



SEPTEMBER  
2024

# EU Interoperability. Challenges

*Enterprise Architecture vs. Solution Architecture areas of concern*

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**EUROPEAN COMMISSION DIGIT B2**

Directorate-General for Informatics (DIGIT)

Dr. Raul M. Abril

Interoperability Architecture Solutions chief

**interoperable**  
europe



# AGENDA

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**1. EU IOP Portfolio of solutions (partial) 10'**

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**2. EA vs. SA. A personal view 35'**

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**3. Q& A 15'**

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# 1. EU IOP Portfolio of solutions (partial)

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# EU Portfolio of solutions (partial). Use cases

## Persona



CIO

The **CIO of a Member State** (e.g. Head of MS's Digital Agency), who needs to plan and optimise the investment in e-Government for the following years, to be distributed in different policy areas, while focusing on the modernisation of the MS's digital public services.



Port Mger

The **public administrations' services Portfolio Manager**, working on planning the long-term modernisation programmes of specific digital public services for citizens and businesses or of infrastructure services, who needs to have guidance in identifying the priority actions and their sequence.



BA/EA/SA

The **business analyst, enterprise or solution architect** working in the implementation of digital public services in a specific policy domain or in cross-domain infrastructure services



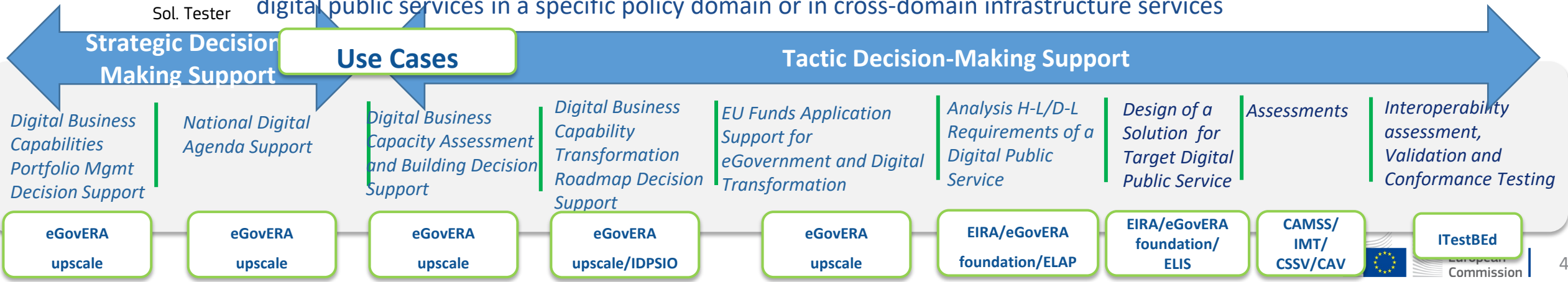
ICT Procurer

The **ICT procurer** working in the identification and assessment of standards and specifications in a public procurement process



Sol. Tester

The **solution tester** working in the validation/ conformance testing of a model/solution implementation of digital public services in a specific policy domain or in cross-domain infrastructure services



# EU Portfolio of solutions (partial). Support for the DPS lifecycle. Positioning

SPECIFICATIONS

Quality Assurance  
(ex-ante)

ELAP, ELIS, EIRA, eGovERA  
foundation, CSSV, CAV,  
**FUTURE IA guidelines**  
**supporting IEA art. 3**

Quality Control  
(post-hoc)

TOOLS

**SW Tools:** CarTool, eGovERA  
upscale (DBC Building and Assessment Decision support, DBC  
Portfolio Management Decision Support, DBC Transformation Roadmap  
decision support)

**Survey Tools:** CAMSS,  
eGovERA upscale, IDPSIO  
**Solutions:** CAMSS  
assessments,

**SW Tools:** ITestBed (EIRA  
Validator)  
**Survey Tools:** Interoperability  
Maturity Tools (IMAPS, SIQAT,  
GIQAT)

# EU Portfolio of solutions (partial). Challenges

Operationalize Interoperable Europe Act

Simplification

Virtual agent (eGovERABot)

Intervention logic supporting public policy implementations (VAT, ViDA) to all EU policies

Support to new needs (data spaces, value and uncertainty base analysis/design)



## 2. EA vs. SA. A personal view

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**The comments/reflexions/etc shared  
in this section are my personal  
opinions and in any way are endorsed  
by the EU**



# Alignment: The big EA idea evolution

ITC alignment to Business Strategy

Transformation roadmap

Requirements based and interactive

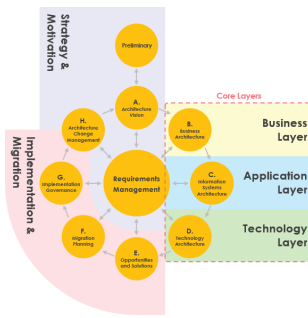
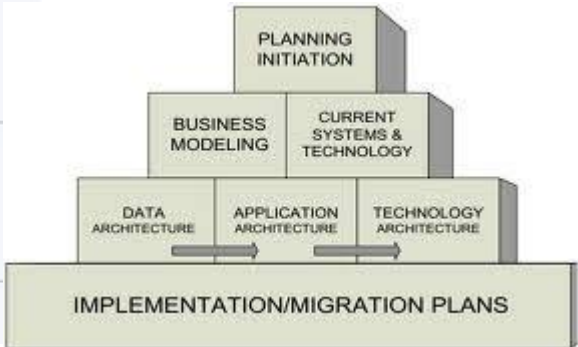
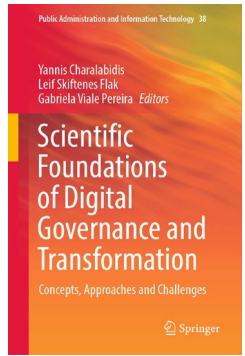
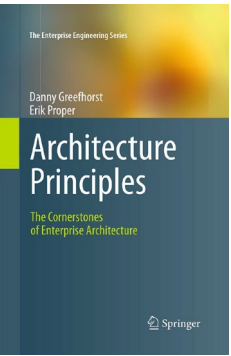
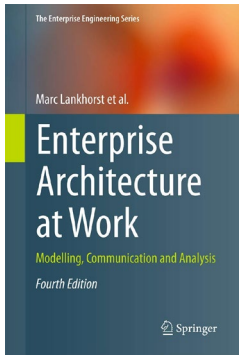
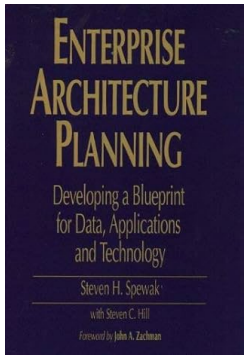
Requirements based and interactive

Context Contingency/ Focus

← Traditional EAF

Focus AFs →

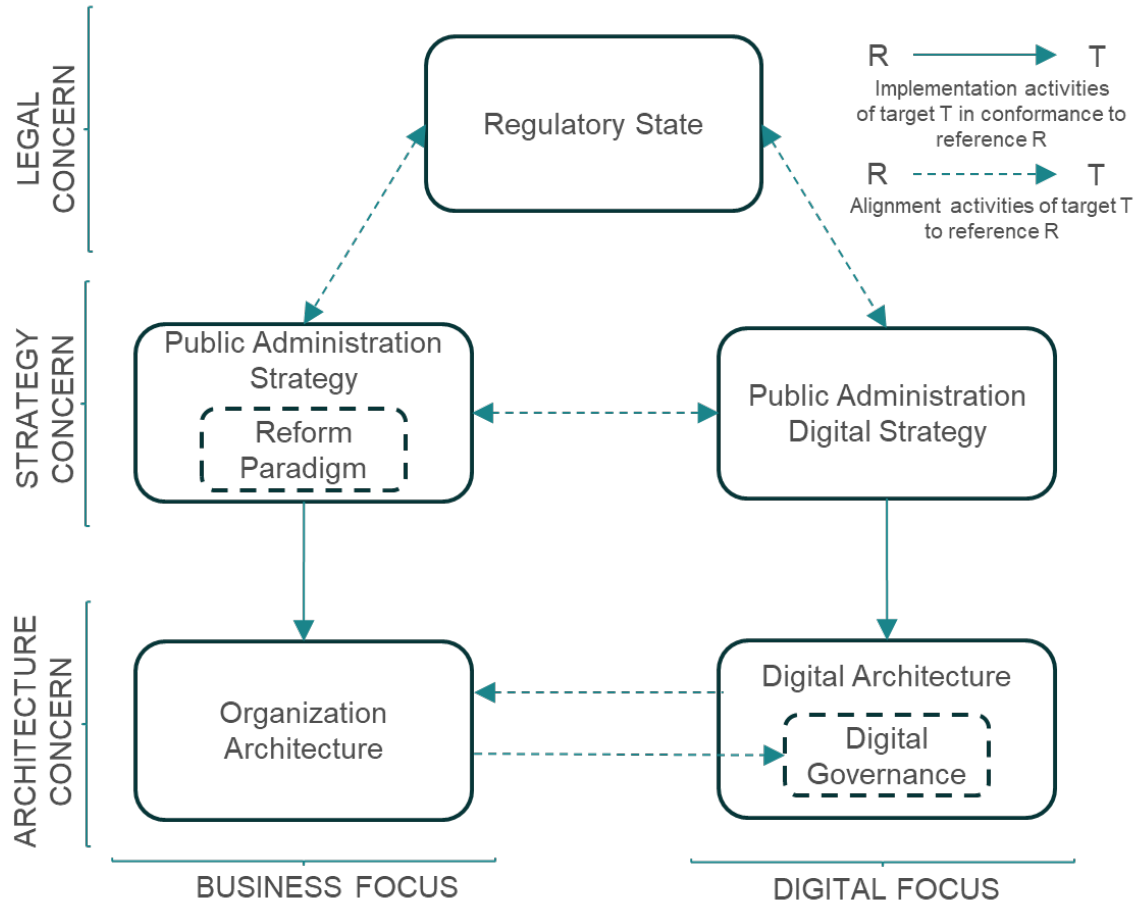
	DATA DESCRIPTION Entity Relation	PROCESS DESCRIPTION Process Input/Output	NETWORK DESCRIPTION Node Line
SCOPE DESCRIPTION BALLPARK VIEW	List of entities important to the business 	List of processes the business performs 	List of locations in which the business operates 
MODEL OF THE BUSINESS (OWNER'S VIEW)	e.g. Entity relationship diagram 	e.g. Functional flow diagram 	e.g. Logistic network 
MODEL OF THE INFORMATION SYSTEM (DESIGNER'S VIEW)	e.g. Data model 	e.g. Data flow diagram 	e.g. Distributed systems architecture 
TECHNOLOGY MODEL (BUILDER'S MODEL)	e.g. Data design 	e.g. Structure chart 	e.g. System architecture 
DETAILED DESCRIPTION (OUT-OF-CONTEXT VIEW)	e.g. Data base description 	e.g. Program 	e.g. Network architecture 
ACTUAL SYSTEM	Data	Function	Communications



REGULATORY STATE	DETAILED LEVEL	THE INTEGRATED SCENARIO	THE FEDERATED SCENARIO
HIGH-LEVEL	DETAILED LEVEL	DPS IMPLEMENTATION ORIENTATION - FOCUS ON SEMANTIC INTEROPERABILITY (i.e. data architectures, base registries)	DPS IMPLEMENTATION ORIENTATION - FOCUS ON TECHNOLOGY INTEROPERABILITY (i.e. interoperability specifications, reusable building blocks, common back-office services, networks)
	DETAILED LEVEL	THE STATECRAFT SCENARIO DPS IMPLEMENTATION ORIENTATION - FOCUS ON ORGANIZATIONAL INTEROPERABILITY (i.e. organizational interoperability agreements, governance structures)	THE SUBSIDIARITY SCENARIO DPS IMPLEMENTATION ORIENTATION - FOCUS ON LEGAL INTEROPERABILITY (i.e. interoperability frameworks, interoperability reference architectures)

Zachman, J. A. (1987). A Framework for Information Systems Architecture. IBM Systems Journal, 26(3).

# EA vs. SA areas of concern



AREA OF CONCERN OF THE ARCHITECTURE FRAMEWORK	Traditional EAF	Business Focus AF	Digital Focus AF (SA)
Legal alignment	✓	✓	✓
Strategy alignment	✓	✓	✓
Organization implementation	✓	✓	
Digital architecture implementation	✓		✓
Architecture alignment	✓	✓	✓ (for digital governance)

# Traditional EAF. Challenges

## CHALLENGES

Business strategy is a requirement

Process orientation (BPMN) → status quo

Holistic → Investment, Value & Time to market

Lack of specialization for Public Administrations

Professional entry barriers are based in best practices ([EABoK](#))

Unit of analysis is not unique (organization for the business and the system for the digital)

Implementation orientation: Normative, top-down

Architecture Principles: Not explicit/neglected

## The hopes

Focus (aka PAAF)

Capabilities orientation

Focus (aka PAAF)

Focus (aka PAAF, eGovERA)

Scientific foundations

Focus (aka PAAF, eGovERA)

Implementation orientation: Context contingent/dynamic

Architecture Principles: Explicit

The background features a complex, symmetrical pattern of glowing green and blue lines and particles. The lines form a central, diamond-like shape that tapers towards the left and right edges. The particles are scattered throughout, creating a sense of depth and movement. The overall color palette is dominated by dark blue, with vibrant green and blue highlights.

**Thank you**



# interoperable europe

innovation ∞ govtech ∞ community

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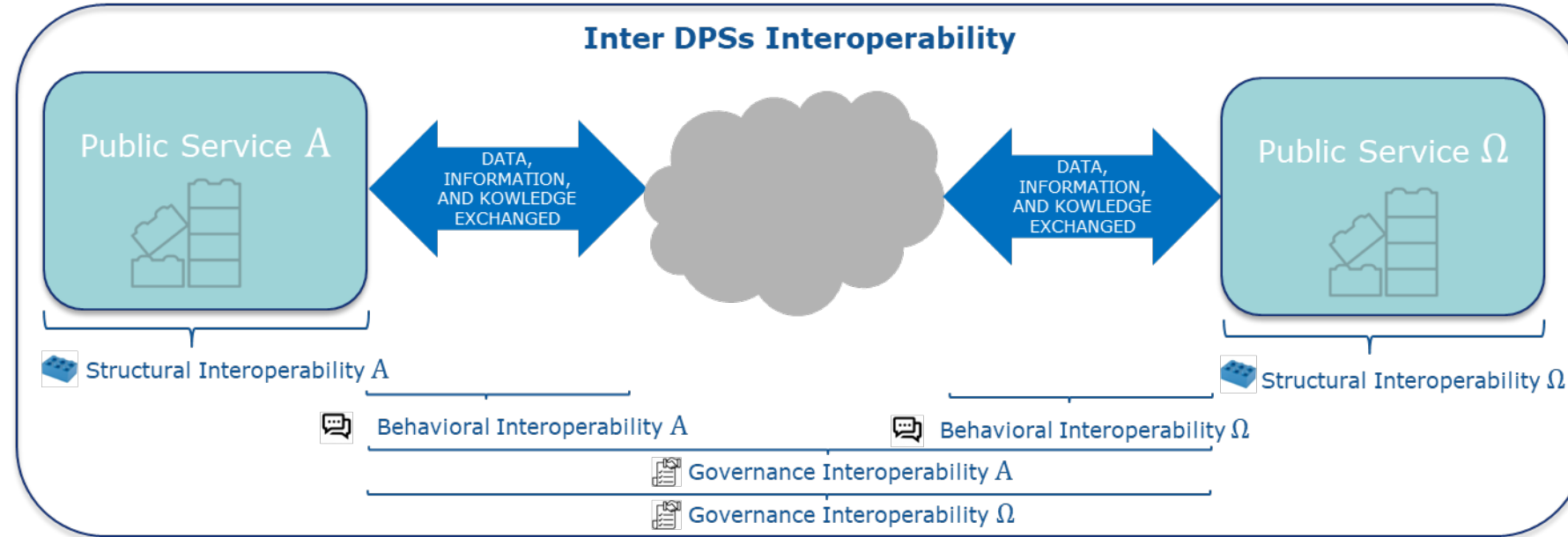


[DIGIT-INTEROPERABILITY@ec.europa.eu](mailto:DIGIT-INTEROPERABILITY@ec.europa.eu)

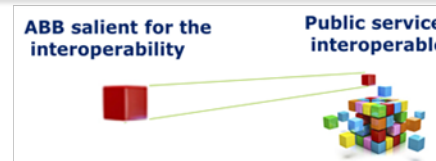


<https://joinup.ec.europa.eu/collection/interoperable-europe/interoperable-europe>

# DPS interoperability dimensions



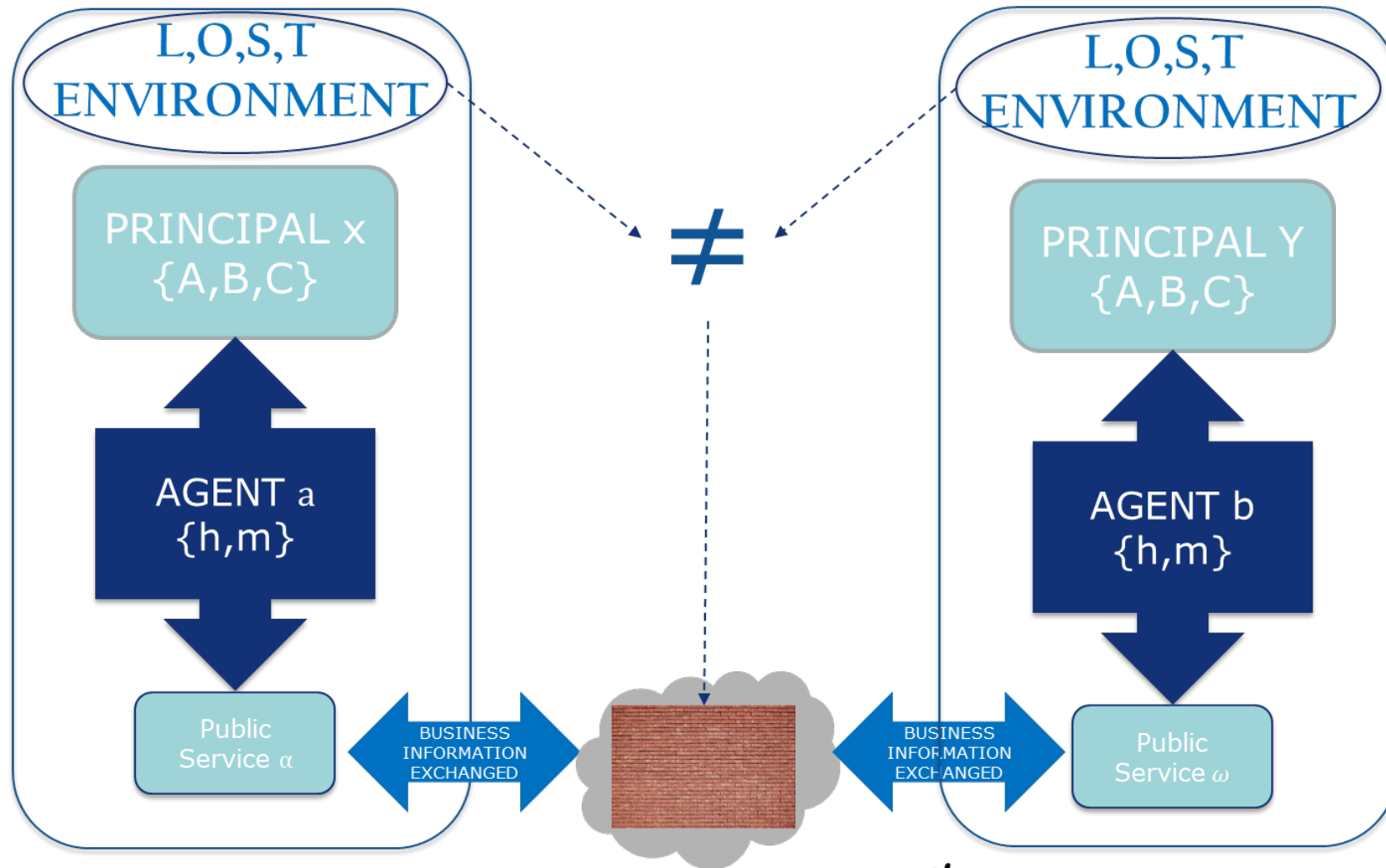
**Structural Interoperability: Interoperability by identification, analysis, design, and implementation of components  $n! = n * (n - 1)!$**



**Behavioral Interoperability: Information exchange**

**Governance Interoperability: Collaboration with other public services**

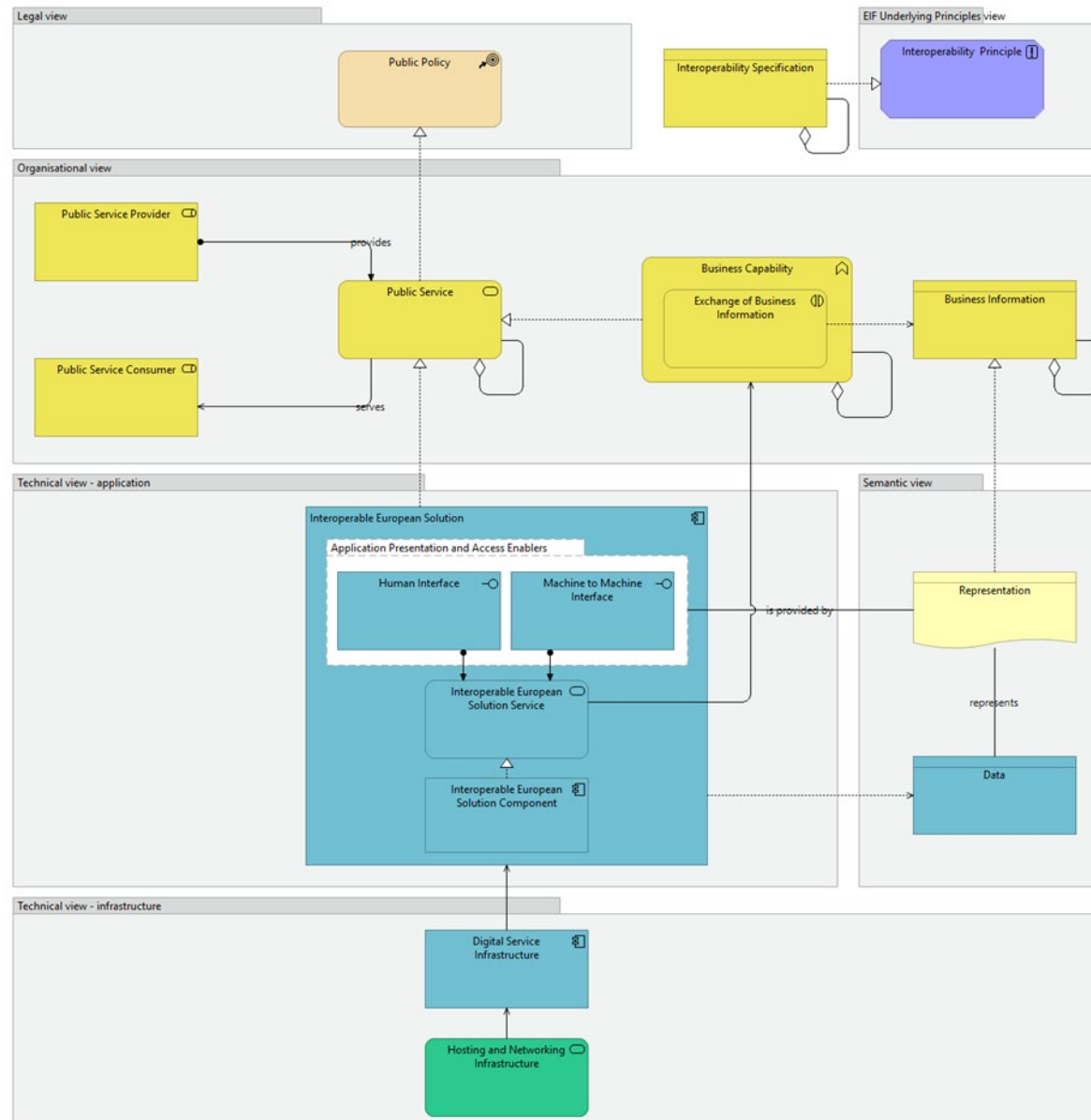
# The IOP challenge: Requirements based LOST environments.



- A: Public Administration (local, regional, national, European)
- B: Business
- C: Citizen



# How does EIRA©/eGovERA© foundation look?



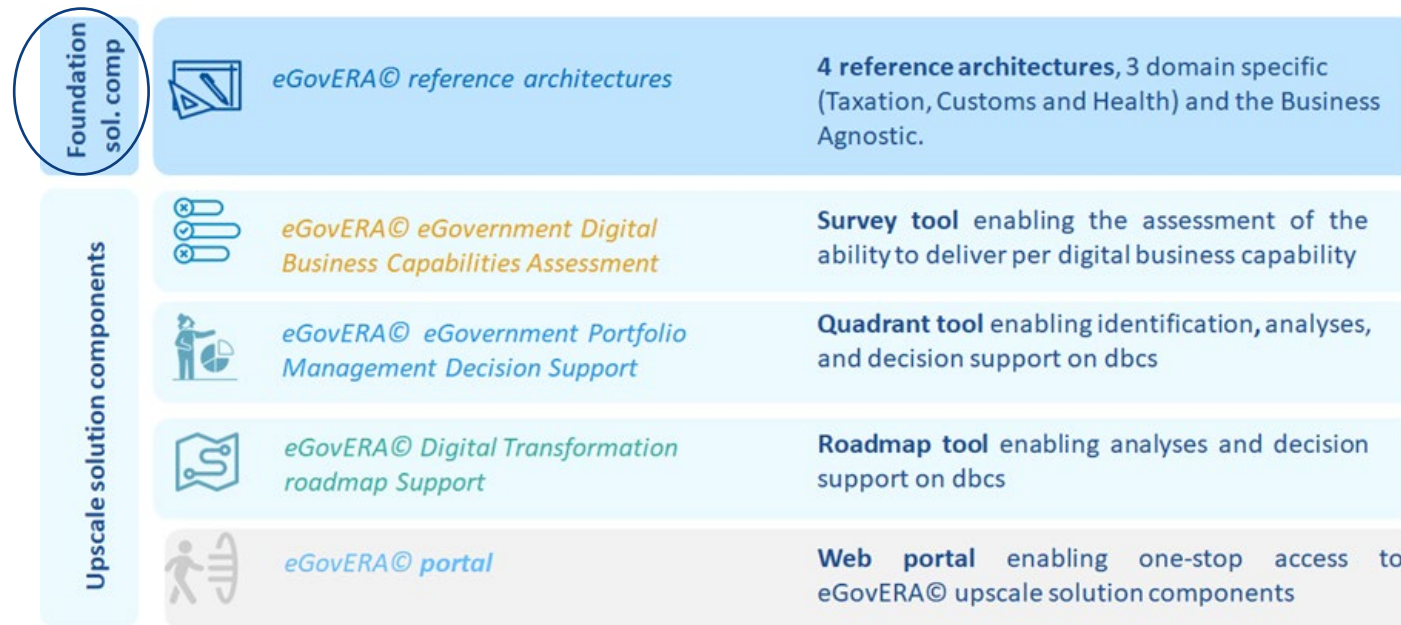


# What is EIRA©?

- ✓ It is a quality assurance specification
- ✓ Architecture technology independent content metamodel
- ✓ The unit of analysis is one European digital public service.
- ✓ Defining the most salient architectural building blocks (ABBs) needed to build European interoperable digital public services
- ✓ Each ABB models a decoupled L/O/S/T functionality (technology domain specific ABBs and technology domain agnostic ABBs)
- ✓ From a life-cycle perspective it supports the following use cases: Analysis of High-level requirements use case, analysis of detail-level requirements (specifications/standards) use case, and solution design use case
- ✓ Result of a collaborative effort of MS
- ✓ As any RA
- ✓ Has a focus: Interoperability
- ✓ Has an Reference Model/Ontology: ArchiMate ©
- ✓ Has an Architecture Style: SOA
- ✓ EIRA Validator based in ITestBed

# What is eGovERA©?

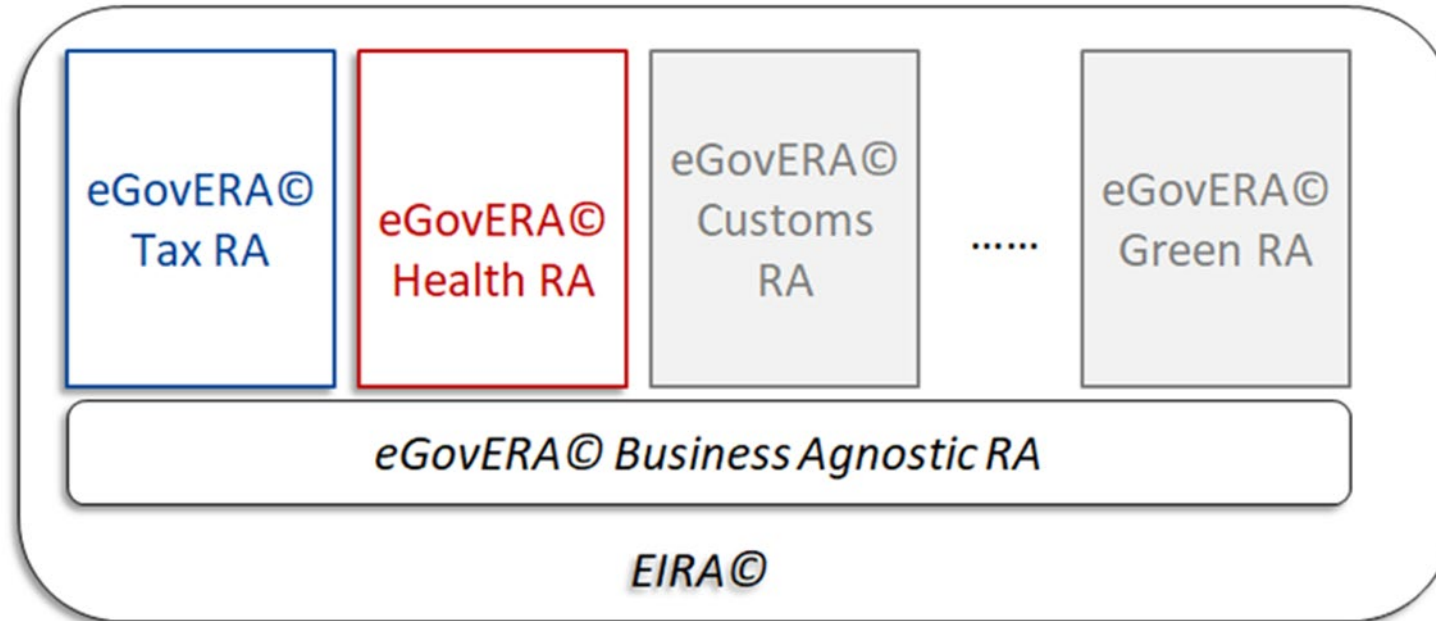
- ✓ It is a suite of quality assurance specifications (i.e. eGovERA© foundation) and solutions (eGovERA© upscale)



- ✓ eGovERA© foundation provides additional granularity to EIRA© defining the most salient architectural building blocks (ABBs) needed to build European interoperable solutions supporting public services in specific domains. Examples:
  - ✓ Digital Business Capability ABB in EIRA© → specific DBCs in each eGovERA© RA.
  - ✓ Digital Public Service ABB in EIRA© → specific DPSs in each eGovERA© RA

# What is eGovERA© foundation?

- ✓ eGovERA© foundation is a suite of specifications based in EIRA©



# What is ELIS?

- ✓ It is a quality assurance set of specifications. The EIRA© Library of Interoperability Specifications.
- ✓ Accessible through the CarTool© and as an Excel directly in Joinup
- ✓ ELIS dashboard

## How does ELIS look?

View	ABB	Model Concept	ABB Description	Associated Interoperability Specification	Creator	Specification Type	Specification Description	Association rationale	TOGAF Domain	ELIS version	Version	CAMSS Assessment Name	Assessment Definition	Assessment Automate Score
Technical Application	Access Management Component	Application Component	Access Management Component ABB is an Application Component allowing users to make use of i) IT services, ii) data, and/or iii) other assets. Access management helps to protect the confidentiality, integrity and availability of assets by ensuring that only authorised users are able to access or modify the assets.	CYBER Application of Attribute Based Encryption (ABE) for PII and personal data protection on IoT devices, WLAN, cloud and mobile services - High level requirements	European Telecommunications Standards Institute (ETSI)	Specification	CYBER Application of Attribute Based Encryption (ABE) for PII and personal data protection on IoT devices, WLAN, cloud and mobile services - High level requirements (ETSI TS 103 458) specifies high-level requirements for the application of Attribute-Based Encryption (ABE) to protect personal information and personal data, where access to data must be granted to multiple parties and under different conditions. With a primary focus on the confidentiality.	CYBER Application of Attribute Based Encryption (ABE) for PII and personal data protection on IoT devices, WLAN, cloud and mobile services - High level requirements (ETSI TS 103 458) specifies high-level requirements to protect personal information and personal data on devices or services in the Internet of Things, cloud services, wireless local area networks and mobile services.	Application	v5.0.1	1.1.1	N/A	N/A	
Technical Application	Access Management Component	Application Component	Access Management Component ABB is an Application Component allowing users to make use of i) IT services, ii) data, and/or iii) other assets. Access management helps to protect the confidentiality, integrity and availability of assets by ensuring that only authorised users are able to access or modify the assets.	JSON Web Token (JWT)	IETF	Specification	JSON Web Token (JWT) is a compact, URL-safe means of representing claims to be transferred between two parties. The claims in a JWT are encoded as a JSON object that is used as the payload of a JSON Web Signature (JWS) structure or as the plaintext of a JSON Web Encryption (JWE) structure, enabling the claims to be digitally signed or integrity protected with a Message Authentication Code (MAC).	JWT is an industry standard method for representing claims securely between two parties.	Application	v1.0.0	32.0.0	N/A	N/A	
Technical Application	Access Management Component	Application Component	Access Management Component ABB is an Application Component	eIDAS SAML message format	European Commission	Specification	The eIDAS SAML message format is an extension of	The specification is generally used by CEF eID	Application	v5.0.1	1.2.0	N/A	N/A	

# What is ELAP?

- ✓ It is a quality assurance set of architecture principles. The European Library of Architecture Principles.
- ✓ Accessible through the CarTool© and as an Excel directly in Joinup
- ✓ ELIS dashboard
- ✓ ELAP validator based in ITestBed under development

## How does ELAP look?

Identifier	Category	Scope	Principle name	Definition of the principle	Source
7240dcd6e6e701c28b3baca727569e13c319d0f5205cdcbcb8d45b2999f1e01a0	Digital Public Service Strategy (Public Policy Cycle)	Business agnostic	Primacy of principles	The principles in ELAP apply to all architectural work within the EU during the life cycle of any architecture work within the context of interoperability and to all organizations in the EU	<a href="https://pubs.opengroup.org/architecture/toga9-doc/arch/chap20.html">https://pubs.opengroup.org/architecture/toga9-doc/arch/chap20.html</a>
d3cc0a1938f252da26d404de58d8be69e872125b0d779875e11a3b66f56ea801	Digital Public Service Strategy (Public Policy Cycle)	Business agnostic	Evidence based Public Policy	Evidence-based Public Policies are policies designed and periodically reviewed looking at experimental evidences and incontrovertible data. The primary goal is to improve the reliability of advice concerning the efficiency and effectiveness of policy settings and possible alternatives.  There are three crucial enabling factors that underpin modern conceptions of evidence-based policy (EBP): high-quality information bases on relevant topic areas, cohorts of professionals with skills in data analysis and policy evaluation, and political incentives for EU Legislation Compliance is the property of a (national/local) legislation to be coherent or to implement European legislation. A compliance assessment of EU Directives must be carried out in two stages: (1) timely and systematic check whether Member States have transposed Union law, (2) a timely and systematic conformity check of national transposing measures against the relevant Union legislation (correct transposition).  While Member States are responsible for the timely and accurate transposition of directives as well as the correct application of the entire acquis, the Commission has to monitor the Member States' transparency in the EIF context refers to: i. Enabling visibility inside the administrative environment of a public administration. This is about allowing other public administrations, citizens and businesses to view and understand administrative rules, processes, IT data, services and decision-making. ii. Ensuring availability of interfaces with internal information	<a href="https://www.researchgate.net/publication/242709855_2_Evidence-based_policy_principles_and_requirements">https://www.researchgate.net/publication/242709855_2_Evidence-based_policy_principles_and_requirements</a>
4cc0376c766cf82024852bf782fc54e8986895822b172ecce8738723d22a79f9	Digital Public Service Design	Business agnostic	EU Legislation Compliance	EU Legislation Compliance is the property of a (national/local) legislation to be coherent or to implement European legislation. A compliance assessment of EU Directives must be carried out in two stages: (1) timely and systematic check whether Member States have transposed Union law, (2) a timely and systematic conformity check of national transposing measures against the relevant Union legislation (correct transposition).  While Member States are responsible for the timely and accurate transposition of directives as well as the correct application of the entire acquis, the Commission has to monitor the Member States' transparency in the EIF context refers to: i. Enabling visibility inside the administrative environment of a public administration. This is about allowing other public administrations, citizens and businesses to view and understand administrative rules, processes, IT data, services and decision-making. ii. Ensuring availability of interfaces with internal information	<a href="https://eur-lex.europa.eu/resource.html?uri=cellar:2c2f2554-0faf-11e7-8a95-01aa75ed71a1:0017_02/DOC_3&amp;format=PDF">https://eur-lex.europa.eu/resource.html?uri=cellar:2c2f2554-0faf-11e7-8a95-01aa75ed71a1:0017_02/DOC_3&amp;format=PDF</a>
8b773803e66e0fc2e22bb6a629f56a915cf65dfb599302b3d54a08179af6bd07	Digital Public Service Strategy (Public Policy Cycle)	Business agnostic	Transparency	Transparency in the EIF context refers to: i. Enabling visibility inside the administrative environment of a public administration. This is about allowing other public administrations, citizens and businesses to view and understand administrative rules, processes, IT data, services and decision-making. ii. Ensuring availability of interfaces with internal information	<a href="https://joinup.ec.europa.eu/collection/info-national-interoperability-framework-observatory/2-underlying-principles-european-public-services-2.4">https://joinup.ec.europa.eu/collection/info-national-interoperability-framework-observatory/2-underlying-principles-european-public-services-2.4</a>

# What is a CAMSS assessment?

- ✓ It is a quality assurance asset produced by the Common Assessment Method for Standards and Specifications.
- ✓ Standards and specifications with score >75% in the EIF scenario are considered “interoperable” and eligible for ELIS
- ✓ CAMSS assessment Library

## How does a CAMSS assessment look?

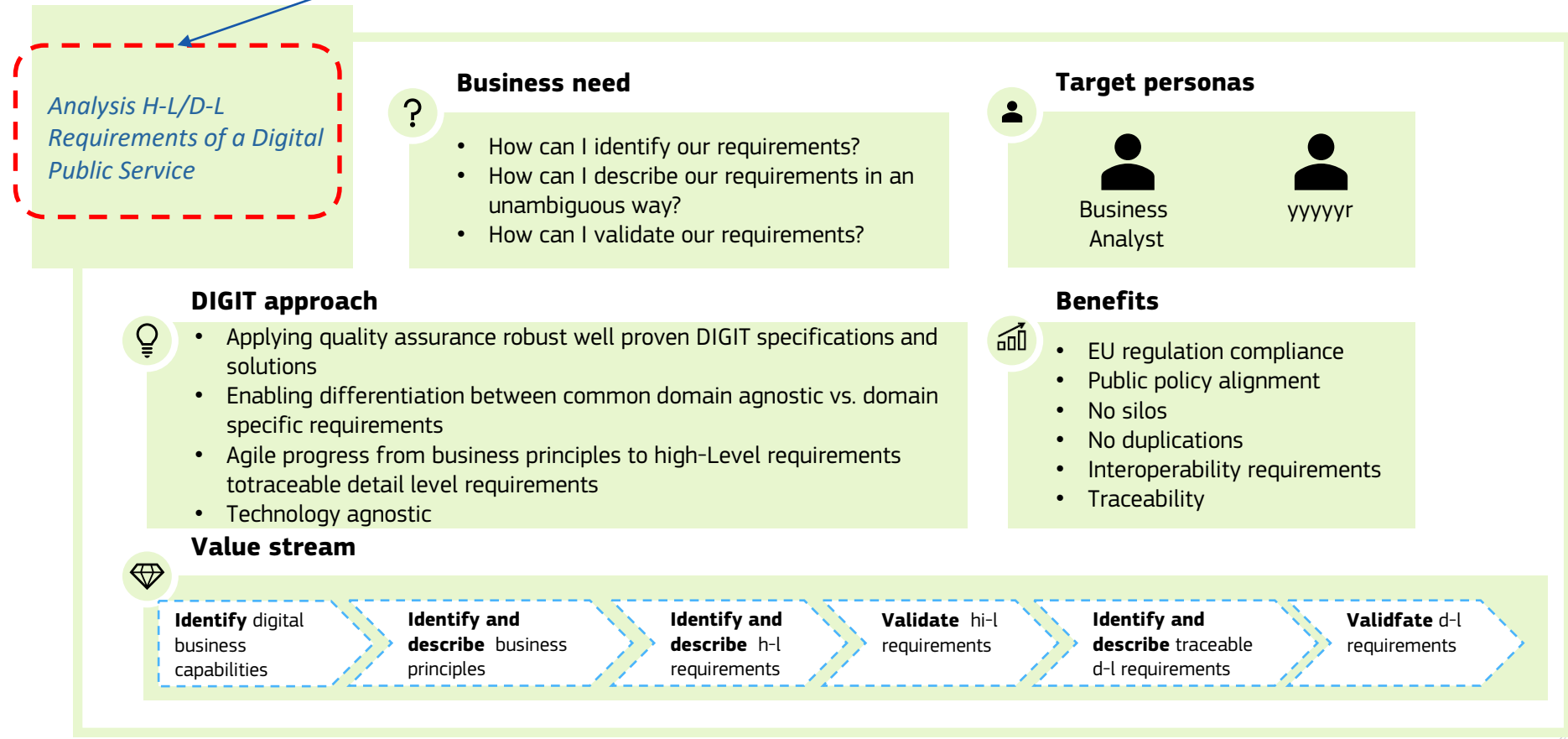
- ✓ It is a report with the achieved score in the selected scenario (i.e. EIF, MSP, etc.)



**SPECIFICATIONS**

**Quality Assurance** (ex-ante)

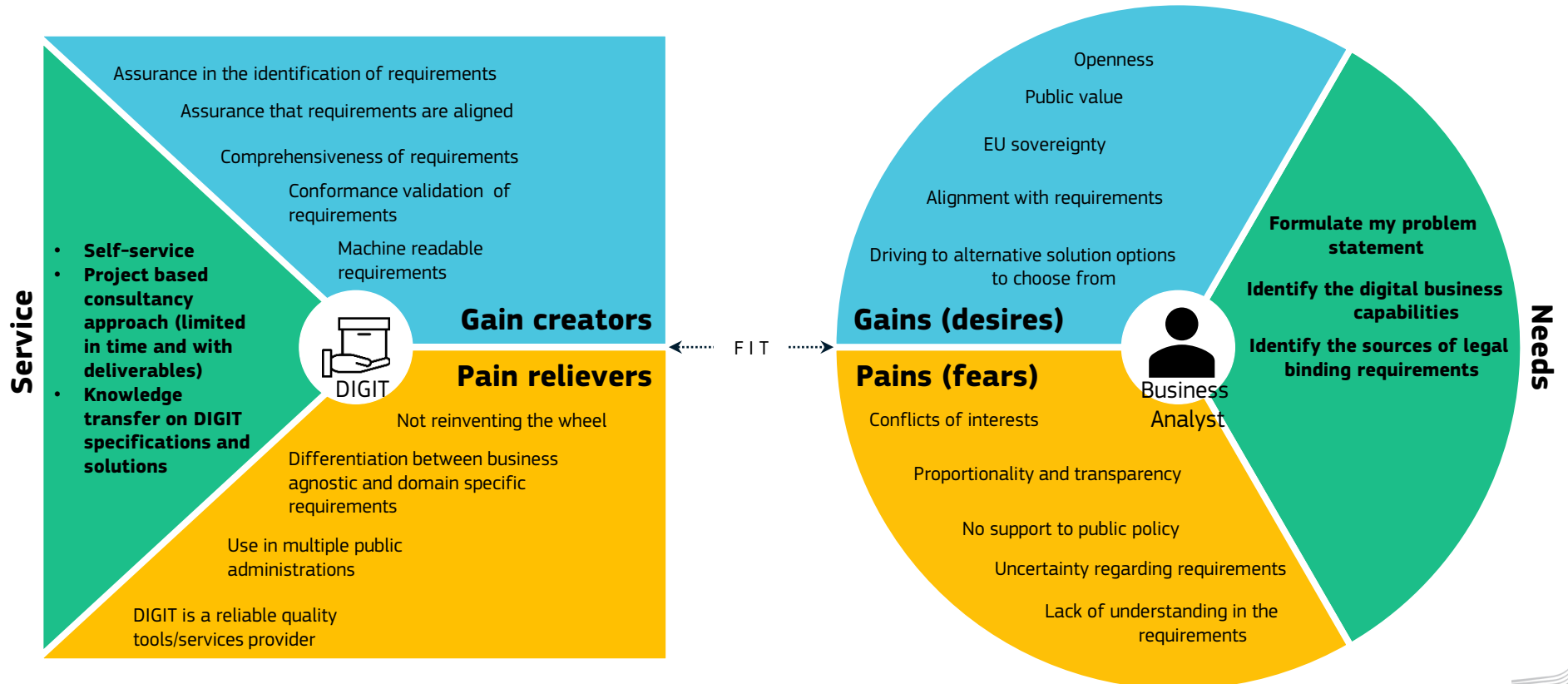
EIRA, eGovERA foundation, ELAP, ELIS, CAMSS assessments



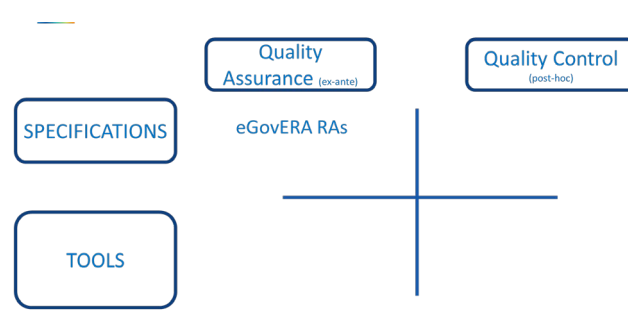
# Persona and use cases

Analysis H-L/D-L Requirements of a Digital Public Service  
Value proposition

## Value proposition of DIGIT approach







**Design of a Solution for a Target Digital Public Service**

**Business need**  
 ? What are the solution-specific components I should implement in my digital public service(s)?

**Target personas**

- Solution Architect
- Enterprise Architect
- Business analyst
- IT managers

**DIGIT approach**

eGovERA© foundation can be used as a model to drive the design of a target digital public service (one or multiple in a specific policy area).

**Benefits**

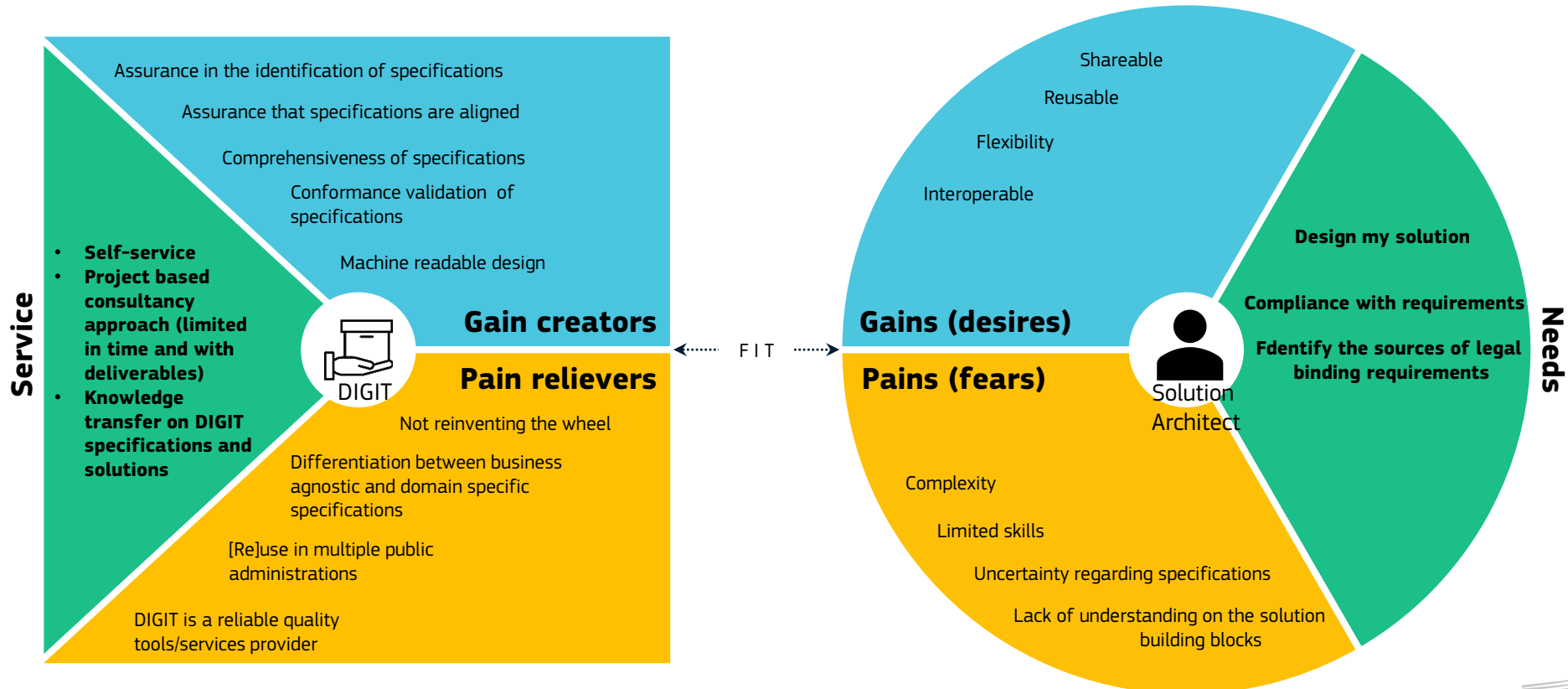
- Specific solution realizing the reference model and detailed requirements
- Specifications traced back to the requirements



# Persona and use cases

## Design of a Solution for a Target Digital Public Service

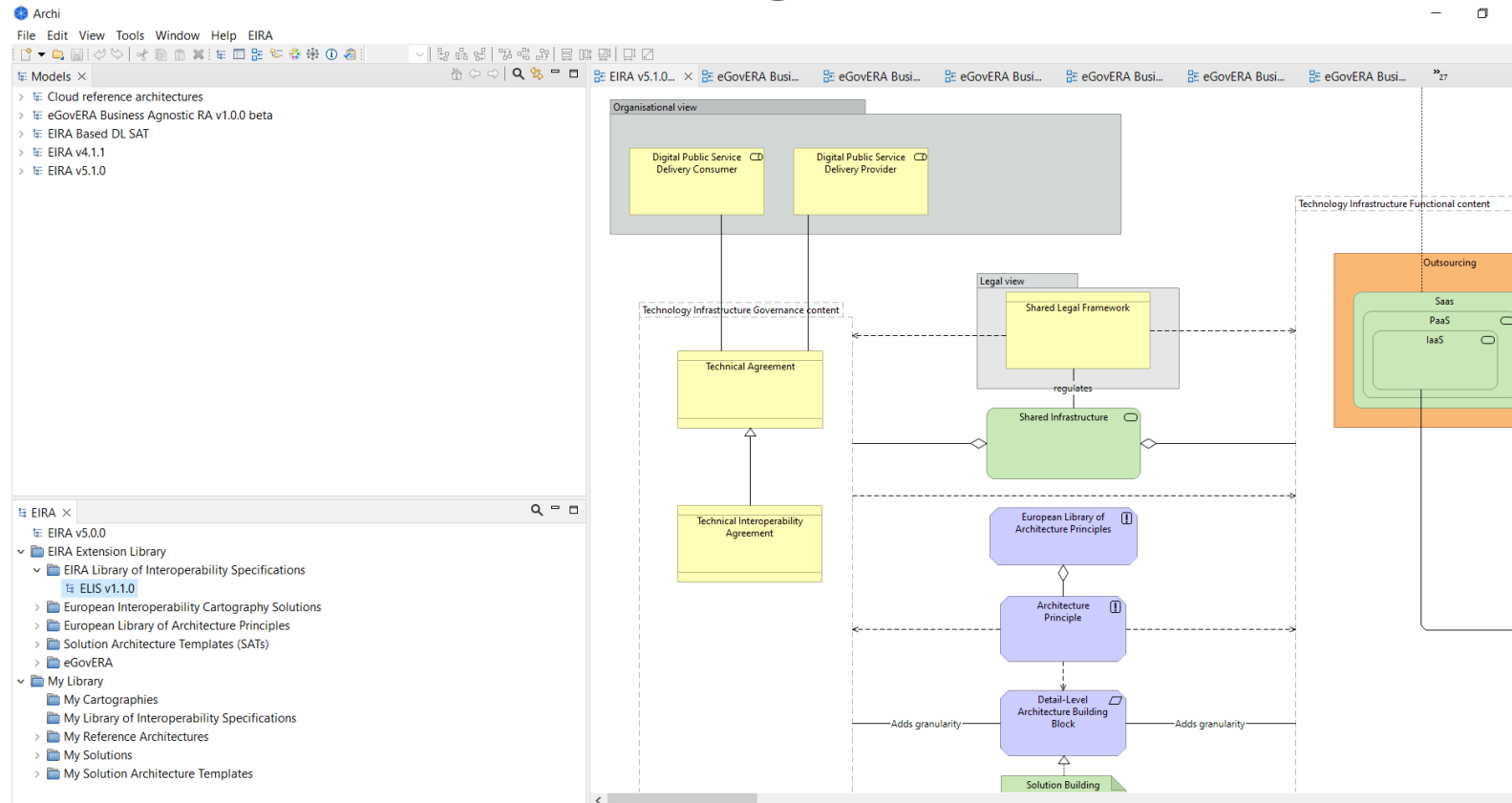
### Value proposition of DIGIT approach



# What is CarTool©?

- ✓ It is solution supporting quality assurance
- ✓ It is an open platform implemented as a plugin of Archi© (available in EC Store) offering a tooling service to EIRA© and eGovERA©.

## How does the CarTool© look?



# What is CAMSS?

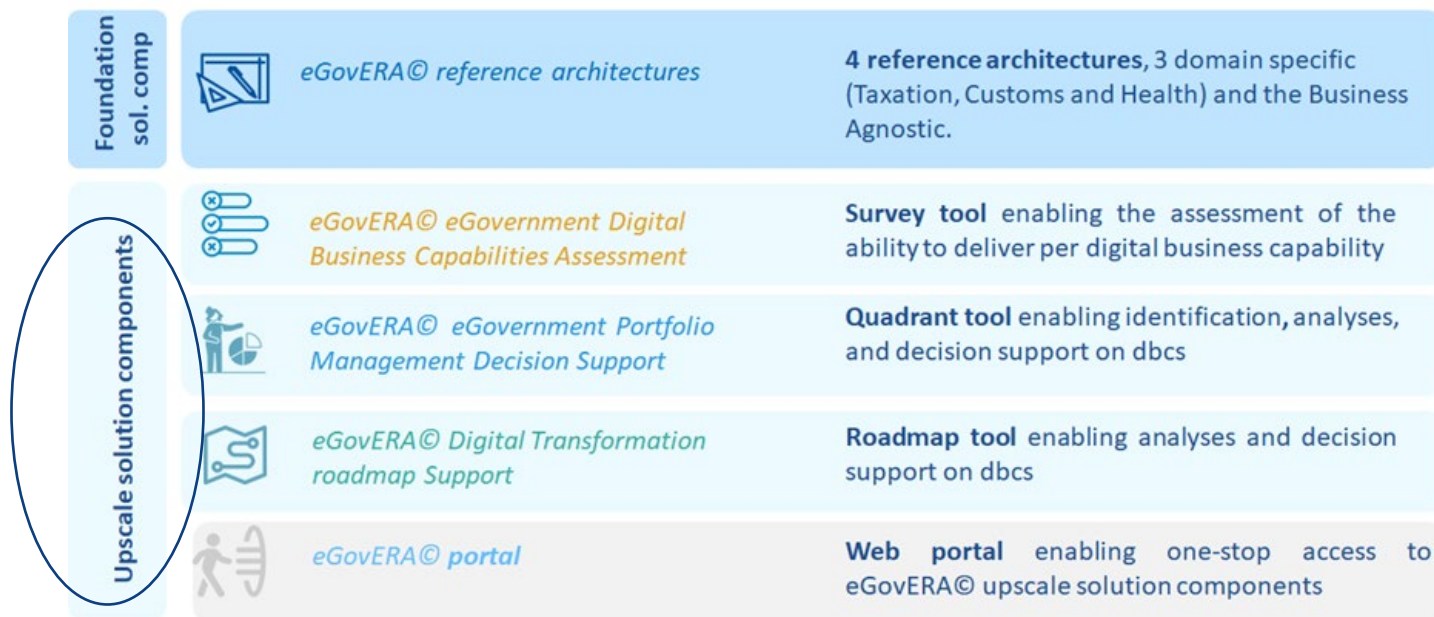
- ✓ It is a quality assurance solution. The Common Assessment Method for Standards and Specifications.
- ✓ Configured in scenarios:
  - ✓ EIF for assessing interoperability fitness
  - ✓ MSP for assessing public procurement fitness
- ✓ The unit of analysis is one standard/specification
- ✓ Self-assessments
- ✓ It assesses the overall score
- ✓ Standards and specifications with score >75% in the EIF scenario are considered “interoperable” and eligible for ELIS
- ✓ CAMSS assessment Library

## How does CAMSS look?

- ✓ It is based in EU Survey
- ✓ It produces an standard/spec assessment report

# What is eGovERA©?

- ✓ eGovERA© upscale solutions provide decision support for CIOs and ICT Portfolio Managers



# What is eGovERA©?

- ✓ **eGovERA© eGovernment Digital Business Capabilities Assessment solution**
  - ✓ The unit of analysis of is one As-Is digital business capability, DBC.
  - ✓ It is based in eGovERA© foundation RAs and, so far, it supports business agnostic DBCs, tax DBCs, customs DBCs, and health DBCs.
  - ✓ It is based in a questionnaire
  - ✓ Use cases are eGovernment digital business capability assessment/building use case, EU funds application support for eGovernment and digital transformation use case, input to the eGovERA© eGovernment Portfolio Management Decision Support solution, input to eGovERA© Digital Transformation Roadmap Decision Support solution, and input to the national digital agenda support use case.

## How does eGovERA© eGovernment Digital Business Capabilities Assessment look?

BAABB1\*\*\*\* requirement <<eira: European Legal Act>> Regulation (EU) 2018/1724 of the European Parliament and of the Council of 2 October 2018 establishing a single digital gateway to provide access to information, to procedures and to assistance and problem-solving services is in the regulation of your country/region

This requirement might be considered because eQualification DPS Delegation of Power DPS, eldentification DPS support this DBC and they involve rules on single digital gateway legal.

*To what extent this requirement is met by As-Is digital business capability?  
Please, consider 1 as the lowest score and 5 the maximum score.*

(\*)This legislation covers aspects on: (a) the establishment and operation of a single digital gateway to provide citizens and businesses with easy access to high quality information, to efficient procedures and to effective assistance and problem-solving services with regard to Union and national rules applicable to citizens and businesses exercising or intending to exercise their rights derived from Union law in the field of the internal market, within the meaning of Article 26(2) TFEU; (b) the use of procedures by cross-border users and the implementation of the 'once-only' principle in connection with the procedures listed in Annex II to this Regulation and the procedures provided for in Directives 2005/36/EC, 2006/123/EC, 2014/24/EU and 2014/25/EU; (c) the reporting on obstacles in the internal market based on the collection of user feedback and statistics from the services covered by the gateway.

Extent to which the requirement is met by the As-Is Digital Business Capability

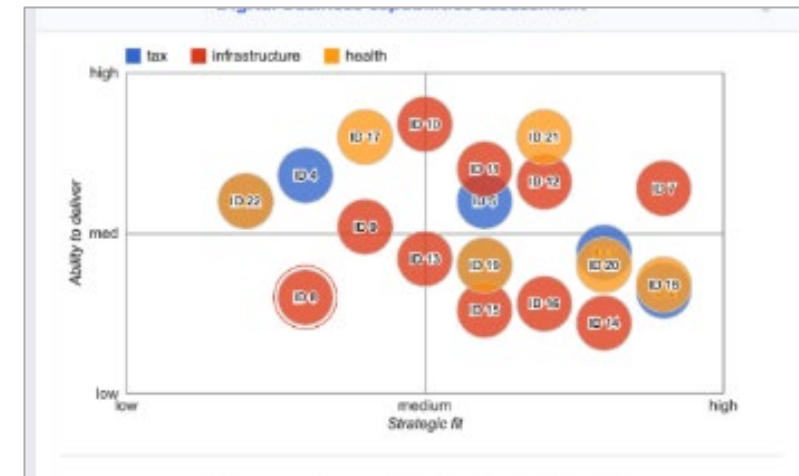
1 2 3 4 5

Not Applicable Requirement

# What is eGovERA©?

- ✓ **eGovERA© eGovernment Portfolio Management Decision Support solution**
  - ✓ The unit of analysis is a business agnostic/domain specific DBC.
  - ✓ It requires the input of the eGovERA© eGovernment Digital Business Capabilities Assessment solution.
  - ✓ It supports quadrant analysis of DBCs in terms of either i) national digital strategy fit axe vs. As-Is ability to support axe or ii) expected public value axe vs. As-Is ability to support axe.
  - ✓ It support analyses considering national digital fit score, As-Is ability to support, To-Be ability to support, expected public value, and estimated budget.
  - ✓ Use cases are eGovernment portfolio management decision support use case, EU funds application support for eGovernment and digital transformation use case, input to eGovERA© Digital Transformation Roadmap Decision Support solution, and input to the national digital agenda support use case.

## How does eGovERA© eGovernment Portfolio Management Decision Support look?

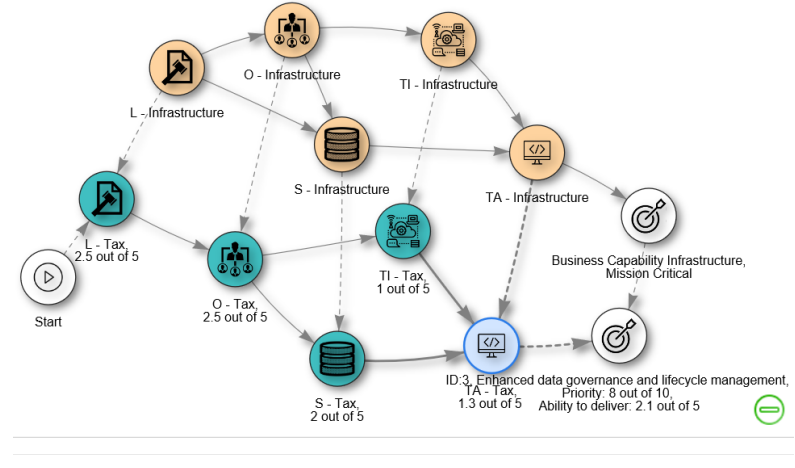


# What is eGovERA©?

## ✓ eGovERA© Digital Transformation Roadmap Support solution

- ✓ The unit of analysis is a business agnostic/domain specific DBC.
- ✓ It requires the input of the eGovERA© eGovernment Digital Business Capabilities Assessment solution.
- ✓ It supports precedence analysis of requirements.
- ✓ It is connected with the IDPSIO solution.
- ✓ The level of granularity of the analyses is as and ABB in the concerned eGovERA© RA.
- ✓ Use cases are EU funds application support for eGovernment and digital transformation use case, digital transformation roadmap decision support use case, and input to the national digital agenda support use case.

## How does eGovERA© Digital Transformation Roadmap Support look?



EU Tax Solutions Services

Operational tax application  
HTML Pages and Forms

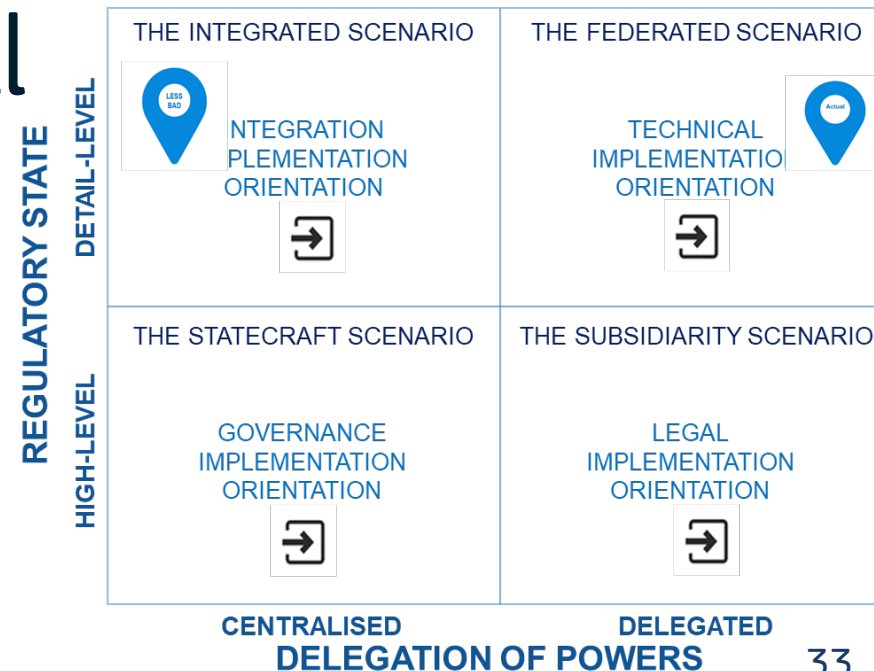
Machine to Machine Interfaces



# What is IDPSIO?

- ✓ It is a quality assurance solution. The Interoperable Digital Public Service Implementation Orientation.
- ✓ Users are CIOs and portfolio managers
- ✓ It provides support identifying configuration of the digital transformation roadmap in terms of the less bad implementation orientation for the concerned public policy context.

## How does eGovERA© Digital Transformation Roadmap Support look?



Digital Public Services Portfolio Mgmt Decision Support

National Digital Agenda Support

ICT Legislation Impact Assessment Support

Digital Business Capacity Assessment and Building Decision Support

Digital Transformation Roadmap Decision Support

EU Funds Application Support for eGovernment and Digital Transformation

Analysis H-L/D-L Requirements of a Digital Public Service

Assessment of standards and specifications

Design of a Solution for Target Digital Public Service

Interoperability assessment, Validation and Conformance Testing

TOOLS

Quality Assurance (ex-ante)

SW Tools: CarTool, eGovERA upscale  
Survey Tools: CAMSS, eGovERA upscale, IDPSIO

EU Funds Application Support for eGovernment and Digital Transformation

**Business need**

- How can I describe our problem?
- How can I describe the solution that requires funds?
- How can I provide justifications for the associated costs and expected benefits?

**Target personas**

Business Analyst

Public Admon officer

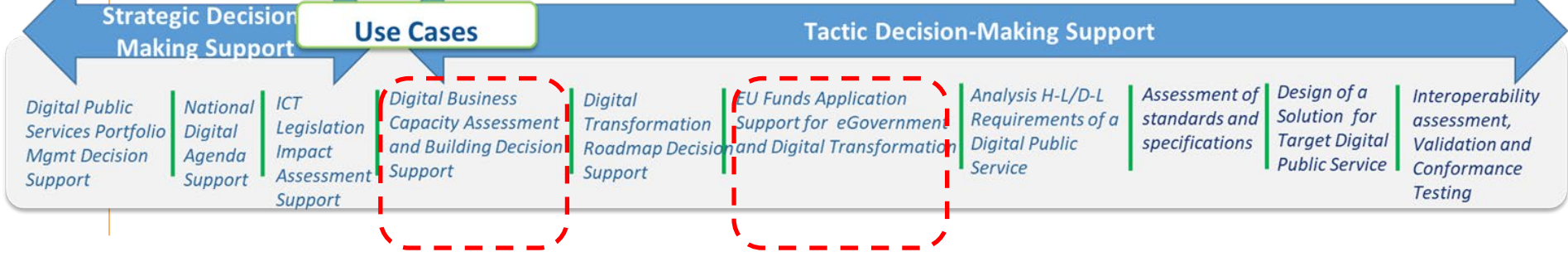
**DIGIT approach**

- Applying digital business capability assessment
- Enabling differentiation between common domain agnostic vs. domain specific requirements

**Benefits**

**Value stream**



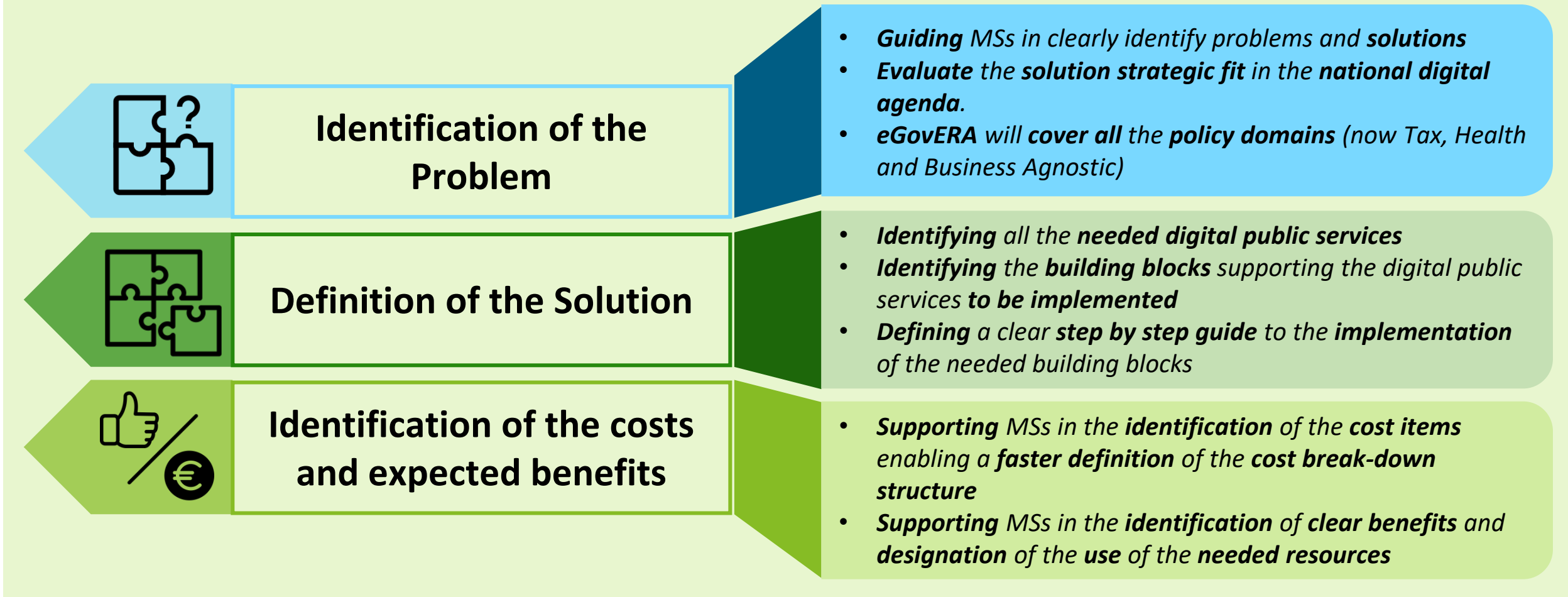


TOOLS

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**Benefits**



- Digital Public Services Portfolio Mgmt Decision Support
- National Digital Agenda Support
- ICT Legislation Impact Assessment Support
- Digital Business Capacity Assessment and Building Decision Support
- Digital Transformation Roadmap Decision Support
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Digital Business Capacity Assessment and Building Decision Support

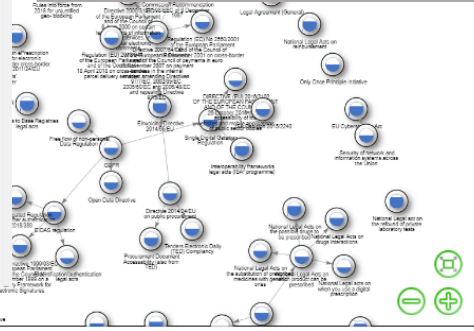
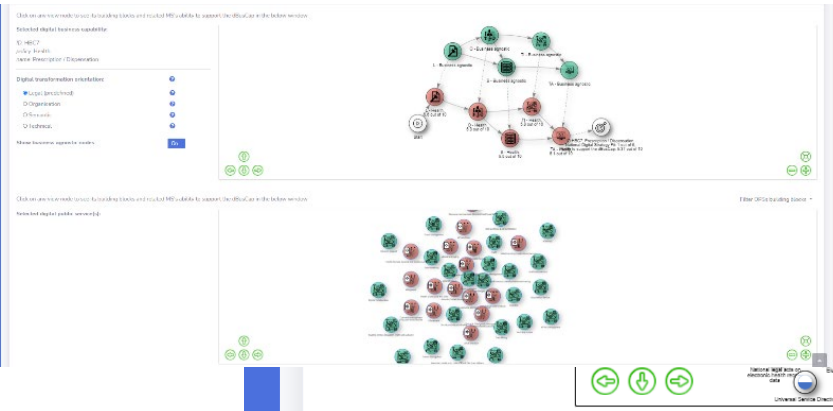
Digital Public Services Portfolio Management Decision Support

2. Please select the estimated ability to deliver each of the following building blocks \*

Building Block	Ability to deliver (0-5)
1) [Legal/National Legislation] - General Tax Legislation	0 1 2 3 4 5
2) [Legal/National Legislation] - VAT Legislation	0 1 2 3 4 5
3) [Legal/National Legislation] - Income Tax Legislation	0 1 2 3 4 5
4) [Legal/National Legislation] - Car Tax Legislation	0 1 2 3 4 5
5) [Legal/National Legislation] - Social Tax Legislation	0 1 2 3 4 5

ID	Policy	Name	Strategic fit
1	tax	Dynamic Customer Understanding and Typing	6
2	tax	Tax risk control (Fraud Detection)	9
3	tax	Enhanced data governance and lifecycle management	8
4	tax	Centralisation of analytical function	3
5	tax	Improved customer experience for digital public services	6
6	tax	International tax cooperation	2
7	infrastructure	Implementation of a Public Administration Digital Transformation Strategy	9
8	infrastructure	Enhance digital collaboration	3
9	infrastructure	Enabling seamless digitalisation of public service delivery	4
10	infrastructure	Digital Interoperable Interaction Between Public Administrations	5
11	infrastructure	Enabling fast creation of new digital Public Services (emergency svcs incl) by aggregating existing ones	6
12	infrastructure	Data Visualisation	7
13	infrastructure	Enabling an ecosystem supporting legal determinacy and judicial certainty (catalogues, legislation, etc.)	5
14	infrastructure	Enabling an ecosystem supporting shared ICT resources (network, hosting, intermediation services, interfaces, svcs, Registry, choreography rules, etc.)	8
15	infrastructure	Enabling an ecosystem supporting a shared governance framework (PS catalogues, governance structures, etc.)	6
16	infrastructure	Enabling an ecosystem supporting common understanding (Data mappings, data visualisation, ontologies, catalogues, etc.)	7
17	health	e-health records & reports for European Reference Networks	4
18	health	Provision of digital emergency services	9
19	health	Provision of non-emergency services	6
20	health	ePrescription	5

Digital Transformation Roadmap Decision Support





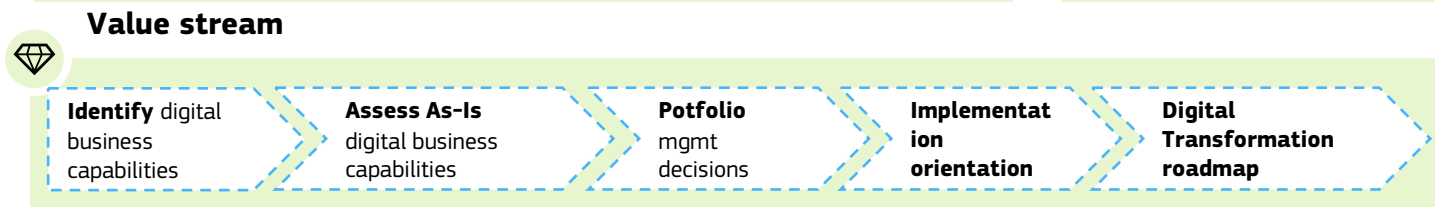
*Digital Business Capacity Assessment and Building Decision Support*  
*Digital Public Services Portfolio Mgmt Decision Support.*  
*Digital Transformation Roadmap Decision Support*

- Business need**
- How can I identify the gaps in my As-Is digital business capabilities?
  - How to identify my ICT portfolio?
  - What should be the less bad implementation orientation I should follow?
  - What should be the roadmaps I should follow?

- Target personas**
- ICT mgr
  - CIO/Portfolio mgr

- DIGIT approach**
- Applying quality assurance robust well proven DIGIT solutions
  - ICT portfolio is an instrument to fulfill the identified gaps is the As-IS digital business capabilities assessments
  - Digital transformation roadmap is the journey starting in the suggested implementation orientation to fulfill the identified gap

- Benefits**
- Digital business capability driven support decisions
  - What-if
  - Visual
  - Business first
  - Align with eGovERA foundation



# What is ITestBed?

- ✓ It is a suite of quality control solution services
- ✓ Unit of analysis: A model (i.e. EIRA©), the behavior in terms of message exchange of an IT system
- ✓ Value: Conformance testing

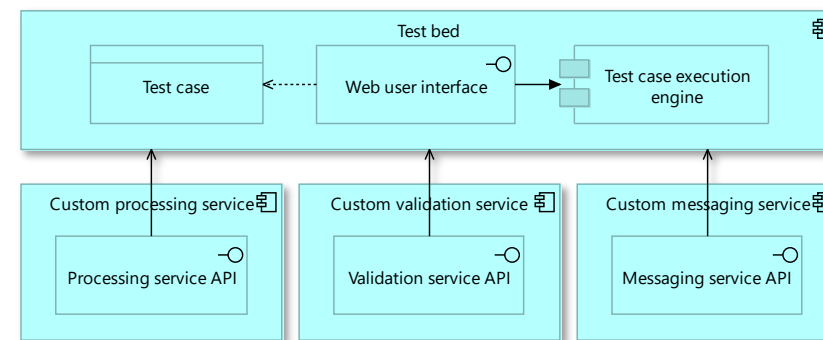
## What are the functionalities?

### ✓ Built-in support

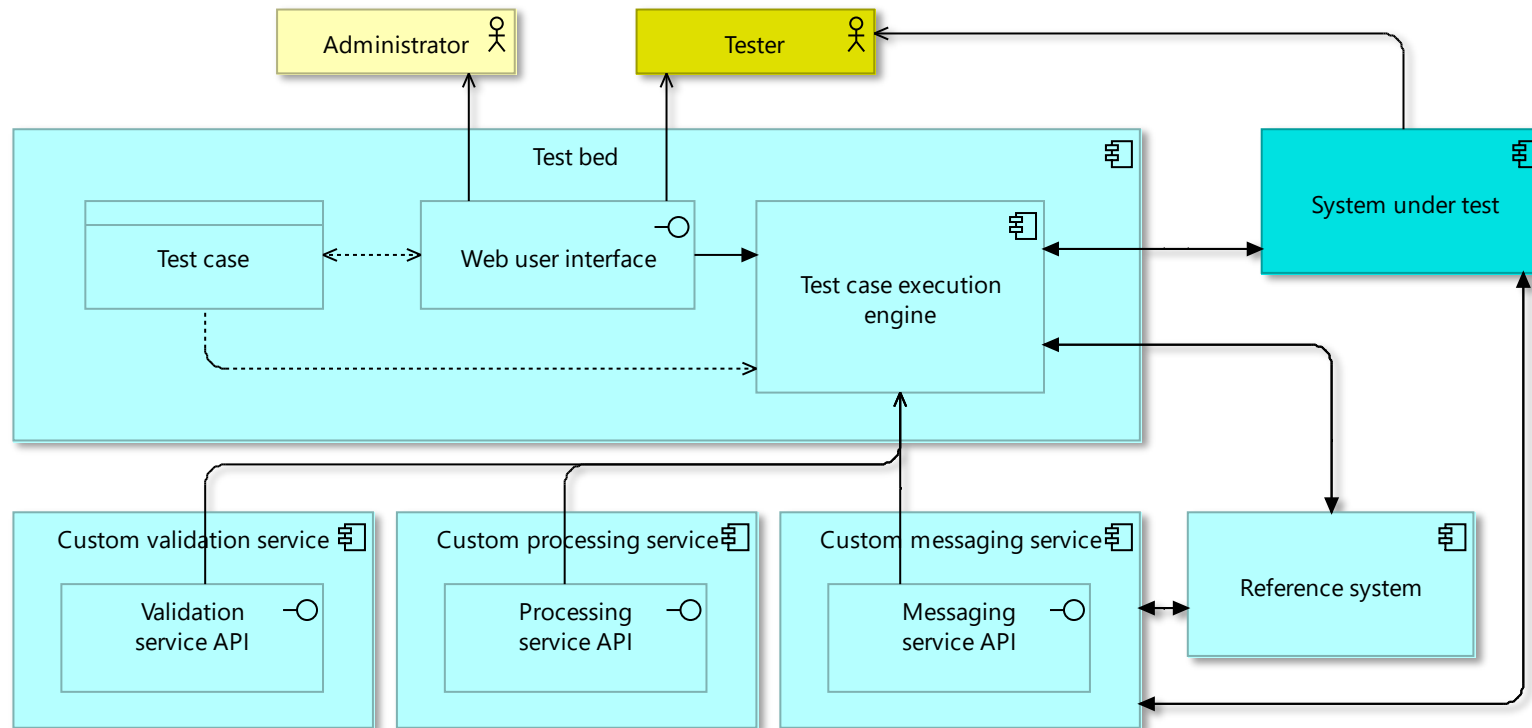
**Messaging** AS2, AS4  
SOAP, REST  
eDelivery, FLUX, HTTP, HTTPS

**Validation** XML, RDF  
SHACL, XSD  
Schematron, XPath, RegExp

### ✓ Custom extensions



# How does it work?



# What are the Interoperability Maturity Tools?

- ✓ It is a suite of quality control solutions (IMAPS, SIQAT, GIQAT)
- ✓ Each solution is based in EU Survey
- ✓ The unit of analysis is one production European digital public service.
- ✓ Value: Self-assessment of the interoperability of a production digital public service
- ✓ Aligned with EIF and leveraging EIRA©
- ✓ It provides an score
- ✓ It suggest recommendations
- ✓ Single Interoperability Assessment Gateway

## How does IMTs look?

- ✓ It is based in EU Survey
- ✓ It produces an assessment report



SW Tools: ITestBed (EIRA Validator, CPSV-AP Validator, ELAP Validator)  
Survey Tools: IAT (IMAPS, SIQAT, GIQAT)

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Validation and Conformance Testing

Business need

- How can I validate my requirements?
- How can I test the conformance of my design/solution with respect my requirements?
- How can I test the conformance of the behavioral interoperability of my system?

Target personas

Solution Architect      yyyyyr

DIGIT approach

- Applying quality control robust well proven DIGIT solutions
- Enabling peer-to-peer validation and testing
- Self-service approach
- Variety of formats

Benefits

- Identification of errors
- Quality control Tool
- Unlimited free access
- No supervised

Value stream



SW Tools: ITestBed (EIRA Validator, CPSV-AP Validator, ELAP Validator)  
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