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PAN EUROPEAN PUBLIC E-PROCUREMENT ONLINE (PEPPOL) THE CHALLENGES OF IMPLEMENTING A EUROPEAN WIDE SOLUTION

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PAN EUROPEAN PUBLIC E-PROCUREMENT ONLINE (PEPPOL)
THE CHALLENGES OF IMPLEMENTING A EUROPEAN WIDE SOLUTION

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1. The benefits of eProcurement in the public sector

E-Procurement refers to the use of electronic methods in conducting a procurement procedure for the purchase of goods, works or services. It is a complex process consisting of many stages, from the initial identification of a requirement, through the tendering process, to invoicing and payment. Furthermore it is important to see the whole process, since the steps are linked and the benefit can be maximized, if the data from each step are integrated with the next step.

Private vesus Public sector

There is a big difference between private and public procurement with huge implications on e-procurement systems. A private company is not bound by any laws and can choose the most cost-effective procedure.

In the Public sector the situation is different:
- The variety of the purchased products is typically greater
- The number of key stakeholders on the purchasers side as well as the number of suppliers is often excessively large.
- The public sector has to follow a number of public procurement regulations. They typically stipulate that no potential bidder can be excluded and enforce a transparent procedure.
- This makes the process of public procurement a very complex and expensive task, since often the number of potential suppliers willing to bid is excessively large and complex procedures have to be followed for all of them.

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] The EC has launched a call under its Competitiveness and Innovation Programme (CIP) in 2007 to support interoperable eProcurement across all member states. 16 partners from 9 European countries have taken on this challenge and set up the "Pan-

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European Public Procurement On-Line" - short: PEPPOL - project with the aim to develop an integrated pilot solution enabling cross border access to the shared service "public eProcurement". The project, which has a duration of 3 years started in May 2008 and is currently in the design phase.

Governments do not have to make profit, since the services they provide are determined by legislative mandate. However, a number of private sector strategies can be successfully deployed to make government operations more efficiently and reduce the costs, which at the end has to be paid the citizens.

Electronic Procurement services 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 EU 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 overall 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 easily communicate with any government in the EU in all areas of eProcurement. [2]

2. Challenges for public administrations and the private sector

In order to really implement the Manchester ministerial declaration and the i2010 initiative 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":

- e-signature
    - o data in electronic form which are attached and which serve as a method of authentication with regard to this data.
- eIdentity

- o attributes, in electronic format, related to a specific entity (citizen, enterprise, or object) which serve to ascertain a specific identity.
- eAttestations (Virtual Company Dossier)
  - o set of certificates and attestations, in electronic format, to be provided by a supplier to prove compliance with the selection and exclusion criteria of a procurement procedure.
- eCatalogues:
  - o A database of suppliers' products and services available to buy online. like eSignature, eIdentity, eAttestation (Virtual Company Dossier), eCatalogues, and eArchiving.
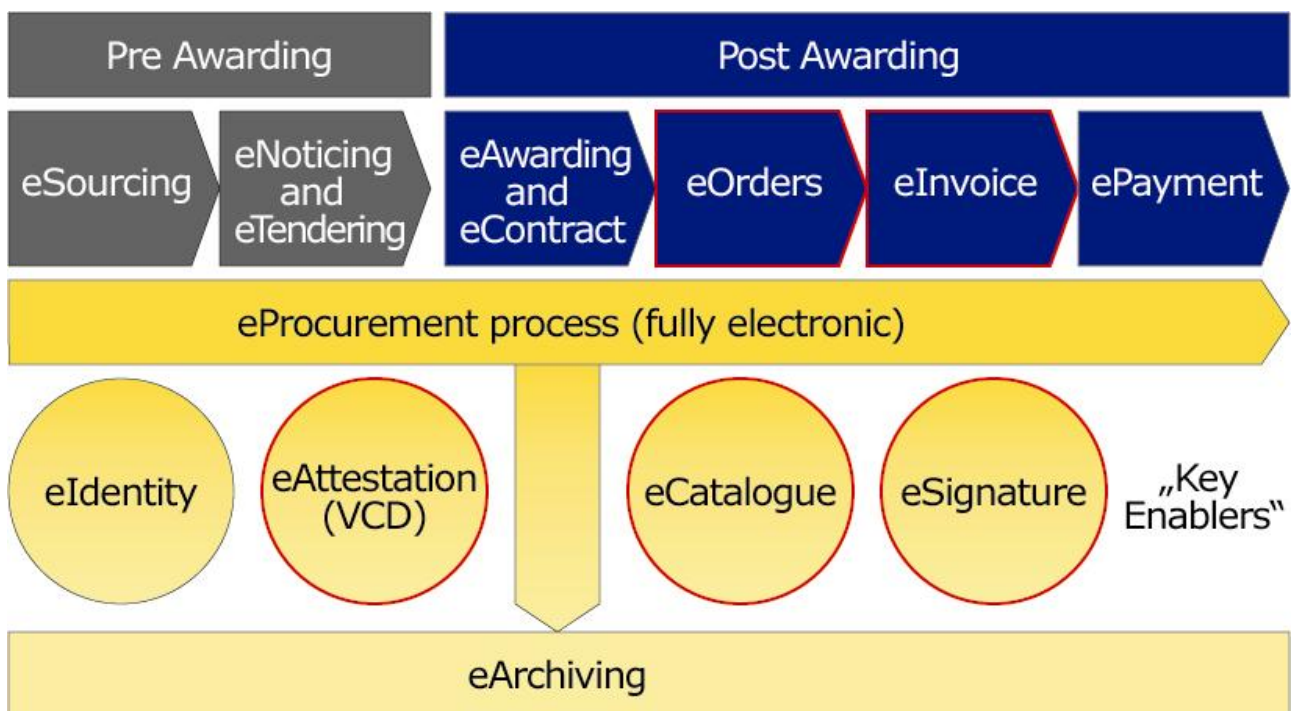

Figure 1: The fully electronic eProcurement Process and its key enablers

The pre-awarding phase refers to all activities before the contract has been signed.

Major sub-processes

- demand estimation
- supplier (pre) qualification
- e-tendering
  - o tender publication or request for quotation
  - o e-access tender documents
  - o e-notification
  - o electronic tender submission
  - o tender evaluation
- contracting

The post-awarding phase refers to all activities after the contract has been signed.

Major sub-processes

- contract management
- electronic purchase order
- electronic delivery notes
- electronic invoicing
- electronic payment

3. The PEPPOL project

The European Commission intends to support governments and the private sector in the implementation of interoperable eProcurement solutions and initiated the PEPPOL project through a call in 2007. The project, which has a duration of 3 years started in May 2008 and is currently in the design phase.

The following countries are participating in the consortium: Austria, Denmark, Finland, France, Germany, Hungary, Iceland, Italy, Norway. Another nine countries have already joined the reference group with an intention to join the consortium in a later stage.

This means a broad European support for interoperable eProcurement solutions is building up.

PEPPOL objectives

The PEPPOL project 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. Accordingly, one work package is devoted to project coordination and management and strives to maintain project incorporation to capture as many synergy benefits as possible. 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.

Expected impact of PEPPOL

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 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 and for the European eGovernment and the forthcoming high impact services. [3]

On a paramount level as part of the CIP programme, PEPPOL will 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. 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]

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 service 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]

Workpackages

The topics divided into work packages address the following eProcurement phases respectively "key enablers":

Work Package: eSignature
Work Package: eAttestation - Virtual Company Dossier (VCD)
Work Package: eCatalogue
Work Package: eOrdering
Work Package: eInvoicing

eSignature

Issues in eSignatures interoperability of electronic signatures is a major challenge to cross-border eProcurement. The interoperability issues are mainly faced by the awarding entity, as receiver of tenders and other signed documents originating in the entire EU area.

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. On the opposite 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.

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 already going on. 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.

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 hence 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 actually 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.

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.

eInvoicing

The eInvoicing process 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 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.

4. E-Procurement interoperability and its main challenges

The PEPPOL project faces a number of challenges, which have to be solved.

Challenge 1: Interoperability on all layers

Interoperability has to be achieved on three layers:

Organizational interoperability
- Standardized business processes
- Pragmatic solutions to legislative differences

Semantic interoperability
- Standardized business documents

Technical interoperability
- Standardized electronic transport
- Standardized electronic signing

Challenge 2: Integration and usage of existing solutions

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:

a) The ability to be based on existing infrastructure and business software for eProcurement in order to leverage existing investments.
b) The ability to support existing national mechanisms for security and authentication.

Challenge 3: Open standards

A European wide solution must be based on open standards in order to allow everyone to connect to the infrastructure without lock-in to proprietary tools or products. This requirement may not apply

to existing solutions in member states and consequently a considerable effort can be expected to align existing solutions with open European standards.

The transport layer as an example

The transport layer has to ensure the transport of any business document between applications of governments and their suppliers.

It must be

- Secure and reliable
- Provide support for small and medium sized organizations
- Support any company or public sector institution in any country
- Leverage investments in existing transport infrastructures
- Should be based on open standards

This means in practice a very heterogenous landscape must be supported. The participating member states have existing infrastructures, processes and laws they want to keep as much as possible.
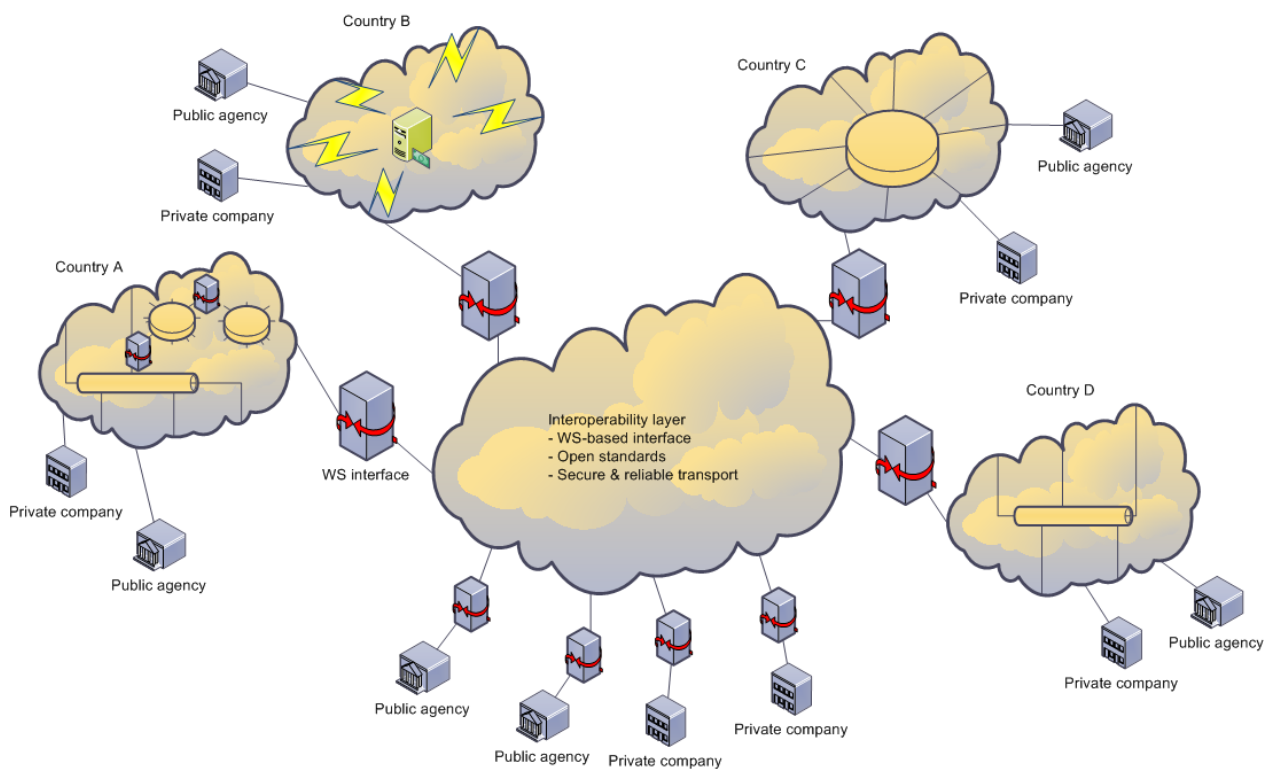

Figure 2: Technical framework of the transport layer

In order to link the member states building blocks have to developed, which will most likely 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

This will include components like

a) *an eBusiness registry*: Anyone connected to the PEPPOL infrastructure must be registered. The cross border trusted verification is an issue to be solved. It is an interoperability issue on all three layers.
b) *A simple end-user software*: Like an e-mail application. Allows simple registration in eBusiness registry.
c) *A PEPPOL web service adaptor*: Allows a national transport infrastructure to connect to the PEPPOL infrastructure.

5. Conclusion

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.

The project faces a number of challenges, which have to be solved.

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