PAN-EUROPEAN INTEROPERABLE ELECTRONIC PUBLIC PROCUREMENT: ENABLING ITS IMPLEMENTATION WITHIN THE EUROPEAN UNION INSTITUTIONS, AGENCIES AND OTHER BODIES, AND FACILITATING ITS ADOPTION ACROSS THE MEMBER STATES

Francisco Garcia Moran*

ABSTRACT. The present paper begins by outlining the political context resulting from the Digital Agenda for Europe[1] and the major European-wide initiatives in the area of e-Procurement. It describes how the European Commission has cooperated with the Pan-European Public Procurement Online (PEPPOL) project in order to facilitate the cross-border exchange of e-Procurement documents, such as catalogues of goods or services, orders and invoices, between European public administrations and suppliers of any size.

The paper explains that, while the European Commission's main objective was the promotion of cross-border e-Procurement as a matter of policy, its own experience as a public purchaser in a wide range of economic sectors and with suppliers of varying sizes and operating from different countries has been instrumental to understand the needs of these suppliers and of the contracting authorities they work for. In this context, it presents the e-PRIOR initiative and reports on its main achievements, as well as Open e-PRIOR —the open source version of e-PRIOR—, which covers the same functionality and could help public administrations in Europe (and, potentially, other regions of the world) to take the leap towards e-Procurement.

Finally, it refers to the next steps and, in particular, on moving from post-awarding to pre-awarding e-Procurement.

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* Francisco García Morán holds Degrees in Mathematics (Numerical Analysis and Applied Statistics, University of Sevilla, Spain) and Computer Science (Polytechnic University of Madrid, Spain). He joined the European Commission in 1986; after holding several posts, he was appointed Director-General for IT in 2005. He sits in the Management Board of ENISA (European Network and Information Security Agency) and chairs the Interinstitutional Committee on Informatics. Before joining the European Commission, he had occupied a number of positions in the University of Sevilla, the Spanish Ministry of Education and the Regional Government of Andalucía.

INTRODUCTION

According to a study carried out by the European Commission in 2004[2], the generalisation of e-Procurement in Europe could "*save governments up to 5% on expenditure and up to 50-80% on transaction costs for both buyers and suppliers*", a massive amount when one considers that public procurement is estimated to account for about 17% of the total EU's Gross Domestic Product[3]. And, yet, the uptake of e-Procurement across the EU is variable and the objective of transitioning to 100% e-Procurement is far from complete.

To counter this, the e-PRIOR project was started in 2007 by the Directorate-Generals for Internal Market (DG MARKT) and for Informatics (DIGIT) of the European Commission, with a view to supporting the objectives of the i2010 EU policy framework for the information society and media[4] and the e-Procurement Action Plan[5]. The e-PRIOR project was initially sponsored by the IDABC programme (Interoperable Delivery of European eGovernment Services to public Administrations, Business and Citizens) to show that emerging standards to enable interoperability in a cross-border environment could be used in a real-life pilot of B2G e-Invoicing, thus promoting the harmonisation of processes across the Member States. As highlighted by Varney (2011), lack of harmonisation of technical standards could be the cause for hindering cross-border e-Procurement due to the diverse standards used at national levels. Our pilot, conducted in 2008 with a number of DIGIT suppliers, actively contributed to the elaboration of these standards in close cooperation with standardisation bodies and European Union Member States and with PEPPOL[6], the e-Procurement Large Scale Pilot (LSP) of the Competitiveness and Innovation Framework Programme (CIP).

As from 2009, e-Invoicing has been live at DIGIT and has proven to offer significant advantages over traditional paper-based invoicing, such as better data quality, faster processing time, absence of data encoding or attachment scanning, all leading to a substantial reduction of human errors. Such benefits, namely process cost

improvements and purchase price reduction, have also been identified by Croom and Brandon-Jones (2007) through the cases-studies performed in the UK on public sector organisations. DIGIT is now mandating the use of e-invoicing in all new framework contracts, and expanding its scope to the full post-award value chain: Catalogues, Quotations, Orders, Goods Receipt, Payment Reminders, etc.

The e-PRIOR platform is based on service-oriented interoperable technology, allowing the European bodies and their suppliers to exchange procurement documents in electronic format by using web services or over the PEPPOL network. Its open-source version – Open e-PRIOR – is available to the EU Member States, helping them to accelerate their own implementation of e-Procurement in general and their participation to the PEPPOL project in particular.

The European Commission strongly promotes the use of e-Procurement across Europe. e-PRIOR is considered as one of the main steered actions to support e-Procurement, as indicated in the Commission's recent Green Paper on e-Procurement[7]. The project is fully in line with the Digital Agenda[8], as mentioned by Neelie Kroes during her speech at the "Lift-Off towards Open Government"[9] conference in December 2010 in Brussels. The e-PRIOR project is supported by the different Directorate-Generals of the Commission, specifically from an information society and standardisation perspective. Today, the move to e-Invoicing is increasingly viewed as a policy objective in itself — and this applies to the transactions carried out by the Commission as a public purchaser itself, not only by the EU Member States. In addition to the Digital Agenda for Europe, this goal is also reflected in the Granada Declaration[10] and the Communication of the European Commission on e-Invoicing[11].

Leading by example is fundamental to overcome the insufficient take-up of e-Procurement in Europe. It showcases a real-life experience, proves the viability of the undertaking, and makes available artefacts easing the adoption of e-Procurement by the EU Member States. Knowing that 45 to 65% of all EU companies are suppliers to the public sector, it is clear that governments can play a crucial role in helping to create the relevant and required e-Invoicing volume. Consequently, important savings can be expected. This is even more

important in today's economical context where cuts in government spending are required at all levels.

DESCRIPTION OF THE SOLUTION

e-PRIOR is a SOA (Service-Oriented Architecture) platform allowing the exchange of electronic business documents, structured or not, between the Supplier and the Customer. It exposes web services which can be called from the back-office ERP applications or via the PEPPOL project exchange infrastructure (CIP LSP infrastructure). Alternatively, a Supplier or a Customer with low volumes of exchange can connect to the system via a web portal, which is also part of the open-source solution. This is illustrated in Figure 1. By means of providing solutions that are accessible to low volume suppliers, it is ensured that e-Procurement adoption will not hinder the participation of low volume suppliers such as SMEs, a negative relationship that was observed by Walker and Brammer (2012).

e-PRIOR replaces the postman, with built-in functionalities for traceability, integrity, non-repudiation, routing and archiving. But it is much more than the postal service: it sets in motion a true interoperability between disparate systems, which don't need to know about each other's specificities. It synchronizes the parallel business processes of the buyer and of the seller.
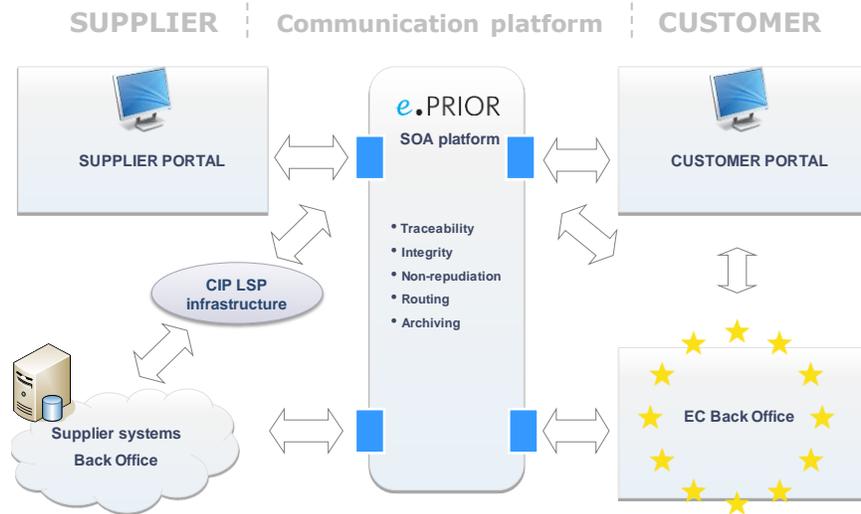
Figure 1 - Components of the e-PRIOR solution

Figure 2 shows the structure of e-PRIOR, divided in modules, platform services and SOA enablers, and connected to the outside world via the CIP gateway, the communication services and the Supplier Portal. Note that only the modules are sector specific, implementing the business of exchanging documents in the context of e-Procurement. The rest of the platform is reusable in any business context where information exchange is required.
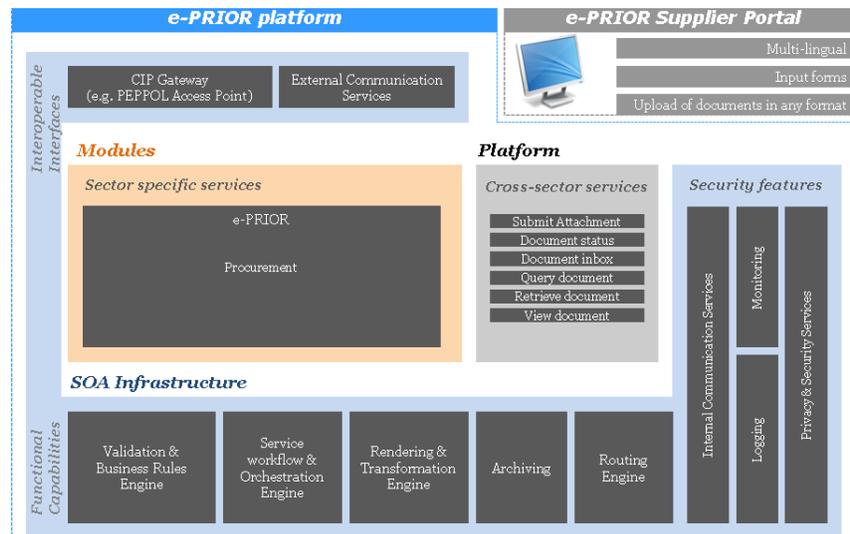
Figure 2 - e-PRIOR structure

e-PRIOR implements *profiles* specified by the first workshop on business interoperability interfaces for public procurement in Europe organised by the European Committee for Standardization, CEN WS/BII[12]. This workshop created several profiles for e-Procurement covering, among other business processes, e-Catalogue, e-Ordering and e-Invoicing. The e-PRIOR project was a pioneer in their use and, through it, a major contributor to their dissemination.

The experts of the e-PRIOR project continue to actively participate in phase 2 of the CEN workshop in order to ensure the sustainability and proper evolution of these profiles.

METHODS

Thanks to e-PRIOR and its successful deployment in production at DIGIT, the European Commission is, already today, equipped with one of the most mature electronic services platform in the public e-Procurement domain. Since it is also available as open source, this initiative encourages Public Administrations to start using e-Procurement. This will therefore contribute to the creation of critical mass and to the promotion of cross-border e-Procurement in Europe.

DIGIT has adopted a phased approach in the dissemination of e-Procurement:

1) DIGIT is using e-Procurement with its own Framework Contracts for IT goods and services, by making e-Procurement processes mandatory for the Contractors.
2) e-Invoicing (and gradually other e-Procurement processes) is becoming mandatory for other Directorate-Generals of the Commission and European Agencies using DIGIT's Framework Contracts with Supplier companies.
3) DIGIT is spreading the use of e-Procurement across other Directorate-Generals of the Commission, European Agencies and Institutions, interested to adopt e-Procurement for their own Framework Contracts covering various domains such as medical insurance, training, translation etc.
4) In parallel, DIGIT is disseminating Open e-PRIOR across the EU Member States, assisting Public Administrations and their service providers in deploying the solution.

e-PRIOR and its open source version enable easy connection to the PEPPOL network. The release of Open e-PRIOR on the JOINUP.EU[13] website has triggered more than 1,000 downloads. Public Administrations throughout Europe are today in contact with DIGIT to know how they can reuse the platform in their national context.

Even if developed in the context of the European Commission, the requirements were gathered at European level, taking into account the specificities of all the EU Member States. This resulted in a platform which is cross-border by nature, overcoming many of the obstacles for the adoption of e-Procurement in Europe.

Alongside the above activities, the project team engages in proactive assistance to Public Administrations. In coordination with the communication initiative of the Interoperability Solutions for European Public Administrations (ISA) programme, the project team proactively disseminates information on e-PRIOR through collaborative platforms such as ePractice.eu or JOINUP.eu, participates in selected expert groups and conferences and contributions to news articles and production of various communication artefacts.

RESULTS

The e-PRIOR project can unlock the potential of various National and European initiatives around e-Procurement, reduce fragmentation and significantly improve cross-border participation, strengthening the single market. Reducing the cost of adoption of e-Procurement calls for proven and tested solutions, ready to be customised and deployed. In this context, Open e-PRIOR has today a very important role in harnessing cost reductions and efficiency gains, linked to e-Procurement, through technology.

The implementation of e-PRIOR at the European Commission showed that by automating or semi-automating the invoice handling process, the associated accounts payable processes also became more efficient. Efficiency gains are observed in the following areas:

- The time needed to book an invoice in the back-office systems of the European Commission was reduced from 2 days on average to only a few seconds;

- Errors are reduced as the data is no longer double-encoded or manually processed;

- Accounting benefits from increased transparency of transactions;

- There is a great potential for better resource allocation: switching from manual processing towards higher output knowledge-based activities;

- There are considerable environmental effects as the transition from paper to electronic invoicing would save over 14 million trees in the EU alone (estimates of, e.g., Pagero and PayItGreen).

The current results of the phased approach of DIGIT in disseminating e-PRIOR are the following:

1) DIGIT now counts 5,000 electronic transactions per year. More than 1,200 of them are electronic invoices. DIGIT receives in average 8,000 invoices a year. By making e-Invoicing mandatory in all of its new Framework Contracts,

more than 50 % of DIGIT's yearly invoices will be electronic by 2012.

2) By January 2013, all 40 Directorate-Generals of the European Commission and its 6 Executive Agencies will be using e-Invoicing with DIGIT suppliers for IT goods and services.

3) In 2013, several Directorate-Generals and European Agencies will be using e-PRIOR for their own market procedures in the fields of training, medical expenses, purchasing of books, catering etc.

The European Commission counts more than 500,000 procurement transactions a year. Switching to e-Procurement would result in significant cost savings[14].

4) The open-source version has been downloaded more than 1,000 times, has been installed in Greece, Portugal and Norway, and is now in the plans of other EU Member States.

As e-Catalogue, e-Sourcing (electronic requests for goods and services) and e-Ordering are also available in e-PRIOR platform, it is adding efficiency gain in terms of process integration, which means that e-invoices will be automatically reconciled with purchase orders and deliveries.

DISCUSSION

Building on its success in the implementation of the post-award profiles, DIGIT is now investigating how to support the pre-award processes as well. The results of this feasibility study and a first pilot implementation are expected throughout 2012. It is believed that the experiences from the implementation of post-award e-Procurement could be instrumental due to challenges that are common to both the post and the pre-award phases and most of which have thus already been addressed. Such challenges have been highlighted by Croom and Brandon-Jones (2007), and these typically include integration with legacy systems, conflicts arising from differing data formats, the ability to handle different communication channels for transmitting data taking into consideration their different needs and also the differences in management reports.

The Open e-PRIOR pre-award project will focus on the e-Tendering process (electronic submission of a tender by an economic operator to a contracting authority, responding to a call for tenders) and the e-Awarding process (awarding of the contract and formal notification of the awarding results). It will build further on TED e-Tendering application, developed by the EU Publications Office, which manages the publication of the call for tenders and the related technical specifications. Building further on TED and electronic notifications, which was effectively embraced by purchasing authorities and entities (Varney, 2011), is considered as elementary for the future of pre-award adoption. Furthermore, it will help address the missing link highlighted by Varney (2011) between the contract notices on the TED site and the additional elements for the specific contracts. e-PRIOR will be at the core of this solution, catering for the electronic exchange of e-Tendering related business documents between the online working environments of economic operators and contracting agents. In consistence with the post-award setup, the specifications from CEN/ISSS WS/BII will be used again for standardisation purposes. This architectural design will allow ultimately for pan-European interoperability between different e-Tendering solutions or service providers, allowing e.g. an economic operator in Portugal to use his current and domestic e-Tendering platform to submit electronic tenders towards the European Commission, or potentially any other public administration in Europe. The pre-award functionality will also be made available to public administrations in Member States as part of Open e-PRIOR.

Additionally, taking advantage of the reusability of the platform, other business domains such as the legislative and competition domains have now implemented their document exchange on top of the platform, as part of the project known as e-TrustEx.

ACKNOWLEDGMENTS

The success of the various e-Procurement initiatives within the European Commission is without doubt the result of collective efforts by many colleagues across several departments spanning over a period of almost 10 years now. While it would be impossible to name

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NOTES

[1] *A Digital Agenda for Europe*, Commission Document No COM(2010)245.

[2] *Action plan for the implementation of the legal framework for electronic public procurement,* Commission Document COM(2004)841, p. 3.

[3] *Europe 2020 Flagship Initiative. Innovation Union*, Commission Document COM(2010)546, p. 16.

[4] See http://ec.europa.eu/information_society/eeurope/i2010/index_en.htm for further information.

[5] Cf. note 2 above..

[6] Pan-European Public Procurement Online, a Large-Scale Pilot (LSP) funded by the Competitiveness and Innovation Framework Programme (CIP) of the European Commission's Directorate-General for Information Society and Media.

[7] *Green Paper on expanding the use of e-Procurement in the EU,* Commission Document COM(2010)571.

[8] See in particular the following actions in the Digital Agenda (cf. note 1 above): "*Issue White Paper on inter-connecting e-procurement*

capacity in EU: Define by 2011 concrete steps in a White Paper on how to inter-connect e-procurement capacity across the single market" and *"Create and implement an ambitious eCommission 2011-2015 action plan: Lead by example on open and transparent eGovernment by creating in 2010 and implementing an ambitious eCommission 2011-2015 action plan, including full electronic procurement"* (p. 32).

[9] *My vision for eGovernment, and how to make it real*. Commission Document SPEECH/10/752.

[10] Granada Ministerial Declaration on the European Digital Agenda (2010).

[11] *"*The Commission and all the other EU institutions should lead by example by implementing e-invoicing for their own public procurement purposes. In particular, the Commission will pursue the roll-out of the e-PRIOR project". *Reaping the benefits of electronic invoicing for Europe*. Commission Document COM(2010)712, p. 12.

[12] See http://www.cen.eu/CEN/sectors/sectors/isss/activity/Pages/ws_bii.aspx for further information.

[13] JOINUP.EU (https://joinup.ec.europa.eu) is a collaborative platform created by the European Commission. It offers services to help e-Government professionals share their experience with interoperability solutions and support them to find, choose, re-use, develop, and implement open source software and semantic interoperability assets.

[14] For an independent insight on the scale of the potential savings, see for example the report Deutsche Bank Research (2010), *E-invoicing: Final step of an efficient invoicing process*, available at http://www.dbresearch.de/PROD/DBR_INTERNET_EN-PROD/PROD0000000000257196.PDF.

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