework for forming and exchange eCatalogue prospectuses. The two prevailing standards for forming and exchanging eCatalogues, UBL and c-Catalogue, are currently being converged. In addition, they should be further developed to cover pre-award/e-tendering needs and areas. Through such developments, the converged standard will be able to cover all needs for eCatalogue content, some of which may be accommodated by product classification and description schemes and others by extensions in the standard, in line with specific needs in the public sector in the EU. Member States are recommended to actively assist towards the convergence and further development of these standards. In parallel, they should actively participate in existing implementation initiatives, such as the NES, focusing on using such standards in practice. The experiences and needs of Member States should be communicated to the relevant Standardisation Bodies in order for the converged standard to be extended as required in order to meet all specific EU needs. Standardisation Bodies are recommended to accelerate the convergence of UBL and c-Catalogue, in order to promote one single standard for eCatalogues in public procurement, and to identify areas for which standards must be extended.	Standardisation Bodies Member States
2.	**Adopt a suitable product classification and description scheme or establish a framework for the co-existence of several such schemes** In order to establish an environment where tenders can take the form of eCatalogue prospectuses, contracting authorities and economic operators should agree on common and widely acceptable standards for describing and classifying products within them. The existence of tailor-made eCatalogue specifications and several standards/schemes for product classification and description generates an interoperability gap in creating/exchanging eCatalogues. This gap could be bridged either by creating one common product classification and description scheme to accommodate the needs of all industries and purposes (including procurement) or, alternatively, by mapping different product description and classification schemes. Member States are recommended to actively assist towards the establishment and widespread use of one of these two potential solutions, which should also provide an adequate mapping to the CPV classification scheme (mandated by the EU Directives for the official EU procurement notices). In parallel, the European Commission should endorse and promote relevant work and examine the ePDC recommendations of CEN/ISSS, e.g. on establishing one common classification scheme. Any development in this field should be performed by Standardisation Bodies, which are recommended to identify steps and activities that can be performed by various stakeholders to accelerate and achieve the establishment of either one scheme or the mapping of different schemes. CEN/ISSS in particular is recommended to better communicate its work to all Member States, private organisations and any other interested parties, including the findings of the work completed so far, as well as current/future activities in this field in order to give all interested parties the possibility to contribute towards the establishment of a solution.	Standardisation Bodies Member States European Commission

3.	**Create and establish a suitable technical framework for incorporating in eCatalogues all information necessary for tendering**	Standardisation Bodies
	In addition to the description of offered products and/or services, a typical response to a call for tenders commonly includes many more additional and necessary information (e.g. supplier competencies, previous projects and experience, ISO certifications, methodologies, etc).	Member States European Commission
	Standardisation Bodies are recommended to look into further enhancing existing eCatalogue standards so that such additional information can be included in tenders in the form of eCatalogues. The contribution of Member States and the EC is necessary for concluding the necessary extensions to eCatalogue standards, in order to render such an objective feasible. New initiatives should be launched to identify the additional information commonly required by contracting authorities (other than product descriptions) to be included in tenders.	
4.	**Adopt mechanisms for bidding in eAuctions through the use of eCatalogues**	Member States
	Electronic catalogues appear to be very suitable for forming bids in the context of eAuction events. As defined by the EU Directives, the eAuction device must be capable to automatically process and evaluate bids without any manual intervention. This requires eAuction bids to be well-structured for automated processing, which is also a requirement for eCatalogues.	
	Based on current eCatalogue solutions in the public sector, the specifications for forming eCatalogues are defined by contracting authorities. These specifications commonly relate to a spreadsheet file, defining the exact attributes that suppliers must fill in for creating an eCatalogue prospectus. A similar process is currently performed for eAuctions.	
	Member States are recommended to consider using product description schemes to define the attributes to be used by suppliers for bidding in eAuction events. This approach may form the first step towards the use of the same tools and methods for both, creating tenders in the form of eCatalogues and bids for participating in eAuction events.	

Table 22: Open issues and recommendations for the transition from Evolution Phase I to Evolution Phase II

#	Open issues & Recommendations	Actors
1.	**Establish a suitable legal, organisational and technical framework for the electronic submission of proof documents (in relation to exclusion & selection criteria)** 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. 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.	European Commission Standardisation Bodies Member States
2.	**Define specifications for Dynamic Purchasing Systems** Although most national legal implementations of the EU Directives envisage the establishment of Dynamic Purchasing Systems, none clearly defines specific requirements on how a DPS should be practically established and function in the context of an ICT system. The EC is recommended to initiate further analysis of the rules for DPS and define specific functional requirements for eProcurement systems which support DPS. In parallel, similar activities may be undertaken by Member States.	EU Commission Member States
3.	**Educate the public and private sector on new rules for eProcurement and eCatalogues** Member States and EEA countries should invest into educating both buyers and suppliers on the new eProcurement rules of the EU Directives, as well as, relevant national procedures and tools. Such training should focus on standards and the efficient use of eProcurement/eCatalogue prospectuses.	Member States European Commission
4.	**Establish interoperable security infrastructure(s) across Europe to enhance secure eProcurement services** A security ICT infrastructure relates to specialised services which permit users to authenticate in ICT systems, digitally sign and digitally encrypt information in a secure manner. An interoperable security infrastructure relates to an infrastructure that can offer the above security services for several users and systems across Europe, bypassing cross border limitations. Such security infrastructure may be implemented using digital certificates (or advanced PKI services). The EU Directives do not mandate the use of digital certificates for eProcurement. Nevertheless, where used, digital certificates must operate in line with Directive 1999/93/EC. Member States are recommended to co-operate, in order to achieve the establishment of an interoperable security infrastructure, building upon the existing initiatives, relevant EC guidelines and the latest technical developments. The EC already performs analysis for this topic. In parallel, new initiatives of the EC and/or Standardisation Bodies could assist further Member by assuming an active role in creating and promoting relevant standards.	Member States European Commission Standardisation Bodies

Table 23: Other open issues and recommendations related to the overall eProcurement environment

In parallel to implementing an eProcurement system using eCatalogues that meets the functional requirements identified in this report, contracting authorities and system implementers should also consider respecting minimum standards for the non-functional behaviour of the system. Here the requirement of interoperability is probably the most important, as it ensures the effective and efficient exchange of information between buyers and suppliers. Particularly for eCatalogue solutions, the interoperability requirement can be met through the use of appropriate eCatalogue standards. UBL and c-Catalogue are the prominent standards in this field; both define specifications for processes, messages and documents for the creation and exchange of eCatalogues. System implementers that abide to these specifications will not only increase the interoperability level of their eProcurement systems, but will also have clear specifications on how to implement a number of functional requirements enlisted in this report (e.g. functional requirements 19 and 20 - creation and submission of tenders in the form of eCatalogues- are core business transactions of both UBL and c-Catalogue).

In order to achieve adequate functionality in the meantime (i.e. until relevant eCatalogue standards are fully established and widely adopted), contracting authorities should take steps towards achieving Evolution Phase I on the use of eCatalogues. According to this, contracting authorities should authorise suppliers to use their existing eCatalogue prospectuses in public procurement competitions, simplifying the procedures suppliers must follow in order to participate. The definition of exact eCatalogue specifications by contracting authorities should be minimised, while the good practices, presented in **Table 20** should be considered as an opportunity to improve the use of eCatalogues in public procurement, until the imminent establishment and wide use of eCatalogue standards.

References

Short name	Full document name	Description/Location	OJ publication number
[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	The 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, 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	The 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, 30.4.2004
[Action Plan]	Action plan for the implementation of the legal framework for electronic public procurement	Commission programming document aimed at assisting and coordinating Member States' implementation of e-procurement under the new public procurement directives. Evolves around three axes: 1) ensure a well functioning Internal Market when public procurement is conducted electronically, 2) achieve greater efficiency in procurement and improve governance, 3) work towards an international framework for electronic public procurement. http://ec.europa.eu/internal_market/publicprocurement/e-procurement_en.htm#actionplan	Not Applicable Year of publication: 2004
[Explanatory document]	Requirements for conducting public procurement using electronic means under the new public procurement Directives 2004/18/EC and 2004/17/EC	Presents the rules and principles governing eProcurement under the new public procurement Directives http://ec.europa.eu/internal_market/publicprocurement/e-procurement_en.htm#expli	Not Applicable Year of publication: 2005
[EIF]	European Interoperability Framework	A Commission White Paper discussing interoperability issues. Revision is on-going. http://europa.eu.int/idabc/en/document/3761	Not Applicable Year of publication: 2004

[Func. Reqs Vol. I]	Functional requirements for conducting electronic public procurement under the EU framework (Volume I)	Presents information and activity flows for all eProcurement procedures, functional requirements, non-functional requirements, an overview of technical specifications with a conceptual model and high-level Use Cases, and open issues related to eProcurement http://ec.europa.eu/internal_market/publicprocurement/e-procurement_en.htm#requirements	Not Applicable Year of publication: 2005
[Func. Reqs Vol II]	Functional requirements for conducting electronic public procurement under the EU framework (Volume II)	Presents 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/internal_market/publicprocurement/e-procurement_en.htm#requirements	Not Applicable Year of publication: 2005
[SIR]	Standardisation Activities	Report created within the context of the present study. Discusses standardisation activities relevant to electronic catalogues.	Not Applicable Year of publication: 2007
[SoP]	State of Play	Report created within the context of the present study. Discusses the current state of play of the use of eCatalogues in Europe.	Not Applicable Year of publication: 2007

Acronyms

Acronym	Description
B2G	Business to Government
CEN	Comité Européenne de Normalisation / European Committee for Standardisation
CfT	Call for Tender
CPV	Common Procurement Vocabulary
DPS	Dynamic Purchasing System
EC	European Commission
EEA	European Economic Area
EIF	European Interoperability Framework
ePDC	electronic Product Description and Classification
eOTD	ECCMA Open Technical Dictionary
EU	European Union
FA	Framework Agreement
GPC	Global Product Classification
GUI	Graphical User Interface
HTTP/HTTPS	HyperText Transfer Protocol / HyperText Transfer Protocol (SSL)
ICT	Information and Communication Technology
IDABC	Interoperable Delivery of Pan-European eGovernment Services to Public Administrations, Business and Citizens
ISO	International Standards Organisation
MEAT	Most Economically Advantageous Tender
NCS	NATO Codification System
NES	North European Subset
NUTS	Nomenclature of Territorial Units for Statistics
OASIS	Organisation for the Advancement of Structured Information Standards
OJEU	Official Journal of the European Union
OJS	OJEU Series-S
PKI	Public Key Infrastructure
SLA	Service Level Agreement
SME	Small-Medium Enterprise
SIMAP	Système d'Information des Marchés Publiques
SQL	Structured Query Language
ToR	Terms of Reference
UBL	Universal Business Language
UN/CEFACT	United Nations Centre for Trade Facilitation and Electronic Business
UN/SPSC	United Nations / Standard Products and Services Codes
XML	eXtendable Markup Language