



# Interoperability Solutions for European Public Administrations

an EU perspective

Tools for Improving Efficiency and  
Performance in The Public Sector Seminar—  
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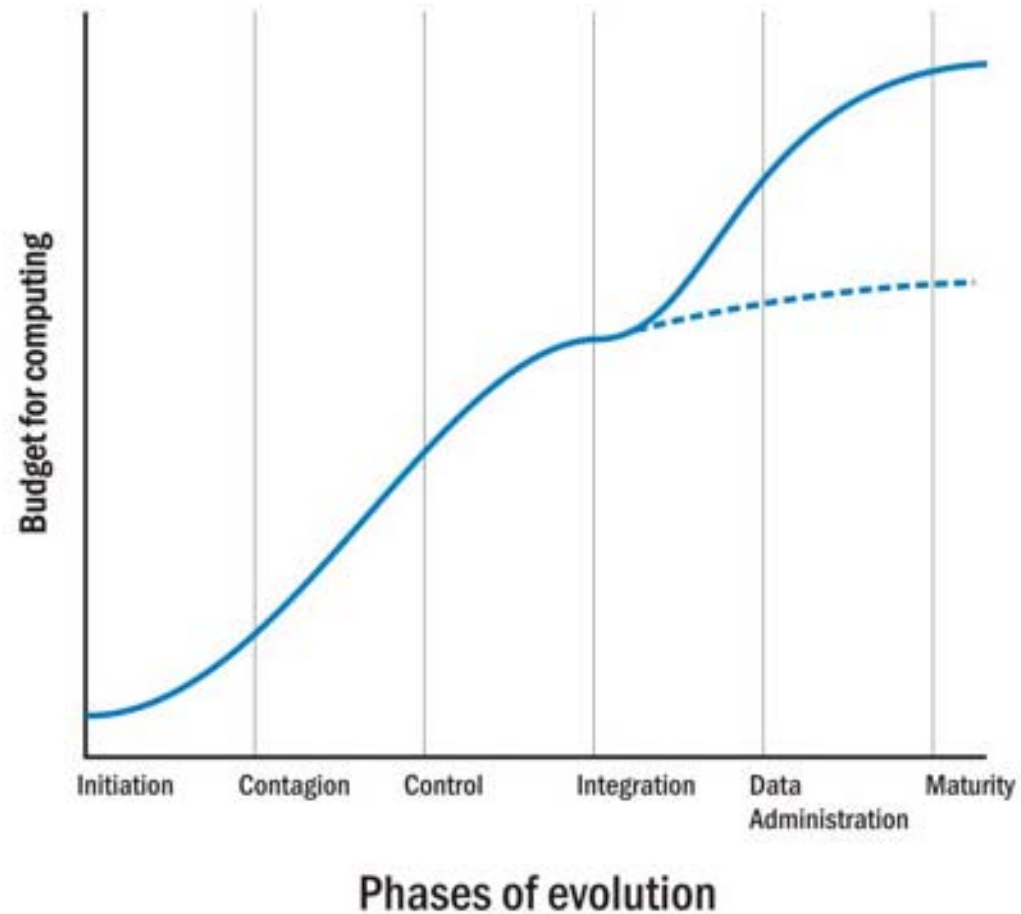
- BACKGROUND
- INTRODUCTION
  - Definitions, needs, ISA decision, EIF,
- IOP AS THE INDEPENDENT VARIABLE
  - Hypotheses, performance model, complexity
- ISA PROGRAMME
  - Objectives, portfolio, scorecard,
- EIA
- KEY MESSAGES
- LINKS
- Q&A



- In the context of European public service delivery, interoperability (IOP) means  
*'the ability of disparate and diverse organisations to interact towards mutually beneficial and agreed common goals, involving the sharing of information and knowledge between the organisations, through the business processes they support, by means of the exchange of data between their respective ICT systems' (\*)*
- "Interoperability is both a prerequisite for and a facilitator of efficient delivery of European public services" (\*)

(\*) Annex 2 COM(2010) 744 final - Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Towards interoperability for European public services

# IOP needs. A Micro lesson learned



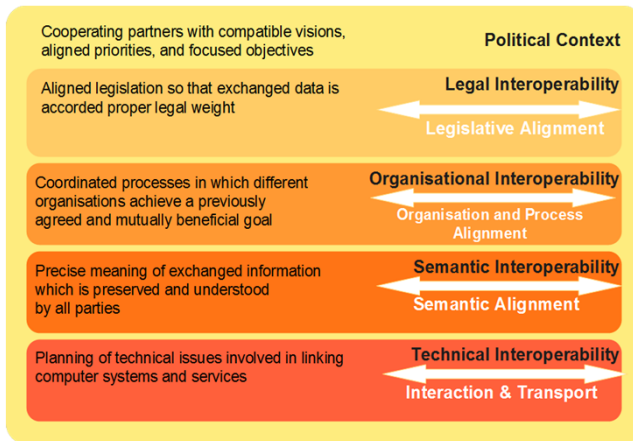
*The six stages of information systems adoption, charted by their relative effect on the typical corporate budget, as presented by Prof. Richard L. Nolan (1979)*



The benefits (\*) are:

- ***improved public service delivery*** to public administrations , citizens and businesses by facilitating the one-stop-shop delivery of public services;
- ***lower costs*** for public administrations, businesses and citizens due to the efficient delivery of public services.

(\*) Annex 2 COM(2010) 744 final - Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Towards interoperability for European public services



Interoperability dimensions

An agreed approach on

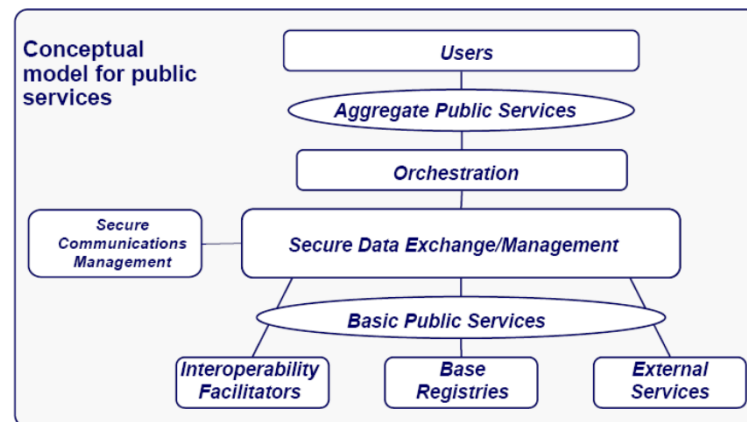
EIF recommendations for organisational interoperability

**Recommendation 15:** Public administrations should document their business processes and agree on how these processes will interact to deliver a European public service.

**Recommendation 16:** Public administrations should clarify their organisational relationships as part of the establishment of a European public service.

**Recommendation 17:** Public administrations working together to provide European public services should agree on change management processes to ensure continuous service delivery.

Underlines principles & recommendations



Conceptual models

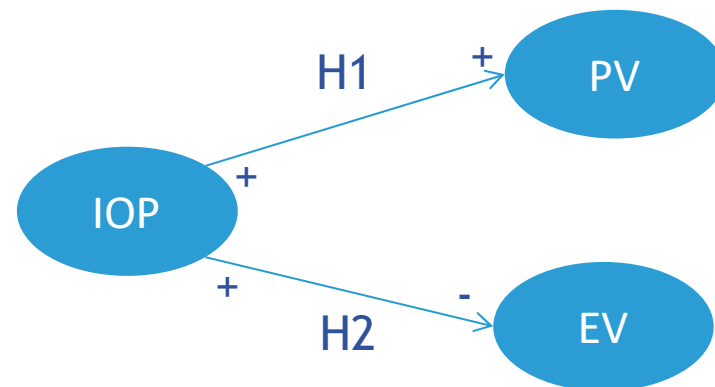
# IOP hypotheses



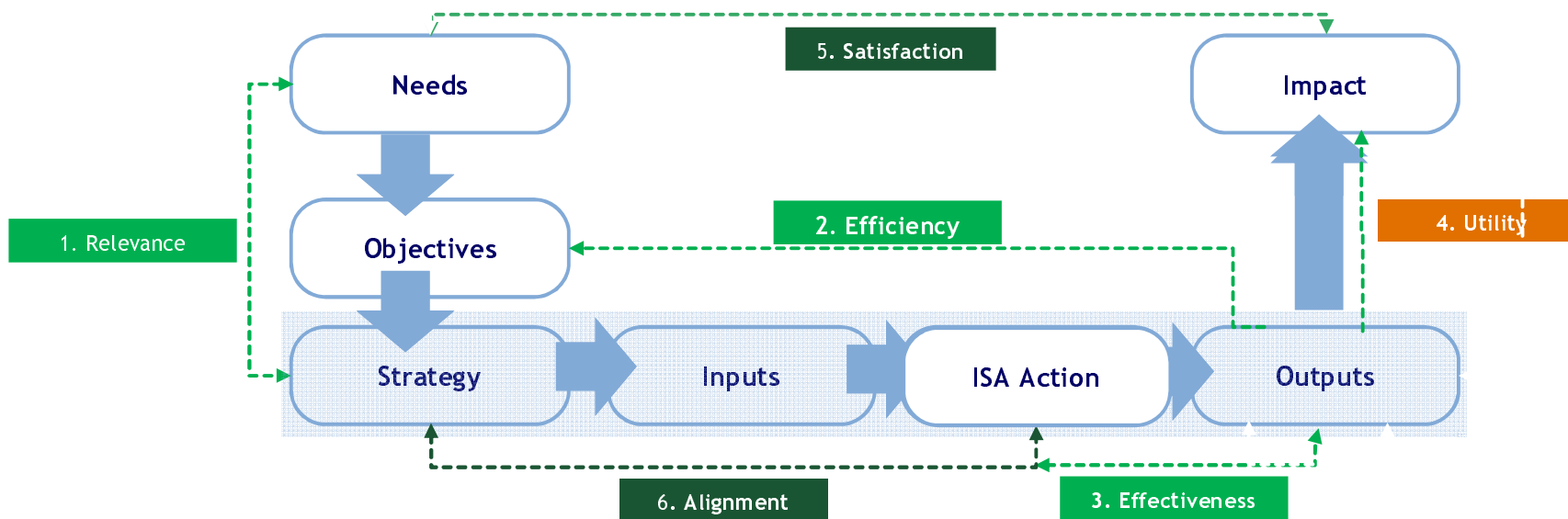
IOP is the independent variable [of performance/economic variables]

H1: “There is a positive correlation between IOP and [performance variable] of *public service delivery* to public administrations citizens and businesses”

H2: “There is a negative correlation between IOP and costs of *public service delivery* for public administrations, businesses and citizens”



# Performance model





# The interoperability puzzle. Complexity



European and national interoperability activities are aligned and complementary

Regularly map and update the current and future EU interoperability environment

Identify missing cross-sector services and solutions and promote their implementation

Reusable solutions are described and their conditions of use are fully established

Disseminate information about currently existing interoperability solutions

Public administrations develop services and solutions with interoperability in mind ('interoperability by design')

Assess and develop the means to facilitate the sharing of components of public services

IT services and solutions support new policies and are included in legislative proposals

Public Administrations have access to base registry data and a catalogue of services

Adopt a 'business case' approach to new PA services and including to cross-sector services

Public services building blocks and common infrastructure services are available

Domain-related specifications are identified and have a sector leader assigned to them

Appropriate governance models are in place covering the life span of the PA services and interoperability solutions

Support development and implementation of cross-sector solutions

Public Sector Information is available in common formats

# ISA Programme objectives



## Key interoperability enablers

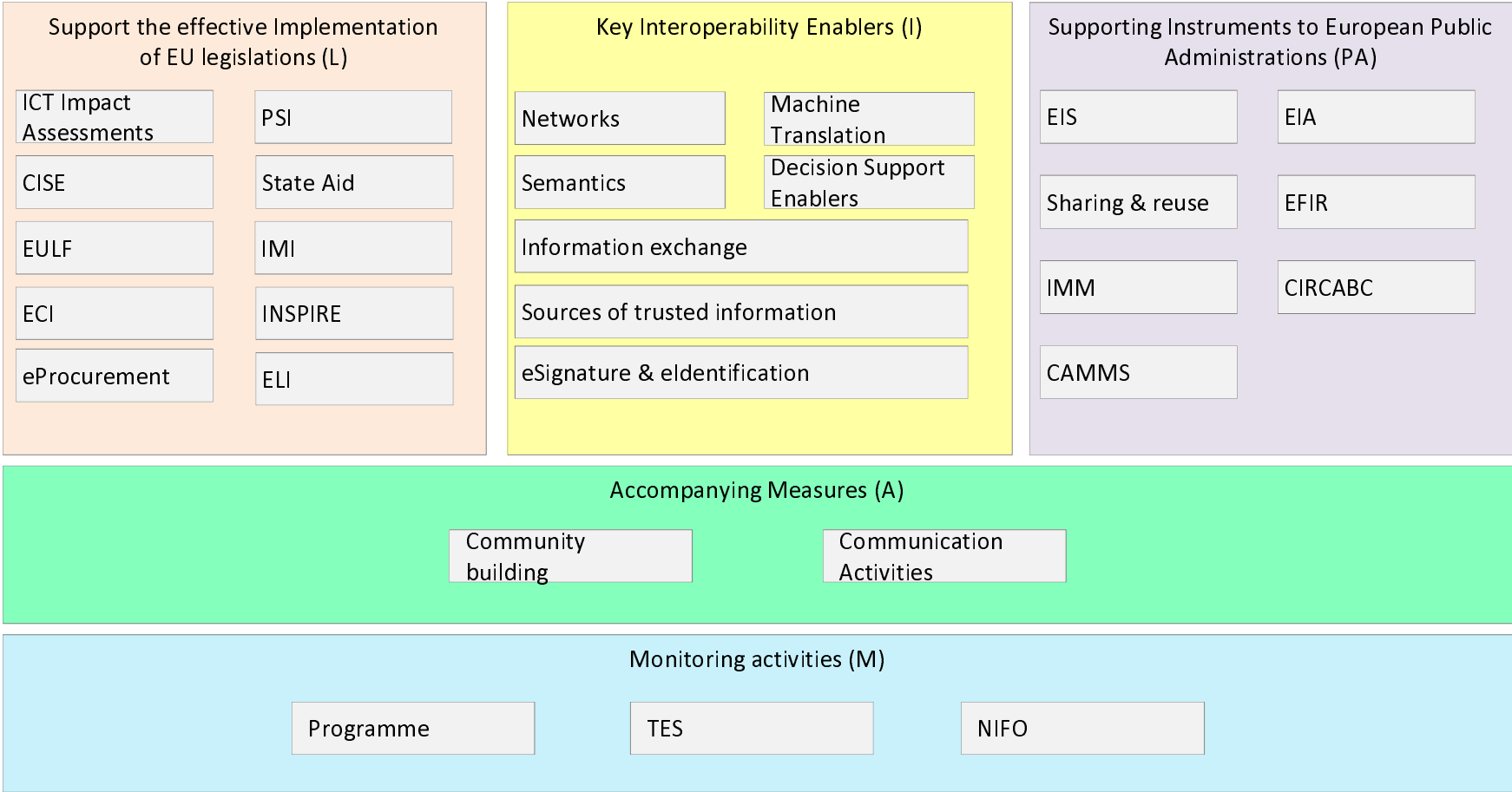
... and effective electronic **cross-border** and **cross-sector** interaction between European public administrations.

## Supporting instruments for European public administrations

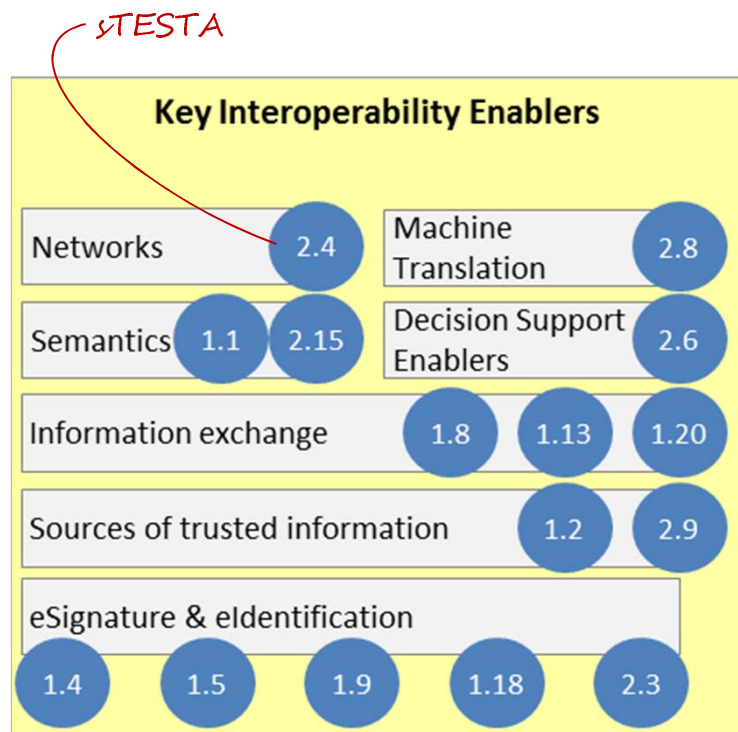
... share and re-use **existing** successful or **new** Interoperability **solutions, common services** and **generic tools**.

## Support the effective implementation of EU legislation

...IT systems allow smooth implementation of **Community policies** and activities.



Source: ISA Legal Decision Art. 1, 2, 3 , Kurt Salmon analysis

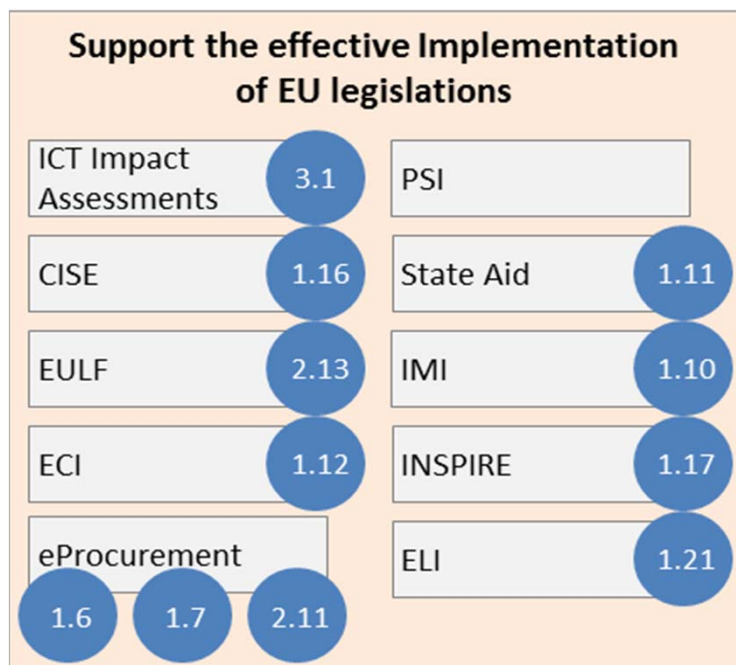


*Core Vocabularies,  
ADMS*

*eTrustEx*

This category includes all actions that aim at developing interoperable solutions that all European public administrations can use to cooperate between each other.

Key enablers for cross-border and cross-sector digital public services include eSignature, eldentification, Information Exchange enablers (e.g. eTrustEX), Machine Translation (e.g. MT@EC), Networks (e.g. sTESTA) and Semantics (e.g. Core Vocabularies, ADMS).



Actions supporting the successful implementation of several EU legislations (e.g. Common Information Sharing Environment, European Citizens' Initiative, INSPIRE Directive) by assessing ICT implications, developing and establishing interoperable solutions with a view to supporting efficient and effective cross-border interoperability in the implementation of these legislations, while reducing administrative burdens and costs.

### Supporting Instruments to European Public Administrations

EIS

5.2

EIA

2.1

Sharing & reuse

4.2.5

EFIR

4.2.4

IMM

4.1.2

CIRCABC

2.5

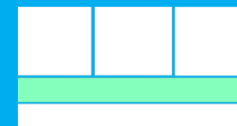
CAMMS

2.2

Consists of different models, frameworks, decision support tools or strategies to be developed, maintained and improved by the programme and further used by European public administrations (e.g. EIRA).



European  
Commission



### Accompanying Measures

Community  
building

4.2.1

4.2.2

Communication  
Activities

4.1.1

#### Monitoring activities

Programme

5.1

TES

2.14

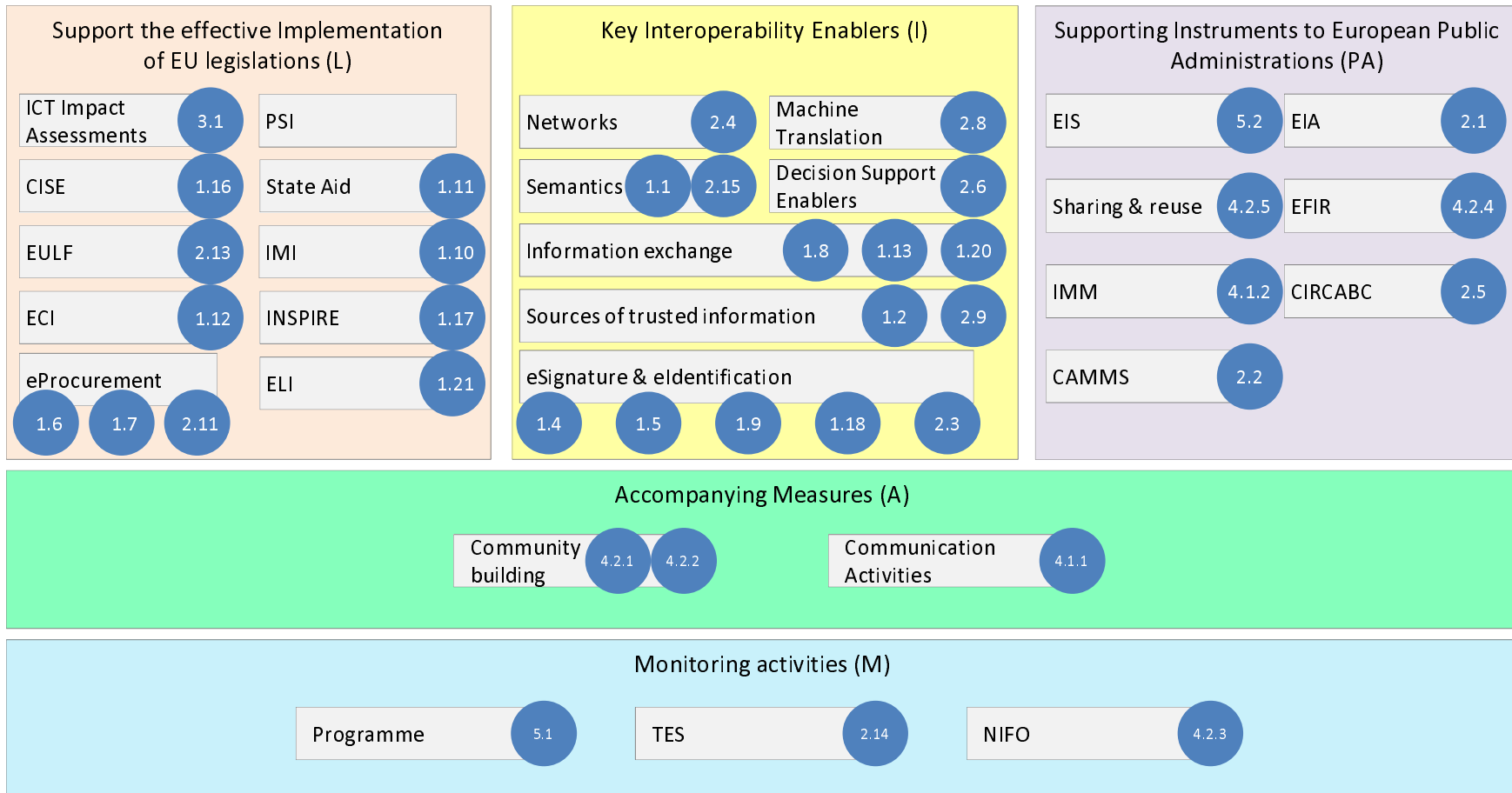
NIFO

4.2.3

Actions aimed at assessing the state-of-play of interoperability (legal, technical, organizational, semantic) at EU level and at national level (e.g. National Interoperability Framework Observatory, Assessment of Trans-European Solutions).



# ISA portfolio



Source: ISA Legal Decision Art. 1, 2, 3 , Kurt Salmon analysis

# Scorecard



ISA Class	Indicator name	Baseline	Milestones					Target 2015
			2010	2011	2012	2013	2014	
L	Number of Commission Services and EU administrations using ePRIOR	0			25	51		58
I	Number of Commission DGs and other European Institutions using eTrustEx	0				8		15
I	Number of eSignature and verification tool downloaded in one month	0			1,680	7,438		10,000
L	Number of national competent authorities using IMI	4,508	5,737	6,802	7,050	7,330		8,000
L	Percentage of organisers using the OCS	0%				100%		100%
I	Use of sTESTA by Commission DGs, Member States, and European Institutions	92		92	92	92		95
L	Number of new EU legislation for which ICT impact has been assessed	0				4		50% of Impact Assessments

*Impact assessment updated guidelines (end-2013) to include ICT impact*

*Screening of 100% of yearly Impact Assessment Roadmaps*

# The European Interoperability Architecture action (EIA)



is in the process of developing a reference architecture for classifying and organising the most salient building blocks, relevant to interoperability, used in the delivery of digital public services.

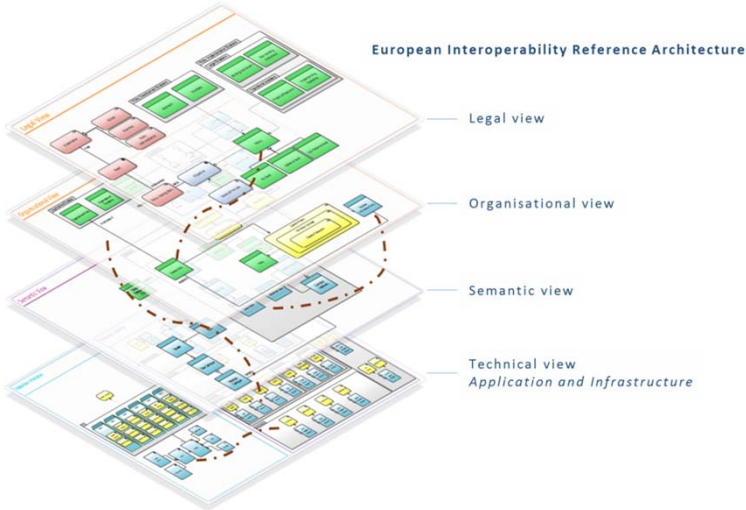
# Main work products of the EIA action



## EIRA

European Interoperability Reference Architecture

A four-view reference architecture for delivering digital public services (across borders and sectors).



## EICart

European Interoperability Cartography



A mapping of solutions to the Building Blocks of the EIRA.

Trans-European										
Trans-European System	Workflow Enablers		Data Exchange Enablers				Security Service			
	Choreography Service	Orchestration Service	Data Transmission Service	Data Transformation Service	Data Translation Service	Data Validation Service	e-Signature Service	Identity Management Service	Access Management Service	Audit Service
e-PRIOR	No	No	Yes	E-PRIOR provides data transformation components (XSLT transformations).	No	E-PRIOR provides data validation services (XSD validation, Schematron validation).	No	No	No	Capability of e-Prior
GENIS IS	No	No	e-TrustEXe-Delivery	No	Multilingual Building Block (manages translation of multilingual application)	No	No	ECAS	No	No
e-Trustex	No	No	Yes	e-Trustex provides data transformation components (XSLT transformations).	No	e-Trustex provides data validation services (XSD validation, Schematron validation).	No	No	No	Capability of e-Trustex
STESTA	No	No	Yes, digital network infrastructure.	No	No	No	No	No	No	No
CEN/CSI	No	No	Yes, digital network infrastructure.	Yes, electronic exchange of structured and unstructured data (OP).	No	No	No	Yes, authenticate users.	Yes, authorize access.	No



# Objectives of the EIA action



Designing

Accelerate the design of systems that support the delivery of interoperable digital public services (across borders and sectors).



Assessing

Provide a reference model for comparing existing architectures in different policy domains and thematic areas, to identify focal points for convergence and reuse.



Communicating  
and Sharing

Help documenting the most salient interoperability elements of complex systems and facilitate the sharing of reusable solutions.



Discovering and  
Reusing

Ease the discovery and reuse of interoperability solutions through the European Interoperability **Cartography** – **EiCart** in **Joinup** website.

# Use cases of the EIA action



EIRA



EICart



Designing

- Design solution architectures
- Design reference architectures



Communicating and Sharing

- Understand the architectural implications of policy or thematic domains (to the extent of the four views of the EIRA)
- Document interoperability solutions



Assessing

- Compare reference architectures
- Compare solution architectures
- Rationalise portfolio
- Manage portfolio



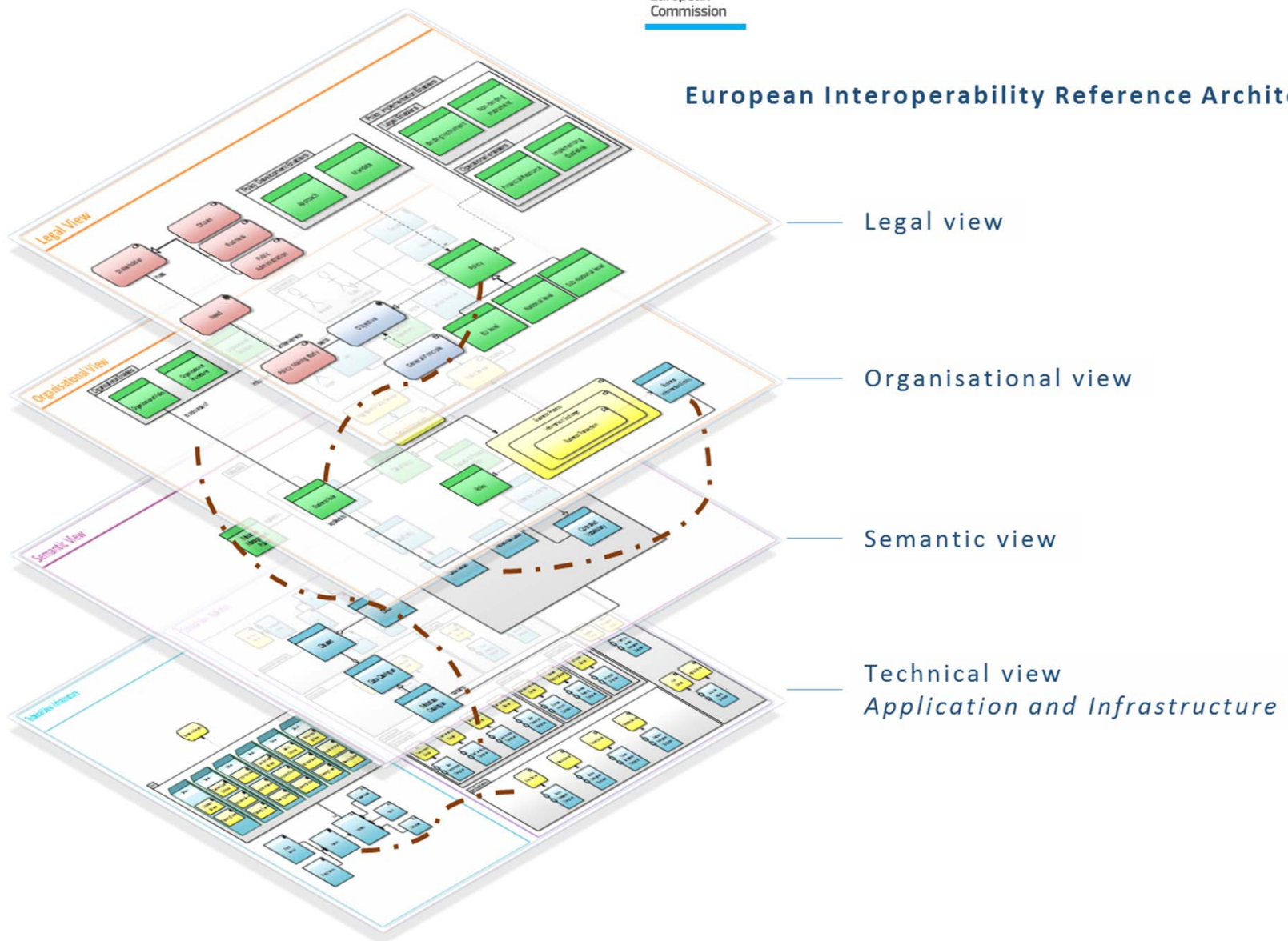
Discovering and Reusing

- Search for interoperability solutions



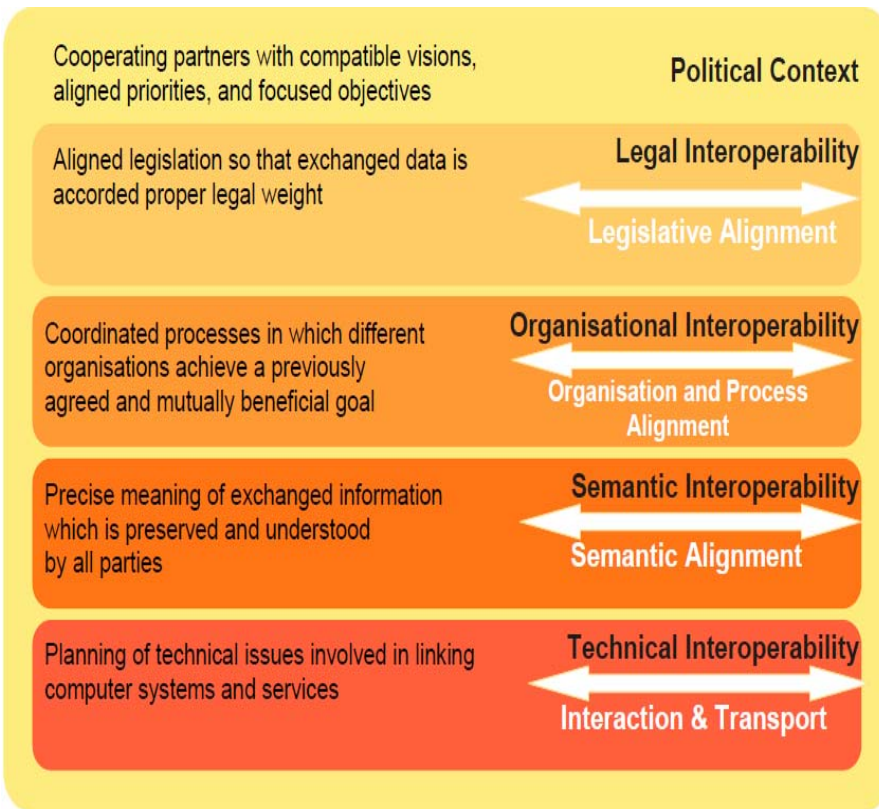
# European Interoperability Reference Architecture

## European Interoperability Reference Architecture

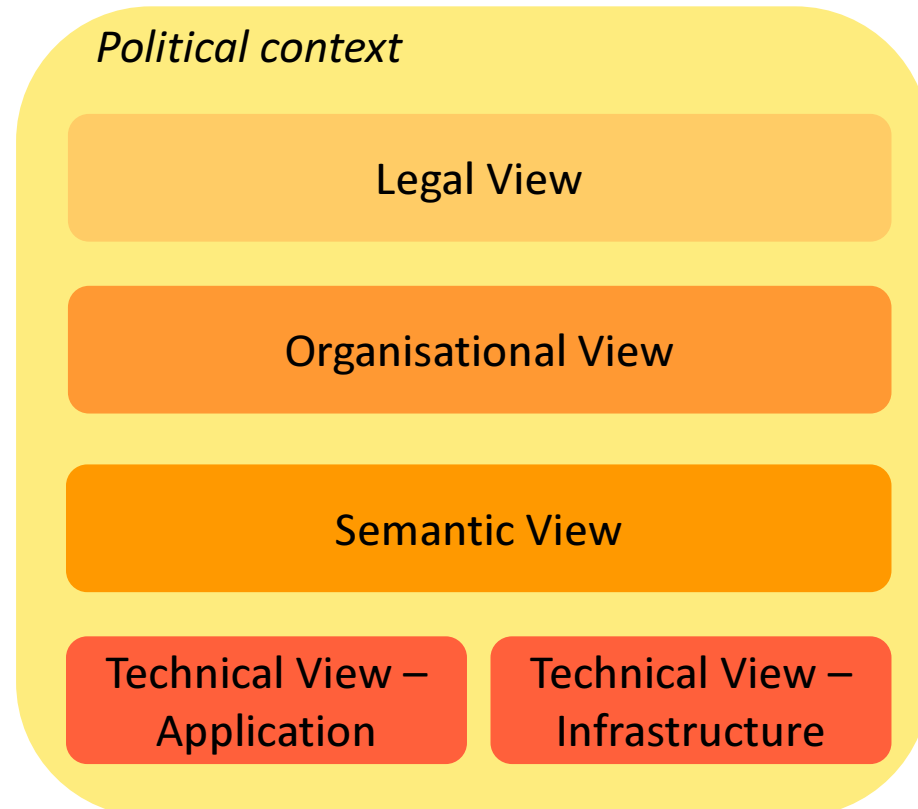




## European Interoperability Framework



## European Interoperability Architecture *European Reference Architecture*

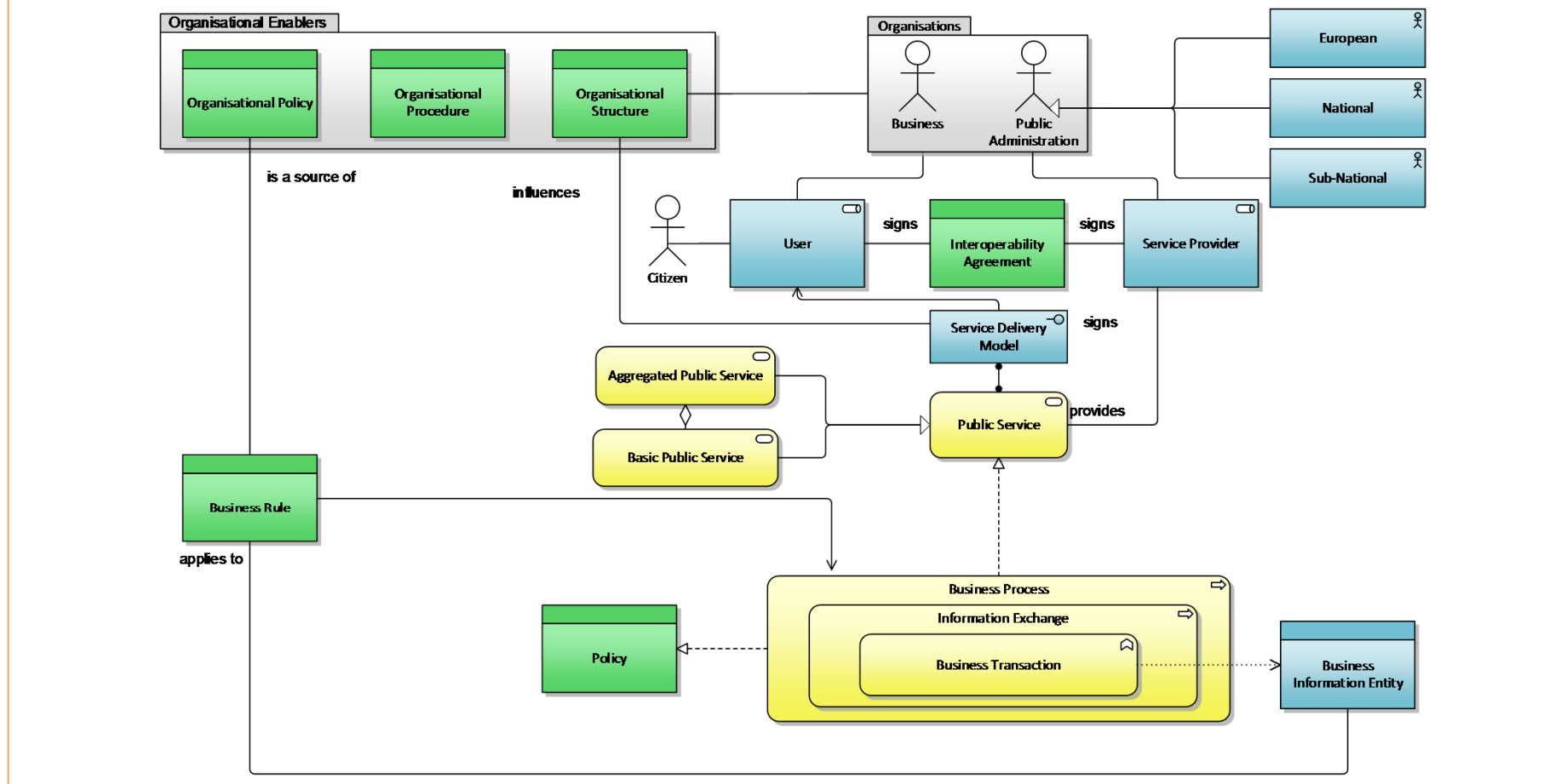




# Generic Organisational View



## Organisational View



# Narrative of the Organisational View



## Generic

*[Organisations] in the role of Service Providers supply [Public Services] to [Public Administrations] and/or [Businesses] and/or [Citizens] in the role of Users according to a [Service Delivery Model], with a defined [sector scope] and [geographic scope]. The delivery of these services is realised through [Business Processes] containing [Business Collaborations] which enclose [Business Transactions] of defined [Business Information Entities]. All of these are subject to [Business Rules] originating from [Organisational Policies] which echo [Organisational Structures] of the [Organisations] involved.*

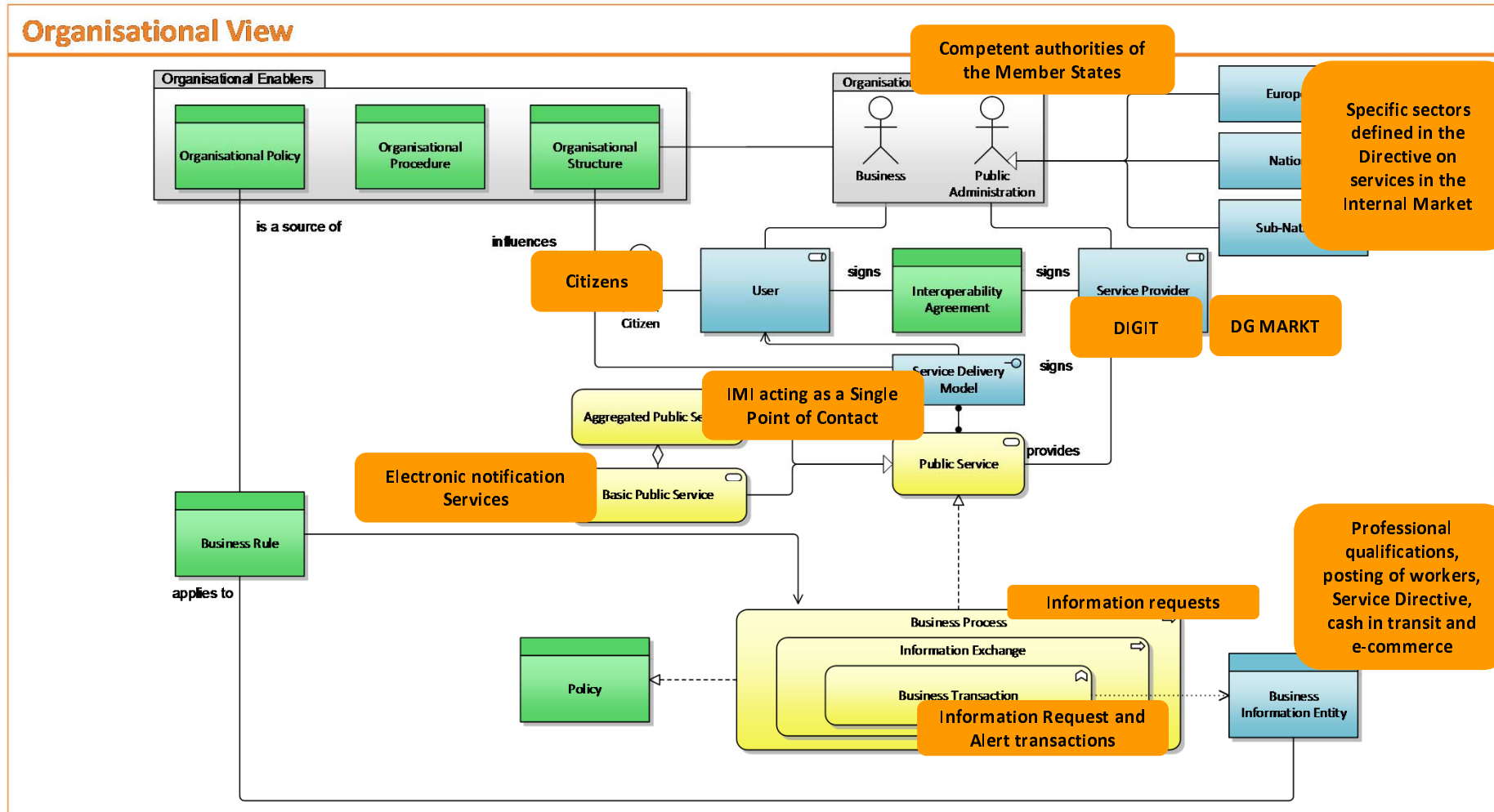
## IMI

*[DIGIT is the system supplier and DG MARKT the system owner of IMI, both play] the role of Service Provider supplying [electronic notifications services] to the [competent authorities of the Member States] and [citizens] in the role of Users, according to a [Single Point of Contact model]. [Competent authorities] belong to [specific sectors defined in the Directive on services in the Internal Market] and to [every geographic location]. The delivery of this service is realised through [information exchanges] which enclose [Requests or Alerts] of defined [Professional Qualifications, posting of Workers, Service Directive, Cash in transit and e-commerce].*

# Organisational View of IMI

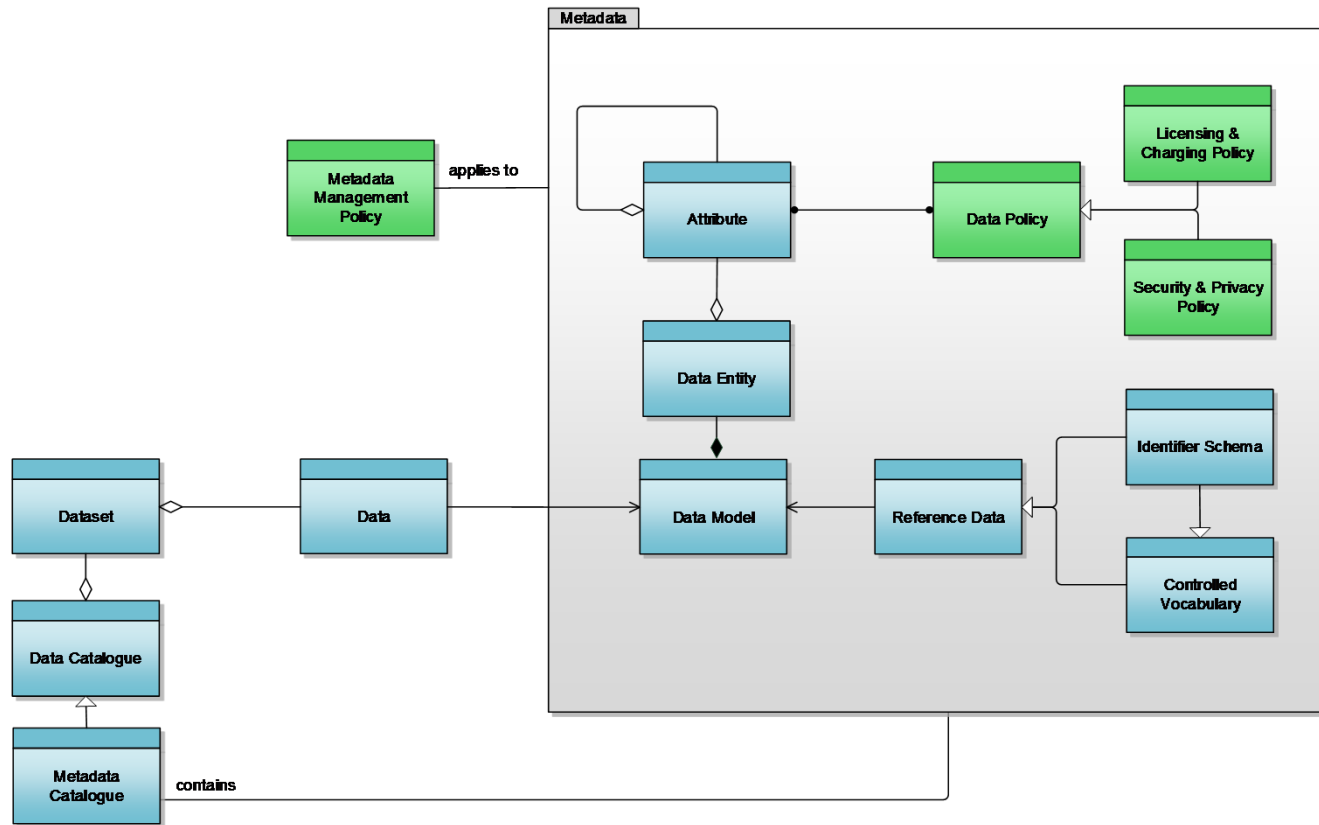


## Organisational View





## Semantic View



## Narrative of the Semantic View



### Generic

*The [Data Entities] are described according to the [Data Model] and [Reference Data]. These are managed according to the [Metadata Management Policy]. This data is classified according to the [Security & Privacy Policy], in terms of Confidentiality the data is [Level] in terms of Integrity and Availability the data is [Level]. A [Licensing & Charging Policy] is applied/ not applied. The data is published/ not published in a [Data Catalogue] and its metadata is available/ not available in a [Metadata Catalogue].*

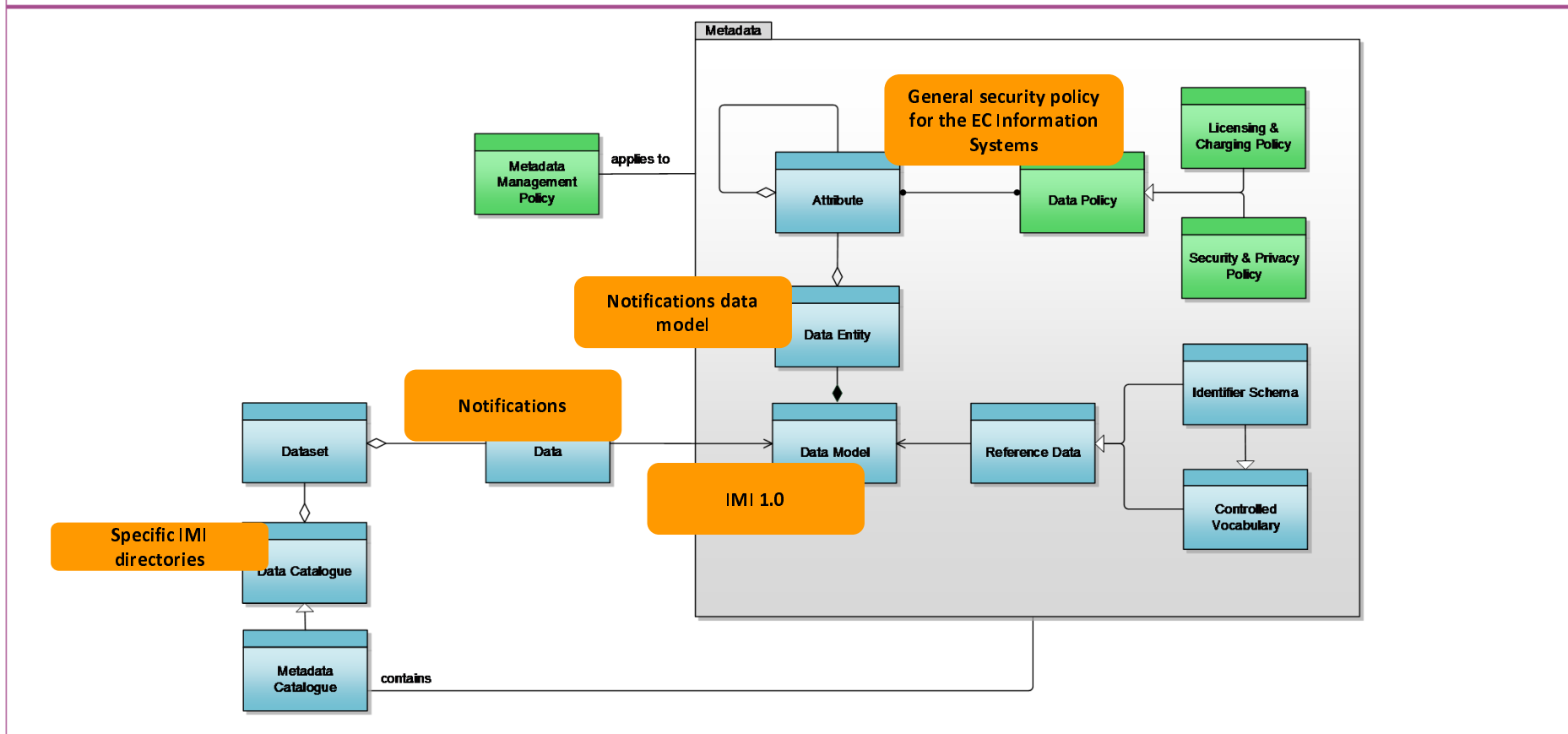
### IMI

*The [Notifications] are described according to the [IMI 1.0]. This data is classified according to the [general security policy for the EC Information Systems]. The data are published in [specific IMI directories] and the metadata of its services are formalised according to [WSDLs].*

# Semantic View of IMI



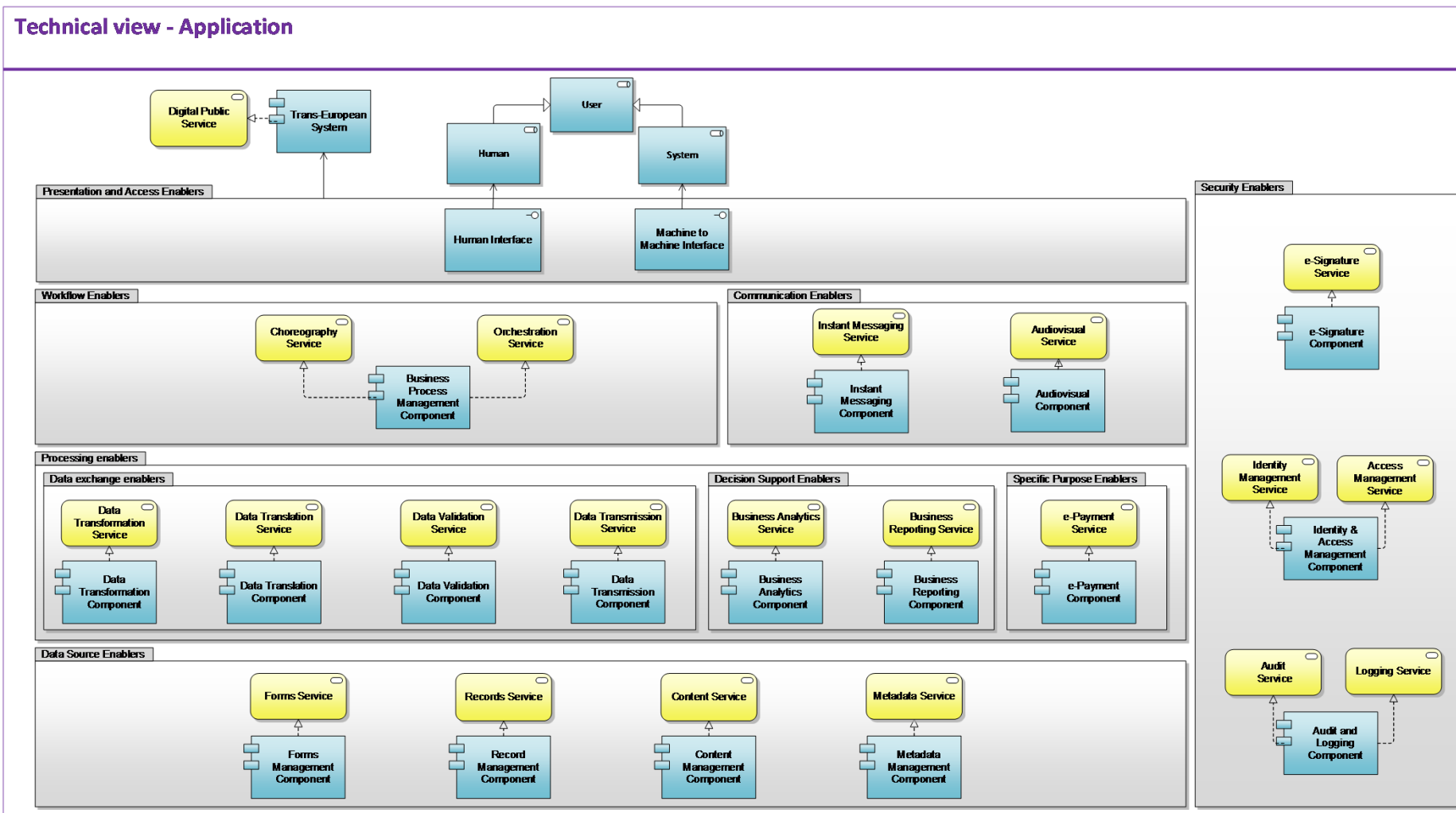
## Semantic View





# Generic Technical View – Application

## Technical view - Application



# Narrative of the Technical View - Application



## Generic

*[Trans-European Systems (TES)] implement [Digital Public Services]. They can be accessed by [Users], which can be [humans] or [systems], through [Presentation and Access enablers]. TES provide access to data through [data source enablers]. Data can be exchanged cross-border and cross-sector with the support of [data exchange enablers], can be processed to make informed decisions with the help of [decision support enablers] or can be used in custom ways, for which [specific purposes enablers] are built. TES can execute complex business processes through [workflow enablers] and can support interaction among humans through [communication enablers]. Access control and data security are managed through the services offered by [security enablers].*

## IMI

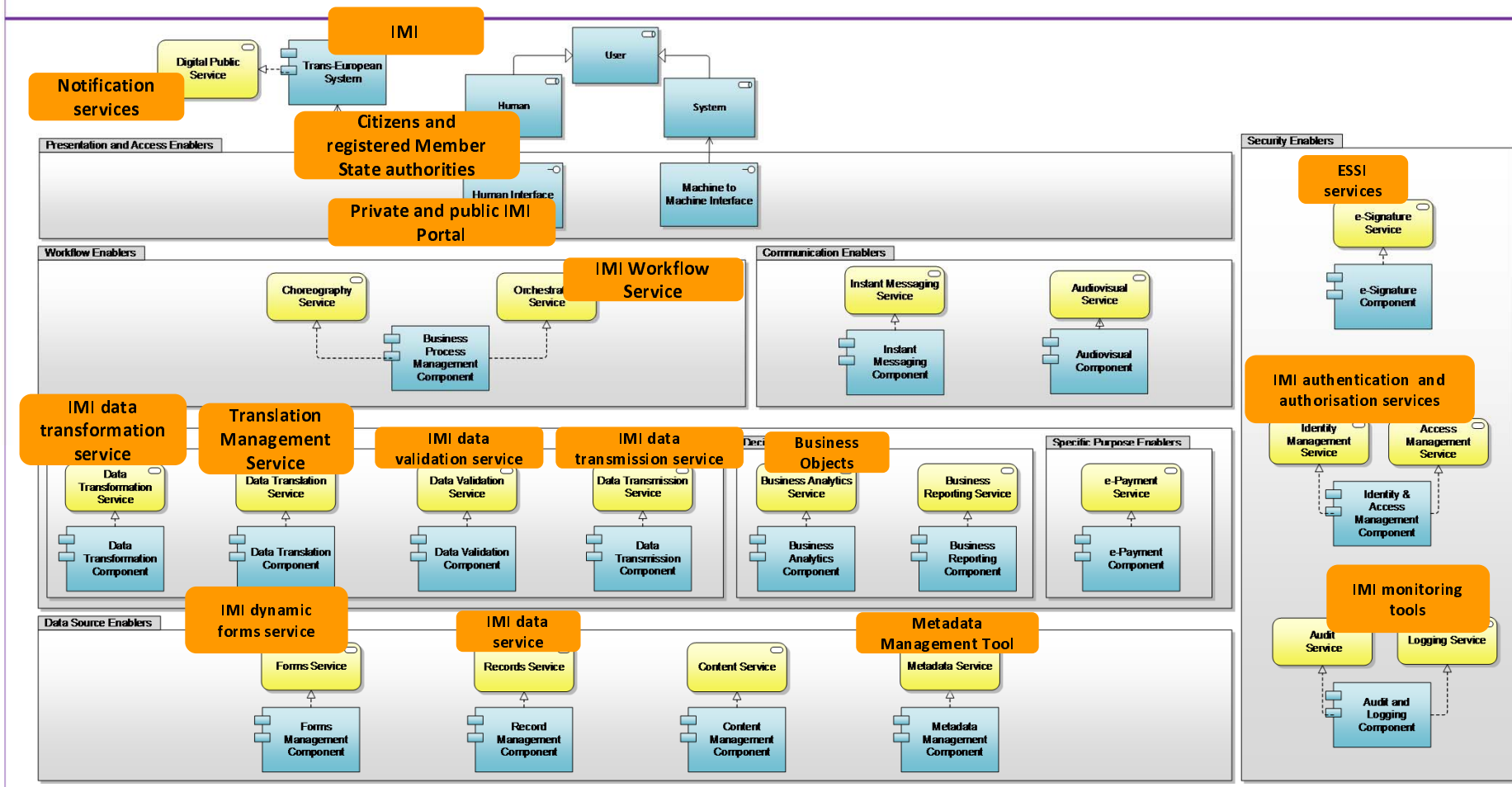
*[IMI] implements [notification services], and can be accessed by [citizens and Member State authorities via a web Portal]. IMI provides access to data through [IMI data service and a Metadata Management Tool]. Data can be exchanged across-border with the support of [IMI data validation, transformation, translation and workflow services]. IMI can send out the notifications and data with the support of [IMI data transmission services]. IMI supports the dynamic creation of forms through the [IMI dynamic forms service]. IMI facilitates internal logging and log processing through the [IMI monitoring tools]. E-Signature is supported through the use of [ESSI services]. Access control is managed through the [IMI authentication and authorisation services].*



# Technical View of IMI – Application



## Technical view - Application



## Scenario 1 – Context



**FICTIONAL**

Marco Rinaldi is an Enterprise Architect, working in the social security sector for a public administration in Italy. In order to be compliant with a new EU directive, his organisation has the mandate to build a new information system that enables automatic exchange of social security information with the European Commission and other public administrations in Europe.

# Scenario 1 – Use cases



## CHALLENGE

How to ensure interoperability between a national system and the systems of the EC and of other MSs.

## EIA in PRACTICE

Marco can use the **technical view - application** of the **EIRA** to find the building blocks that are relevant for interoperable message exchange.

Design solution architecture

Marco can use the **EICart** to find reusable solutions for the building blocks he needs.

Search for interoperability solutions

## KEY BENEFITS

- Strong focus on cross-border interoperability from the outset
- Faster access to reusable solutions
- Alignment to a common reference model

## Scenario 2 – Context



**FICTIONAL**

Christine Dupont is working for DG AGRI, European Commission. Due to a change in the business processes supporting the implementation of rural development policies, her DG has launched an assessment of the current application landscape to evaluate the impact of the change. The DG has found out that there is an overlap between the functionalities of different systems, and the cost of implementing a change are significant. Christine has been asked to evaluate a strategy for rationalising application landscape and implement the new business process.

## Scenario 2 – Use cases



### PROBLEM

How to rationalise the application landscape to support efficient business process implementation.

### EIA in PRACTICE

Christine can use the **organisational view** of the **EIRA** to organise the key business processes and related business rules, and explain this relationship to stakeholders.

Understand the architectural implications of a policy

Christine can use the **EIRA** to understand her DG's architecture and identify missing building blocks.

Compare reference architectures

Christine can map the current applications to the EIRA building blocks, and plan which ones have to be dismissed, merged or replaced.

Rationalise portfolio

### KEY BENEFITS

- Structured communication with stakeholders
- Accelerated assessment of architectures
- Simplified decision-making process for application portfolio rationalisation



- Interoperability is a key enabler for the provision of efficient and effective public services
- Interoperability is a multidimensional construct (not just technology)
- Interoperability is complex subject
- ISA programme focus in the Interoperability value chain is on value creation and delivery
- ISA programme supports the modernization of public administrations



- ISA programme
  - <http://ec.europa.eu/isa>
- JoinUp
  - <https://joinup.ec.europa.eu/>



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