



e-Procurement contracting 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..... | 6 |
| 2.1 | GOAL | 6 |
| 2.2 | WHAT IS E-PROCUREMENT CONTRACTING BUSINESS CAPABILITY? | 6 |
| 2.3 | WHAT IS A SOLUTION ARCHITECTURE TEMPLATE (SAT) | 6 |
| 2.4 | TARGET AUDIENCE | 6 |
| 3 | E-PROCUREMENT CONTRACTING INTEROPERABILITY MAPPED TO THE EIRA | 8 |
| 3.1 | ARCHIMATE MOTIVATION EXTENSION | 8 |
| 3.2 | HOW TO USE THIS SAT | 8 |
| 3.3 | E-PROCUREMENT CONTRACTING LEGAL VIEW | 10 |
| 3.4 | E-PROCUREMENT CONTRACTING ORGANISATIONAL VIEW..... | 11 |
| 3.5 | E-PROCUREMENT CONTRACTING SEMANTIC VIEW..... | 17 |
| 3.6 | E-PROCUREMENT CONTRACTING TECHNICAL VIEW – APPLICATION..... | 19 |
| 3.7 | E-PROCUREMENT CONTRACTING TECHNICAL VIEW – INFRASTRUCTURE | 20 |
| 4 | REFERENCES | 21 |
| 5 | ACKNOWLEDGEMENTS..... | 22 |
| 6 | APPENDIX: LEGAL VIEW..... | 23 |
| 7 | APPENDIX: ORGANISATIONAL VIEW..... | 24 |
| 8 | APPENDIX: SEMANTIC VIEW | 25 |
| 9 | APPENDIX: TECHNICAL VIEW – APPLICATION | 26 |
| 10 | APPENDIX: TECHNICAL VIEW – INFRASTRUCTURE | 27 |

1 INTRODUCTION

This document contains the description for a Solution Architecture Document (SAT) for the e-Procurement contracting business capability.

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
contracting v1.0.0 b1



SAT e-Procurement
contracting v1.0.0 b1

1.1 Purpose of this document

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

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 contracting business capability 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 a minimal, but holistic (legal, organisational, semantic and technical) interoperability architecture in the domain of e-Procurement contracting business capability. 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 contracting business capability?

The e-Procurement contracting business capability covers the signing, enactment of a contract / agreement and possibly its related catalogue through electronic means between the contracting bodies and the winning tenderer(s), as well as the signing of contract amendments and possibly their related catalogue.

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 contracting solution. |
| Policy maker | Policy makers studying the implications due to policy changes in the area of e-Procurement, contracting part |

| | |
|---|---|
| Public Administration / Members States | Public Administrations of the European Union that need to have a holistic view of the e-Procurement, contracting part interoperability architecture |
|---|---|

3 E-PROCUREMENT CONTRACTING INTEROPERABILITY MAPPED TO 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

There is no supplementary building block in this specific e-Procurement contracting Motivation View in comparison with the e-Procurement core Motivation View provided in the e-Procurement core SAT. The core Motivation View specified in the e-Procurement core SAT applies.

There is no supplementary building block in this specific e-Procurement contracting Motivation View in comparison with the e-Procurement core Motivation View provided in the e-Procurement core SAT.

3.2 How to use this SAT

The present SAT is specifically related to the contracting business capability of e-Procurement. The present document has to be used in complement to the SAT related to core e-Procurement.

Indeed:

- The e-Procurement core SAT focuses on the architecture that is common to all e-Procurement business capabilities.
- The present e-Procurement contracting SAT addresses the architecture that is specific to the contracting business capability.

Said in other words, the e-Procurement core SAT provides the foundation for the core e-Procurement, while the present SAT complements it by addressing the e-Procurement contracting specificities.

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

3.2.1 e-Procurement contracting Gap Analysis use case

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

3.2.2 e-Procurement contracting Building a solution architecture use case

When building a solution architecture, the solution architect is expected to use the four different EIRA views in the two e-Procurement core and e-Procurement contracting SATs and provide a solution in the form of Solution Building Blocks (SBBs) for the Architecture Building Blocks (ABBs) that are indicated. This is done by replacing the Architecture Building Block (ABB) with an

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

Interoperability Specifications (IoP specs) are added as specialisation of an Interoperability ABB, implemented in the form of an SBB and attached to an ABB as interoperability requirements. The final solution should only contain the implementation (the SBB) of the IoP Spec

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



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.

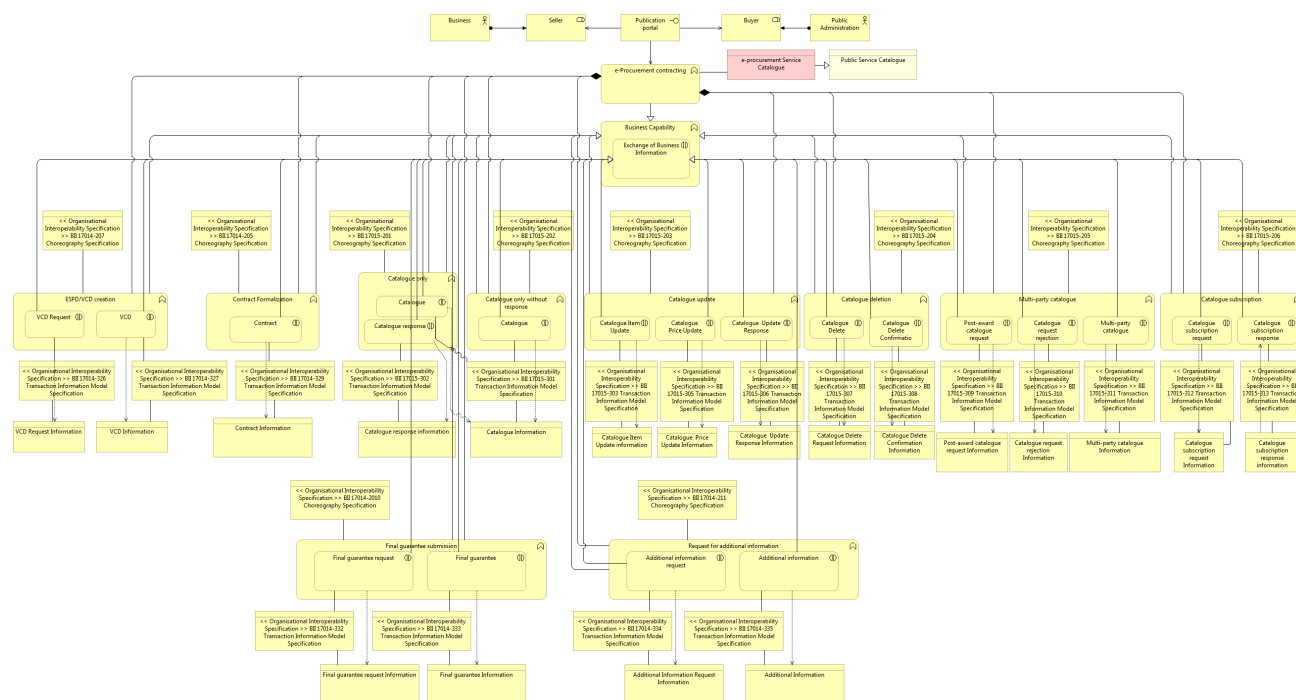
3.3 e-Procurement contracting Legal View

There is no supplementary building block in this specific e-Procurement contracting Legal View in comparison with the e-Procurement core Legal View provided in the e-Procurement core SAT. The core Legal View specified in the e-Procurement core SAT applies.

There is no supplementary building block in this specific e-Procurement submitting Legal View in comparison with the e-Procurement core Legal View provided in the e-Procurement core SAT.

3.4 e-Procurement contracting Organisational View

The Organisational view for the e-Procurement contracting business capability 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 contracting Business Capability is provided using the Publication portal Service Delivery Model and is listed in the e-procurement Service Catalogue.

The Publication portal is used for the signing, enactment of a contract / agreement and possibly its related catalogue between the Buyer (in the present case a Public Administration) and the Seller (the winning tenderer(s)), as well as the signing of contract amendments and possibly their related catalogue.

The e-Procurement contracting Business Capability is made up of the following refined Business Capabilities. For each capability, the Exchanges of Business Information between the Buyer and the Seller it involves are given:

1. ESPD/VCD Creation

Exchanges of Business Information:

- a. VCD Request
- b. VCD

2. Request for additional information for the contract

Exchanges of Business Information:

- a. Additional information request
- b. Additional information

3. Final guarantee submission

Exchanges of Business Information:

- a. Final guarantee request

- b. Final guarantee
- 4. Contract Formalization
 - Exchange of Business Information: Contract
- 5. Catalogue only
 - Exchanges of Business Information:
 - a. Catalogue
 - b. Catalogue response
- 6. Catalogue only without response
 - Exchange of Business Information: Catalogue
- 7. Catalogue update
 - Exchanges of Business Information:
 - a. Catalogue Item Update
 - b. Catalogue Price Update
 - c. Catalogue Update Response
- 8. Catalogue deletion
 - Exchanges of Business Information:
 - a. Catalogue Delete request
 - b. Catalogue Delete Confirmation
- 9. Multi-party catalogue
 - Exchanges of Business Information:
 - a. Post-award catalogue request
 - b. Catalogue request rejection
 - c. Multi-party catalogue
- 10. Catalogue subscription
 - Exchanges of Business Information:
 - a. Catalogue subscription request
 - b. Catalogue subscription response

The following table lists the Organisational Interoperability Specifications applying to the Business Capabilities and Exchanges of Business Information:

Table 3-1

| Business Capability and Exchange of Business Information | Organisational Interoperability Specification |
|---|--|
| ESPD/VCD Creation | BII 17014-207 |
| VCD Request | BII 17014-326 |
| VCD | BII 17014-327 |
| Request for additional information for the contract | BII 17014-211 |

| | |
|---------------------------------|---------------|
| Additional information request | BII 17014-332 |
| Additional information | BII 17014-333 |
| Final guarantee submission | BII 17014-210 |
| Final guarantee request | BII 17014-334 |
| Final guarantee | BII 17014-335 |
| Contract Formalization | BII 17014-205 |
| Contract | BII 17014-329 |
| Catalogue only | BII 17015-201 |
| Catalogue | BII 17015-301 |
| Catalogue response | BII 17015-302 |
| Catalogue only without response | BII 17015-202 |
| Catalogue | BII 17015-301 |
| Catalogue update | BII 17015-203 |
| Catalogue Item Update | BII 17015-303 |
| Catalogue Price Update | BII 17015-305 |
| Catalogue Update Response | BII 17015-306 |
| Catalogue deletion | BII 17015-204 |
| Catalogue Delete request | BII 17015-307 |
| Catalogue Delete Confirmation | BII 17015-308 |
| Multi-party catalogue | BII 17015-205 |
| Post-award catalogue request | BII 17015-309 |
| Catalogue request rejection | BII 17015-310 |
| Multi-party catalogue | BII 17015-311 |
| Catalogue subscription | BII 17015-206 |
| Catalogue subscription request | BII 17015-312 |
| Catalogue subscription response | BII 17015-313 |

ESPD/VCD creation

ESPD/ VCD Creation choreography describes the process and its variants by which exclusion and selection criteria are transmitted and answered by the seller (economic operator) either on basis of self-declaration or references to documents on remote locations such as links to national registers (ESPD) or evidences accompanying the response (VCD).

The ESPD requester can be the buyer (contracting body) that has established the exclusion and selection criteria required in the context of the tendering procedure or can be the Seller who delegates filling in the ESPD by a service provider.

VCD Request

VCD Request BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured document for requesting qualification information with their evidences as attachments through a Virtual Company Dossier (VCD), at least for the awarded tenderer.

VCD

VCD BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured document for providing qualification information and their accompanying evidences in response to a VCD Request.

Request for additional information for the contract

Request for additional information for the contract choreography describes the process and its variants by which the buyer (the contracting body) can request additional information to awarded tenderer in order to finalize the contract.

The key aspects covered by this choreography are:

- The contracting body requests additional information in order to establish the contract.
- The awarded tenderer provides the additional information.

Additional information request

Additional information request BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured electronic document for requesting additional information for the preparation of the contract.

Additional information

Additional information BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured electronic document for providing additional information for the preparation of a contract.

Final Guarantee Submission

Final guarantee submission choreography describes the process and its variants by which the buyer (the contracting body) can request a final guarantee to the contractor.

Final guarantee request

Final guarantee request BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured electronic document for requesting to the seller (contractor) a guarantee on the contract.

Final guarantee

Final guarantee BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured electronic document for providing to the buyer (contracting body) an evidence of a guarantee on the contract.

Contract formalization

Contract formalization choreography describes the process and its variants by which the buyer (the contracting body) can finalize the contract after a business opportunity has been awarded.

The key aspects covered by this choreography are:

- The draft contract is prepared by the Buyer.
- All involved parties must sign the contract.

Usually, in the context of public administrations, it is recommended that the contract is first signed by the contractors before it is signed by the contracting body who sends the signed version back to the contractors. Other scenarios may exist.

Contract

Contract BII transaction provides the set of interoperability specifications to support the electronic exchange of a structured document, its attachments and signatures making the contract.

Catalogue Only

Catalogue only choreography describes the process and its variants by which the seller sends a catalogue to the buyer.

A key aspect in this choreography is that the buyer informs the seller when he has received the catalogue with a catalogue response.

Catalogue

Catalogue BII transaction provides the set of interoperability specifications to support the electronic exchange of information on items, e.g., prices, ordering information or properties, offered by supplier in a structured format as part of a contract.

Catalogue Response

Catalogue BII transaction provides the set of interoperability specifications to support the electronic exchange of information on the reception of a catalogue.

Catalogue Only without response

Catalogue only choreography describes the process and its variants by which the seller sends a catalogue to the buyer.

A key aspect in this choreography is that there is no confirmation of the reception of the catalogue by the buyer.

Catalogue

Catalogue BII transaction provides the set of interoperability specifications to support the electronic exchange of information on items, e.g., prices, ordering information or properties, offered by supplier in a structured format as part of a contract.

Catalogue update

Catalogue update choreography describes the process and its variants by which the seller sends a catalogue update to the buyer in order to refresh the information the buyer has.

Updates can be price updates in case of indexation for instance, or item updates.

Catalogue item update

Catalogue item update BII transaction provides the set of interoperability specifications to support the electronic exchange of information on updates on items, ordering information or properties, offered by supplier in a structured format as part of a contract.

Catalogue price update

Catalogue item update BII transaction provides the set of interoperability specifications to support the electronic exchange of information on updates on pricing offered by supplier in a structured format as part of a contract.

Catalogue Update Response

Catalogue update response BII transaction provides the set of interoperability specifications to support the electronic exchange of information on the reception of a catalogue item update or catalogue price update.

Catalogue Deletion

Catalogue deletion choreography describes the process and its variants by which the seller sends a request to delete a catalogue on the buyer's side in order to suppress the information the buyer has.

Catalogue Delete Request

Catalogue delete request BII transaction provides the set of interoperability specifications to support the electronic exchange of information on the request for suppressing a specific catalogue.

Catalogue Delete Confirmation

Catalogue delete confirmation BII transaction provides the set of interoperability specifications to support the electronic exchange of information on the confirmation that the specific catalogue has been deleted.

Multi-Party Catalogue

Multi-party catalogue choreography describes the process and its variants by which the buyer sends a catalogue request to a catalogue provider who aggregates catalogues of more parties contributing in fulfilling the same catalogue request.

Key aspects of this choreography are that:

- Catalogue items may be supplied by more sellers.
- The catalogue request can be rejected

Post-award catalogue request

Post-award catalogue request BII transaction provides the set of interoperability specifications to support the electronic exchange of information on the request for a specific catalogue or a group of items in a specific catalogue

Catalogue request rejection

Catalogue request rejection BII transaction provides the set of interoperability specifications to support the electronic exchange of information on the rejection of a given catalogue request.

Multi-party catalogue

Multi-party Catalogue BII transaction provides the set of interoperability specifications to support the electronic exchange of information on an aggregated list of items, e.g., prices, ordering information or properties, offered by more suppliers in a structured format

Catalogue subscription

Catalogue subscription choreography describes the process and its variants by which the buyer subscribes to receive updates of a catalogue.

Catalogue subscription request

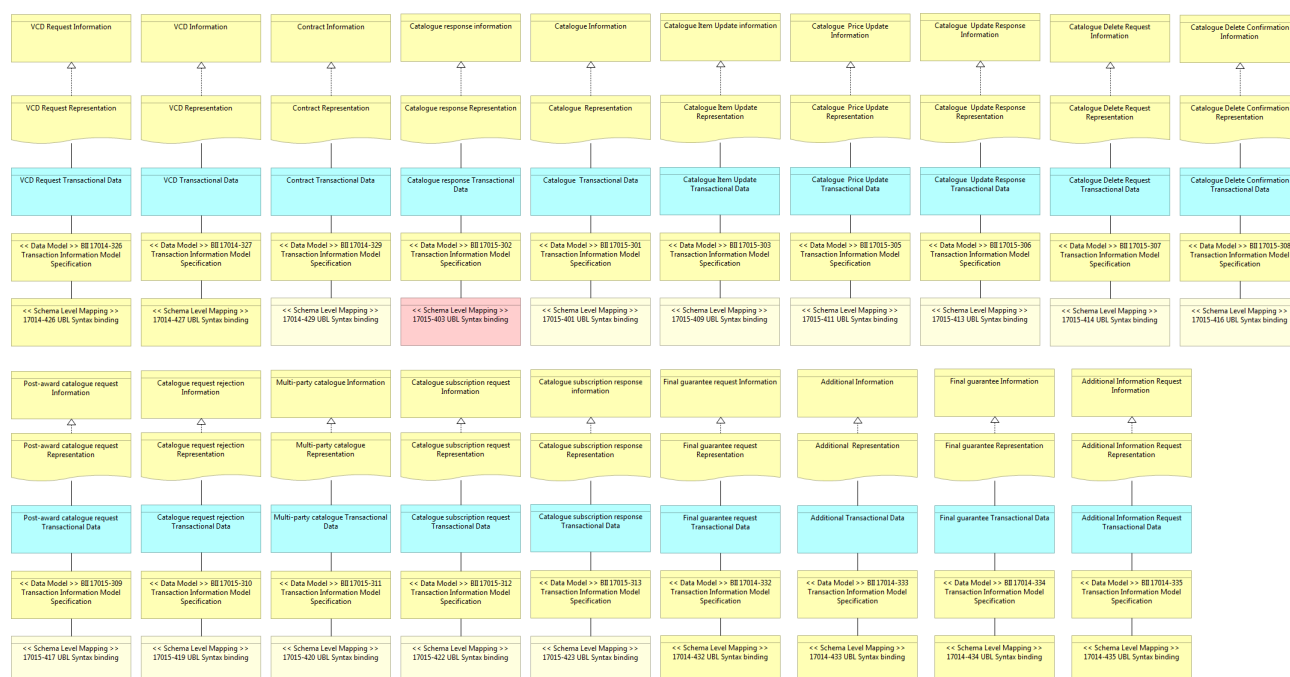
Catalogue subscription request BII transaction provides the set of interoperability specifications to support the electronic exchange of information on subscribing to catalogue updates

Catalogue subscription response

Catalogue subscription response BII transaction provides the set of interoperability specifications to support the electronic exchange of information on the response to a subscription to catalogue updates

3.5 e-Procurement contracting Semantic View

The 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):



The Transactional Data ABBs represent at the semantic point of view the business information exchanged at the organisational point of view.

Consequently, there are 19 Transactional Data ABBs in the e-contract semantic view:

1. VCD Request
2. VCD
3. Additional information request
4. Additional information
5. Final guarantee request
6. Final guarantee
7. Contract
8. Catalogue response
9. Catalogue
10. Catalogue Item Update
11. Catalogue Price Update
12. Catalogue Update Response
13. Catalogue Delete request
14. Catalogue Delete Confirmation
15. Post-award catalogue request
16. Catalogue request rejection

17. Multi-party catalogue
18. Catalogue subscription request
19. Catalogue subscription response

Each Transactional Data is defined in a Data Model SBB, the BII Transaction Information Model Specification, itself associated to a Schema Level Mapping SBB, the UBL Syntax Binding specification. These are listed in the following table:

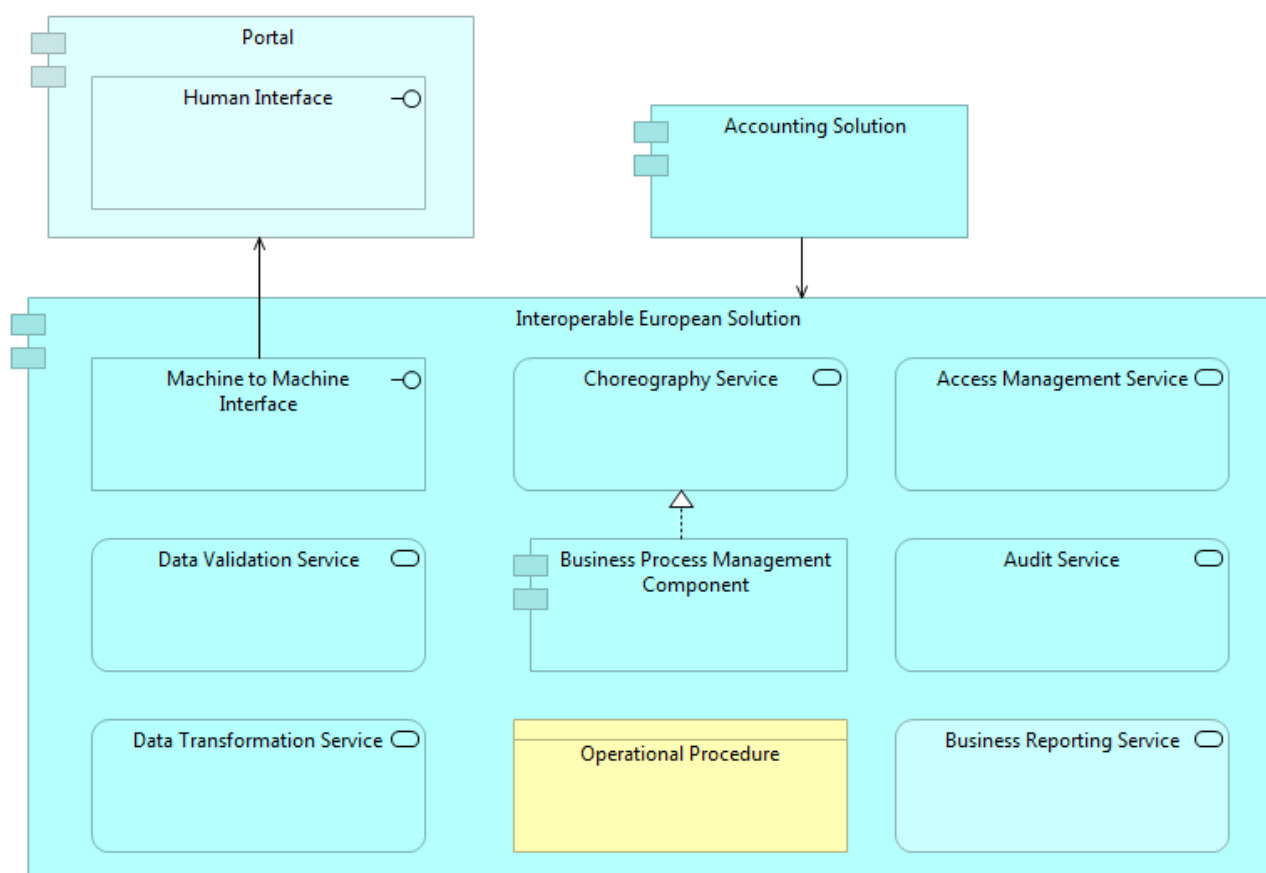
Table 3-2

| Transactional Data | Transaction Information Model Specification | UBL Syntax Binding |
|---------------------------------|--|---------------------------|
| VCD Request | BII 17014-326 | 17014-426 |
| VCD | BII 17014-327 | 17014-427 |
| Final guarantee request | BII 17014-332 | 17014-432 |
| Final guarantee | BII 17014-333 | 17014-433 |
| Additional information request | BII 17014-334 | 17014-434 |
| Additional information | BII 17014-335 | 17014-435 |
| Contract | BII 17014-329 | 17014-429 |
| Catalogue response | BII 17015-302 | 17015-403 |
| Catalogue | BII 17015-301 | 17015-401 |
| Catalogue Item Update | BII 17015-303 | 17015-409 |
| Catalogue Price Update | BII 17015-305 | 17015-411 |
| Catalogue Update Response | BII 17015-306 | 17015-413 |
| Catalogue Delete request | BII 17015-307 | 17015-414 |
| Catalogue Delete Confirmation | BII 17015-308 | 17015-416 |
| Post-award catalogue request | BII 17015-309 | 17015-417 |
| Catalogue request rejection | BII 17015-310 | 17015-419 |
| Multi-party catalogue | BII 17015-311 | 17015-420 |
| Catalogue subscription request | BII 17015-312 | 17015-422 |
| Catalogue subscription response | BII 17015-313 | 17015-423 |

3.6 e-Procurement contracting Technical View – Application

There are two supplementary building blocks in this e-Procurement contracting Technical View – Application in comparison with e-Procurement core Technical View – Application provided in the e-Procurement core SAT:

- Part of the IES:
 - Document Generation Service
- External to IES:
 - Accounting Solution



The Representations of Transactional Data that the MMI has to process are the ones shown in the specific Semantic View shown in the previous paragraph of the present document.

3.7 e-Procurement contracting Technical View – Infrastructure

There is no supplementary building block in this specific e-Procurement contracting Technical View – Infrastructure in comparison with the e-Procurement core Technical View – Infrastructure provided in the e-Procurement core SAT. The core Technical View – Infrastructure specified in the e-Procurement core SAT applies.

There is no supplementary building block in this specific e-Procurement contracting Technical View – Infrastructure in comparison with the e-Procurement core Technical View – Infrastructure provided in the e-Procurement SAT.

4 REFERENCES

The references listed in the e-Procurement core SAT apply.

5 ACKNOWLEDGEMENTS

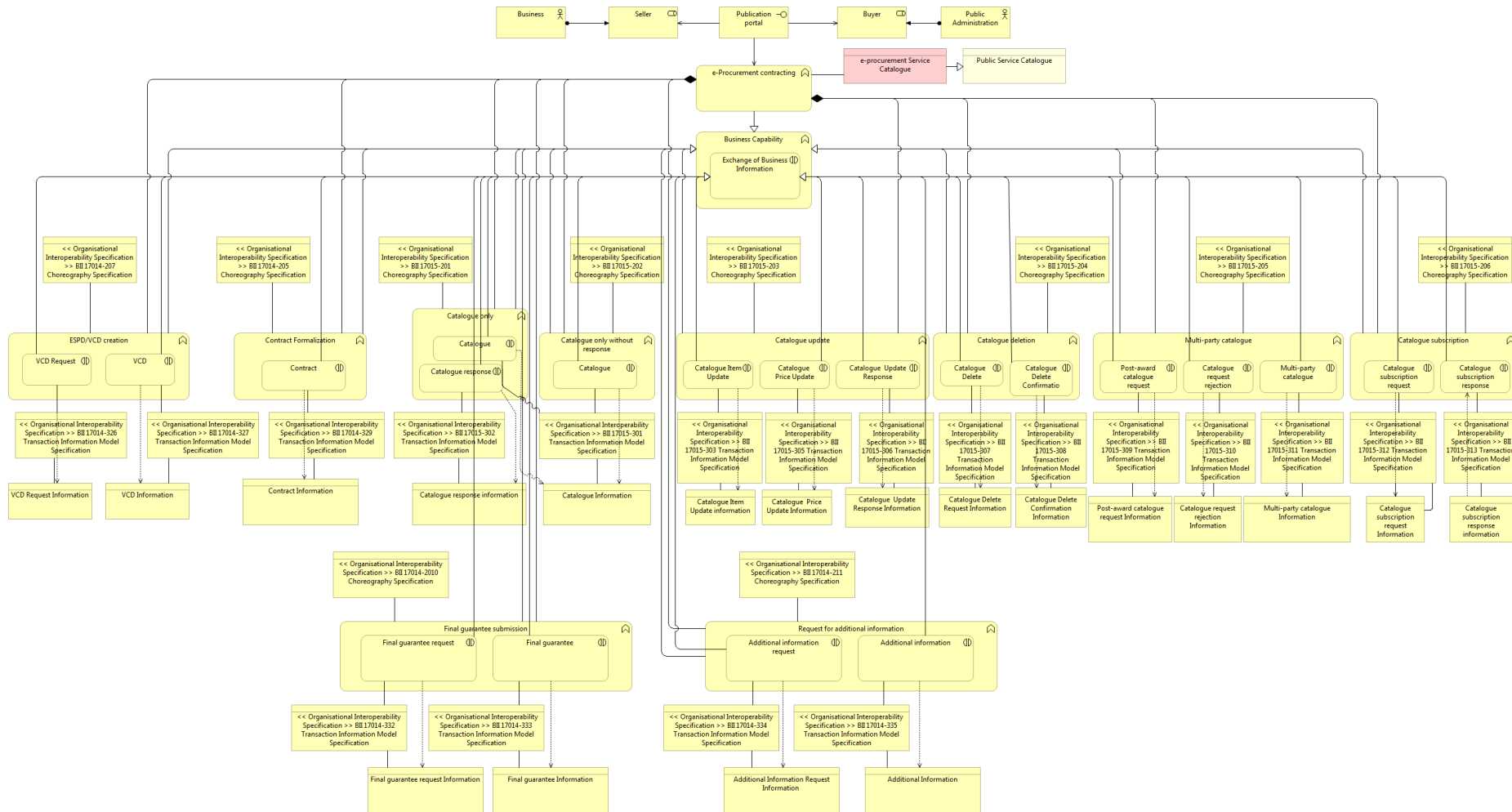
The creation of this SAT was made possible with the help of CEN Technical Committee 440 – Electronic Public Procurement. We would like to thank the following people for their input (alphabetical order):

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

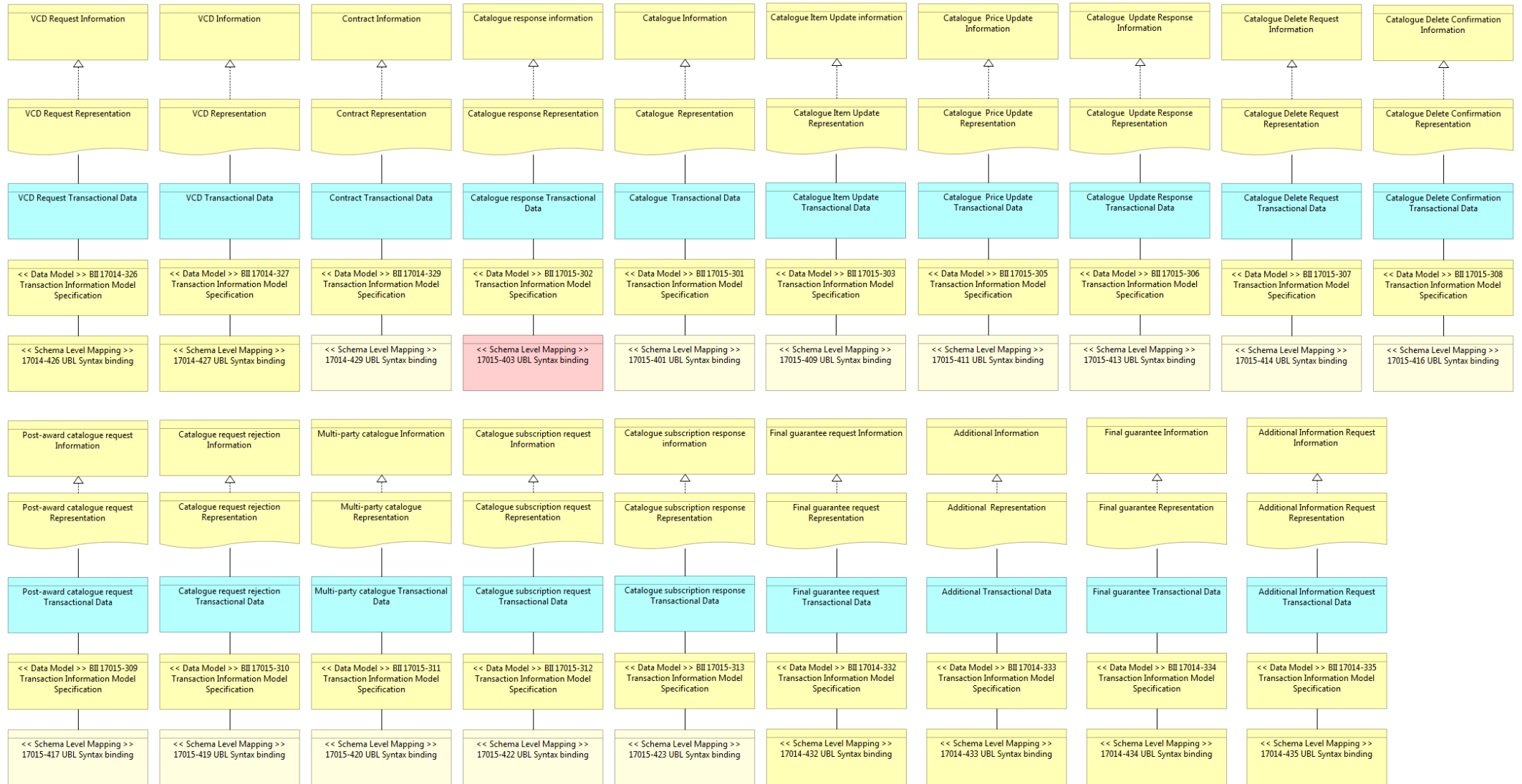
6 APPENDIX: LEGAL VIEW

There is no supplementary building block in this specific e-Procurement submitting Legal View in comparison with the e-Procurement core Legal View provided in the e-Procurement core SAT.

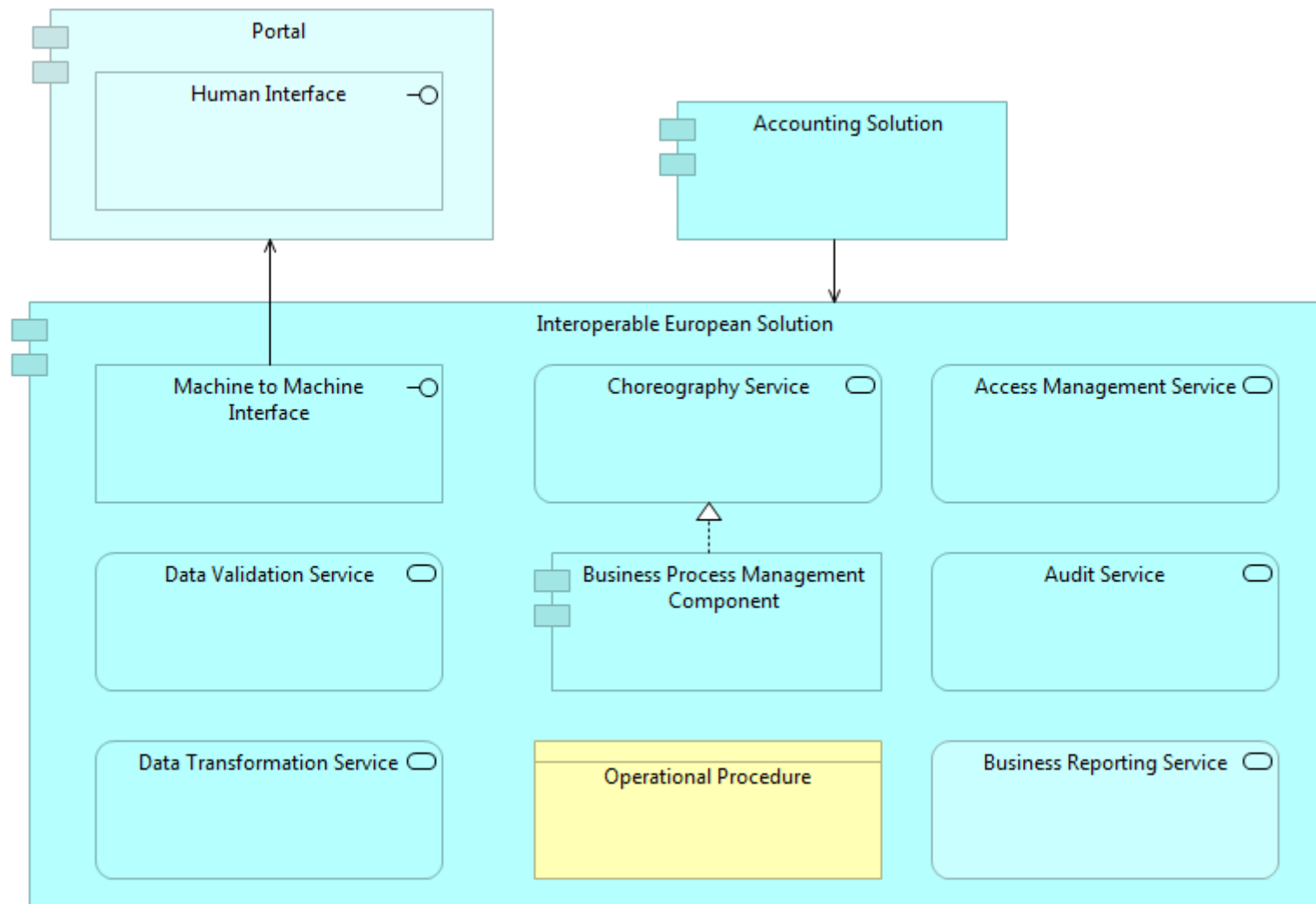
7 APPENDIX: ORGANISATIONAL VIEW



8 APPENDIX: SEMANTIC VIEW



9 APPENDIX: TECHNICAL VIEW – APPLICATION



10 APPENDIX: TECHNICAL VIEW – INFRASTRUCTURE

There is no supplementary building block in this specific e-Procurement contracting Technical View – Infrastructure in comparison with the e-Procurement core Technical View – Infrastructure provided in the e-Procurement SAT.