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Peppol, the Pan European Public procurement on line:
a balance and a proposal
based on the project experience



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I'Quaderni Consip' sono una testata registrata presso il Tribunale Civile di Roma
versione cartacea iscr. n. 11 del 16 gennaio 2009
versione elettronica iscr. n. 14 del 16 gennaio 2009

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I Quaderni Consip sono pubblicati all'indirizzo:
www.consip.it

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1. Abstract

The PEPPOL (Pan-European Public Procurement On-Line) project was conceived to widely improve the ICT systems interoperability among public sector organizations and their suppliers, through the creation of solutions natively designed to solve the problem also at cross-border level, and at accessible costs for SMEs.

The project was run by a consortium participated by 22 partners from 12 European nations, for a 52 month duration addressing the topics of eSignature, Virtual Company Dossier, eCatalogues, eOrders, eInvoices, and the Transport of e-documents.

Through a significant number of pilot (but real life) transactions, the solutions generated by PEPPOL had a concrete impact on the European eProcurement scenario: they became a reference for many EU initiatives in the field and they have been mentioned/referred to in several legislative laws and regulations at national level. In addition, after the project a legal entity was created, Open PEPPOL, entrusted with the maintenance and evolution of the project results.

Based on this valuable real life experience, the authors - drilling down in one of the project areas, i.e. eCatalogues - propose the creation of a new "Common eProcurement Vocabulary", or CePV, which would serve the purpose of facilitating the standardization of the large mass of data that are usually present in eCatalogues. The proposal matches, with some specific suggestions, one of the scenarios analysed in a European Commission's Report on the functioning of the CPV. In the authors' opinion, the CePV has the potential to get to agree a large number of users, and thus become a cornerstone to solve the hardest interoperability challenge in the area of eCatalogues. In their proposal, the authors suggest both a staged (multi-year) and a collaborative approach for the creation and maintenance of the CePV, in order to make this idea become affordable.

2. Introduction

The PEPPOL (Pan-European Public Procurement On-Line) project has been a successful attempt of the European Commission to trigger a steady process to converge European wide consensus on a set of eProcurement standards, which may pave the way to a larger use of interoperability in public procurement. The project aimed at spreading the uptake of interoperability with manifold goals, but principally two: significantly increasing efficiency in the eProcurement process; lowering the barriers to cross-border eProcurement.

This paper has two objectives: on one side, providing a high level view of the PEPPOL project and its results, including reference tables for summarized data on the project (Chapters 3-6); on the other side, to formulate a proposal (Chapter 7), based on the project experience, for the creation of a new European system for describing the properties of supplies and services purchased by the Public Sector.

Regarding the first objective, the hope of the authors is that this paper may be effective in conveying the feeling of some distinctive features of PEPPOL. First: concreteness. Indeed, the project based the strength of its results on a significant number of real life tests. Second: achievement. The PEPPOL project succeeded in achieving the results that any EU financing has in general: trigger a process that lasts after the project end; the tangible example of this is the creation of OpenPEPPOL, that is a voluntary based organization entrusted with the maintenance and evolution of the project results.

Regarding the second objective, the authors wish to contribute to the European debate on the Integration of the a classification system in an e-procurement environment, that has been thoroughly analysed in the Final Report on the functioning of the CPV codes, by defining a proposal that aims at promoting - with some further suggestions that aim at improving the feasibility - one of the scenarios (scenario 1 "Self-Development") for enhancement of the CPV analysed in that Report.

3. From the project conception to the conclusion, and beyond

3.1 The initial idea and the first EU Call for Proposals

The PEPPOL project responded to a Call for Proposals launched in 2007 under the Framework Programme "CIP - Competitiveness and Innovation Programme", and more specifically in the sub-program " ICT PSP - ICT Policy Support Programme", aimed at supporting ICT uptake policies in EU member states .

The CIP program was an operational tool of the "i2010 - A European Information Society for growth and employment ", which implemented the so called "Lisbon Strategy ".

In the ICT PSP Work Programme 2007 a funding was addressed to the objective " Enabling EU- wide public eProcurement " , to be implemented by means of a "Large Scale Pilot" or "type A project", i.e. by means of a consortium where at least 6 member states had an official participation, guaranteed by the presence of central government institutions with a policy role in the relevant domain (in the specific case: electronic procurement)

Despite being the instrument of the "LSP type A" open to private participation, in the specific case of PEPPOL the consortium was formed only by public institutions, as all governmental bodies dealing with public procurement preferred to avoid any potential conflict of interest that could arise by working in a consortium with potential suppliers.

The lead role in the establishment of the group was initially played by France, which, in the wake of the change of government resulting from the general election of 2007 passed the baton to Norway. The latter coordinated the proposal for funding submitted by a consortium, that in the end was made by 8 states: Norway , Denmark, Italy , Austria, Hungary , Finland, France , Germany.

The EU approved the project proposal in 2008, by signing the "Grant Agreement", i.e. the contract between the Commission and the Consortium of "Beneficiaries" of the loan. The latter signed in addition a "Consortium Agreement", i.e. a contract establishing a consortium among the participating institutions (without the EU).

Under the rules of the CIP Programme, the European Commission covered 50% of the costs incurred by the beneficiaries to run the project.

The Project activities officially started on 1 May 2008; the "Kick-off" meeting took place in Rome, in the CONSIP headquarters, on 14-16 May 2008, with the participation of the 8 countries that had submitted the first proposal for funding. The initial project work plan spanned on a 36 month duration.

3.2 The enlargement

The launch of the project was an achievement in itself, and the European Union wished to further strengthen the result. For this reason, in the CIP Work Programme 2009 an additional funding was included to enlarge the project to other countries. As a result, Greece, Sweden, Portugal and Scotland, officially became part of the Consortium from 1 November 2009, bringing to 12 the number of participating countries.

As enlargement inevitably led to an interference with the day-to-day activities, and required a phase-in time for newcomers, the project duration was extended from the original 36 months to 48 months, to be later fixed to 52 months to allow the participants concluding a number of ongoing activities.

On the occasion of the enlargement of 2009, several countries expanded their participation, including Italy, which took the opportunity to enter also in WP 5 - eInvoicing with the Departments of Finance and the General Accounting Office of the Ministry of Economy, beyond Consip (in support of the latter) and Intercent-ER.

In 2011, Hungary, following the results of the general elections, formally left the Consortium, thus bringing the final number of participating countries to 11.

In late 2011 the Italian AVCP became an "external partner", taking part in project activities without an official budget allocation, in order to align the Italian project for the issue of the "Electronic Dossier of the Economic Operator" to the PEPPOL Virtual Company Dossier.

3.3 The project conclusion and the launch of OpenPEPPOL AISBL

In the final phase of the project the consortium of countries has identified the need to ensure the maintenance of the PEPPOL specifications and to promote their implementation across Europe.

To this end, the Governing Board of the Consortium decided to set up an international non-profit organization, registered in Belgium, which took the name of OpenPEPPOL.

The association was formally established on September 1st, 2012 by 5 members of the PEPPOL project (Difi for Norway, Bremen Online Services for Germany, DIGST for Denmark, Intercenter for Italy). In 2013 Consip joined OpenPeppol taking on the leadership for the Pre award Community and the task to coordinate the eCatalog working group.

OpenPeppol is based on membership fees and in-kind contribution, with openings also for other types of funding compatible with the purpose of the association and its non-profit nature. Members are public sector buyers, suppliers of goods and services, administrations, as well as PEPPOL service providers e.g. providers of access point and of eSignature validation services.

The structure of OpenPEPPOL consists of the following units and bodies:

- The General Assembly;
- The Coordinating Communities;
- The Managing Committee.

A Secretary General is elected to pursue the purposes of the Association and to implement the decisions of the General Assembly and the Managing Committee, which in general aim to: ensure the long term sustainability of the PEPPOL-infrastructure networks and user communities; ensure the long term sustainability of the PEPPOL specifications, building blocks and services; and promote and support the ever-wider use of the PEPPOL specifications, building blocks and services.

In its first year of operation, over 80 members have joined from both the public and private sectors based in 18 countries (the 2014 target is to reach 150 members) while over 60 PEPPOL Access Points have been established.

Countries such as Norway and Austria have recently made e-invoicing mandatory for public sector suppliers, referencing the PEPPOL e-Invoicing specifications and network as an implementation method.

In Italy, the Region of Lombardia is implementing PEPPOL for e-Orders, while the region Emilia Romagna has been driving adoption in the health care sector for e-Order and e-Invoicing, setting up its own Access Point. Other government agencies are planning to implement PEPPOL eInvoicing, eOrders or eCatalogues including, but not limited to, Ireland, France, Netherlands and Poland.

OpenPEPPOL is one of the three streams along which PEPPOL members moved to ensure the continuation of its results after the project conclusion. In the PEPPOL strategy, this was called "User driven approach", and was flanked by two other approaches:

- EC support approach, through the Connecting Europe Facility (CEF), ISA operations and change management of centralised software components/services, and the e-SENS project.
- Standardisation approach through continued efforts for standardisation of business processes and semantics, mainly in CEN Workshops.

Ultimately OpenPEPPOL was established to ensure the sustainability of the various building blocks developed during the PEPPOL project and to further enhance and promote adoption of the PEPPOL specifications.

The development of a governance structure that could assure future development in line with market needs and EU policy and Member States' interests, ensures the reliability and continuity of the agreement framework laying the groundwork for an open, accessible and compliant manner growth.

4. The project objectives

PEPPOL was a complex and multi-year project; the objectives assigned by the European Commission as basis for the funding were ambitious and articulated.

According to the provisions of the Call for Proposals, the overall objective was "*the EU-wide implementation of electronic public procurement enabling companies, in particular SMEs, from one state to respond to public procurements in any other state*", and the Target outcome and characteristics were defined as follows:

- *Integrated pilot solution building upon existing national systems, based on:*
 - *common specifications for an interoperability layer and for common building blocks, agreed by the entities responsible for the national eProcurement strategies, to be made publicly available with no fees for the pan-European interoperability layer of public eProcurement;*
 - *building blocks for the cross-border interoperability layer of public eProcurement reusable, modular, exchangeable, and easy to integrate in existing systems;*
- *Meet the following requirements:*
 - *Compliance with applicable EU and national levels;*
 - *Efficiency and reduce costs for the involved actors*
 - *Technical integrity, repeatability, scalability, usability and reliability.*

These objectives, as defined in the Call for Proposals, evolved over time and, although covering mainly the technical aspects, have always had a 'political' value.

An unofficial and summarized reformulation of the project objectives, which takes into account the evolutions and the agreements made with the Commission during the project, could bring to state that **the objective of the project was to develop, and test in pilot transactions, specific software specifications and solutions (the "building blocks") for eProcurement which, by integrating within existing systems, allow interoperability of IT systems of PA and suppliers (in particular SMEs), even at cross-border level.**

The four key words of the project objective as reformulated above are "specifications", "interoperability", "SMEs" and "cross- border".

Interoperability allows a first definition of the scope of PEPPOL: only documents exchanged between suppliers (and all the issues connected with the exchange) are of interest to PEPPOL. Therefore, attestations and certificates for qualification, catalogues, orders, invoices do fall within the field of interest; instead, ERP systems and/or systems for the management of activities that take place within the "boundaries" of an organization - such as the award procedures or issues related to archiving of electronic documents - do not fall within the field of interest of PEPPOL.

The PEPPOL approach to interoperability is in line with the European Interoperability Framework – EIF, and in particular with version 2.0, that establishes 5 layers of interoperability, as shown in the Figure 2 below.

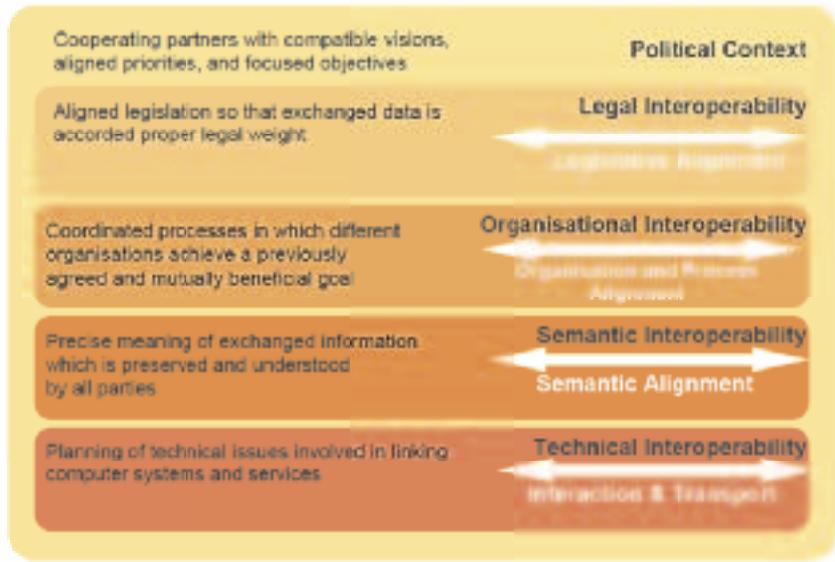


Fig. 1 – The EIF - European Interoperability Framework 2.0

Referring to the EIF, PEPPOL focused primarily on the semantic level, following the same approach adopted by the CEN/BII Workshop. Interoperability is resolved with the use of **software specifications** that business partners should refer to in their IT systems, through limited - if any at all - adaptations to the existing systems. In other words PEPPOL chose not to develop and spread the use of a "universal IT solution", as this would have been a too ambitious objective.

The focus on **SMEs** has imposed the use of technologies with easy access, that lead to choose XML and related technologies for the development of specifications, and Java to develop the related solutions (also some .NET solutions were implemented).

Finally, the aspect of **cross-border** was essential, as the PEPPOL standards and specifications have been agreed between organizations representing multiple countries. During the project, however, it was noted that the cross-border traffic today is still very limited, so in the execution of pilot cases the focus shifted from cross-border to "cross-community", meaning that the hardest border to be crossed is the one among communities using different standards and systems, rather than the border between users from different countries.

5. The project structure

5.1 The Work Packages and their evolution

The project activities were divided into work packages (WP), each managed by one country. Originally eight WPs were planned, to which a ninth added during the project, to better respond to the need to manage the implementation of the pilot cases, so the final list of WPs is the following:

- WP1 - eSignature (GER)
- WP2 - Virtual Company Dossier (GER)
- WP3 - eCatalogue (ITA)
- WP4 - eOrdering (AUT)
- WP5 - eInvoicing (DEN)
- WP6 - Project Management (NOR)
- WP7 - Awareness and Consensus Building (AUT)
- WP8 - Architecture Design and Validation (DEN)

The different PEPPOL WPs delivered (see Figure 2) two kind of "components" (i.e. specifications and/or software for eCatalogues, eOrders, eInvoices): "eProcurement Components", which target the central steps of the public procurement process, and in particular the ones where documents are exchanged among business partners (thus taking a big advantage from interoperability); and "Enablers" that are used across a number of steps along the procurement process.

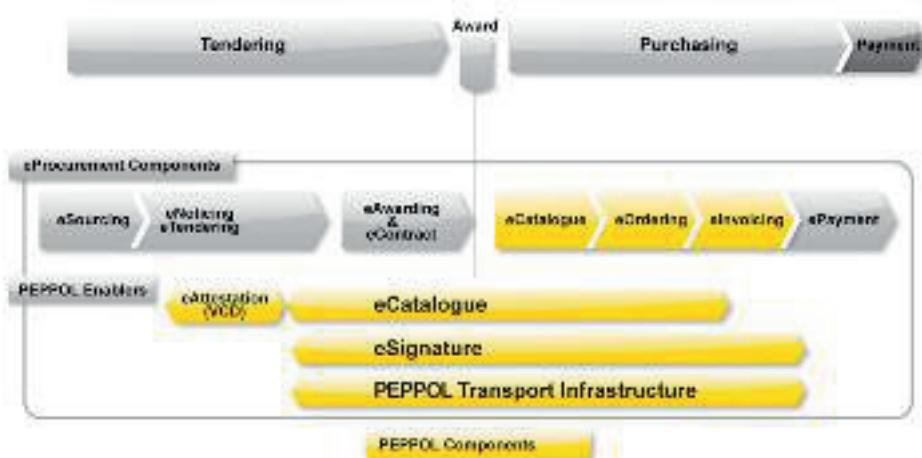


Fig. 2 – The PEPPOL scope

There was no obligation for a country to be present in all WPs; the following table provides the complete picture of all the WPs composition, each with its managing country and the organizations of each country participating in the WP.

Tab. 1 – Country participation in the project Work Packages

	WP1 eSignature (GER - BMN)	WP2 Virtual Company Dossier (GER - UKL)	WP3 eCatalogue (ITA - Consip)	WP4 eOrdering (AUT - BBG)	WP5 eInvoicing (DAN - NITA)	WP6 Project Management (NOR - Difi)	WP7 Awareness and Consensus Building (AUT - BRZ)	WP8 Architecture Design and Validation (DAN - NITA)	WP9 Implementation Support Unit (GRE-UPRC)
NOR	Difi	Difi	Difi	Difi	Difi	Difi	Difi	Difi	Difi
ITA	CNIPA-DigitPA Infocamere	Infocamere	Consip MEF Intercenter CSI Piemonte	Consip MEF Intercenter	Consip MEF Intercenter	Consip MEF Intercenter CSI Piemonte CNIPA-DigitPA Infocamere	Consip MEF Intercenter Infocamere	Consip DigitPA Infocamere	Consip MEF Intercenter Infocamere
DAN			NITA	NITA DIGST	NITA DIGST	NITA DIGST	NITA DIGST	NITA DIGST	NITA DIGST
AUT	PEPPOL.AT (BRZ)	PEPPOL.AT (BRZ)	PEPPOL.AT (BBG)	PEPPOL.AT (BBG)	PEPPOL.AT (BRZ-BBG)	PEPPOL.AT	PEPPOL.AT	PEPPOL.AT (BRZ)	PEPPOL.AT (BRZ)
GER	Bremen	UniKoblenz		UniKoblenz		Bremen UniKoblenz	Bremen UniKoblenz	UniKoblenz	Bremen UniKoblenz
GRE	UPRC EKEVYL	UPRC EKEVYL SSPD	UPRC EKEVYL	UPRC	UPRC EKEVYL	SSPD UPRC	SSPD UPRC	UPRC	UPRC
FRA	ADETEF	ADETEF	ADETEF		ADETEF	ADETEF	ADETEF		ADETEF
SVE				ESV	ESV	ESV		ESV	
FIN		VM	VM	VM	VM	VM	VM		VM
HUN		KSzF	KSzF		KSzF	KSzF			
POR		ANCP-EPE			ANCP-EPE	ANCP-EPE			
SCO		Scottish Government	Scottish Government	Scottish Government	Scottish Government	Scottish Government	Scottish Government		Scottish Government

5.2 The PEPPOL Consortium

The project participants, also called "beneficiaries" (meaning they were receiving a EU grant) formed a consortium registered under Norwegian law, which was governed by a Consortium Agreement.

With the exception of German partners, who participated with a municipality and a university, all other countries have participated in at least one organization involved in the eProcurement policies at national level, either due to its nature of innovation agency, often including the task of spreading the use of ICT in the public sector (stressing the "e" side of *eProcurement*), or due to its nature of agency involved in public procurement (stressing the "procurement" side of *eProcurement*).

The Table 2 provides the full list of participants, organized by country, and includes a short description that aims to clarify how the participation fits with the beneficiary's institutional mission.

Tab. 2 – List and short description of participating organizations

Organization (original name)	Translated name (where applicable)	Short Name	Country	Description / Mission	Period (from month to month)
Direktoratet for Forvaltning og IKT	Directorate for Public Management and ICT	Difi	Norway	Difi aims to strengthen the government's work in renewing the Norwegian public sector and improve the organisation and efficiency of government administration. Difi's tasks include setting up solid public procurement procedures	M 1 to M 52
Freie Hansestadt Bremen	Municipality of Bremen	Bremen	Germany	Bremen is one of the most innovative municipalities in Germany, and has developed many solutions relying on the use of eSignature	M 1 to M 52
UNIVERSITAET KOBLENZ-LANDAU	University of Koblenz	UKL	Germany	The Faculty of Computer Science of the University of Koblenz has a strong focus and an established traditionon research in eGovernment, eParticipation and Semantic Web	M 1 to M 52
Consip SpA	Consip SpA	Consip	Italy	Consip is the company owned 100% by the Italian Ministry of Economy and Finance, acting as Central Purchasing Body for the whole Italian Public Sector	M 1 to M 52
IT-OG TELESTYRELSEN	National IT and Telecom Agency	NITA	Denmark	The Agency aimed to safeguard the public development in the IT and telecommunications, by establishing the general rules for public delivery of IT and telecommunications services. It migrated to DIGST, to which it handed over in month 44.	M 1 to M 44
PEPPOLAT - Consortium zwischen dem Bundes Finanzministerium (BMF), dem Bundesrechenzentrum (BRZ) & dem Bundesbeschaffung (BBG)	PEPPOLAT - Consortium between the Ministry of Finance, the Federal Computing Center (BRZ) & Federal Procurement agency (BBG)	PEPPOLAT	Austria	The Ministry of Finance (BMF) establishes the policy in public procurement The Federal Computing Centre BRZ is the IT service provider and market-leading e-government partner of the Austrian federal administration. The Federal Procurement GmbH (BBG) is the central procurement service of the public sector in Austria.	M 1 to M 52
VALTIOVARAINMINISTERIO	Ministry of Finance	VM	Finland	The Ministry of Finance controls the development of information management, aiming at saving IT spending, and at the same time asking the IT better serve the core functions implementation.	M 1 to M 52
Centro Nazionale per l'Informatica nella Pubblica Amministrazione	National Center for IT in Public Administration	CNIPA	Italy	The CNIPA was the body entrusted to implementation the policies of the Department for Public Administration and Innovation. It migrated to DigitPA, which took over in Month 11.	M 1 to M 10
DigitPA	DigitPA	DigitPA	Italy	Among other tasks, DigitPA (now AgID) inherited from CNIPA the tasks of setting technical standards for information systems to be adopted by the public sector, of handling the Public Connectivity System and of supervising the TSL of eSignature Service Providers in Italy	M 11 to M 24
Ministero dell'Economia e delle Finanze	Ministry of Economy and Finance	MEF	Italy	The MEF sets the guidelines of the Programme for Rationalisation on Public Spending, implemented by Consip through eProcurement tools	M 1 to M 52
Kozponti Szolgáltatási Foigazgatóság	Services Directorate General	KSzF	Hungary	The KSzF has a role for centralisation of public procurement, including publication of procedures.	M 1 to M 37
Agenzia regionale di sviluppo dei mercati telematici Intercent-er	Regional Agency for development of ICT markets	IntercentER	Italy	Intercent-ER has the task of promoting and supporting the process of optimization of purchases and manage the ICT platform designed by the Region Emilia Romagna.	M 1 to M 52
Consorzio per il Sistema Informativo Piemonte	Consortium for ICT System Piedmont	CSI Piemonte	Italy	The CSI has among its tasks, the implementation of innovative public services, including eProcurement, for a large number of Regional authorities	M 1 to M 52
Infocamere - Società consortile di informatica delle Camere di Commercio italiane per azioni	Infocamere - Consortium ltd company of the Italian Chambers of Commerce	IC	Italy	InfoCamere, the ICT arm of the Italian Chambers of Commerce, is entrusted with the management of information assets of Italian Chambers of Commerce system, including the Digital Business Register data.	M 1 to M 52

segue Tab. 2 – List and short description of participating organizations

Organization (original name)	Translated name (where applicable)	Short Name	Country	Description / Mission	Period (from month to month)
Assistance au Developpement des Echanges en Technologies Economiques et Financieres	Development Assistance for Trade through Economic and Financial Technologies	ADETEF	France	ADETEF is the agency for the international technical cooperation of the Ministries of Economy and Finance, Industry, Handicraft and Tourism, Sustainable Development and Energy, and State Reform.	M 1 to M 52
Scottish Executive		SE	United Kingdom	The Scottish Executive implements eProcurement policies in Scotland	M 19 to M 52
Erevnetiko Kentro Viologikon Ylikon - Anonymos Etaireia	Research Center for Biomaterials - S.A.	EKEVYL	Greece	EKEVYL is a research center supervised by the Ministry of Health and Social Solidarity, offering the public health sector services for Certification, Laboratory Testing, and Research & Development	M 19 to M 24
Agencia Nacional de Compras Publicas, E.P.E.	National Agency for Public Purchases	ANCP	Portugal	ANCP leads the National System of Public Procurement, centralising procurements and using eProcurement, with the goal to reduce expenditure	M 19 to M 52
Ekonomitryningsverket	Financial Management Authority	ESV	Sweden	The ESV is a central administrative agency under the Ministry of Finance, that aims to develop efficient financial management for central government agencies, and to analyse and make forecasts of central government finances.	M 19 to M 52
KENTRO EPEYNΩΝ ΠΑ- ΝΕΠΙΣΤΗΜΙΟΥ ΗΕΙ- ΡΑΙΩΣ (Erevnetiko Kentro Viologikon Ylikon - Anonymos Etaireia)	University of Piraeus Research Center	UPRC	Greece	The Center, among many other tasks, is entrusted with managing projects for scientific and innovative technological services	M 25 to M 52
ΥΠΟΥΡΓΕΙΟΥ ΑΝΑΙΤΥΞΗΣ, ΑΝΤΑΓΝΙΣΤΙΚΟΤΕΑΣ ΚΑΙ ΝΑΥΤΙΑΙΑΣ (Υπουργείο Αναπτυξης, Ανταγνιστικότητας και Ναυτιλίας)	Ministry of Economy Competitiveness and Shipping	SSDP	Greece	The tasks of the Ministry's Secretariats include modernising the law of public procurement, to enhance transparency, faster conducting competitions and reduce the public spending; Establishing, and managing the Government Supply Programme.	M 25 to M 52
Finansministeriet - Digitaliseringsstyrelsen	Ministry of Finance - Digitization Agency	DIGST	Denmark	The Agency for Digitisation was established in 2011 under the Ministry of Finance to speed up the digitisation processes required to modernise the Danish welfare society. The Agency is in charge of the digitisation of Denmark and is responsible for the implementation of the government's digital ambitions in the public sector.	M 44 to M 52

The structure of the Consortium has been organised into the following bodies:

- a Governing Board (GB), body for the strategic direction of the project, consisting of one representative for each country;
- a Project Director (PD), responsible for implementing the directives from the Governing Board;
- a Project Management Team (PMT), a body responsible for managing the technical issues of the project and for implementing the work plan along the guidelines issued by the Governing Board, composed of all the WP Manager and the Project Director;
- a Head of Beneficiary Forum (HoBF), a body entrusted with discussing the problems emerging during the implementation of pilots.

5.3 Links with other initiatives

Under the CIP Programme, the European Commission launched the “Large Scale Projects”, or “Pilot A’s” in the CIP jargon, with the ambition to involve the relevant stakeholders, including in particular the policy makers, and to trigger an as-wide-as-possible spreading of the project results across EU countries.

Consistently with this ambition, the Commission offered a significant sponsorship and support to all LSPs, and PEPPOL made no exception. This ensured a high visibility to the project at European Level, and opened the possibility to establish more or less steady cooperation with a wide range of initiatives, such as ePRIOR (the EC initiative to allow practical implementation of interoperable electronic procurement services within any public administration), eCERTIS (the information system that helps contracting authorities and economic operators to identify attestations requested in procurement procedures, an initiative closely related to the PEPPOL VCD), the eInvoicing Expert Group, the eTendering Expert Group.

For this reason, this section does not have the ambition to provide an extensive and exhaustive list and description of all the numerous initiatives that had links with PEPPOL throughout the project life span, but just to mention the ones that were particularly meaningful for the purposes of this paper, and in particular: the CEN/BII Workshop and the CEN WS/eCAT.

A sub-section is included which provides information on some additional initiatives that were particularly significant for the project.

5.3.1 The CEN/BII Workshop

The role of PEPPOL takes on a clearer meaning when seen in conjunction with the CEN Workshop “Business Interoperability Interfaces for Public Procurement in Europe” (acronym CEN/BII, or sometimes WS/BII).

This Workshop was launched by a number of Nordic countries in 2007, with the objective of defining a European standard for electronic documents exchanged by governments and suppliers during the process of e-procurement, and thus to facilitate interoperability between their IT systems.

The Workshop adopted an innovative approach to the activity of standardization, especially in two respects: it concentrated its activities on the semantic level¹ of the documents rather than on the technological level,

¹ For the definition of levels of interoperability PEPPOL and CEN/BII referred to the EIF - European Interoperability Framework, published at <http://ec.europa.eu/idabc/en/document/2319/5644.html>

thus allowing an easier mapping of several standards, made possible also because CEN/BII de-coupled the representation of the documents from the syntax; and two, because it adopted a comprehensive approach to the whole procurement process. In fact, the Workshop defined the so called 'collaboration profiles', i.e. standardized processes that may include also multiple exchanges of documents between the interested parties across different steps of the procurement process; this allows coordinating data sets, business rules etc. in a consistent manner between different documents exchanged along the procurement process .

The link between PEPPOL and CEN / BII has always been very tight. The European Commission, which financed both initiatives , has always recommended for a strong coordination, which nevertheless took place in a natural way thanks to the large presence of the same organizations and people in both initiatives. In the second edition of the Workshop, launched in February 2010, one of the two Workshop Vice-Chairs was chosen among the members of the PEPPOL Project Management Team, to ensure closer collaboration.

The peculiarity of the link between PEPPOL and CEN/BII has helped to make both a success : on the one hand, few standardization initiatives could boast as CEN/BII an application of its results, concrete, immediate and spread in many countries, which in addition provided a valuable feed-back in terms of practical applicability; on the other, the possibility for PEPPOL to incorporate its requirements in a standardization initiative has certainly been a key factor of its success.

5.3.2 The CEN/eCAT Workshop

In the eCatalogue area, PEPPOL established a cooperation with WS/eCAT, another permanent Workshop of CEN, that was launched in 2002 to deal with multilingual issues in the electronic catalogues used for e-commerce and ebusiness in Europe. Under the eCAT Workshops, several projects took place: ePDC, gen-ePDC, ePPS, CC3P and CMap.

The co-operation between PEPPOL and the WS/eCAT started in 2009, and found an institutionalization through the inclusion of a PEPPOL representative among the members of the WS/eCAT Advisory Group. At operational level, the co-operation was particularly tight in the two latter projects, the CC3P and the CMap projects.

The "Classification and Catalogue systems for Public and Private Procurement - CC3P" project was launched in April 2009, with the goal to analyse the main classification systems and catalogues used in Europe for elec-

tronic procurement in the private and public sectors. The project operated a selection of the most widely eBusiness product classifications used in Europe, and identified in particular four systems: UNSPSC, eCl@ss, GPC, CPV.

The CC3P work focused on the identification of solutions that may improve the mutual mapping, and thus the interoperability of the four product classifications.

The most important result of the co-operation with the PEPPOL project was to bring the public sector needs to the attention of the Ws/eCAT, which was previously focused exclusively on the private sector; PEPPOL contributed thus to clarify when and how the public sector use eCatalogues and classification systems (including CPV) in their purchases.

The "Classification Mapping for open and standardized product classification usage in eBusiness - CMap" project significantly extended the work of CC3P. Firstly, CMap analysed in depth the structure of the four product classification systems in all domains (the CC3P had started the analysis focusing on 6 domains). In addition the CMap project assessed the maintenance processes of the different classification authorities that are responsible for the maintenance of each product classification system, with the goal to understand the differences and similarities of the maintenance processes and thus define a possible architecture and a governance mechanism for a maintenance process, that is an inescapable issue to solve to design a real solution for interoperability.

The project carried out an analysis on the methods and methodologies to fulfill a automatic or semiautomatic mapping among the four main product classification systems explored in CC3P, and proposed the creation of a "classification platform" to support mappings among the four product classification systems, investigating not only technical aspects but also organizational and strategic aspects to taken into account for reaching the goal of allowing an easy interoperability between the four classification systems, and possibly other systems.

PEPPOL had a significant influence in addressing the work of the CMap project, and as we will see, this paper builds very much on the ideas developed in the CWA 16525:2012, making a proposal that can hopefully represent a step forward in the direction identified by the Workshop.

5.3.3 Other Initiatives

PEPPOL co-operated with a number of other initiatives; the list below is not exhaustive, however it includes some particularly remarkable cooperation initiatives.

Open e-PRIOR

Open e-PRIOR is an open-source e-procurement platform that allows practical implementation of interoperable electronic services within any public administration.

It plays the role of intermediary between the back-office applications of the public administration and the Pan-European Public Procurement OnLine (PEPPOL) interoperability initiative. It has been designed to interoperate with a large number of applications of heterogeneous nature. The platform is connected to PEPPOL via its own Access Point, facilitating the cross-border exchange of e-procurement documents between, for example, a public administration in country A with suppliers in country B.

Open e-PRIOR currently covers post-award e-procurement, i. e. documents exchanged between the public administration and its contractors after the award of a contract, such as catalogues of goods or services, orders and invoices.

The Open e-PRIOR package includes also a web portal allowing suppliers, such as SME and individuals, to manually encode their invoices via a web form.

The platform has been developed under the ISA (Interoperability Solutions for European Public Administrations) programme, by the Directorate-General for Informatics (DIGIT) of the European Commission and it was deployed within DIGIT in 2009. Other Directorate-Generals, European Agencies and Institutions are implementing the system and it is freely available to all Members States wishing to exchange standardised electronic procurement documents via secured communication channels.

The other CIP Large Scale Pilots (LSPs): SPOCS, STORK, STORK 2.0., epSOS, eCODEX

PEPPOL was launched as a Pilot A under the CIP Programme. The Programme funded also other projects, under different areas:

- The SPOCS project, which aims to build the next generation of online portals (Point of Single Contact or PSC), which every European country now has in place, through the availability of high impact cross- border electronic procedures.
- The epSOS project, which aims to design, build and evaluate a service infrastructure that demonstrates cross-border interoperability between electronic health record systems in Europe.
- The STORK project, which aims to establish a European eID Interoperability Platform that will allow citizens to establish new e-relations across borders, just by presenting their national eID.
- The Stork 2.0 project which, building on the results of STORK, aims at the realization of a single European electronic identification and authentication area, by establishing interoperability of different approaches at national and EU level, eID for persons, eID for legal entities and the facility to mandate.

- the eCODEX project, which aims to develop building blocks that can be used in- or between Member States to support cross-border operation of processes in the field of justice, in order to improve the cross-border exchange of information in legal proceedings - where citizens, businesses and governments are involved - in a safe, accessible and sustainable way.

The European Commission had a view to create, through the Large Scale Pilots, a consistent set of building blocks, that made the basis for the issue of cross-border services across different domains. Figure 3 illustrates the relationships among the 5 LSPs.



Fig. 3 – The Large Scale Pilots of the CIP Programme

eCERTIS

eCERTIS is the information system offered by the EC to help eProcurement stakeholders to identify the different certificates and attestations frequently requested in procurement procedures across the 28 EU Member States, plus the three EEA countries and Turkey.

eCERTIS is a reference tool which helps to identify and recognise the certificates and attestations that are most commonly requested in the context of procurement procedures of the different Member States. However, it is not a service of legal advice, nor does it guarantee that the evidence information resulting from a query will be recognised as valid by a contracting authority, so its principal use is as information tool.

eCERTIS cooperated PEPPOL (in particular the Work Package 2) on the area of the Virtual Company Dossier, as the recognition of attestations in different states is one of the barriers that the VCD deals with.

The European Multistakeholder Forum on eInvoicing

PEPPOL and later OpenPEPPOL was given an observer status at the European Multi-Stakeholder Forum on e-Invoicing. The Forum brings together delegates from national e-invoicing fora and key stakeholders from the user side of the market. Its objective is to help pave the way for a broad-scale adoption of e-invoicing at both national and EU-level. The Forum creates a unique opportunity to exchange experiences and best practices across borders. Furthermore, the Forum discusses issues of common interest, with the possibility to issue recommendations to the Commission. The Forum is chaired by the Commission.

The Expert Group on e-Invoicing

PEPPOL was given an observer status at the Expert Group on e-Invoicing, the group was established in late 2007 by the European Commission to establish a European Electronic Invoicing Framework (EEIF). The EEIF aims to establish a common conceptual structure, including business requirements and standard(s), and propose solutions supporting the provision of e-invoicing services in an open and interoperable manner across Europe.

6. The project results

As described in the previous Chapter 5, the PEPPOL project has been a complex and multi-year project. The objectives officially assigned to it by the European Commission through the funding contract (Grant Agreement) were ambitious and articulate, and have undergone an evolution over time.

The description of the results of PEPPOL must of course relate to the real objectives and expectations of the involved parties (the European Commission and the participants themselves); but the articulation of the objectives requires that the description be developed both in terms of "tangible/demonstrable" results, and in terms of overall impact.

As the description will show in more detail, a distinctive feature of PEPPOL and its results is concreteness. A very simple summary of its results includes the following: 1) A comprehensive and consistent set of standard specifications for eProcurement documents and processes; 2) A transport infrastructure that supports the interoperable exchange of the documents; 3) An open (and growing) community of users that actually use the results, and provides constant feed-back on their usability and necessary evolution. The third point puts the other two in a particular perspective, since few standards and transport infrastructures can boost such an open, flexible, multinational usage in public (but also cross-) sector, and makes PEPPOL a successful case among EU funded projects.

6.1 The PEPPOL EIA

PEPPOL has generated a considerable amount of 'products' (deliverables): Documents for strategic planning, documents to define the macro and micro-architecture, semantic models of documents and processes (profiles), protocols for data and document transmission, technical specifications and syntax for the implementation of the documents into existing ICT systems, schemas for XML / XSLT / XSD etc.. , guidelines, software line codes (open source), small applications, etc..

In order to manage and be able to communicate in an organized way this massive 'corpus' of 'products', the project defined the "PEPPOL Enterprise Interoperability Architecture", abbreviated "EIA", which allows to clarify the role played by each 'product' with respect to the overall architecture.

According to the EIA, which is represented graphically in Figure 4 below, each product is categorized according to three 'dimensions':

- the "Community" to which the 'product' is addressed, which may be focused on the Pre-Award, on the Post-Award, on the Transport Infrastructure, or on the digital signature validation Infrastructure;
- the "Level of Abstraction" it refers to the product, which may relate to the level:
 1. strategy
 2. framework
 3. model(ing)
 4. service components
 5. design
 6. implementation

The first 4 levels include products of a general nature , providing increasing levels of detail from strategy to specifications, guidelines, and generic software components; the two lower levels refer to specific 'instances' of the, that is, to tangible implementations (for example, the design of a practical solution done by a project participant for a particular ICT system, and the software developed for its implementation).
- finally, a PEPPOL product can in general be related to a logical set, which constitutes the third "Dimension"; in general, a PEPPOL product refers to:
 1. ICT Architecture
 2. Conformance Test
 3. Product Life Cycle management
 4. Governance
 5. Marketing
 6. Business

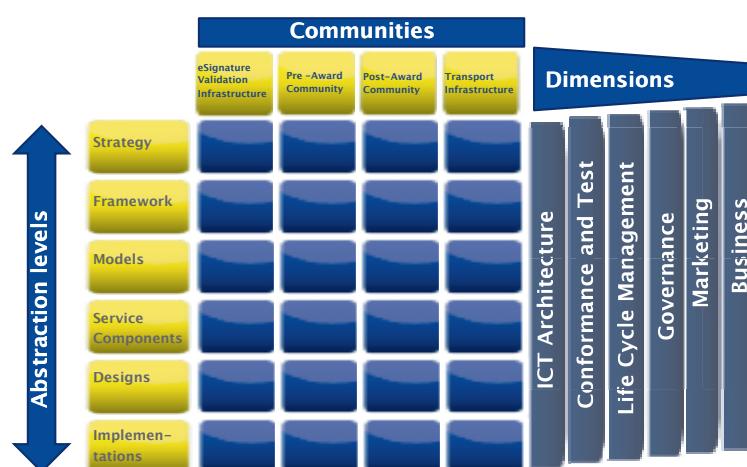


Fig. 4 – The PEPPOL EIA - Enterprise Interoperability Architecture

As said, all the 'products' of PEPPOL are categorized according to a precise combination of the three variables.

To illustrate the logic of categorizing PEPPOL products within the EIA, let's take one of the products developed by PEPPOL, such as the software (lines of code) developed to allow **testing** the **electronic invoice** implementations. This product belongs to the Dimensions "Conformance and Test" (the purpose is testing), the "Post-Award Community" (elnvoices are exchanged in the post-award), and the level of abstraction "Service Components" (the software are components that perform a service). The product will be available among the products listed in the "cube" which is located at the intersection of these three Dimensions (selectable in the web site with the simple click).

The Enterprise Interoperability Architecture, as well as allowing to easily find the results produced by the project and to communicate them concisely, is in itself an important result of the project, because it allows to manage the life cycle of the many 'artifacts PEPPOL' that must maintained over time (task that will be undertaken by OpenPEPPOL).

6.2 The official Deliverables

The structure of the EIA described in the previous section is a way to categorize PEPPOL results, organized to be easily accessed by the project stakeholders. There is also another 'view' of the products PEPPOL, less easily accessible for those who were not directly involved in the initiative, which is represented by the official list of documents delivered by the project according to the agreements with the European Commission. These Deliverables, included in the Technical Annex to the project Grant Agreement, are listed below.

These documents contain, through their annexes, all the project 'products' also accessible via the "PEPPOL EIA", although they are organized according to a contractual logic. The Deliverables have a reference code made of two digits: the first refers to the work packages to which they belong, the second numbers the documents progressively released by the WP.

The list of PEPPOL Deliverables is the following:

WP1 - eSignature

- D1.1 Specification of eSignature solution for eProcurement/Trust model
- D1.2 Trans-national verification solution(s) - Prototype
- D1.3 Demonstrator and Revised Specification eSignature solution for eProcurement
- D1.4 eSignature Validation PEPPOL EIA

-
- D1.5 WP1-eSignature Evaluation and Best Practice (Evaluation)
 - D1.6 Transfer of ownership and operations

WP2 - Virtual Company Dossier

- D2.1 Functional and non-functional requirements specification for the VCD
- D2.2 Specification of architecture and components enabling cross-border VCD
- D2.3 Software Building Blocks enabling cross-border VCD
- D2.4 VCD PEPPOL EIA
- D2.5 WP2-VCD Evaluation and Best Practice
- D2.6 VCD Transfer of ownership and operations

WP3 - eCatalogue

- D3.1 Functional, Technical, legal and organisational specifications for the development of Building Block
- D3.2 Specification of architecture and components enabling cross-border eCatalogue
- D3.3 Software Building Blocks enabling cross-border eCatalogue
- D3.4 PreAward eCatalogue PEPPOL EIA
- D3.5 WP3 - Preaward - eCatalogue Evaluation and Best Practice
- D3.6 WP3 Preaward - eCatalogue Transfer of ownership and operations

WP4 - eOrdering

- D4.1 Standard Basic eOrdering format and data structure
- D4.2 Specification of architecture and components enabling cross-border eOrdering
- D4.3 Software Building Blocks enabling cross-border eOrdering
- D4.4 eOrdering - PEPPOL EIA
- D4.5 WP4-PostAward eProcurement Evaluation and Best Practice
- D4.6 PostAward eProcurement Transfer of ownership and operations

WP5 - eInvoicing

- D5.1 Methodologies, measures and indicators for test and evaluation
- D5.2 eInvoicing Pilot Specifications
- D5.3 Specification of architecture and components enabling cross-border eInvoicing
- D5.4 Software Building Blocks enabling cross-border eInvoicing
- D5.5 eInvoicing PEPPOL EIA

-
- WP6 - Project Management
 - Da "D6.1" fino a "D6.16": da 1st a 16th Quarterly report to EU Commission
 - D6.17 PEPPOL - Final report

WP7 - Awareness and Consensus Building

- D7.1 Basic dissemination material and plans
- D7.2 Non consortium member state report I
- D7.3 Stakeholder analysis and involvement strategy. Dissemination action plan and strategy II
- D7.4 Report and evaluation of campaigns
- D7.5 Dissemination and beneficiary action plan and strategy III
- D7.6 PEPPOL Sustainability model
- D7.7 WP7- Dissemination Evaluation

WP8 - Architecture, Methodology and Testing

- D8.1 PEPPOL Infrastructure Overview and Specifications
- D8.2 Version 1.0 of the PEPPOL Infrastructure
- D8.3 Transport Infrastructure PEPPOL EIA
- D8.4 WP8-Transport Infrastructure Evaluation and Best Practice
- D8.5 Transport Infrastructure transfer of ownership and operations

WP9 - Implementation Support Unit

- D9.1 PEPPOL Pilot Lifecycle Management Methodology (PPLM)
- D9.2 PEPPOL Pilot and Enablement Evaluation

6.3 The implemented pilots

PEPPOL carried out a considerable amount of "pilots", that are one of the most important results of the project. A "pilot" meant in PEPPOL an articulated concept. A comprehensive definition of what a PEPPOL pilot was, could be the following: an **implementation of two or more ICT systems** that, in a non-experimental but rather in a real "**production set-up**", allowed - through the application of **PEPPOL specifications/architecture** - to **successfully conclude** an **interoperable** (i.e. "machine to machine") **transaction**, by transaction meaning the exchange of a document (order, catalog, invoice, certificate of digital signature or Virtual Company Dossier) concerning a real procurement process (i.e. real exchange of performance and payment).

In the definition, there are several keywords that characterize a PEPPOL Pilot: interoperable; transaction; real; PEPPOL specifications; successful.

For instance, the first PEPPOL pilot was the successful machine-to-machine (interoperable) exchange of a legally binding invoice (a transaction) between the ICT systems of the Danish company Alpha1 Lab and the Swedish administration ESV (real procurement parties), who had adapted their systems to act according to PEPPOL standards (specifications) and architecture (using Access Points to access the PEPPOL Transport Infrastructure for transmitting the document).

After the first PEPPOL pilot, concluded in March 2011, others followed. At the end of the project (August 2012) the key indicators of performed are described in the Table 3 below.

Note that the indicators are divided between "structural", describing the permanent results (enabled platforms, connected communities, etc..) and "usage" indicators, which describe the volumes of transactions recorded.

	"Structural Indicators" "Usage Indicators"			Transact. Volumes
	Actual	In-progress	Target	
Active eProcurement Communities	60	26	63	n.a.
Active Access Points transactions	51	11	50	11.940
Post-aw eCatalogue Enabled Platf. catalogues	5	18	14	6
eOrder Enabled Platforms orders	5	13	15	48
eInvoicing Enabled Platforms invoices	29	55	61	11.886
eSignature Enabled Platforms verifications	9	5	13	30.866
VCD Enabled Platforms Procedures	3	4	7	22
Pre-award eCat Enabled Platforms Procedures	4	1	6	12.656

Tab. 3 – Pilot key indicators: situation at the end of the project (August 2012)

6.3.1 Focus: the pilots and the permanent implementations in Consip

CONSIP participated significantly in the PEPPOL Pilots Phase, carrying out pilots on eOrders, pre-award and post-award eCatalogues, eInvoices and eSignatures, thus also experiencing the components of the Transport Infrastructure.

The parties involved and their geographical distribution were chosen with a view to ensure a fair representation of the Italian scenario, and to also test some cross-border transactions (see Figure 5 below).



Fig. 5 – Consip Pilots Figures

Consip pilots were surely a significant experience during the pilot phase, which allowed acquiring precious knowledge on the obstacles to expect on the way to a fully operational interoperability; but even more significantly, some of them succeeded to become permanent implementations, as described below.

A common element of all implementations described in this section is the fact that - in line with the PEPPOL approach - suppliers who have chosen to interoperate eOrders and eCatalogues with AcquistinretePA (the Consip-operated platform of MEF), become automatically able to interoperate with other platforms, both Italian and European. This is true because the standards and specifications adopted were not defined by Consip alone, but were based on CEN standards and shared with a significant panel of European partners (the PEPPOL participants) and under the coordination of the EC.

In addition to the benefits in terms of the concrete savings obtained currently, the suppliers that chose to interoperate with Acquistinrete can expect other benefits in the future, when concluding contracts with other contracting authorities.

eOrders

Figure 6 shows the overall architecture and role played by the different actors/components.

Consip enabled the AcquistinretePA platform to send orders directly to suppliers, in a PEPPOL-compliant XML format, using the PEPPOL transport infrastructure (CONSIP uses for this purpose the Access Point developed by Intercent- ER).

The implementation has been kept operational also after the end of the project.

From their side, the piloting suppliers adapted their platforms in order to receive orders from Acquistinretepa and import them directly into their ERP systems, linking to the PEPPOL Transport Infrastructure.

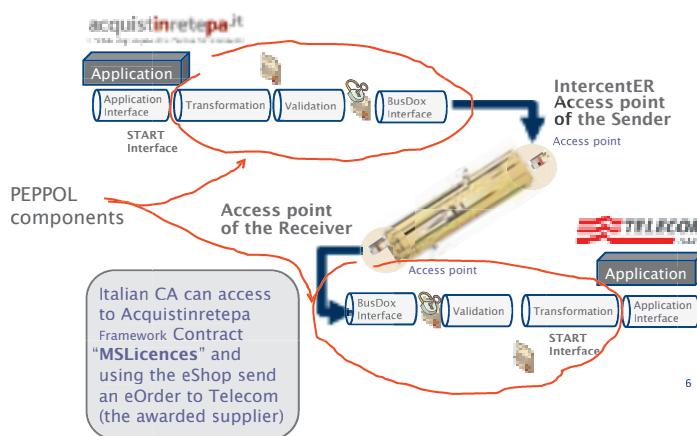


Fig. 6 – The eOrder interoperability scenario

The suppliers that were connected are namely:

- Telecom Italia , that during the project phase received a number of eOrders in the context of a specific framework contract;
- W2K, and Delta Office, two SMEs that operate in the MEPA, which, in addition to being pilot partners, established a permanent connection, and now regularly receive eOrders from the platform and import them directly into their ERP systems systems.

All these suppliers found an advantage in developing the software that enables their ERP systems to receive orders, as the investment (relatively limited: few person/months) is quickly rewarded by 1) the time saved on data entry (they receive some tens/hundreds orders per month), 2) the benefits in terms of data quality of exchanged, and 3) the reduction of the orders execution time.

eCatalogues post- award

In Acquistinretepa platform a module was developed for receiving from suppliers catalogues in XML format, via the PEPPOL Transport Infrastructure.

A total of 13 suppliers submitted eCatalogues during the pilot period of PEPPOL: Delta Office; SWC; SmartCare; Stylus Office Center; W2K; Virtual logic; VarGroup; Tecnolinea snc; Tesi Group; Menhir; Eco Laser Computer

Science; Kelyon. To create the document, the suppliers, that are all operating under MEPA, used a demo software created by the project itself.

After the end of the pilot phase, Delta Office decided to continue the implementation of PEPPOL components into their own ERP, to automate the submission of their catalogs in XML format, as it saw a convenience in the complete automation of their catalogue, which are composed of thousands of items, with prices changing (due to currency rate fluctuations) on a daily basis.

In September 2013, however, the platform has not yet solved some technical barriers that prevent the service to go fully operational for any user, as the case of Delta Ufficio highlighted that the approach originally used in Acquistinrete entails a legacy, that presents now some blocking factors for a mass adoption, that still need to be removed.

eCatalogues pre-award

The platform AcquistinretePA was enabled to receive, in the bidding phase, the description of the objects offered by the suppliers in the form of an electronic catalogue, via the up-load of an XML file. This opportunity can in principle be used in any of the tools provided on the platform (Framework Contracts, Framework Agreements, Dynamic Purchasing System, Request for Quotation in the eMarketplace of PA (hereinafter MEPA RFQ). In concrete terms, the opportunity was implemented only for the MEPA RFQ during the experimental period of the PEPPOL project.

During this period, 10 suppliers responded to RFQ issued by 8 Italian contracting authorities by means of eCatalogues structured according to PEPPOL XML format. It is in particular The suppliers and the contracting authorities involved were: Business-e, in response to an RFQ in the Province of Rome; Delta Office in response to a RFQ of the Empoli Val d'Elsa network of Local Authorities; Faci di Cacaci in response to a Guardia di Finanza RFQ; Menhir in response to an RFQ from the Ministry of Defense - Secretariat General of the Italian Army; Errebian in response to an RFQ from the Ministry of Defense - Navy; Cousinard and Dutertre two French suppliers, in response to an RFQ the Italian Consulate in Paris; Esaote in response to an RFQ of the S. Filippo Neri Hospital in Rome; VarGroup and W2K in response to a RFQ of the Municipality of Rome.

For contracting authorities, the XML eCatalogue templates were created automatically by the AcquistinretePA platform, while suppliers used the demonstrator software made available by the PEPPOL project to create their eCatalogue offers. As the above list shows, the pilots gave a number of people and organizations a valuable opportunity to learn about interoperability, having also a "hands-on" experience.

However, after the end of the project the opportunity to use eCatalogues templates and offers in the pre-award phase has been switched-off. In the post-pilot dialogues with the involved suppliers for evaluation of the pilot experience, Consip understood that the opportunity to submit pre-award eCatalogues in XML could have been relevant in theory for those suppliers responding massively or very frequently to RFQs; but no suppliers within MEPA have indeed a sufficient volume of RFQs to justify investing in its automation. Together with this finding, Consip learnt from the suppliers that their interest was focused, rather than on the XML structure, on the possibility to have the classification system used by Consip for filling in the eCatalogues content, because through that they would gain efficiency in the eCatalogues offers.

This finding played a key role in convincing Consip of the "CePV idea", that is the proposed in Chapter 7 of this paper.

eInvoices

As part of the PEPPOL project CONSIP successfully tested the receipt on its ERP system of two eInvoices in XML, sent (under actual contracts) by two foreign suppliers, based in Spain and Denmark. The invoices were delivered by means of PEPPOL Transport Infrastructure to "SIFE", the eInvoicing application of the State General Accounting Office (MEF), and from SIFE sent to CONSIP, that acquired them in its ERP accounting applications (called SIAC and SICOGE)

These pilots were a useful test, which confirmed the compatibility of "FatturaPA", the Italian national eInvoicing format, with the internationally CEN/BII - PEPPOL format, that can be used for cross-border transactions.

(Note: to become fully operational, the Italian cross-border eInvoicing scenario for the public sector still needs to be regulated by a clear legislative framework, since the current framework only targets the national eInvoicing scenario. PEPPOL is well poised to play a major role in the Italian legislative framework regarding cross-border, considering that the regulation currently in force is already mentioning the project and CEN/BII as references for cross-border).

eSignature

During the PEPPOL project CONSIP promoted the implementation, within in the cryptographic platform of the MEF², of a module for the recognition of signing certificates from foreign countries . This module, that

² The MEF - Ministry of Economy and Finance owns a cryptogrtaphic central platform offering to any other MEF application the eSignature verification service.

was developed with PEPPOL components, enables any MEF and CONSIP user to verify origin, authenticity and integrity of the signature certificates , whatever European Certification Authority issued the certificate.

To date, the verification is done manually, as the checks are still needed only occasionally; however, should the volume increase to a level to justify it, the complete automation of the operations and the integration with AcquistinretePA would be quite easy.

6.4 Impact

The project results must be evaluated also under the point of view under: the impact generated on eProcurement at European level.

To this end, it is useful to quote the Expected Impact as expressed in the original Call for Proposals:

"The pilot project results will enable public authorities in the EU to implement mutually interoperable eProcurement systems and thereby contribute to the realisation of the goal agreed in the eGovernment Action Plan of achieving 100% availability and 50% usage of eProcurement for tenders under the European procurement rules by 2010." – Improved competitiveness of European businesses and particular SMEs by providing them with the tools to access the large European markets for public services – Development of markets for innovative ICT solutions for eProcurement"

It is well known that the objectives for 2010 eGovernment Action Plan 2004 have been achieved only very partially; the Commission had to acknowledge that, without of a 'strong' decision such as a law obligation, the large-scale introduction of eProcurement in the public sector requires a much longer time than predicted in 2004 eGovernment Action Plan. The delay in eProcurement uptake has clearly consequences on the slow spreading of the expected fall-outs in terms of business competitiveness and of market developments for eProcurement innovative solutions.

Naturally, the expectation from PEPPOL was to contribute to the objectives of eGovernment Action Plan, and not to undertake direct responsibility for their full achievement. In this sense, it is undeniable that PEPPOL gave its contribution to the Action Plan objectives, for instance by making available interoperable solutions free of charge for (potentially) all European PAs . The European Commission itself has somehow contributed to achieving the goal of 100 % availability of eProcurement systems by making available to all contracting authorities European the ePRIOR solution. The suite of ePRIOR, which has fully embraced the logics and standards developed by the PEPPOL project, is in the process of customization in some countries (eg Greece, Czech Republic), where large eProcurement platforms were missing.

Beyond this remarkable result, PEPPOL generated an important impact on other fields.

First, it should be noted that the project and its results have become a stable reference in all documents "policy" on eProcurement circulated by various EU bodies; reminding here just some of many relevant cases :

- PEPPOL is suggested as a solution and is repeatedly mentioned in the Final Report of " eTEG - eTendering Expert Group", the group of experts appointed by the Commission's Internal Market Directorate for advice on eProcurement issues;
- PEPPOL is mentioned in the preparatory documents and those accompanying the European Directive on Electronic Invoicing in Public Administration, whose proposal was made official in June 2013;
- the European Economic and Social Committee adopted its own resolution in 2011 on the electronic invoicing (CESE 1159/2011 - INT / 560) in which " recommends that the PEPPOL project is further implemented by connecting those areas where electronic invoicing is already a reality "

Another important impact generated by PEPPOL can be found in the legislation of several European countries (Norway , Ireland, Sweden, Denmark, Austria, Italy, Poland, Czech Republic), where its architecture and/or data models are mentioned, sometimes as a simple reference, sometimes as a mandatory standard.

In addition, in order to understand another aspect of the scope of the results achieved by PEPPOL, it is worth spending just a few words on the so called " Pilots type A ", i.e. the financing scheme adopted for PEPPOL and for other LSP projects. The Pilot A projects were eligible for funding only where the partners included central government organizations of at least 6 Member States. Back in 2006, before its launch within the CIP Programme, this funding scheme was much debated within the Commission, especially concerning its actual capacity to achieve the real goals, i.e. to solving the problem of interoperability 'at the root-cause' by triggering the process of converging consensus towards a restricted set of shared standards.

The Commission admitted that in this sense the results of PEPPOL have gone above and beyond the expectations; after the project a stable community was in fact created, and formalized in a legal entity (the Association OpenPEPPOL), no longer depending to the presence of European funding. The Community OpenPEPPOL grew in just a few months after the initial core of the 5 founders to more than 70 members from several European countries , which go far beyond the borders of the countries who were partners of PEPPOL . The members of this community represent an important group of users of standards that are used voluntarily, allowing cross-border transitions at low cost. The Community OpenPEPPOL is probably the best sign that the Commission funding has actually triggered the process in the wished direction, that is towards a gradual convergence on common standards that facilitate trans-national interoperability.

Finally, an important impact of PEPPOL, although 'intangible', is the "cultural" impact. For example, thanks to the PEPPOL experience, CONSIP became aware of the importance of some internal assets (e.g. its products and services classification that could be reused by other contracting authorities). Another example of the "cultural" impact is the fact that the organizations that participated in the project understood the importance of addressing all issues related to the development of eProcurement bearing two very important factors in mind: on the one hand the convenience to share experiences with other organizations that may have (or have had) to deal with similar problems, on the other hand, the convenience to tackle each problem, from the early stages, with a view as far as possible to standardization, both in the sense of verifying the existence of the reference standard, and in the sense of creating or including in the standards the requirements that suit your needs.

6.5 Open PEPPOL and eSENS

The Digital Agenda for Europe, one of the pillars of the EU 2020 strategy, identifies e-government and the Digital Single Market as crucial elements of a modern and competitive EU economy. Within this framework, the Commission has undertaken significant efforts to digitise public procurement in the EU making a €13.5 million investment to further develop cross-border digital public services; the launch of the project e-SENS (Electronic Simple European Networked Services), a new large-scale project, is part of this strategy.

The aim of the e-SENS project is to develop efficient, high quality public services based on a European standard infrastructure. It will consolidate, improve and extend the efforts of large-scale pilots that have already been launched under the CIP Programme: PEPPOL- e-CODEX, epSOS, SPOCS, STORK, - by facilitating access to public procurement, judicial systems, health care services, businesses registers and identity services in Europe; essentially, e-SENS will support cross- border e-government services in general.

From the public procurement perspective, the "e-SENS" project will help to develop digital public services which make it easier for companies to do business in their own Member State and elsewhere in the EU -including setting up a company, fulfilling legal requirements and taking part in public tenders.

eSENS involves public partners from 20 countries: Austria, the Czech Republic, Denmark, Estonia, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and Turkey; in addition the project consortium includes organisations as OpenPEPPOL, that in order to be very active has allocated a significant budget on this project (36 PM).

Potential synergies between eSENS and the OpenPEPPOL project were early identified, and this led to a high level of cooperation between the two initiatives, especially regarding, coordination of cross-over activities and sharing of information and results. To ensure a steady and fruitful cooperation some of the project work groups leaders cover also key roles in OpenPeppol.

The OpenPEPPOL activity into eSENS is strategically focused on further e-Procurement piloting where PEPPOL artefacts will converge into emerging pan-European Basic Cross-Sector Services, keeping into consideration the differences between Pre and Post-award components maturity.

While the Post-award components can be considered mature enough and in their growth phase, the Pre-award components are still in a consolidation phase, and need more "maturation" before starting a widespread adoption. In other words, Pre Award requires more work and effort in order to reach a state where the elements are ready for production. This is one of many reasons e-Catalogue related processes in the Pre Award constitute good candidates for running pilots within e-SENS, and OpenPeppol participation in the project (in particular in the Work Package 5.1 - eProcurement Domain) is highly focused to support piloting blue print taskforces regarding eTendering and eCatalogue.

7. Proposal for new developments of pre-award e-catalogues

This chapter has a central role in this paper, as it includes the proposal that comes after some years of experience in the use of eCatalogues. The chapter includes three sections: the first describes what are the challenges to overcome; the second describes PEPPOL's experience; the third describes the proposal itself, with some details that aim to give the perception of the actual feasibility of the idea.

7.1 The challenges of using eCatalogue in the pre-award

The goal of PEPPOL Work Package 3 was solving the challenges preventing the interoperability of eCatalogues in the pre-award phase of public procurement procedures.

Such challenges are complex and numerous; PEPPOL operated a distinction, conventionally grouping them into two areas: one area includes the challenges related to interoperating the "content" of eCatalogues, and a second area includes the challenges related to interoperating the "format" of eCatalogues.

Obviously, all eDocuments have interoperability challenges related to "content" (the meaning of the information included in the document) and to "format" (how the "content" is organized to form a document); but in the case of eCatalogues the "content" ones have a particular complexity.

In fact, eCatalogues complexity is a consequence of the nature of what a catalogue (also a paper one) is: a document containing typically tens up to thousands of items, each bringing the description of its physical and commercial properties: name, description, unit of measure, unit price, size, sellable unit, delivery time, producer code, seller code, colour, etc. The additional complexity of electronic catalogues compared to the paper ones is that, in order to be understandable (or interoperable referring to machine-to-machine communication), those data need to be represented in electronic format, and this requires a number of decisions regarding the technologies and the standards to be used. Even worse, when used for cross-sector purchases, as it is in PA case, there is a lack of prevailing standards on processes, document formats and contents. Moreover, business partners still need to describe eCats in national languages.

After analysing all these issues, PEPPOL agreed on the following statement of what is the typical problem preventing widespread use of eCatalogue in public procurement:

The widespread use of electronic Catalogues in public procurement is not favoured by the current practices of the Contracting Authorities, which have the habit to create own formats, managed with

ad hoc tools, thus requiring economic operators to adapt the content of their electronic Catalogues. In the hypothesis that eCatalogues are used in pre-award, many economic operators have to readapt their eCatalogue to the tender specific template; out of the submitted eCatalogues, only one (or a few, in the case of Framework Agreements) will be re-used in the contract, while the effort of the other economic operators will be lost.

This problem can be in theory solved through a wider adoption of standardised eCatalogues by the contracting authorities; but there is still a full range of options on how to make this in practice. Referring to the conventional simplification adopted by PEPPOL, there should be a wide consensus both on the eCatalogue "format", and on the "content" to include in eCatalogues.

The EC Commission Study "ELECTRONIC CATALOGUES IN ELECTRONIC PUBLIC PROCUREMENT" (Final Report, Vol. I - State of Play, September 2007) suggested a two phase strategy to solve the above described problem and "*...to move from the current, inefficient buyer-defined eCatalogues towards a more standardised environment..... In the first phase (Evolution Phase I), buyer-defined eCatalogues would be replaced by supplier-defined ones. In other words, suppliers should have the possibility to submit their existing eCatalogue prospectuses (with only slight adjustments, if any) as tenders for public procurement competitions. In this phase, there would still be only limited opportunities for automation; however, it is anticipated that this practice would lead to more effective competitions, with increased participation. In the second phase (Evolution Phase II), contracting authorities will require from suppliers to structure their tenders based on widespread industry standards for eCatalogue, addressing specifications for the format, content and exchange of eCatalogue prospectuses. In this manner, the current need of contracting authorities for defining tailor-made specifications will be minimised, and will relate only to the parts of tenders that cannot be included in the content of eCatalogue prospectuses. Contracting authorities should be able to manage tenders in a semi or fully automated manner, to save cost and time*".

PEPPOL WP3 doubted that the suggested "Evolution Phase I" could actually take place, because for each tender it would have meant shifting a huge workload from many suppliers to one contracting authority, which in addition would need multiple tools to visualize the different eCatalogue formats.

So, the strategy agreed in PEPPOL was to start directly from Evolution Phase II, investigating what contracting authorities needed to actually structure their eCatalogues (both when used in tendering or in the post award phase) on widespread industry standards.

The results of the analysis of existing literature and initiatives on eCatalogue standardization were a precious source of information for PEPPOL to better focus on how to solve (within the project mandate) the issue of standardizing eCatalogue contents.

In fact, at first sight the ideal solution could seem the creation of a EU coherent classification and description scheme (or, in other words, an 'ontology' of purchasable objects, or a 'meta-catalogue structure'), to be used –at least as a reference - by all public administrations in their public procurement procedures.

This "ideal solution" was discarded by PEPPOL WP3 for the scope of its own work, on the grounds that "*it would require a huge effort by a central body for its creation, a considerable effort for the maintenance, and –last but not least- a big effort for promoting its use, beyond being achievable only in the long run*".

However, since the above ideal solution was not compatible with PEPPOL life span, PEPPOL moved on to achieve its goals using existing classification and descriptions systems, so that other aspects (format, architecture, processes, etc.) of eCatalogue interoperability could still be tested in real-life pilots.

This choice of this solution was based on the consideration of a number of constraints; for instance:

1. there is not one standardized Dictionary that covers all the 22 EU official languages;
2. there are several standardized Dictionaries, that are sometimes in competition with each other;
3. there are general purpose classification schemes (UNSPSC, and CPV which is mandatory for public procurement), that do not support attributes, but which have a wide application;
4. there are some specific sectors like Health where particular classification and description schemes are widely used.

The same topics analysed by PEPPOL in 2008 were later analysed and reported in the EC Study "Review of the functioning of the CPV codes/system" issued in December 2012 (which could not be taken into consideration by PEPPOL during its lifetime, since the project ended in August 2012).

This Report includes a thorough analysis and well substantiated recommendations on the functioning of the current CPV, as well as suggestions for its improvement.

For the purposes of this paper, the most relevant part of the Report is the section on the Integration of the CPV in an e-procurement environment, which includes suggestions on possible scenarios for the enhancement of the CPV as a tool for eProcurement in general and eCatalogues in particular.

The study concludes that "*The CPV can currently be used only to a limited extent for all phases of e-procurement*". However, the study also shows that the potential exists, at least for a key area of public procurement, that is the Procurement Preparation: 47% of the contracting authorities use CPV during that phase (cfr fig. 50 of the Report), even if only 30% of users (i.e. little more than half of them) seem satisfied with CPV (cfr fig. 52 of the Report); and similarly, 33% of the suppliers use CPV to submit bids (cfr fig. 54 of the Report), even if only 26% of users (i.e. two thirds of them) seem satisfied with CPV (cfr fig. 55 of the Report).

The Reports recommends therefore to improve the classification, and suggests how: "*To integrate the CPV's gaps into an e-procurement environment, the CPV attributes and keywords/synonyms would need to be improved. Scenarios "1. Self-development" and "2. Collaboration with another classification system" appear feasible, but implementation would require considerable effort. The alternative is not to use the CPV for e-procurement but – as today – only as a classification system for the publication of tender documents (Scenario 3).*"

More precisely, the three scenarios are the following:

"1. Enhance the current CPV: this would mean revising the supplementary vocabulary thoroughly Furthermore, ... keywords and synonyms would have to be defined This might be feasible but implies considerable effort.

2. Collaborate with another classification system: the CPV could use the keywords. For this, it would be necessary to map all the elements ...with ... the corresponding CPV element. The work of the cMap project would be a basis for this. This scenario might be feasible. However, the mapping and the continuous update would require considerable resources.

3. Allow different product classification systems to coexist: the CPV would not be integrated in e-procurement environments but would continue only ... fortender notices. In this scenario, the CPV would merely be optimised In e-procurement, including e-catalogues, there would be freedom of choice as to which classification system to apply, In this scenario, the CPV could be simplified as it would need to meet only the criteria relevant for publishing and identifying tender notices."

The drawbacks identified for these scenarios are based on findings of the study. However, some of these findings (e.g. "*Contracting authorities do not use CPV internally to describe their needs or to structure them*") may be true on a large scale, but there are exceptions (see for instance section 7.3) which may help to mitigate the drawbacks of scenario 1 in particular (considerable effort for enhancing the current CPV). This finding, together with the experience carried out in PEPPOL, is at the basis for the formulation of the proposal included in this chapter.

7.2 The PEPPOL experience and lessons learned in pre-award eCatalogue

To carry out the pre-award eCatalogues pilots, PEPPOL used two different solutions: one to address the "format" area and the other to address the "content" area.

The solution to the "format" problem was based on CEN/BII work, and more specifically on the CEN/ISSS WS/Profile BII 12 "Tendering Simple", which was specified, with adaptations and evolutions that were needed to match the specific context of the pre-award eCatalogue. The PEPPOL adaptations and evolutions formed a set of requirements that triggered new developments in CEN/BII profiles, and were eventually included in the new release of CEN/ISSS WS/Profile BII 35 "Tendering Simple with Catalogue".

To face the "content" challenges, the project relied, as explained in previous section 7.1, on the use of an existing system for the classification and description of item properties. After carefully considering three alternatives (CPV, eCl@ss, GPC), the choice fell on eCl@ss.

Regarding the content, PEPPOL worked on the idea of allowing buyers and suppliers to exchange fully interoperable eCatalogues through a Service. The Service, accessible via Web by both parties (buyers and suppliers), provides all the information for a standardized classification and description of the items to inserted in eCatalogues.

Under the PEPPOL project, 5 pilots were carried out using pre-award eCatalogues.

The architecture on which PEPPOL based its pre-award solution is shown in Figure 7.

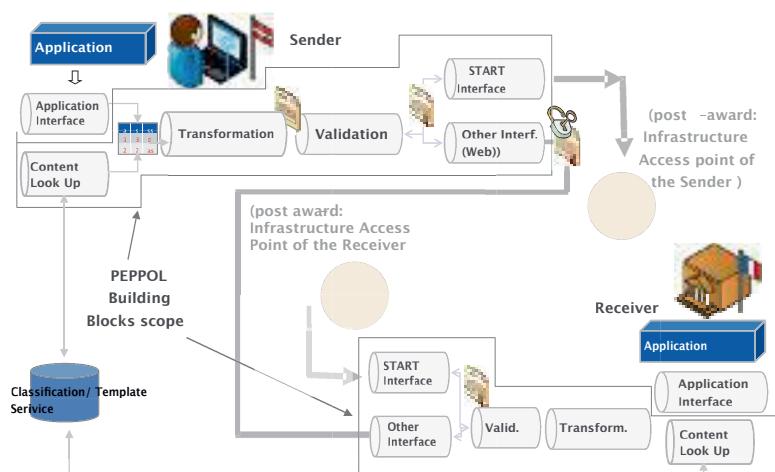


Fig. 7 – The Pre-award eCatalogue interoperability scenario

The PEPPOL pilots succeeded in demonstrating that the idea of a Web-Service supporting the standardization of eCatalogue content is technically feasible, and brings concrete benefits to users.

The pilots also made evident that the ways in which contracting authorities require information on supplies and services offered in tenders are extremely variable, and hard to standardize. For this reason, the creation of a pre-award eCatalogue format is mostly a non-repetitive task, and suppliers find little interest to invest in the automation of a document with a given format. It is hardly worthwhile reminding that automation is the precondition for interoperability, which brings to the conclusion that, unless a totally improbable legislative act forced all contracting authorities to use the same format for pre-award eCatalogues, investing on interoperability of pre-award eCatalogues formats is not a priority for users.

Suppliers, especially those offering a large number of items, have instead shown potential interested in the standardization of items description. In fact, in the less unlikely case that a law required all contracting authorities to adopt the same way to describe supplies and services in their tenders, they would have to add the contracting authorities description to their eCatalogues. This would be a one-off investment, which could then be re-used many times in all the bids to the public sector.

In conclusion, PEPPOL project has clearly highlighted that, without a full standardization of the eCatalogue content, including the identification of items and their properties, the benefits of the eCatalogue interoperability, despite their huge potential, are bound to remain limited. Incidentally, it is important to highlight that a standardized system can be easily translated in other languages, and thus play an important role in lowering the barriers to cross-border procurements.

To address the “content” issue, in the life span of the project PEPPOL experienced a Web Service, that was labelled “ePPS” (electronic PEPPOL Property Server). However, at the end of the PEPPOL project, the ePPS was switched off; the only solution that is now in place is the Austrian one (operated by the Federal Purchasing Agency - BBG), which is offered only in Austria.

In fact, after the end of PEPPOL, the project struggled to find a viable model for the instantiation of a permanent Service, that provides eCatalogue Content at Pan-European level (to label this let's call it PECCS - Pan-European eCatalogue Content Server).

The difficulties met to find a viable model for the instantiation of a sustainable PECCS are basically linked to the following factors:

1. Identifying a content (i.e. a Classification system that provides the codes and names of items, and a Dictionary that provides standardized attributes and their codes) that is:
 - a. free (eClass, and GPC are not, and UNSPSC is not for a large use);
 - b. matching the needs of PA purchases (eCl@ss and USNPS, and CPV itself are partially; GCP in general is not);
 - c. eCatalogue suitable (CPV is not; UNSPSC is not in full, as does not include properties)
 - d. covering all EU official languages, and not linked to any geographic areas (only CPV is);
2. finding an entity willing to bear the cost for the maintenance of the content;
3. finding an entity willing to bear the cost to host the service, and to make it really Pan-European

Point 1, i.e. the existence of a classification system and a Dictionary that are eCatalogue suitable and at the same time covering PA needs, seems to be a precondition: if no "content" exists, there is no need to find an entity to cover the cost for maintenance and hosting the service.

However, as none of the existing systems (CPV, eCl@ss, GPC, UNSPSC) is suitable as such, the alternative of creating a new system has been considered.

Thus, an idea to solve points 1 and 2, and contribute to solve point 3, could be the one described in the next section.

7.3 The way forward: a proposal based on PEPPOL experience

As a consequence of an increasingly wider adoption of eProcurement, many contracting authorities across EU have started to realize how necessary it is to have a well structured reference classification (or here we should say taxonomy) for identifying the goods/works/services they purchase.

Consip's experience, described below, is a perfect paradigm of the path followed by a contracting authority increasingly using eProcurement.

Consip started operating as a central purchasing system in May 2000, issuing a tender for the award of a Framework Contract on Telephone Service; other tenders on pc, stationery etc. started to follow; after the initial growth, a steady phase was reached since 2005-2006, in which around 50 Framework Contracts are active on average.

At the beginning, few goods/services were purchased; few people in Consip were sufficient to manage the contracts and information on what had been purchased, as the list of purchases was not long. Basically everything

could be managed through Word or Excel files, and the personal memory of the contract managers, that in Consip are named "CategoryManagers".

The volume of purchases and managed items steadily grew, and years later the contract strategies (including for instance bundling/unbundling of products and services) started to change, together with the features of goods/products purchased in successive contracts, so as to make the best strategy at each tender. Comparing successive contracts was not easy, data were always more complex and sophisticated, and more and more the need was felt for a clear reference classification that was not depending on the individual "views/ideas/tastes" of Category Managers.

In addition to the Framework contracts, a new eProcurement tool was launched in 2003, the eMarketplace of Public Administrations (MEPA). This marketplace is based on eCatalogues that thousands of SMEs were requested to create and send to Consip. Such a massive volume required to adopt an increasingly stable, neutral, and refined classification system.

In 2004 Consip chose to create such system "ad hoc", starting from the CPV classification. After some initial experience, the need to enlarge the CPV codes to better suit the eCatalogue needs was identified, and an extension was undertaken: "metaproducts" were the basic unit, directly linked to CPV items, to which attributes were added, defined on the basis of Consip experience. The system has grown over time; in 2013 it covers more than 1.500 "metaproducts", linked to 600 CPV codes, that are complemented by some thousands of standardized attributes to describe the items' properties, each codified and with pre-defined values.

After an initial phase, in which the "ad hoc" system for the MEPA was managed through Excel files, Consip had to adopt a much more structured approach, and an entire module of its eProcurement platform was developed expressly to manage an increasingly better structured system, which includes now codes, units of measures, synonyms, etc. (in a way similar to eClass structure).

In 2012 and 2013, many of the SMEs (more than 10.000) that send the eCatalogues to Consip in the framework of MEPA have increasingly expressed interest in adopting the classification system that Consip uses, because they want to make the search of tenders and production of eCatalogues more efficient. This means that the market is expressing the need to know exactly the "language" of Consip, to be able to "speak" efficiently.

It is interesting to add that not only suppliers have started to ask Consip for its classification system, but also other contracting authorities, to avoid the burden of making it themselves and also as an acknowledgment that there is an advantage in using the system to "talk" with their suppliers.

Last, but not least: the Consip's system raised the interest of the Italian Public Procurement Authority (AVCP). In fact, one of AVCP's tasks is collecting data on all public procurement tenders in Italy, including supplies and services purchased through the tenders. Using a standardized description, AVCP could collect consistent and comparable data, and so have the possibility to make massive data elaboration on procurement trends (e.g.: segmenting the purchased objects according to the properties will allow a much sharper calculation of average prices at national/regional/sectoral level, etc.)

In other words, Consip's system has the potential to become a sort of "national standard" for the identification of goods and services.

The case of Consip is probably not isolated in Europe, as also other large contracting authorities/central purchasing bodies may have experienced the same needs. However, it is clear that Consip as well as other central purchasing bodies, that manage huge volumes of purchases, can be considered among the front-runners of eProcurement compared to smaller contracting authorities.

The evolution of Consip experience can be considered a "preview" on what will happen both on the side of public administrations and suppliers - when eProcurement will be adopted on a large scale across EU. The need for a common way to name the products and describe their properties will emerge strongly, and the "Excel-based management" of product classifications and properties descriptions will sooner or later prove insufficient. Just like the Consip Category Managers experienced after the initial approach based on individual languages, the public sector in its entirety will have to recognize that the benefits of having a single "language" to identify the products overcomes the benefit of having the flexibility to name things according to the individual needs/customs/tastes. In parallel, the market will recognize that a single system used by the whole public sector to describe the products/services/works purchased has the big benefit of simplifying/making more efficient the dialogue with the Public Sector. Such system may be a good classification and description system or not (identifying the answering tenders). Just like it happened in Consip, achieving consensus on the use of the system among the users (in Consip the Category Managers, in EU all Contracting Authorities' purchasers) will take some time and effort (awareness, training). And probably, there will be the need for a central entity to manage the system (just like in Consip the attempt to set up a distributed management system failed, so there is now a single eCatalogue Manager).

On the other end, the evaluation of PEPPOL eCatalogue pilots, especially in pre-award (see § 6.3.1), lead to the conclusion that suppliers would gain advantage from a reference classification of supplies and services adopted by the public sector.

The EC Study on the CPV systems comes to the same conclusion: "*There is no integration of the CPV classification system into complete e-procurement. In order to support the change from paper-based to electronic media-discontinuity-free processes a broad, detailed and regularly updated classification system is, however, inevitable.*"

The potential utility of a pan-European system for the classification and description of items to be purchased in public procurement seems clear; in PEPPOL WP3, some attention has been initially put on CPV as a potential candidate for becoming such system, since other possible systems (eCl@ss, UNSPSC, GPC, etc.) have each

some reasons that prevent a 'flat' adoption from the public sector (fee-policies, language availability, kind of attributes, etc.).

The CPV (cfr. www.simap.eu) "establishes a single classification system for public procurement aimed at standardising the references used by contracting authorities and entities to describe the subject of procurement contracts".

As this description shows, CPV is a vocabulary for defining the **subject** of a contract, but it was not created with the purpose to describe the **objects** purchased with a contract; in fact, it was created to suit the tender notice publication needs. While it may serve the purpose for which it was created, when used to manage eCatalogues the CPV shows many a weak point.

Remitting to the EC study for an extensive analysis of the CPV, in PEPPOL's view the main weak point is that it is meant to identify category of products and services (e.g. Personal computer), but not the product and service attributes (eg. Hard disk capacity, unit of measure "Gigabyte", etc.).

The basic idea that resulted at the end of PEPPOL experience, and which forms the proposal of this paper, is to create a " CePV - Common eProcurement Vocabulary ", i.e. a classification based on an evolution of CPV, created natively to be suitable for the use within eCatalogues (CPV and UNSPSC were not created with that purpose), and for the needs of public procurement (eCl@ss and GPC are not meant for that purpose).

The CePV would contribute to speak the "same language" among Member States. A "language" that for instance allows an Italian procurer to understand what an Austrian procurer wants to buy (e.g. to look for best practice's exchange, demand aggregation, public expenditure review), and at the same time that allow an Italian firm to understand it and to apply for a bid in Austria. A "language" that allow buyer's and seller's information systems to communicate.

PEPPOL's proposal was also inspired by the foreseeable overall evolution of eGovernment scenario, which in the next 10 years will see the progress from Web 2.0 to Web 3.0. Some factors will be key for success along this evolution:

- the capacity to build and foster a sharing of knowledge within networking communities and network systems, stimulating voluntary cooperation, which can be a real "added value" of eGovernment in the knowledge society;
- information redundancy reduction, which can be facilitated by a joint service authority and information hub;

-
- effective solutions for the authentication (including eSecurity, eSignature, privacy issues, etc) and data management;
 - unified approach in the eGovernment services (e.g. Platform that operates with different communication channels like TV, mobile phones);
 - the aim to a "user centric approach", e.g. giving users the opportunity to evaluate and rate performances, and with an inclusion path;
 - the use of architectures based on common collaboration cooperative structures, that support -in a distributed way – delocalization and the consolidation of networked local private/public players (nearest to users requirements).

The following sub-sections aim at describing in a bit more detail the above stated proposal, with the twofold goal to give concreteness to the idea, and to trigger a debate at EU level that could contribute to the make steps forward for its implementation.

The proposal has to be read in a complementary way to the EC Study on CPV; however, it touches only marginally the suggestions on the tools for supporting the functioning of the CPV (section 3.1 of the EC Study), while it focuses more on the way to enhance CPV content (section 3.2 of the EC Study), and assumes - in total agreement with the EC study - that the compliance with standards must be guaranteed.

7.3.1 Building (and maintaining) a "CePV - Common eProcurement Vocabulary"

Considering the content, the creation of the "CePV" would require to:

- Identify which items are necessary for PA purchases through eCatalogues*, improving CPV codes (the Commission should then decide what to do with the remaining CPV codes, but this is not in scope with the idea);
- Define keywords/synonyms and standardized properties for the items identified;

A new system created "from scratch" and by a single organization would entail several drawbacks (too high costs, too long time, risk of limited consensus of final users) because the assortment of supplies, services and works purchased by the public sector is very large. Some strategies can be adopted, also concurrently, to significantly mitigate the drawbacks of the creation of the " CePV": 1. to make adaptations starting from an existing basis; 3. to distribute costs on several organizations; 2. to make a staged approach, meaning to start from the higher priority sector.

Which is an existing basis to possibly start from?

PEPPOL made, jointly with the CEN Workshop eCAT, a thorough screening of the most mature international classification and description systems, (CPV, eCl@ss<mailto:eCl@ss>, GCP, UNSPSC), to which only a few others should probably be added (eOTD, NATO, Rosettanet).

The same classifications have been analysed in the EC study. However, after the project, Consip's internal classification system was also looked at with some interest, since it was developed expressly for PA needs and for eCatalogue purposes; this latter experience shows that some 1.500 - 2.000 well described products can cover the eCatalogue needs of a very wide range of Public Administrations³.

This finding suggested the idea to put together the knowledge of Classification-Making Organizations and experienced contracting authorities expressing interest in this activity, with the goal to create a "CePV".

A panel of experienced PAs and standard-making organizations could fulfill the task of creating the "CePV". When starting from an existing basis, a "first usable core" of the "CePV" could be done in a reasonable time frame (e.g. 8/12 months if necessary).

Obviously, this first usable core would be the first step of a staged-approach, which would require years to be brought to a large coverage.

The idea of creating a CePV has also been discussed in OpenPEPPOL. Some members of the community (namely Consip, Difi, BBG, eCl@ss , BME, Scottish Government, PEPPOL France) have expressed a preliminary interest in putting some effort in a similar initiative, naturally depending on the concrete ways in this it is actually implemented. All these OpenPEPPOL organizations have no profit goals, and could in principle invest some of their own resources, as the creation of the CePV responds in some way to their own mission.

Currently there is no defined release policy for the maintenance of the CPV. We suggest defining a release policy for the CPV which distinguishes between major and minor updates. Users want more frequent updates and are willing to contribute to updates. In the future, the users of the CPV should be involved more in the maintenance of the CPV. Finally, it might be necessary to think about whether a reflection on the legislative nature of the CPV should be initiated to allow more flexibility.

³ Over 13 year of experience as the Italian Central Purchasing Body for supplies and services, Consip defined a classification system covering a wide range of Italian PA needs (except most of the health sector items and works), which is based on 1.500 items; this is much less than CPV 9.000, and eCl@ss 27.000.

Together with the creation, the maintenance of the “CePV” should also be planned, as this entails a continuous work, to keep up to date to technology and needs evolution over time. This issue is well addressed by the EC Study, which conducts a thorough analysis of the maintenance policies and processes of CPV and of the main classification systems. Some quick additional considerations on the topic are added below.

The maintenance work consists mainly in defining the new items and properties that must be added to the initial basis, or adapting the existing properties.

This workload is expected to be only a fraction of the initial effort (e.g. it could be estimated between 3% and 6% each year), however, it must be considered, as it is continuous. To make it sustainable, this effort can be distributed on the same panel of organizations that undertakes the “creation” of the system (in line with the EC Study conclusion *“Users want more frequent updates and are willing to contribute to updates. In the future, the users of the CPV should be involved more in the maintenance of the CPV.”*)

As part of the effort initial, a release policy and the engineering of a maintenance workflow (supported by an on line tool) should be considered.

The eCI@ss approach is a possible reference model for the maintenance work flow; according to this model, change requests are discussed (and approved or rejected) by panels of experts. The experts could be appointed (for free) from the same group of organizations entrusted with the creation of the "CePV",, and additional ones who commit themselves.

In other words, the idea is that a Community would be created to take care of the maintenance, which would base its work on the typical wiki tools allowing the community management.

Finally, to make the “CePV” widely accessible across all EU Countries, and useful for the creation of eCatalogue content, a dedicated Server is necessary. The PEPPOL Project provided a basis for the specifications of how such Server should be organized and the Service delivered.

The eSENS project can work further on the evolution of the PEPPOL building blocks; engineering the evolved building blocks concurrently with the creation of the “CePV” would offer major advantages. Furthermore to make the “CePV” really Pan European, a translation into all EU official languages is necessary, while it is hard to imagine that the panel entrusted with its creation includes native speakers from all EU countries. A translation cost to the languages not-represented in the Panel should be considered.

A description of the maintenance model is includes in next sub-section.

7.3.2 Connecting a CePV Community

The long run goal of CePV should be to reach a target of thousands of users, across all EU Member States (or better EEA Member States, and, why not, beyond).

The best way to ensure consensus (and so, actual usage) of such a large number of users is to involve them (or as many of them as possible) in the creation and/or the maintenance of the CePV itself; in other words, to create a community of users.

Reaching a large number of users takes time, and a structured community; but starting with the right approach is key.

The community members would presumably be heterogeneous and wide; an analysis of the two main clusters of potential users can help to better identify the strategies to build the community and keep it connected.

The first target group would certainly be the procurement officers of contracting authorities, who are in charge of drafting the technical specifications for tenders. Today, the majority of these officers face great difficulty to share the practices with other contracting authorities, and this results in the lack of dominant models for defining the properties of items to be purchased, that must be included in technical specifications and reflected, when the tender is issued electronically, in the eCatalogues templates that the contracting authorities publishes for helping tenderers to make their bids. On top of this difficulty, that relates to the "content" of eCatalogues, the officers have another difficulty, which is choosing the "format" to organize the content; today, the common practice is using spreadsheets, that means basically a lack of standard format.

The CePV would help the members of this group to find and share information on how to define the properties of the items to purchase would be a great added value that these users would find from the participation in the community. For example, these users would find advantage in knowing which is the set of properties that most commonly the public procurement officers use to define the characteristics of e.g. personal computers, or any other supply or service (i.e., in knowing the basic "content" of the eCatalogue); and they would also have a great advantage in having the possibility to import that data set into a workable eCatalogue structure (i.e., in easily acquiring the "format"). While a large part of this group of users would play mostly a "passive" role, a subset of users (that typically always exist in these communities) would also find an interest in playing a more "proactive" role, enriching/updating the CePV by sharing their experience.

The second large target group would be made of the eCatalogue managers of suppliers, and especially of those suppliers that deal frequently with public procurement procedures. Today, when responding to public tenders, the suppliers need to interpret the terms used by the procurement officers to describe the properties, and decide each time which products in their portfolio respond to the contracting authority needs. As there is no common dictionary used by the public sector, there is no possibility/interest for the suppliers to import the terms in their portfolio, as these terms vary from tender to tender and from contracting authority to contracting authority. In this situation, little automation is possible, and the identification of items to offer is done totally by the humans. If a CePV existed, the members of this community would have a great advantage, as they would know in advance the "dictionary" used by the public procurement officers to define the properties of the items that are purchased in tenders. In fact, they could use the CePV as a dictionary, and add its terms/properties to their internal eCatalogue so as to be quick and precise in finding the correspondence between the items that the contracting authorities are in search of, and the ones that are present in their portfolio. Again, a subset of these users would have an interest in playing a proactive role, proposing the addition of new properties to the items, that reflect the technology and market evolution.

Basically, the community would concretely serve the purpose of helping the match of demand and offer: in a virtuous circle, the parties would be more and more using the same dictionary and terms, so literally "talking the same language", and using the same format, which is the precondition for interoperability.

For both target groups, the Community members would play a key role in the maintenance of the CePV. For this goal to be achieved, the community would need to be connected, a structure to be established with rules and roles, procedures to be created, a platform to be set up where all the members would meet to exchange information. The idea behind all this is basically borrowing from the OSS community and working method.

The wiki model would be the basic paradigm to manage the requests for updates of the CePV, be the request for the addition of a new item, or for the addition/review of a property of an existing item: if a CePV item (e.g. a notebook) does not have all the necessary attributes due to technology evolution (e.g.: the embedded web-cam) or an existing attribute needs to be integrated/changed (e.g.: hard-disk capacity in Terabytes instead of Gigabytes), a contracting authority officer could propose the attributes with the wiki model to the other buyers. The proposal should follow an approval and release flow, managed by a committee of experts made by community members who volunteer for this activity. So, a number of organizational tools should be set up to ensure the life of the community: items life-cycle, procedures and for the approval and release of change

requests, rules for the appointment of experts and set-up of committees, etc., and a collaborative platform to host the community activities.

Beyond the technological set up, an organisational structure would need to be set up to manage all this. Drawing from the most common open source community models, the structure could be based on three layers: 1) a body that defines the policies, the strategies and the long run vision of the community (including for example a Secretary General, a Scientific Committee, EU representatives); 2) a Governing Board, composed by the main stakeholders volunteering to take role in a more "tactical level" and to do the day-by-day management of the community; 3) the Community members, composed by the target groups described above, as well as representatives from Universities, Innovation Agencies, Businesses Trade Unions and private sector stakeholders that on voluntary base maintain, develop and re-use the product property data set.

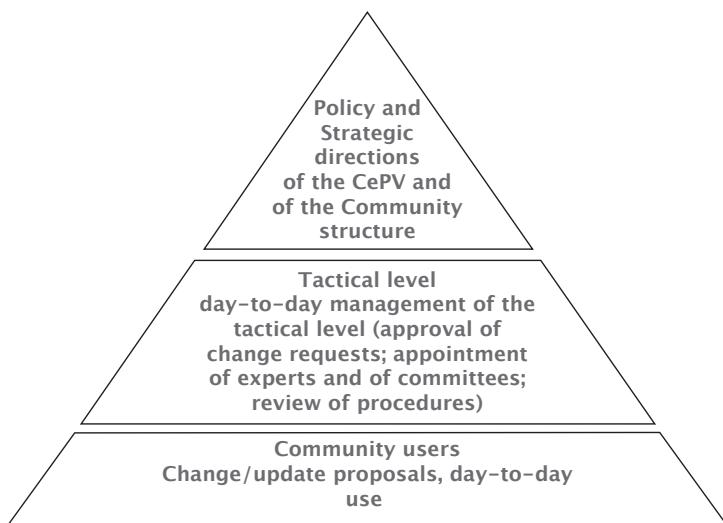


Fig. 8 – The layers of the CePV Community

The ideas illustrated above have, as the rest of this document, the purpose of triggering a debate at European level, through which new proposals or more details could be discussed and better explored (for instance, the possibility to adopt Beta versions phases during the release process, or to manage the publication of "ad hoc" attributes by individual public administrations before they start the process to become official, etc.).

Summarizing, the idea is to build up an European eProcurement users community that in a wiki and open way, will manage a CePV (for the content) and structured product property data base, supported with a stan-

dard-based workflow, that will develop a standardized language of "what" public procurers want to buy.

Referring once more to the "content" and "format" areas for the main challenges identified by the PEPPOL project, the CePV Community would concentrate on the content, working in close relation with (or even under the umbrella of) OpenPEPPOL, which is currently taking care of the "format" issues, approached mainly at the semantic level of the EIF.

The CePV Community could have other important roles, in particular in the eCat management fields:

1. information and training;
2. sharing of best practices (on the model of ePractice community) and lead innovation with experimentation of new features and tools (e.g. in eCat management);
3. addressing management practices with manuals and toolkits;
4. defining other eCat requirements, to send to Standardization bodies;
5. developing the use of semantic web in eProcurement field (it will be very useful in future, searching for products/services in a complementary way of eProcurement systems on line categories breakdown tree);
6. maintaining Multilanguage attributes versions and developing Multilanguage translators tools (based on semantic web and standardized attributes dictionaries);
7. improving continuous and long run networking activities with procurement's sector stakeholders pursuing an inclusive approach.

7.3.3 Growing a CePV Community

The success of any initiative aiming at proposing a result to users, is that the result is used.

The former is an obvious statement, but many failures of apparently very useful big initiatives share this point: missing to spend a considerable amount of effort in promoting the results and expanding their usage, based on the assumption that the users will infallibly perceive the big value of the initiative.

If the proposal for the creation of a CePV finds a concrete application, the effort to spend to raise awareness of the initiative amongst the thousands of users it aims at should definitely be planned. Growing the community should be a priority task for the initial years; indeed, only if the awareness of the initiative reaches a 'critical mass' of users, the propagation of knowledge can benefit from a "exponential effect", due to the converge of the interest of users to simplify their job.

The growth of the community to its full scale would take years; the awareness raising effort is huge, and must aim at a non-linear approach, reaching the large part of the users in the first two-three years, and the remaining part in the long run. Achieving such an ambitious goal is possible only if the CePV benefits of sponsorship of institutional actors and/or the alliance with other stakeholders: first and foremost the European Commission at EU level, together with other initiatives stakeholders who already own an established reputation or brand (e.g. SIMAP, OpenPEPPOL, etc.).

An important aspect to acknowledge is that CePV, and its especially its use, will definitely be a matter for insiders and professionals, and not for a general audience. Considering this, the strategy to grow its use - and thus expand constantly the community - should include, beyond some sheer "marketing initiatives" (e.g. emailing, participation in events, etc.), a considerable part on training with tutorials, demos, videos etc.

7.3.4 A possible implementation path

The creation of a CePV described in sub-section 7.3.1 can obviously not happen "per se", but needs to be promoted and lead by some actor.

For CePV to succeed at cross-border level the actor should have a number of characteristics: being not for profit (as described above, the target users are primarily the public sector procurement officers), being supranational (to guarantee the interest of and the availability in different countries and languages), being cross sector (to guarantee the coverage of different procurement needs).

The natural candidate for such role seems to be the European Commission; however, the European Commission is traditionally (and understandably) reluctant to immediately accept a direct role in all the initiatives it is invited to, as it has it has to wisely its resources.

However, the European Commission could play a key role simply by promoting and "sponsoring" the idea, leaving to interested parties (some of which already exist) the task of developing and maintaining the CePV content, and maybe to make it available as a web-service.

A similar service would fit in the set of Core Service Platforms (CPSs) envisaged in the Deloitte Study on "The feasibility and scenarios for the long-term sustainability of the LSP"; the Vision for the Deloitte study is: "Beyond 2020, enable the provision of online personalised cross-border public services, whether provided by

public or private sector, by making use of sustainable Core Service Platforms (CPSs) that provide common fundamental cross-border interoperability solutions.", where the overall objective for the Digital Service Infrastructure for cross-border services is: "Ensure the sustainable provision of the DSI for cross-border public services by implementing CSPs (comprised of building blocks, which in turn consist of components and agreed upon standards and specifications) that provide cross-border interoperability solutions by taking into account the needs and requirements of the different stakeholders and setting up corresponding structure for the governance, financing, operations and architecture."

Based on this study vision, the governance and financing models that seem to fit more into the project are:

- 1) the "AISBL model", i.e. the model of a not-for-profit Association;
- 2) " EC Agency model " where a dedicated agency is set up and OpenPEPPOL might support the Commission in implementing the idea with the necessary endorsement .
- 3) A combination of the two where the EC Agency deals with coordination of DG interests and legislative issues (through the DGs) and the AISBL deals with user involvement (administrations, NGOs and private sector/ICT industry) and commitment.

An example of implementation path

All these issue need to be better analysed, and the Commission could start to launch a feasibility study, to well understand and define the strategy and the scenario:

Time Frame;

- Business Model;
- Regulatory Impact Analysis;
- relationships with eSENS pilots and other EC funded initiatives;
- etc.

Based on the results of the study, in a second stage, a "Call for Applications" could follow, to set up a 'Working Group for the creation of the "CePV'.

Beyond the principal task of "creating" the CePV, the Working Group should take care of a number of tasks, such as the Growth Plan; the Maintenance workflow and rules/policies; the platform specifications; the Server specifications; the legal obligations; the Awareness plan; etc.

Based on the Work Group specifications, a tender for the operation of a CePV web service should be launched, where the final result of the CePV Work Group should be made available.

Based on the the Call for Applications, the Work Group members could be required to undertake the the maintenance work, at least for a number of years; enlargement rules could be foreseen, to openly enlarge the users Community.

Some reflections on the proposed implementation path

With no ambition to be exhaustive, some advantages of the proposed path are described below.

Firstly, the effort to establish a CePV would be split on different users, and thus become affordable; the main- tance work would entail, beyond the updating of the CePV, an extremely light organization to run the Com- munity, and the cost of hosting the service⁴.

Secondly, the approach would be "bottom up", and the CePV would be created with a view to be shared by the same community that creates it.

Thirdly, created under the umbrella of the EC, the "CePV" would have a recognition by the target users, that no other solution would ensure. In fact, in a public procurement environment any business-oriented model would be difficult to adopt.

If the maintenance work is ensured by the Community members, the only running costs to be considered the Commission would be the running of the server and the translation costs.

The "EC endorsement" would mean also a significant reduction of the awareness raising" effort that should accompany the release of the CePV.

7.3.5 Possible Fall-Outs of the CePV proposal

As stated in numerous studies, a wider usage of interoperable eCatalogues would have widespread benefits for the public and private organizations involved in public procurement procedures, in terms of reduction of

⁴ In the experience of eCl@ss (an association from which the proposal has borrowed several ideas) the overall maintenance cost, including both the organization and the equipment, is some percent of the creation cost.

human resources involved in low-value activities, increase of process speed, reduction of errors and litigation, innovation for SMEs, etc.

But beyond the facilitation of eCatalogue interoperability, creating a CePV would result in other positive fall-outs.

First of all, even when not using an eCatalogue, having a reference description of the properties attached to a purchasing item (identified by a CPV code) would help a large number of not-so-skilled contracting authorities to define their technical specifications when drafting procurement procedures.

Considering that in Europe vast majority of contracting authorities are not internally equipped with competences and skills required to draft effectively technical specifications needed in the wide variety of their purchases, the benefit would be massive in terms of time reduction to draft, but also in terms of increasing the quality of the purchased items, through better defined specifications.

Another significant benefit is linked to the possibility of understanding and comparing the prices of items purchased by public buyers, even on a large scale. For instance, after a massive collection of prices for the item "Personal Computer", the average price could be hardly comparable between the individual tenders; however a segmentation based on "Processor Speed", "HD Capacity", etc. would mean a more useful comparison.

As described above, the Italian Public Procurement Authority is starting an initiative to allow the massive collection of standardized data on public procurement, to create reference prices of items purchased by PAs; this initiative is based on the creation of a reference description of supplies, services and works, which is basically the same concept of the CePV, only used at national level, while the CePV would allow the same at EU level.

8. Bibliography

CMAP Project: "CLASSIFICATION AND MAPPING FOR EBUSINESS AND EPROCUREMENT", OPEN CONFERENCE PROCEEDINGS - TKE2012 MADRID 2012

CWA 15045:2004 - Multilingual catalogue strategies for eCommerce and eBusiness. <ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/CWA15045-00-2004-Jul.pdf>

CWA 15294:2005 - ePDC project - Dictionary of Terminology for Product Classification and Description. <ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/CWA15294-00-2005-May.pdf>

CWA 15295:2005 - ePDC project - Description of References and Data Models for Classification. <ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/CWA15294-00-2005-May.pdf>

CWA 15556-1:2006 - Gen-ePDC project - Product Description and Classification - New Property Library. <ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/CWA15556-01-2006-Mar.pdf>

CWA 15556-2:2006 - Gen-ePDC project - Product Description and Classification - Product Classes with sets of properties. <ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/CWA15556-02-2006-Mar.pdf>

CWA 15556-3:2006 - Gen-ePDC - Product description and Classification - product Classes with sets of properties. <ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/CWA15556-03-2006-Mar.pdf>

CWA 16100:2010 - ePPS - Guidelines for the design, implementation and operation of a product property server. <ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/CWA16100ePPS.pdf>

CWA 16138:2010 - CC3P: Classification and catalogue systems for public and private procurement <ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/CWA16138.pdf>
Annex B (.zip file) ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/Annex_B_Mapping_Tables.zip

CWA 16525:2012 - Multilingual electronic cataloguing and classification in eBusiness - Classification Mapping for open and standardized product classification usage in eBusiness. ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/CWA16525_2012.pdf

CWA 16658:2013 :Business Interoperability Interfaces for Public procurement in Europe - BII Architecture ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/CWA16558_2013.pdf

CWA 16659:2013 : Business Interoperability Interfaces for Public procurement in Europe - Tender Notification ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/CWA16559_2013.pdf

CWA 16660:2013 : Business Interoperability Interfaces for Public procurement in Europe - Use of profiles in the tendering process ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/CWA16560_2013.pdf

CWA 16661:2013 : Business Interoperability Interfaces for Public procurement in Europe - eCatalogue profiles ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/CWA16561_2013.pdf

CWA 16662:2013 : Business Interoperability Interfaces for Public procurement in Europe - Post award profiles ftp://ftp.cen.eu/CEN/Sectors>List/ICT/CWAs/CWA16562_2013.pdf

CWA 16073-0:2010 : Business Interoperability Interfaces for Public procurement in Europe - Part 0: Introduction ftp://ftp.cenorm.be/PUBLIC/CWAs/BII/Final/2010_16073_0.pdf

CWA 16073-1:2010 : Business Interoperability Interfaces for Public procurement in Europe - Part 1: Profiles overview ftp://ftp.cenorm.be/PUBLIC/CWAs/BII/Final/2010_16073_1.pdf

CWA 16073-2:2010 : Business Interoperability Interfaces for Public procurement in Europe - Part 2: Convergence and gap analyses ftp://ftp.cenorm.be/PUBLIC/CWAs/BII/Final/2010_16073_2.pdf

CWA 16073-3:2010 : Business Interoperability Interfaces for Public procurement in Europe - Part 3: Toolbox requirements ftp://ftp.cenorm.be/PUBLIC/CWAs/BII/Final/2010_16073_3.pdf

CWA 16073-4:2010 : Business Interoperability Interfaces for Public procurement in Europe - Part 4: Evaluation guidelines for testing and piloting ftp://ftp.cenorm.be/PUBLIC/CWAs/BII/Final/2010_16073_4.pdf

European Commission

2004 "Action plan for the implementation of the legal framework for electronic public procurement"

2004 Directives, 2004/18/EC and 2004/17/EC

2004 eGovernment in the EU in the next decade, Institute for Prospective Technological Studies and EC Joint research centre

2005 "eGovernment beyond 2005", EC e-gov unit

2005 Requirements for conducting public procurement using electronic means under the new public procurement Directives 2004/18/EC and 2004/17/EC, Document of the service of the Commission

2006 "Guidelines to Common Specifications for Cross Border use of Public eProcurement", DG-INFSO H2 eGov & CIP (Expert Group on High Impact Services), MS

2007 "Electronic Catalogues in Electronic Public Procurement", DG-MARKT Study, Vol. I, II and III.

2011 "The feasibility and scenarios for the long-term sustainability of the LSP", DG MARKT (Deloitte Study)

2012 "FINAL REPORT REVIEW OF THEFUNCTIONING OF THECPV CODES/SYSTEM" (MARKT/2011/111/C)

CEN

2004 "Multilingual catalogue strategies for eCommerce and eBusiness", CWA 15045:2004

2005 "Analysis of standardization requirements and standardization gaps for eProcurement in Europe", Cen Workshop Agreement, CWA 15236-00-2005-Feb

2005 "Dictionary of Terminology for Product Classification", CWA 15294:2005

2005 "Description of References and Data Models for Classification", ePDC project CWA 15295:2005

2005 "Product Description and Classification - New Property Library", Gen-ePDC project: CWA15556-1:2006

2006 "Product Description and Classification - Product Classes with sets of Properties", Gen-ePDC project CWA 15556-2:2006

2006 "Product Description and Classification - Results of development in harmonization and product classification and in multilingual electronic catalogues and their respective data modelling", Gen-ePDC project CWA 15556-3:2006

2007 "Business Requirements Specifications for Cross-Industry catalogues", CEN/ISSS WeBES

2007 "Business requirements specification - Cross industry catalogue process", CWA 15667:2007

2009 "Terms of Reference for the CC3P Project (V.1)", WS/eCAT project on "Classification and catalogue systems for public and private procurement" (CC3P)

IDABC

2005 "Functional requirements for eProcurement under the EU framework", Vol. I and II

Bertini, L.

2007 "eGovernment Scenarios and Visions to 2011", www.concreta-mente.it

2007 "The Public Administration Electronic Market – MEPA: Scenario, Operation and Trends", (with Vidoni, A.), Ministry of the Economy and Finance and Consip, Paper n. 7.

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