

DOMIBUS – implementation of the eSENS AS4 profile

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Organisation: Ministry of Justice of North Rhine-Westphalia

Country: Germany

Level of government: Regional/State government

Sector: General public services

Type: Digital, Public Service

Launched in: 2015

Overall development time: 6 year(s)

Link to the innovation's website

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Description

The objective of the e-SENS building block “e-Delivery” was to establish a common transport infrastructure suited to the requirements of cross-border communication between eGovernment applications in different domains. The e-SENS e-Delivery infrastructure supports interoperable, secure and reliable exchange of structured, non-structured and/or binary data within (at least) asynchronous communication scenarios. The common e-Delivery infrastructure does not replace existing infrastructures, but instead aims to transparently interconnect existing electronic delivery communities. Based on the concept of a four-corner model, where end entities (corners one and four) exchange messages via gateway intermediaries (corners two and three), the infrastructure standardises communication between these intermediaries.

Why the innovation was developed

- The DOMIBUS e-Delivery component was developed to enable the secure communication across borders in Europe. It started with different European Large Scale Pilots (LSPs) deploying their own e-Delivery platform. Each of these e-Delivery platforms have in their own area been quite successful – however in the long run it was unacceptable for the European countries to run different infrastructures for the different domains (e.g. for e-Procurement, eHealth, e-Justice etc.). Therefore an effort has been undertaken by the participants of the LSPs, the Member States, Associated Countries and the European Commission, with support from standardisation organisations, to define a roadmap towards a common e-Delivery protocol, which combines building blocks from LSPs (PEPPOL and SPOCS) with European and international standards in a modular approach. The eCODEX project piloted a first version of this common solution in real life use cases.
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Objectives

Improve access, Improve efficiency, Improve service quality

Main beneficiaries

Businesses, Civil Society, Government bodies, Government staff

Existing similar practices

1.IBM B2B Advance/2.FMS Server and Light Client/3.Holodeck B2B v2.0/4.mendelson AS4 solution

In the private sector, civil society or elsewhere

IBM/Flame/Holodeck/mendelson GmbH

1: Multi-protocol Business2Business communication platform 2: Multi-protocol secure business message server providing the middleware for communicating business messages over industry standard protocols conforming to the ebXML V3.0, AS4, RosettaNet RNIF 2 and the EPP IETF STD69 specifications. 3: Java-based implementation of the ebMS 3 and AS4 standard. 4: Java-based highly configurable implementation of the ENTSOG AS4, ebMS AS4 and eSENS AS4 standards.

Results

Efficiency

- By implementing the e-Delivery solution, public and private authorities can save a lot of time and effort in their crossborder exchanges in comparison to traditional mail. The exchange is not only more secure, but also gives immediate feedback to the sender.
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Service quality

Accessibility:

- Using an electronic way of communication makes the data accessible from anywhere.

Reliability:

- The authentication of messages, safe data transmission and privacy are guaranteed through digital signatures and message encryption.

Development

Design

Experts from different European Member States and Associated Countries analysed the requirements for an interoperable e-Delivery platform in meetings and through questionnaires on existing national solutions. The outcomes of other LSP projects were also analysed and screened for the usage of state of the art technologies that could be re-used. The solution was developed in cooperation with the European project e-CODEX and is based on industry standards released by standardisation organisations OASIS and ETSI in order to ensure interoperability and a wide applicability.

Design time: 4 year(s)

Testing

- The e-Delivery solution has been tested extensively before and also during its deployment in the field of e-Justice as part of the e-CODEX project. In criminal and civil justice use cases ranging from the European Payment Order to Mutual Legal Assistance, government authorities from different EU Member States made use of the secure and reliable electronic communication to speed up their cross border procedures. “Minder”, a special tool coded within the e-SENS project to aid in the conformance testing of the solution, has been used to verify the conformance of the application against the e-SENS AS4 profile. It has also been used to verify the compatibility between different other AS4 products. To insure the quality of the software product (DOMIBUS), JUnit tests took place throughout the whole development process.

Testing time: 3 year(s)

Implementation

Tools used:

- On the technical side we used Eclipse and IntelliJ (Java IDEs), Nexus/Maven (repository), Jenkins (build server), JUnit Testing Framework (tests for individual methods) and others. The main “tool” for developing and implementing the innovation was the good cooperation of members from different EU Member States, Associated Countries, the European Commission and the standardisation bodies.

Resources used:

- Around 3000 hours of pure development time

Implementation time: 4 year(s)

Diffusion

- DOMIBUS is presented regularly at international and national events to foster contacts with public and private bodies. The solution has been adopted by the tax authorities within and between Australia and New Zealand, the iSupport project and the ASEAN. Also a number of commercial implementations of the AS4 profile are known, including Fujitsu, IBM and Microsoft. The e-SENS project is in the process of expanding the solution to further domains like e-Procurement, e-Health and Business Lifecycle.

Diffusion time: 2 year(s)

Challenges and solutions

- Problem: Enabling a secure connectivity on SSL basis between different EU Member States and Associated Countries, including certificates, firewall settings etc. Solution: Exchange of and continues updates to configuration parameters (pModes) between participating public agencies
 - Problem: Guaranteeing security of the attachments Solution: Implementing encryption of attachments based on existing web service stacks
 - Problem: Connection of different kinds of backend APIs (Application programming interface) Solution: A plugin interface was developed in order to connect different message service APIs
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Partnerships

European Commission, Connecting Europe Facility, OASIS, & ETSI

Academics and Research Bodies, Other Public Sector

The e-SENS project worked in close cooperation with standardisation bodies OASIS and ETSI in regard to using the right standards to ensure the interoperability of the developed solutions. By the regular support from the experts, it was ensured, that the innovation offers the widest possible applicability. The European Commission as co-funder of the Large Scale Projects supported the project in regard with the connection to European legislation. The Connecting Europe Facility (CEF) took over the lead of the development for the DOMIBUS component in order to continue to be able to fulfill future requirements set forth.

Lessons Learned

Lessons Learned

- Finding common sense with numerous partners like the EU Member States extends and delays the development time
 - Also, being entangled with political discussions and requirements can lengthen the development time substantially
 - Testing requirements are immense and should not be underestimated
 - Finding alignment between national and European requirements is important
 - Ensuring interoperability by using international standards was key
 - Getting in contact with the right person in the right position is hard to handle for a central marketing team. The decision for a national approach was crucial.
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Conditions for success

- The close cooperation between piloting parties/countries has been essential
 - A common and stable legal basis is very helpful
 - Political support proved to be adjuvant.
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