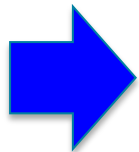


Semantic building block convergence to support e-government in Europe

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The Digital Agenda for Europe

“Too many barriers still block the free flow of online services and entertainment across national borders. “



Cross border services to support eGovernment



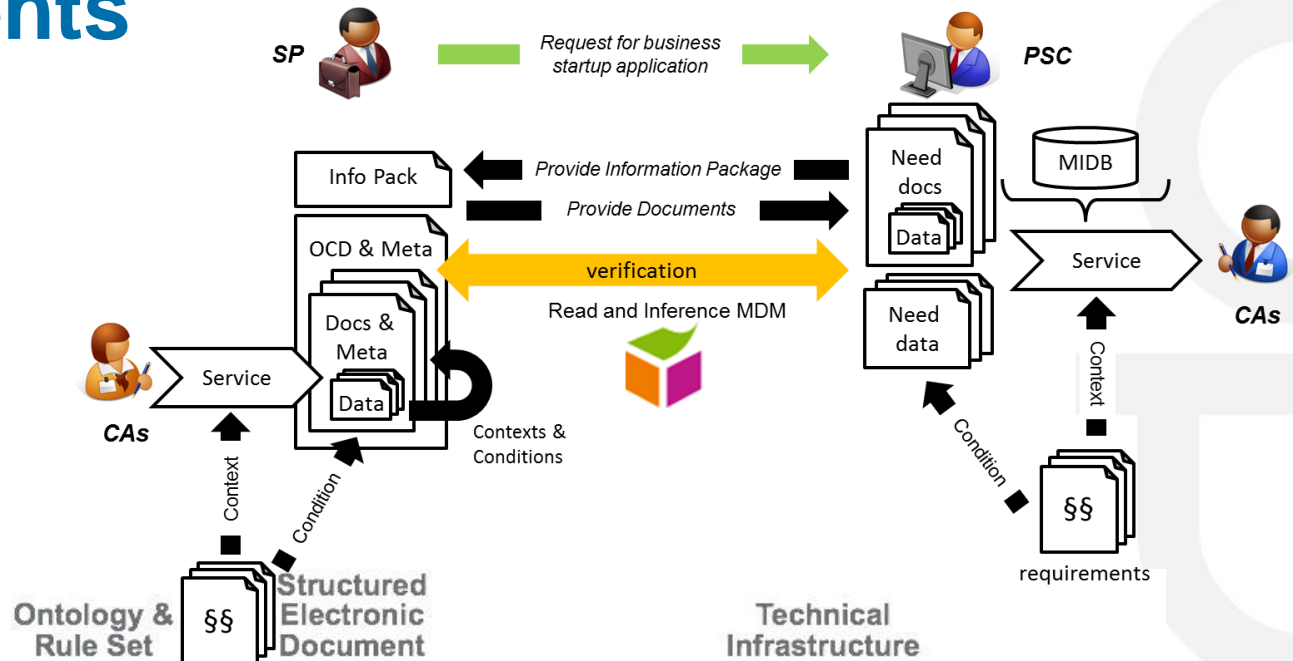
Large scale pilots

‘The "Large Scale Pilot" projects (LSPs) develop practical solutions tested in real government service cases across Europe. ‘

- SPOCS** “Simple Procedures Online for Cross-border Services”
- epSOS** “European Patients Smart Open Services”
- STORK** “Secure idenTity acROss boRders linKed”
- PEPPOL** “Pan European Public Procurement OnLine
- e-CODEX** “e-Justice Communication via Online Data EXchange”

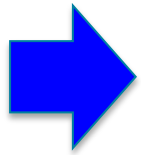


Some equivalent processes and components

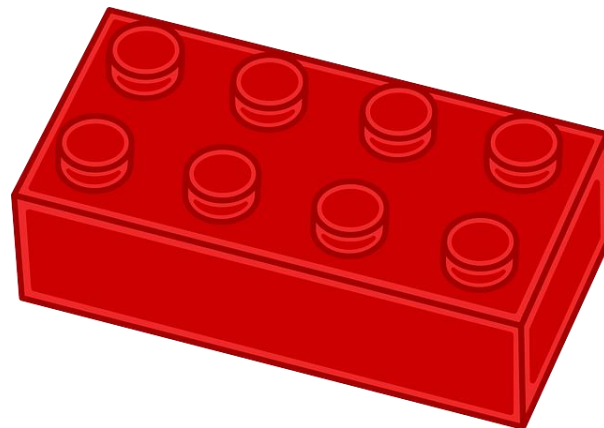


Definition of building blocks

“Building Block (BB): Represents a (potentially re-usable) component of business, IT, or architectural capability that can be combined with other building blocks to deliver architectures and solutions.”



developed to be easily re-used in any area of public administration



The eSens project

Electronic Simple European Networked Services

to improve the **cross-border access of citizens and businesses to public services in Europe**

by provision of **interoperable IT solutions**

Project start: 01/04/2013

Project Coordinator: Ministry of Justice NRW, Germany

Duation: 36 months

Project budget: 27 m

EU financing: 13.5 m

Programme: Competitiveness and innovation framework programme (CIP), ICT policy support programme



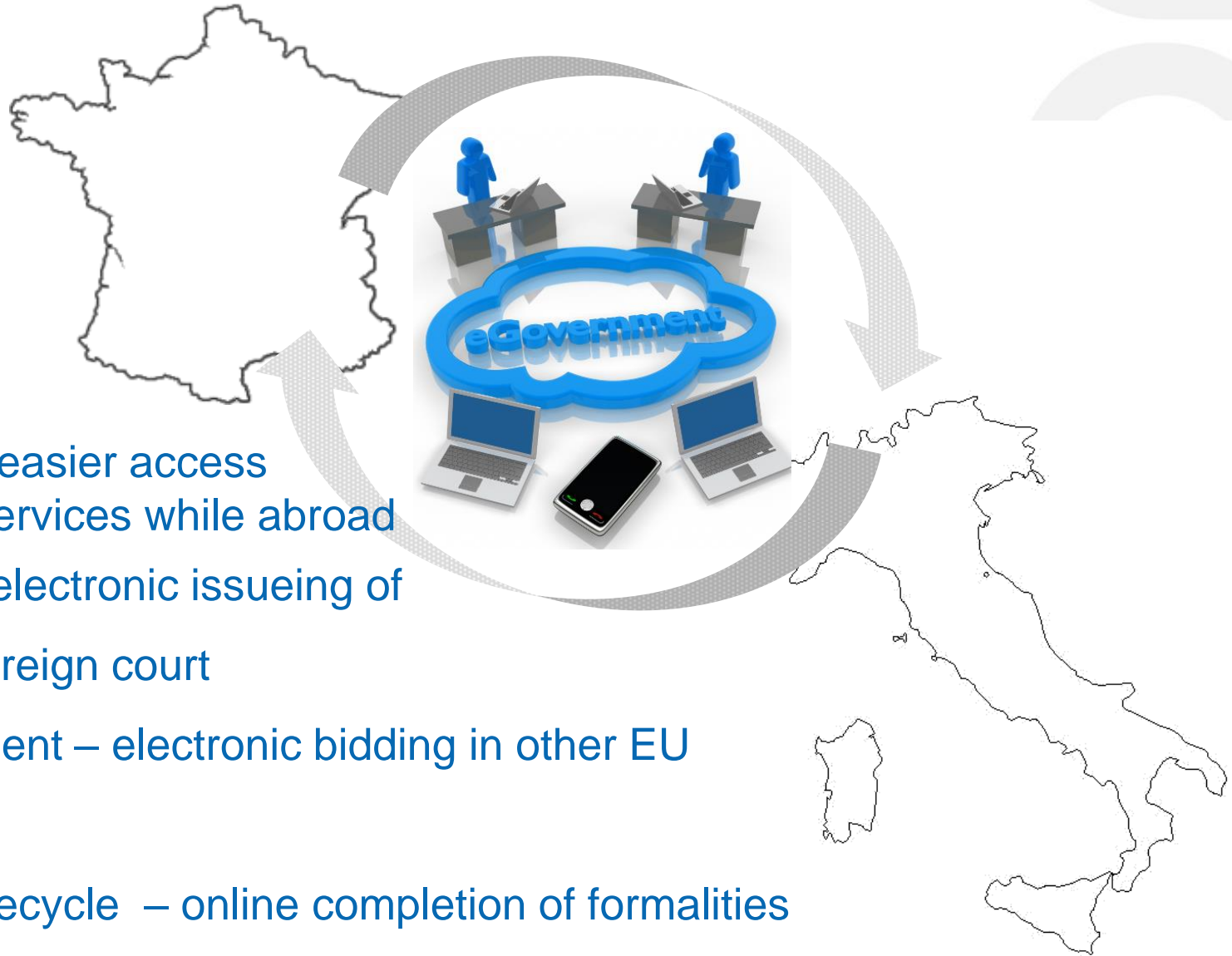
Objectives of e-SENS



- **Consolidates** the results of LSP projects
- **Improves** solutions and develops generic modules
- **Extends** their usage to additional domains

<http://www.esens.eu>

Pilots in real life scenarios



- e-health – easier access to health services while abroad
- e-justice – electronic issuing of a claim in a foreign court
- e-procurement – electronic bidding in other EU countries
- business lifecycle – online completion of formalities for company setup abroad

e-SENS tasks



- Stock taking

- Specifications of consolidated building blocks

- Testing and pilot enablement

- Piloting

- Handover

Why semantics?

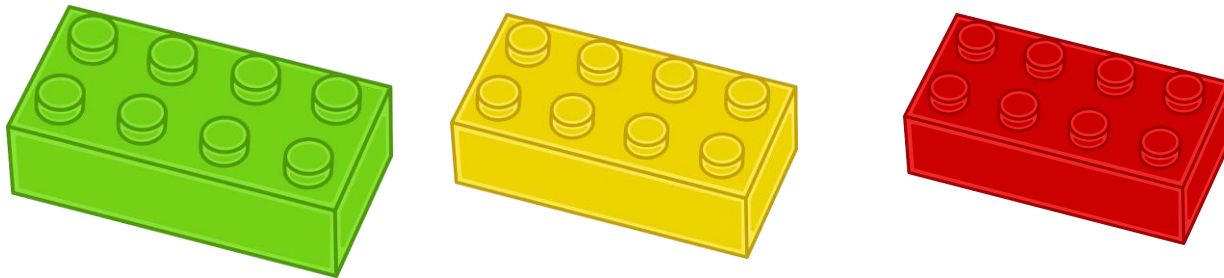
Inside each LSP

- **multilingual approach**
- **mapping of data models: granularity of descriptions, coverage of models**
- **missing datasets: need to develop new semantic resources**



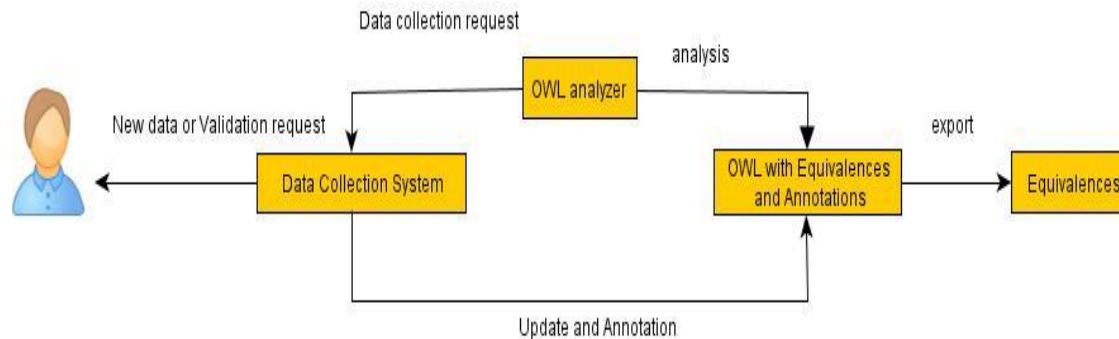
Why cross domain building blocks?

- **depends on the BB**
- **many experiences not leveraged, many tools that could be reused**
- **new pilots to come: can we facilitate the set up of new pilots whichever the existing level of interoperability?**

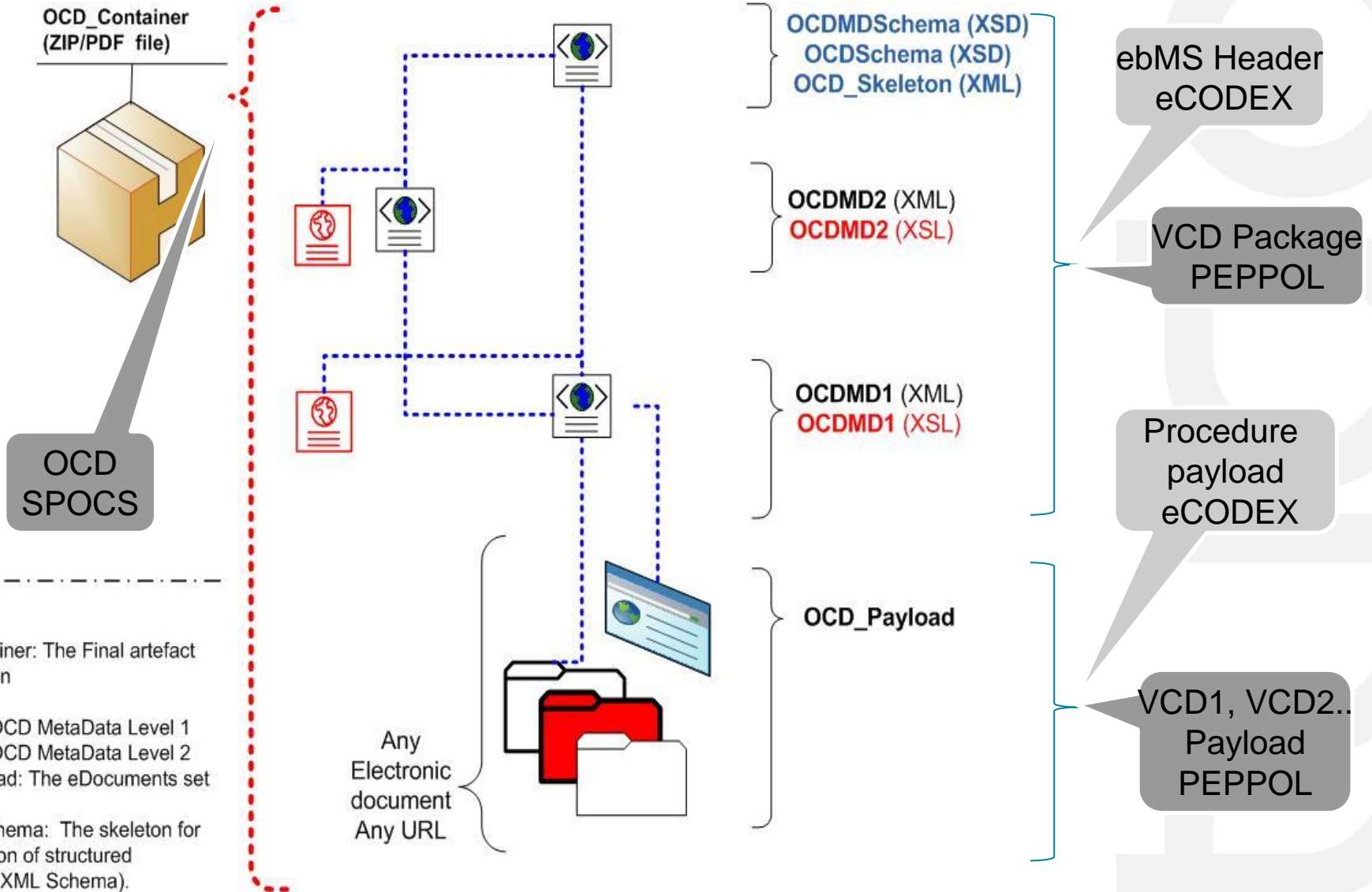


Semantics, Processes and Documents

- eDocuments (OCD, VCD, HL7 ...)
- Terminologies
- Ontologies
- Semantic mapping services
- Validation services
- Semantic enrichment services



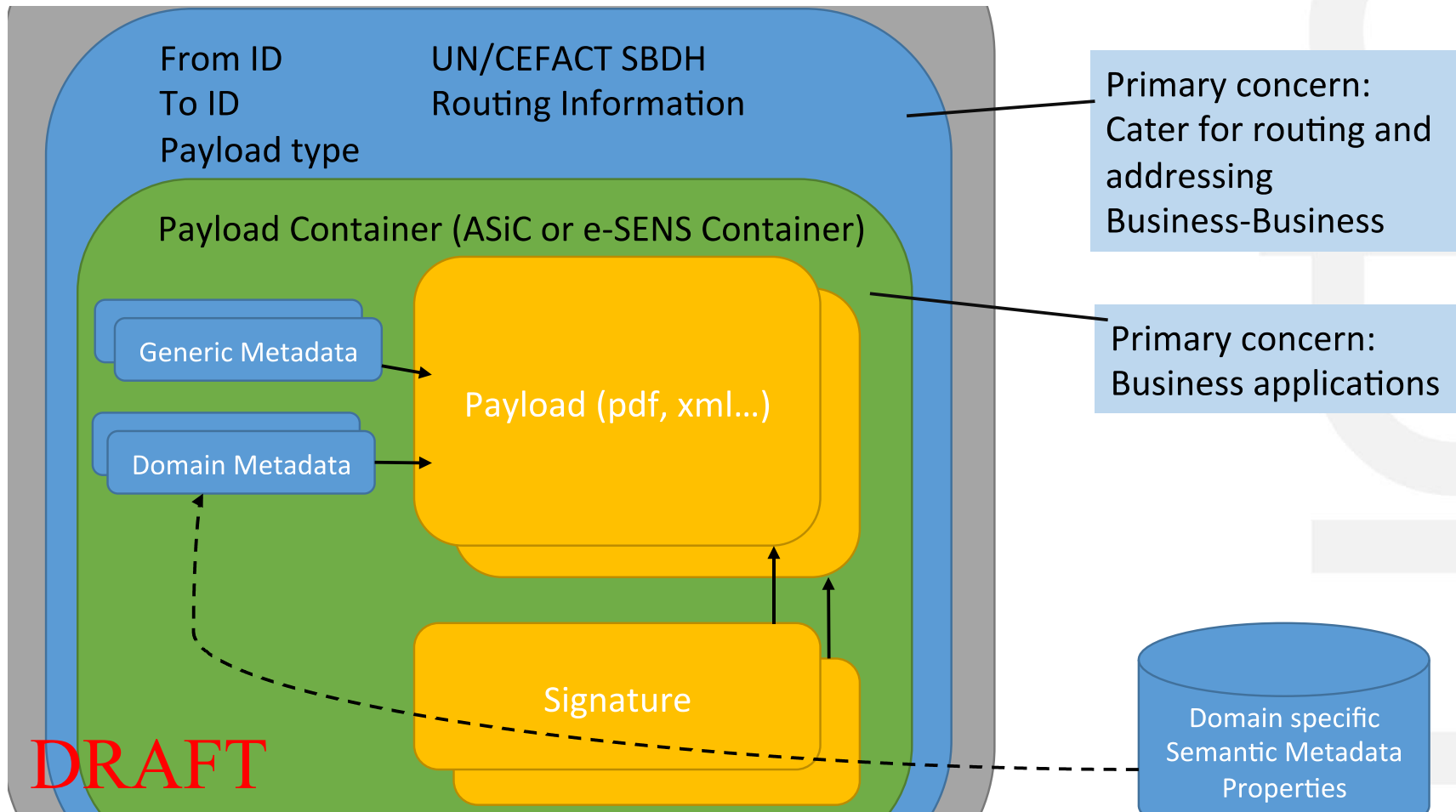
HBB: eDocument Architecture



Legend:

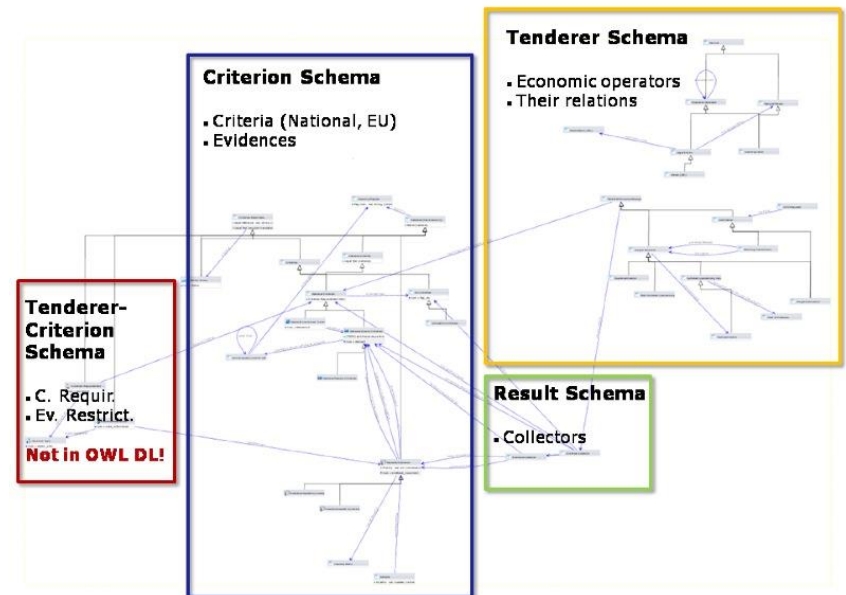
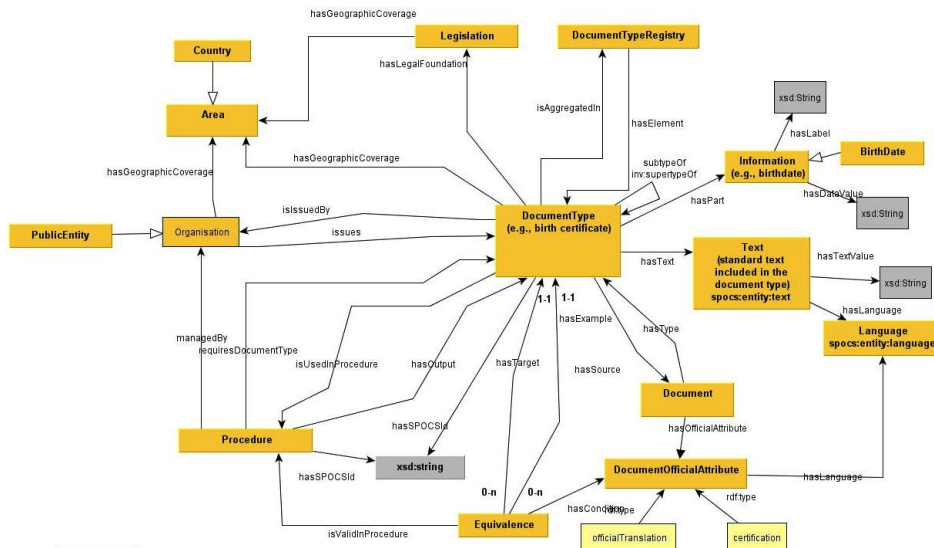
- OCD_Container: The Final artefact on production
- OCDMD1: OCD MetaData Level 1
- OCDMD2: OCD MetaData Level 2
- OCD_Payload: The eDocuments set
- OCDMDSchema: The skeleton for the generation of structured documents (XML Schema).

Towards a common eDocument model based on standards



Semantic mapping services

- Knowledge Organisation Systems: Terminology mapping
- Document equivalence mapping, i.e., acceptance as substitute of another document
 - Asymmetric relation
 - In the context of a procedure
 - With or without legal grounding



Ontology mapping

Various levels of documentation

Ontology description vs. Requirement based mapping

Person	core:Person	
	Person	
LegalPerson	Organisation	
NaturalPerson	Person	individual
Procedure		
Document		
DocumentType		
Legislation		
DocumentOfficialAttribute		
Equivalence	exists when a DocumentType is accept	
spocs:entity:text		

Main Bussiness Requirements are classified into GROUPS		
Group Name	Group Id	
Document Description	DOC-DESCR.	Provides a description of documents and associated concepts. Describes a document from an abstract point of view. A Document is the primary target for a document mapping.
Document Type	DOC-TYP	Document types are specific appearances of a document. Document Types relate to a higher level description of a document. Document Types are a means to express equivalence and relations between documents.
Application Procedure	APP-PRO	Describes the application for which the document mapping is required. Includes information about the applicant and the receiver/public authority.
Requirement Description	REQ-DESCR	Requirements describes the criteria or proofs for which a document needs to be provided. A Document may fulfill certain requirements. An application may point to these requirements. Requirements may be stated by an authority before the application. Requirements provide means to execute a mapping between document.
Meta Information	META	Information not related to the business process but required to organize or manage the contents from a meta perspective

Challenges for semantic building blocks

Existing BBs at various levels of maturity

- maturity assessment

Number of implementations

eSens pilots requirements vs. LSP requirements

Need to reuse standards as much as possible

including ISA Core vocabularies

“everyone is special”

Name	Omnifarious Container for e-Documents OCD		
Relationship to ICT Strategies in EC/MS (WP3)	eDocuments is the basis of interoperable cross-border services. Generic document formats holding payload, metadata, and authentication information allow for domain-independent exchange of eDocuments.		
Type	SBB	Generic/Specific	Generic
Architecture Framework / Component Specifications	<p>This building block represents a multilayered container format for the (cross-border) exchange of eDocuments. The so called Omnifarious Container for eDocuments (OCD) consists of a payload layer, a metadata layer and an authentication layer</p> <ul style="list-style-type: none"> The payload layer is able to hold any electronic document (arbitrary formats, signed/unsigned, encrypted/unencrypted, ...). The metadata layer contains metadata about the contained documents as well as the entire container. The (optional) authentication layer guarantees authenticity and integrity for the entire container using an advanced electronic signature. Here, a XAdES or PAdES signature is used - depending on the physical implementation of the container (XAdES for ZIP based container and PAdES for PDF based container). <p>In addition, the building block eDocuments provides software modules to create and verify OCD containers. The verification module supports all signature formats as defined by the European Commission Format Decision 2011/130/EU. In addition, support for national and proprietary signature formats (e.g. Lithuanian ADOC format) is achieved through an external verification services mechanism. The signature verification is performed on following levels:</p> <ul style="list-style-type: none"> On payload level: Verification of payload document signatures (as they are issued by the Member States, i.e. electronic signature, advanced electronic signature and qualified electronic signature) On container level: Verification of the container signature, whereas this signature is used for authentication purposes only. Any legal meaning depends on the document signatures on the payload layer 		
Standards	Containers: PDF (ISO 32000-1) and ZIP Metadata: XML schema; VCD schema from PEPPOL Signatures: ETSI TS 101 903 (XAdES), ETSI TS 101 733 (CAAdES), ETSI TS 102 778 (PAdES)		
Open source	EUPL, all components are open source.		
Relationship and Couplings	<p>To other Generic-/Domain specific BB:</p> <ul style="list-style-type: none"> BB eSignature Standards Framework <p>To lower level Building Blocks/Components:</p>		
Related Artifacts and Solution Building Blocks			
Ownership	SPOCS	LCM	
In Use	Test pilot	Technical Maturity	T3
Business Maturity	B1 TBD with WP5.	Market Maturity	M1 TBD WP3.
Evaluation			

Conclusion: critical issues for semantic building blocks



Use standards including ISA Core vocabularies to support the mapping process

Implementation of various types of BBs in pilots

Semantics in the Connecting Europe Facility Digital service infrastructures with various levels of maturity

<u>Well established DSIs</u>	<u>Europeana</u> Safer Internet
Mature DSI	<u>eIdentification and eSignature</u> <u>eDelivery</u> <u>eInvoicing</u> Open Data
DSIs approaching maturity	Automated translation Cyber security
Broadband	Financial Instruments Technical Assistance