



e-Procurement Core Solution Architecture Template (SAT)



Change control

Modification	Details
Version 1.0.0 beta	
Initial version	

Disclaimer:

The views expressed in this report are purely those of the authors and may not, in any circumstances, be interpreted as stating an official position of the European Commission.

The European Commission does not guarantee the accuracy of the information included in this study, nor does it accept any responsibility for any use thereof.

Reference herein to any specific products, specifications, procedure, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favouring by the European Commission.

All care has been taken by the author to ensure that s/he has obtained, where necessary, permission to use any parts of manuscripts including illustrations, maps, and graphs, on which intellectual property rights already exist from the titular holder(s) of such rights or from her/his or their legal representative.

ArchiMate® and TOGAF® are registered trademarks of The Open Group.

ArchiMate© and TOGAF© are copyright of The Open Group. All rights reserved.

Archi® is a registered trademark of Phillip Beauvoir.

TABLE OF CONTENTS

1	INTRODUCTION	5
1.1	PURPOSE OF THIS DOCUMENT	5
1.2	LIST OF ACRONYMS USED IN THIS DOCUMENT	5
2	GOAL, DESCRIPTION AND TARGET AUDIENCE.....	7
2.1	GOAL	7
2.2	WHAT IS E-PROCUREMENT?	7
2.3	WHAT IS A SOLUTION ARCHITECTURE TEMPLATE (SAT)	8
2.4	TARGET AUDIENCE	8
3	E-PROCUREMENT USING THE EIRA	9
3.1	ARCHIMATE MOTIVATION EXTENSION.....	9
3.2	HOW TO USE THIS SAT	11
3.3	E-PROCUREMENT CORE LEGAL VIEW	15
3.4	E-PROCUREMENT CORE ORGANISATIONAL VIEW.....	18
3.5	E-PROCUREMENT CORE SEMANTIC VIEW.....	20
3.6	E-PROCUREMENT CORE TECHNICAL VIEW – APPLICATION.....	21
3.7	E-PROCUREMENT CORE TECHNICAL VIEW – INFRASTRUCTURE	22
4	REFERENCES	25
4.1	LEGISLATIVE REFERENCES	25
4.2	ORGANISATIONAL REFERENCES.....	25
4.3	SEMANTICAL REFERENCES.....	26
5	ACKNOWLEDGEMENTS.....	27
6	APPENDIX: LEGAL VIEW.....	28
7	APPENDIX: ORGANISATIONAL VIEW.....	29
8	APPENDIX: SEMANTIC VIEW	30
9	APPENDIX: TECHNICAL VIEW – APPLICATION	31
10	APPENDIX: TECHNICAL VIEW – INFRASTRUCTURE	32

1 INTRODUCTION

This document contains the description for a Solution Architecture Document (SAT) for e-Procurement. It presents the building blocks of the architecture that are common to all e-Procurement.

This SAT is based on EIRA v2.0.0, which is aligned with ArchiMate® 3.0.

The ArchiMate source are embedded in this document in the “Archi format” as well as in “The Open Group ArchiMate Model Exchange File Format”.



SAT e-Procurement
v1.0.0 beta.archimat



SAT e-Procurement
v1.0.0 beta.xml

1.1 Purpose of this document

Enterprise and Solution architects can use this document to design solution architectures in the domain of e-Procurement.

1.2 List of acronyms used in this document

Table 1-1

ABB	Architecture Building Block
BII	Business Interoperability Interfaces
CA	Contracting Authority
CEF	Connecting Europe Facility
CEN	Comité Européen de Normalisation (European Committee for Standardization)
CEN TC 440	CEN Technical Committee 440 – Electronic Public Procurement
EIRA	European Interoperability Reference Architecture
EO	Economic Operator(s)
GDPR	General Data Protection Regulation
HI	Human Interface
IES	Interoperable European Solution
ISA ²	Interoperability solutions for public administrations, businesses and citizens

MMI	Machine to Machine Interface
SAT	Solution Architecture Template
SBB	Solution Building Block
UBL	Universal Business Language

2 GOAL, DESCRIPTION AND TARGET AUDIENCE

This chapter gives the goals and a description on e-Procurement and indicates the target audience and their potential use of this Solution Architecture Template (SAT).

2.1 Goal

The purpose of this SAT is to provide guidance by defining core legal, organisational, semantic and technical interoperability architecture in the domain of e-Procurement. This SAT should allow businesses, citizens and public administrations to have a common understanding of the most-salient building blocks.

2.2 What is e-Procurement?

e-Procurement is the use of electronic communications and transaction processing by government institutions and other public sector organisations when buying supplies and services or tendering public works. [IATE definition, Commission Staff Working Document 52010SC1214/EN]

Procurement, within the meaning of Directive 2014/24/EU on public procurement, is the acquisition by means of a public contract of works, supplies or services by one or more contracting authorities from economic operators chosen by those contracting authorities, whether or not the works, supplies or services are intended for a public purpose.

e-Procurement in the meaning of the standardization committee on e-Procurement encompasses the definition of the e-Procurement directive and extends it to cater for B2B exchange of information supporting supply chain processes.

2.2.1 Business capabilities

e-Procurement covers the following 11 business capabilities:

- notifying
- discovering
- accessing
- submitting
- evaluating
- awarding
- contracting
- quoting
- ordering
- fulfilling
- invoicing

The present document focuses on the core architectural aspects that are common to all business capabilities, while architectural specificities related to each business capability are addressed in separated SATs.

More details on how to use the templates are provided in § 3.2.

2.2.2 Invoicing business capability specific case

It has to be noted that invoicing is an e-Procurement business capability that is more specific in its principles than the other business capabilities. Indeed, the Directive 2014/55/EU on electronic invoicing in public procurement is much more normative than the other Directives related to e-Procurement. Furthermore, invoicing falls under different administrations than the rest of procurement and have different drivers that imply a more dynamic evolution in time: for example, VAT rules may change on a regular basis.

2.3 What is a solution architecture template (SAT)

A Solution Architecture Template (SAT) is a specification extending the EIRA providing support to solution architects in a specific solution domain. An SAT contains a motivation (principles, requirements), a goal and a description of the supported functionalities, a sub-set of the EIRA core Architecture Building Blocks (ABBs) covering the four views, a set of specific ABBs extending EIRA's views enabling specific functionalities to be provided by implementations derived from the SAT and the interoperability specifications of selected ABBs and a narrative for each EIRA view.

The benefits of a SAT are the following:

- Provides architects with a common approach to cope with a specific interoperability challenge. It also places the focus on the key-points you need to consider.
- A solution architect can create a solution architecture by mapping existing Solution Building Blocks (SBBs) to an SAT, based on the interoperability specifications that are provided. This is done by providing SBBs for the ABBs identified in the SAT.
- When an architect creates an SAT, he/she can define the interoperability specifications for the SAT's ABBs and moreover recommend specific SBBs which produces faster and more interoperable results.
- An SAT can be created within and across the different views of the EIRA. An SAT can then support architects specialised in different interoperability levels.

2.4 Target audience

This document has the following target audience:

Table 2-1

Audience	Description
Solution Architect	Solution architects in the need of understanding, implementing, or describing an e-Procurement solution.
Policy maker	Policy makers studying the implications due to policy changes in the area of e-Procurement.
Public Administration / Members States	Public Administrations of the European Union that need to have a holistic view of the e-Procurement interoperability architecture.

3 E-PROCUREMENT USING THE EIRA

This chapter contains for each EIRA view the corresponding ArchiMate model and narrative. Next to the SAT's EIRA architecture building blocks, the ArchiMate model includes, where applicable, the related specifications, principles and requirements.

The models have been scaled down to fit with the text, they are included in bigger format in the appendix.

3.1 ArchiMate motivation extension

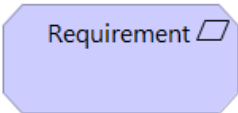
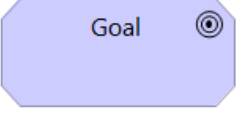
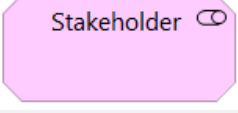
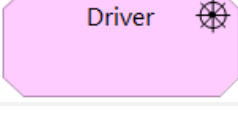
The motivation extension is used to model specific goals, requirements and optionally the sources of those intentions; stakeholders and drivers. Motivational concepts are used to model the motivations, or reasons, that underlie the design or change of some enterprise architecture. These motivations influence, guide, and constrain the design. The ArchiMate motivation elements address the way the architecture is aligned to its context. They provide the context of or reasons behind the architecture.

It is essential to understand the factors, often referred to as drivers, which influence the motivational elements. They can originate from either inside or outside the organisation. Internal drivers, also called concerns, are associated with stakeholders, which can be some individual human being or some group of human beings, such as a project team, organisation, or society.

The actual motivations are represented by goals and requirements. Goals represent some desired result – or end – that a stakeholder wants to achieve. Requirements represent desired properties of solutions – or means – to realize the goals.

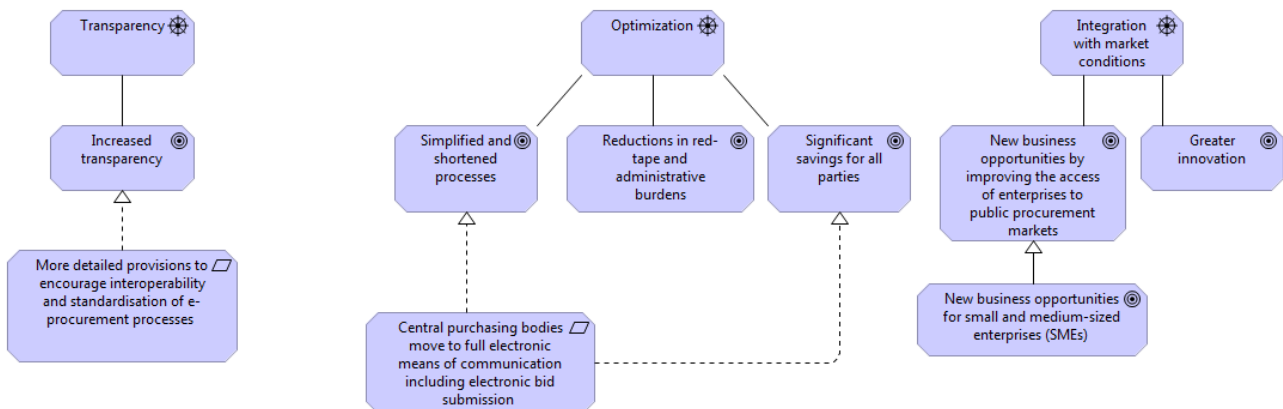
In addition to the standard EIRA concepts, the diagrams use the following concepts coming from the ArchiMate motivation extension:

Table 3-1

Non-EIRA concept	Description
 Requirement	A requirement is defined as a statement of need that must be realized by a system.
 Goal	A goal is defined as an end state that a stakeholder intends to achieve.
 Stakeholder	A stakeholder is defined as the role of an individual, team, or organization (or classes thereof) that represents their interests in, or concerns relative to, the outcome of the architecture.
 Driver	A driver is defined as something that creates, motivates, and fuels the change in an organization

The following principles, requirements, goals and constraints, linked to the following stakeholders, drivers and assessments, apply to all e-Procurement and are used in this SAT¹:

¹ See also, for example, https://ec.europa.eu/growth/single-market/public-procurement/e-Procurement_en



Stakeholders

The stakeholders involved in e-Procurement and considered in the present SAT are:

- CEN TC 440

The CEN Technical Committee 440 (TC 440) – Electronic Public Procurement scope is standardization in the field of e-Procurement to support the electronic public procurement processes and their accompanying information flows in the physical and financial supply chain. This is to facilitate end-to-end e-Procurement including both Pre-awarding and Post-award processes for public procurement covering: notifying, discovering, accessing, submitting, evaluating, awarding, contracting, quoting, ordering, fulfilling. Deliverables for these processes will support the electronic exchange of information in public procurement as well as in B2B transactions. Attention will be given to the establishment of a semantic data model and at least one syntax data binding for the application of XML in both pre-awarding and post-award. The work of CEN/TC 440 will be developed from the deliverables of CEN/BII (2)3 in alignment with the deliverables of CEN/PC 434. [Extracts from [CEN/TC 440 - Electronic Public Procurement](#)]

- ISA²

The European [ISA² programme](#) supports the development of digital solutions that enable public administrations, businesses and citizens in Europe to benefit from interoperable cross-border and cross-sector public services. ISA² is running from 1 January 2016 until 31 December 2020. Further details can be found there: [European public procurement interoperability initiative](#). The present SAT was developed as part of the Actrion 2016.32 – European Interoperability Architecture of the European [ISA² programme](#).

Drivers, goals and requirements

The digitalisation of public procurement is part of the leadership of the EU driving the modernisation of public administrations². Pre-awarding and post-award in e-Procurement have the ambition to make them simpler for businesses to participate in and for the public sector.

² See https://ec.europa.eu/growth/single-market/public-procurement/e-Procurement_en on Europa web site

Public spending should become more transparent, optimised, and integrated with market conditions.

The goals of e-Procurement are:

- increased transparency
- simplified and shortened processes
- reductions in red-tape and administrative burdens
- significant savings for all parties
- new business opportunities by improving the access of enterprises, including small and medium-sized enterprises (SMEs) to public procurement markets
- greater innovation

In order to reach these goals, the following requirements were met:

- more detailed provisions to encourage interoperability and standardisation of e-Procurement processes are specified
- central purchasing bodies move to full electronic means of communication including electronic bid submission

3.2 How to use this SAT

3.2.1 Design principles

The present SAT document specifies the views that apply to all e-Procurement. These are called the *e-Procurement core views*.

The views that are specific to each business capability of e-Procurement are presented in other SATs specific to business capabilities that shall be used in complement to the present document.

When designing a solution architecture, the present document should be used as the foundation and should be complemented with the SATs that tackle the specificities of the business capabilities that will be addressed by the solution.

3.2.1.1 e-Procurement core views

The following views apply to all business capabilities of e-Procurement (i.e. they apply to the *core e-Procurement*):

- e-Procurement core Legal View

This view describes the **legal** ABBs and SBBs common to all e-Procurement.

- e-Procurement core Organisational View

This view describes the **organisational** ABBs and SBBs common to all e-Procurement:

- ABBs can serve two purposes in this e-Procurement core Organisational View:
 - Either they apply to all business capabilities of e-Procurement and can be replaced by SBBs in the solution. These ABBs are not repeated in the specific Organisational Views related to business capabilities.

For example, the *National or Regional e-Procurement Interoperability Strategy*, the *Interoperability Agreement*, the *National or Regional Service Location* and the *National or Regional Service Policy* can be replaced by SBBs

in the solution to be designed. They are not repeated in the specific Organisational Views.

- Or they are further specialised as ABBs or replaced by SBBs in each business capability specific Organisational View.

For example:

- The ABB *eProcurement Business Capability* is further specialised by ABBs *Send a notice for Publication* and *Create notice* in the notifying specific Organisation View.
- The ABB *Service Delivery Model* is further specialised by the ABB *Publication portal* in the notifying specific Organisation View.
- The ABB *BII Choreography specification* shown in the e-Procurement Organisational View is instantiated as SBBs *BII 17013-201 and 17013-205 Choreography Specifications* in the notifying specific Organisation View.
- SBBs that apply to all business capabilities and are not repeated in the specific views.

For example, the SBBs *Directive 2014/23/EU*, *Directive 2014/24/EU* and *Directive 2014/25/EU* of type *Organisational Procedure* apply to all business capabilities.

- e-Procurement core Semantic View

This view describes the **semantic** ABBs and SBBs common to all e-Procurement:

- ABBs present concepts that can be further detailed as ABBs or SBBs in each business capability specific Semantic View.

For example:

- The ABB *Transactional Data* in the e-Procurement Semantic View is further detailed as ABBs *Notice Publication Request Transactional Data*, *Notice Publication Response Transactional Data* and *Notice Creation Transaction(s) Transactional Data* in the notifying Semantic View.
- The ABB *BII Transaction Information Model specification* is instantiated as SBBs *BII 17013-304 Transaction Information Model Specification*, *BII 17013-305 Transaction Information Model Specification* and *BII 17013-311 Transaction Information Model Specification* in the notifying Semantic View.
- SBBs that apply to all business capabilities and are not repeated in the specific views.

For example, the 2 SBBs *UBL 2.2* (of type *Data Model*) and *Unicode Transformation Format – 8-bit* (of type *Character Encoding Scheme*) apply to all business capabilities.

- e-Procurement core Technical Views - Application and Infrastructure

These views describe the technical ABBs and SBBs, at the application and infrastructure levels, common to all e-Procurement:

- ABBs present concepts that can be further detailed as ABBs or SBBs in the Specific Technical Views.

Note. When the solution architect uses the SAT to implement an IES covering several business capabilities, he/she can decide to use the same SBB for all the selected business capabilities, or different ones. For example, the *Business Process Management Component* ABB could be implemented using the same BPM engine for the design of a solution that would cover the pre-awarding business capabilities.

- SBBs in the e-Procurement Technical Views apply to all business capabilities.

3.2.1.2 Business capabilities selection

The solution architect will select the business capabilities in which he/she is interested and will use the present document and the SATs related to the selected business capabilities.

For example, if the solution architect is interested in designing a solution for the implementation of the pre-awarding of e-Procurement, he/she would use the present document as the foundation, plus the SATs related to the following business capabilities: notifying, discovery, access, submission, evaluation, awarding and contract.

3.2.2 e-Procurement SAT use cases

A solution architect typically wants either to perform a gap-analysis between an existing solution and the Solution Architecture Templates he/she selected, or he/she wants to model a solution in the domain of e-Procurement and uses these documents as guidance.

3.2.2.1 e-Procurement Gap Analysis use case

Using the SATs for gap analysis, the solution architect can map the building blocks of the solution to the ones in the SATs and identify which building blocks are missing. These building blocks can either indicate missing functionality or missing interoperability specifications.

3.2.2.2 e-Procurement Building solution architecture use case

When building a solution architecture, the solution architect is expected to use the four EIRA views (legal, organisational, semantic and technical) and provide a solution in the form of Solution Building Blocks (SBBs) for the Architecture Building Blocks (ABBs) that are indicated in the SATs. This is done by replacing the Architecture Building Block (ABB) with an annotated Solution Building Block.

Two cases apply:

- Either the ABB is in a View of the present document. In that case:
 - Either the SBB of the designed solution is also placed in the e-Procurement View and applies to all considered business capabilities.
 - Or specific SBBs replace the ABB, each SBB in each specific View of the considered business capabilities.
- Or the ABB to be replaced is in the specific View of a given business capability. In that case, the SBB replacing the ABB is placed in the design of the solution in the Specific View of the same business capability.

The following principles also apply:

Some ABBs in the e-Procurement Views of the present SAT are already implemented by SBBs in the Specific Views of the SATs applying to the specific business capabilities. The designed solution should contain these SBBs.

For example, the *Organisational Interoperability Specification* ABB in the e-Procurement Organisational View is implemented by the SBBs *BII 17013-201 and 17013-205 Choreography Specifications* in the specific Organisation View of the notifying SAT.

The Solution Building Blocks (SBB) in the present SAT should not be removed and replaced. However, the acknowledgement of reusing these building blocks can be done by removing the ABBs which they specialise.

For example, the SBB Unicode Transformation Format – 8-bit (UTF-8) would be reused in the solution but the ABB Character Encoding Scheme which it specialises can be removed from the solution model.

Interoperability Specifications (IoP specs) are added as specialisations of Interoperability ABBs, implemented in the form of SBBs and attached to ABBs as interoperability requirements. The final solution should only contain the implementations (the SBBs) of the IoP Specs.

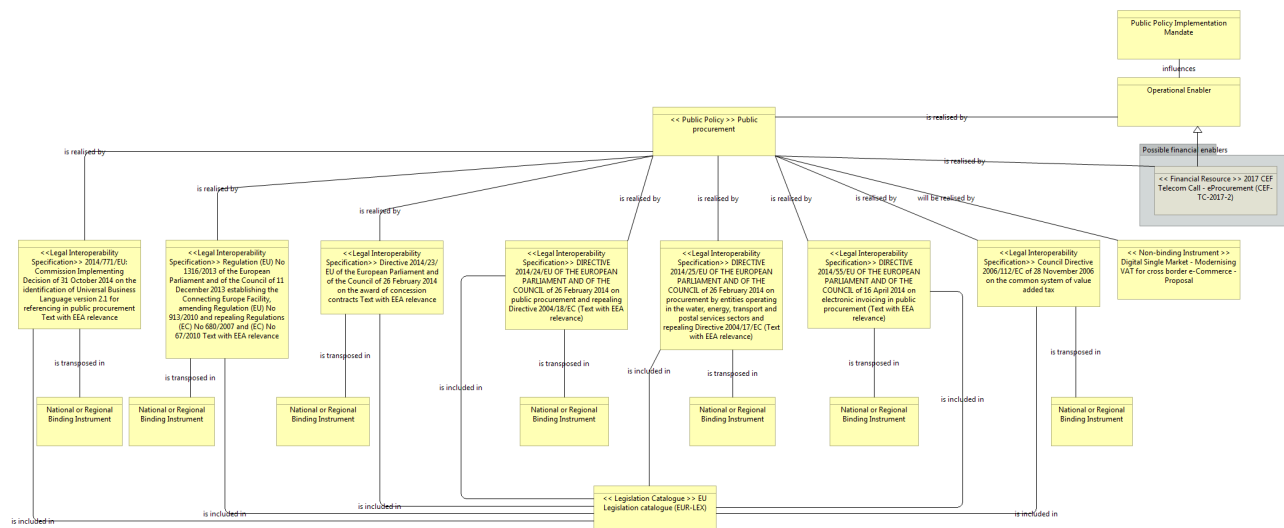
The result will be a solution architecture that will contain only SBBs, all ABBs should have been removed (in the case the SATs already provide SBBs for these ABBs) or replaced by SBBs (solutions that implement that ABBs).



The SAT is a document describing the needed Architecture Building Blocks for a desired solution. This should not be taken as restrictive but as advisory. When an Architecture Building Block (ABB) is present for which there is no implementation foreseen in the form of a Solution Building Block (SBB), it is *strongly* recommended, but not mandatory, to take this ABB into consideration in the final solution.

3.3 e-Procurement core Legal View

The e-Procurement Legal View consists in the following sub-set of EIRA Architecture Building Blocks (ABBs) as well as a number of predefined Solution Building Blocks (SBBs). This Legal View applies to all business capabilities of e-Procurement. There is no need for supplementary business capability specific Legal Views.



The *Public procurement* Public Policy is realised by the following European legal interoperability specifications, which are transposed in national or regional binding instruments:

- *Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement*

The legislation specifies that when national authorities use public procurement to invite tenders to provide works, supplies or services, they must treat all applicants equally and not discriminate between them. They must also be transparent in their dealings. Thresholds, assessed every 2 years by the European Commission, apply for the rules to apply. The contract is awarded to the most economically advantageous tender to be identified in particular on the basis of the best price–quality ratio. This criterion takes into account such factors as the overall cost effectiveness, quality, environmental and social aspects, trading and delivery conditions.

The legislation introduces a new procedure to promote the development of innovative products, services or works. To facilitate the participation of small companies, the new rules encourage public authorities to divide up large contracts into individual lots.

Safeguards are provided, for example to prevent workers' rights being abused. Exemptions apply, for example: water, energy, transport and postal services sectors are excluded from the directive and some sectors such as electronic communications, research and development and defence and security can be excluded under certain conditions.

- *Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors*

Although the basic rules and principles laid down in Directive 2014/24/EU apply to the water, energy, transport and postal sectors, Directive 2014/25/EU takes account of the specific features of these sectors which play key roles in meeting society's needs.

- *Directive 2014/23/EU of the European Parliament and of the Council of 26 February 2014 on the award of concession contracts*

The Directive sets out the European Union rules for procurement by public sector contracting authorities and by contracting entities in the utilities sector by means of a concession (e.g. the right to operate infrastructure, such as a motorway, or a service, e.g. a bus route).

- *Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility*

The facility sets the conditions, methods and procedures for providing funding to support projects of interest to the European Union in the transport, telecommunications and energy infrastructure sectors. It seeks to speed up investment in trans-European networks and to leverage funding from the public and private sectors. It also sets out the amount of money to be made available from 2014 until 2020 and for which areas.

- *Commission Implementing Decision of 31 October 2014 on the identification of Universal Business Language version 2.1 for referencing in public procurement (2014/771/EU)*

This Decision states that the Universal Business Language version 2.1 developed by the Organization for the Advancement of Structured Information Standards is eligible for referencing in public procurement.

- *Directive 2014/55/EU of the European Parliament and of the Council of 16 April 2014 on electronic invoicing in public procurement*

EU countries adopted new laws on public procurement in 2014. In tandem, they adopted a law which should result in a greater uptake across Europe of e-invoicing by contractors for work that they do for, or goods that they deliver to, the public sector.

A European standard on electronic invoicing is to be developed and tested by the European standardisation organisations. Once the standard becomes available, all public authorities across the EU will be obliged to receive and process e-invoices complying with it. The standard will also be suitable for use in commercial transactions between businesses, as well as in the area of public procurement.

- *Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax*

VAT is applied to all transactions carried out in the EU for consideration (payment) by a taxable person, i.e. any individual or body that supplies taxable goods and services in the course of business. Imports by any person are also subject to VAT.

Taxable transactions include supplies of goods or services within a single EU country, intra-EU acquisitions of goods and imports of goods into the EU from outside. Generally, VAT is payable by any taxable person making a taxable supply of goods or services. Exceptions include specific transactions where it is the customer who pays VAT. The directive permits derogations by EU countries from standard VAT rules, as well as special VAT schemes.

These European legal texts can be retrieved from the *EUR-LEX* Legislation Catalogue³. They are transposed at national or regional level, which is reflected by corresponding *National or Regional Binding Instrument* ABBs in the model. The latter should be replaced by SBBs (meaning, the

³ <http://eur-lex.europa.eu/>

specific national or regional legal texts) by the solution architect when designing the solution or performing the gap analysis.

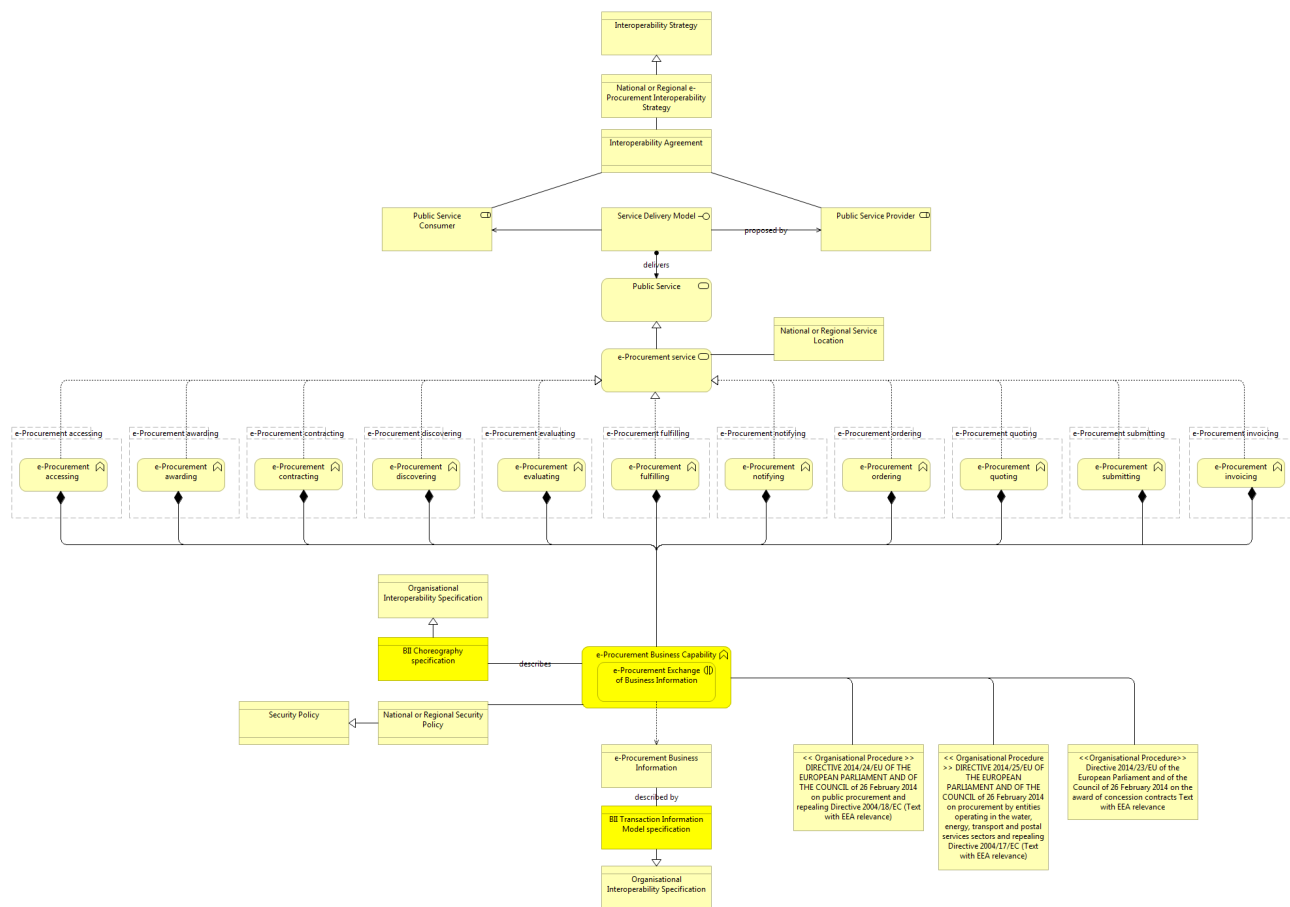
The non-binding instrument [*Digital Single Market - Modernising VAT for cross border e-Commerce – Proposal*](#) can also be considered.

A possible Financial Resource at the European level is provided by the SBB *2017 CEF Telecom Work Programme*: up to €77 million is foreseen for grants managed by the Innovation and Networks Executive Agency (INEA) in the area of Generic Services⁴. The grants under CEF Telecom will help European public administrations and businesses to hook up to the core platforms of the digital services that are the object of the calls.

⁴ Source: <https://ec.europa.eu/inea/en/connecting-europe-facility/cef-telecom/apply-funding/2017-cef-telecom-calls-proposals>

3.4 e-Procurement core Organisational View

The e-Procurement Organisational view consists in the following sub-set of EIRA Architecture Building Blocks (ABBs) as well as a number of predefined Solution Building Blocks (SBBs):



The e-Procurement Public Service will be realized by the following e-Procurement Business Capabilities: notifying, discovering, accessing, submitting, evaluating, awarding, contracting, quoting, ordering, fulfilling and invoicing. These e-Procurement Business Capabilities are in turn themselves made up of more specialised Business Capabilities, for which the focus is put on interoperability by identifying the Exchanges of Business Information they perform between stakeholders. These specialised Business Capabilities and their Exchanges of Business Information are further detailed in the SATs related to e-Procurement Business Capabilities.

The specialised Business Capabilities and the Exchanges of Business Information are implemented by respectively choreographies and transactions. Choreographies are specified in BII Choreography Specifications and transactions are specified in BII Transaction Information Model Specifications. These specifications are published by the CEN and are specialisations of EIRA Organisational Interoperability Specifications. They are further detailed in the SATs related to the e-Procurement Business Capabilities.

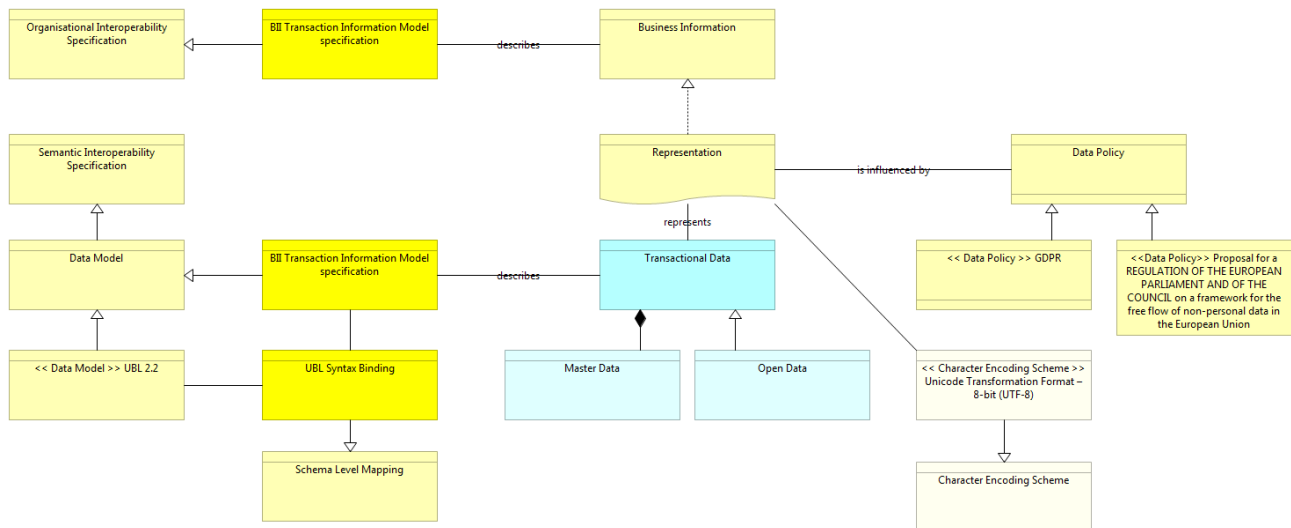
Business Capabilities have to comply with the Organisational Procedures defined in the European Directives SBBs and can be subject to National or Regional Security Policies.

The Public Service is provided following a Service Delivery Model proposed by the Public Service Provider at National or Regional Service Locations to the Public Service Consumers, possibly via Interoperability Agreement(s), which can be related to a National or Regional e-Procurement

Interoperability Strategy. These services are not specified by TC 440 and so will only be represented by placeholders in this SAT.

3.5 e-Procurement core Semantic View

The e-Procurement Semantic view of this SAT consists of the following sub-set of EIRA Architecture Building Blocks (ABBs) as well as a number of predefined Solution Building Blocks (SBBs):



Transactional Data are the exchanged Business Information specified in the Organisational View represented in some Representation. The Transactional Data are specified in BII Transaction Information Model Specifications. Transactional Data, which can be of type Open Data, also contain Master Data.

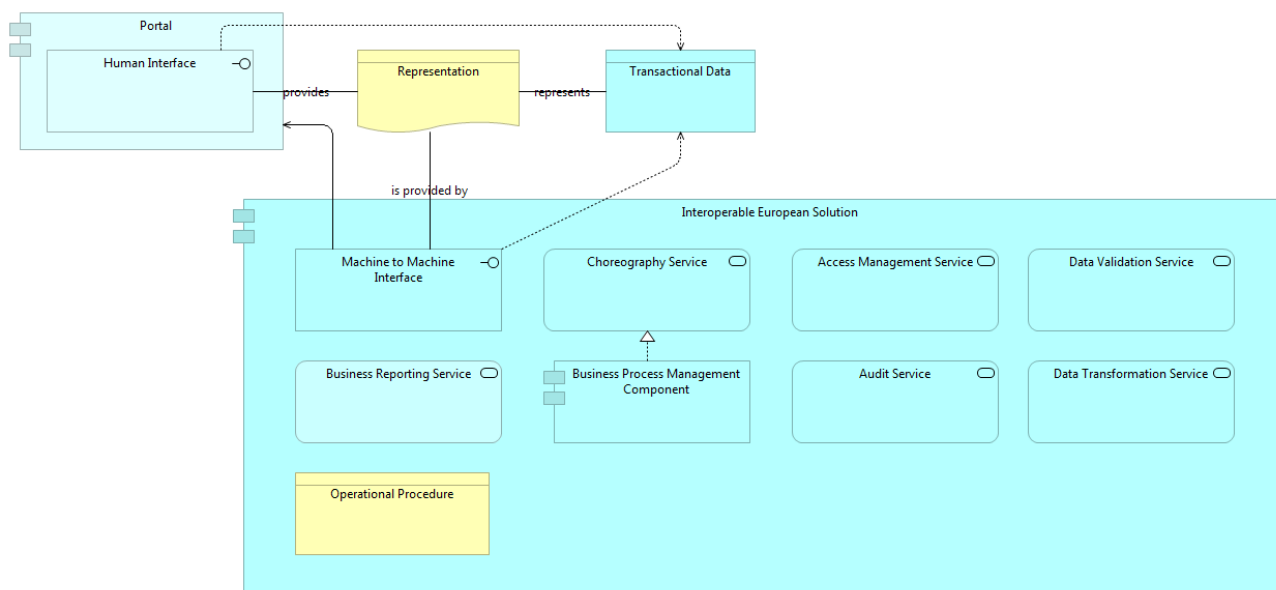
The BII Transaction Information Model Specifications are associated to UBL Syntax Bindings that map BII transactions to UBL 2.2 (or later) messages.

Transaction Data are encoded using the UTF-8 Character Encoding Scheme and their Representation can be influenced by the GDPR Data Policy.

N.B. The Transactional Data ABB is instantiated as SBBs in each business capability specific Semantic Views. It has to be noted that some of these SBBs are used for several business capabilities. This can be noticed/confirmed by observing the reference number of the Transaction Information Model Specification. For example, the ESPD Request Transactional Data (reference BII 17014-308), is used in accessing and submitting business capabilities.

3.6 e-Procurement core Technical View – Application

The e-Procurement Technical View - Application of this SAT consists of the following sub-set of EIRA Architecture Building Blocks (ABBs) as well as a number of predefined Solution Building Blocks (SBBs):



The Interoperable European Solution (IES) should provide a Machine to Machine Interface (MMI) to exchange data with the Portal of the Buyer. The Human Interface (HI) and the Machine to Machine Interface (MMI) render the Transactional Data using some Representations.

The IES should also provide a Choreography Service implemented by a Business Process Management Component that manages the choreographies.

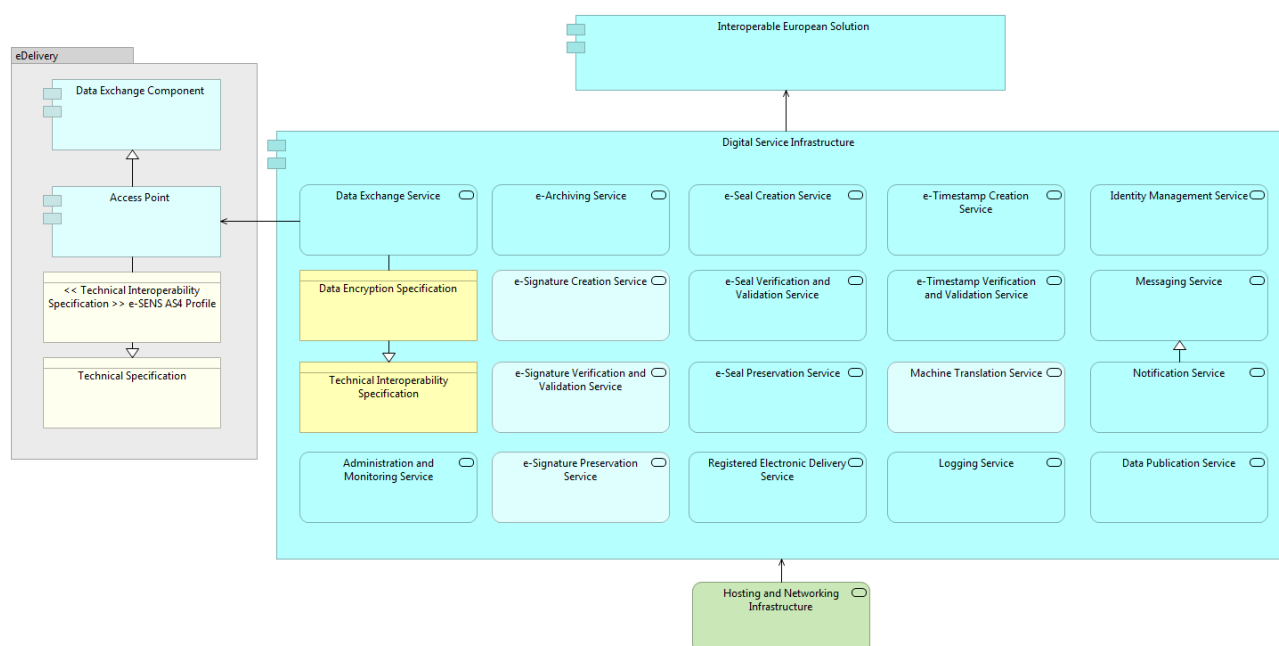
The IES should also provide the following services:

- Access Management Service, in order to grant authorised users the right to use a service, while preventing access to non-authorised users.
- Audit Service, in order to provide support for the principle of accountability, which is holding users of a system accountable for their actions within the system, and detection of policy violations.
- Data Validation Service, in order to validate data against predefined semantic and syntactic constraints.
- Data Transformation Service, in order to convert data, including the conversion from one data format to another.
- Business Reporting Service, in order to provide reports using unified views of the data.

It should provide an Operational Procedure, in order to define the process of operating the IES, how the procedures are implemented and the rules for operating it.

3.7 e-Procurement core Technical View – Infrastructure

The e-Procurement Technical View - Infrastructure of this SAT consists of the following sub-set of EIRA Architecture Building Blocks (ABBs) as well as a number of predefined Solution Building Blocks (SBBs):



The Digital Service Infrastructure is used by the Interoperable European Solution (IES) in order to provide the services listed in the table here after.

Table 3-2

Service	Description
Data Exchange Service	Enables the secure exchange of messages, records, forms and other kinds of data between different ICT systems.
Administration and Monitoring Service	Enables the administration and monitoring of services offered by the different components.
e-Archiving Service	Enables the permanent or long-term storage of selected (by an authority) electronic documents or information for preservation purposes like their enduring research value and memory aid.
e-Signature Creation Service	This is used by a natural person to sign data in electronic form. An 'electronic signature' means data in electronic form which is attached to or logically associated with other data in electronic form and which is used by the signatory to sign.
e-Signature Verification and Validation Service	This is used to verify the documents that are signed electronically and to confirm that the electronic signature is valid.
e-Signature Preservation Service	This is used for extending the trustworthiness of the qualified electronic signature beyond the technological validity period.
e-Seal Creation Service	This is used to sign data in electronic form on behalf of a legal person. An 'electronic seal' means data in electronic form, which is attached to or logically associated with other data in electronic form to ensure

	the latter's origin and integrity. The 'creator of a seal' is a legal person who creates an electronic seal.
e-Seal Verification and Validation Service	This is used to verify the documents that are signed electronically and to confirm that the electronic seal is valid.
e-Seal Preservation Service	This is used for extending the trustworthiness of the qualified electronic signature beyond the technological validity period.
Registered Electronic Delivery Service	Transmits data between third parties by electronic means and provides evidence relating to the handling of the transmitted data, including proof of sending and receiving the data, and that protects transmitted data against the risk of loss, theft, damage or any unauthorised alterations.
e-Timestamp Creation Service	Creates timestamps used for establishing evidence that a given piece of data existed at a given point in time. 'Electronic timestamp' means data in electronic form which binds other data in electronic form to a particular time establishing evidence that the latter data existed at that time.
e-Timestamp Verification and Validation Service	Verifies and validates timestamps.
Machine Translation Service	Enables the automatic translation of data in form of plain text from one EU language to another EU language (or to a set of other EU languages).
Logging Service	Traces all events and user actions impacting a data entity throughout its lifecycle (from its creation to its disposal). It can be used to reproduce a certain state of a data entity at a certain moment in time.
Identity Management Service	Provides functionalities for the authentication of users. 'electronic identification' means the process of using person identification data in electronic form uniquely representing either a natural or legal person, or a natural person representing a legal person; 'authentication' means an electronic process that enables the electronic identification of a natural or legal person, or the origin and integrity of data in electronic form to be confirmed.
Messaging Service	Enables real-time transmission of text over the internet.
Notification Service	Enables real-time transmission of notifications over the internet.
Data Publication Service	Makes data available to other services or users.

The Digital Service Infrastructure is using the Hosting and Networking Infrastructure.

The Data Exchange Service should use data encryption described in a Data Encryption Specification. A possible secure implementation is that the Data Exchange Service uses the Access Point of the e-Delivery⁵. In that case, the e-SENS AS4 Profile specification would be used. The e-

⁵ See https://joinup.ec.europa.eu/asset/eia/asset_release/edelivery-sat-v101-beta

SENS AS4 is a profile of the ebMS3 and AS4 OASIS Standards which ensures secure and reliable data exchange.

4 REFERENCES

- European Interoperability Reference Architecture (EIRA)
<https://joinup.ec.europa.eu/asset/eia/>
- European Interoperability Framework (EIF)
http://ec.europa.eu/isa/documents/isa_annex_ii_eif_en.pdf
- ArchiMate®
<http://www.opengroup.org/subjectareas/enterprise/archimate>
- Archi®
<http://www.archimatetool.com/>

4.1 Legislative references

- 2014/771/EU: Commission Implementing Decision of 31 October 2014 on the identification of Universal Business Language version 2.1 for referencing in public procurement Text with EEA relevance
- Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No 913/2010 and repealing Regulations (EC) No 680/2007 and (EC) No 67/2010 Text with EEA relevance
- Directive 2014/23/EU of the European Parliament and of the Council of 26 February 2014 on the award of concession contracts Text with EEA relevance
- Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC (Text with EEA relevance)
- Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC (Text with EEA relevance)
- Directive 2014/55/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 April 2014 on electronic invoicing in public procurement (Text with EEA relevance)
- Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax
- Digital Single Market - Modernising VAT for cross border e-Commerce – Proposal

All of these texts can be found on EUR-LEX: <http://eur-lex.europa.eu/homepage.html?locale=en>, except the last one provided on https://ec.europa.eu/taxation_customs/business/vat/action-plan-vat_en.

4.2 Organisational references

- Comité Européen de Normalisation (European Committee for Standardization) - CEN Technical Committee 440 – Electronic Public Procurement
[CEN/TC 440 - Electronic Public Procurement](#)

4.3 Semantical references

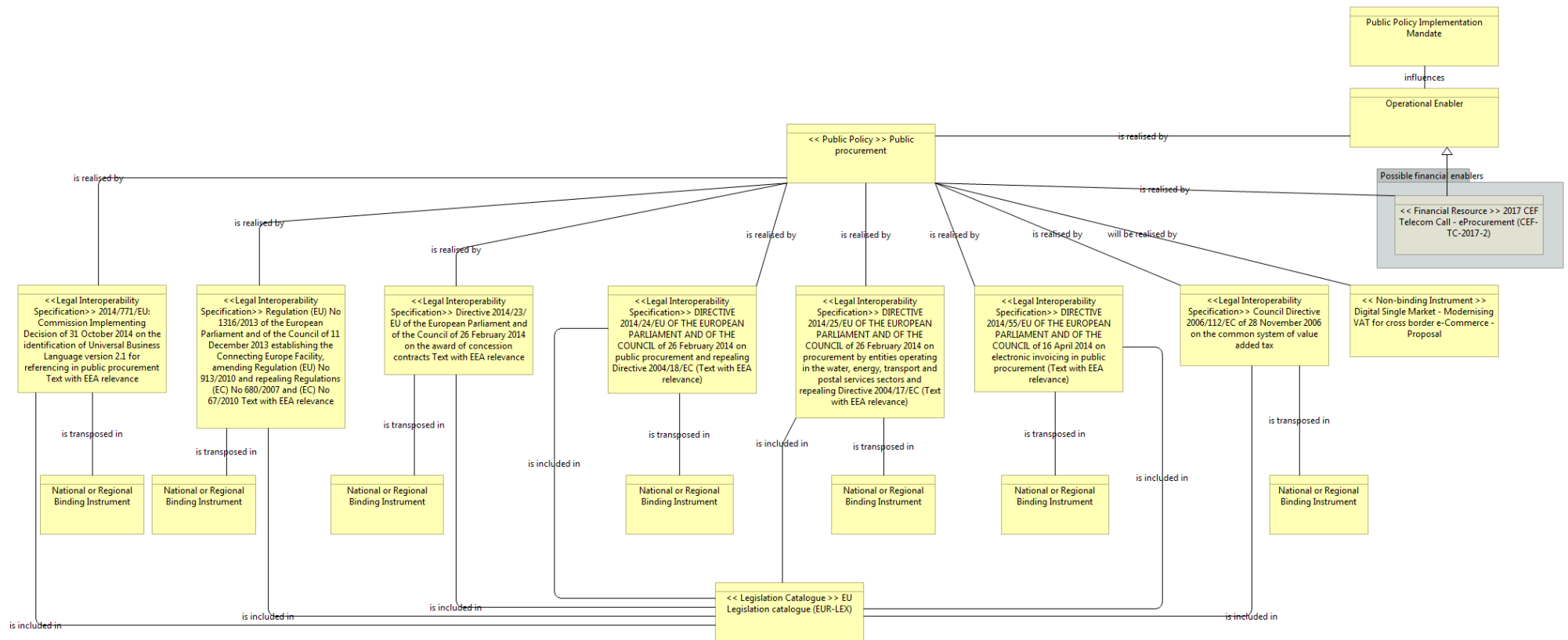
- Comité Européen de Normalisation (European Committee for Standardization) - CEN
Technical Committee 440 – Electronic Public Procurement
[CEN/TC 440 - Electronic Public Procurement](#)

5 ACKNOWLEDGEMENTS

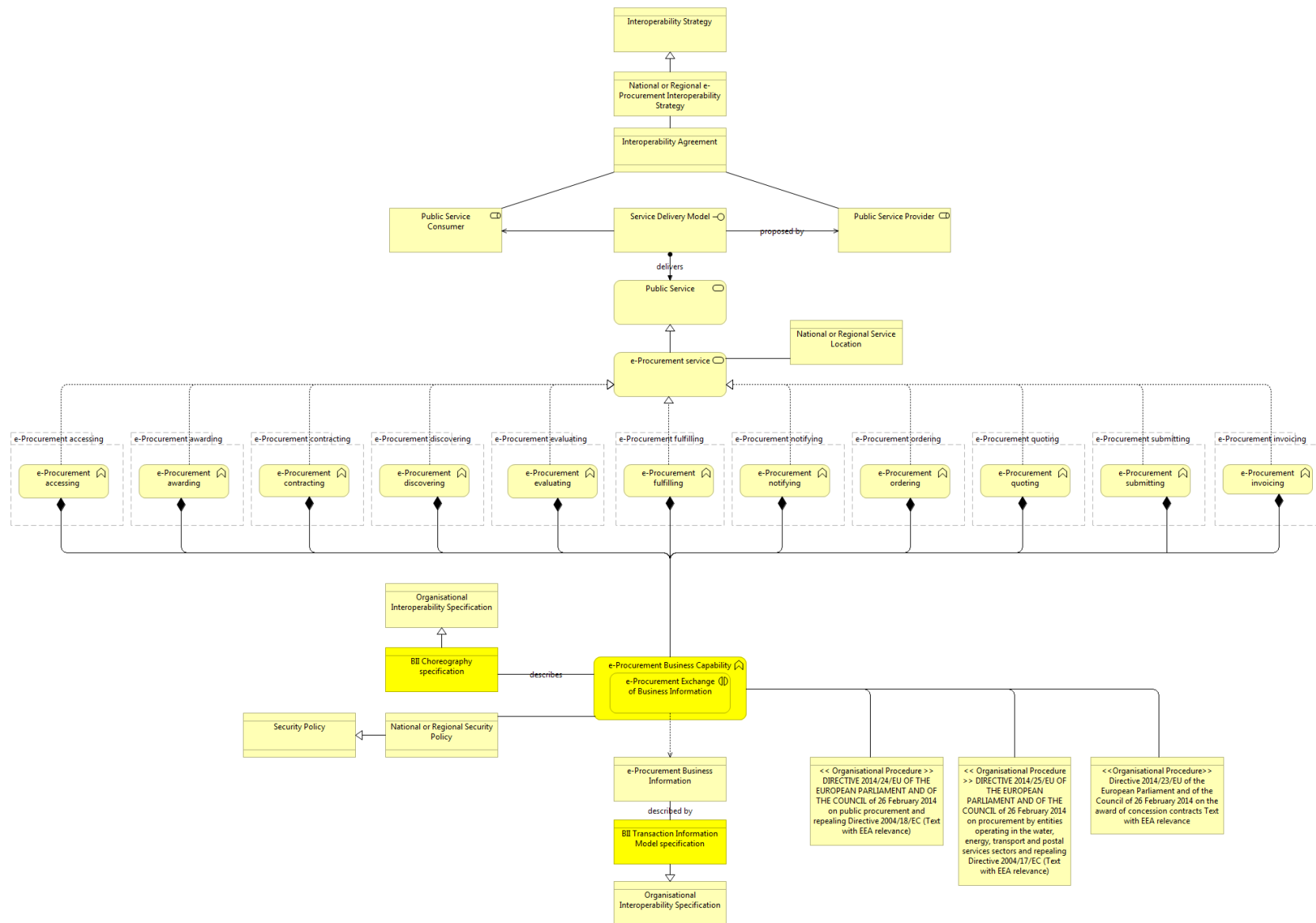
The creation of this SAT was made possible with the help of CEN Technical Committee 440 – Electronic Public Procurement. We would like to thank the following people for their input (alphabetical order):

- APOLOZAN Liviu
- BLOMMESTEIN Fred
- DRIJFHOUT Kornelis
- FROMYR Jostein
- GUASCH Cécile

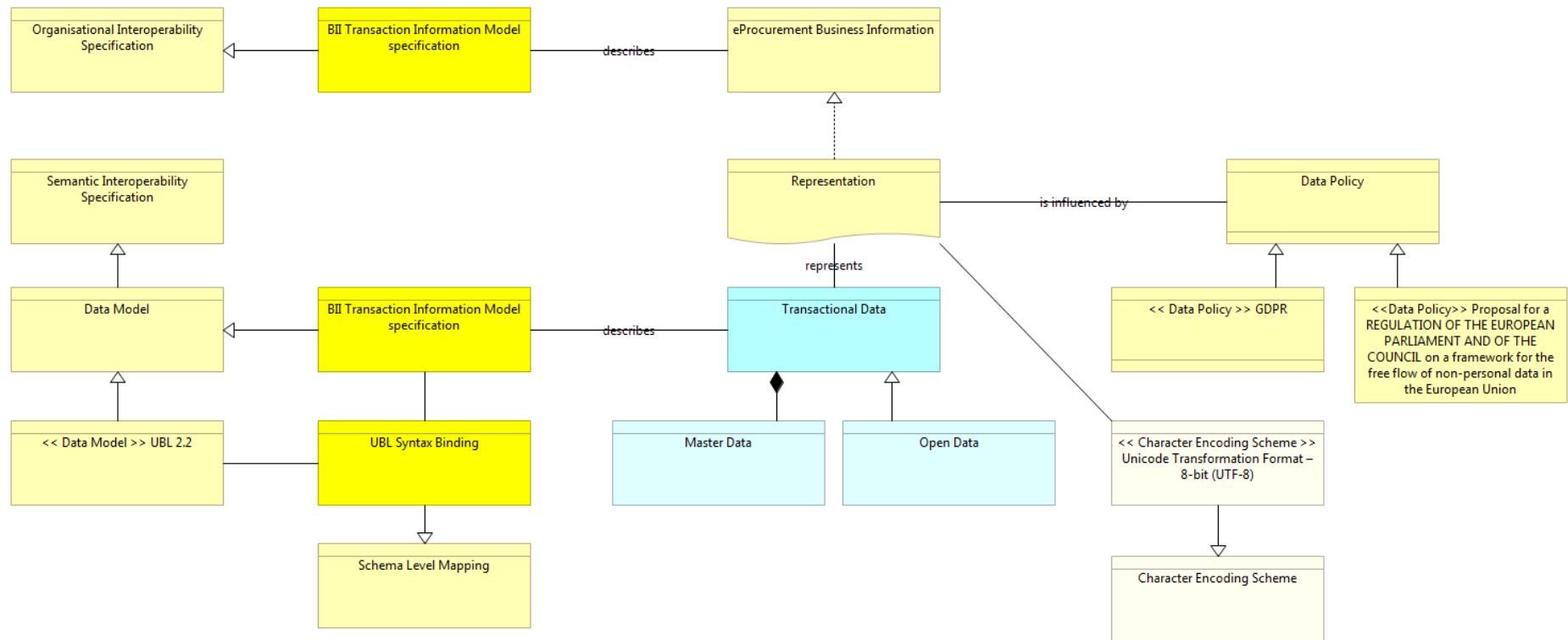
6 APPENDIX: LEGAL VIEW



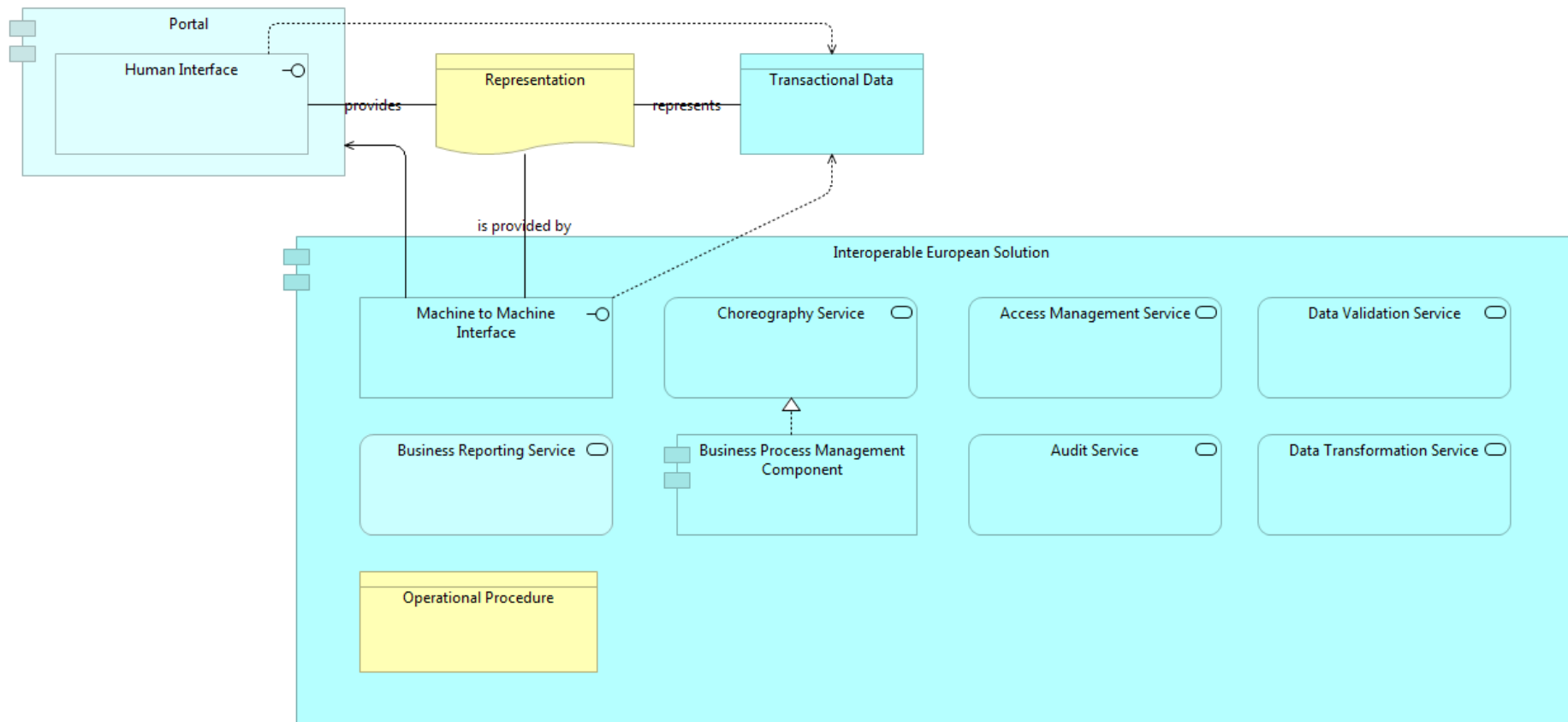
7 APPENDIX: ORGANISATIONAL VIEW



8 APPENDIX: SEMANTIC VIEW



9 APPENDIX: TECHNICAL VIEW – APPLICATION



10 APPENDIX: TECHNICAL VIEW – INFRASTRUCTURE

