# Interoperable Public E-Procurement and the European PEPPOL project

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## 1. Introduction

Shared services is about consolidating critical but non-core services such as finance, human resources, information and communication technology, and procurement. For governments, procurement shared services are receiving significant attention. Centralised governance structures are characterised by substantial economies of scale and scope, because procurement of assets and services is possible on the broadest scale possible within the organisation.

Public procurement is going to change quickly in the coming years. The European Commission has published an Action Plan on public eProcurement to assist Member States in implementing the new Procurement Directives adopted in 2004 [8].

## 2. Shared Services as Driving Force for Public eProcurement?

Governments are not driven by a profit motive, since the services they provide are determined by legislative mandate. However, a number of private sector strategies can be successfully deployed to make government operate more efficiently.

One of them is shared services – a strategy initially adopted by large multi-national corporations to reduce costs and increase the efficiency and effectiveness of internal back-office service functions. Shared services have been so successful that a number of governments have already adopted many of its features.

Procurement shared services functions are growing more popular, because these programmes have a track record of delivering:
· reduced procurement service cost,
· increased organisational efficiency,
· improved contractual relationships, including better contract terms with vendors,
· enhanced procurement services and client satisfaction with those services, and
· empowered ministry and department management, better able to focus on their core programmes.

Moving public procurement on-line promises substantial savings on expenditure and transaction costs for buyers and suppliers. However, it is a complex operation and experience of eProcurement is limited. Inconsistent implementation, with different rules and incompatible systems in different Member States, could hinder its uptake. There is a risk of new 'e-barriers' in cross-border trade or in government-to-business and business-to-business procurement. On the basis of the Manchester Ministerial Declaration of 24 November 2005 and i2010 initiative various coordinated initiatives have been launched to fulfil the Lisbon objectives for growth and employment [5].

The aim is that all public administrations across Europe shall have the capability of carrying out 100% of their procurement electronically and at least 50% of public procurement above the EU public procurement threshold will be carried out electronically. The broader vision is that any company in the EU can communicate with any government in the EU in all areas of eProcurement [2].

This means that both government administrations and suppliers will have to act and change their processes and modify their IT-systems. Suppliers have to make sure that they are compatible with formats and processes. Administrations have to implement interoperable electronic processes for all phases of the procurement processes (eSourcing, eNoticing, eTendering, eAwarding, eContract, eOrders, eInvoicing, and ePayment) [6]. But, to successfully conduct electronic procurement across borders, eProcurement systems also rely on some "key enablers" like eSignature, eIdentity, eAttestation (Virtual Company Dossier), eCatalogues, and eArchiving.
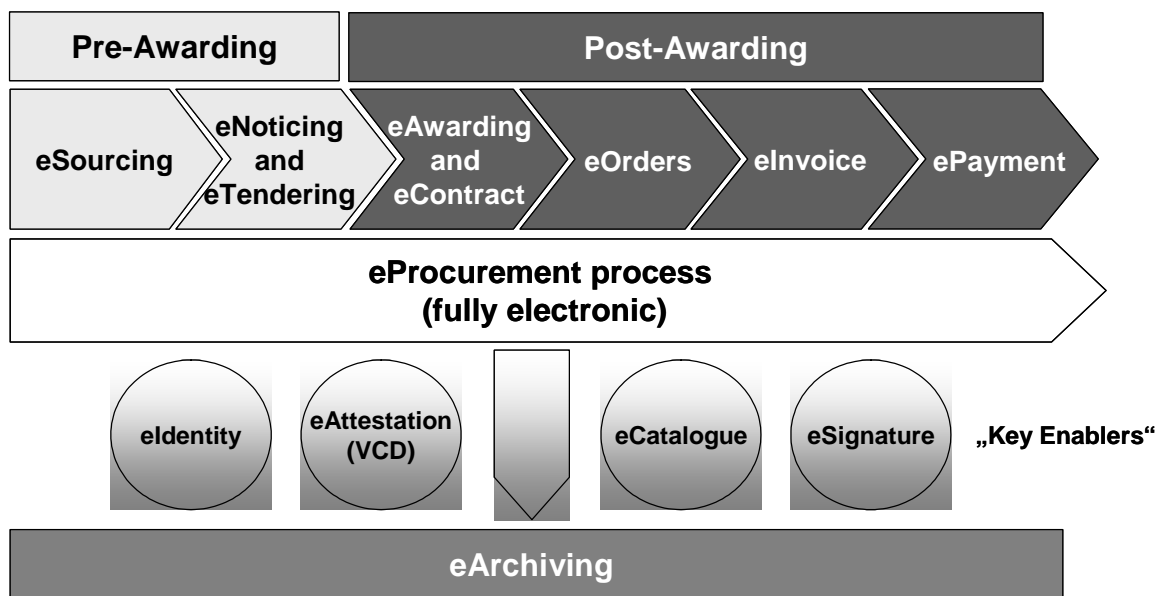


Figure 1: The fully electronic eProcurement Process and its key enablers

## 3.  The PEPPOL project

In 2007 the European Commission launched a call under its Competitiveness and Innovation Programme (CIP) to implement an integrated pilot solution building upon existing national systems and providing cross border access to public eProcurement.

A consortium of 16 partners from 9 European countries together with 6 supporting partners have started a project under the CIP programme called "Pan-European Public Procurement On-Line", short: PEPPOL. The project commenced in May 2008 for a three-year duration. Austria, Denmark, Finland, France, Germany, Hungary, Iceland, Italy and Norway are participating in the consortium. Another nine countries have already joined the reference group with an intention to join the consortium in a later stage.

### 3.1  PEPPOL objectives

The PEPPOL project wants to further deploy the shared services model on public eProcurement in Europe and therefore aims to set up an integrated pilot solution across borders that capitalise on each nations strength/advantage in existing national systems that conjointly facilitate to the enabling of an EU-wide interoperable solution for public eProcurement.

The project is divided into five topics/work packages, that will deliver separate project parts as cited in the Guidelines to Common Specifications for Cross Border use of Public eProcurement [4]. It is believed that the project composition allows for complete attention to all topics while also focusing on the incorporation of these topics into one whole and as such seeing the whole picture of the public eProcurement process. The PEPPOL project will focus on in depth development of the key blocks/enablers to the interoperability solution while ensuring a red thread along the project course.

The topics address the following eProcurement phases respectively as "key enablers": eSignature; eAttestation - Virtual Company Dossier (VCD); eCatalogue; eOrdering and eInvoicing.

### 3.1.1 eSignature

Issues related to signatures and interoperability of electronic signatures is a major challenge to cross-border eProcurement. Interoperability issues are mainly faced by the awarding entity, as the receiver of tenders and other signed documents originating from across the EU. Public eProcurement may be more complicated in this respect than other eGovernment services, as other services typically require one signed document and most often also a signature from one party only. A tender may involve many documents at different stages of the process, where documents must be signed depending on the (national) requirements of the awarding entity.

This work package will concentrate on the specific problems of creation, verification and acceptance of electronic signatures in electronic procurement documents, and in particular tender documents. Validation and acceptance of eID certificates required in the different phases of the procurement cycle are also topics that are within scope.

### 3.1.2 eAttestation - Virtual Company Dossier (VCD)

The overall aim of eAttestation (Virtual Company Dossier – VCD) is to provide interoperable solutions for economic operators in any European country to utilise company information already registered somewhere, when these economic operators submit offers electronically to any European public sector awarding entity.

A European eProcurement environment requires the collaboration of several actors such as companies, business registers, certificate issuers and procurers. To enable seamless and trusted collaboration and cooperation among those actors, an environment is needed that relies on a central document, the VCD, produced by admitted authorities such as business registers or other authorised registers.

The VCD can be seen as an information package about a company accomplishing the following main functions [3]:

The VCD shall provide general information about a tendering company to the procurer. According to article 45 (Personal situation of the tenderer) of Directive 2004/18/EC of 31/03/2004 [1] any candidate or tenderer, who has been convicted by a final judgement for several listed reasons, shall be excluded from participation. Also any candidate or tenderer may be excluded, who is in one of the listed situations (from banckruptcy to professional misconduct).

A procurer shall be enabled to prove the economic and financial standing of a tendering company (cf. Article 47 of the Directive 2004/18/EC of 31/03/2004) [1]. Therefore, the economic operator has to present appropriate statements from banks, a statement of the overall turnover as well as evidence of relevant professional risks. The economic and financial standing should include a balance sheet under the law of the country in which the economic operator is established or, where appropriate, extracts of the balance sheet.

A VCD shall include numerous certificates and business documents, which are currently barely available in electronic form. The kind of evidences requested and the authorities that shall provide them differs from time to time. Additionally, these certificates need to be usable and acceptable across borders. This requires multi-lingual support and multilateral agreements. A major challenge of the VCD will be to support a common set of electronic certificates, at least for those most frequently required.

Certificates drawn by independent bodies related to quality assurance standards and environmental standards also may be required by contracting authorities according to article 49 and 59 of Directive 2004/18/EC. [1]

There are a number of national and international activities ongoing. These shall be streamlined and assessed towards the development of a European-wide interoperable and standardised Virtual Company Dossier that facilitates public eProcurement within the European market. The VCD specification and pilot implementation shall provide a key building block for pan-European eProcurement, which allows the connection of different eProcurement systems among - as well as within - different countries.

The PEPPOL activities shall ensure that a significant part of the public procurement processes can be made through electronic cross-border transactions under consideration of the organisational, semantic and technical challenges that have to be resolved in order to develop a sophisticated VCD.

### 3.1.3   eCatalogue

The lack of a standard definition of eCatalogues across all EU countries is one of the existing or potential hurdles that all enterprises - and especially SMEs - face when trying to carry out cross-border public eProcurement transactions. Defining a shared standard for the presentation of eCatalogues should enhance both the creation of wider market opportunities and the uptake of ICT in procurement procedures.

In this context, the objective is the creation and testing of a solution to manage eCatalogues used in the frame of public procurement procedures, both as part of a bid submitted by competing tenderers and as a basis for issuing orders to economic operators.

The expected results are:

- The definition of processes for eCatalogue management, allowing economic operators to carry out all operations on eCatalogues in cross-border public procurements.

- The definition of a set of standard attributes to be used independently of category (e.g. quantity, description, unit of measure, unit price, currency, etc.), and a standardised pan-European meta-catalogue structure, for an identified set of categories, i.e. the identification and sharing of a data structure to represent supplies and services through the unambiguous definition of their technical and commercial characteristics.

- The definition, creation and testing of necessary components (interfaces) in accordance to the eProcurement platform adopted by the consortium participants and by other European countries, that provide the functionalities of first, automatic mapping and conversion mechanisms between catalogues and second, automatic translations of the catalogue contents.

### 3.1.4   eOrdering

The eOrder process deals with electronic transmission 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.

Ordering is an important phase of the public procurement process and has a tight connection with invoicing and strongly affects the other phases, from catalogue to payment.

There is a strong desire from both awarding entities and economic operators for automation and efficiency across the procurement process. This requires an information model ensuring a flow of information between different parts of the process and models ensuring data synchronisation. The goal is to implement a European Ordering Interoperability (EOI) framework that allows SMEs to adopt eOrdering in an effective way to lower their entry and operating costs.

The PEPPOL project will analyse the eOrdering process and seek to implement and pilot arrangements for the exchange of eOrdering documents between all participants and related economic operators. Processes will be benchmarked and good practices highlighted and communicated.

### 3.1.5 eInvoicing

The eInvoicing process deals with the claim for payment for the goods and services that has been ordered or delivered, received or consumed under the conditions agreed by the buyer and the supplier. eInvoicing links the two important value chains, the procurement process and the payment process. Invoicing is an integrated and significant part of the procurement process, as well as the starting point for the payment process. Invoicing is the subject of legal restrictions that are different from country to country, which has created barriers for cross border invoicing. eInvoicing is a part of an electronic procurement process aiming for automation and efficiency. It is based on an information model ensuring flow of information between different parts of the process. eInvoicing, creating efficiency and certainty, has the potential to unleash great savings and release resources for more innovation. The PEPPOL goal is to implement a European eInvoicing (EEI) framework that allows SMEs to adopt eInvoicing in an effective way to lower their cost of entry and operating costs.

### 3.1.6 Interoperability Architecture

The eBusiness infrastructure of the PEPPOL project consists of a number of functional building blocks supporting the identified business requirements. Some of the business requirements are well known requirements and some requirements will be identified as part of the project. Examples of well-known requirements for e-business transactions are the following:

- Authentication
- Authorization
- Confidentiality
- Integrity
- Non-repudiation

The cross-border scenarios inherent in the nature of the PEPPOL project and the requirements of a large-scale pilot under the European CIP programme introduce additional business requirements and constraints, such as:

The ability to be based on existing infrastructure and business software for eProcurement in order to leverage existing investments.

The ability to support existing national mechanisms for security and authentication.

Be based on open standards in order to allow everyone to connect to the infrastructure without lock-in to proprietary tools or products and through this create a level playing field for competition between multiple service providers.

A detailed analysis of the business requirements will affect the detailed composition of building block to be delivered as part of the project. Open questions are whether the infrastructure should be based on a federated architecture or on centralised architecture

components and whether any existing Pan European infrastructure may meet the business requirements. However the building blocks will probably fall into the following categories:

- Federated Service and business process registry
- Security Token Service
- Gateway
- Web service profile toolkits
- Public Key Infrastructure components
- NTP servers and Time Stamp Mechanism
- Test framework
- Payload validation tools
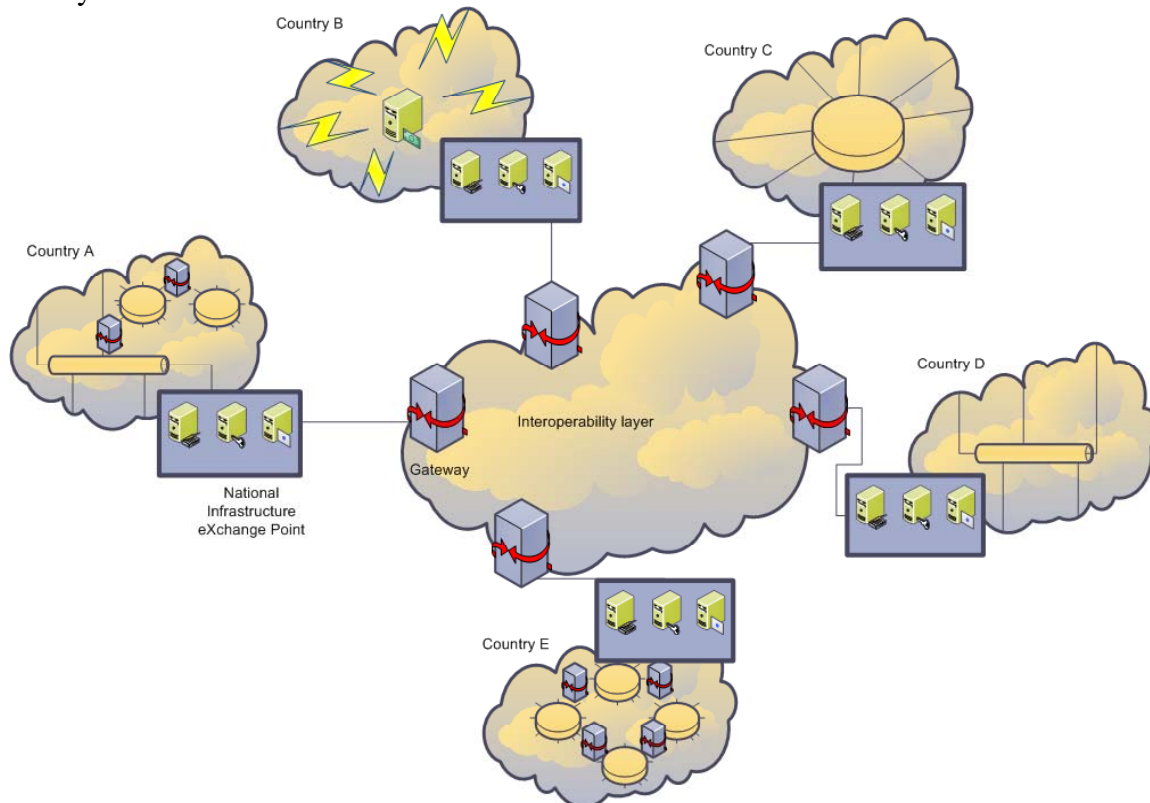


Figure 2: PEPPOL Infrastructure Model

The PEPPOL project will deliver a number of specifications:

- A customized set of e-procurement standards for relevant business documents, e.g. order, catalogue, invoice, etc
- Standardized and well defined business processes for common procurement patterns
- A profile of web service standards supporting the reliable and secure exchange of business documents.

## 3.2   Liaison with Other European Projects and Initiatives

The link with other projects and initiatives will be ensured through liaison managers. To date the following projects and initiatives have been identified:

- PROCURE
- eID LSP (STORK)
- R4EGOV
- E-Invoicing experts group
- E-Procurement Experts group

- BRITE
- CEN/ISSS workshop BII
- E-Invoicing project of the EC
- SEPA e-invoicing initiative
  The liaison managers establish contact with those projects and participate in meetings.

### 3.3   Proposed impact of PEPPOL

The PEPPOL project will contribute to EU's Lisbon Agenda. Specifically, the PEPPOL project is considered to be an instrument that will accomplish the implementation of a high impact service and thus directly relate to the eGovernment i2010 European objective 'implementation of high impact services'. Internationally, the PEPPOL project will be seen to strengthen and underpin the values of eProcurement.

Furthermore, the PEPPOL project will act as a bridge builder towards reaching the i2010 eGovernment Action Plan target of 100% availability and 50% usage of public eProcurement for all EU states. The outcome of the PEPPOL project might be seen as a trigger for Member States reaching their national public eProcurement target in terms of availability and usage since far from everybody have reached the stated objectives as of now. Electronic public procurement initiatives clearly demonstrate significant cost savings that are possible. If eProcurement was introduced all over the EU, annual savings could amount to over €50 billion [7].

On a strategic level, the PEPPOL project is in line with different national efforts in terms of promoting generally and more specifically public eProcurement. Another potential impact of the PEPPOL project is related to international exchange of best practices as one nation might have an advanced feature in one domain, but may need help in another, and as such relate to the activities of epractice.eu.

The eGovernment is advancing through modernising public services in various areas on local, regional and national level, but is to due date in lack of international interoperable services. A number of services delivered across borders make a significant difference to businesses and administrations. By deploying an interoperable service such as public eProcurement this will help to achieve top-level commitment and additionally create substantial demand for key enablers such as that of electronic identification. Furthermore, an international interoperable public eProcurement will act as a flagship for the European eGovernment and the forthcoming high impact services [3].

As part of the CIP programme, PEPPOL will help boost growth and jobs in Europe. In particular, PEPPOL will enhance Europe's capability of exploiting the full potential of ICT and similarly drive forward innovation through the best use and wider adoption of information and communication technologies. PEPPOL also helps to strengthen the competitiveness of SMEs in Europe. Based on the results of PEPPOL, European SMEs will have the possibility to enlarge their markets and will be in a position to carry out better, simpler and more secure procurement due to predefined e-processes compliant with the European procurement legislation. Initiatives like secure identification with eSignature, through the complete procurement process and self update of public information in national databases will be timesavers for every economic operator. Building shared services will enable the reuse of data in the complete procurement process from eCatalogue to eInvoice with specified standards. This will contribute to a more economic and secure eProcurement process for every party involved [3].

## 4.  Conclusions

Even though governments and companies are not alike, successful shared services models share common traits. They have developed a shared services culture, demonstrated service

quality and moved beyond centralisation. But what makes government and business alike is people. Serving customers, taxpayers, stockholders and voters all comes down to providing exemplary services at the lowest feasible cost. Every new method that helps meet human needs efficiently has value. And, procurement shared services is quickly becoming a proven model that can work for any enterprise.

Public procurement is going to change quickly in the coming years. The PEPPOL-project will implement the interoperable eProcurement systems across Europe and demonstrate its benefits. This will serve as a trigger to administrations and the private sector across Europe to accelerate the implementation and usage of harmonized electronic procurement and invoicing processes. It will allow governments to reduce costs through greater competition and leaner processes.

Governments, suppliers, the financial service industry and software companies have to act now and align their systems to upcoming common European standards. This means both, government administrations and suppliers, will have to change their processes and modify their IT-systems. Suppliers have to make sure that they are compatible with formats and processes. Administrations have to implement interoperable electronic processes for all phases of the procurement processes.

## References

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