

PEPPOL Starter Kit



www.peppol.eu



*making
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better.eu*

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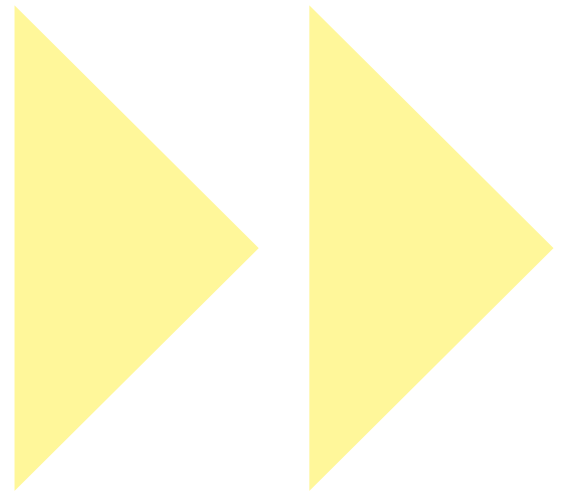
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Preface

The purpose of this Starter Kit is to provide interested stakeholders with a deeper understanding of the various roles and components available to prospective PEPPOL pilots.

The Starter Kit includes detailed information about the operational, technical and legal aspects of the PEPPOL project. In particular, it focuses on the piloting process, starting from the initial engagement to implementation and conformance to the PEPPOL specifications.

We assume the readers of this document have a general understanding of PEPPOL, its goals and the benefits of engaging in and promoting a fully automated, standards-based eProcurement environment.

For more information about the PEPPOL project, please see: <http://www.peppol.eu>

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„European businesses need to be able to sell goods and services to public administrations anywhere in Europe as easily as in their home country. eProcurement will save time and money - both for those companies proposing their goods and services and for their clients. The EU funded PEPPOL project has developed solutions for interoperable eProcurement as part of EU's eGovernment Action Plan.“

*Neelie Kroes
Vice-President of the European Commission
responsible for the Digital Agenda*



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About this guide

Section 1

This section provides a high-level overview of PEPPOL, its vision, components and standards used.

Section 2

This section provides a more in-depth view of the types of roles available to prospective PEPPOL pilots, the specific criteria defined for pre and post-award scenarios, and an outline of the benefits of piloting the PEPPOL solutions.

Section 3

This section provides information about the structure of the PEPPOL project, the rationale behind the PEPPOL specifications, the connection to the CEN BII profiles, and the long-term benefits of process alignment adoption.

Each PEPPOL component (the Virtual Company Dossier, eCatalogue, eSignature Validation, eOrder, and eInvoice) and its associated processes are illustrated. Links to the PEPPOL tools and specifications are provided along with supporting documentation. A description of the PEPPOL Transport Infrastructure and information about how to connect to PEPPOL is included in this section.

Section 4

A practical view of the PEPPOL testing and validation process is provided in this section, including the conformance criteria for the pre and post-award components and the PEPPOL transport infrastructure. Links are provided to the test website where tools and guidelines are available for testing the various PEPPOL scenarios.

Section 5

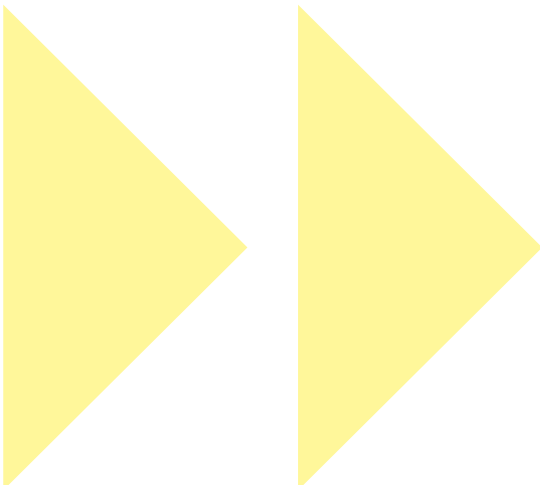
This section describes the PEPPOL Governance Model, details about national vs. regional coordination, and links to the appropriate legal agreements.

Section 6

This section describes the technical requirements, the various approaches for achieving technical and operational capability, and checklists defined for specific PEPPOL pilot roles.

An outline of the pilot engagement and on-boarding process, ongoing support, and a link to the PEPPOL sign-up form is included.

Annex 1: includes an overview of the Open e.PRIOR project of the European Commission.



Key Definitions

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ARTIFACT: one of many types of results obtained during the development of software. For example, open source software components, specifications and design documents to describe the function, architecture and design of software.

BUILDING BLOCK: a building block is a fundamental element created by PEPPOL to enhance cross-border interoperability. It can refer to the PEPPOL specifications that an IT system must follow to be PEPPOL compatible and therefore interoperable with other similar IT systems. More commonly, it refers to an open source software artifact that PEPPOL has developed, on the basis of those specifications, which can be integrated into existing IT systems, allowing them to interoperate with other PEPPOL compatible systems.

BUSINESS PROFILE: a business profile is a technical specification describing the “choreography” of the business process covered. It is a detailed description of the way the business partners collaborate to play their respective roles and share responsibilities to achieve mutually agreed goals with the support of their respective information systems.

Contracting Authority: a Contracting Authority (public sector buyer) means the State, regional or

local authorities, bodies governed by public law, association formed by one or several of such authorities or one or several of such bodies governed by public law.

DATA MODEL: a data model refers to the set of data included in a business document, and to the structure and metadata according to which the data is organised.

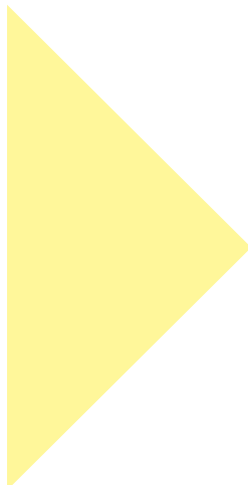
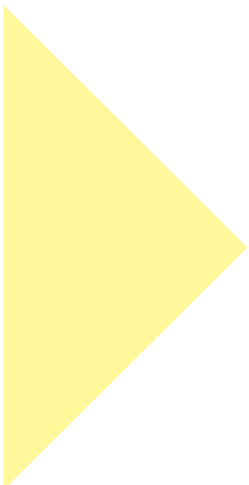
ECONOMIC OPERATOR: the term covers equally the concepts of contractor, supplier and service provider, meaning any natural or legal person or public entity or group of such persons and/or bodies which offers on the market, respectively, the execution of works and/or a work, products or services.

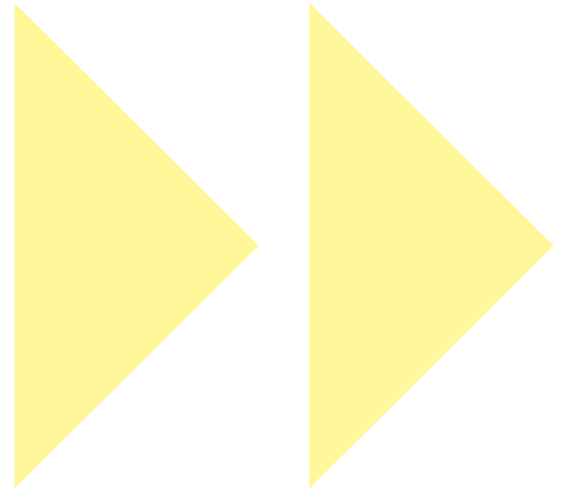
EPROCUREMENT COMMUNITY: an eProcurement community is defined as a group of organisations (buyers, suppliers) which operate a common set of electronic processes by using the same IT solution to undertake common aspects of the procurement process. An eProcurement community can be based around a Contracting Authority (buyer), an economic operator (supplier), or an ICT service provider.

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Glossary of acronyms and abbreviations

AP:	Access Point
BUSDOX:	Business Document Exchange Network
CA:	Contracting Authority
CEN:	European Committee for Standardisation
CEN BII:	CEN Workshop on “Business Interoperability Interfaces on public procurement in Europe”
CFT:	Call for Tender
CIP:	Competitiveness & Innovation Programme
CPV:	Common Procurement Vocabulary
CSD:	Content Specific Data
EBR:	European Business Registers
EIF:	European Interoperability Framework
EO:	Economic Operator (supplier of goods or services to a Contracting Authority)
GUI:	Graphical User Interface
ICT:	Information and Communication Technology
ID:	Identifier
LIME:	Light Weight Message Profile
MS:	Member State
NPPA:	National Public Procurement Act
PEPPOL:	Pan-European Public Procurement OnLine
PPRS:	PEPPOL Public Registry Service
SLA:	Service Level Agreement
SML:	Service Metadata Locator
SMP:	Service Metadata Publisher
START:	Secure Trusted Asynchronous Reliable Transport
TED:	Tenders Electronic Daily
TSE:	Tender Structure Element
UBL:	Universal Business Language
UN/CEFACT:	United Nations / Centre for Trade Facilitation and Electronic Business
VCD:	Virtual Company Dossier
WG:	Working group
XML:	Extensible Mark-up Language





Section 1

The Peppol Project

The Peppol Project

„eProcurement is the future of public procurement. It delivers better procurement outcomes, reduces waste and error, and helps public purchasers to manage complex transactions more efficiently. In 5-10 years time, most public procurement processes will be conducted electronically. We have to start preparing for that change now.“*

1.1 INTRODUCTION

While many European countries already use electronic procurement to make tendering of public sector contracts simpler and more efficient, most of these solutions are implemented solely on a national or regional level, with limited access to other communities. Since 2008, the Pan-European Public Procurement Online (PEPPOL) project has been developing and implementing the technology standards to align business processes for electronic procurement across all governments within Europe.

PEPPOL's vision is to enable businesses to communicate electronically with any European government institution in the procurement process, increasing efficiencies and reducing costs.

Through agreement on specifications for cross-border procurement processes, the European Commission's pilot project PEPPOL has contributed to the development of a pan-European, standards-based IT infrastructure. PEPPOL has not replaced, but built upon, the existing strengths of national eProcurement systems by using information and communication technologies to enable them to connect with each other.

The PEPPOL consortium is comprised of leading public eProcurement agencies in 11 countries: Austria, Denmark, Finland, France, Germany, Greece, Italy, Norway, Portugal, Sweden and the United Kingdom. PEPPOL activities are funded jointly by consortium members and the European Commission.

In order to set the right expectations and understand the value of piloting the PEPPOL solutions, it is important to clarify the following:

Domain: PEPPOL addresses electronic public Procurement (thus not any generic public procurement issue falls within its domain).

Scope: PEPPOL focuses specifically on interoperability in

eProcurement. The operations that take place within the stakeholders systems (for example: ranking and evaluation of eTenders, eNotifications and ePayments) are considered out of scope. However, in scope are processes and documents exchanged by the stakeholders during the eProcurement process such as eSignatures, eAttestations (the Virtual Company Dossier) eCatalogues, eOrdering, and eInvoicing.

Solution Strategy: PEPPOL does not attempt to provide an integrated platform. It offers instead a modular set of IT specifications, and associated open source interoperable software solutions that any organisation can easily install on its existing ERP systems to interoperate with others, exchanging specific business documents. Thus, the strategy is not to replace existing solutions, but to integrate them and allow them to communicate.

In summary, the objective of the PEPPOL solutions is to facilitate cross-border transactions and to lower barriers for SMEs. The solutions have been designed to operate across European borders, regions or business sectors, supported by low-cost technologies, making them affordable also for SMEs.

1.2 PEPPOL PILOT PHASE

The PEPPOL project has completed the documentation of best practice content standards and common business practices in 2010, and established a fully-tested open exchange infrastructure across Europe. In spring 2011, PEPPOL began its production pilot phase, making use of PEPPOL-enabled platforms and PEPPOL-conformant solutions, with which the first pilot participants were able to exchange cross-border eInvoices and verify eSignatures. The first eAttestations in Virtual Company Dossiers were used in a national post-award context.

PEPPOL is actively seeking additional public entities, such as government agencies, suppliers and ICT companies for

* Source: Michel Barnier, European Commissioner for Internal Market and Services

participation in the pilot programme. In addition to gaining valuable experience with the established standards by working with PEPPOL's implementation experts, organisations will begin to realise time and cost savings and greater efficiencies in all aspects of electronic public procurement. Following the completion of the project, it is expected that usage of PEPPOL components will expand through a combination of public and private sector adoption.

1.3 PEPPOL SOLUTIONS OVERVIEW

PEPPOL's success is based on a modular building block approach, where organisations can grow their PEPPOL usage together with their expanding capabilities in eProcurement. For example, businesses and government agencies can start with eInvoicing, and later extend to eCatalogues and eOrders.

PEPPOL is developing the following solutions to enable a standards-based IT infrastructure and services for cross-border public eProcurement in Europe:

In the pre-award phase, PEPPOL is building the following set of

using standardised properties and classifications provided by the PEPPOL Properties Server).

- a Transport Infrastructure available for the pre-award processes but used mainly in the post-award phase.

For the post-award process, PEPPOL includes:

- eCatalogue to exchange information about goods and services available under the contract
- eOrdering and eInvoicing using a defined set of processes to share common business information
- Validation of eSignatures issued by certificate authorities
- Virtual Company Dossier to update the qualifications of economic operators in existing contracts
- a Transport Infrastructure

These solutions are based on data models for the documents using common structures and reusable components. This makes it possible to build an order document with information from a catalogue and to create an invoice document from an order without retyping information, thereby reducing the manual work required and limiting the risk of errors in the procurement phase.

PEPPOL's Transport Infrastructure interconnects eProcurement systems using common and nationally compatible standards. Access to the PEPPOL infrastructure takes place through Access Points, which are currently provided by both government agencies and private companies, but which can in principle be created by any interested entity, following a pre-defined set of commitments. By defining profiles and tools for interoperability on both a national and international scale, PEPPOL seeks to

interconnect the islands of eProcurement communities that currently operate across Europe. Once connected to the PEPPOL Transport Infrastructure, organisations can reach any other community already using the PEPPOL network.

Virtual Company Dossier (VCD)

The Virtual Company Dossier (VCD) has been developed to address the demand for better interoperability in electronic tendering, offering simplification, transparency and electronic

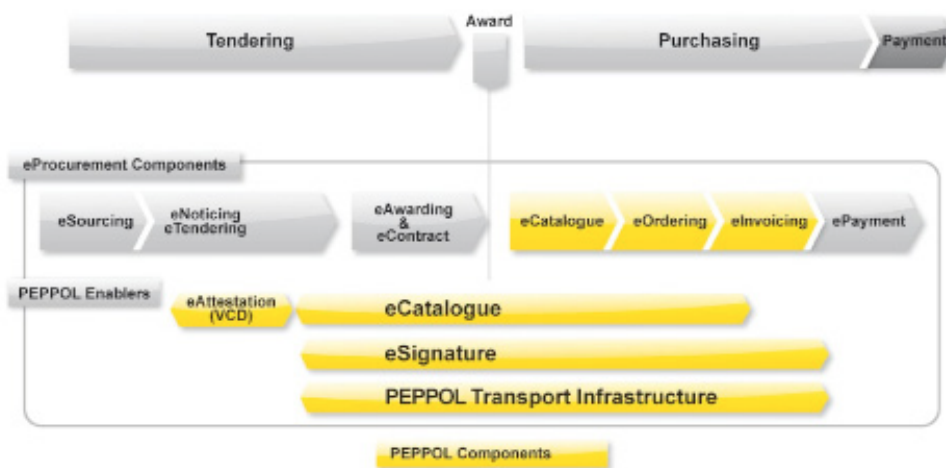


Figure 1: PEPPOL Components

solutions to support the public tender process:

- Validation of eSignatures issued by certificate authorities throughout Europe
- Virtual Company Dossier to request and submit standardised company information and mutually recognised evidence (candidate statements, certificates and attestations)
- eCatalogue to request and submit standardised and formatted information (mainly used by Contracting Authorities to define and structure their request for goods and services

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monitoring of supplier qualifications in public procurement. The VCD provides a standardised method and an electronic document solution to facilitate the selection and delivery of qualification documents across borders. The VCD solution can be used in the pre-award tendering process to provide qualifications as well as in the post-award process to update qualifications for existing contracts. With the VCD solution, economic operators (such as SMEs) are assisted in preparing the correct evidences to meet criteria set in calls for tender or contracts from Contracting Authorities in other Member States.

eCatalogue

A shared approach for providing product information through eCatalogues will save time for suppliers when preparing their offers and will facilitate the evaluation of tenders for Contracting Authorities. Economic operators will be encouraged to invest in the creation of an electronic template of their offer, because it can be reused for different tenders and across sectors. At the same time, the PEPPOL open source solutions may benefit a large number of the smaller public administration offices. Contracting Authorities may use pre-award eCatalogues to include the specific conditions of the call for tender and any other relevant information.

eOrdering

eOrdering begins with the issue of an order by a buyer and ends with the receipt of an order response and the transmission of the delivery instructions from the supplier, by electronic means. Ordering is an important procurement phase as it affects the other phases significantly, from catalogue to payment, enabling reconciliation between order and invoice, avoiding errors and payment delays. The PEPPOL goal is to implement a European Framework that allows SMEs to adopt eOrdering in an effective way to lower their cost of entry and subsequent operating costs.

eInvoicing

The eInvoicing process deals with the claim for payment for goods and services that have been either ordered or delivered, received or consumed under the conditions agreed by the buyer and supplier. eInvoicing links two important value chains: the procurement and the payment process. PEPPOL implements and seeks to pilot arrangements for the exchange of eInvoicing documents between all awarding entities and related economic operators. The goal is to implement a European eInvoicing Framework that allows SMEs to adopt eInvoicing in an effective way to lower their cost of entry and subsequent operating costs.

PEPPOL Transport Infrastructure

The foundation of all PEPPOL services is an interconnected eProcurement infrastructure based on common IT standards compatible with the various solutions provided at the Member State level. The centrepiece of this infrastructure is a messaging service enabling government agencies and private companies to exchange PEPPOL documents in a secure and reliable manner.

eSignature

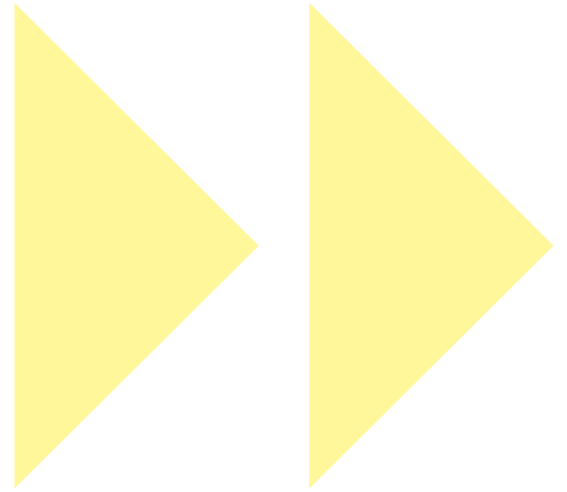
Electronic signatures based on electronic certificates identifying companies and/or single persons are already in common use. They provide the secure identification of the sender of a document. PEPPOL aims to create interoperability between the different national schemes, so that in practice a public sector entity can validate certificates issued in other member states, allowing the electronic submission of tenders across borders.

1.4 PEPPOL SPECIFICATIONS OVERVIEW

The principal PEPPOL specifications are known as 'BIS' and 'BusDox'.

The PEPPOL Business Interoperability Specifications (BIS) are based on the BII profiles. BII stands for "Business Interoperability Interfaces" for public procurement in Europe and is the name of a CEN (European Committee on Standardisation) workshop. PEPPOL BIS are BII profiles detailed to define the common PEPPOL business processes and information content to be used when exchanging business documents across borders or nationally. This enables a French or Swedish company to receive orders and send invoices to an Austrian or Danish Contracting Authority as easily as they would in their home countries. PEPPOL BIS also covers important parts of the tender submission process, making it easier for economic operators to bid for contracts in other European countries.

The 'BusDox' specifications enable the transport infrastructure upon which organisations can exchange business documents electronically, securely and reliably throughout Europe. By establishing a BusDox network for eProcurement, PEPPOL has created a common eBusiness infrastructure with the potential for use by any European organisation – both public and private – and for any electronic document. The BusDox specifications are based on a combination of W3C and OASIS standards, and are being maintained by an OASIS Technical Committee.



Section 2

What is a PEPPOL Pilot?

What is a PEPPOL Pilot?

A PEPPOL pilot must facilitate trade between Contracting Authorities (buyers) and one or more Economic Operators (suppliers), where the Contracting Authorities and economic operators are being supported by different ICT solutions or service providers.

2.1 INTRODUCTION

Over the years, private enterprises have been forming buying groups in order to optimise terms with their suppliers. As eCommerce evolved, some suppliers embraced eSupply Chain initiatives to automate the communications and transactions amongst their supply chain partners. However, the technologies used in these eSupply chains were based on the processes and data formats unique to their own communities. In many cases, these communities had no connections to companies and systems outside of their own, often 'closed' networks.

A PEPPOL pilot aims to solve these cross border / organisational / technical issues, connecting eProcurement communities (islands) by use of common implementations of standards known as PEPPOL Business Interoperability Specifications (BIS), or other PEPPOL tools (e.g. open source software) and related components.

An eProcurement community is defined as a group of organisations (buyers, suppliers) which operate a common set of electronic processes by using the same business processes and/or IT solutions to undertake common aspects of the procurement process. An eProcurement community can be based around Contracting Authorities (buyer centric) or economic operators (supplier centric), and can be operated or supported by service providers.

PEPPOL aims to establish interoperability among eProcurement communities across Europe. The aim is that these former islands of eProcurement would be joined together, while businesses and contracting authorities using the PEPPOL specifications would reap the rewards, including:

- Improved access across borders, technologies and industry groups may increase business potential;
- Widespread connection to PEPPOL may create a more competitive market for standardised eProcurement solutions;
 - Seamless communications among businesses may enhance collaboration and efficiency.

PEPPOL also enables electronic document exchange on a national level where there can be a lack of established principles for data exchange in the public procurement domain.

Two main outcomes for PEPPOL have therefore been identified:

1. Interconnecting eProcurement communities of Contracting Authorities in participating countries for engaging Economic Operators in other countries.
2. Making available open source software together with tools to deal with eProcurement both for Contracting Authorities and Economic Operators (especially SMEs).

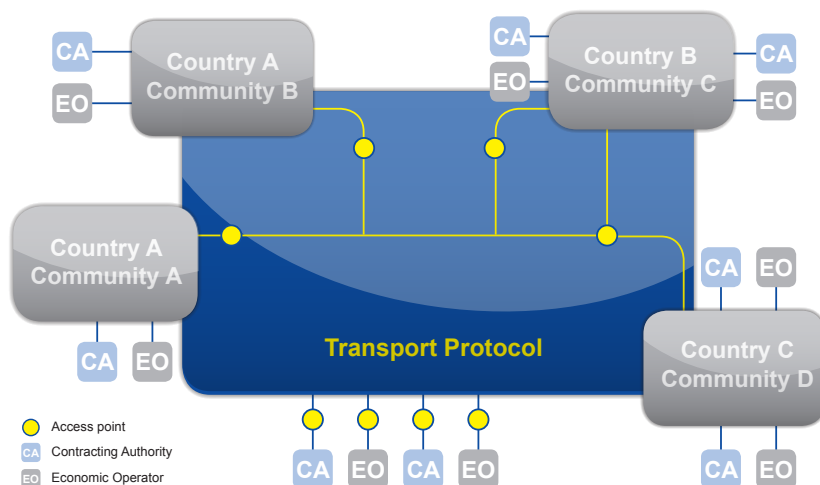


Figure 2: Connecting eProcurement islands

2.2 PILOT ROLES AND BENEFITS

The three main types of participants involved in the PEPPOL pilots are:

- a Contracting Authority (CA): means the State, regional or local authorities, bodies governed by public law, associations formed by one or several of such authorities or one or several of such bodies governed by public law;
- an Economic Operator (EO): the term covers equally the concepts of contractor, supplier and service provider, meaning any natural or legal person or public entity or group of such persons and/or bodies which offers on the market, respectively, the execution of works and/or a work, products or services;
- an ICT solution or service provider: providing software or services implementing PEPPOL specifications.

Contracting Authorities (CAs)

The primary participant for any PEPPOL pilot is a Contracting Authority which provides the incentive for its suppliers (and associated ICT solution providers) to become enabled for PEPPOL business processes. Contracting Authorities may be public procurement agencies from all areas of the public sector.

For example: hospitals, government departments, universities, municipalities, regions, or government agencies established to provide a procurement service to others (central purchasing bodies).

Benefits for Contracting Authorities

PEPPOL aims to break down the barriers to seamless electronic communications across borders and communities, in an effort to deliver significant benefits for taxpayers and Contracting Authorities on all levels as follows:

1. Improved market access across borders, particularly for small and medium enterprises, increases competition and lowers sourcing costs for Contracting Authorities.
2. PEPPOL addresses the complexity of administrative procedures through standardised processes backed by a large number of governments.
3. Local and regional Contracting Authorities have the opportunity to use standardised open source software, interoperable across the EU, for the critical phases of the eProcurement process.
4. Once connected to the PEPPOL network, Contracting Au-

thorities can communicate electronically with any supplier in the network, eliminating the need to enter into agreements with several service providers.

5. Using PEPPOL solutions, Contracting Authorities can easily create eProcurement communities, even at a local level, providing the highest level of services, efficiencies and opportunities.
6. Contracting Authorities who have invested in national or regional eProcurement solutions can continue to use them and still connect to the PEPPOL network, converting to and from the PEPPOL specifications during the transport phase.

Generic eProcurement benefits:

- Greater transparency increases public accountability and reduces potential for corruption.
- Automated procurement speeds up administrative activities and reduces costs.

Through their purchasing power, governments exert significant influence over market dynamics. eProcurement use is growing and momentum is building to achieve critical mass. Contracting Authorities are expected to save €50B-€75B annually when eProcurement is fully operational¹.

Local governments and SMEs in particular will benefit from PEPPOL through the availability of lower cost standardised eProcurement solutions, allowing them to take advantage of all the benefits enjoyed by larger organisations.

Economic Operators (EOs)

Economic Operators can be multinational organisations who may use different systems and networks to interface with Contracting Authorities in different regions or member states, or small business owners who wish to supply Contracting Authorities outside their local community or member state.

Benefits for Economic Operators

By breaking down the barriers to seamless electronic communications across borders and communities, PEPPOL enables suppliers to realise significant benefits:

1. Improved access to tenders across borders increases business potential.
2. Once connected to the PEPPOL network, suppliers can

1. Source: Deutsche Bank Research, "E-procurement", February 2011.

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communicate easily to everyone within PEPPOL, enhancing efficiency and eliminating the need to enter into agreements with several service providers.

3. Suppliers and SMEs in particular can prepare a single Virtual Company Dossier (eAttestation) to be used across borders, reducing complexity caused by language and legal differences.
4. The use of standardised eCatalogues and common processes for eOrdering and eInvoicing across borders removes the operational and technical obstacles, providing the basis for interoperability at local, national and European level.
5. Companies who have invested in national or regional eProcurement solutions can continue to use them and connect to the PEPPOL network (converting to and from the PEPPOL specifications during the transport phase).
6. PEPPOL simplifies supplier access to public eProcurement by developing simple, easy to use, open source software components.

Generic eProcurement benefits for suppliers:

- Greater transparency increases accountability and reduces corruption.
- Electronic procurement speeds up administrative activities and reduces costs; resulting in immediate processing of invoices and improved cash flow.

While the PEPPOL network is open for all types of suppliers from any sector, a key focus of the project is to attract SMEs. SMEs typically do not have the resources to automate administrative functions and find the disparity in data formats creates additional cost and complexity. The introduction of PEPPOL alleviates these problems through the need to comply with only one set of standards. PEPPOL makes it easier for suppliers to do business with public authorities, and with widespread adoption, the interconnection of businesses across the EU will produce greater opportunities and improved economies of scale.

ICT Industry (ICT)

There are different ways in which ICT companies can be engaged with implementing or supporting PEPPOL specifications:

- PEPPOL service providers - such as Value Added Network providers (VANS) who act as Access Point and/or SMP providers for the PEPPOL transport infrastructure.

- PEPPOL middleware providers - providing Contracting Authorities or Economic Operators with software components or services to integrate PEPPOL eProcurement processes. These are typically document translation and exchange services.
- PEPPOL enabled platform providers - providing Contracting Authorities or Economic Operators with the necessary software components to perform PEPPOL eProcurement processes.

Benefits for the ICT industry

The ICT sector plays a key role in various aspects of the implementation of PEPPOL's infrastructure. Service providers (SPs) and software suppliers will assist Contracting Authorities and economic operators with the technical and legal requirements of connecting to the PEPPOL network and, ultimately, to each other.

Their services may include:

- Exchange of PEPPOL documents between public entities and suppliers
- Connection of eProcurement communities through PEPPOL Access Points
- Digital signature validation across borders
- Document content validation and data conversion based on PEPPOL specifications

As operators for the PEPPOL transport network, SPs provide the infrastructure components that connect Contracting Authorities and their suppliers to PEPPOL's international backbone. With a standardised solution, SPs will no longer have to resort to point-to-point connections for each situation, which is the norm today. IT software suppliers will help Contracting Authorities and economic operators by providing software components to integrate or link their existing IT systems with the requirements.

As the sector most likely to use eProcurement for public tenders today, ICT solutions and service providers are poised to realise further efficiency gains and cost savings as more Contracting Authorities move to eProcurement.

Those firms working with PEPPOL will also be presented with a number of business opportunities:

1. Widespread PEPPOL adoption will create significant additional demand for more advanced IT solutions and service provisions.
2. First movers will gain valuable experience with the specifications and have an advantage in securing the early implementation contracts.
3. Expertise in PEPPOL specifications will add capabilities to their portfolio of solutions.
4. Offering SMEs reach to all public sector entities that are connected to PEPPOL will increase client base.
5. Service and solution providers can adopt the PEPPOL open source software in order to provide new data translation and validation services (to and from the PEPPOL specifications) to their clients.
6. The PEPPOL transport infrastructure is based on the BusDox specifications which are document agnostic, paving the way to expand usage for the exchange of any type of standardised XML document, between any network.
7. Software developers can make use of the PEPPOL open source software to embed PEPPOL enabled solutions in ERP software packages.

Once connected to a PEPPOL Access Point, suppliers and Contracting Authorities can communicate with everyone within the PEPPOL network. As ICT companies scale up their efforts to connect existing procurement communities electronically, the web of interconnected communities will grow, leading to a more efficient business climate throughout Europe.

2.3 PEPPOL PILOT REQUIREMENTS

A PEPPOL pilot fulfils the following requirements:

1. Cross community: the pilot enables the establishment of interoperability between different existing eProcurement communities (or pilot participants);
2. Use of PEPPOL technology: the pilot uses PEPPOL building blocks. In the pre-award domain, at least one of the following components must be used: eSignature, Virtual Company Dossier or eCatalogue. In the post-award domain, use of the PEPPOL transport infrastructure is mandatory in combination with at least one of the following components: eCatalogue, eOrdering, or eInvoicing to enable cross community interoperability.

2.3.1 PRE-AWARD REQUIREMENTS

In the pre-award phase PEPPOL focuses on exchange of electronic catalogues and/or Virtual Company Dossiers (VCDs) with potentially related signatures using the PEPPOL validation infrastructure. A PEPPOL pre-award pilot must fulfil one or more of three basic requirements:

- connecting eTendering communities by enabling document interoperability;
- use of PEPPOL specifications for alignment of business processes and content of documents exchanged;
- use of PEPPOL validation infrastructure for signature validation of signed documents.

By adopting PEPPOL technology, different eProcurement communities can exchange documents and validate their signatures by connecting through the PEPPOL signature validation infrastructure. PEPPOL has set up a pan-European solution that links existing national certificate authorities into an EU-wide interoperable public eSignature validation network. This network can be used also for business to business (B2B) trade in private industry or any other public process in need of signature validation.

The PEPPOL specifications are based on following cornerstone sets of common implementations of standards:

1. Business Processes (e.g.: How do I respond to a request for an eCatalogue?)
2. Document Structures (e.g.: What does an eCatalogue look like?)
3. Schemes for identifying Parties, Products and Places (e.g.: How can I recognise the supplier sending the eCatalogues, the classification and attributes used?)
4. Schemes for identifying the evidences for the criteria of qualitative selection (e.g. How can I recognise the criteria for which the tenderer has provided evidences?)
5. Schemes for identifying and registering eClassification and Property Description Services (e.g.: Where do I find the information about classification, attributes, ontologies?)
6. Design of the tender rules based on user needs (e.g.: document confidence, use of PEPPOL Validation Infrastructure to accept documents).

The pilot activities for a Contracting Authority in the pre-award phase MAY include:

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- Specification and definition of requested goods or services through the use of eCatalogues
- Specification and definition of relevant qualification criteria in a structured and standardised way that can be automatically computed via the VCD solution.
- Validation of eSignatures used in electronic submission of tenders
- All of the above components

Note: Pre Award pilots require initial commitment from Contracting Authorities. Economic operators will be included through their participation in the tendering process. If involved, the pilot activities for an Economic operator in the pre-award phase MAY include: specification and definition of tendered goods or services through the use of eCatalogues; submission of certificates and attestations through the use of Virtual Company Dossiers; electronic signing of any tendering document.

Legal requirements

Pilot participants adopting the VCD must approve the terms and conditions of the European VCD service and the National VCD services. The terms and conditions in both cases have to be accepted as part of the registration process for such a service.

No legal requirements are requested for participating in a pre-award pilot where only eCatalogue is used.

Technical requirements

Pilot participants must claim conformance to PEPPOL specifications. This is based on a self evaluation process supported by guidelines, test documents and compliance criteria. PEPPOL also provides specific tools that support conformance testing of VCD instances.

Note: A Contracting Authority MUST claim conformance to PEPPOL to implement the pre-award eCatalogue component, while an economic operator (supplier) is not required to do so. It is the submitted document which has to be conformant and validated, while the way in which the Economic Operator obtained the document may vary (e.g. use of a PEPPOL tool).

2.3.2 POST-AWARD REQUIREMENTS

PEPPOL post-award focuses on exchange of eAttestations

(VCD), eOrders, eInvoices and related documents, by use of the PEPPOL transport infrastructure.

A valid PEPPOL post-award pilot must fulfil three basic requirements:

1. connecting eProcurement communities, for example: connecting a Contracting Authority and an economic operator in different eProcurement communities
2. use of the PEPPOL BIS for alignment of business processes and content of documents exchanged
3. use of the PEPPOL transport infrastructure for exchange of business documents.

Although the public sector focus is prominent in PEPPOL BIS, it should be recognised that post-award procurement processes within public and private sector is very much the same, making use of PEPPOL BIS a viable option within the private sector.

The results of the CEN workshop on Business Interoperability Interfaces for public procurement in Europe (CEN BII/BII2²) are a significant component in PEPPOL BIS. By use of PEPPOL BIS, different eProcurement communities can exchange messages by connecting through the PEPPOL transport infrastructure.

The PEPPOL Business Interoperability Specifications are based on following cornerstone sets of common implementations of standards:

1. Business Processes (e.g.: How do I respond to an Order?)
2. Document Structures (e.g.: What does an Order look like?)
3. Schemes for identifying Parties, Products and Places (e.g.: How can I recognise the customer sending the Order?)
4. Schemes for identifying and registering eProcurement Services (e.g.: Where do I send the Invoice?)
5. Schemes for updating qualification documents in existing contracts (e.g. How can I communicate changes to my company's qualifications?)
6. Document transport: use of the PEPPOL Transport Infrastructure to exchange documents (e.g.: How do I transport documents?)

2. For more information, please see: <http://spec2.cenbii.eu>

The pilot activities for a Contracting Authority in the post-award phase MAY include:

- receiving an eCatalogue issued by a supplier from another eProcurement community;
- creating eOrders and sending them to a supplier in another eProcurement community;
- receiving an electronic invoice issued by a supplier from another eProcurement community;
- all of the above components.

The pilot activities for an Economic operator in the post-award phase mirror the ones above.

Connecting to the PEPPOL transport infrastructure is mandatory for all post-award processes mentioned above.

Note: These pilots require commitment from both a Contracting Authority and its suppliers.

Legal requirements

ICT service/solutions providers, Contracting Authorities or economic operators planning to set up direct access to the PEPPOL network as an 'Access Point Provider' must sign the PEPPOL Transport Infrastructure Agreements (TIA) to gain access rights to the PEPPOL infrastructure.

For more information, please read section 5 of this document: PEPPOL Governance.

Technical requirements

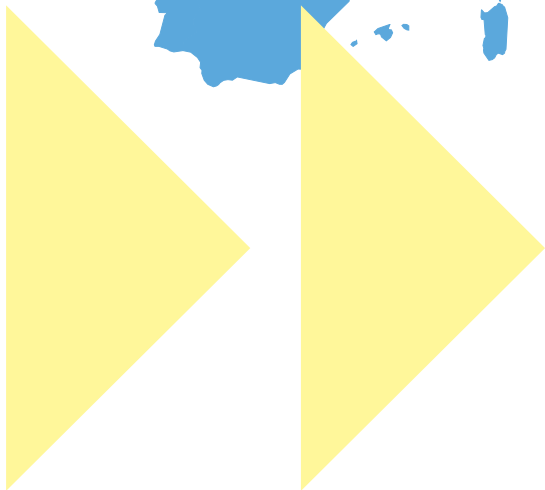
Pilot participants must conform to PEPPOL specifications, in order to "go live". This is based on a self evaluation process supported by guidelines, test documents and conformance criteria.

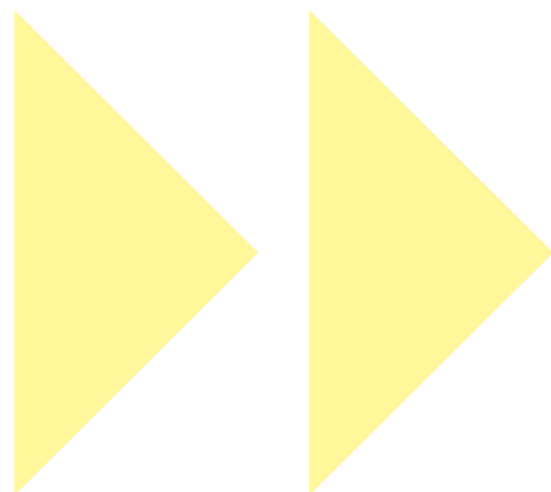
(For more details, please see section 4).

2.3.3 EVALUATION OF A PEPPOL PILOT

For the project duration the pilot organisations must participate in a pilot evaluation as part of internal reporting activities.

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Section 3

PEPPOL ICT Architecture, Components and Solutions

PEPPOL

ICT Architecture, Components and Solutions

3.1 INTRODUCTION

The purpose of this section is to provide the reader with the information needed to fully understand the scope of their prospective PEPPOL project, based on the components their organisation chooses to pilot and on the PEPPOL tools they plan to employ.

Section 3.2 provides an overview of how the PEPPOL project results and artifacts have evolved and how to access the appropriate information.

Section 3.3 provides an overview of the PEPPOL BIS specifications, the CEN BII Profiles, their purpose and the processes they support, in addition to the scope of these specifications within the piloting process.

Section 3.4 provides a more detailed view of the various PEPPOL components, related processes, and links to the BIS specifications and other artifacts - starting with pre-award: VCD, eCatalogue, eSignature and then post-award: eCatalogue, eOrder, and eInvoice.

Section 3.5 provides an overview of the PEPPOL Transport Infrastructure, followed by instructions for PEPPOL pilots to connect to PEPPOL.

3.2 PEPPOL PROJECT RESULTS

3.2.1 Background

In the first phase of the project, PEPPOL focused on the identification of the challenges for interoperability in cross border public procurement together with the most suitable solutions. These results represented the starting point for the second phase of the PEPPOL project where an explicit set of requirements (specifications) and tools to implement PEPPOL components have been developed, in particular:

1. **Specifications** - Developing technical specifications of the architecture and the building blocks necessary to implement the high level scenarios outlined in the first phase. These specifications have been provided to PEPPOL

participants to create suitable implementations for their pilot operations.

2. **Tool Development** - Developing software tools based on the initial specifications suitable for Contracting Authorities and Economic Operators (particularly SMEs) to facilitate the connection and interoperability of their business process. The results were documented as the preliminary description of the Reference Implementations (Tool Development).

In particular PEPPOL has focused its software building blocks on enabling small and medium size suppliers (SMEs) who represent the audience with the greatest potential benefit from enabling cross-border eProcurement.

Implementations of the specifications, in conjunction with the PEPPOL infrastructure, address the Organisational, Semantic and Technical interoperability layers of the European Interoperability Framework (EIF) version 2.0³.

3.2.2 Structure

The PEPPOL Enterprise Interoperability Architecture (EIA) is a structured approach to present the PEPPOL artifacts (project documents, specifications, user guides, software tools, etc.) in a repository so that different stakeholders can access information relative to their specific needs, in a consistent and flexible way.

The EIA repository is a useful tool for organisations interested in implementing the PEPPOL components, and becoming familiar with the results of the project.

The PEPPOL EIA is a 3 dimensional cube (see Figure 3).

At the top, the cube comprises 4 interoperability communities, reflecting the PEPPOL components:

- eSignature Validation Infrastructure – validates eSignature certificates across EU borders.
- Transport Infrastructure – enables pan-European eDelivery of business documents between the eProcurement communities

3. http://ec.europa.eu/isa/strategy/doc/annex_ii_eif_en.pdf

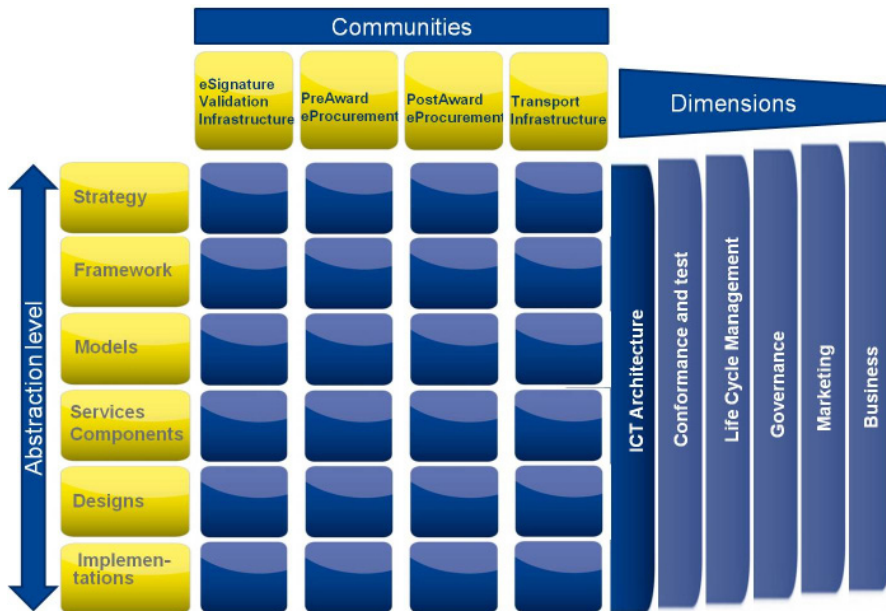


Figure 3: PEPPOL Enterprise Interoperability Architecture (EIA)

ICT Architecture, Conformance and Test, and Governance.

Furthermore, each community dimension is divided into 6 abstraction levels:

- Strategy (setting strategy, scope and principles)
- Framework (high level view)
- Models (models, guidelines and specifications of the different services and components)
- Services and Components (reusable services, components and tools supporting the models)
- Designs (instances and results of conceptual implementations)
- Implementations (instances and results of implementations)

- Post-Award eProcurement - enables the purchasing process consisting of eCatalogue, eOrdering and eInvoicing
- Pre-Award eProcurement - enables the tendering process currently consisting of eAttestation (VCD) and eCatalogue

The above 4 communities are also linked to 6 dimensions:

- ICT Architecture – providing the ICT scope, solutions and ICT architecture for the interoperability community
- Conformance and Test – comprising the requirements, processes and tools of conformance for the different interoperability stakeholders
- Life Cycle Management (LCM) – processes for LCM of business and ICT architectures
- Governance - comprising the governance structure, legal framework and processes for the business and ICT architectures
- Marketing – including processes and material for increasing awareness and recruiting new participants for PEPPOL pilot projects
- Business – being the business scope and business architecture of the interoperability community

These 6 abstraction levels can be viewed as follows:

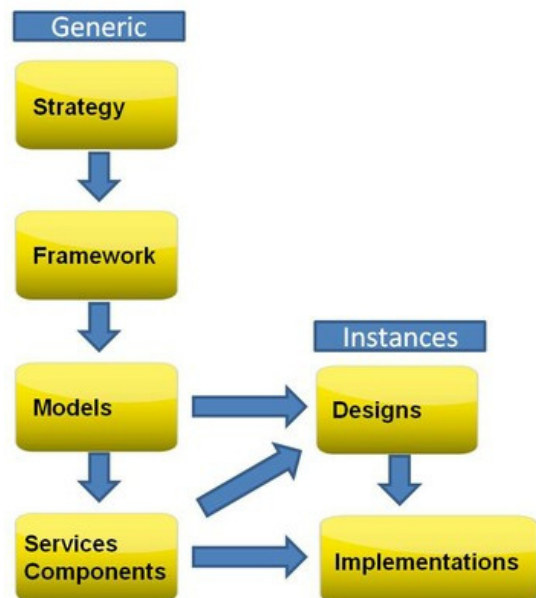


Figure 4: PEPPOL EIA Abstraction Levels

Work on the EIA is ongoing as development progresses. Currently, three of the six dimensions have been put into operation:

Strategy, Framework, Models, Services and Components are generic artifacts where the Models can be instantiated into spe-

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cific designs and implementations. The Services and Components can be used in the specific designs and incorporated into the implementations.

http://www.peppol.eu/peppol_components/peppol-eia

3.2.3 Open Source Observatory and Repository (OSOR)

PEPPOL provides many supporting software sample implementations that are available on an open source licence from OSOR (the Open Source Observatory and Repository for European public administrations).

Some of these implementations are:

- Software components to be used in implementing the Transport Infrastructure
- Validation artifacts such as XML schemas and schematron files for validating PEPPOL BIS document instances
- Formalisations of BIS business rules for incorporation into other software engines
- PEPPOL Demonstrator Client – a client application implementing the PEPPOL specifications that can be used to demonstrate functionality

Joining the PEPPOL OSOR community also provides access to a collaborative forum for software developers.

For more information please see: <http://peppol.forge.osor.eu>

3.3 PROCESS ALIGNMENT AND STANDARDS

3.3.1 CEN BII Profiles Overview

The PEPPOL project has been built on the basis of standards and tools recommended by the CEN/ISSS workshop on Business Interoperability Interfaces (CEN ISSS/WS BII).

CEN is the European Committee for Standardisation, whose 31 national members work together to develop voluntary European Standards. CEN workshops also rely upon input and review from a vast team of technical and business experts across the private and public sectors.

The objectives of the CEN 'BII' (Business Interoperability Interfaces) workshop are:

- to identify and document the required business interoperability interfaces related to pan-European electronic transac-

tions in public procurement expressed as a set of technical specifications developed, taking account of current and emerging UN/CEFACT standards in order to ensure global interoperability;

- to co-ordinate and provide support to pilot projects implementing the technical specifications in order to remove technical barriers preventing interoperability.

The requirements and final specifications will be input into UN/CEFACT to contribute to the achievement of a single set of global standards for eProcurement.

The Workshop has the following main activities:

1. Specification of message contents and business processes
2. UBL-UN/CEFACT standards convergence
3. Provision of a toolbox that will ease the software vendors' adoption of the specifications and improve technical interoperability
4. Providing technical support for adopters and implementers of the BII deliverables
5. Providing a forum for governance, life cycle management and further refinements of the CWA published by CEN WS/BII
6. Contributing to coordination and harmonisation amongst European initiatives addressing various aspects of eProcurement.

The main deliverables from the CEN ISSS/WS BII are the BII Profiles. A BII profile specifies:

- On the business level they include agreement of business rules, processes and semantic document models
- The business eProcurement process i.e. the choreography with a detailed description of the way the business partners collaborate, play their respective roles and share responsibilities to achieve mutually agreed goals with the support of their respective information systems
- The structure and semantics of the involved eProcurement documents i.e. the information content of the electronic business transactions exchanged by referencing a common core data model for each of the business transactions
- On a syntax level they include usages of XML documents compliant with schemas from eBusiness standards such as UN/CEFACT XML and OASIS Universal Business Language 2.0

3.3.2 Business Value of the BII Profiles

Organisations that exchange business documents electronically reap substantial rewards in terms of costs savings, improved turn-around times, and increased customer satisfaction. While there are many types of 'eBusiness' service providers and software available in the marketplace, eBusiness technology adoption may seem complex or cost-prohibitive for many companies, in particular SMEs.

This complexity exists because different organisations use any number of different processes, their systems produce different types of data in various output formats and there are many different ways to send or receive electronic data.

The business processes used in an organisation may be influenced by:

- the customer requirements of a particular business sector or industry
- software developed for a specific sector or industry
- the complexity of the products or services offered
- the process and control elements developed by staff and/or management
- legal compliance pertaining to a business sector, industry, or region

Over time, even the most complex processes tend to solidify and become industry or sector 'norms'. In some cases they may have evolved from constraints in the original technologies used or possibly from now-redundant industry/sector practices. In any case, a detailed review may be required to determine the necessary and unnecessary steps involved in any business process.

The CEN BII Profile workshops were created to resolve these differences by bringing together experts from many industries and business sectors to compare their business processes (in this case, eProcurement processes), identify the common and required elements of those processes, and agree on a core set of simplified processes and related data elements that could be used to exchange documents seamlessly between organisations.

The main goal is to achieve a level of interoperability that makes it easier and more cost-effective for organisations to exchange documents electronically.

For more information on CEN/ISSS WS BII: <http://spec2.cenbii.eu>

3.3.3 The PEPPOL Business Interoperability Specifications (BIS)

In general terms, a PEPPOL BIS can be described as a set of specifications that enable the interoperable exchange of documents in a semi open environment, where trading partners can exchange documents without a prior or bi-lateral agreement or set-up, to define individual business scenarios. Separate PEPPOL BIS specifications are available for each PEPPOL scenario (invoice, catalogue, order, etc.).

Based on the European Interoperability Framework (EIF) 2.0, a PEPPOL BIS is a CEN BII Profile with additional legal, organisational and technical requirements to support pan European use.

A CEN BII Profile defines the process and semantic information content. A PEPPOL BIS defines the laws, operations, processes, semantic information content, and technical formats when invoices are sent for example, from a Swedish supplier to a

French buyer.

A PEPPOL Profile (BIS) is a technical specification describing:

Legal:

- Identifying legal requirements, setting the eProcurement legal scope of the specification;

Organisation business:

- Identifying business requirements, setting the Organisation/Business scope of the specification;

Organisation process:

- Using a CEN BII Profile (choreography part) as the foundation defines the Business eProcurement Process;

Semantic:

- Using a CEN BII Profile (transaction part) as the foundation specifies the Business eProcurement structure, rules and

semantics of the involved eProcurement documents, e.g. invoice.

Technical interaction:

- The technical implementation of the business specifications and semantic specifications.
- The binding of the semantics of the eProcurement documents to a syntax e.g. CEFACT or UBL.
- Relationships with the PEPPOL eSignature infrastructure validation

Technical transport:

- Relationships with the PEPPOL Transport Infrastructure.

In order to comply with a PEPPOL BIS, it is necessary to comply with each interoperability layer. (See section 4)

The scope of a PEPPOL BIS is shown in the following diagram.

The PEPPOL BIS – Outline by component

Based on the CEN BII profiles, PEPPOL defines PEPPOL BIS specifications that cover different parts of the eProcurement process as follows:

Pre-award Tendering:

BIS 12a – Catalogue in a Tender Process

Post-award:

BIS 1a Catalogue Only

BIS 3a Basic Order Only

BIS 4a Invoice Only

BIS 5a Billing

BIS 6a Procurement

Links to the BIS specifications can be found in the components section of this chapter.

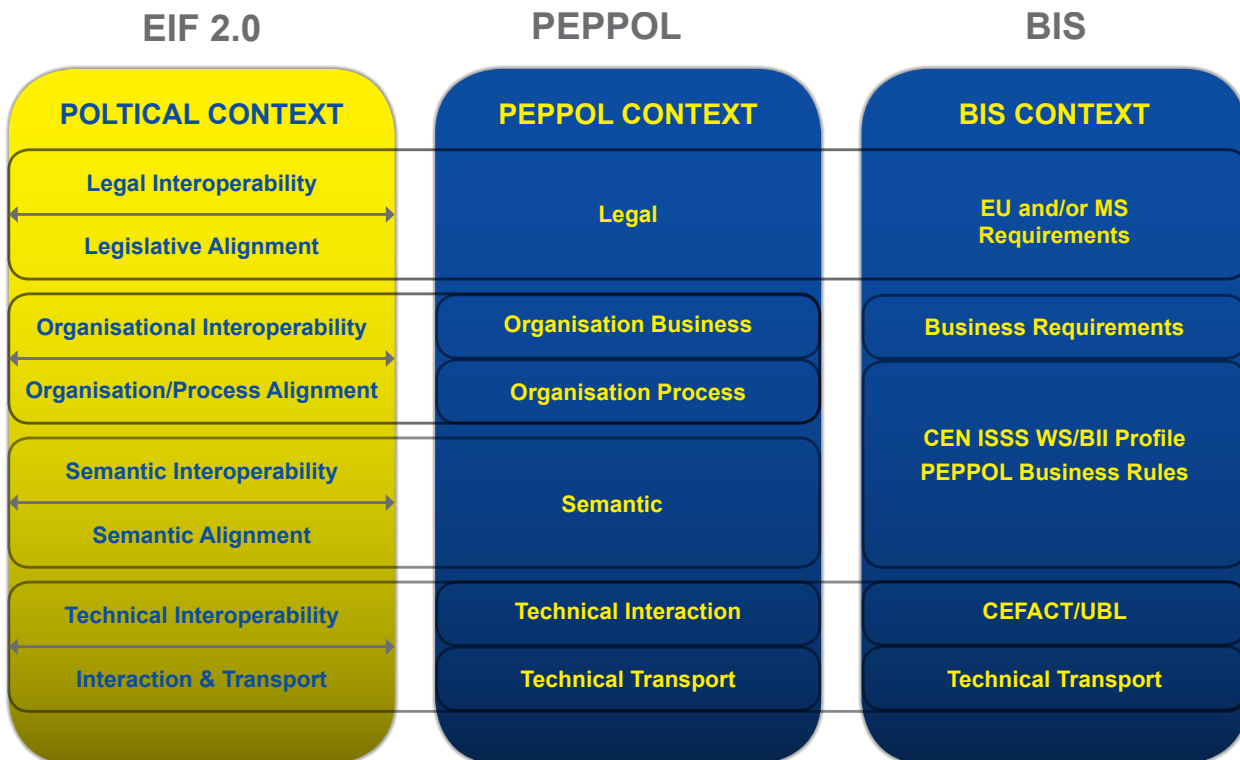


Figure 5: European Interoperability Framework

3.4 PEPPOL COMPONENTS

3.4.1 PEPPOL: a System Independent Integration Model

The overall conceptual model of PEPPOL is a 'system independent' integration model that supports a few common business processes that all participants can support. The solution enables further system to system integration and business workflow integration based on industry or bi-lateral needs. The diagram below illustrates the conceptual model for PEPPOL.

The PEPPOL scope is defined as following:

- A system independent integration model that supports a few common business process for all to support. This model provides organisations with the flexibility to either adopt the PEPPOL BIS in their back-end systems and processes or to continue using industry, regional, or national

standards that can be convertible to the BIS via translation software

- The solution enables further system to system integration and business workflow integration, bi-laterally defined

The main focus of the work is the PEPPOL BIS format, specification and validation of documents that pass through the network. The participants' systems, interfaces, and document transformation are out of scope for PEPPOL, whereas the document transmission is supported by the PEPPOL architecture.

While implementation of the transformation between the different content formats and PEPPOL profile format is out of scope, the specification of the common format for document transfer within the network need to be harmonised. Conformance for document instances can then be measured against sample implementations provided as 'Schematron' components.

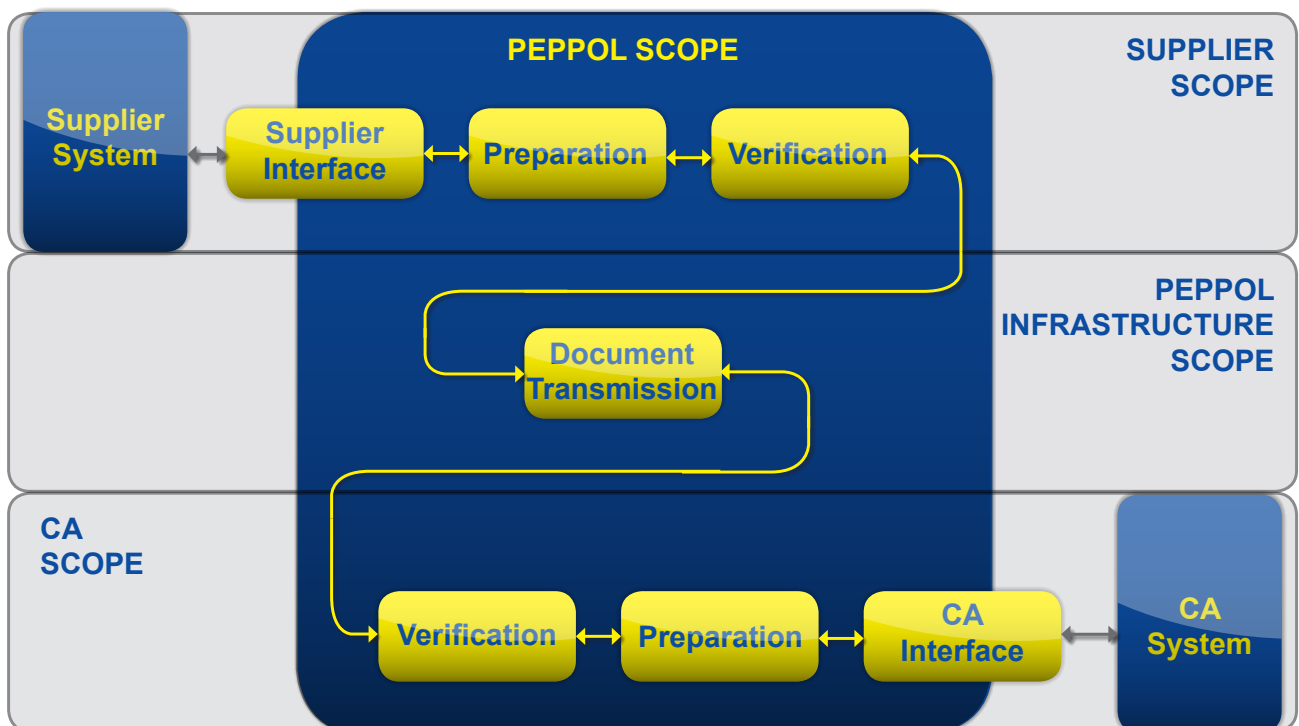


Figure 6: PEPPOL Integration Model

3.4.2. PEPPOL Pre-Award Components

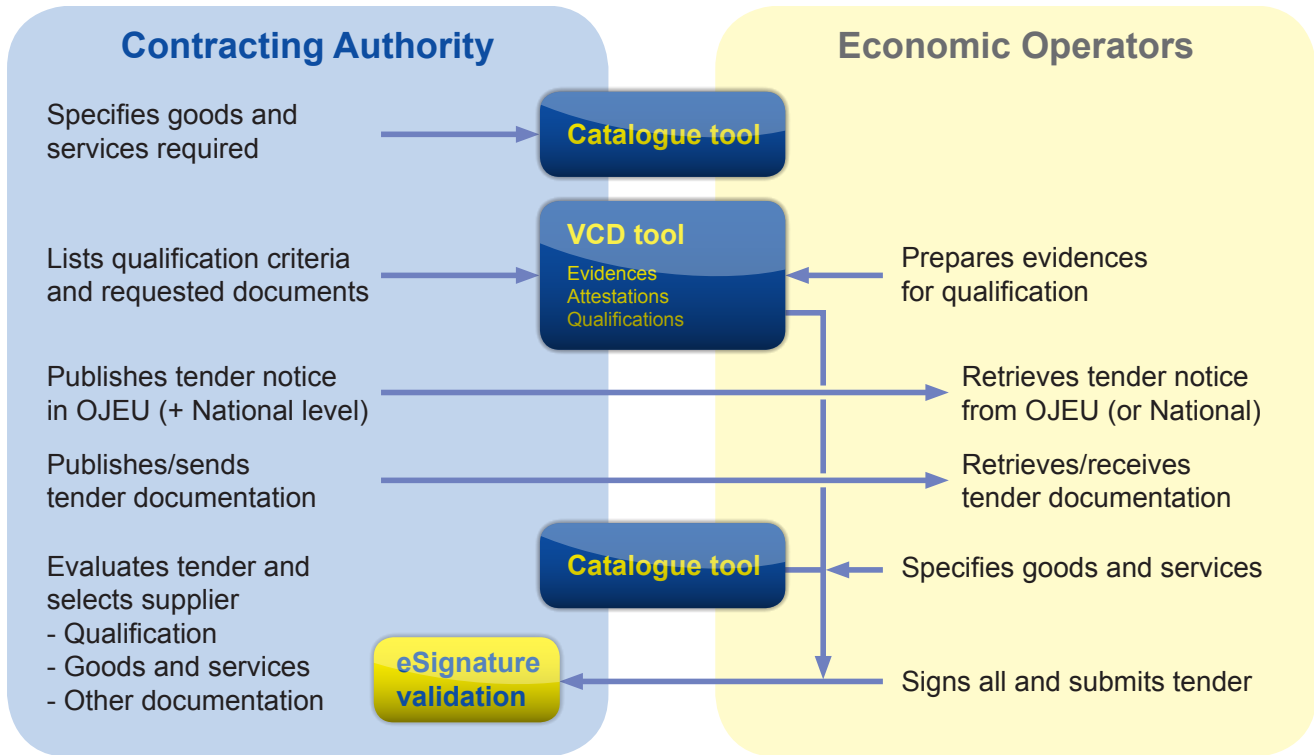


Figure 7: PEPPOL Pre-Award processes

The PEPPOL Pre-Award phase describes the interactions that occur during the Call for Tender process carried out by a Contracting Authority and the subsequent submission of evidence (attestations) and/or product catalogue details provided to the Contracting Authority by an Economic Operator (supplier) in response to a Tender.

Depending on the national legislation or regional policy, an eSignature may also be required in order to authenticate the submission of documents in the pre-award phase. Where eSignatures are required, PEPPOL offers a Digital Signature Validation service to confirm validity of the certificate used for the signature (please see the eSignature part of this section).

Pre-award (tendering) processes tend to follow a closed, 3-corner model, typically using web based methods to submit documents. For pre-award processes the following high-level steps are assumed:

7. A Contracting Authority (CA) defines a Call For Tender (CFT) including a specification of products and goods and relevant criteria of the qualitative selection to be proven.
8. A tender notification is published locally, nationally and/or at European level (OJEU), dependent of the value and the nature of the contract. (This step is outside the scope of PEPPOL).
9. The economic operator (EO) finds a tender of interest and prepares the appropriate documents to prove its qualification for the tender (compliant to the PEPPOL profile and format).
10. The EO signs all documents according to the rules defined by the CA and the CFT. The EO may also use its local signing methods if the CA uses the PEPPOL signature validation infrastructure.
11. The signed PEPPOL compliant document is transmitted to the receiving Contracting Authority using the mechanisms determined by the Contracting Authority in its tender process.
12. The PEPPOL compliant document is verified according to the PEPPOL rules and the business rules at the receiver (Contracting Authority) side.
13. The received document is unpacked and presented to the receiver (the Contracting Authority) through the Receiver Interface. The signature is validated through the signature infrastructure and the documents received are evaluated.

The key point is that in a pre-award process the transport infrastructure is open to any implementation models. It is also in the nature of the pre-award tendering processes that the Interfaces are more complex because they will involve the collation and interpretation of diverse sets of information as is required in a tender submission. Therefore, although the conceptual models are the same it is useful to identify two different Reference Architectures (pre and post-award) to reflect the different emphasis of each context.

The diagram (Figure 7) illustrates the pre-award process flow using the PEPPOL Virtual Company Dossier (VCD) and the eCatalogue Tool.

3.4.2.1 VIRTUAL COMPANY DOSSIER (VCD)

The Virtual Company Dossier (VCD) is being developed to address the demand for better interoperability in electronic tendering, offering simplification, transparency and electronic monitoring of supplier qualifications in public procurement.

The PEPPOL project is developing an eAttestation tool for tendering to provide a standardised method and electronic document solution to support Contracting Authorities and Economic Operators during the qualitative selection process.

For eligible Economic Operators, participation in public tenders requires proof of fulfilment of the qualitative selection criteria requested by the Contracting Authority. The burden of proof lies with the Economic Operator, who must collect evidences from different (national) sources and provide them to the Contracting Authority. The VCD will assist Economic Operators and Contracting Authorities in their communication by providing a standardised structure to submit evidence that can be used for both national and cross-border procurement processes.

The cross-border dimension of eProcurement can be complex due to the application of differing legal requirements between the parties where the selection criteria may not apply to specific evidences, some evidences might not exist in a country or they may exist but in a different form. Moreover, competent issuing authorities are unknown across borders thus documents often have to be legalised and translated by the Economic Operator.

The VCD aims to reduce some of these barriers by providing an interoperable electronic document solution that supports the exchange of evidences. The VCD structure is defined according to the qualitative selection criteria introduced by the European Procurement Directive 2004/18/EC (Art. 45 – 50) but it also refers to corresponding national legislation.

The VCD can be used by any Economic Operator from the European Union to prove compliance with criteria when participating in public (pan-European) tenders while it can also be used by Contracting Authorities for monitoring eligibility and suitability of national and foreign candidates.

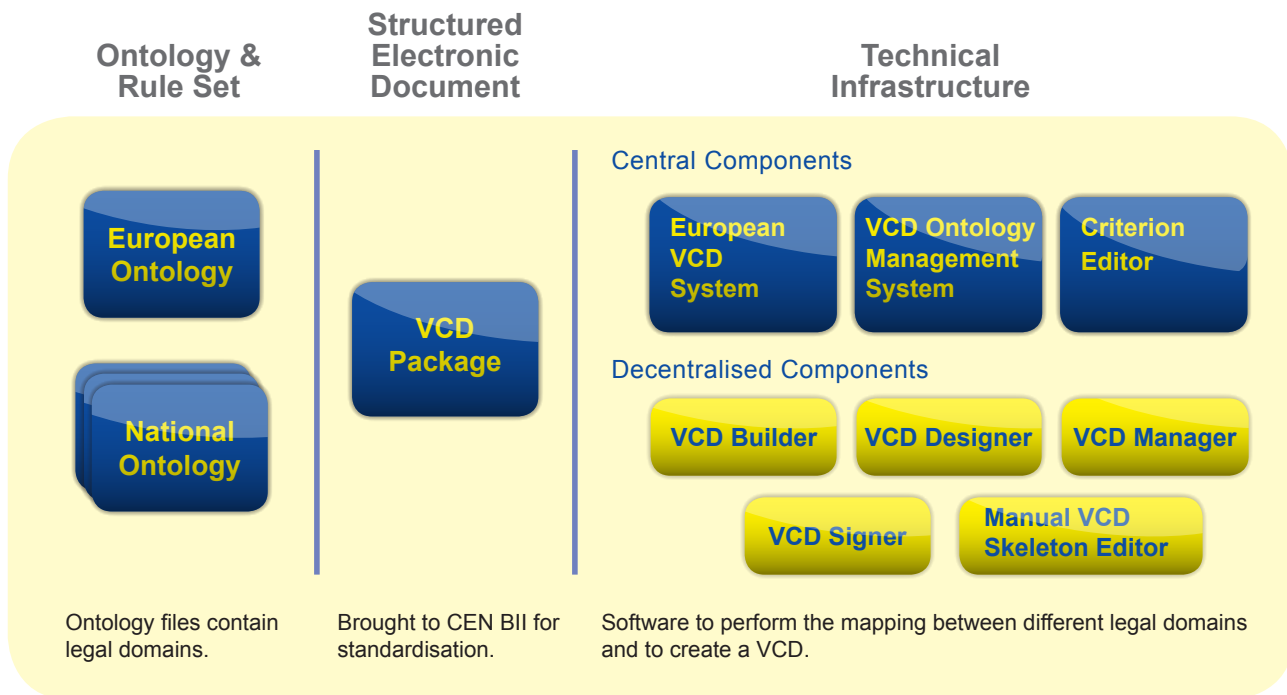


Figure 8: PEPPOL VCD Building Blocks

The VCD building blocks (Reference Implementation)

The VCD specification and pilot implementation form a key building block for pan-European eProcurement through the uniquely described data to be exchanged between tenderers and Contracting Authorities across Member States. The PEPPOL VCD full support solution represents a highly advanced and comprehensive solution for the VCD concept. The main components of this PEPPOL VCD full support solution are described in Figure 8 and explanation below:

VCD components

- The ontology and rule-set represents the knowledge required for the legal mapping between criteria and evidences according to European and national procurement regulations.⁴ It contains information about European and national criteria as well as evidences and defines the links between them, i.e. which evidences are sufficient to prove compliance to a given criterion.
- The European VCD System (EVS) provides decision support for deriving evidences based on the aforementioned ontologies in order to meet the required criteria defined in the Call for Tenders pursuant to the underlying legal rule sets in accordance to European and national procurement legislation. The EVS provides reasoning and makes decision support accessible via system and user interfaces. It provides a tender specific VCD structure (VCD Skeleton Container) to the Economic Operator that can be used to include evidences accordingly. It also provides a service interface to the VCD Designer. The European VCD system is maintained via the Ontology Management System (OMS). Therefore the rule sets of the EVS are represented as machine interpretable ontologies. The OMS provides the editing and management functionality for the different ontologies. The Ontology Management System can be used simultaneously by the different ontology editing teams to keep the legal rule sets up to date.
- The National VCD System provides a full range of VCD functionalities to the Economic Operator from the initial selection of criteria (via the VCD Designer) to the finalisation of a validated VCD Container (through the VCD Builder). A core functionality of the NVS is to enter data and to upload evidences to a VCD. Depending on implementation architecture decisions, it can be provided as an authorised national service, integrated into existing tendering platforms, or used as a stand-alone component. Implementers can use all parts of the NVS reference implementation. The VCD designer is a component allowing users to create a VCD Skeleton Container that can be used by the VCD Builder for the creation of the desired VCD. It uses the information about economic operators and their relationship among each other (tenderer structure), the criteria and other relevant information defined in the Call for Tenders. It therefore provides an interface to the EVS in order to derive appropriate evidences pursuant to the underlying legal rule sets. Together with the VCD Builder, it can be used in a desktop or web-based NVS environment and is part of the NVS reference implementation. The VCD Builder is a web or desktop application allowing users to enter data and to upload evidences according to the VCD skeleton Container. It creates a VCD Container and is part of the NVS reference implementation.
- The VCD Schema specification consists of standardised document and container schema specifications for VCDs, VCD packages and VCD containers that are used by the European VCD System and National VCD Systems at distinct VCD Package Container production stages.
- The VCD Viewer is a component to view and navigate through the content of any VCD Container without having the possibility to edit or change content. This component is dedicated for use by Economic Operators and Contracting Authorities.

The Economic Operator can send the VCD Container to a Contracting Authority either by directly submitting it to a tendering platform or any other means of electronic communication accepted by the Contracting Authority which may also include the use of the PEPPOL transport infrastructure. In order to encourage Contracting Authorities to use the PEPPOL infrastructure in pre-award processes, the VCD team is currently elaborating the prospects for defining a PEPPOL VCD BIS.

The **VCD Signer** will provide the technical means to digitally sign VCD Container and the included XML meta-data files according to the XAdES (XML Advanced Electronic Signatures) format. It will provide interfaces so that other components can directly access its functionality.

As not all EU Member States will have their corresponding national rule set defined in the ontology of the European VCD system from the beginning, the “PEPPOL VCD manual editor”

4. The criteria of qualitative selection are defined in directive 2004/18/EC and have been implemented in national procurement regulations and thus are adjusted to national requirements. Currently, the rule-sets for five country-specific legal domains and the European legal domain exist.

supports Economic Operators with a **manual VCD skeleton editor** as a simplified quick start solution having no compilation support, but optionally some decision support. The Manual VCD Skeleton Editor is a building block that shall support those Economic Operators in creating a VCD Container whose national procurement legislations are not yet part of the European VCD System. In this case Economic Operators have to create the VCD structure with the suitable national evidences manually.

The manual VCD Skeleton Editor is specifically aligned with eCertis⁵. Once the manual VCD Skeleton is created, the VCD Builder (stand-alone component) is used to input missing information and documents in order to compile a full VCD Container. In the PEPPOL VCD manual editor solution, the generated VCD Container content has a different quality. The submission of the VCD Container to a Contracting Authority is planned to use the same channels as within the PEPPOL VCD full support

solution. Likewise, the Contracting Authority uses the VCD viewer to view and navigate through the VCD Container generated by the VCD editor.

The diagram that follows illustrates the full support solution scenario of the VCD reference implementation as well as major building blocks within a tendering process. Each VCD building block thereby indicates the user group for which it is intended (Economic Operators, Contracting Authorities or eTendering solution providers). The figure also differentiates between the different statuses of development and implementation (available and planned) and how it can be used (web-based, stand-alone or integrated into tendering platforms).

Full support in this context refers to the existence of a European VCD System and a National VCD System. Furthermore, the rule-set of a Member State has to be modelled as an ontology within the EVS.

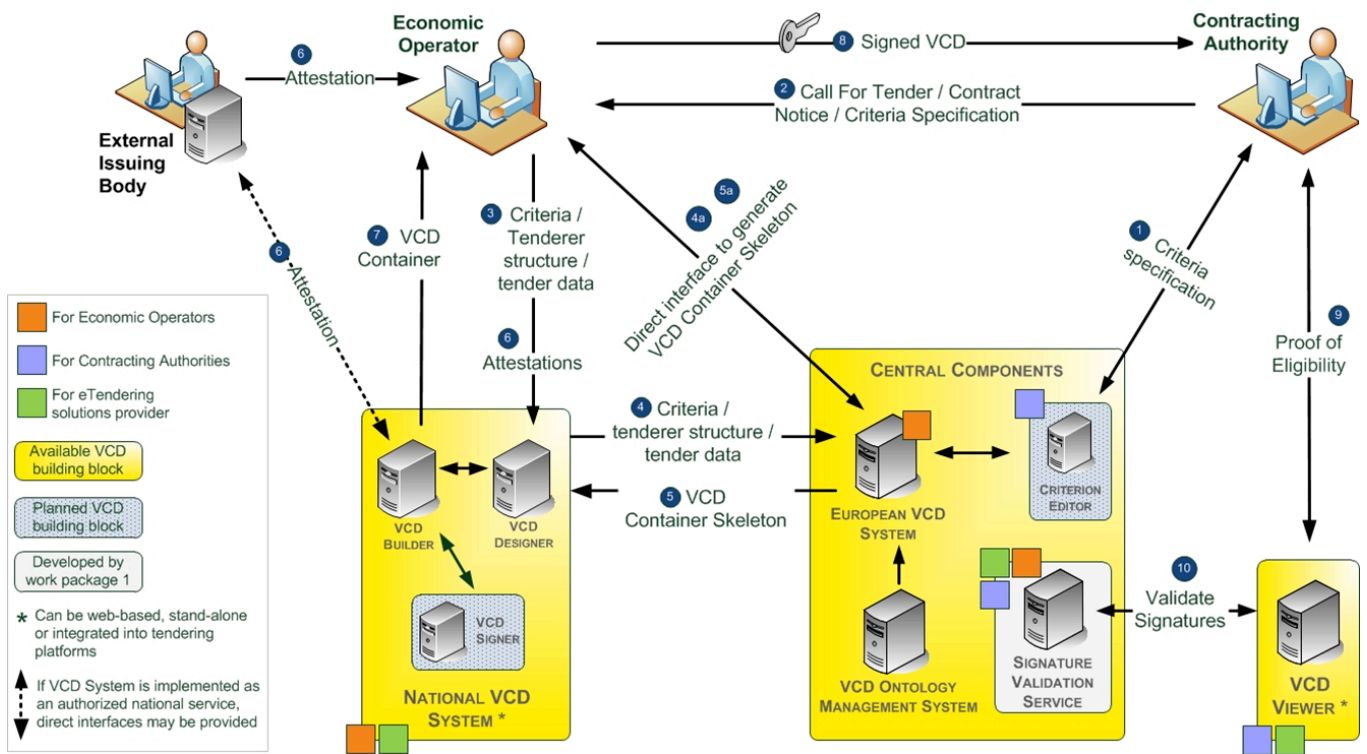


Figure 9: PEPPOL VCD Full Support Scenario

5. eCertis (www.ec.europa.eu/markt/ecertis) is a guide to the different documents and certificates frequently requested in procurement procedures across the 27 Member States, two candidate countries (Turkey and Croatia) and the three EEA countries (Iceland, Liechtenstein and Norway). Economic operators that wish to submit a proposal in response to a foreign Call for Tender and Contracting Authorities that have to evaluate a foreign tender are supported by eCertis to understand what information is being requested or provided.

The flow of interaction which is depicted in the diagram above consists of the following steps:

1. A Contracting Authority uses the criterion editor to define relevant criteria in a structured and standardised way.
2. A Contracting Authority publishes a contract notice (CN). An Economic Operator wishes to participate by requesting the Call for Tender (CFT) and the criteria specification.
3. The Economic Operator submits criteria, tenderer structure and other tender data to the VCD Designer.
4. Having these inputs defined in the VCD Designer, the Economic Operator can now invoke the European VCD System via system to system interface. Alternatively the European VCD System also provides a direct user interface to generate a VCD Container Skeleton (4a/5a).
5. The European VCD Service creates a VCD Container structure consisting of relevant criteria and suitable evidences to be provided by the Economic Operator.
6. The VCD Container structure is passed over to the VCD Builder. The Economic Operator can now fill the structure with attestations and candidate statements. In countries where the VCD system is implemented as an authorised national service, direct interfaces to issuing bodies may be provided.
7. Having filled the VCD structure with all relevant data, the customised VCD Container is provided to the Economic Operator. It may be signed by the VCD signer before (not yet implemented)
8. The VCD is submitted to the Contracting Authority or relevant tendering platform.
9. The Contracting Authority can use the VCD Viewer to display the VCD contents and to proof the eligibility of candidates. The VCD Viewer offers a convenient graphical user interface for checking qualifications in a consistent manner.
10. The VCD Viewer can be linked to the PEPPOL signature validation service which provides the capability to prove validity of certificates used in foreign signatures.

VCD Artifacts according to the PEPPOL EIA

VCD Framework, Specifications, Components and Guidelines that can be found in the PEPPOL EIA repository are described in the table below. **Note:** The VCD is not yet covered under a PEPPOL BIS specification.

Dimension	Level	File Name	Type
ICT Architecture	Framework	ICT_Architecture_VCD_Framework_100	Framework
ICT Architecture	Framework	ICT_VCD_Information_Entities_Business_Requirements_100	Framework
ICT Architecture	Framework	ICT_VCD_Requirements-101	Framework
ICT Architecture	Models	European_VCD_system_Specification_101	Specification
ICT Architecture	Models	National_VCD_system_Specification_101	Specification
ICT Architecture	Models	VCD Common GUI Design	Specification
ICT Architecture	Models	VCD Concepts Database	Specification
ICT Architecture	Models	VCD Ontology and Reasoning specification_100	Specification
ICT Architecture	Models	VCD Data Model	Specification
ICT Architecture	Models	VCD Legal Specifications	Specification
ICT Architecture	Models	VCD Process Models	Specification
ICT Architecture	Services	VCD System Release 1.0.0	SW Library
ICT Architecture	Services	VCD System Release 2.0.0	SW Library
ICT Architecture	Services	ICT-VCD Software Guideline-100	Guideline
Conformance Testing	Framework	VCD Testing Framework	Framework
Conformance Testing	Models	CT-Transport-Conformance Guideline-110	Guideline
Conformance Testing	Models	CT-Transport-Conformance Specification-110	Specification
Conformance Testing	Services	VCD Test Systems	Components

Table 1: VCD artifacts in the PEPPOL EIA repository

3.4.2.2. Pre and Post-Award eCatalogue

Catalogues are used by Economic Operators to describe goods or services offered for sale and by Contracting Authorities to source goods or services for purchase and obtain product or pricing details. They can be used in both tendering (pre-award) and purchasing (post-award) processes.

The PEPPOL project will provide interoperable solutions for economic operators in any European Member State to use eCatalogue information that is registered in their systems, match it with official classifications and dictionaries of properties, and to submit this information electronically to any public sector awarding entity, also from a different Member State.

The eCatalogue component in PEPPOL focuses on common data structures and classifications schemes for catalogues. While the purpose and content of post-award catalogues may be different, many of the structures and classification schemes can be shared with pre-award processes.

A key issue regarding the PEPPOL pre-award eCatalogue pertains to the choice of the standard process and data model to apply.

PEPPOL has generally chosen to adopt the standard profiles (processes) and data models defined by the CEN Workshop BII (Business Interoperability Interfaces for eProcurement); however, this choice could not apply in the pre-award, because the CEN/BII has not yet defined a profile or a data model for pre-award eCatalogues. For this reason, PEPPOL has defined for eCatalogues a pre-award profile and data model of its own, and has based its specifications and artifacts on these.

The PEPPOL vision is that any company (incl. SMEs) in the EU can easily, securely and seamlessly create, validate and send an electronic catalogue as a part of a procurement tender issued by any European Contracting Authority. To realise this vision, PEPPOL has created the specifications to manage eCatalogues in the framework of cross-border public procurement procedures as part of a bid submitted by competing pre-award tendering suppliers. The ultimate goal is to enable cross-border public eProcurement transactions.

Coupled with the above specifications, PEPPOL is creating SW Components to facilitate the concrete implementation of the

specifications by the users, and run actual pilots. The Components are open source software artifacts for transformation of formats, visualisation of documents, import/export of standardised contents, management of business rules in the template, validation of documents, exchange of documents, and workflow management.

The Components are modular, meaning that they can be implemented independently from each other.

In addition to the individual eCatalogue Components, PEPPOL is developing a tool, better described in the following sections, which assemble all the Components and allow a basic management of eCatalogues both by Contracting Authorities and Economic Operators (and Service Providers working on their behalf), as follows:

- **For Contracting Authorities:** the tool will support the creation/visualisation/validation of eCatalogue templates to be used in the pre-award phase, based on standard formats (the embedded format is the PEPPOL pre-award eCatalogue format, adopted by CEN/BII as the basis for its pre-award eCatalogue tool) and descriptions of the catalogue items. The standardised descriptions can be imported by a Catalogue Content Server, created ad hoc by PEPPOL.
- **For Economic Operators (and Service Providers):** the tool will support handling the creation of pre-award eCatalogues according to a given template (format and properties) and to transmit through the PEPPOL infrastructure using the prescribed standard description of the catalogue items.

Finally, PEPPOL is developing an instance of the On Line Product Property Server, called PPS - PEPPOL Property Server. This Server will run at least until the end of the project, in order to support the PEPPOL pilots.

The eCatalogue Management Tool (PEPPOL Demonstrator Client)

PEPPOL is developing an eCatalogue Management Tool (often referred to as PEPPOL Demonstrator Client) to support Public Administrations and Economic Operators in designing and

managing eCatalogues. The main features of the eCatalogue Management Tool, applicable both to pre-award and post-award phases of the public procurement procedures are related to the standardisation of procedures, formats and contents to simplify Catalogue exchanges between Businesses and Administrations.

For the pre award phase, where there was no existing CEN BII profile to refer to, PEPPOL concentrated on developing its own definition of the eCatalogue data model. The tool is based on this PEPPOL specified data model.

The data model has been developed by PEPPOL on the basis of CEN/BII "Catalogue Only" profile, and of the tender data model included in the CEN/BII "Tendering Simple" profile. For the post award phase, the tool is fully compliant with the CEN/BII "Catalogue Only" profile, while in the pre-award phase, it complies with a PEPPOL defined profile which represents the basis for the standardisation work brought forward by the CEN/BII 2 Workshop.

The eCatalogue tool will provide the ICT sector with the ability

to share with the PEPPOL project the path toward interoperability and provide Contracting Authorities and Economic Operators with a tool which has a sufficient operational capacity to run PEPPOL pilots, with actual transactions between pioneer business partners.

The eCatalogue open source reference software will be developed and improved over time to meet the needs of future targets. This solution is publicly accessible as a complete software package at:

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/pre-award-e-procurement/designs/

The Pre-Award eCatalogue Process

The process described below assumes that automated processes are either in place between the Economic Operator and the Contracting Authority (internally or via an external service provider) or that the PEPPOL pilots are using the Demonstration Client Tool to carry out and validate these transactions. An example of the Pre-award structure is illustrated in the following diagram.

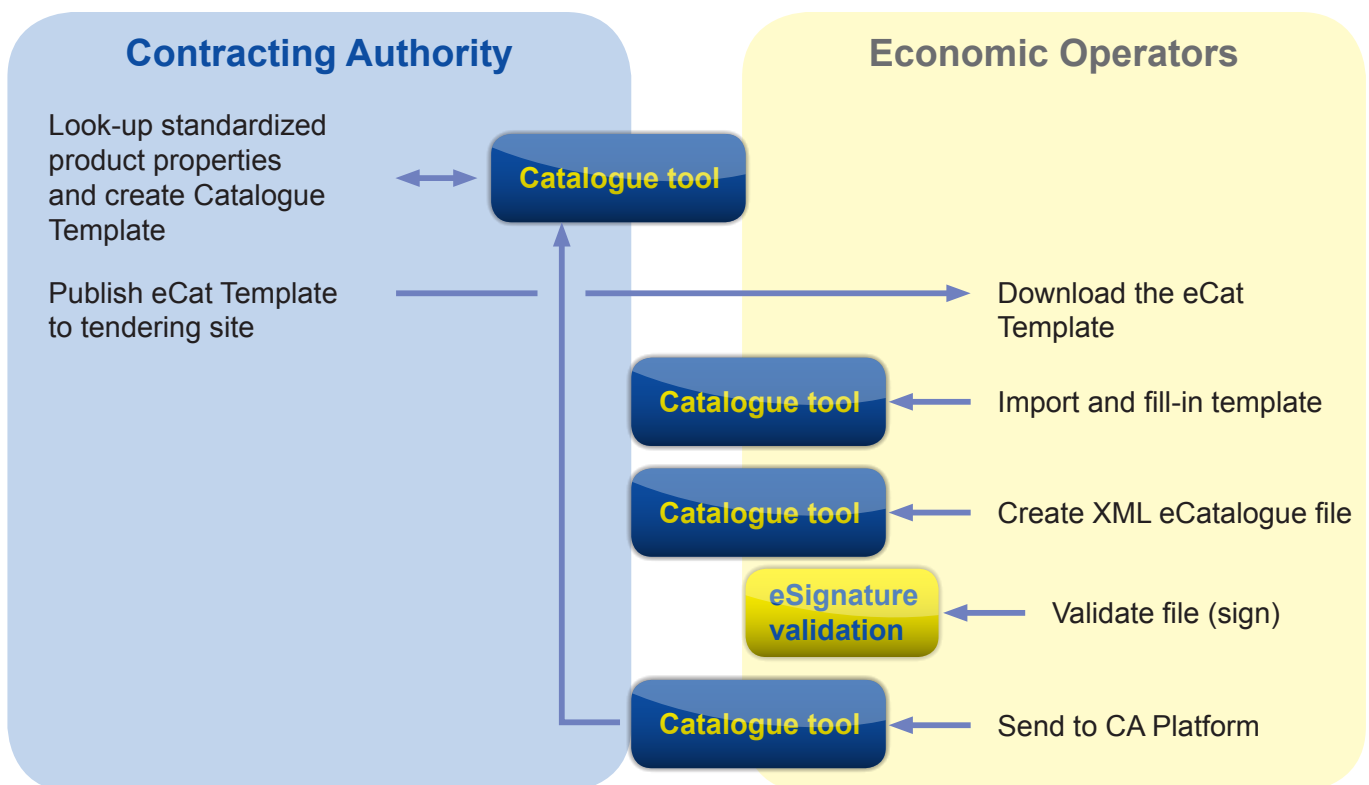


Figure 10: PEPPOL Pre-Award eCatalogue Process

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In the following process, the described functions can be performed by Contracting Authorities and Economic Operators either via an eProcurement platform adapted to PEPPOL specifications, or via the PEPPOL eCatalogue Management tool.

Step 1 – Create the eCatalogue Template (see activities 1 and 2 of Figure 10)

The Contracting Authority that is planning to publish a tender creates an electronic catalogue Template, following the eCatalogue data model included in the PEPPOL BIS 12a specification.

The Contracting Authorities wishing a high interoperability of eCatalogue content includes a fully standardised description of the eCatalogue items. To do so, they call a web service from the PEPPOL Property Server (PPS) (on-line Dictionary of standardised properties) to retrieve standardised product properties based on a standardised dictionary (eCI@ss).

Where appropriate according to the purpose of the specific tender, the original description (=set of properties) of the item included in the classification system can be extended, adding properties coming from other products, and creating a new property, where needed.

Step 2 – eCatalogue Template Publication (see activity 3 of Figure 10)

The Contracting Authority publishes the eCatalogue document created according to the PEPPOL BIS data model as part of the tender documentation.

Step 3 – eCatalogue Offer creation and validation (see activities 4 and 5 of Figure 10)

The Economic Operator that wishes to respond to the tender downloads the eCatalogue template, fills out the Template according to the requested standardised content (if needed consulting the Server where the standards are defined), creates the document and validates it against the business rules and the specific tender rules. If requested, the Economic Operator digitally signs the document.

Step 4 – eCatalogue Submission (see activity 7 of Figure 10)

The Economic Operator uploads the eCatalogue to the Contracting Authority's platform

Step 5 – eCatalogue Offer Validation (after activity 7 of Figure 10)

Upon receipt of the eCatalogue offer from the Economic Operator, and expiration of the deadline for opening the tenders, the Contracting Authority can validate the offer against the business rules established by PEPPOL for the eCatalogue Template data model and against the tender rules established for the specific tender.

Step 6 – Transform and Upload the eCatalogue

The Contracting Authority can now extract the validated eCatalogue Document and import the data into their database, to proceed with evaluation and award in case. The awarded catalogues can provide the basis for the post-award eCatalogues to be used by the Contracting Authority.

PEPPOL Post-Award eCatalogue

In the post-award phase, eCatalogues may be used to describe the goods and services that are specific to a particular tender or to provide details of products and services to be updated frequently to support the sourcing/ordering process on an ongoing basis. An example of a 'tender specific' post-award eCatalogue process is illustrated in the following diagram.

The Post-Award eCatalogue Process

The process described below assumes that automated processes are already in place between the Economic Operator and the Contracting Authority (internally or via an external service provider) or that the PEPPOL pilots are using the Demonstrative Client Tool to carry out and validate these transactions.

Step 1 – Populate the eCatalogue (see activity 1 in Figure 11)

Upon award (by any means, including paper) of a contract to an Economic Operator (supplier) by a Contracting Authority, the Economic Operator may create an eCatalogue, extracting (more or less automatically) data from its own adapted platform, or using the eCatalogue Management Tool provided by PEPPOL (inserting data manually or via spreadsheets).

The post-award catalogue template is specified by the PEPPOL BIS 1a document (link provided in the specification section below).

Notes:

1. The Contracting Authority may also create and send the eCatalogue to the Economic Operator to ensure a better quality.
2. If agreed by the parties, standardised content can be included in the eCatalogue.

Step 2 – Create and Validate the eCatalogue (see activity 2 in Figure 11)

The Economic Operator can use the eCatalogue Tool or internal transformation software capability to create and validate the eCatalogue against the business rules established by the PEPPOL BIS.

Step 3 - Submit the eCatalogue (see activity 3 in Figure 11)

Once validated the Economic Operator can submit the eCatalogue to the Contracting Authority using the PEPPOL infrastructure with the '4-corner model' where the supplier and buyer use separate Access Point providers. Please see the Transport Infrastructure section for more information about the 4-corner model.

Step 4 - Submit the eCatalogue (see activity 4 in Figure 11)

Upon receipt of the eCatalogue, the Contracting Authority sends an acknowledgment receipt.

Step 5 – Receiver Validation (after activity 4 in Figure 11)

Upon receipt of the eCatalogue template from the Economic Operator, the Contracting Authority can validate the document against the business rules established by PEPPOL, using the eCatalogue Management Tool or its own internal software capability. Based on the validation results, an Acceptance or Rejection message can be generated to ensure compliance with the PEPPOL BIS.

Step 6– Transform and Upload the eCatalogue Data

(after activity 4 in Figure 11)

The compliant eCatalogue data can then be transformed into the Contracting Authority’s system format, extracted from the eCatalogue Management Tool (or from an inbound electronic data file), and imported into the Contracting Authority’s eProcurement application. The detailed information about the products and services will now be available for placing orders.

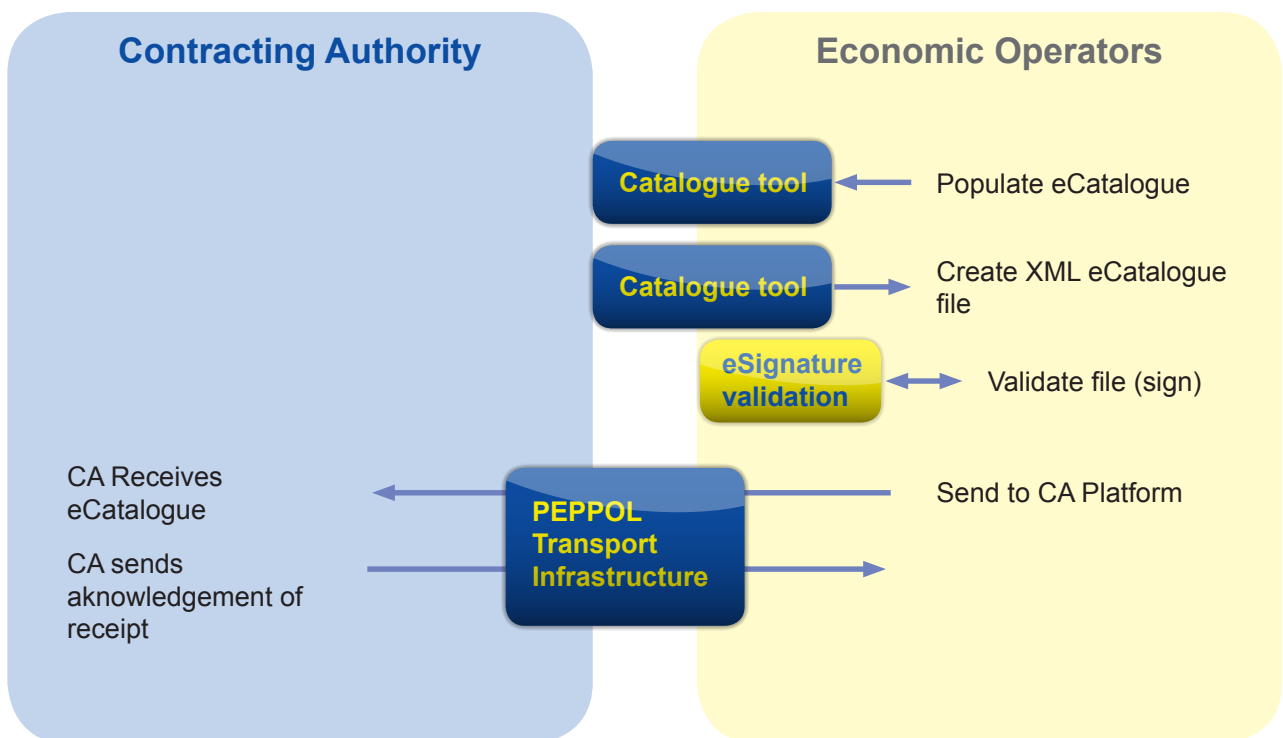


Figure 11: PEPPOL Post-Award eCatalogue Process

Specifications

Pre-Award eCatalogue PEPPOL BIS 12a:

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/pre-award-eprocurement/models/

The scope of the eCatalogue in a tendering process is defined as the ability to express what the Contracting Authority wants to purchase, matching what can be found in a catalogue and the associated response of the economic operator. The procedural issues, requirements for suppliers, the tendering and awarding criteria are not covered in full. The Call for Tender documents can be extended or attached to a non-standardised process.

The CEN/BII Workshop has not explicitly dealt with the use of eCatalogues in the pre-award, thus PEPPOL has opted to specify eCatalogue transaction data models that can be developed into a PEPPOL BIS Tendering profile for use when information on the offered goods and services is exchanged.

Post-Award eCatalogue PEPPOL BIS 1a:

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/post-award-eprocurement/models/

This specification describes a process comprising only an electronic Catalogue. It allows suppliers to inform Customers about availability of goods and services and describe them in a standardised way.

It can also be used to inform Customers about goods and services that can be supplied under a specific contract. Catalogue updates can be transmitted or made available on a regular basis according to terms of contracts. The post-award Catalogue can be used as the basis for the eOrdering process.

The link above provides documents and artifacts based

on the scope of the PEPPOL eCatalogue work including the organisational, legal, semantic and technical interoperability. In particular:

The eCatalogue User Manual

- Instructions for downloading the eCatalogue Tool
- Specification of architecture and components enabling cross-border eCatalogues
- Software building blocks enabling cross-border eCatalogues

eCatalogue Architecture – Pre and Post-Award

The graphic below illustrates how the eCatalogue services work with the PEPPOL infrastructure.

In a pre-award scenario most Contracting Authorities have formalised mechanisms for transporting catalogue documents, such as web portals or document submission environments. Therefore, when submitting their pre-award catalogues an Economic Operator may or may not be required to use the PEPPOL infrastructure.

In a post-award scenario Supplier Parties (and Customer Parties) will be required to use the PEPPOL infrastructure for their document exchanges.

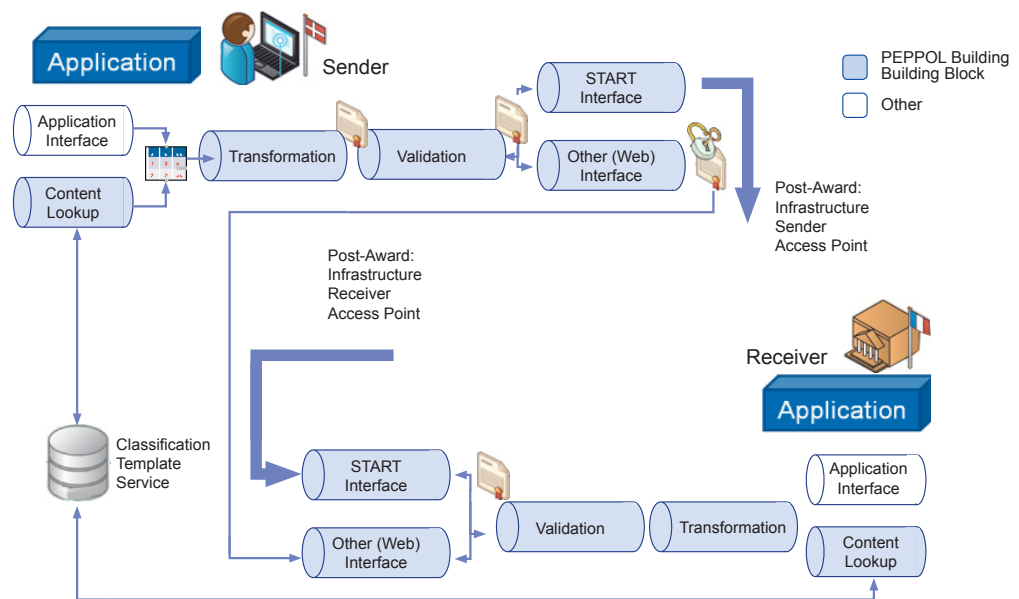


Figure 12: PEPPOL eCatalogue Architecture

3.4.2.3 eSignature Validation Infrastructure

The PEPPOL vision is to develop solutions that make it possible for economic operators in any European country to use the eSignatures of their own choice when submitting offers electronically to any European public sector awarding entity.

PEPPOL does not address the electronic signature theme in general, but concentrates instead on the specific problems of creation, verification and acceptance of electronic signatures on electronic procurement documents, and in particular tender documents.

When a document is electronically signed the originator of the document uses an eSignature issued by their certification authority. These authorities may be public or private, national, regional or domain specific. The party receiving the document needs to know who issued the eSignature so they can validate it.

In addition to the specifications, PEPPOL provides demonstrator software components and documentation for cross-border validation of eSignatures: the PEPPOL service will validate eSignatures from various certification authorities.

For example, it will answer the question, “Is this a valid German eSignature?” This means when a document is delivered with a digital signature the authorised parties can check its authenticity (and integrity) regardless of which certification authority issued the signature.

The principle is to maintain an index of all certification authorities that are trusted, as a Trusted Services List. This is used to access the appropriate validation mechanism. It is not an essential part of the PEPPOL Pilot as it does not affect unsigned documents and signed documents can be validated in other ways.

However, it is a valuable add-on service and has application beyond PEPPOL to any trust model that spans various certification authorities. The eSignature verification service is independent of the PEPPOL transport infrastructure.

eSignature Infrastructure Components

The PEPPOL XKMS Responder:

- can validate certificates against configured Contracting Authorities and use the PPRS to pass the XKMS request towards other PEPPOL XKMS responders

The PEPPOL Public Registry Service (PPRS):

- provides information about Trusted Service Providers and their services
- organised according to Trust-service Status List (TSL, ETSI TS 102 231)
- will be aligned with the EU Commission project on establishing an EU list of CSPs

Architecture Dependencies:

Available services of national certificate authorities

- Providers of validation services (VS)

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eSignature Validation Architecture

Description of the process:

1. The sender applies the digital signature and transmits the signed document to the tender portal.
2. The Validation Service (VS) trusted by the recipient is used to validate the certificate.
3. The requested VS can validate the respective certificate or the VS 'asks' the PPRS which trusted VS is able to validate the current foreign certificate.
4. In the latter scenario, the VS mediates the validation request towards the foreign VS covering the respective Contracting Authority.
5. The foreign VS then validates the certificate against the CA and sends the validation result back to the local VS.
6. The local VS resigns, XKMS responds and sends the validation result back to the recipient.

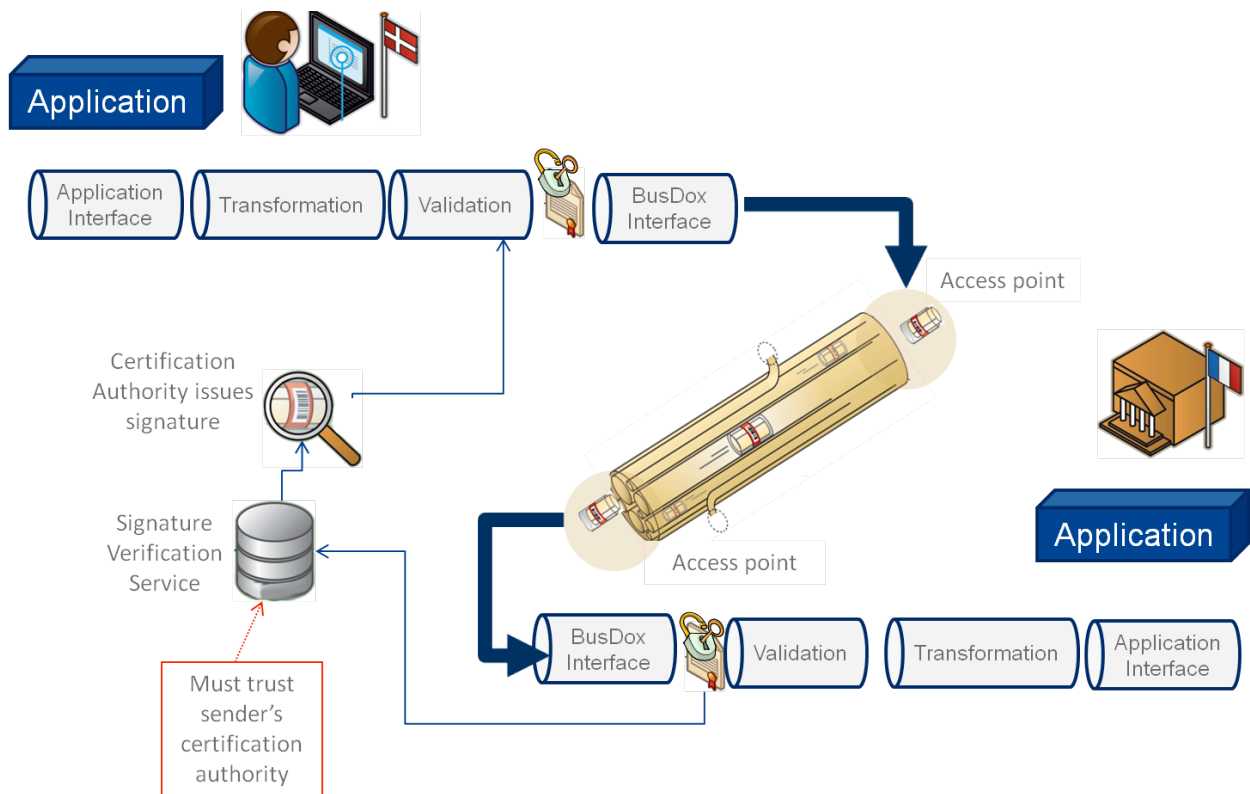


Figure 13: PEPPOL eSignature Validation Architecture

Types of Services:**Centralised:** PEPPOL Public Registry Service TSL (PPRS)

- The trust model of the PEPPOL validation services federation
- Provides links and rules to invoke the PEPPOL validation services
- Issues in XML format according to the ETSI TSL specification

Decentralised: Validation Services (VA, XKMS responders)

- Validation of digital signature certificates
- Local validation against configured Certificate Authorities
- Forwarding of validation requests to other VS

Demonstrator and Specifications – eSignature Validation Service

The links below provides detailed information on the scope of the PEPPOL eSignature work including the organisational, legal, semantic and technical interoperability, in addition to the legal aspects of national schemes and analysis of other EU initiatives on eSignature interoperability.

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/esignature-infrastructure/framework

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/esignature-infrastructure/models

Artifacts include:

- Signature Policies
- Architecture and Trust Models
- XKMS Interface Specification
- OASIS DSS Interface Specification
- eID and eSignature Quality Classification
- Signature Validation Infrastructure Online
- Requirements For Use of Signatures in Public Procurement Processes
- Trans-national Verification System – Prototype Documentation

3.4.3 PEPPOL Post-Award

3.4.3.1 PEPPOL Post-Award Processes

The PEPPOL post-award processes involve the electronic exchange of eCatalogues as part of the post-award purchasing process, eOrders, and eInvoices.

Depending on the national legislation or regional policy, an eSignature may also be required in order to authenticate the submission of documents in the post-award phase. Where eSignatures are required, PEPPOL offers a Digital Signature Validation service to confirm validity of the certificate used for the signature (please see the pre-award section 3.4.2.3 where eSignature validation is discussed as a separate PEPPOL component).

The following diagram illustrates an overview of the PEPPOL post-award processes:

For post-award processes, PEPPOL has adopted a four-corner model whereby the PEPPOL transport infrastructure is an intermediary transport layer for transmitting and delivering business

documents between the sender (where a business document is issued) and the receiver (where a business document is delivered) who accepts and automatically processes the document. In this context, the following high-level steps are assumed:

- The Sender (for example a Contracting Authority) issues an electronic business document (for example an order) which is extracted from their system and transformed in the preparation stage to create a PEPPOL compliant document according to the PEPPOL BIS standard. Specific translation software is normally used either by the Sender or their service provider to effect this data transformation.
- The document is transmitted electronically to the sender's PEPPOL Access Point (and SMP) provider where it is verified and validated according to the PEPPOL profile rules and the business rules applicable to the Sender.
- The validated PEPPOL document is then transmitted to the receiving participant's Access Point (and SMP) provider through the PEPPOL transport infrastructure.
- The PEPPOL document is verified and validated according to the PEPPOL profile rules and the business rules applicable to the Receiver.

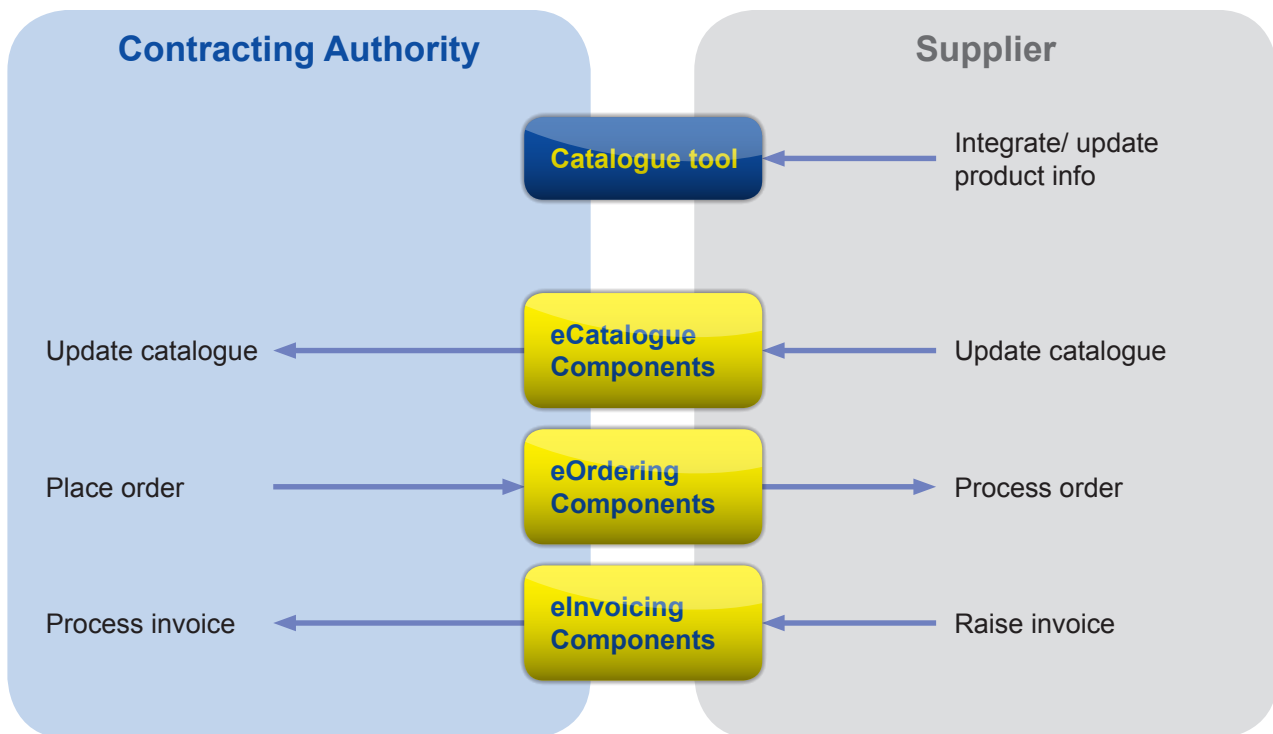


Figure 14: PEPPOL Post-Award Processes

- The business document is transformed (using translation software) in the preparation stage to create a suitable format for the Receiver (this step of the process may be carried out by the Access Point provider as a service, by a separate service provider on behalf of the Receiver or by the Receiver's own software)
- The transformed document is transferred to the Receiver (e.g. Supplier) where it may pass through another form of validation and a matching process before downloading to the Receiver's system.
- Depending on the type of document received, the Receiver may return an electronic acknowledgement, an order response, an invoice acceptance, notice of rejection, etc.

3.4.3.2 eCatalogue – Post-Award

For the post-award eCatalogue overview, process definition, architecture and specifications, please see section 3.4.2.2.

3.4.3.3 PEPPOL eOrder

eOrdering begins with the issue of an order by a buyer and ends with the receipt of an order response from the supplier, by electronic means. The process may include an order change or cancellation advice from the buyer and a shipping/dispatch advice from the supplier. Ordering is an important phase of the public procurement process, and has a direct connection with the catalogue and the invoice. There is a strong desire from both Contracting Authorities (buyers) and economic operators (suppliers) to achieve efficiency across the procurement process through automation. This requires a specific structure, ensuring the flow of information between different parts of the process, and specific models, ensuring data synchronisation.

PEPPOL's vision is to make it possible for economic operators to receive orders electronically from any public sector awarding entity in Europe, and to respond to such orders. The solutions that are being developed by PEPPOL demonstrate that electronic orders can be exchanged and processed without manual intervention across EU borders. This lowers the cost of entering data into systems and it reduces ongoing operating costs. To realise this vision, the PEPPOL project deliverables will include:

- eOrdering specifications for cross-border trade, based on the work carried out in the CEN BII workshops

- Open platform for document exchange via the PEPPOL transport infrastructure
- Pilot evaluation guidelines and testing facilities
- Development of open source software components and demonstrator tools
- Documented benchmarking and best practices

PEPPOL aims to enable interoperability by reducing organisational, semantic and technical barriers. Moreover, PEPPOL can provide the opportunity for Contracting Authorities and their suppliers to expand their access to the wider EU market, while benefiting from increased opportunities and efficiencies.

The eOrdering Process

The process described below assumes that automated processes are either in place between the Economic Operator and the Contracting Authority (internally or via an external service provider) or that the PEPPOL pilots are using the Demonstration Client Tool to carry out and validate these transactions.

Step 1 – Create the Order

The Contracting Authority creates an eOrder according to the details provided in the PEPPOL BIS 3a specification (link provided in the specification section below) or using the PEPPOL Demonstration Client tool.

Step 2 – Validate the Order

The eOrder format and content can then be validated against the business rules established by PEPPOL using the PEPPOL validation components or the Contracting Authority's eProcurement software.

Step 3 – Send the eOrder to the Economic Operator

The Contracting Authority connects to their PEPPOL Access Point to transmit the eOrder to the Economic Operator via the PEPPOL transport infrastructure.

Step 4 – Order Response Receipt

The Economic Operator receives the eOrder through its PEPPOL Access Point provider and returns an automated response to the Contracting Authority to confirm receipt of the eOrder.

Step 5 – Validate the eOrder Response

The Contracting Authority validates the format and content of the eOrder Response document against the business rules

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established by the PEPPOL BIS using the Client Demonstration Tool or internal software.

Step 6 – Transform and Upload eOrder Response Data

The Contracting Authority can then extract the data from the eOrder Response, transform it into the appropriate format, upload and process the data into its eProcurement application accordingly.

Note: The PEPPOL Demonstration Client Tool may also be used by Economic Operators and Contracting Authorities to validate the eOrder test data and the PEPPOL transport process.

Specifications: BIS 3a – Order Only

This specification describes a process comprising only an electronic (purchase) Order. It allows for electronic ordering of goods and services/services that are standardised as well as those that are non-standard or not easily described in catalogues.

The Order may contain items (goods or services) with item identifiers and/or items identified by name/description. Because of this, the internal processes for transaction handling at the Supplier may require manual intervention. This process is intended to result in acceptance or rejection of the Order, but such responses are external. This specification can be used with minimal integration to ERP systems.

The links below provide detailed information on the scope of the PEPPOL eOrder work including the organisational, legal, semantic, and technical interoperability, in addition to the legal aspects and analysis of specific national implementations.

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/post-award-eprocurement/framework

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/post-award-eprocurement/models

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/post-award-eprocurement/services-components

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/post-award-eprocurement/designs

Links to documents and artifacts include:

- Specification of Architecture and components enabling cross-border ordering
- Software building blocks enabling cross-border ordering
- PEPPOL Demonstration Client Tool
- Test and Validation guidelines for eOrdering
- Visualisation Ordering Guideline

3.4.3.4 PEPPOL eInvoicing

Electronic invoicing is the automated process of issuing, sending, receiving and processing invoice data by electronic means. Creating efficiency and cost reductions, eInvoicing can also unleash significant resources for further value-added tasks and innovations. Since 2005, many EU Member States have started to make eInvoicing mandatory to the public sector, increasing adoption at the national level.

eInvoicing links two important value chains, the procurement and the payment process. However, it is governed by different country-specific legislation and may be subject to processes and standards specific to regions or industries, often creating barriers to cross-border trade.

PEPPOL's vision is to develop solutions that make it possible for economic operators (suppliers) to submit cross-border electronic invoices to any Contracting Authority within Europe.

To realise this vision, the PEPPOL project deliverables include:

- eInvoicing specifications for cross-border trade, based on the work carried out in the CEN BII workshops
- Open platform for document exchange via the PEPPOL transport infrastructure
- Pilot evaluation guidelines and testing facilities
- Development of open source software components and demonstrator tools
- Documented benchmarking and best practices
- PEPPOL enables interoperability by lowering the organisational, semantic and technical barriers. Moreover, PEPPOL provides the opportunity for Contracting Authorities and their suppliers to reach the wider EU market, while benefiting from increased opportunities and efficiencies.

The invoicing Process

The process described below assumes that automated processes are either in place between the Economic Operator and the Contracting Authority (internally or via an external service provider) or that the PEPPOL pilots are using the Demonstration Client Tool to carry out and validate these transactions.

Step 1 - Sending an invoice

The Economic Operator (supplier) produces an invoice according to the details provided in the PEPPOL BIS 4a (Invoice Only) specification document (link provided in the Specifications section below) and connects to their Access Point Provider to transmit the invoice to the Contracting Authority using the PEPPOL Transport Infrastructure.

Step 2 - Receiving an invoice

The Contracting Authority receives the invoice document through their Access Point Provider and validates it against the business rules established by the PEPPOL BIS.

Step 3 - Transform and Upload the Invoice

The Contracting Authority converts the invoice data from the BIS standard to the format appropriate for their ERP system (using either the PEPPOL components or internal translation software), and then extracts the data from the eInvoice document and uploads to their eProcurement or Accounts Payable application.

Note: The PEPPOL Demonstration Client Tool may also be used by Economic Operators and Contracting Authorities to validate the eInvoice test data and the PEPPOL transport process.

Specifications:

PEPPOL BIS 4a Invoice Only (version 1.0): Defines a simple invoice process (sending and receiving). This specification describes a process including only a supplier initiated electronic Invoice. It is intended to support cases where the invoicing is electronic but where automation of matching it to other documents may not be practical.

PEPPOL BIS 5a Billing (version 1.0): This specification describes a process comprising an electronic Invoice and, potentially, an electronic Credit Note.

PEPPOL BIS 6a Procurement (version 1.0): This specification describes a process comprising an electronic (purchase) Order, an electronic Order Response, an electronic Invoice, and, potentially, an electronic Credit Note. Billing anomalies are resolved by the issuing of a Credit Note or a subsequent Corrective Invoice. The Order may refer to a framework agreement for its terms and conditions; otherwise the Customer's terms and conditions apply.

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/post-award-eprocurement/framework

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/post-award-eprocurement/models

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/post-award-eprocurement/services-components

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/post-award-eprocurement/designs

Links to documents and artifacts include:

- Specification of Architecture and components enabling cross-border invoicing
- Software building blocks enabling cross-border eInvoicing
- PEPPOL Demonstration Client Tool
- Test and Validation guidelines for eInvoicing
- Visualisation Invoicing Guideline

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Post-Award Components Architecture

The graphic (Figure 16) illustrates how the post-award documents are exchanged with the PEPPOL infrastructure. For post-award scenarios Economic Operators and Contracting Authorities will be required to use the PEPPOL transport infrastructure for their document exchanges. This may include the option of eSignature validation for documents.

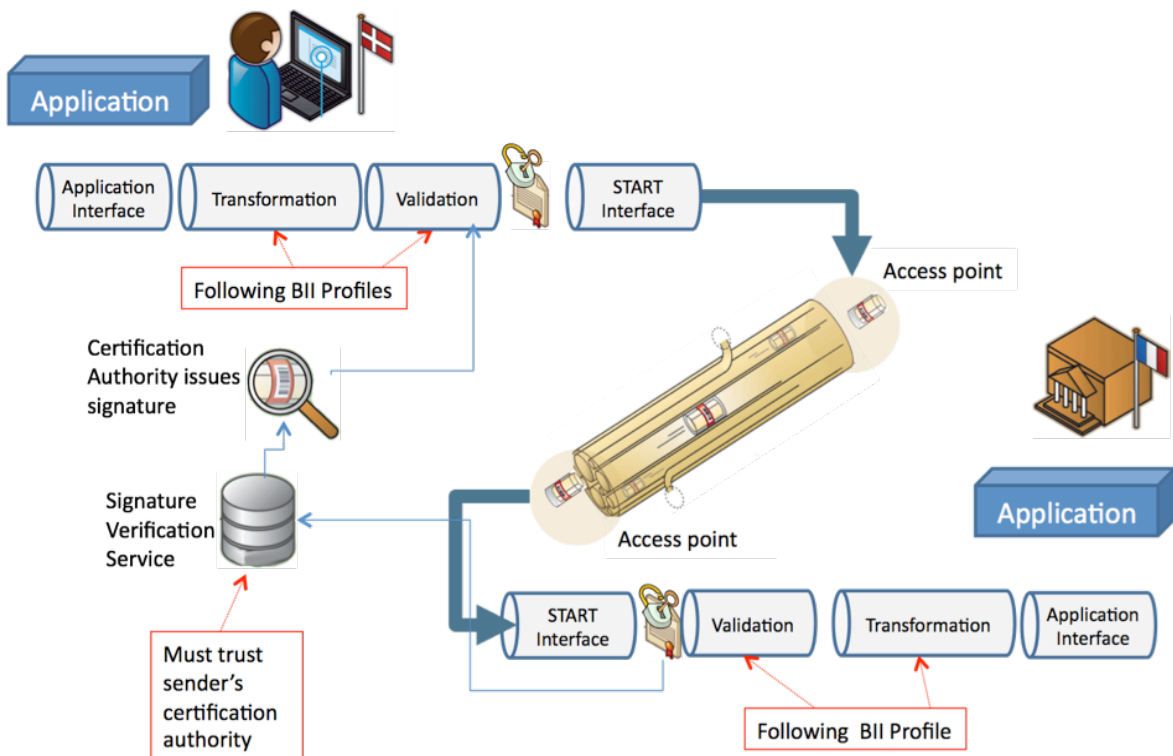


Figure 15: PEPPOL Post-Award Components Architecture

3.4.4 PEPPOL TRANSPORT INFRASTRUCTURE

3.4.4.1 Background

PEPPOL's transport infrastructure is based on a set of standardised communication protocols which ensure the interoperable, secure and reliable exchange of electronic documents between buyers and sellers within the EU.

Public agencies and private enterprises can use the PEPPOL infrastructure to send and receive electronic documents by connecting to the Access Points, which are the base elements of the infrastructure.

PEPPOL Access Points (APs) form a secure network by connecting to each other using the same transport protocol and document format, applying digital signature algorithms to secure message content. Operators of APs connect to their customers through existing networks and use the PEPPOL network to exchange documents with each other.

The figure below shows the main components of the PEPPOL transport infrastructure.

The sender of an electronic document (for example an eInvoice, an eOrder or an eCatalogue), which can be a large corporation, an SME or a public administration, uses an Access Point to connect to the PEPPOL network, specifying the type

of document being sent and the recipient, uniquely identified in the network by a business ID. Access points can either be built by organisations or sourced as a service from IT providers offering PEPPOL capabilities.

In order to route the documents received from the sender to the correct recipient, the Access Points in the network need to discover each other. The PEPPOL infrastructure maintains centralised addressing and metadata information on servers called Service Metadata Publishers (SMPs), which contain the addresses of the parties' Access Points.

SMPs store information about the users connected to the PEPPOL network (receiving capabilities), providing details about the business document types supported and the business collaboration profiles that can be processed through the national infrastructure.

The final key entity in the infrastructure is the Service Metadata Locator (SML) which is centrally maintained by PEPPOL. Whether a sender or a recipient, every participant in the PEPPOL network is registered in an SMP, and the Access Points must know which one to connect to in order to retrieve the metadata about that specific recipient party. The SML contains the related SMP information for every business ID.

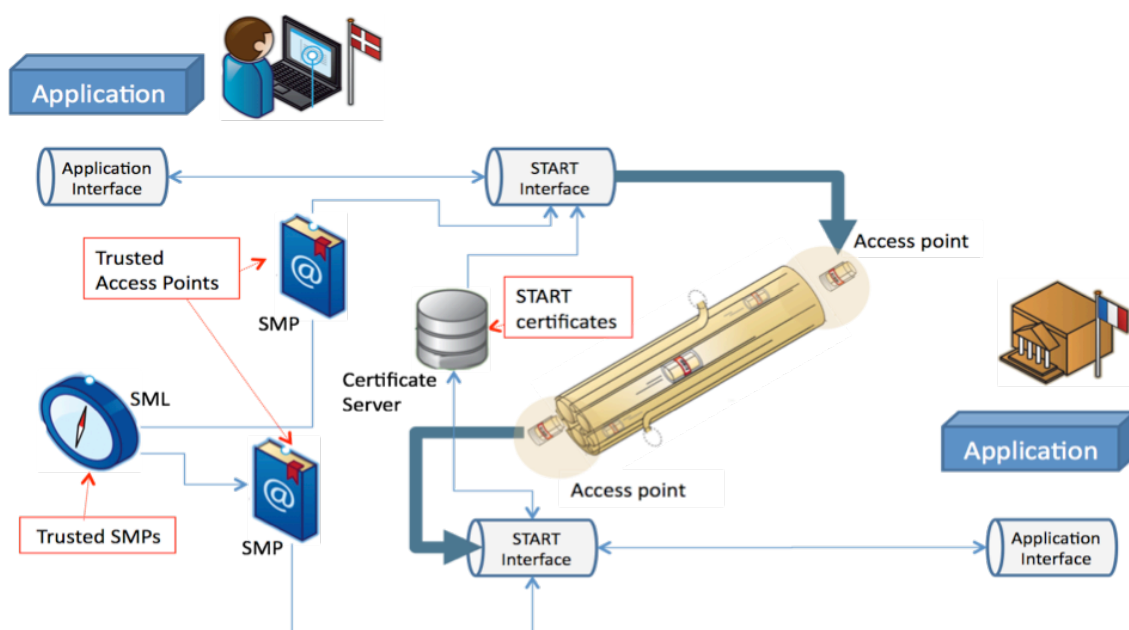


Figure 16: PEPPOL Transport Infrastructure Components

3.4.4.2 Key Features

Common Electronic Document Exchange Platform

The PEPPOL transport infrastructure uses a set of technical specifications known as BusDox (Business Document Exchange Network) to allow organisations to securely and reliably exchange electronic documents. BusDox is document agnostic, meaning users can transfer ANY type of XML document between ANY network. In PEPPOL's first pilot phase, a specific suite of business documents was developed, establishing a solid foundation to exchange additional document types in the future.

PEPPOL Access Points communicate to each other using the BusDox messaging system, a standardised and trusted way to exchange documents. BusDox also provides a pan-European addressing mechanism for eBusiness participants, making it easy to look up participants and to publish eBusiness capabilities. By creating a transport infrastructure based on BusDox, PEPPOL makes it possible for any public or private European organisation to exchange electronic documents. This is reminiscent of the way governments established the road and railway infrastructure that enabled cross-border trade.

Open 4-Corner Model

An important difference between the BusDox standards and other messaging solutions is that BusDox is designed to support what is known as a 4-corner model where communication takes place between two Access Points, respectively for the sender and the recipient organisation.

Each Access Point derives the endpoint addresses of other Access Points through the BusDox SMP Infrastructure. Access Points may communicate via optional BusDox Transport Profiles, but they must always offer a START (Secure Trusted Asynchronous Reliable Transport) endpoint with which any other Access Point may

communicate.

An important advantage of the **open** 4-corner model that PEPPOL employs is that any interested participant can access the network through a PEPPOL Access Point provider. However, any company in Europe (e.g.: Contracting Authority, economic operator) may set up an Access Point, providing it meets the PEPPOL requirements.

Addressing Independent of Transport

PEPPOL designed the Universal Endpoint addressing scheme (UPIS) to allow any type of existing addressing scheme to be mapped onto the PEPPOL scheme. PEPPOL uses a set of pre-defined document and process identifiers.

Participant identifiers of different schemes are supported (e.g. DUNS, GLN), while existing identifiers are reused and assembled in a specified way. In PEPPOL, the participant identifier uses a combination of a reference to an issuing agency and a unique identifier issued by that agency. Identifiers may have different values, but the method by which they are defined is consistent.

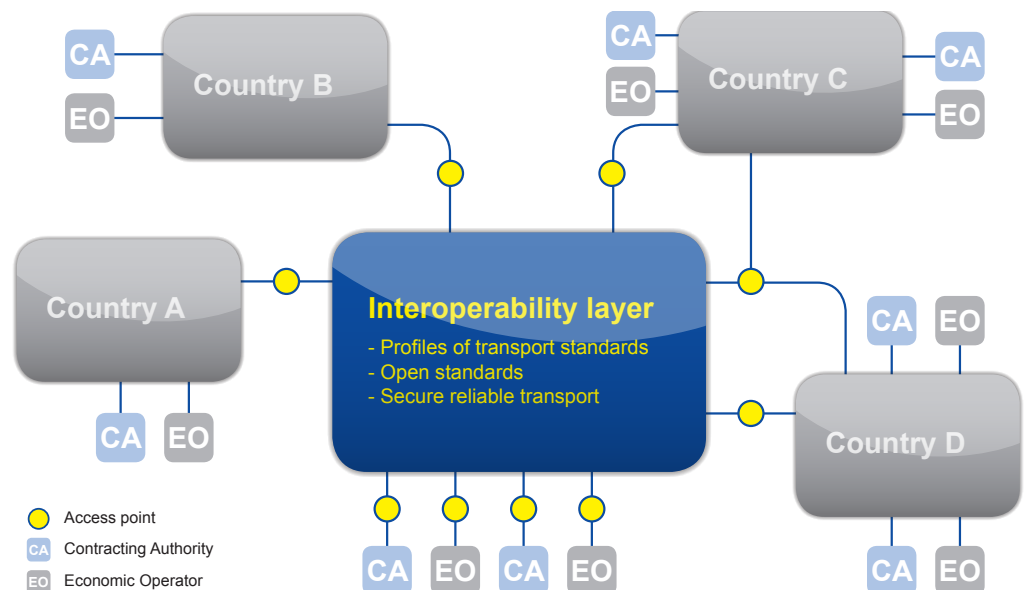


Figure 17: PEPPOL Open 4-Corner Model

3.4.4.3 Key Components

Service Metadata Publisher (SMP)

The SMP contains the receiving capabilities of the Transport Service (Access Point) as a combination of Process, Document, the exact location (IP address) of the Transport Service (Access Point) according to receiving capabilities, and the REST API for interaction (pure HTTP). It makes it possible to dynamically explore and match capabilities online.

The PEPPOL infrastructure assumes that there are several SMPs in the infrastructure. There may even be several SMPs within a national domain. Thus, there is a need for specific agreements to ensure that the SMP Provider adequately provides the required services and that they have the required access to the Service Metadata Locator (SML).

Service Metadata Locator (SML)

The Service Metadata Locator is the key component that enables the pan-European eBusiness register for the exchange of business documents. The SML defines the profiles for the discovery and management interfaces for the BusDox Service Metadata Locator service.

The Service Metadata Locator service specification is based on the use of DNS (Domain Name System) lookups to find the address of the Service Metadata for a given participant ID. This approach does not need a single, central server to run the discovery interface (with its associated single point of failure). Instead, the already distributed and highly redundant infrastructure that supports DNS is used. The SML service itself provides controlled access to the creation and updating of entries in the DNS.

For a sender, the first step in the discovery process is to establish the location of the Service Metadata relating to the particular Participant Identifier to which the sender wants to transmit a message. Each participant identifier is registered with only one Service Metadata Publisher. The sender looks up the endpoint for the Service Metadata Publisher using the DNS-based Service Metadata Locator service (this is a regular DNS resolve). The sender can then retrieve Service Metadata using Service Metadata Publisher services to obtain the metadata about the Participant Identifier, which includes the information necessary

to transmit the message to the recipient endpoint represented by that Participant Identifier.

The SML management interface is the only centralised component in PEPPOL. At runtime, the SML uses decentralised DNS for load balancing of runtime requests, thus supporting a full European-wide upscaling of runtime performance.

START Profile

The START (Secure Trusted Asynchronous Reliable Transport) profile is the full profile that includes all the security and reliability features provided by the infrastructure. It is used for communicating between two Access Points.

START is based on Web-Service technologies, and it employs several WS-standards, including:

- WS-Addressing 1.0 to address remote resources (APs, SMP/SML)
- WS-Transfer, as a standard approach to accessing the message channels
- WS-Reliability, to ensure reliability of message exchange
- WS-Security 1.1 to manage authentication, authorisation and signatures on exchanged messages
- SOAP 1.1
- SAML 2.0

SAML 2.0 security tokens are used to carry security information across the infrastructure. SAML 2.0 protocol is based upon assertions, which carry the security claims (keys, certificates, references to external authorities) and the conditions under which the information is valid. A compliant implementation of a PEPPOL AP must be able to support the START profile.

The LIME Profile

The Lightweight Message Exchange Profile (LIME) protocol is a simple mechanism that allows an application to deliver a message to the Access Point to which it subscribes. The LIME Profile is designed to allow systems to participate in the BusDox infrastructure without needing to access service metadata or host an Access Point. Instead, they rely on an Access Point operator to provide Lightweight Message Exchange Profile (LIME) services to them. The LIME protocol alone does not enable the application to access the PEPPOL infrastructure,

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as all communications between access points uses the START protocol.

A simple analogy is Internet email where large companies may run their own Simple Mail Transport Protocol (SMTP) server and proprietary email clients to create and read messages, but individuals or small companies rely on an ISP to provide an SMTP Relay and POP3 or IMAP server.

Key features of LIME include:

- No requirement to host online endpoints
- No firewall crossing
- No server infrastructure
- No requirement to support “advanced” WS-standards, such as WS-Trust, WS-Reliable Messaging
- Only minimal requirement to support WS-Security (authentication headers only)

A LIME AP may be an existing VAN or a new service offered by governments or private companies.

PEPPOL Identifiers

The PEPPOL transport infrastructure uses a set of identifiers to address resources and to define them uniquely:

- Participant Identifier identifies a sender/receiver on the PEPPOL network (standard schemes such as GLN, DUNS, CVR can be used)
- Document Identifier identifies a document type in the PEPPOL network
- Process Identifier identifies the process in which the document can participate
- Message Identifier identifies the single message across multiple hops in the network

The participant identifier uses a combination of reference to an issuing agency and a unique identifier issued by that agency. The use of an identifier issued by any of the issuing agency schemes is mandatory.

For example, the issuing agency for Danish company numbers has the identifier 9902 in PEPPOL. Company A is a Danish company with the unique Danish company number (in Denmark called CVR number) DK28158000. Therefore, Company A's PEPPOL participant identifier is 9902:DK28158000.

For document and process types and schemas, PEPPOL supports (and encourages) the use of UBL 2.0 documents and CEN/BII profiles. A PEPPOL Business Interoperability Specification (BIS) is a CEN BII Profile with additional legal, organisational and technical requirements to support pan-European use.

The above information is carried along in the header of the SOAP messages defined by START and LIME profiles. SMPs use the identifiers to return to the requesting AP the address of the recipient AP. APs have to submit the recipient business identifier, the document identifier and the process identifier in their queries to the SMP.

The use of identifiers in PEPPOL is specified in the ‘Policy for Using Identifiers’. For more information please see:

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/transport-infrastructure/models

3.4.4.4 Transport Interaction Scenario

Company B (a supplier) wants to send an invoice to Company C (a Contracting Authority/buyer) through the PEPPOL transport infrastructure.

How do I transport the document?

Please note that, in the diagram, an Operator can be any Contracting Authority or Economic Operator who develops an Access Point for its own use. A service provider can set up an Access Point for commercial use

1. Operator 1 (used by Company B) connects to a PEPPOL Access Point in its country (AP1)
2. AP1 sends the business ID of the receiver (Company C) to the DNS system - Service Metadata Locator (SML)

3. The DNS system (SML) returns the address of Company C's Service Metadata Publisher (SMP) registry
4. AP1 queries the SMP for the Company C AP address, submitting the business ID of the receiver, the document type and the process type
5. SMP returns the address of the PEPPOL AP1
6. AP1 sends the message containing the document to AP2
7. AP2 forwards the message to Operator 2 in country B
8. Operator 2 processes the document and sends it to Company C

Please see: http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/transport-infrastructure/framework

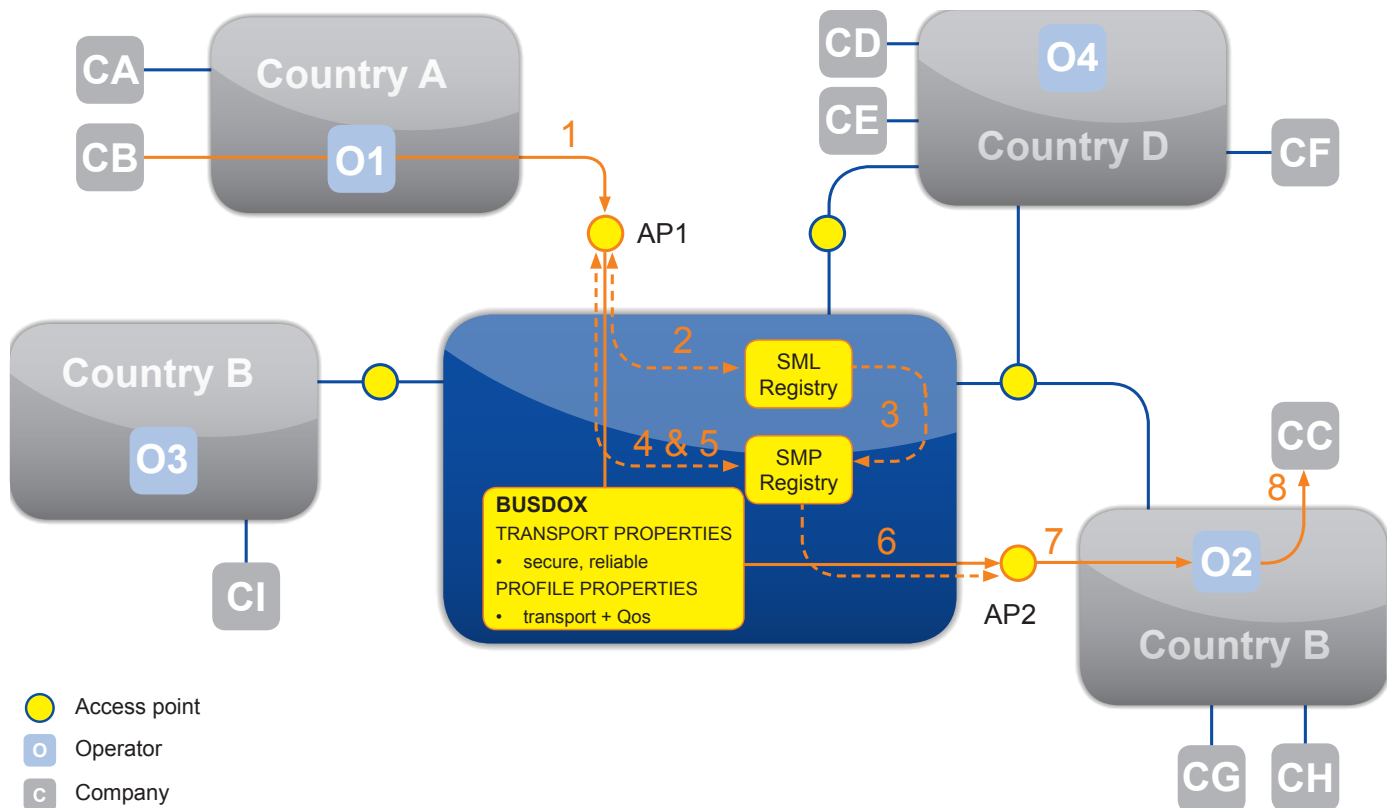


Figure 18: PEPPOL Transport Interaction Scenario

3.4.4.5 PEPPOL Security Infrastructure

The PEPPOL Security Infrastructure rests on five pillars:

1. Trust is established using a Public Key Infrastructure (PKI)
2. Service providers sign an agreement before they join the infrastructure
 - Agreement regulates responsibilities, requirements, liability
 - Compliance checks may be performed
3. Secure communication protocols
 - Employs encryption, signing, certificates, security tokens
4. Operational security requirements for service providers
 - Firewalls, intrusion detection, patching, logging, penetration test
5. Sender authentication
 - Sender Access Point vouches for sender identity

Linking Trust and Agreements

Service Providers can only join the infrastructure (and receive a PEPPOL certificate) once they have signed the relevant agreements with the PEPPOL Governing Board. When entering the agreement, service providers commit to fulfil the stated quality and security requirements. The PEPPOL Governing Board may perform checks on new Service Providers, including a review of documentation and a review of auditor statements on compliance.

Secure communication is achieved by:

1. Signing SOAP messages (WS-Security)
 - Authentication of service providers
 - Message integrity
2. Using transport-layer security (SSL / TLS)
 - Confidentiality & integrity
3. Including SAML tokens vouching for sender identity (WS-Security)
 - Sender authentication
4. Similar to OIO Identity-Based Web Services

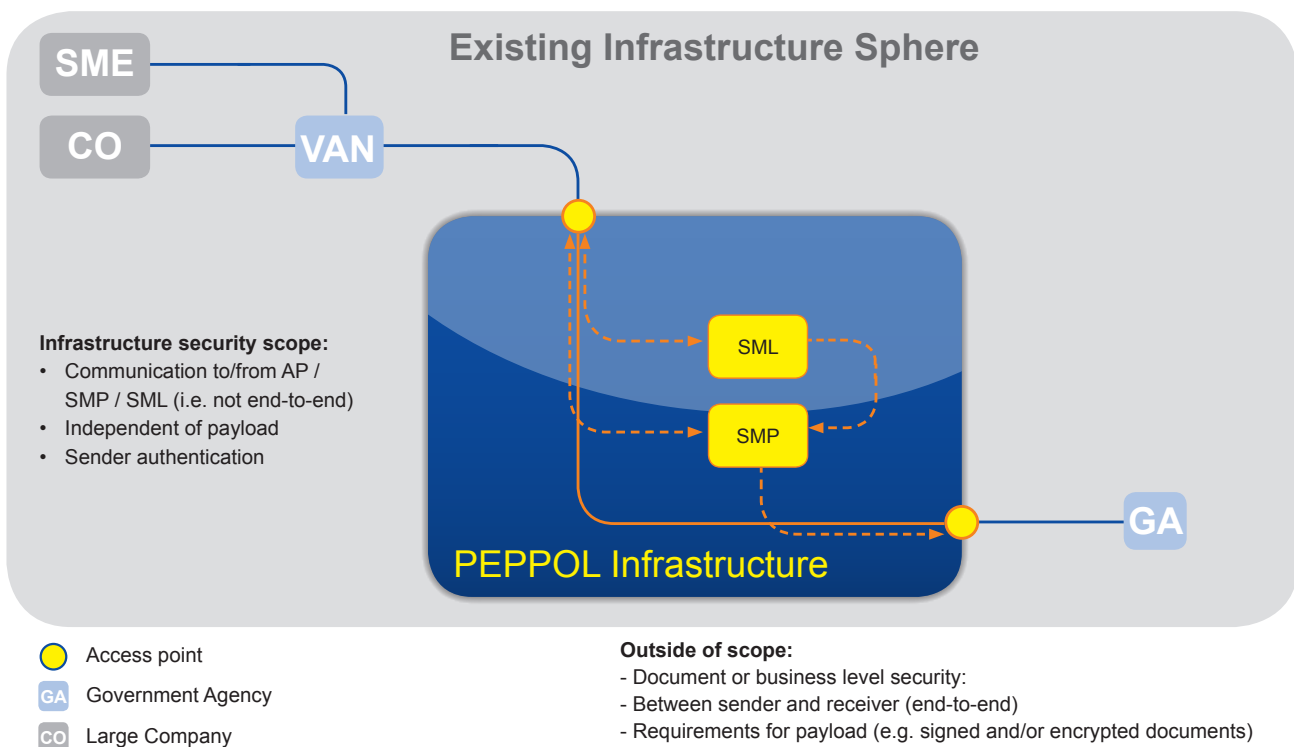


Figure 19: PEPPOL Security Scope

PEPPOL Root PKI

The PEPPOL ROOT PKI is used to create the core circle of trust in PEPPOL between APs, SMPs and SML. Together with the use of SAML Sender Vouches assertion tokens, this creates a flexible and trustworthy 4-corner model for realising the foundation of pan-European document exchange.

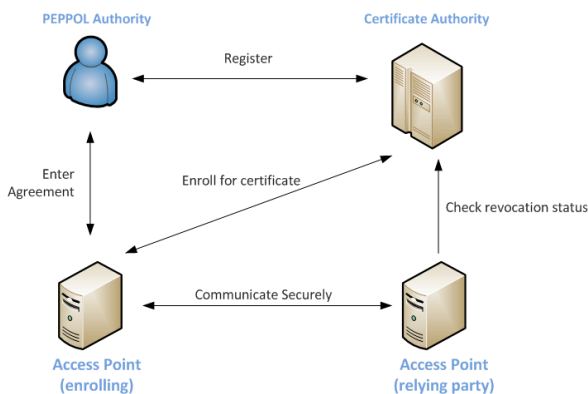


Figure 20: PEPPOL Root PKI

Sender Authentication

A Sender Access Point is required to authenticate the sender of document and vouch for its identity to the recipient. This relieves the Recipient from the complexity of handling many different types of credentials, and means that the Recipient needs only to know sender identity, not the details of its credential.

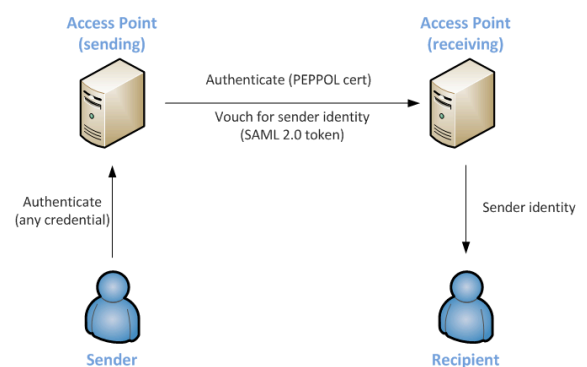


Figure 21: PEPPOL Sender Authentication

A public key infrastructure can be established by:

1. A Certificate Authority (CA) issuing digital certificates under a central PEPPOL root certificate
2. Anyone with a PEPPOL certificate -considered a valid member of the infrastructure (closed user group PKI)
3. The PEPPOL Governing Board acting as Registration Authority

Advantages:

- The CA service can be acquired as a standard offering by PKI vendors
- Service providers can validate peers just by installing the PEPPOL root certificate (does not need to invoke services)
- Validation of certificates is offered out-of-the-box in most middleware
- Proven technology and scalable
- Easy to revoke members
- Reasonable cost (centralised)

Key Features:

1. Sender Access Point issues SAML 2.0 token stating:
 - Sender identity (result of authentication)
 - Level of identity assurance (1-4)
 - Issuer of token (signed with PEPPOL certificate)
2. Level of identity assurance:
 - 1 => low confidence in claimed identity
 - 4 => very high confidence in claimed identity
3. Technology agnostic
4. Assurance level classified according to Liberty Alliance Identity Assurance Framework, taking into account:
 - Technical quality of the credential
 - Credential issuing process
 - Organisational factors

3.4.4.6 Specifications

BusDox

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/transport-infrastructure/models/

The link above provides the following documents:

- Common Definitions
- Service Metadata Publishing
- Service Metadata Locator Profile
- Secure Trusted Asynchronous Reliable Transport
- Lightweight Message Exchange Profile
- PEPPOL Identifier Schemes

The PEPPOL Sample software:

http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/transport-infrastructure/services-components/

Includes links to:

- Additional Resources
- Guidelines
- Open Source Software

3.5 CONNECTING TO THE PEPPOL NETWORK

PEPPOL has developed a secure and reliable electronic messaging system to exchange the various business documents between participants. A pilot who intends to participate in PEPPOL post-award processes, either as a Contracting Authority or a Supplier, must use this infrastructure to exchange their documents.

To use this infrastructure the pilot organisation will need to have an arrangement with a PEPPOL Access Point (AP) provider and a Service Metadata Publisher (SMP) provider. In most scenarios this will be the same organisation. These are provided by both government agencies and private companies.

The arrangements with the AP or SMP service provider may require some contractual issues to be resolved. For example, participants will need to have an agreement with a PEPPOL Access Point provider accepting their responsibility for using the PEPPOL services as intended. Typically this is an extension to an existing service agreement. In PEPPOL we refer to this as the Participant Agreement.

Note: Information about the PEPPOL Transport Infrastructure Agreements is provided in the section 5 of this Starter Kit.

If a PEPPOL pilot wishes to become an approved PEPPOL Access Point Provider (typically an IT company), their organisation is obliged to:

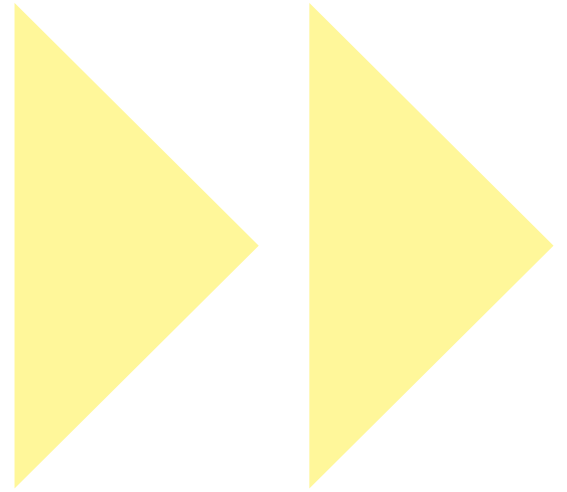
- By means of separate agreements, ensure that it is entitled to receive and transfer Business Documents on behalf of or for the benefit of the PEPPOL Participants that it services.
- Enclose in each agreement between itself and of the PEPPOL Participants that it services, a complete reference to this Agreement and to the PEPPOL Regional Authority, including the full address of the Contact Point.
- Process PEPPOL Business Documents and ensure that all related tasks are accomplished in accordance with the Agreement, including its Annexes, and the agreements it has made with the PEPPOL Participants that it services.

The Service Metadata Publisher provider needs to register all service capabilities enabled by each participant. This means that when an organisation wants to send a document as part of a PEPPOL scenario, the SMP will check that the recipient is registered as enabled to receive this type of document in the same scenario.

Once these tasks have been satisfied then documents can be exchanged as required without further intervention.

The actual effect of using the PEPPOL transport infrastructure will depend on how the Access Point provider has configured their services. In the majority of cases once the Access Point is established the participant sees no difference to normal usage of their eProcurement systems.

To summarise: access to the PEPPOL transport infrastructure is through an Access Point (AP), similar to how access to the Internet is obtained for example through Internet Service Providers (ISPs). Every participant (Contracting Authority and Supplier) must arrange a connection to an Access Point to participate in PEPPOL post-award processes through direct connections or via an existing eProcurement network or, alternatively, a PEPPOL pilot (particularly IT Service Providers) may choose to develop their own PEPPOL Access Point.



Section 4

Conformance and Test

PEPPOL

Conformance and Test

4.1 PEPPOL CONFORMANCE OUTLINE

Conformance vs. Compliance

PEPPOL compliance means that a solution or implementation of the PEPPOL process is conformant to all legal, business, technical, organisational, semantic and technical specifications, defined by PEPPOL or committed to by PEPPOL.

PEPPOL conformance is defined as the testing process for implementers to claim compliance. PEPPOL conformance is based on self evaluation.

Role of Testing and Validation

Testing provide the processes and tools for the participant to claim conformance. PEPPOL testing therefore defines a set of

activities containing test processes and test cases to ensure the functional and non-functional requirements of the system work together as defined by the various PEPPOL interoperability requirements (eSignature, VCD, pre-Award, post-Award and Transport Infrastructure).

How is Conformance achieved?

Pilot participants must claim conformance to the PEPPOL specifications. This is based on a self evaluation process supported by guidelines, test documents and compliance criteria.

The following picture explains the relationship between compliance and conformance and demonstrates the role of testing in conformance.

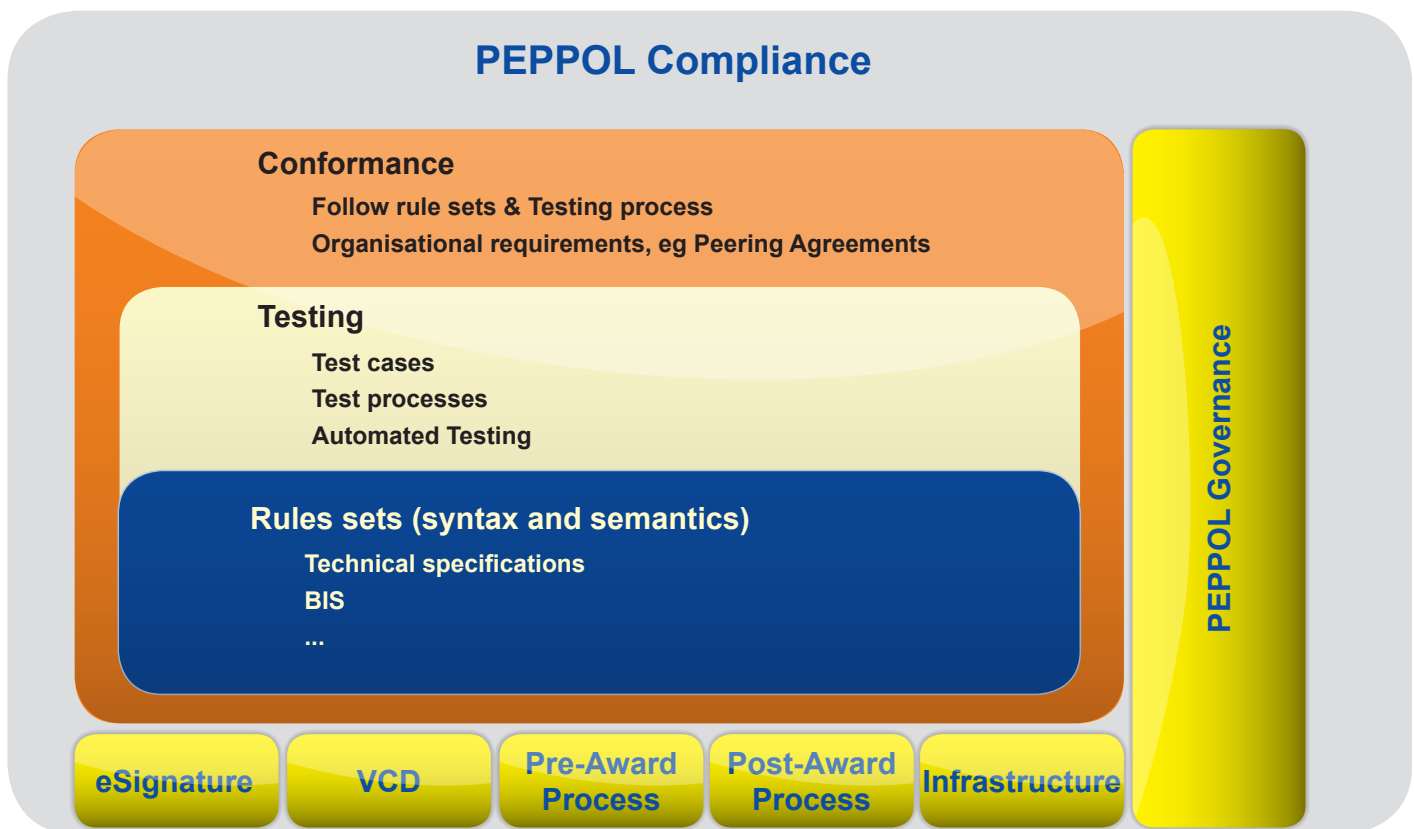


Figure 22: PEPPOL Conformance and Test

4.2 CONFORMANCE FOR SUBJECT AREAS

Every subject area of PEPPOL defines a set of specifications and requirements that must be fulfilled as part of definition of conformance for that subject area. These are the rule sets (requirements) that must be met by all that claim conformance in that area.

4.2.1 PEPPOL Pre-Award

Virtual Company Dossier (VCD)

The aim of VCD conformance testing in pre-award is to test whether software components are able to generate and understand correct document instances. Document instances are correct if they are valid regarding:

- Well-formed XML structure
- Mandatory / optional elements and cardinalities
- Element data types
- Element values (code lists, value patterns: e.g. URI, UUID, etc.)
- Semantic validity
- Further information constraints (e.g. file reference checks)

These objectives ensure that both technical and semantic conformance of VCD instances can be tested and validated in a given application.

Pre-award pilot scenarios are often 'open source' based, using the reference implementations that have been developed over time within the PEPPOL project. These processes are tested for conformance and interoperability based upon their adherence to the specifications and business rules defined for the content, in the original development.

This approach is similar to the post-award approach and requires that third party implementations are tested against the specifications and business rules defined in PEPPOL using the PEPPOL methodology.

4.2.2 PEPPOL Transport Infrastructure (transport of documents)

For PEPPOL transport infrastructure, conformance is defined as:

- The participant has signed the relevant PEPPOL Transport Infrastructure Agreements.
- The participant has implemented their solution according to the BusDox specifications and PEPPOL policies (example: for using identifiers, etc.).

To claim conformance a pilot participant must conform to the above specifications. For a participant to go-live they must execute at least two sets of interoperability tests with two other AP/SMP implementations.

4.2.3 PEPPOL Post-Award (document content)

A valid PEPPOL pilot must fulfil the following requirements:

- cross communities – for the business case
- use of PEPPOL transport infrastructure
- use of PEPPOL BIS – for document content

For the PEPPOL post-award scenario conformance is defined in terms of document instance. A document must conform to a series of specifications and business rules that apply to the content.

In terms of electronic documents an XML instance is conformant to PEPPOL when:

1. It is a valid instance in terms of its syntactical structure.
2. It has no other elements than the ones considered valid according to the declared Customisation Identifier (currently only the core data models are defined in the PEPPOL Policy for Identifiers).
3. It fulfils the business rules defined within PEPPOL.

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4.2.4 Post-Award: Testing and Validation guidelines

PEPPOL has developed a common approach to conformance and interoperability as a basis for testing of document content in post-award processes, catalogues, orders, invoices and related documents.

The guidelines can be downloaded at the following link:
http://www.peppol.eu/peppol_components/peppol-eia/conformance-test

The target group of this document are implementers of PEPPOL specifications. The document should be used as a guideline for interoperability testing and as a basis for claiming PEPPOL conformance.

4.3 PEPPOL TEST AREA

PEPPOL provides public access to the pilot test website where the reference implementation guidelines, artifacts for test validation, and supporting documentation are available. PEPPOL project teams and pilot participants have access to the restricted area which contains material detailing actual test experiences and documented test cases.

4.4 TOOLS

Several tools are provided to establish and support a shared testing process. PEPPOL provides access to these tools, documents and information - available on a daily basis (while testing is underway). Results of testing, tools and test documents will be published as deliverables of the project.

The status of the support tools for participants is currently as follows:

1. A Test Management Tool (web interface) provides the daily support for testers, with access to up-to-date information and documentation within PEPPOL including:
 - a) Test cases (test case management)
 - b) Test execution (documentation of results on basis of test cases)
 - c) Shared documents (e.g.: test guidelines, lessons

learned and documentation)

d) Link with defects on OSOR

e) Link to other relevant test material or sites.

2. Document instances can be handcrafted or created by automated processes.
3. The Validation Tool (web interface) supports:
 - a) UBL validation rules
 - b) CEN BII rules
 - c) PEPPOL rules (according to BIS specifications)
 - d) (Optional) national invoicing rules as they become available to the team of testers.
 - e) A test report template used to report the outcome of each test phase (sum of all test executions for a certain test type) by participant
 - f) An OSOR forum to report bugs (defect management) and share experiences on detailed technical questions across project teams
 - g) Skype/Adobe Connect meeting facilities to share and discuss lessons learned

Test Management Tool

The PEPPOL test cases describe the steps to conduct the test execution including preconditions to verify the required conditions. Examples of documents are provided as valid test cases (describing what needs to happen) and invalid cases with known errors are also provided to the testers. This provides certainty that in addition to functional transactions, all validation rules and error handling is working correctly.

A standardised test case template ensures that the relevant information will be contained in all test cases and makes test cases reusable for various different test phases and levels.

4.5 LINKS

pDAF – public version

Public testing website for sharing of lessons learned and individual material on behalf of (interoperability) testing for the PEPPOL Work packages: eSignature, VCD, etc.

pDAF – test management tool

Website for documentation of test cases and test executions.

<http://peppol.phloc.com/view/p-1179/Test-Management-Tool/>

Short introduction to the pDAF Test Management Tool (v1.1 as of 2011-01-24 as PDF document:

<http://peppol.phloc.com/user/File/Documents/pDAF%20Test%20Management%20introduction.pdf>

OSOR

The Open Source Observatory and Repository for European public administrations (OSOR) is a platform for exchanging information, experiences and FLOSS-based code for use in public administrations.

<http://www.osor.eu/>

4.6 DOCUMENTS AVAILABLE ON THE SITE**Testing methodology**

Description of the general testing approach used in PEPPOL.

Testing guideline

Description of testing activities focused on the Post-Award processes; contains definitions, processes, testing objects and a general “how to” on test planning.

The latest version 1.2 is published on:

http://www.peppol.eu/peppol_components/peppol-eia/conformance-test

Pre-award

http://www.peppol.eu/peppol_components/peppol-eia/conformance-test/pre-award-e-procurement/models

Post-award

http://www.peppol.eu/peppol_components/peppol-eia/conformance-test/post-award-e-procurement/models

eSignatures

http://www.peppol.eu/peppol_components/peppol-eia/conformance-test/esignature-infrastructure/models

Transport Infrastructure

http://www.peppol.eu/peppol_components/peppol-eia/conformance-test/transport-infrastructure/models

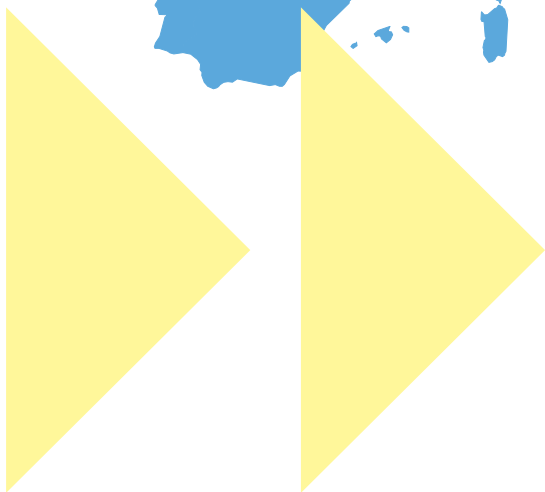
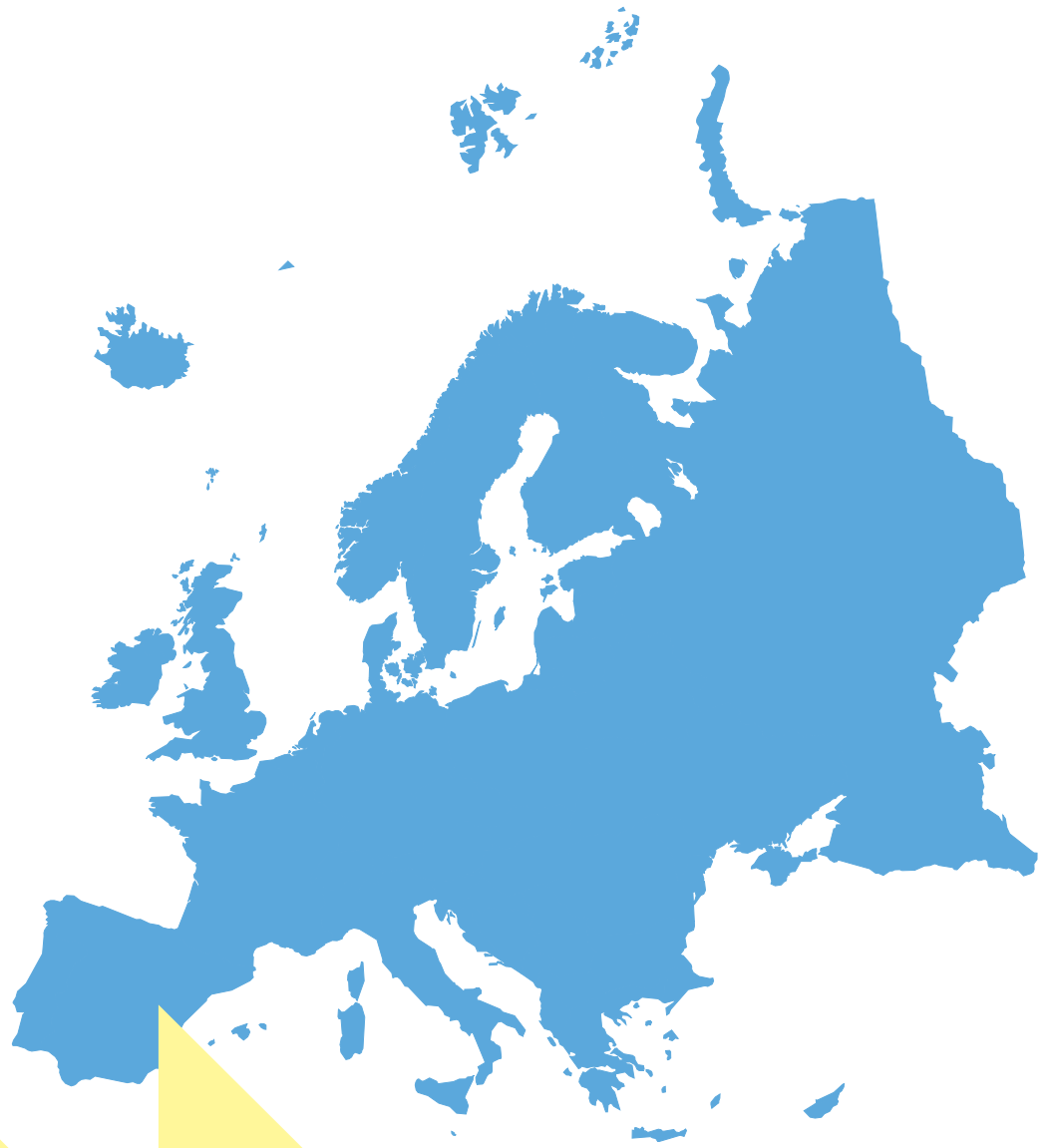
Test cases

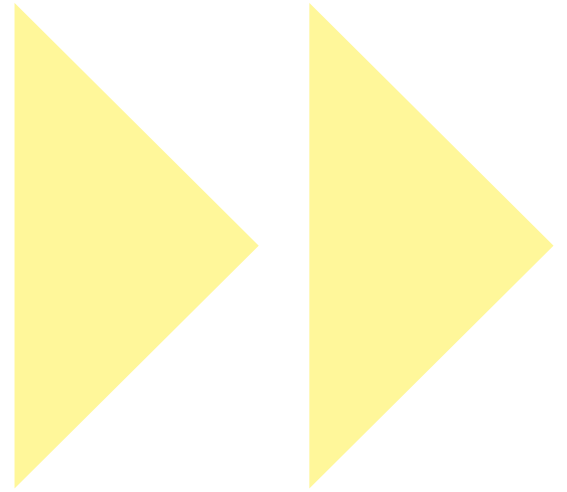
Use case based test scripts are stored in the pDAF tool.

Template Test report

Template provided for reporting of individual testing activities and their results in order to be consolidated to an overall PEP-POL testing report afterwards.

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Section 5 PEPPOL Governance

PEPPOL

Governance

5.1 PEPPOL GOVERNANCE MODEL

The long term governance model for the PEPPOL Transport Infrastructure is built around two levels of authority:

1. European-wide coordination, which is achieved through centralised governance of the PEPPOL SML (Service Metadata Locator) and the common technical standards and specifications;
2. National and/or regional coordination, which is achieved by delegating governance over the implementation and use of PEPPOL SMPs and PEPPOL APs to an appointed PEPPOL Regional Authority.

5.2 EUROPEAN COORDINATION

The European wide coordination is achieved by establishing the PEPPOL Coordinating Authority who will have authority over all central components of the PEPPOL Transport Infrastructure.

Key aspects of this responsibility include:

- manage updates and releases of new versions of PEPPOL technical standards and service specifications according to the published policy;
- central governance of the PEPPOL Public Key Infrastructure (PKI) according to the published policy, including the authority to issue digital certificates, as well as suspend and revoke the digital certificate if a PEPPOL SMP Provider or PEPPOL AP Provider fails to fulfil its obligations;
- providing the PEPPOL SML service.

Through these measures a set of minimum requirements and criteria will be established and consistently applied throughout the full PEPPOL Transport Infrastructure.

Making the PEPPOL Coordinating Authority the instrument for managing areas of use (through the recognition of identification schemes) and using the PEPPOL SML as a tool to enforce this policy, consistency and interoperability will ensure support not

only at technical level, but also on semantic and organisational level.

Furthermore the PEPPOL Coordinating Authority is responsible for:

- providing a website to promote and provide support for the operation of the PEPPOL Transport Infrastructure, including tools to facilitate efficient sharing of information and contact between all actors involved in the infrastructure;
- providing an arbitration body for eventual conflicts related to any part of the PEPPOL Transport Infrastructure;
- appointing and signing the Community Agreement with relevant PEPPOL Regional Authorities;
- entering into agreements with and providing support for PEPPOL SMP Providers and PEPPOL AP Providers in domains where no PEPPOL Regional Authority has been delegated.

For more information about the PEPPOL Coordinating Authority and contact details, please see http://www.peppol.eu/peppol_components/-transport-infrastructure/governance/peppol-coordinating-authority

5.3 NATIONAL AND/OR REGIONAL COORDINATION

The PEPPOL Regional Authority oversees the actual implementation and use of the PEPPOL Transport Infrastructure within a defined domain. The domain will typically be defined by national borders or by regions within a country. It is not foreseen that domains will overlap or cross national borders.

Key aspects of the responsibility of the PEPPOL Regional Authority include:

- describe and make publicly available any additional qualification criteria applicable to PEPPOL SMP Providers and PEPPOL AP Providers with whom they contract; such additional qualification criteria typically include service requirements over and above what is defined by the PEPPOL Coordinating Authority;
- sign agreements with the qualifying PEPPOL SMP Providers and PEPPOL AP Providers;

- participate in the governance of the PEPPOL Public Key Infrastructure (PKI) by participating in the processes required to issue digital certificates, as well as suspend and revoke a digital certificate if a PEPPOL SMP Provider or PEPPOL AP Provider fails to fulfil its obligations;
- ensure that PEPPOL SMPs and PEPPOL APs established within its domain comply with the minimum requirements defined by the PEPPOL Coordinating Authority, as well as with any additional qualification criteria applicable within the domain;
- provide support for PEPPOL SMP Providers and PEPPOL AP Providers contracting with the PEPPOL Regional Authority, including the escalation of support issues that the PEPPOL Regional Authority cannot resolve to the PEPPOL Coordinating Authority.

For European countries or regions that have not nominated a PEPPOL Regional Authority or do not wish to establish any specific national governance, including qualification requirements for PEPPOL SMP Providers or PEPPOL AP Providers, the governance model and qualification requirements established by the PEPPOL Coordinating Authority will apply.

For more information about PEPPOL Regional Authorities and contact details, please see:
http://www.peppol.eu/peppol_components/-transport-infrastructure/governance/peppol-regional-authorities

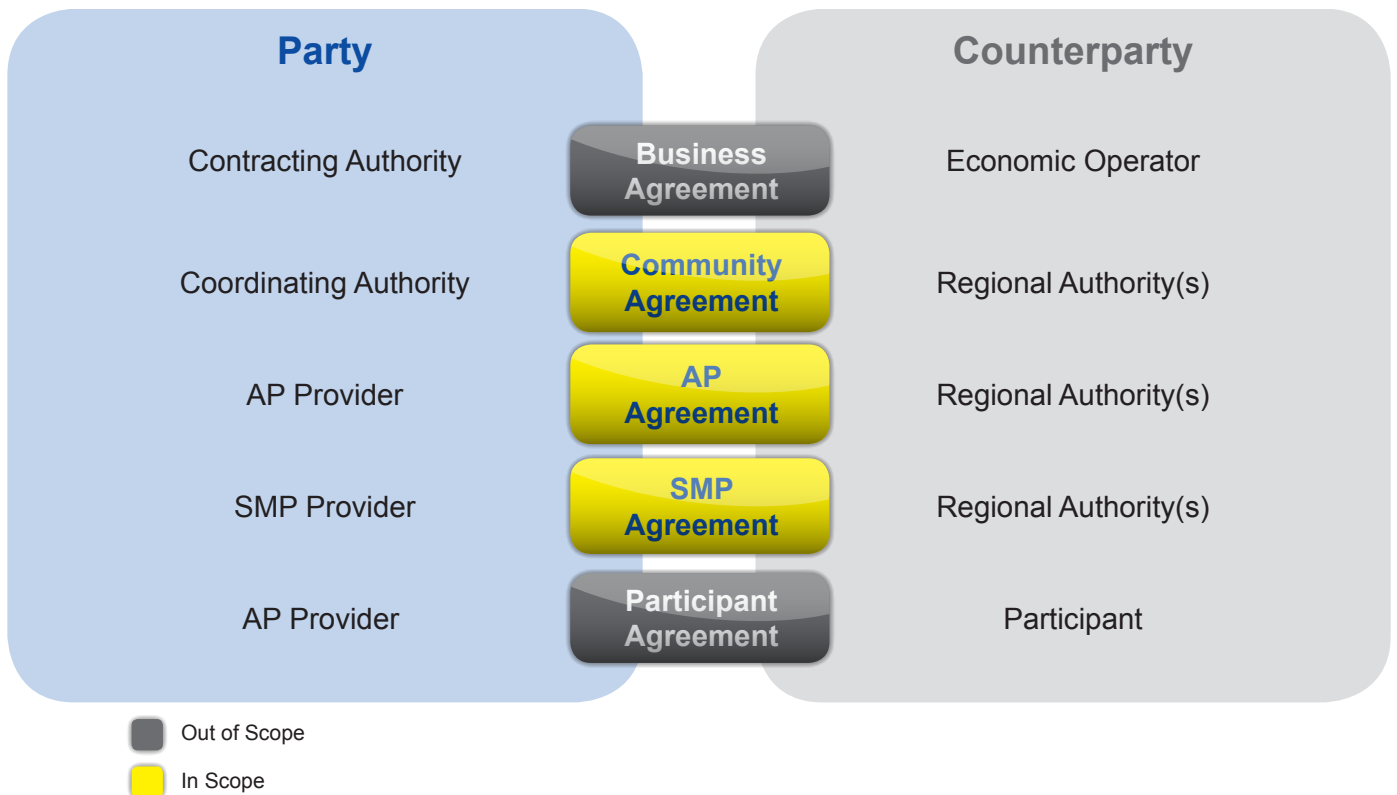


Figure 23: PEPPOL Governance Model

5.4 PEPPOL AGREEMENTS

The figure below illustrates the operational components of the PEPPOL Transport Infrastructure, the actors involved in their operation and the agreements required.

The PEPPOL Transport Infrastructure Agreements (TIA) include three types of agreements:

1. PEPPOL Community Agreement
2. PEPPOL Access Point (AP) Provider Agreement
3. PEPPOL Service Metadata Publisher (SMP) Provider Agreement

The regime of agreements and the governance structure ensure that:

- the role and responsibilities of each actor are clearly described and openly available, making PEPPOL an open and transparent community;
- sufficient information is made available through the SML/SMP, allowing a Participant to make this its sole source of information for conducting eProcurement with its trading partners.

It should be noted that the Business Agreement, as well as the Participant Agreement, shown in the Figure 23 are not part of the PEPPOL Governance models. It is, however, expected that such agreements may include provisions related to the use of the PEPPOL Transport Infrastructure.

5.4.1 PEPPOL Community Agreement

The PEPPOL Community Agreement is entered into between the PEPPOL Coordinating Authority and the PEPPOL Regional Authority for the purpose of defining the terms and conditions under which the Parties shall provide governance for the PEPPOL Transport Infrastructure.

The main aspects regulated in this agreement include:

- Giving the PEPPOL Regional Authority the authority to represent PEPPOL within its domain of responsibility;
- That the PEPPOL Regional Authority is responsible for ensuring adequate performance by the PEPPOL SMPs and PEPPOL APs established within its domain, including their

compliance to the PEPPOL specifications.

The PEPPOL Community Agreement is required in order to ensure consistency of the technical standards, specifications and procedures across the entire PEPPOL Transport Infrastructure.

5.4.2 PEPPOL SMP Provider Agreement

The PEPPOL SMP Provider Agreement is entered into between the PEPPOL Regional Authority and the PEPPOL SMP Provider for the purpose of defining the terms and conditions under which the PEPPOL SMP Provider shall provide the required PEPPOL SMP services.

The main aspects regulated in this agreement include:

- that the PEPPOL SMP Provider is guaranteed access to the PEPPOL SML according to specification in a timely manner;
- that the PEPPOL SMP Provider is responsible for maintaining the data about its registered PEPPOL Participants in the PEPPOL SML in a timely manner;
- that PEPPOL APs and PEPPOL Participants are guaranteed open access to the PEPPOL SMP according to specification in a timely manner.

The PEPPOL SMP Provider Agreement is required in order to ensure that the SMP Provider adequately provides the required services, and that they have the required access to the PEPPOL SML.

5.4.3 PEPPOL AP Provider Agreement

The PEPPOL AP Provider Agreement is entered into between the PEPPOL Regional Authority and the PEPPOL AP Provider for the purpose of defining the terms and conditions under which the PEPPOL AP Provider shall provide the required PEPPOL AP services.

The main aspects regulated in this agreement include:

- that the PEPPOL AP Provider is guaranteed open access to the PEPPOL SML and PEPPOL SMPs according to specification in a timely manner;
- that the PEPPOL AP Provider is responsible for maintaining the data about the PEPPOL Participants that it services in the PEPPOL SMP nominated by the PEPPOL

- Participant in a timely manner;
- that all other PEPPOL APs are guaranteed open access to the PEPPOL AP in order to deliver business documents to the PEPPOL Participants according to specifications;
- that the PEPPOL AP Provider guarantees to deliver any business document received from another PEPPOL AP to the stated receiving PEPPOL Participant in a timely manner;
- that the PEPPOL AP Provider guarantees to deliver any business document received from a PEPPOL Participant to the stated receiving PEPPOL AP according to PEPPOL specifications in a timely manner.

The PEPPOL AP Provider Agreement is required in order to ensure that the PEPPOL AP Provider adequately provides the required services, and that the PEPPOL AP has the required access to the PEPPOL SML and the PEPPOL SMPs.

5.5 STRUCTURE OF THE PEPPOL AGREEMENTS

The PEPPOL Community Agreement is provided as a set agreement with identical provisions applicable to all PEPPOL Regional Authorities to ensure common governance for the full PEPPOL Transport Infrastructure.

The PEPPOL AP Provider Agreement and the PEPPOL SMP Provider Agreement are provided as “template documents” allowing each Regional Authority to adjust the actual text and language of the agreements, according to local terms and conditions, including alignment to local legislation. To ensure interoperability and consistency across domains, the “template documents” identifies provisions that must be present in any PEPPOL AP Provider Agreement and PEPPOL SMP Provider Agreement.

All three types of agreements share a common set of annexes defining technical aspects related to the services. By making these annexes commonly applicable for all agreements a set of minimum requirements and criteria are established and consistently applied throughout the full PEPPOL Transport Infrastructure.

These annexes are:

- Annex 1 Contact points
- Annex 2 Definitions
- Annex 3 Service and Service Levels
- Annex 4 Technical Standards
- Annex 5 Regional domain and its specific services and service levels
- Annex 6 Change procedure
- Annex 7 The PEPPOL Governance model and model agreements

The PEPPOL Regional Authority is responsible for ensuring that the actually signed PEPPOL AP Provider Agreements and PEPPOL SMP Provider Agreements contains all mandatory provisions references in the “template documents” as well as in the annexes.

5.6 LINKS

The PEPPOL Agreements and the seven Annexes are available at the following link:

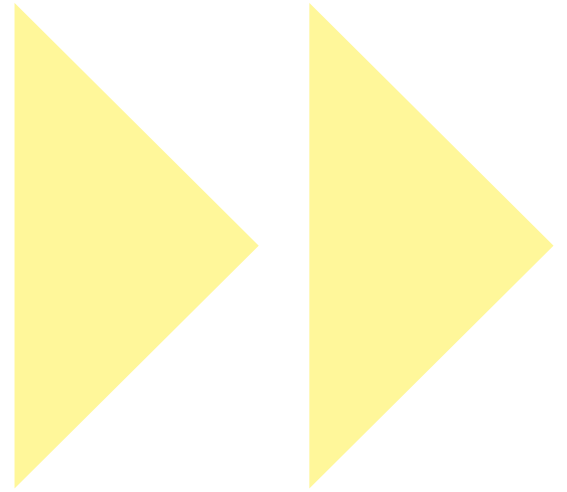
http://www.peppol.eu/peppol_components/peppol-eia/governance/transport-infrastructure/models/

For more information please see:

http://www.peppol.eu/peppol_components/-transport-infrastructure/governance/transport-infrastructure-agreements

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Section 6 PEPPOL Pilot Readiness and Engagement

PEPPOL

PEPPOL Pilot Readiness and Engagement

There are a number of different approaches that organisations may take to implement the PEPPOL solutions. Some important factors to consider are:

- For post-award pilots implementing one or more of the related components; eCatalogue, eOrder, or eInvoicing, use of the PEPPOL Transport Infrastructure is mandatory.
- PEPPOL has developed open source software components and tools that can be further enhanced by pilot organisations to facilitate the document translation and exchange process, including validation of conformance to the PEPPOL specifications.
- Only BIS compliant documents can be exchanged over the infrastructure between the two separate PEPPOL Access Points, which can be set up by any organisation, for private or public use, meeting the PEPPOL requirements.
- PEPPOL pilots may continue to use existing standards and convert to the BIS specifications during the document exchange process (please see commentary below).

Supporting the PEPPOL BIS vs. National, Regional or Industry Standards

While organisations should seek to adopt the CEN BII profiles in their procurement processes and support the PEPPOL BIS specifications where possible, it is equally important to clarify that PEPPOL is a system independent integration model that supports a few common processes but also provides organisations with the flexibility to continue using industry, regional, or national standards (if necessary) that can be translated into the BIS specifications via translation software or services.

This type of data conversion requires translation software commonly provided by eBusiness or IT service/solution providers, either as software or services as described later in this section.

However, the core value of PEPPOL resides in its contribution

to standardisation developments in Europe so that the complexities, costs and barriers created by the multitude of existing standards can be reduced to the minimum required by specific industry and business needs. This is of critical importance for SMEs who do not have the IT capabilities and resources to support the different requirements of large organisations.

When the PEPPOL BIS and BusDox standards become widely adopted throughout the public and private sector, IT software vendors will recognise the longevity of these specifications and start to embed them in their eProcurement and ERP software packages. This is the point at which true interoperability will be realised.

6.1 IT SYSTEM REQUIREMENTS

Many organisations outsource their 'eBusiness capability', which in general terms can be described as having the software required to transform data from one standard or format to another, validate the completeness and correctness of the data, and carry out the secure exchange of data files between entities. However, whether a service provider carries out these functions or, an organisation purchases or develops their own software, some basic requirements still need to be met. The term 'ERP system' used throughout this section, refers to the software owned or used by an entity to carry out their core business transactions which produces the data relating to invoices, orders, etc.

A typical high level PEPPOL document exchange process is described in the following steps:

1. Sender's ERP System creates data file (invoice, order or catalogue)
2. Sender (or Sender's service provider) translates file to the PEPPOL BIS standard
3. File is transferred to Sender's Access Point (AP) and SMP Provider
4. Sender's AP validates file contents according to rules of the PEPPOL BIS standard
5. Sender's AP transfers file to Receiver's AP using the PEPPOL BusDox standard
6. Receiver's AP validates file contents according to rules of the PEPPOL BIS standard
7. Receiver's AP transfers file to Receiver (or Receiver's service provider) in the BIS format
8. Receiver (or Receiver's service provider) accepts and translates file to receiving ERP system format
9. Receiver validates file contents and matches to ERP source data for download and processing
10. If required, Receiver sends an automated response back to sender to acknowledge acceptance or rejection of file

Note: An Access Point provider may also fulfil the role of an eBusiness service provider and carry out the file translation

process and other value added services such as file encryption, transfer, testing, monitoring, archiving etc.

6.1.1 Requirements for Economic Operators and/or Contracting Authorities

1. **Application Interface** – extracts data from ERP systems (for outgoing catalogue, order, or invoice data) and imports data into ERP systems (for incoming catalogue, order or invoice data). The data may consist of regular business documents, or acknowledgements that documents have been received, accepted or rejected.
2. **Data Translation** – is the process of transforming the data (invoice/order/catalogue, etc.) from the format of the Sender's ERP system to the appropriate PEPPOL BIS standard and then transforming the data from the BIS standard into the format that will be accepted by the Receiver's ERP system.
3. **Data Transfer Mechanism** – can be a process of transferring a data file internally from an ERP system to an eBusiness software application or transferring a data file to an external service provider via email or other transfer process. Some organisations may develop a more sophisticated eBusiness 'gateway' where an external server and software are used for sending and receiving data files from and to their ERP systems and their clients' systems using various methods of communication (FTP, AS2, VAN, etc.).

For post-award components, the PEPPOL transport infrastructure is mandatory which means that the sender (or their service provider) must send the data file to their PEPPOL Access Point (and SMP) provider who will validate the content of the file according to the BIS specification rules. The Access Point provider will define the method of transfer to be used. In many cases, the Access Point provider may also provide document translation services (from the sender format to the BIS format).

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The PEPPOL BusDox standards include the LIME protocol, which is a standardised way for an Access Point and a client application to exchange data files as an optional alternative to using a Value Added Network (VAN), FTP, or other common methods of exchange.

4. **Data Validation** – is an important part of the automated process. For the Receiver, this can be a program or specific software that validates the contents of the file according to predefined rules about the standard used or format required and the preset profiles based on client details which may include a detailed matching process (e.g. matching customer number, order number, amount, etc. to the original purchase order details) to ensure the data can be processed automatically.

For the Sender, this can be a program or software to verify that the outgoing data is correct, complete, and in the format required for the Receiver.

For the PEPPOL Access Point providers (sending and receiving), this must be software that validates the data content according to the format and business rules applicable to the PEPPOL BIS standard (for the documents) and the BusDox standards for the file transport process.

6.1.2 Requirements for IT Service Providers supporting PEPPOL pilots

The same four basic system requirements apply as discussed for Contracting Authorities and Economic Operators above, with the following additions:

Application Interface – must be able to import and export files for multiple clients to and from the eBusiness platform and include controls for segregating and monitoring client activity.

Data Translation – software must be capable of translating to and from multiple standards or proprietary formats and must fully support the PEPPOL BIS specifications.

Data Transfer Mechanism – must be able to send and receive files using a number of common transport methods to support pilots, including the LIME Protocol as an option for communicating with PEPPOL Access Point providers on behalf of clients.

Data Validation – must be able to validate the content of data files to conform to the format and business rules of the PEPPOL BIS specifications. Services usually include front-line validation of files based on client specific business rules.

Note: For Service Providers, Contracting Authorities or Economic Operators who wish to **develop a PEPPOL Access Point** (and SMP); further information is provided in the AP Provider Checklist at the end of this section.

6.1.3 How to address IT requirements

Three methods are commonly used to address the IT requirements.

1. Systems integration where organisations can choose to have built-in components which enable their eProcurement system to operate according to the appropriate scenario by purchasing the PEPPOL 'connector' components from the vendor of your company's procurement or ERP systems or having these components developed for your system by a software integrator. Many eBusiness service providers also sell integration packages that support a wide range of processes and technical standards.
2. Infrastructure Solution as an alternative to integrating your specific business application is to have validation and any translations performed as documents are being transported by a service provider (such as a PEPPOL Access Point provider). This will reduce internal requirements but may involve additional charges by the service provider.
3. Adapting the PEPPOL Demonstrator Client, an open source software tool. It is possible to run a PEPPOL pilot without integrating components into your organisation's procurement application. A separate application can be used, such as a standalone program on a PC. For a demonstration of this and to provide the basis for commercial product development (particularly for SMEs), PEPPOL has created a 'Demonstrator Client' application.

This can be downloaded onto a PC and can be accessed at: http://www.peppol.eu/peppol_components/peppol-eia/ict-architecture/post-award-e-procurement/implementations

The PEPPOL Desktop Application User guide is also available through this link. The User Guide will explain the steps to be performed to install the application, and provide details of the main functionalities of the software. For post-award components, an Access Point provider with LIME access will still be required when the Demonstrator Client is used.

Note: The PEPPOL Demonstrator Client is provided by PEPPOL as a demonstration application for 'proof of concept' and testing purposes only. As with any open source software, organisations need to provide their own internal support for the use of this application or obtain outsourced support services. PEPPOL does not provide support and does not accept responsibility for any use of this application for production purposes.

6.2 PEPPOL PILOT SCENARIOS

Contracting Authorities and Economic Operators (suppliers) can implement all of the PEPPOL components OR implement only those which provide the most significant benefits in the short term. There are a number of ways to implement the components depending on the technical capabilities and preferences of the participants. Two different scenarios are described below as examples.

Scenario #1: Cross-border eInvoice Implementation

A French Contracting Authority (CA) purchases goods from an Italian supplier/Economic Operator (EO)

Assumptions:

The two entities agree to pilot the PEPPOL cross-border eInvoice component and both are already capable of sending and receiving eInvoices at a national level. The Italian EO uses a service provider for its eInvoicing transactions while the French CA has developed a fully integrated eInvoicing platform as part of their ERP system.

Currently, the Italian EO: extracts the relevant invoice data from their ERP system and sends it to the service provider on a daily basis. The service provider transforms the invoice data into the national eInvoice standard (using translation software) and transmits the eInvoice file to the appropriate buyers (or to the service providers of their buyers).

Currently, the French CA: receives eInvoice files from their national suppliers through a 'gateway' they have developed where a software program is used to identify incoming files and accept or reject them based upon the rules configured. Accepted invoice files are then translated from the national standard into the format necessary to download into the ERP system where the key invoice data is then matched to the original orders and processed accordingly (a fully automated process).

Decisions need to be made by both entities based on the various approaches mentioned above. In this example, it is assumed that the Italian EO will continue sending proprietary files to their service provider, whereas the CA has decided to adopt the PEPPOL BIS eInvoicing standard.

Based on these decisions:

The Italian EO needs to:

- Identify a PEPPOL Access Point and SMP provider. This may be their existing service provider.
- Ensure either the existing service provider or the Access Point provider (if different entities) have the capability to transform the proprietary invoice files into PEPPOL BIS.
- Agree on the file transport method to be used by the Service Provider to the Access Point provider – if both are different entities.

The French CA needs to:

- Review invoice process to ensure alignment with PEPPOL BIS.
- Add the BIS standard to their data translation software capability or make use of the PEPPOL open source software components.
- Identify a PEPPOL Access Point and SMP provider(s).
- Agree on the method of communication to be used by the AP provider to send the invoices to the CA.

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Scenario #2: Cross-Community eCatalogue, eOrder, and eInvoice

A Swedish healthcare public authority is member of a regional eProcurement community connecting public sector buyers and private sector suppliers of medical products. The Swedish healthcare community purchases their software through an IT eProcurement community also based in Sweden. The two communities decide to pilot PEPPOL solutions in order to fully automate their processes and to connect all of the buyers and suppliers to each other.

Assumptions:

Currently, the Swedish authority's healthcare eProcurement community is connected via web services using an eProcurement software platform developed and hosted by an external software provider. Buyer and supplier profiles, product details, orders, and order history are accessed through the Internet to automate the sourcing of products, while the actual processing of order and invoice transactions are completed manually in the ERP systems of each community member.

Currently, the Swedish IT eProcurement community is connected through eProcurement software developed by the group to enable each member to exchange eCatalogues, eOrders, and eInvoices, using a common industry standard, in a fully-automated environment over a dedicated network connection.

Decisions need to be made by both entities based on the various approaches mentioned above. In this example, it is assumed that the Swedish healthcare community engages their eProcurement software provider to fully automate the exchange of catalogues, orders and invoices by incorporating the PEPPOL open source software components and develop the Demonstrator Client tool. The IT eProcurement community in this scenario will adopt PEPPOL BIS into their current data translation capability but has also decided to develop a PEPPOL Access Point and SMP, to provide these services for all of their community members.

Based on these decisions:

The Swedish healthcare community needs to:

- Identify a PEPPOL Access Point and SMP provider(s) and provide the details to the host of their eProcurement software.

The Swedish healthcare community's Software Provider needs to:

- access the PEPPOL open source software and develop and test their solution based on the PEPPOL demonstrator client tool;
- familiarise themselves with the appropriate PEPPOL BIS specifications;
- engage with the PEPPOL AP and SMP provider(s) to agree the method of file transfer.

The Swedish IT eProcurement community needs to:

add the BIS specifications to the existing translation software capability;

- sign the PEPPOL Community agreement, the AP Provider and SMP Provider agreements, with the designated PEPPOL regional or coordinating authority (see section 5 - PEPPOL Governance Model);
- adopt the BusDox standard for document exchange (see section 3.5 - PEPPOL Transport Infrastructure);
- ensure technical capability to support the AP and SMP requirements;
- test the solution to ensure PEPPOL conformance (see section 4 – PEPPOL Testing and Validation).

6.3 PEPPOL PILOT ENGAGEMENT

6.3.1 Invitation to participate in a PEPPOL Pilot

PEPPOL would like to invite European public sector entities (Contracting Authorities) with existing cross border suppliers, and suppliers (economic operators) with public sector customers, to join us in testing the PEPPOL solutions.

Public sector buyer

By participating in PEPPOL pilots, you will have the opportunity to use tools for the validation of foreign electronic signatures, to work with solutions for electronic catalogues both as a part of a tender and as a part of an order. You can also send an electronic order to your foreign suppliers and receive their invoice electronically.

Supplier

As a supplier to the European public sector, the use of PEPPOL solutions will simplify the tendering process in other countries, giving you the opportunity to receive an electronic order and

send an electronic invoice to your foreign customers in the same way as you would in your own country.

Target groups

We are looking in particular for public sector buyers and suppliers that are already connected to an eCommerce or eProcurement platform, but we welcome all types of organisations to contact us by using the form below. Registration is without obligation, we will just use your registration to contact you to talk about possible participation.

If you are interested in more information or would like to express your interest in becoming a PEPPOL pilot, please register using the link below:

http://www.peppol.eu/join_form

6.3.2 Pilot Engagement Process

The initial PEPPOL Pilot Engagement Process can be described as follows:

1. A prospective PEPPOL pilot is identified by a PEPPOL representative. This may be the result of direct contact from an interested party or through a PEPPOL targeted marketing campaign.
2. A high-level prequalification process takes place internally within PEPPOL to determine if the prospective pilot (at a glance) fits the parameters laid out in the PEPPOL Pilot Definition (See Section 1 of this Starter Kit).
3. If the high-level parameters are met, the PEPPOL representative and the prospective pilot exchange more detailed information about the PEPPOL project requirements, and the pilot organisation, respectively.
4. If the prospective pilot identifies further interest, a more detailed prequalification process takes place within the PEPPOL team. The value proposition and project requirements are then developed in dialogue with the prospective pilot participant (containing both the business and technical elements tailored specifically to the needs of the prospective pilot organisation).

During this process, roles are clearly defined, resources and timelines identified, a feasibility study is carried out, and a final qualification is made in order for PEPPOL and the prospective pilot participant to commit to the project.

For PEPPOL contact points and regional nodes, please see: <http://www.peppol.eu/contacts>

6.3.3 Pilot Implementation Support

PEPPOL provides an Implementation Support Unit (ISU) that follows the PEPPOL Pilot Lifecycle Management (PPLM) and PEPPOL Artifact Lifecycle Management (PALM) methodology.

Key activities include:

- Involvement in Pilot evaluation
- Development of Pilot Implementation packs
- Kick-off new Pilots
- Support execution of Pilot activities
- Provision of technical support to Pilots
- Provision of guidance for Pilot testing
- Development of the Pilot Communication Plan
- Pre and post-award Pilot enablement, running and monitoring

6.4 PEPPOL BUSINESS CASE/ SUCCESS STORY

As part of the PEPPOL Pilot Lifecycle Management process, pilot progress will be tracked and reported throughout the project. Feedback and lessons learned will be collected, logged and maintained. This information will be consolidated and may be used, where appropriate to suggest changes or enhancements to the various PEPPOL artifacts and specifications, and will form an integral part of the PEPPOL pilot business case document. PEPPOL Pilot success stories will be announced on the PEPPOL website at: <http://www.peppol.eu>

6.5 PEPPOL PILOT CHECKLISTS

Checklists for Prospective PEPPOL Pilots

6.5.1 Checklist for Contracting Authorities (CA)

1. PEPPOL Starter Kit - Section 1 and 2
 - a) Determine if the organisation fits the PEPPOL pilot criteria
 - b) Identify a committed Economic Operator(s) (Supplier) as a pilot partner(s)
 - c) Choose the components to be piloted (eCatalogue, VCD, eInvoice, etc.)
2. PEPPOL Starter Kit - Section 3
 - a) Review the project concepts and specifications used
 - b) Read the sections relevant to the component(s) chosen
 - c) Review the appropriate PEPPOL BIS specification documents
 - d) Align internal processes (if necessary) with the appropriate CEN BII profiles
 - e) If Post-Award – review the PEPPOL Transport Infrastructure section – ‘Connecting to PEPPOL’
 - f) If Post-Award – identify a PEPPOL AP (Access Point) and SMP Provider
3. PEPPOL Starter Kit – Section 4
 - a) Review the testing and validation guidelines
 - b) Read the Test Management Tool section
4. PEPPOL Starter Kit – Section 5
 - a) Read the PEPPOL governance overview
 - b) Identify any legal agreements required
5. PEPPOL Starter Kit – Section 6
 - a) Identify eBusiness capability to determine if an IT service provider is necessary
 - b) Ensure the organisation or appointed service provider can support (or translate to and from the PEPPOL BIS standard)
 - c) Identify internal business and technical resources to support the project
 - d) Review the pilot engagement process
 - e) Submit the online Pilot Participation form
 - f) Provide the PEPPOL representative with the information necessary to build the ‘value proposition’

- g) Build the internal business case and obtain commitment
- h) Upon acceptance, (if post-award) enter into a bi-lateral agreement with a PEPPOL Access Point and SMP provider

6. PEPPOL Repository

- a) Familiarise the project team with the information and software tools available via the PEPPOL EIA repository at: http://www.peppol.eu/peppol_components/peppol-eia

6.5.2 Checklist for Economic Operators (EO)

1. PEPPOL Starter Kit - Section 1 and 2
 - a) Determine if the company fits the PEPPOL pilot criteria.
 - b) Identify a committed Contracting Authority as a pilot partner
 - c) Choose the components to be piloted (eCatalogue, VCD, eInvoice, etc.)
2. PEPPOL Starter Kit - Section 3
 - a) Review the project concepts and specifications used.
 - b) Read the sections relevant to the component(s) chosen
 - c) Review the appropriate PEPPOL BIS specification documents
 - d) Align internal processes (if necessary) with the appropriate CEN BII profiles
 - e) If Post-Award – review the PEPPOL Transport section – ‘Connecting to PEPPOL’
 - f) If Post-Award – identify a PEPPOL AP (Access Point) and SMP Provider
3. PEPPOL Starter Kit – Section 4
 - a) Review the testing and validation guidelines
 - b) Read the Test Management Tool section.
4. PEPPOL Starter Kit – Section 5
 - a) Read the PEPPOL governance overview.
 - b) Identify any legal agreements required *

*Economic Operators do not enter into PEPPOL Transport Infrastructure Agreements (unless providing Access Point or SMP services).

5. PEPPOL Starter Kit – Section 6
 - a) Identify eBusiness capability to determine if an IT service provider is necessary
 - b) Ensure the company or service provider can support (or translate to and from) the PEPPOL BIS standard
 - c) Identify internal business and technical resources to support the project
 - d) Review the pilot engagement process
 - e) Submit the online Pilot Participation form
 - f) Provide the PEPPOL representative with the information necessary to build the ‘value proposition’
 - g) Build the internal business case and obtain commitment
 - h) Upon acceptance, (if post-award) enter into a bi-lateral agreement with a PEPPOL Access Point and SMP provider
6. PEPPOL Repository
 - a) Familiarise the project team with the information and software tools available via the PEPPOL EIA repository at: http://www.peppol.eu/peppol_components/peppol-eia

6.5.3 Checklist for IT Service/Solution Providers

This checklist is intended for IT vendors providing file translation and exchange services to PEPPOL Pilot organisations

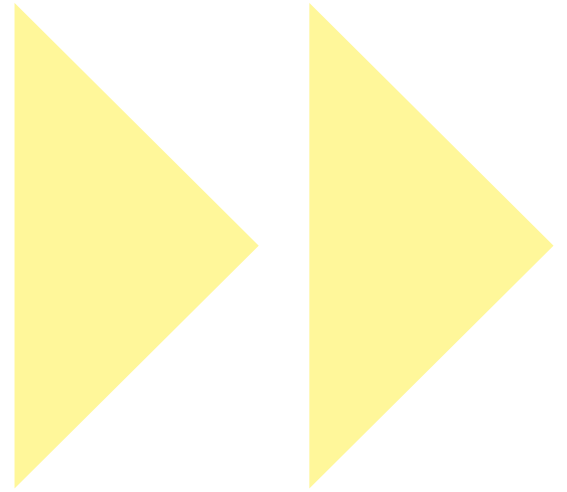
1. PEPPOL Starter Kit - Section 1 and 2
 - a) Identify a committed Contracting Authority/Economic Operator pair to pilot
 - b) Determine if the supplier/buyer pair and transaction fit the PEPPOL pilot criteria
 - c) Identify the components to be piloted (eCatalogue, VCD, eInvoice, etc.)
2. PEPPOL Starter Kit - Section 3
 - a) Review the project concepts and specifications used.
 - b) Read the sections relevant to the component(s) to be piloted
 - c) Review the appropriate PEPPOL BIS specification documents
 - d) Align internal processes (if necessary) with the appropriate CEN BII profiles
 - e) Review the PEPPOL Transport section – ‘Connecting to PEPPOL’
3. PEPPOL Starter Kit – Section 4
 - a) Review the testing and validation guidelines
 - b) Read the Test Management Tool section
4. PEPPOL Starter Kit – Section 5
 - a) Read the PEPPOL governance overview.
 - b) Identify any legal agreements required *
5. PEPPOL Starter Kit – Section 6
 - a) Review eBusiness capability to determine if software/hardware upgrades are necessary
 - b) Ensure existing translation software can support the PEPPOL BIS standard
 - c) Identify internal and client resources to support the pilot project
 - d) Review the pilot engagement process
 - e) Submit the online Pilot Participation form
 - f) Provide the PEPPOL representative with the information necessary to build the ‘value proposition’.
 - g) Build the service provider business case and obtain internal commitment
 - h) Upon acceptance, enter into bi-lateral agreements with the appropriate PEPPOL Access Point and SMP Providers
6. PEPPOL Repository
 - a) Familiarise the project team with the information and software tools available via the PEPPOL EIA repository at: http://www.peppol.eu/peppol_components/peppol-eia
- f) Identify PEPPOL AP (Access Point) and SMP (Service Metadata Publisher) Providers

*IT service providers do not enter into PEPPOL Transport Infrastructure Agreements (unless providing Access Point or SMP services)

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6.5.4 Checklist for PEPPOL AP and SMP Providers

1. Read the PEPPOL Starter Kit and review deliverables/artifacts in the PEPPOL EIA repository at http://www.peppol.eu/peppol_components/peppol-eia
2. Fully understand the commercial opportunity for the organisation and the local market. Identify the level of market interest via client surveys, business networking sites, etc.
3. Understand the current status of the PEPPOL project, the 30.04.12 deadline, and the long term sustainability
4. Understand the scope of the project and the status of its components – both the Transport Infrastructure and the PEPPOL BIS profiles for business documents
5. Analyse contractual obligations and their commercial implications (e.g.: no routing fees allowed between Access Point providers – including workflow for users to register and deregister for PEPPOL)
6. Review the SMP and AP technical requirements in detail. Identify internal technical requirements to make the decision: commercially available solutions vs. internal development
7. Sign the PEPPOL Transport Infrastructure Agreements with the selected Regional Authority (or Coordinating Authority). (See section 5 of the Starter Kit for more information about governance and legal agreements).
8. Upgrade systems to:
 - a) Comply with PEPPOL data structure
 - b) Create interface with input controls for sending data within PEPPOL
 - c) Incorporate input controls on interfaces for receiving data from any system
 - d) Adjust/upgrade workflow of document handling
 - e) Create interface to register users on SMP
 - f) Create interface
9. Update system documentation
10. After signing the relevant PEPPOL Transport Infrastructure Agreements, obtain PEPPOL Pilot Certificate to 'go live in PEPPOL test environment'.
11. Test functionality internally
12. Test functionality in PEPPOL environment with dummy accounts
13. Obtain sign-off from PEPPOL
14. Test functionality in PEPPOL environment together with other service providers
15. Update user/client documentation
16. Update user contacts/terms and conditions to be in line with PEPPOL contractual obligations
17. Inform users/clients of the new service with PEPPOL functionality
18. Go-live



Annex 1

Other Open Source Tools and Reference

ANNEX 1

Other Open Source Tools and Reference

Open e.PRIOR: an open source eProcurement solution

e.PRIOR is the eProcurement service-oriented platform developed by the Directorate-General for Informatics (DIGIT) of the European Commission specifically for internal use, while the open source version, Open e.PRIOR has been developed for use on the open market.

Primarily focused on post-award eProcurement (eCatalogue, eOrder, and eInvoice), the main features of Open e.PRIOR include:

- An integrated environment that offers web services to exchange procurement documents. The application guarantees authenticity of origin and integrity of content for all exchanged documents. It also integrates an archiving functionality.
- It supports the integration of multiple suppliers with the multiple back-offices of a Contracting Authority
- It is connected to the PEPPOL gateway, enabling the secure exchange of electronic documents via the PEPPOL network. Any supplier connected to PEPPOL has, by design, a connection to all Contracting Authorities which have implemented Open e.PRIOR.
- The application complies with the CEN/BII Profiles, the eInvoicing Directive, standard identifiers, standard codes lists, and the WS-Interoperability guidelines.

Key Open e.PRIOR components

PEPPOL Gateway

The PEPPOL Gateway was developed according to the PEPPOL specifications, to enable a connection to the PEPPOL network.

Data Exchange Services

The data exchange services automate the eProcurement business processes, enabling a contracting authority to receive catalogues, invoices, credit notes, etc. in a standard format from their suppliers and in turn send orders, catalogue responses, etc. in electronic format to those suppliers. The system is based on the CEN/BII business profiles and the data model of UBL2.0.

Toolbox Services

Open e.PRIOR implements a number of generic services which support the business independently, such as business document validation, routing, logging, generation of human-readable version of the different UBL documents that the system can handle and the ability to exchange attachments. A dedicated team provides assistance to Member States, agencies and European institutions. In the next phase of the project, the Commission will develop a supplier portal for SMEs to provide a graphical user interface to some e-PRIOR services and will also extend its business documents to cover the pre-awarding process, in particular e-Submission and e-Award.

For more information visit: <http://www.osor.eu/projects/openeprior>

