Guidelines to Common Specifications for Cross Border use of Public eProcurement

Disclaimer

This document is mainly based on the outcomes of the 6th meeting of the High Impact Services Expert Group, held in Brussels on the 19th April 2007 and thus all the views expressed must be interpreted as pure indications and guides provided by the members of the expert group and do not have in any case to be considered mandatory for the realisation of the Pilot project.
Nevertheless, the legal framework depicted in the sections below has to be taken into account (in particular any applicable EU legislation) and it is mandatory.
Each time the document reports parts of the official ICT PSP workprogramme document[1], which has to be interpreted as mandatory for the pilot, the text appears quoted and italic.
Indeed, it is recommended that the outcomes of the Pilot will include explanations on what guidelines have not been considered and for which reasons.

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

[1] http://ec.europa.eu/information_society/activities/ict_psp/library/ref_docs/docs/cip_ictpsp_wp_draft.pdf

Executive summary

The ICT PSP workprogramme[2] defines the priorities for calls for proposals to be launched in 2007.
For the theme "efficient and interoperable eGovernment services", ICT PSP will support one Pilot in the objective 1.1 "*Enabling EU-wide public eProcurement*".
The pilot action will not address the public eProcurement in general, but should concentrate on all the following topics (see section 2 for a more detailed description):

- *Cross-border recognition of eSignatures for eProcurement;*
- *The virtual company dossier;*
- *eCatalogues;*
- *eOrdering and eInvoicing;*

The present document is dedicated to support the preparation of proposals for that Call, by providing some guidelines for the definition of Common Specifications for an interoperability layer and for the building blocks implementing the themes to be addressed by the Pilot.
From here on, it is assumed the knowledge of the objective and of the expected results of the Pilot, as stated in the workprogramme, as well as of the instrument (pilot of type A) that will be funded.

Considering the variety and complexity of the scenario, it is out of the scope of these Guidelines to provide an exhaustive state of the art of the running activities and available technical solutions for all the four themes. Rather, the objective is to provide a minimal outline of the "environment" in which the Pilot project will operate, as well as to suggest some open issues and to identify possible hurdles.
The scope of this document is twofolded: on the one hand, it reports some information that could help clarify the legal and technical framework within which the Pilot Project will operate; on the other hand, it is aimed at providing suggestions on the approach to be adopted and on the possible technical solutions that could support the Pilot Project in meeting the objective stated in the official ICT PSP workprogramme document.
In addition, the document presents some initiatives running at National level, selected by the members of the High Impact Services Expert group and by experts in the Commission, which present interesting elements for identifying good approaches as well as open issues for the development of EU-wide interoperable solutions for the topics to be covered.

The first chapters of the document provide some explanations aimed at clarifying what the Common Specifications should be, why they are needed and how their development could be approached (Chapters 3 and 4).
Chapter 5 contains an outline of the legal framework and some information on activities and tools relevant for European public eProcurement. These elements, even if not originally conceived to deal with the specific themes to be addressed by the pilot, provide basic requirements and recommendations of general interest for the development of interoperable tendering applications compliant with the EU Directives, thus can be of interest for the definition of the Common Specification.

The remaining chapters are devoted to each single pilot theme and are structured as follows:

- the "Legal framework" section, shortly outlines the current EU legal scenario for the specific theme;

[2] http://ec.europa.eu/information_society/activities/ict_psp/library/ref_docs/docs/cip_ictpsp_wp_draft.pdf

- the “Guideline” section, provides some views of the main issues to be addressed by the Pilot in the identification of the Common Specifications
- the “Feasibility Studies” section, contains description of studies on the specific topic, mainly promoted by the Commission, that are already completed (with available results), running or planned for the next future;
- the “Interoperability technical solutions” section, describes available technical solutions (standards and tools) for the implementation of interoperable modules;
- the “Relevant initiatives and Research projects” section, presents some initiatives (promoted by the Commission, by standardisation bodies or by Governments) as well as research projects whose results may be useful to identify problems, hurdles and possible solutions.

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1 Introduction

Public Procurement is one of the key sectors for the European economy (public authorities purchase for 15-20% of the GDP or 1500-2000 billion euro per year) and consequently electronic Public eProcurement (ePP) has been commonly recognised as one of the high-impact services to be provided by European governments, with a significant savings potential.

The Manchester ministerial declaration[3] contains very ambitious objectives for eProcurement to be reached by 2010: all European public administrations shall be able to carry out 100% of their procurement electronically ('availability') and at least 50% of public procurement above the EU public procurement threshold shall effectively be carried out electronically ('usage').

Cross-border use of eProcurement has therefore been chosen in the i2010 eGovernment Action Plan[4] as the first high impact service to focus on and the following actions have been planned by the European Commission in partnership with the Member States:

- 2006: Agree with Member States on a roadmap setting measurable objectives and milestones for achieving 100% availability of eProcurement and 50% take-up of eProcurement by 2010.
- 2007: Based on existing or under development Member States solutions, accelerate common specifications of key elements for cross border use of public eProcurement and launch implementation pilots
- 2009: Assess pilot deployments and disseminate results across the EU
- 2010: Review of progress of cross border use of public eProcurement applications in Member States

Interoperability is seen as one of the key enablers for high-impact services. One of the objectives of the i2010 eGovernment Action Plan is to "ensure that eGovernment at national level do not lead to new barriers on the single market due to fragmentation and lack of interoperability".

These efforts are based on the legislative package of public procurement Directives 2004/18/EC[5] and 2004/17/EC[6] which the Council and the European Parliament adopted in April 2004. The Directives provide for the first time a coherent EU framework for the transparent and non-discriminatory use of electronic means in the public procurement process and introduce new innovative purchasing techniques.

The *rationale* for the legal provisions specifically devoted to e-procurement is that each and every economic operator across the EU should be able to participate, with simple and commonly used equipment and basic technical know-how, in a public procurement process which takes place partially or entirely by electronic means.

[3] The Manchester Ministerial declaration is available at:
http://archive.cabinetoffice.gov.uk/egov2005conference/documents/proceedings/pdf/051124declaration.pdf

[4] The i2010 eGovernment Action Plan is available at:
http://ec.europa.eu/transparency/archival_policy/docs/moreq/action_plan_i2010_en.pdf

[5] 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, L 134, 30.4.2004, p.114.

[6] Directive 2004/17/EC of the European Parliament and of the Council of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors, OJ L 134, 30.4.2004, p.1.

Member States were required to implement this new legal framework by 31 January 2006. Its early adoption was judged essential in order to avoid distortion of competition and to encourage the effective uptake of e-procurement. However, whilst e-procurement is firmly rooted in an established legal framework regulating the principles and rules for the awarding process, the challenge is to organise electronically the steps initially designed for paper, and to correctly apply the new, fully electronic procurement procedures and tools. Erroneous or divergent interpretation of the new rules can create new barriers to cross-border trade.

In order to facilitate the transposition and coherent implementation of the legal framework by the Member States, the Commission, in close cooperation with the Member States, adopted an *Action Plan for the implementation of the new legal framework for electronic public procurement* ('eProcurement Action Plan')[7] in December 2004, having concluded that coordinating Community action would strengthen national implementation efforts.

The Action Plan identifies specific problems and suggests possible actions for the Commission and Member States in the years 2005 – 2007 onwards to facilitate the correct and timely implementation of the legal framework. It evolves around three main axes: (1) A well-functioning Internal Market; (2) Increasing competition, efficiency and good governance and (3) Working towards an international framework for e-procurement.

The present document focuses on four themes (namely, *cross border recognition of eSignatures*, *electronic exchange of certificates and attestations –'Virtual Company Dossier'*, *eCatalogues*, *eInvoicing/eOrdering*) themes that are essential for effective cross border use of eProcurement but that may suffer from interoperability concerns. The objective of this document is to provide some guidelines that help clarify the aims, the need and the boundaries of the Common Specifications, with particular emphasis on the interoperability issues; it also provides information and references to existing elements (legal explanatory documents, existing specifications, well-accepted standards and tools) that can be exploited for the implementation of an interoperability layer for cross-border use of eProcurement.

[7] *Action plan for the implementation of the legal framework for electronic public procurement*, Communication from the Commission to the Council and the European Parliament, the European Economic and Social Committee and the Committee of the Regions, COM(2004)841, December 2004; available at: http://ec.europa.eu/internal_market/publicprocurement/docs/eprocurement/actionplan/actionplan_en.pdf

2 The need for Common Specifications

The ambitious objective stated in the i2010 eGovernment Action Plan is to achieve 100% availability and 50% usage of eProcurement for tenders under the European procurement rules by 2010.
In order to reach this objective within the established deadline it is necessary to remove the interoperability barriers that, at the present moment, dramatically affect the cross border use of Public eProcurement. Creating an interoperability layer for the core ePP themes would enable the cross-border provision of and participation in eProcurement procedures.

In particular, the ICT PSP workprogramme states that "*the Pilot will address all the following topics:*

- ***Cross-border recognition of eSignatures for ePProcurement*** *enabling all actors to electronically sign certificates and documents required for public procurement procedures in any participating countries (the lack of interoperability between the different national schemes for electronically signing tender documents are the single most important blocking factor to cross-border eProcurement);*

- ***The virtual company dossier*** *enabling businesses, in particular SMEs, to comply with selection and exclusion criteria across borders, using electronic means in order to avoid the submission of paper documents;*

- ***eCatalogues*** *usable for submitting tenders by electronic means across borders as well as for ordering purposes, considering standards applicable to the European context. eCatalogues could be used in the scope of dynamic purchasing systems;*

- ***eOrdering and eInvoicing*** *for suppressing the use of paper across borders in post-award interactions between buyers and sellers, in full consideration of applicable standards. Electronic ordering could be used in the scope of dynamic purchasing systems."*

These four different themes ("ePP themes" shortly) represent necessary conditions for effectively conducting eProcurement EU-wide but that suffer interoperability problems.
It is expected that the results provided by the Pilot project will enable European Public Authorities to put in place eProcurement systems that are able to smoothly interoperate across the national borders.

Whereas the Member States of the European Union may maintain, wherever available, their existing eProcurement systems or, at least, are free to adopt their own solution, in line with the transposition of the new legal framework for e-procurement into their national law, the objective of the Pilot is to work on an interoperability framework of services operating on top of them, which are necessary to ensure a secure and effective adoption of eProcurement cross-border use.

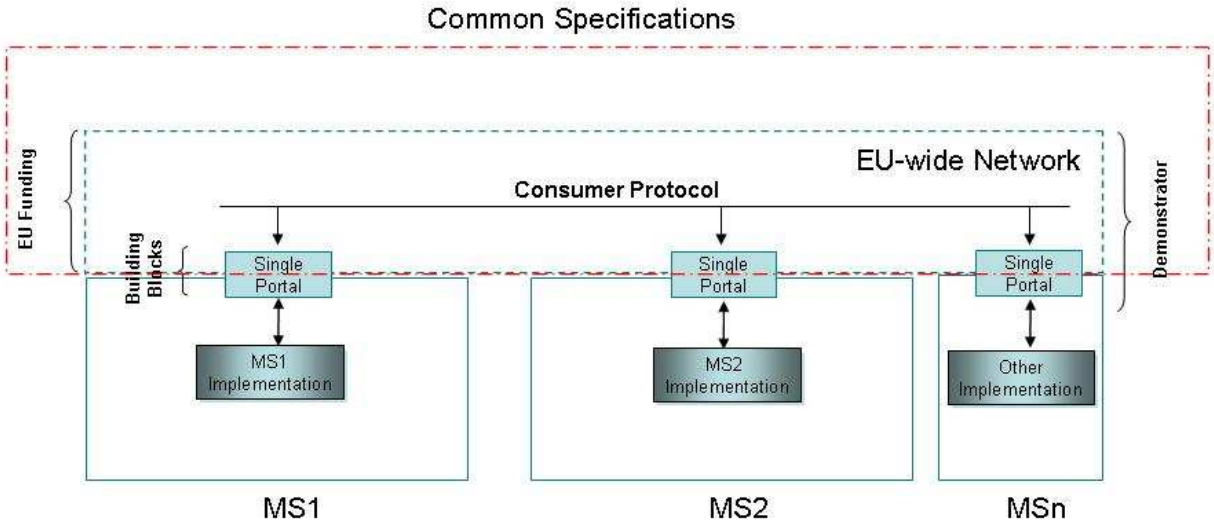
In order to achieve the above mentioned objective, the Pilot is expected to provide specifications that are commonly agreed by all the Member States and that represent a minimal set of requirements for ensuring interoperability between the ePP solutions adopted by the different MSs and for integrating on top of them some software modules (also called *building blocks*) implementing the services related to the eProcurement themes. Simply speaking, a Member State not equipped with an ePP solution integrated with these building blocks, will be excluded by (or

will not be able to fully participate in) a pan European procurement scenario: on one side, the administrations belonging to the Member State will not be able to manage Public Procurement procedures involving economic operators from other European countries. On the other side, stake holders residing in the Member State could not be able to exploit the services necessary to participate to call for tenders issued by foreign administrations.

The figure below depicts a possible scenario for the Pilot implementation. It may be useful to clarify the aim and the boundaries of the Common Specifications, that are expected to define the requirements for:

- the implementation of an *interoperability layer* that is exploited by the building blocks for the four ePP themes, to ensure the cross-border interoperability of the services they provide
- the implementation of the *building blocks* providing a solution for the ePP themes, that, as stated in the ICT-PSP workprogramme, *"should be modular, exchangeable (i.e. one building block can be exchanged without affecting the whole system)"* and *"easily integrated in existing systems of the Member States or associated countries"*

It is expected that the Member State will be able to adopt the Pilot solution with very small modifications to their pre-existing ePP system; however, the implementation of the interface between the ePP system and the building blocks is under the Member State responsibility and must not be covered by the pilot.



Ideally, the Common Specifications should be agreed by *all* the Member States, to ensure the EU-wide acceptance of the solution; but to be realistic, the viable approach that should be followed by the Pilot is to reach consensus among the Member States in the consortium and then demonstrate that the results can be adopted by any other Member State (or associated countries) outside the consortium.

The pilot should take into account that national public procurement regimes may differ from one another, although it is not the objective of the pilot to eliminate such differences.

The importance of establishing Common Specifications for the interoperability layer and for the building blocks is essential for several reasons:

- Increased *participation* of SMEs to cross-border eProcurement: the availability of tools that can be easily and freely adopted (*"Common building blocks must be shared under the EUPL licence (or equivalent)"*) and which provide a solution to remove historical barriers in the participation to cross-border procurement should encourage the participation of SMEs to respond to Call for tenders issued by public authorities in any other Member State;

- Increased *transparency*: common specifications not only represent the common agreement of the MSs and should be fulfilled by all the administrations, but "*should be publicly available with no fees";* for example, clear and commonly agreed specifications on Virtual Dossier would offer a common denominator for systems that will allow to exchange, cross-borders, business documents and attestations in the context of e-procurement procedures.

- To facilitate and make *effective* the exchange of data (through the adoption of eCatalogues and eInvoicing solutions) in a *secure* and *trusted* environment (ensured by eSignature functionalities) with a significant reduction of time usually spent in production and submission of paper documents.

- To allow greater *speed* and *efficiency* of transactions: today's procurement still suffers of significant delays due to limited transparency of the process, and fragmentation of solutions that are not able to seamlessly communicate. Human intervention in still required in several phases of the process: the usage of papers and traditional communication means (phone, fax, physical meetings) that are still broadly adopted are significant time-consuming factors.

- From a technical point of view, it is important to have clear specifications of the building blocks for the Interoperability layer to guide their implementation and in order to have *re-usable, reliable and exchangeable* modules that can be integrated in existing systems.

3 Common Specifications objectives and suggested approach

The objective of this section is to clarify what the Pilot project is expected to produce as Common Specifications and to define some concepts.

Technically speaking, a *specification* is a set of requirements related to a system to be developed that are generally elicited by the supplier (or developer) from the user and that have been mutually agreed.
In the context of the eProcurement Pilot, the specifications are "*common*" in the sense that they "*shall be agreed by the entities responsible for the national eProcurement strategies of all the participating Member States or associated countries*".
Therefore the Pilot project should define mechanisms for:

- defining and agreeing on common specification, possibly also by involving other entities (i.e.: standardisation bodies), States and stakeholders;
- maintaining specifications (periodic revisions will be made over time where needed to consider modifications in the eProcurement scenario occurring at legal and technical levels);
- enlarge consensus and adoption by Member States outside the Consortium;

- making specifications openly and freely available;

It is worthwhile clarifying once more that the Common Specifications expected from the Pilot project *do* not have the objective of providing requirements for the whole ePP, but have to be focused expressively on the interoperability layer and on the four key elements (the ePP themes) enabling interoperable, cross border use of public procurement in Europe.

Interoperability, adopting the European Interoperability Framework EIF[8] definition, is "the ability of Information and Communication Technology (ICT) systems and of the business process they support to exchange data and to enable the sharing of information and knowledge".

Three levels of interoperability have been identified in the European Interoperability Framework proposed by IDABC and should be considered when developing cross-border eGovernment services:

- Organisational interoperability: this level, as stated in the EIF, 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".
- Semantic interoperability: this level, as stated in the EIF, 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"
- Technical interoperability: this level, as stated in the EIF, is concerned *with* "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".

It is envisaged that all the three levels will be carefully considered for the preparation of the Common Specifications, to be sure that the conformity to the produced specifications by the implemented building blocks will automatically ensure their interoperability and their smooth integration in the existing ePP systems.

Thus, in principle, the Common Specifications should not be limited to consider the technical level of interoperability: other aspects could be considered if the hurdles to the EU-wide adoption of an eProcurement building block are identified at a different level (i.e.: the Pilot project could recognize that the main difficulties in the adoption of eSignature solution for the cross-border submission and acceptance of tendering documents are related to different internal structures and processes in the administrations of the Member States)

The Pilot Consortium should carefully analyse the nature of the detected interoperability gaps and through the Common Specification, establish the basis for interoperability at both the business and technical levels for the identified eProcurement services.

The *level of details* of the common specifications may vary from a very high one (e.g.: a desirable functionality for a given module is defined in terms of expected system behaviour) to a very

[8] European Interoperability Framework for PanEuropean eGovernment Services, printed version available at http://europa.eu.int/idabc/en/document/3761

detailed one (e.g.: the specifications set out exactly the standard to be adopted and the technical solution for the implementation of the functionality).

In principle, the common specifications could adopt different levels of detail for the four ePP themes; however, the recommendation is to limit the produced requirements to the minimal set, therefore to specify only those aspects that are essential for the development and putting in place of a working cross-border eProcurement solution. One serious and possible risk related to the over-specification of the interoperability layer and of the building blocks is to conflict with national regulations and legislations. Too detailed specifications could also be more difficult to maintain and this factor has to be carefully considered, as periodical revisions should be planned by the Pilot project, in order to adapt the specifications each time technologies, standards and legislation change.

4 General information on eProcurement

This section contains some generic information on Public eProcurement (not specifically addressing any of the pilot themes) that could help clarify the legal and technical framework within which the Pilot Project will operate.

4.1 LEGAL FRAMEWORK

- Directive 2004/17/EC[9] of the European Parliament and of the Council of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors (30.04.2004)
- Directive 2004/18/EC[10] 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 (30.04.2004)

These Directives provide a coherent framework for conducting procurement electronically in an open, transparent and non-discriminatory way, establish rules for tendering electronically and fix the conditions for modern purchasing techniques based on electronic means of communication.

An Explanatory Document *'Requirements for conducting public procurement using electronic means under the new public procurement Directives 2004/18/EC and 2004/17/EC'* [11] has been issued by DG MARKT to clarify the requirements of the above mentioned Directives and answer questions arising in the implementation process.

4.2 THE EPROCUREMENT ACTION PLAN

In December 2004, the Commission adopted an *Action Plan for the implementation of the new legal framework for electronic public procurement* ('eProcurement Action Plan)[12] in order to support the Member States in the correct implementation of the Directives, so as to release the full potential of electronic public procurement.
The Action Plan aims to encourage the wide adoption of electronic solutions for the whole procurement process by all the Member States, through the identifications of the possible problems and hurdles and through a set of possible actions for the Commission and the Member States, in the 2005-2007 timeframe.

[9] Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32004L0017:EN:NOT
[10] Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32004L0018:EN:NOT
[11] Available at: http://ec.europa.eu/internal_market/publicprocurement/docs/eprocurement/sec2005-959_en.pdf
[12] *A*vailable at: http://ec.europa.eu/internal_market/publicprocurement/docs/eprocurement/actionplan/actionplan_en.pdf

4.3 RELEVANT INTITIATIVES

The IDABC eProcurement preliminary functional requirements

It is worthwhile mentioning a report produced by DG MARKT under the IDABC programme: *Preliminary Functional Requirements for carrying out electronic public procurement under the EU legislative framework*[13]. It analyses and 'translates' legal and procedural requirements for eProcurement under the EU Directives into functional and non-functional requirements for implementing them electronically. It also provides possible technical solutions for their implementation, enriched with good practices.

The IDABC learning demonstrators

In order to provide a concrete application of and learning tool for the above functional requirements DG MARKT and IDABC issued a set of **eProcurement learning demonstrators**[14] , i.e. an interactive software simulating an eProcurement system that would be compliant with the Directives' requirements. The demonstrators are subjected to the European Union Public licence (EUPL)[15].

Both the report and the demonstrators have not been originally conceived for any of the specific ePP themes however they contains basic requirements and recommendations of general interest for the development of interoperable tendering applications compliant with the EU Directives, thus can be of interest for the definition of the Common Specifications, in particular for specifications and implementation of the VCD theme.

Other relevant initiatives

Public administrations in Denmark, Sweden, Norway, Iceland and Finland have formed, with the contribution of the United Kingdom, a cooperation in order to support domestic and cross border electronic trade. The name of the collaboration is **NES** (Northern European Subset) and its aim is to simplify the use of eProcurement for buyers and suppliers, especially among SMEs.

The participating countries have identified the urgent need for an open XML based standard covering the entire procurement process from catalogue to invoice. Such a standard is a prerequisite to reaping the benefits of a full electronic procurement cycle. The open international eProcurement standard **UBL 2.0** from OASIS is seen by NES as the standard that can fulfil this at present. **NES-UBL**[16] is the initiative leaded by the NES countries for the implementation of a subset of UBL2.0 (the first version is already available on the NES-UBL website).

The **CEN/ISSS** committee has just launch (the kick-off meeting was on May 2007) a workshop on "*Interoperability in the Implementation of public eProcurement in Europe*[17]", with the objective of providing the basis for an interoperability framework enabling cross-border electronic transactions.
The starting points for the workshop are the NES and CODICE customisations of UBL2.0, and thus, for the time being, not the whole procurement process is covered but only the post-awarding phases (mainly eOrdering and eInvoicing), whereas the eTendering phase is excluded for the moment.

[13] http://ec.europa.eu/idabc/en/document/4721/5874
[14] IDABC Software simulators for eProcurement are available at http://ec.europa.eu/idabc/en/document/3488/5874
[15] http://ec.europa.eu/idabc/en/document/6523
[16] The official site of the NES-UBL initiative: http://www.nesubl.eu/
[17] Workshop page: http://www.cen.eu/cenorm/businessdomains/businessdomains/isss/activity/ws_eppe.asp

The workshop deals with some technical aspects that should be relevant for the four ePP themes, in particular for eOrdering/eInvoicing and eCatalogue, thus a cooperation with the CIP IST-PSP pilot is envisaged and must be clarified in the future. For the time being, a possibility for a minimal cooperation could be that the CEN workshop will support the CIP IST-PSP pilot in the dissemination of the results.

The **CEN/ISSS** has launched a working group "*Workshop eBES Expert Group on eGovernment*[18]" with the purpose of creating Business Processes Models and Business class diagrams for documenting business scenarios and business transactions for the e-Government, aiming at more efficient public services and broader participation of citizen in democracy. The first scenario that will be analysed is eProcurement and some related aspects.

[18] http://www.cenorm.be/sh/ebes

5 Cross-border recognition of eSignatures

5.1 LEGAL FRAMEWORK

The use of eSignature in the Europe has been regulated by the Directive 1999/93/EC on a Community framework for electronic signatures[19].
This Directive lays down the criteria that form the basis for legal recognition of electronic signatures by focusing on certification services and defines the concepts of advanced electronic signature and qualified certificate.

An explanatory document ("The Legal and market aspects of electronic signature"[20]) describing the legal and practical issues that concern the implementation of the above mentioned Directive has been issued by the Commission. It contains also the result of an analysis of interoperability issues between products and services and the use of commons standards.

In addition, the Commission issued the following **decisions**:

- Commission Decision 2003/511/EC of 14 July 2003 on the publication of reference numbers of generally recognised standards for electronic signature products in accordance with Directive 1999/93/EC of the European Parliament and of the Council[21]**.** This Decision lists the reference numbers of generally recognised standards for electronic signature products.

- Commission Decision 2000/709/EC of 6 November 2000 on the minimum criteria to be taken into account by Member States when designating bodies in accordance with Article 3(4) of Directive 1999/93/EC of the European Parliament and of the Council on a Community framework for electronic signatures[22].This Decision sets out the criteria that Member States must take into account when designating national bodies to evaluate the conformity of secure signature-creation devices.

and an operation **report**:

- Commission report of 15 March 2006 on the operation of Directive 1999/93/EC on a Community framework for electronic signatures[23]**.** The report indicates that all the EU Member States have implemented the general principles of the Directive but points out that the adoption of qualified electronic signatures is not as large as expected, mainly for economic reasons: the service providers have little incentive to develop a multi-application electronic signature and prefer to offer solutions for their own services.

[19] http://ec.europa.eu/information_society/eeurope/i2010/docs/esignatures/esignatures_en.pdf
[20] http://ec.europa.eu/information_society/eeurope/i2010/docs/single_info_space/electronic_sig_report.pdf
[21] http://ec.europa.eu/eur-lex/pri/en/oj/dat/2003/l_175/l_17520030715en00450046.pdf
[22] http://ec.europa.eu/eur-lex/pri/en/oj/dat/2000/l_289/l_28920001116en00420043.pdf
[23]http://ec.europa.eu/information_society/eeurope/i2010/docs/single_info_space/com_electronic_signatures_report_en.pdf

5.2 GUIDING PRINCIPLES

The Pilot project will not address the eSignature theme in general, but shall concentrate on the specific problems of creation, verification and acceptance of electronic signatures on tender documents and on the validation and acceptance of certificates required in the different phases of the procurement cycle.

The Public Procurement Directives mentioned above in section 5.1 do not explicitly define which type of e-signature should be used in public electronic tendering: hereby, each Member State has chosen its own concept of electronic signature, and require one of the levels of security that are compliant with the Directive 1999/93/ EC and the national transposition thereof. But the Member States are also obliged, by the Directives, to accept and process signed tenders (and the associated certificates) received from potentially any EU country. In addition, the tenders could be submitted by a consortium of suppliers and thus they might consist of documents of different origins, signed by different systems and with different certificates.

Therefore, a quick and comprehensive review of national activities related to the acceptance of eSignature applied to Procurement documents and certificates should be the first step towards the preparation of the Common Specifications; this activity should carefully consider the outcomes of the analysis and revision work undertaken by the two expert groups in IDABC and DG INFSO (see section 5.3). The requirements on electronic signatures vary strongly in the EU Member States. The Common Specifications should set out to identify a possible minimal set of requirements (technical/organisational) for the EU-wide acceptance of the eSignature and for the implementation of a fully interoperable solution.

The creation of a signature, per se, is not a technical or economical problem, as Open Source software is freely available to sign documents. The main barriers to the effective adoption of e-signature in cross-border ePP are related to some different factors:

1. the lack of consensus on some critical concepts, such as "advanced signature" and the different levels of trust in the advanced signature for the Member States;
2. The legal hurdles due to different legislations in the different EU countries;
3. The acceptance of electronic solutions for signing documents in the public sector that seems to be, at least in some Member States, much more difficult that in the private one;
4. The limited support from service providers towards the development of interoperable multi-purpose solutions.

As for the first factor, the Pilot project should quickly provide a definition of "advanced signature" that is accepted not only by the Member States of the consortium but that is proved to have a large consensus also in the other EU countries.

Any solution for eSignature in the ePP will not be winning if there will not be a full acceptance by the public administrations in all the EU countries. Thus it is necessary to consider all the factors that might encourage the adoption of eSignature by the EU administrations. However, the private sector must be involved in the definition of the Common Specifications to avoid the creation of barriers to the participation of Economic Operators to the cross-border eProcurement.

The Common Specifications related to the eSignature theme should cover all the three interoperability levels: organisational, semantic and technical. A particular relevance should be put on the first level, to ensure that the business processes that are expected to share signed documents are aligned.

Considering the complexity of the task and the continuously growing interest around the eSignature theme, as a number of related initiatives running at European and national level demonstrate, it is necessary for the Pilot project to continuously monitoring this situation. In particular it is recommended to consider the results of the eSignature specifications that will be developed as part of the Pilot focused on "*Pan-European recognition of Electronic IDs*", in order to avoid contradictions between the specifications. A co-operation with that Pilot should be considered.

The Common Specifications should also clarify:

- ***What*** has to be signed, since at least two different possibilities could be considered: the electronic signature of each single document exchanged among the procurement actors or the electronic signature of an electronic "*envelope*" containing, for example, all the documents and certificates that constitute an offer; this second possibility raises several difficulties:
  - it should be noted that envelopes containing offers to be submitted, including proof documents, are in general not signed: they must be anonymous, and on paper often use several sealed envelopes.
  - it must be distinguished between the signature of the offer (by the tenderer) and signatures applied to the accompanying certificates and attestations (by the authorities and/or private companies that have emitted the certificates/attestations). These two types of signatures cannot be substituted for each other. Moreover, such a combination of signatures of different level and origin may possibly present technical difficulties which should be explored.

- ***How*** the electronic signature should be verified, that is by which tools,

and

- ***When*** the signature associated with the tender documents can/must be verified;

Different models for the building blocks implementation could be adopted; however, the most reasonable one, at the moment, seems to be based on third parties acting as EU-wide validation authorities.

The building blocks for the eSignature theme should provide at least functionalities for:

- Digital key generation
- Signature creation, independently from the specific format of the document
- Automatic authentication of the sender and integrity check of the received e-signed documents.

5.3 FEASIBILITY STUDIES

A study on the **"***Standardisation aspects of e-Signatures***"** has been launched by DG INFSO and the first results, expected by 2007 Q3, will be available on the i2010 web site. The objective of the study is to analyse the use of the standards mentioned in "Commission Decision 2003/511 on generally recognised standards for e-signature products". The finding will help to assess whether the business model underpinning the e-Signature Directive is still relevant given the recent technological developments, and to design new standardisation tasks which will serve in future to establishing trust in e-transactions/e-services.

In 2005, the 'eSignatures expert group' organised under the IDABC programme and led by DG DIGIT launched a "*Preliminary study on mutual recognition of eSignatures for eGovernment applications*"[24] to identify the legal implications and the interoperability requirements for the acceptance of eSignature, in particular in the eProcurement field.
First results are expected by June 2007 and will be available on the IDBAC web site.

5.4 INTEROPERABILITY TECHNICAL SOLUTIONS

The description of the accepted standards for e-Signature is provided by the Commission Decision 2003/511; however the outcomes of the feasibility studies mentioned above should be carefully considered to support the identification of those standards that better fulfil the requirements for a EU-wide adoption in the public e-procurement field.

5.5 RELEVANT INITIATIVES AND RESEARCH PROJECTS

Research projects

The IST project **GUIDE**[25] (Government User identity for Europe, IST-2003-507498) conducted research and technological development with the aim of creating an architecture for *secure and interoperable e-government electronic identity* services and transactions for Europe. Guide has conducted a study about current standards and protocols to test authentication protocols and interoperability.

The **Bridge CA** pilot study[26,] launched under the IDA programme and completed in 2005, addressed the issue of recognition and trust of electronic certificates issued by different Certification Authorities (CAs) and used for exchanging e-mail and signed documents between administrations. It established a list of trusted and recognized national signature certificates. The pilot consortium included 9 Member States.
A follow-up, to establish the legal, operational and technical frameworks for an operational Bridge/Gateway CA, is planned to be launched at the end of 2007.

National Initiatives

The **DNV Validation Authority** initiative[27] (Norway) suggests the use of an independent Validation Authority (VA) that can answer for validity of eSignatures and eIDs regardless of eID issuer. Two Web Services are defined (XML structures to be proposed as standards) for the Signature verification and the certificate validation. Quality and legal status (according to the issuer's national rules) of eIDs are returned, as well as quality of eSignatures (determined by eID quality and cryptographic quality).
The eID managed by the DNV VA services could both identify physical persons and companies (depending on the legal requirements established in the CA home country).

[24] The study page on IDABC site: http://ec.europa.eu/idabc/en/document/6485/5938
[25] Project site: http://istrg.som.surrey.ac.uk/projects/guide/
[26] Bridge CA information on IDABC site: http://ec.europa.eu/idabc/en/document/2318/556
[27] DNV home page: http://va.dnv.com

The VA service will process all kind of certificates and assess them according to a set of parameters[28] . It is up to the user of the VA service - typical a public sector buying organisation - to decide the policy and level of quality to be accepted. Additionally, the caller may populate a set of "respond with" parameters indicating information to be returned from the VA.
The VA is a separate trust anchor and is maintained neutral with respect to the CAs.
The Norwegian Ministry of Government Administration and Reform eProcurement Secretariat has chosen this approach for its eSourcing services being established as part of the eHandel.no portal, in order to enable recognition of eSignatures from suppliers in the entire EU area. The complexity is handled by the VA, providing the eSourcing services with a uniform interface.

Since June 2000, in **Italy** certificate providers issuing qualified certificates have to comply with technical interoperability rules. Basically, these rules define a trust status model, usable formats for the envelope containing subscribed documents and a set of mandated fields in qualified certificates.
A **national official trust status list**, maintained and published by CNIPA (the Italian Agency for the ICT adoption in the Public Administrations), contains certificates of all voluntarily accredited certificate providers[29].
The result is fully interoperable recognition and verification of electronic documents subscribed with advanced electronic signatures based on qualified certificates, as defined in the 1999/93/EC Directive on electronic signatures. In particular, advanced eSignature interoperability is being proven on the field by current eProcurement systems operated by CONSIP[30], the main purchasing body for Italian public administrations.

France is strongly promoting the adoption of electronic transmission of documents, and consequently the adoption of eSignature.
In 2003, France has issued the eSignature framework policy (**PRIS**), aimed at providing a clear framework for the use of electronic signatures for eGovernment services. The French government has set up a specific regulation to ensure the compatibility of the certificates of electronic signature with French buyer profiles. The current legislation establishes the rules for e-signature applied to e-procurement in France, and the list of referenced certificate providers (or categories) is maintained by the French Ministry for Economy [31].
An economic operator may freely choose any of the certificate providers included in the list for signing tendering documents and the administrations must be able to accept all the listed certificates. The legislation allows certificate providers from other Member states to be referenced in exactly the same way as French certificate providers.
By 1st January 2010 the authorities will be authorised to require the electronic transmission of the tenders, electronically signed, in conformity with the regulation of the Public Procurement.
A preparatory action has been launched by the government[32], under a derogatory regime set by a by-law, a secondary legislation[33], aiming at making mandatory for the economic operator the electronic transmission of the signed tenders.

[28] See at: http://www.dnv.com/ict/va/thednvsolution/va_quality_parameters/index.asp
[29] List of certificate providers available at http://www.cnipa.gov.it/site/it-IT/Attivit%c3%a0/Certificatori_accreditati/Elenco_certificatori_di_firma_digitale/.
[30] CONSIP S.p.A. is a public stock company owned by Italy's Ministry of the Economy and Finance (MEF) that operates on behalf of the State, with the aim of promoting technological change within the Public Administration. Official site: http://www.consip.it
[31] The list is available at http://www.entreprises.minefi.gouv.fr/certificats/ .
[32] See : http://www.minefi.gouv.fr/themes/marches_publics/directions_services-daj-marches_publics-note_couverture.php
[33] http://www.legifrance.gouv.fr/WAspad/UnTexteDeJorf?numjo=ECOM0720001A

An official communication[34] addressing the adoption of the public eProcurement, has been issued; it provides explanations on: what is an electronic certificate, how an economic operator may obtain it, and how it could be used.

In addition, a simplification of the verification system is foreseen. For the time being, the verification of the certificate is performed before the opening of the signed tender and it is focused on certificate acceptance. This operation can be performed during the awarding procedure, whenever the technical environment allows it.

In the future, if the verification of the certificate validity without the disclosure of other elements in the tender would be technically achievable, this procedure will be encouraged. The validity of the certificate for the electronic signature has not to be considered an element of the tender, but just a condition for its formal validity.

Recently, the **German** procurement regulations[35] have been modified to allow the use of advanced eSignature. To avoid the proliferation of a plethora of different advanced signatures, with different levels of trust, the private companies commercialising ePP solutions in Germany have agreed on basing their solutions on the same advanced eSignature and level of trust, that have been formalised in the specifications issued by the procurement agency of the federal Ministry of Interior[36].
For the time being, only the qualified signature is accepted for Public Procurement but it is expected to move towards the adoption of advanced eSignature and use of electronic service cards, by the end of 2007.

The Federal Government in **Austria** has made available[37] free of charge a number of **Online Application Modules** (**MOA**) for different recurring process steps like identification, electronic **signature** with card (available for both citizens and administrations),electronic payment and electronic delivery that are freely available. This allows the public authorities to add value to their legacy application, without the need to replace them at once. These modules are based on open standards and communicate with the application via defined interfaces and could, in principle, also be used by other Member States.

The eSignature related services are provided through three MOAs:

- MOA-SS creates electronic signatures in the well-known XML-signature format;
- MOA-SP verifies electronic signatures in CMS-format (PKCS#7) and XML-format.
- MOA-ID supports the identification of a user in online applications by using the capability of the so called Austrian Citizen Card (ACC). This includes the use of electronic signatures. MOA-ID supports the application in the identification process by providing a proxy-service and supporting the SAML (Security Assertion Mark-up Language) methodology

[34] http://www.telecom.gouv.fr/rubriques-menu/entreprises-economie-numerique/dematerialisation-marches-publics/cliquer-est-acheter-652.html
[35] Available at: http://www.bmwi.de/BMWi/Navigation/Wirtschaft/Wirtschaftspolitik/Oeffentliche-Auftraege/vergaberecht-vorschriften.html
[36] http://www.bescha.bund.de/files/c23ea717e5921e31fee9f2a653e4cf4f/738/Signaturgutachen.pdf
[37] Available from the government portal: http://help.gv.at

6 Virtual Company Dossier (VCD)

The European tendering procedures require that companies participating in Public procurement submit certificates and attestations to prove that they comply with the selection and exclusion criteria.

Some examples of exclusion criteria are:

- payment of social security contributions
- payment of taxes
- bankruptcy
- professional misconduct
- failure to comply with contractual obligations
- fraud and corruption
- involvement in criminal organisations or illegal activities

Some examples of selection criteria are:

- Turnover during the last N years
- Audited annual accounts during the last N years
- References of previous projects
- Curriculum vitae of the professionals involved in the tender
- ISO 9000 certificates

The benefits that could derive from the implementation of a successful solution for the electronic exchange of such certificates and attestations are significant and should result in a reduction of costs and time for both economic operators and public administrations. All certificates would be accessible in an electronic format and interoperable. The automation of the purchase routine from the side of the purchaser would also greatly increase and the procedures would be streamlined and accelerated.

In order to define the contents of the Virtual dossier, several sources have to be considered:

- the Directives, that provide a minimal set of common elements
- the currently accepted proof documents in the Member States
- the documents having an equivalent electronic version
- the compatibility among Member States: certificates not having an equivalent in each Member State should not be considered, at least in the first phase of the Project; but then an alternative use must be found for these cases.

6.1 LEGAL FRAMEWORK

The Directives 2004/18/EC, articles 45-50, and 2004/17/EC provide a list of possible certificates or documents to be provided from the Economic Operators to participate to Procurement above the thresholds.

DG MARKT published on its website a list of existing certificates[38] currently required by Member States.

[38] http://ec.europa.eu/internal_market/publicprocurement/2004_18/index_en.htm

The following developments in the field of **criminal justice**:

- Council Decision 2005/876/JHA[39] of 21 November 2005 on the exchange of information extracted from the criminal record

and

- Proposal for a Council framework Decision on the organization and content of the exchange of information extracted from criminal records between Member States of 22.12.2005 COM(2005) 690 final[40],

concerning the developments on criminal justice, should be closely monitored because:

- extracts of the judicial records are typically required as means of proof for the participation in the procurement procedures;
- requirements regarding data protection are particularly strong concerning the sensitive information they convey;
- the way their electronic exchange between judicial authorities is organised should be taken as a starting point in order to organise their exchange also between other actors in order to avoid duplication of efforts and multiplication of solutions that could create interoperability problems.

6.2 GUIDING PRINCIPLES

There are some elements that characterise certificates and attestations which are important to underline in the perspective of cross border public procurement, and thus have to be taken into account by the Pilot project:

- Variety: A large variety of certificates and documents are required in order to be able to participate in procurement procedures across the EU;

- Temporal validity: certificates and attestations have a limited validity in time or should refer to a given time period;

- Language: certificates and attestations are provided in one language that in most of the cases cannot be understood by the administration that launched the procurement procedure; furthermore, translations must provide guaranties of authenticity;

- Interoperability: strong interoperability hurdles are related to the format of the documents and certificates and to the signatures required

- Privacy and security: The electronic exchange of certificates naturally causes issues related to protection of personal data, recognition of signatures and security of submitted data.

However, there is one positive aspect: even though there is a huge variety in the types of certificates/documents required by the administrations of the Member States for the participation to public procurement, the information that is required is, in most of the case, the

[39] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32005D0876:EN:NOT
[40] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52005PC0690:EN:NOT

same. This is because the Directives strongly condition the information that can be required or not by the purchasing authorities

Thus the adoption of directories containing just YES/NO information instead of whole certificates could be a possible solution to the problems of variety of formats and translations of the certificates.

The approach suggested for the Pilot project is based on several steps:

1. make a quick revision of the National legislation and initiatives based on the available data
2. define a framework to identify the needs related to:
    a. subsidiarity: the VCD implementation should be flexible enough so that each Member State is free to perform choices on the required documents and on the criteria for exclusion or selection to be adopted.
    b. Homogeneity of the solution that has to be adopted all over the EU countries
    c. Avoidance of extra burden (for example, the translation of complete documents in various European languages is extremely onerous and in most of the cases not necessary)
3. define the virtual dossier by levels and start from the simplest certificates

In principle, the models that could be adopted by the Pilot are various:

- A **centralised** approach: the virtual dossier is managed by single central entity/body at European level that provides access to the electronic documents: this model could be the most efficient one but, at the same time, the least realistic as its acceptance by all the Member States is very difficult:
- A **distributed** approach: based on a network of national portals, providing access to national directories and exchanging information between themselves. The drawback could be a lack of efficiency that could be solved by adding an extra EU portal. This approach has the inconvenience of potentially not being efficient for cross border procurement, as experience with lists of registered suppliers in some Member States has shown.
- A **one-to-one** approach in which the electronic certificates are delivered to economic operators that will subsequently transmit them to purchasing authorities in the same or different Member States.

For the time being, the approach suggested for the Pilot is the distributed one, with the additional suggestions to carefully consider the implications related to:

- Controlled access to the sensitive data in the VCD: one possible solution could be that the Economic Operator itself provides the purchasing authority with the authorisation (the simplest way could be to provide just a link to its VCD) to access its company information;
- Univocal identification of a company: it has to be considered whether an harmonised identifier has to be necessarily adopted (in such a case, the VAT number could be adopted) or not (in this case, each national portal could provide access to the dossier of companies that are identified through identifiers with a national validity);
- Responsibility for creating and updating the VCD;
- The nature and format of the stored information: a possibility could be to retrieve from the certificates and document only the minimal pieces of information required by the purchasing authorities and store them into Yes/No directories, with significant

savings in time for both the organisations responsible for the maintenance of the VCD and the purchasing authorities, that can avoid to read whole documents;

- Harmonised human interfaces to the portals in the network: it has to be avoided that a user is puzzled by a number of different interfaces when trying to perform the same activities through the portals in different EU countries;

The minimal set of functionalities to be provided by the portals (and thus implemented by the building blocks for the VCD solution) should include (without any prioritisation):

- Search for a company (by e-ID or other);
- Access restriction to a VCD (implemented by the company itself);
- Storing of official vital documents or transparent access to the Yes/no directories;
- Storing of additional documents (or piece of information) performed by the company;
- Conversion of key vital document into yes/no format;
- Extraction of key vital figures from document (i.e.: annul turnover)
- Download and submission of VCD;

6.3 FEASIBILITY STUDIES

The IDABC work programme promotes activities or the standardisation of electronic business attestations, including those frequently required in public procurement, as well as mutual recognition of foreign certificates and their translations.
A "*Study on electronic business attestations*"**,** lead by **DG MARKT**, has been launched in February 2007. Its objective is to identify, analyse and compare organisational models for the electronic supply of certifications and attestations in public procurement procedures (including both legal and technical aspects); the proposed models shall ensure in particular that certificates and attestations issued in a Member State are easily accepted in another one. The findings of the study shall provide the Commission with a thorough, comprehensive and operational analysis, including both legal and technical requirements, enabling it to take appropriate action targeting the complete automation of the provision of the certificates and attestations required as evidence in public procurement procedures.

6.4 INTEROPERABILITY TECHNICAL SOLUTIONS

VIES[41] (VAT Information Exchange System) is a means of transmitting information relating to tax exempt intra-Community supplies between Member States' administrations. It is based on the idea of linking together al the EU national databases. VIES enables:

- companies to obtain rapidly confirmation of the VAT numbers of their trading partners
- VAT administrations to monitor and control the flow of intra-Community trade to detect all kinds of irregularities

Under the transitional VAT system, all intra-community supplies between "taxable persons" (i.e. producers, traders and persons supplying services, including mining and agricultural activities and persons carrying out professional activities) are exempted from VAT at the point of origin, the tax being declared at destination by the receiving taxable person. The data transmitted is the value of

[41]VIES system available at: http://europa.eu.int/vies

the total intra-Community supplies made to each taxable person in each Member State. This database was created in 1992 to prevent fraud by enabling Member States to ensure the proper taxation of supplies of goods and services to their resident taxable persons. Through this system, companies and public authorities can verify the validity of the VAT numbers provided by the suppliers.

6.5 RELEVANT INITIATIVES AND RESEARCH PROJECTS

Some existing activities are highly related to the creation of virtual dossier.

The **BRITE** - Business Register Interoperability Throughout Europe[42] research project aims to develop, implement and demonstrate an interoperability model, ICT service platform and management instrument for Business Registers to interact across the EU. BRITE addresses cross-border Business Register interoperability at all levels: abstract, organisational, technical, legal, strategic and managerial.

The Virtual Company Dossier is one of the scenarios addressed by the CEN/ISSS workhop "**eBES Expert Group on eGovernment**" (see section 4.3)

In **Italy**, the www.impresa.gov.it portal, officially presented in March 2005, provides companies and other economic subjects with a unified access point to fundamental data held by the chambers of commerce and social security and tax agencies. Identification is provided by "Carta Nazionale dei Servizi (CNS)" and other eID cards, which may contain digital signatures thus enabling sending relevant documents which are fully equivalent to signed paper documents. As eID cards are easily available for the interested parties, access to the www.impresa.gov.it portal is widespread.
Among the certifications that may be obtained are those related to basic company profiles, payment of social contributions and status of workers' insurance.

7 e-Catalogue

Electronic catalogues are electronic documents established by the suppliers which describe products and prices ('electronic prospectus'). They may, under certain conditions, constitute a tender; these are either transmitted or uploaded to the contracting authority's website or made available in the suppliers' websites.

7.1 LEGAL FRAMEWORK

Public eProcurement Directive 2004/17/EC and Directive 2004/18/EC regulate the electronic submission of offers under the different procurement procedures, for which they authorise the use of electronic catalogues.

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

[42] http://www.briteproject.net/

In particular the stage of re-opening of competition in a repetitive procurement procedure allows for the use of e-catalogues. In theory, e-catalogues can also be used to present the tender in a one-off procedure or the initial tender in a repetitive procedure. However, it is precisely when the supplier and products have already been admitted that e-catalogues may easily be used to update the indicative tender for a Dynamic Purchasing System (DPS) or to submit a new tender.

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

7.2 GUIDING PRINCIPLES

In principle, e-catalogues may be used in all the various phases of the eProcurement cycle: from sourcing to payment and invoicing. In practice, e-catalogues are at present mainly used for ordering and payment purposes, not for the submission of initial offers. Based on on-going work by DG MARKT, the Pilot project should analyse the specific requirements and subsets of data that are relevant in each procurement phase, and seek to progress on their interoperability.

The adoption of commonly agreed standards for the definition of catalogue exchange messages does not seem to be a major barrier (XML-based standards are widely accepted also in the public sector and NES-UBL provides a unified format for the content of the eCatalogues). However much needs to be done on the definition and standardisation of catalogue contents that would be suitable to be submitted as offers, and standardised rules for the presentation of these contents. Current implementations which focus mainly on the use of eCatalogues in the post-award phases (e-ordering, e-invoicing) overlook the high potential of e-catalogues for the management of the whole procurement cycle.
Another relevant challenge related to the implementation of eCatalogues that should be addressed by the Pilot project is the provision of high-quality catalogues, where additional information (not merely technical description of a product) can be used to easily compare offers and support their automatic evaluation.
However, considering that the basic requirements for the adoption of eCatalogues in the eProcurement life-cycle are still to be formalised, for the sake of the Pilot project it is suggested to start with the simplest configuration and leave aside, at least for the first phases, the issues related to the creation and management of high-quality catalogues.

In addition, the Pilot solution for interoperable eCatalogues should provide functionalities for:

- Automatic mapping and conversion mechanisms between catalogues;
- Automatic translations of the catalogue contents

7.3 FEASIBILITY STUDIES

In 2006 **DG MARKT** launched a *"Study on e-catalogues to be used as offers"* whose first results are expected by the 2nd quarter of 2007.

The objective of the study is to identify general and specific functional requirements, derived from the public procurement legal framework, to specify the conditions under which eCatalogues may constitute a valid offer in an e-procurement procedure whilst preserving interoperability with eCatalogue applications in general use. It will review all relevant aspects of how eCatalogues can be used in the tendering process as well as specific requirements relating to their electronic submission and receipt in public procurement and investigate the relevant data exchanges between buyers and suppliers (e.g. type and content of messages exchanged). This includes applications like "Remote Catalogue Access" through which buyers can access suppliers' catalogue content through their own procurement applications, and retrieve the offer from the supplier's site (e.g. *'punch-out'*).
The results of the study will be presented in the form of three reports:

- State of play report: discusses different eCatalogue concepts and examines Member States' current practice, i.e. presenting some advanced eCatalogue projects (Hungary, Italy, Latvia, Norway, Sweden, the UK and Spain). It analyses common features, needs, difficulties and implementation gaps.
- Standardisation report: reviews on-going standardisation activities for eCatalogues and product classifications; identifies, through a high level gap analysis, trends, synergies and gaps and proposes actions to remedy these. It clarifies who are the main standardisation actors and requirements for participating in their activities.
- Functional requirements report: presents preliminary functional requirements (legal/technical/ organisational) for e-catalogues to form initial offers in a public procurement procedure. These requirements are analysed against existing standardisation activities to determine further standardisation needs. It provides recommendations on how to implement e-catalogues and specifies 'open issues' for further analysis. Both the requirements and the recommendations are drafted in a way suitable for providing input into the appropriate standardisation bodies (OASIS, CEN/ISSS and UN/CEFACT).

7.4 INTEROPERABILITY TECHNICAL SOLUTIONS

Standards
Ideally, commonly accepted standards for the description of catalogue processes and messages should make very easy and efficient the exchange of the catalogue information between buyer and supplier. In practice, as the current situation demonstrates, each industry specific sector is developing its own format for the product description, and this proliferation of schemes, obviously, represents a serious obstacle to interoperability and thus to an effective adoption of eCatalogues.

Currently, two initiatives are addressing the development of standards for the use of eCatalogues in the post-awarding phases of eProcurement: **UBL 2.0**[43] (developed by OASIS) and **c-Catalogue** (initially developed by CEN/ISSS and currently under further development by UN/CEFACT, see section 7.5).
A gap analysis and convergence of the two standards is currently underway. Harmonisation is expected to provide interoperable, simple, transparent, and effective processes for the close collaboration between the public and private sectors. However, the harmonisation period will be quite long (at least two to three years).

[43] Universal Business Language 2.0 Public Review Draft, http://www.oasis-open.org/committees/download.php/19260/2-prd2-cd.zip

Other classification systems

The use of the **Common Procurement Vocabulary** (CPV) [44] to describe the goods or services to be purchased is mandatory for the Public Procurement, as established by the Directives. CPV is a list of approximately 8,000 products and services associated with a numeric code and translated into the 20 EU languages. Its exploitation by electronic tools could provide the authorities with additional services, e.g.: compilation of statistics, more efficient analysis and comparison of the tenders.

A study and public consultation has been conducted by DG MARKT with the objective of reviewing and improving the CPV and to make it more suitable for use in e-procurement. In particular, the objectives were to identify with the contributions of the interested parties:

- codes to be deleted
- codes to be revised and/or added
- improvement of additional vocabulary

with the contributions of the interested parties.

The study was completed on 4Q/2005. The outcomes and received contributions are currently under review by Member States; a new CPV regulation is expected to be issued at the end of 2007.

In addition to the mandatory CPV-codes, the use of other codes, that are already adopted in the private sector, such as the **UNSPSC**[45] (The United Nations Standard Products and Services Code®), owned by GS1 US[46,] which provides an open, global multi-sector standard for classification of products and services, should be considered for more detailed product group specification and/or even more detailed nomenclatures.

Other classifications have been derived by UNSPSC and are used at regional (EU-wide) or national level in the private sector.

The GPC (Global Product Classification), a hierarchical structured product classification scheme for the consistent categorisation and identification of products and their consistent mapping between existing internal classifications, is actually in use also in the public sector (see the Hungarian case in section 7.5). GPC is part of the GS1 System, a series of standards, owned by GS1, designed to improve supply chain management.

The GS1 is also providing services (such as the GDSN network) for conversion possibilities between classifications beside the GPC/ UNSPSC.

7.5 RELEVANT INITIATIVES AND RESEARCH PROJECTS

The **NES-UBL** initiative (see section 4.3) is relevant also for the eCatalogue theme, as the NES subset contains guidelines for documents and business processes involved in the catalogue exchange.

CEN/ISSS Initiatives

The **c-Catalogue** (core components for catalogues) standard has been developed in the framework of the CEN/ISSS eBES workshop, by the **EEG1 (European Expert Group 1) Supply Chain Group** which is considered the most important group of the WS/eBES in the area of electronic

[44] The current CPV codes are available at: http://www.simap.eu.int

[45] http://www.unspsc.org/

[46] http://www.gs1us.org/

procurement and electronic catalogues.
The **c-Catalogue Project Team** was set up within EEG1 on January 2005, with the objective of standardising the messages required for the management of electronic catalogues. Its objective is the identification of basic core components (CCs) and business processes for the development of a cross-industry catalogue specifications based on known business requirements from trade, industry and public administration.
The c-Catalogue PT has issued the Business Requirements Specification (BRS)[47] for Cross-Industry catalogue that defines catalogue processes in the area of eProcurement.

The Workshop on *Multilingual e-Cataloguing and e-Classification in eBusiness (WS/eCAT)*[48] was launched in 2002 by CEN/ISSS, in order to provide a methodology for the establishment and maintenance of multilingual eCatalogues. Within the framework of WS/eCAT, two projects were introduced: the *e-Cataloguing* and the *electronic Product Description and Classification* (ePDC) projects.
The *e-Cataloguing project* focused on the use of eCatalogues in a multilingual environment. It completed its activities in 2004, and provided the CWA 15045 "Multilingual catalogue strategies for eCommerce and eBusiness"[48], which was published in July 2004. CWA 15045 provides an overview of eCatalogue standardisation (i.e. format, classification) and provides a roadmap for the selection and implementation of eCatalogues.
The *electronic Product Description and Classification (ePDC) project* was launched in 2004 for the development of interoperable and multilingual electronic standards for product classification and their application to electronic catalogue systems. The ePDC is divided into two parts:
- "Global Multilingual Product Description & Classification for eCommerce & eBusiness" (ePDC-1)
- "Generic electronic Product Description & Classification" (ePDC-2)

The **CEN/ISSS** workshop on **"***Interoperability in the Implementation of public eProcurement in Europe***"** (see section 4.3), which has the NES customisation of UBL2.0 as a starting point, should provide outcomes relevant for the use of eCatalogues in the ePP.

National Initiatives

In UK**,** the **Office of Government Commerce** (**OGC)** has responsibilities for public procurement policy and for the support to the public sector in the implementation of ePP systems.
In 2006 the **OGC Buying Solution**[49], an Executive Agency of the OGC that provides eProcurement services for the public authorities, has created the Zanzibar e-marketplace available to the whole of the UK public sector; this system has implemented 14 UBL2.0 documents.
OGC Buying Solutions is representing UK in the Northern European UBL 2.0 Subset Working Group (NES) and OCG will adopt the NES specifications when they become available.
OGC Buying Solutions has also undertaken the S-Cat (IT services), and G-Cat (IT products) initiatives related to eCatalogues. G-Cat and S-Cat are catalogue based eProcurement systems to provide public sector organisations with a simplified electronic means of procuring and contracting for a wide range of IT related consultancy and specialist services from a range of service providers. Both systems are used by public institutions (buyer-side), such as Government departments,

[47] Business Requirements Specification (BRS) for Cross-Industry c-Catalogue process, http://www.cenorm.be/cenorm/businessdomains/businessdomains/isss/activity/brscrossindustrycatalogue20060512.pdf
[48] CEN Workshop Agreements (CWAs) of the projects are available at: http://www.cen.eu/cenorm/businessdomains/businessdomains/isss/activity/wsecat.asp
[49] http://online.ogcbuyingsolutions.gov.uk/news/

Agencies, Local Authorities, Educational establishments, Police Forces, NHS bodies, public and privatised Utilities. S-Cat is a web catalogue giving access to more than 170 service providers. G-Cat provides also functionalities for online ordering and online payment.

The **CODICE** (Interoperable Components and Documents for Electronic Procurement) project[50] , started in May 2006, is a Spanish national initiative, managed by the Ministry of Economy (Ministerio de Economía y Hacienda) focused on the identification and design of the documents used in the Public eProcurement and within these, of the components that make them up. The documents relating to eProcurement in reality constitute "messages" to be shared and exchanged between the different eProcurement system actors. The main outcome of the project is the identification of a set of core components (CCs), identified starting from the analysis of the CCs produced in UBL2.0 and c-Cat UN/CEFACT standardisation works, then adapted to meet the requirements imposed by the European and Spanish legislations. The messages are described by a set of XSD files.

The Norwegian electronic public procurement **eHandel.no** project[51] is an important channel for distribution of the content of framework agreements to the individual buyers in the different public sector entities through the use of eCatalogues. It also provides a catalogue toolkit that gives guidance to suppliers on how to establish a high quality eCatalogue.
The eHandel.no project had an initial focus on use of eCatalogues for post award processes, i.e. to support electronic ordering. Through a recent project, the eHandel.no service offering is expanded so that it also includes eSourcing services where use of eCatalogues as an offer is one of the possibilities.
Within the fields of the Programme for Electronic Commerce in the Norwegian public sector (Ehandelsprogrammet), a document entitled "Platform independent model, Product catalogue establishment and maintenance"[52] was produced. This document describes semantically the business processes that Ehandelsprogrammet followed for the establishment and maintenance of catalogues on the Marketplace eHandel.no.

The Italian **MePA**[53] is an electronic marketplace operating since 2004, where habilitated suppliers submit their offers by publishing them on electronic XML-based catalogues, which contains enough information to allow easy comparison and automatic evaluation of offers and to issue purchasing orders. The eCatalogues are based on the CPV nomenclature as a hidden code, but describe the products to the users through an 'everyday language' (e.g. the description for 'bulb' says 'Electric filament lamps', which might facilitate the users in finding the desired item). It contains at present more than 250,000 items and has been widely tested by thousands of users and by more than 1,200 suppliers. In 2006, more than 11,000 transactions took place for a total volume of € 38 millions.
MePA was conceived for public administrations (the Italian acronym stands for 'Electronic Marketplace for Public Administrations'), and is totally developed and managed by CONSIP.

A variety of product classification schemes is used in **Denmark**; however, the UNSPSC is the most widely adopted standard for the classification of catalogue products and services. An official translation of the UNSPSC standard codes in Danish has also been implemented.

[50] http://documentacion.meh.es/doc/C11/C14/CÓDICE/AnalisisDeProcedimientosDeContratacion.pdf
[51] Web site: http://www.ehandel.no/index_en.php
[52] eHandel "Platform independent model, Product catalogue establishment and maintenance", available at: http://www.ehandel.no/data/file/file_213.pdf
[53] MePA is accessible from the http://www.acquistinretepa.it/ portal, run by CONSIP

The most relevant initiative supporting public eProcurement in Denmark is OIOXML (see also section 8.5). An extension of these specifications is expected at the beginning of 2007. It will be based on UBL 2.0 and will cover all the documents involved in the post awarding phase of the procurement process (i.e. **catalogue**, order, order confirmation, invoice, reminder, etc).

The government of the **Hungarian Republic** has established the current legal framework of centralised public procurement in 2003, authorising eProcurement and the use of eCatalogues, whereas the European Directives were implemented in 2005. Centralised public procurement is performed by the Central Services Directorate, acting as a central purchasing body, which serves about 1800 public sector entities.
To computerise and electronically manage procurement, an ICT system[54] has been put in place, which utilises eCatalogues. The system offers the ability to its users to upload and browse eCatalogues and to prepare and place orders based on eCatalogues. Electronic catalogues, used primarily in Framework Agreements, are available for all procurement officers of all registered Contracting Authorities for placing orders; they are received from suppliers which have framework agreements with the Directorate, and are available for all registered procurement officers to see and place orders upon. The system offers support to a semi-automatic eCatalogue verification: electronic tools verify the correct format of eCatalogues, and perform checks on data types, product classification, etc. Then, manual work is required for verifying the quality of content, including appropriate descriptions, classification, etc.
.The Global Product Classification (**GPC)**, used in Hungary, offers the possibility to classify products based on their "hard attributes" (i.e. static attributes of products). Then, suppliers can create eCatalogues by referencing products in GPC, also defining "soft attributes", such as price, location, etc.

Sweden is operating under a de-centralised model for eProcurement. This model provides full autonomy to local authorities and municipalities which, therefore, can handle their own procurement activities independently.
In order to develop a shared view on the public procurement processes and agree on common specifications, some Swedish local, regional and national authorities had launched the **SFTI** (Single Face To Industry) project[55], under the leadership of the Swedish Association of Local Authorities, with the purpose to establish a single set of specifications for the interchange of electronic commercial transactions with all public operators, whether at governmental, regional (county council) or local community level. The provided specifications allow suppliers to exchange business documents (i.e. orders, invoices) based on the same standard regardless of whether they are trading with one or more municipalities, county councils or other undertakings. To achieve this, a platform of co-operation has been organised where representatives for all three levels meet with representatives for the suppliers. The SFTI initiative represents Sweden in the NES-UBL.

There exist no specific requirements for eCatalogues in the legal implementation of the EU Directives, which will be put in force by 2008; due to the fact that many agencies in Sweden use the UNSPSC product classification scheme, through cooperation between public and private stakeholders, there is now a Swedish translation of the UNSPSC scheme, in line with the translations made in other Nordic countries.

[54] Accessible on line at: http://kszfweb.econet.hu/portal/ where registered user may access a training session
[55] SFTI project description available at: http://www.eh.svekom.se/

Electronic catalogues based on EDI-messages have been used by municipalities for a long time; in alternative, some public bodies are moving towards the adoption of market places and the government is considering to establish market places with services available for public authorities: **eMarket Service**[56], is an initiative taken by the Swedish Trade Council, to simplify the use of electronic marketplaces for international public eProcurement. This service resulted from a cooperation between Trade Councils in many European countries, for example Denmark, Italy, Spain, Portugal and Norway.
The NES specifications for catalogue format could eventually be used in such solutions, even if, for the time being there is no official decision or plan from the Government.

In 2002 **Latvia** adopted the eGovernment Conception, aimed at modernising state administration through the use of ICT. It complements the Latvian State Public Government Reform Strategy 2001-2006, set to introduce optimised/modernised rules and processes for state administration. In line with these legal provisions, the eGovernment Development Program 2005-2009 was initiated, for improving state and municipal information technology infrastructure and collaboration between public sector entities. The new Electronic Procurement State Agency is set to provide a single portal for all public sector procurements and for monitoring procedures.
The EU Directives were implemented by national legislation: Directive 2004/18/EC entered into force in 2006, and Directive 2004/17/EC in 2005. Similar to the EU Directives, the legislation includes references to eCatalogues but no specific requirements for their use. In 2007 a new Regulation is expected which will provide an interpretation of eCatalogues and rules for their use.
The Latvian eProcurement system[57], available from 2006, is primarily used for contracts below the EU threshold and for framework agreements. CPV is mandatory for contract publication but it is considered too wide for eCatalogues: for the time being, the Latvian system does not support any standard: the eCatalogues are formatted in XML, based on Oracle xCBL.

8 e-Ordering and e-Invoicing

The **eOrdering** theme should deal with the electronic transmissions of documents during the eProcurement phase that starts with the issuing of orders by the buyer and ends with the receipt of an order response and the transmission of the delivery instructions of the ordered goods or services from the supplier.

The process of **eInvoicing** deals with the claim for payment for the goods and services that have been either ordered or delivered, received or consumed under the conditions agreed by the supplier and the buyer.

Electronic invoicing is the transmission and storage of invoices, without the delivery of paper documents, by electronic means. Electronic equipment is used for the processing (including digital compression) and storage of data. The electronic invoices must contain the same information as paper invoices.

The expected Pilot solution for the eOrdering/eInvoicing theme should provide an environment enabling the cross-border exchange of electronic documents in the post-awarding phase of public procurement, eliminating the need for paper versions.

[56] Further information is available on http://www.emarketservices.com.

[57] The Latvian eProcurement system is available at: http://www.eiepirkumi.gov.lv

The solution must take into account current European and National legislations ruling this field.

8.1 LEGAL FRAMEWORK

The electronic submission of invoices is originally ruled by the Council Directive 2001/115/EC[58] (Invoicing Directive) of 20 December 2001 that amends Directive 77/388/EEC with a view to simplifying, modernising and harmonising the conditions laid down for invoicing in respect of value added tax.
This Directive is a solid foundation for guaranteeing integrity and authenticity of an e-Invoice.

The Invoicing Directive, as from 1 January 2007, was incorporated into the VAT Directive (2006/112/EC) [59]. Article 237 of the said Directive requires that "The Commission shall present, at the latest on 31 December 2008, a report and, if appropriate, a proposal amending the conditions applicable to electronic invoicing in order to take account of future technological developments in that field."

But e-Invoicing is at the crossroads of several other areas of legislation, mainly Accounting, Payment, Authentication and Data retention.
This obviously adds complexity to the implementation of the Pilot solution that should consider also the following elements for clarifying the current legislative environment:

- Directive 1999/93/EC on a Community framework for electronic signatures
- Commission Recommendation 1994/820/EC of 19 December 1994 relating to the legal aspects of electronic data interchange[60],

In the e-invoice field, as for other eProcurement related themes, the scenario of the solutions adopted by the different Member States is very heterogeneous, with different methods adopted for ensuring authenticity of data and different implementations of the required levels of security.

The good point is that there are some initiatives that are paving the way towards a pan-European adopted solution for e-Invoicing (see section 8.5).

8.2 GUIDING PRINCIPLES

Considering that the ordering and invoicing phases of the public procurement process have tight connection and strongly affect the other phases, from catalogue to payment, the Common Specifications for the e-Ordering and e-Invoicing theme should therefore carefully consider the organisational level of interoperability and address a solution that can be easily integrated in the whole procurement process.

For the implementation of a solution ensuring interoperability at the semantic level, the Common Specifications should concentrate on the exchange of a minimal set of e-order and e-invoice data between Economic Operators and European public administrations.

[58] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32001L0115:en:NOT
[59] http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_347/l_34720061211en00010118.pdf
[60] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31994H0820:EN:HTML

This set will be defined taking into account some factors:

- The legislative and regulatory requirements for the cross-border exchange of orders and invoices among the Member States;
- The requirements for authentication and integrity of electronic documents;
- The requirements for archiving electronic documents;
- The technical interoperability (at the semantic level) of the exchanged data
- The possibility of including additional data to the initial core set and additional documents needed by the actors involved in the invoicing and ordering business processes;

In addition to the Legal barriers described in the previous section, the Pilot solution for e-Invoicing should consider the barriers related to authenticity and trust. According to the Council Directive 2001/115/EC[61] invoices sent by electronic means shall be accepted by Member States provided that the authenticity of the origin and integrity of the contents are guaranteed. This could be guaranteed by means of:

- An advanced electronic signature or
- Electronic Data Interchange (EDI) or
- Other means that guarantee authenticity of origin and integrity of content. For example, control documents generated in a sales ordering process could be used to support the authenticity of the origin and integrity of the invoice provided the business can demonstrate a high level of integrity in their electronic and other internal control system over time

More in general, the Pilot project should analyse which threats exists concerning the ordering and invoicing processes and which damages or losses could potentially be caused; in most of the cases, sound internal controls of the administrations and companies involved in the procurement process could be enough to avoid the approval of incorrect invoices, however other risks could be out of the control of these internal procedures. The common specifications should precisely state the requirements that an e-invoice implementation must satisfy to specifically remove the risks merely related to the electronic means of submission.

8.3 FEASIBILITY STUDIES

The EEI initiative (see section 8.5), jointly leaded by DG MARKT and DG ENTR for establishing a **EEI** (European E-Invoicing) **Framework,** is expected to define a roadmap for the creation of the EEI and to develop a common interoperable standards base.

8.4 INTEROPERABILITY TECHNICAL SOLUTIONS

Standards

The interest in e-Ordering and e-Invoicing from both the private sector and from the public authorities in Europe is continuously growing but the standardisation environment is very fragmented and does not provide commonly accepted solutions.

As a consequence, the adopted solutions are based on a number of different de-facto standards.

[61] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32001L0115:EN:HTML

The key standards bodies in the e-Invoicing field are **UN/CEFACT** (EDI standards), **ISO20022** and **OASIS** (for UBL) and ideally the Pilot solution should be based on an International standard emanated from this organisations under the umbrella of the EEI initiative to improve its credibility.

OASIS and UN/CEFAT are working towards the creation of a unified eProcurement standard and it is foreseen that UBL will be migrated into UN/CEFACT.

There are some relevant initiatives that are producing requirements to be incorporated into an e-Invoicing standard and that should be considered for the preparation of the Common Specifications:

- The eOrdering and eInvoicing new project that will be launched by DG-DIGIT and DG-MARKT, under the IDABC programme (see section 8.5)

- The CEN/ISSS eInvoicing Focus Group (see section 8.5) issued a report and recommendations[62] on Standards and Developments on electronic invoicing relating to VAT Directive 2001/115/EC

- The CEN/ISSS Public e-Procurement workshop will submit to UN/CEFACT a full procurement suite of messages; UN/CEFACT and ISO20022 will work for having an alignment of the core e-Invoicing elements in both standards;

- The NES countries are actively involved in unification of UBL and UN/CEFACT. UBL and the UN/CEFACT Supply Chain Group (TBG1) began the Convergence Project in July 2006 and have already converged on business requirements for seven documents, including the cross industry invoice.

In addition, the Pilot project should take into consideration the Single Euro Payments Area (SEPA[63]) initiative and the interoperability of the provided solution for e-Ordering and e-Invoicing with the SEPA messages.

Tools for interoperability

The IDABC programme promoted the eProcurement XML schemas initiative[64] that has developed a set of UML diagrams and XML schemas modelling the data exchanged in the different phases of electronic public procurement: the e-Ordering, e-Invoicing, e-Tendering and e-Awarding phases are currently covered.

8.5 RELEVANT INITIATIVES AND RESEARCH PROJECTS

One of the major difficulties to the implementation of an e-Invoicing solution that is fully compliant to the legal rules is that this theme is affected by several areas of legislation and the scenario of the proposed solutions is very wide and heterogeneous. The good point is that there are some initiatives that are paving the way towards a pan-European adopted solution for e-Invoicing:

[62] http://ec.europa.eu/enterprise/ict/policy/doc/final_e-invoicing_report.pdf
[63] More information on SEPA are available at: http://www.europeanpaymentscouncil.eu/
[64] Available at http://ec.europa.eu/idabc/en/document/4721/5874

In 2003 CEN/ISSS set up, on request of the European Commission DG Taxation and DG ENTR an open "e-invoicing Focus Group", and issued a report analysing requirements on standardisation issues relating to electronic invoicing resulting from the new VAT legal framework.
Following the agreement on this report, the Commission issued a standardization mandate to the ESOs to provide a background support to the ESO standards activities required to implement those recommendations of the CEN/ISSS Focus Group.
As CEN's response to the mandate, **a CEN/ISSS Workshop on "Interoperability of Electronic invoices in the European Community"**[65] has been established and it produced several documents where different aspects (e.g..: relations with eSignature, storage of e-invoices) of e-invoicing are analysed.
It closed its activities in 2006 but a second phase (eInvoicing Phase II[66]) has been launched in February 2007
The general objective of the proposed Phase II of the e-Invoicing workshop is to stimulate further standardization work in the domain of electronic invoices in Europe, with a view to supporting:

- the compliance of electronic invoice implementations to Council Directive 2001/115/EC and the national legislation as regards electronic invoices;
- the effective implementation of compliant electronic invoice systems in using emerging technologies and business processes, in business-to-business as well as in business-to-government scenarios; and
- the emerging network infrastructure of invoice operators throughout Europe.

An eInvoicing Steering Group has been created by the Commission, as a joint initiative of DG MARKT and DG ENTR, with the objective of establishing an **EEI** (European E-Invoicing) **Framework**.
The scope is to establish a framework within the EU member states which allows for the exchange of electronic invoice data by all actors in the supply chain (public sector, enterprises and financial service providers), an open collaborative environment that establish the basis for interoperability at both the business and technical level for European e-Invoicing services. The EEI framework should be developed into a "European Recommendations on Electronic Invoices", similar to the EDI recommendation from 1994.
The next official document will be the final report of the group, due for June 2007, which should contain a roadmap for the creation of the EEI and the development of a common interoperable standards base.
For this purpose:

- Initial business requirements of the relevant sectors (public sector, enterprises and (financial) service providers) will be collated and document under the UN/CEFACT umbrella using business process modelling.
- These requirements will be used by ISO to produce an e-Invoicing standard under the ISO20022 methodology. This shall be done rapidly (an ISO standard can be ratified within 18 months) and should also meet interoperability requirements with regard to the common payment standards established under SEPA and hence would be commercially acceptable to the stakeholders.
- These requirements will also be used by CEN to align the more comprehensive e-Procurement standards, being developed under the e-Procurement workshop (for later submission to UN/CEFACT) with the SEPA payment instruments.
- Once the e-Procurement standard produced by CEN is accepted and published by UN/CEFACT any alignment task to ensure complete semantic alignment around semantic

[65] http://www.cen.eu/cenorm/businessdomains/businessdomains/isss/activity/wseinvoice.asp
[66] Available at: http://www.cen.eu/cenorm/businessdomains/businessdomains/isss/activity/einvoicing_2.asp

components of the e-Invoicing contained in the UN/CEFACT and ISO20022 repositories will be undertaken by ISO20022.

• After the alignment has been completed the EEI Framework will be able to be implemented on the basis of either ISO20022 of UN/CEFACT XML message standards. Both standards will be interoperable and maximise mass-market appeal by leveraging both UN/CEFACT and ISO standards.

A close co-operation between the EEI Steering group and the Pilot consortium is envisaged. Ideally the pilot will take on board the EEI specifications for the Common Specifications of the interoperability layer on eInvoicing, thus not producing a new proprietary and redundant solution. The positive result could be that the EEI standards base will find in the Pilot their first live and large scale application.

DG-MARKT and **DG-DIGIT** have agreed to launch a new project under the IDABC programme regarding **eOrdering and eInvoicing.**

The objective is to contribute to the use of electronic invoices in the public sector according to the i2010 eGovernment action plan and the eProcurement action plan.

Two main activities are planned:

1. A wide *study* to identify barriers to the spread of eInvoicing in Europe and the identification of general business requirements of both sectors (EU public administrations and their suppliers) for electronic invoicing systems in a cross-border environment that will provide the models of the business processes and message definitions of the involved sectors that will provide the basis for interoperability and openness for future developments
2. A small scale *prototype* to test the use of existing solutions for the electronic exchange of invoices and orders between public administrations and suppliers in a cross-border environment; the Commission will act as a testing environment.

The project should start in 2007 Q3.

Strong synergies between the eInvoicing pilot and the IST-PSP pilot can be established: the IDABC project will provide early input for the CIP pilot in the form of specifications and feedback on the use of existing solutions for eInvoices and eOrders. Also, the CIP pilot will influence the IDABC prototype at a later stage.

In addition, it is worthwhile mentioning some other activities that could provide relevant results for the e-Invoicing theme:

- On Commission mandate, the PricewaterhouseCoopers issued a "Study on the requirement imposed by the Member States, for the purpose of charging taxes, for invoices produced by electronic or other means"[67].
- DG TAXUD is going to launch a study on the Invoicing Directive (2001/115/EC) now incorporated into the VAT Directive (2006/112/EC);
- the outcomes of the DG INFSO e-signature feasibility study (see section 5.3) could be highly relevant for the e-Invoicing theme too.

National initiatives

[67] Available at http://www.ec.europa.eu/taxation_customs/resources/documents/taxation/vat/key_documents/reports_published/TenderXXI-98-CB-5010.pdf

The **Danish** public sector is one of the European key actors in the field of e-invoicing as from February 2005 e-invoicing has become mandatory for all public entities and their suppliers.
Denmark promoted an XML-based initiative, called **OIOXML**[68], which supports the exchange of electronic invoices between private suppliers/vendors and public authorities. The OIOXML specifications describe the data models, interfaces, and web services, that should be respected for the implementation of governmental and private sector systems in order to support electronic invoicing.
In 2006 the majority of the vendors have adjusted their systems, in order to become compliant with the OIOXML specifications. This resulted into an increase of market competition and interoperability between different products and systems.
The experience gained by Denmark through the OIOXML eInvoice initiative[69] could be useful to identify not only the benefits of e-Invoicing adoption, but also the risks: part of the expected savings have been consumed by additional costs and extra work.

In **Sweden**, the purpose of the **SFTI** initiative (see also section 7.5) is to establish a single set of specifications for the interchange of electronic commercial transactions with all public operators, whether at governmental, regional (county council) or local community level. To achieve this, a platform of co-operation has been organised where representatives for all three levels meet with representatives for the suppliers to develop a shared view on the public procurement processes and agree common specifications. The purpose in this co-operation is to identify user requirements, agree on standards and have the resulting specifications recognised among the various industries and groups of users. The Electronic Commerce initiative started with an analysis of public procurement in a broader scope, identifying the areas of work. As much of the Swedish public procurement takes place under framework contracts, the great bulk of transactions are formed by price list - order/call-off - order response - delivery instruction - invoice. The effect of rationalisation is, consequently, high for these types of transactions. The initial activities focused on developing specifications for this phase of procurement and four SFTI business scenarios for message exchange were defined to satisfy various requirements and ambition levels in system design. Recently a fifth business scenario has been adopted, where the price list and call-off transactions are replaced by a web-based ordering process and with a copy of the order information and the invoice generated as EDI transactions for processing in the buyer's system. So far, it is in the post-contract phases of procurement that implementations are found. Experience shows that savings can be made on the administrative side by merely creating system support for automatic matching of invoices against orders.

The Swedish Association of Local Authorities and Regions has, together with about 20 other actors, developed a standard for eInvoicing called "**Svefaktura**" ("Swed-Invoice")[70], which is a simple XML documents based on UBL 1.0; The Swedish National Financial Management Authority (Ekonomistryrningsverket – ESV) promotes "Svefaktura" to the Government Interoperability Board for forming a standard for eInvoicing in the government sector. This solution is also suggested by the Swedish Association of Local Authorities and the Confederation of Swedish Enterprise. The ESV recommends the use of "Svefaktura" in all governmental applications since October 2005. The use of Svefaktura will be mandatory[71] for all the Swedish central government agencies after July

[68] Offentlig Information Online (presentation of OIOXML project): http://www.oio.dk/dataudveksling/danishXMLproject
[69] Additional information are available at: http://oio.dk/xml/standardisering/eHandel/materialer/OIOXMLeInvoice
[70] http://www.svefaktura.se/
[71] Information about the mandatory use of eInvoice available at: http://www.e-fakturera.nu/english.4.6f60681109102909b80002032.html

2008. For the time being, Swedish Municipalities are using Svefaktura but also invoices based on EDIFACT standard.

The **CODICE** project (see section 7.5) is also focused at the development of interoperable documents for eInvoicing.

The **Latvian** eProcurement system (see section 7.5) supports the issuing of invoices and payment through electronic means using the xCBL standard

Acronyms & Glossary

Acronym Abbreviation	Term	Description
	Advanced electronic signature	An electronic signature which meets the following requirements: (a) it is uniquely linked to the signatory; (b) it is capable of identifying the signatory; (c) it is created using means that the signatory can maintain under his sole control; and (d) it is linked to the data to which it relates in such a manner that any subsequent change of the data is detectable; (from Directive 1999/93/EC, Article 2)
	Building Block	A software module encapsulating a set of functionalities relevant for one of the Pilot themes. A building block should be modular, exchangeable, and must be easily integrated in existing systems for ePP.
CEN/ISSS	CEN Information Society Standardisation System	
	CEN Workshop	An ongoing short-term working group established by CEN/ISSS and accessible to anyone interested, providing a direct method for standardisation in various fields
	Certificate	An electronic attestation which links signature-verification data to a person and confirms the identity of that person; (from Directive 1999/93/EC, Article 2)
CIP	Competitiveness and Innovation framework Programme	A community programme organised around three specific programmes: – the Entrepreneurship and Innovation Programme (EIP); – the Information and Communication Technologies (ICT) Policy Support Programme (ICT PSP); – the Intelligent Energy-Europe Programme (IEEP).
CPV	Common Procurement Vocabulary	A list of approximately 8,000 products and services associated with a numeric code and translated into the 20 EU languages, to describe the goods or services to be purchased; it is mandatory for the Public Procurement
DPS	Dynamic Purchasing System	A specific term to refer to an entirely electronic procedure for repetitive procurement for common use purchases whose characteristics generally available in the market meet the needs of the Contracting authority, limited in time and open during its whole duration to any Economic operator who complies with the selection criteria and has presented an indicative tender which fits the Tender Information.
eCatalogue	Electronic catalogue	product catalogue that is used in eCommerce and eBusiness
EDI	Electronic Data Interchange	A standard format for the computer-to-computer transmission of (business) data; information has a pre-defined structure and can be processed without human intervention
EEI (initiative)	European E-Invoicing initiative	An initiative jointly leaded by DG MARKT and DG ENTR for establishing a EEI (European E-Invoicing) Framework within the EU member states which allows for the exchange of electronic invoice data by all actors in the supply chain, particularly those involved in purchase and supply.
EIF	European Interoperability	A set of standards and guidelines to support the pan-European delivery of electronic government services

	Framework	
eInvoice	Electronic invoice	A trade document, or instruction, exchanged in electronic format, that details the goods sent or services received with a statement of the due payable amount. This trade document normally flows from the Supplier to the Buyer within a contractual agreement.
ePP	Electronic Public Procurement	Is the use of electronic tools and systems to increase efficiency and reduce costs during each stage of the purchasing process performed by public authorities
eSignature	Electronic Signature	Data in electronic form which is attached to or logically associated with other electronic data and which serves as a method of authentication (from Directive 1999/93/EC, Article 2)
EUPL	European Union Public Licence	A licence to be used for the distribution of software developed in the framework of the IDABC programme
	Framework Agreement	A specific term to refer to a repetitive procurement system in which a "framework agreement" is established between one or more Contracting authorities and one or more Economic Operators with the objective of establishing the conditions which govern the contracts to be awarded over a certain period, particularly with regard to prices and, where appropriate, the anticipated quantities.
GPC	Global Product Classification	A hierarchical structured product classification scheme for the consistent categorisation and identification of products and their consistent mapping between existing internal classifications. GPC is part of the GS1 System (see GS1)
GS1		A global organization dedicated to the design and implementation of global standards and solutions to improve the efficiency and visibility of supply and demand chains globally and across multiple sectors. GS1's main activity is the development of the GS1 System, a series of standards designed to improve supply chain management
ICT-PSP	Information and Communication Technology (ICT) Policy Support Programme (PSP)	A community programme, running under the CIP framework programme which aims at stimulating innovation and competitiveness through the wider uptake and best use of ICT by citizens, governments and businesses and in particular SMEs.
IDABC	Interoperable Delivery of European eGovernment Services to public Administrations, Business and Citizens	A Community programme managed by the European Commission's Directorate-General for Informatics supporting the delivery of cross-border public sector services to citizens and enterprises in Europe and encouraging the collaboration between European public administrations
	Interoperability	The ability of Information and Communication Technology (ICT) systems and of the business process they support to exchange data and to enable the sharing of information and knowledge
NES	Northern European Subset	A collaboration among some European countries aiming at simplify the use of eProcurement for buyers and suppliers, by implementing a subset of UBL2.0
OASIS	Organization for the Advancement of Structured Information Standards	A not-for-profit, international consortium for the development, convergence, and adoption of e-business standards
	Qualified Certificate	A certificate which meets the requirements laid down in Directive 1999/93/EC

SEPA	Single Euro Payment Area	An area in which consumers, companies and other economic actors will be able to make and receive payments in euro, whether between or within national boundaries under the same basic conditions, rights and obligations, regardless of their location.
	Specification	A set of requirements related to a system to be developed that are generally elicited by the supplier (or developer) from the user and that have been mutually agreed.
UBL	Universal Business Language	The product of an international effort to define a royalty-free library of standard electronic XML business documents such as purchase orders and invoices. UBL has been developed by OASIS.
UN/EDIFACT	United Nations rules for EDI For Administration, Commerce and Transport	
UN/CEFACT	United Nations Centre for Trade facilitation and Electronic Business	An organization with representatives from United Nations Member States, intergovernmental agencies, sector and industry associations, aimed at facilitating the development of e-business standards that can cross all international boundaries and help lower transaction costs, simplify data flow and reduce bureaucracy. UN/CEFACT is responsible of the development of various standards, among which ebXML and UN/EDIFACT.
UNSPSC	United Nations Standard Products and Services Code	A code for classification of product and services, owned by GS1
VIES	VAT Information Exchange System	A system allowing companies and authorities to obtain rapidly confirmation of the VAT numbers of their trading partners and enabling VAT administrations to monitor and control the flow of intra-Community trade to detect all kinds of irregularities
XML	Extensible Markup Language	A markup language that enables users to create their customized tags, enabling the definition, transmission, validation, and interpretation of data between applications and between organizations.
	XML Schema	One of the XML schema languages: XML Schema can be used to express a schema: a set of rules to which an XML document must conform in order to be considered 'valid' according to that schema.
XSD		XML Schema definition language
VCD	Virtual Company Dossier	A set of document and certificates that are provided in electronic format by the Economic Operators to be able to participate in procurement procedures across the EU
WA	CEN Workshop Agreements	