Submitted to the EC on 26/05/2017

COMPETITIVENESS AND INNOVATION FRAMEWORK PROGRAMME

ICT Policy Support Programme (ICT PSP)

Project acronym: e-SENS

Project full title: Electronic Simple European Networked Services

ICT PSP call identifier: CIP-ICT-PSP-2012-6

ICT PSP main theme identifier: CIP-ICT-PSP-2012-6-4.1 Basic Cross Sector Services

Grant agreement n°: 325211

D5.7b: e-SENS Requirements Framework

Deliverable Id :	D5.7b (*or D5.8*)
Deliverable Name :	Requirements Framework n^{o} 2 Final
Version :	1.0
Status :	Final
Dissemination Level :	Public
Due date of deliverable :	M48
Actual submission date :	26.05.2017
Work Package :	WP5
Organisation name of lead partner for this deliverable :	UPRC
Author(s):	Fokion Logothetidis (FORTH, GR), Andriana Prentza, Lefteris Leontaridis (UPRC, GR)
Partner(s) contributing :	Domain Leaders, Workgroup Coordinators and MS piloting

Abstract:

D5.7b is the final version of the Requirements Framework of the project. It updates the interim version D5.7a by fine tuning the pilot blueprints, (including the requirements), of the four initial domains (eProcurement, eHealth, e-Justice and Business Life Cycle). It also includes the pilot blueprints and the related requirements of the new domain use cases of the e-Justice domain as well as the pilot blueprints and the related requirements of the new domain (Citizen Lifecycle). Moreover, D5.7b consolidates all pilot requirements of domain use cases captured across the domains of the project and synthesizes them in the final Requirements Framework that is aligned with the final WP6 Architectural Framework. The main part of D5.7b, including the final pilot blueprint descriptions of the domain use cases and the related requirements as well as a consolidation of all requirements per SAT, is stored in the WP5 wiki for e-SENS pilots and more

specifically in the Pilot Blueprints and Requirements Repository.

Table of contents

List of Figures

List of Tables

Glossary

See: http://wiki.ds.unipi.gr/display/ESENSPILOTS/Glossary

Executive Summary

The aim of e-SENS (Electronic Simple European Networked Services) is to provide generic interoperable solutions for cross-border public services in Europe. e-SENS is an LSP project launched by the European Commission to support the realisation of European policies. All of the LSPs that have been launched facilitate the use of innovative technologies for the deployment of EU-wide services in selected areas and, in turn, the development of a Digital Single Market.

The objective of this deliverable is to produce a comprehensive overview of the final pilot requirements that come from the e-SENS domains. This is done by presenting at domain level, all pilot blueprint descriptions that are related to domain use cases as well as by consolidating the final requirements from all domain use cases into a common repository. This is the final e-SENS Requirements Framework which is aligned with the final WP6 Architectural Framework.

In fact, D5.7b continues the work carried out in the second year of the project in the context of deliverable D5.7a. The final version D5.7b incorporates the pilot blueprints and the related requirements of the **new domain use cases of the e-Justice domain** (the e-CODEX pilots on Mutual Legal Assistance (MLA)/European Investigation Order (EIO) and Financial Penalties were on-boarded in e-SENS so that they would have some more time to expand the geographical coverage and further develop the results) as well as the pilot blueprints and the related requirements of the **new e-SENS domain (Citizen Lifecycle).** Also, it fine-tunes the pilot blueprints, including the requirements, of the four initial domains (**eProcurement, eHealth, e-Justice and Business Life Cycle**). Moreover, D5.7b consolidates all pilot requirements of domain use cases captured across the domains of the project and synthesizes them in a common Requirements Framework that is **aligned** with the final **WP6 Architectural Framework**.
In addition, the final e-SENS Requirements Framework, is implemented as user-friendly electronic repository, the **Pilot Blueprints and Requirements Repository**, which is part of the **WP5 wiki for e-SENS Pilots** that includes documentation about e-SENS pilots and is related with the final WP5 deliverables D5.6 and D5.7b.
Thus, the Pilot Blueprints and Requirements Repository on the WP5 wiki stores the final blueprint descriptions including the requirements of the domain UCs and presents a **consolidation of requirements per SAT**. Moreover, the requirements are **mapped** and **linked** to the entities of the e-SENS EIRA (SATs, ABBs) which are stored in the WP6 wiki for e-SENS EIRA thereby improving the traceability of requirements.

The methodology used in order to produce D5.7b was the same as the methodology used for the production of D5.7a. In addition, the requirements are mapped and linked with the entities (SATs, ABBs) of the e-SENS EIRA.
The deliverable is **composed of two parts**: This report and the **electronic Pilot Blueprints and Requirements Repository** which is **part of the WP5 wiki for e-SENS Pilots**. The other main part of the WP5 wiki, is the **Repository of Pilot Solutions** that is related to **deliverable D5.6.** It includes the pilot documentation and evaluation material for e-SENS pilots. Moreover, a separate part of the WP5 wiki presents the methodologies and templates used for both deliverables.

The links to the WP5 wiki which are related to D5.7b are shown below:

- **WP5 wiki for e-SENS Pilots:**
  http://wiki.ds.unipi.gr/display/ESENSPILOTS/e-SENS+Pilots+Home
  - **Pilot Blueprints and Requirements Repository**
    http://wiki.ds.unipi.gr/display/ESENSPILOTS/Pilot+Blueprints+and+Requirements+Repository

The report introduces the deliverable (in chapter 1) by giving the objective and scope of the deliverable, an overview of the methodology used in the context of the deliverable as well as a description about its relations to internal and external e-SENS environment (WP5, other WPs), quality and risk management and legal issues. The report also presents, (in chapter 2), in more detail the overall requirements modelling methodology used to organize the whole process for the production of the related deliverables D5.1 (1st year deliverable), D5.7a (2nd year deliverable) and D5.7b and provides a short description about the electronic Pilot Blueprints and Requirements Repository that stores all the related material. The final chapter summarises the results/findings of the previous sections and includes final conclusions.

The electronic Pilot Blueprints and Requirements Repository presents in a **user friendly** way the pilot blueprints including the requirements of the e-SENS domain UCs, as well as a **consolidation** of requirements per SAT of the e-SENS EIRA.

The main findings and lessons learned are:

- The e-SENS domains have collectively produced **195 requirements**, aggregated from all domain use cases. About **185 requirements** are related to e-SENS BBs[1] (SATs, ABBs). The remaining functional and non-functional requirements, although they are relevant to specific domain UCs, they are not mapped to e-SENS SATs since they are for domain specific business logic.
- In the context of **deliverable D5.1**, which was a deliverable of the first year of e-SENS, the level of detail of description of pilot blueprint descriptions and the related requirements was not the same in all domain use cases. Also, the presentation of requirements was different among domain use cases.
- In the context of **deliverable D5.7a,** which was a deliverable of the second year of e-SENS, we went one step further as regards the description of requirements. Taking into account the remarks for deliverable D5.1 from the 1st year technical review of e-SENS, as well as the work done during the second year of the project, the working groups of WP5, **revised and updated** the pilot blueprints and the related requirements of the domain use cases in order to **homogenize** the related descriptions. The main amendments were based on changes in the **requirement modelling methodology** that had been used in the context of deliverable D5.1. WP5 working groups processed the requirements in order to improve their **granularity** and **clearly categorize** them so that we understand what they represent and how they should be considered when designing or building a system. The main categories of identified requirements are functional and non-functional. For the latter, their description is based on ISO/IEC 25010:2011[2].
- **D5.7b,** is based on the same requirement modelling methodology used in D5.7a, it produces the final Requirements Framework which is **aligned** with the **final WP6 Architectural Framework** and it is stored in a user friendly electronic repository which is part of the WP5 wiki for e-SENS pilots.

[1] A complete description of e-SENS BBs can be found in the WP6 wiki: http://wiki.ds.unipi.gr/display/ESENS/WP6+-+Building+Blocks.

[2] ISO/IEC. Systems and software engineering -- Systems and software Quality Requirements and Evaluation (SQuaRE) -- System and software quality models [PDF or Paper]. Edition 1. 2011-03-01. Available from Internet: http://www.iso.org/iso/catalogue_detail.htm?csnumber=35733.

1. Introduction

1.1. Scope and Objective of Deliverable

According to the Technical Annex of the project, D5.7 is the second version of the Requirements Framework of the project. D5.7 is produced in the context of T5.0.1 (Consolidation of Requirements Mapping and Validation) of WP5. D5.7 updates deliverable D5.1 (e-SENS Requirements Framework No 1) and consists of **D5.7a**, which is an interim version that is produced in the second year of e-SENS, and **D5.7b**, the final version of D5.7, which is submitted on M48.

The main objectives of D5.7 are:

- Maintain, revise and update, at domain level, all blueprint descriptions that are related to domain use cases, including goals and scope, key examples and related requirements as well as the necessary e-SENS BBs.
- Review and harmonize the above descriptions at the domain level.
- Synthesise the domain level input with regard to consolidating the revised requirements into a common requirements framework; and subsequent assurance that this framework is mapped and aligned with the WP6 Architectural Framework.
- Present all the requirements captured per e-SENS BB.

D5.7a, was an update of the deliverable D5.1 e-SENS Requirements Framework No 1 submitted in April 2014. D5.7a included revised and updated pilot blueprints and related requirements of domain use cases with clarifications about stakeholders consulted in each domain. Pilot requirements were more clearly articulated, referenced and mapped to BBs. The requirements capture and documentation methodology had been enhanced in order for the categorization of requirements to be more comprehensive. Additionally, a more accurate and more granular mapping to BBs following the e-SENS EIRA of WP6 was also included, making more clear which requirements point to the use of specific BBs. In D5.7a, WP5 working groups have processed the requirements in order to improve their granularity and clearly categorize them so that we understand what they represent and how they should be considered when designing or building a system. The main categories of identified requirements are functional and non-functional. For the latter, their description is based on ISO 25010.

D5.7b continues and finalizes the work carried out in the second year of the project in the context of deliverable D5.7a. More specifically:

- It includes the pilot blueprints and the related requirements of the **new domain use cases of e-SENS**. These include:
    - **Two new UCs** from the **e-Justice domain**:
        - UC 5.3.5 Mutual Legal Assistance/ European Investigation Order
        - UC 5.3.6 Financial Penalties

      These two UCs are coming from e-CODEX and were on-boarded in e-SENS so that they would have some more time to expand the geographical coverage and further develop the results
    - The UCs of the **new domain** of e-SENS, the **Citizen Lifecycle** domain:
        - UC 5.5.1 Citizen Lifecycle. It includes the following sub-use cases:

1. UC 5.5.1 Citizen Lifecycle - Nemkonto
2. UC 5.5.1 Citizen Lifecycle - Patient Access
3. UC 5.5.1 Citizen Lifecycle - eEducation
4. UC 5.5.1 Citizen Lifecycle - Record Matching

- UC 5.5.2 eAgriculture

- Moreover, it **fine-tunes** the pilot blueprints, including the requirements, of the four initial domains of e-SENS (eProcurement, eHealth, e-Justice and Business Life Cycle). Below are the changes from v1.0 of D5.7a:
  - **UC 5.1.1 eTendering:**
    As regards UC 5.1.1 eTendering, there are **21 new legal requirements** for **trust models** (**R5.1-UC1-47… R5.1-UC1-67**) in accordance to Directive 2014-24-EU[3] on public procurement. Based on these legal requirements there are **13 new business requirements** (**R5.1-UC1-68… R5.1-UC1-80**). All requirements are mapped to the **Trust Establishment SAT, (ABB-Trust Network PKI).**

    Additional changes regarding the mapping of some requirements to BBs are as follows:
    - R5.1-UC1-17: has been changed from e-Delivery to e-Documents (ABB Document provisioning).
    - R5.1-UC1-25: has been changed from eSignature to Trust Establishment (ABB Trust Network Mutual Recognized Certificates).
    - R5.1-UC1-26: has been changed from eSignature to Traceability (ABB Time Stamping).
    - R5.1-UC1-27: has been changed from eSignature to Traceability (ABB Time Stamping).
    - R5.1-UC1-28: has been changed from e-Delivery to Traceability (ABB Time Stamping, ABB Non Repudiation).
      R5.1-UC1-32: has been changed from eSignature to "Other Functional and Non-Functional Requirements (Domain specific business logic - No BB mapping)".
  - **UC 5.2.2 eConfirmation:**
    The mapping of some requirements to BBs has been changed as follows:
    - R5.2-UC2-9: has been changed from eDocuments to eDelivery (ABB Message Exchange).
    - R5.2-UC2-13: has been changed from e-Delivery to Trust Establishment (ABB Trust Network PKI, ABB Trust Network Mutual Recognized Certificates).
      R5.2-UC2-14: has been changed from Trust Establishment to eDocuments (ABB Document Provisioning, ABB Document Packaging and ABB Document Routing).
  - **UC 5.4.1 Business Registration and UC 5.4.2 Activity Registration:**
    The mapping of some requirements to BBs has been changed as follows:

[3] EUR-LEX -Europa. 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. Official Journal of the EU [online]. 28/ 03/2014, L 94/65, [viewed 11 March 2015]. Available from internet:

http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014L0024&from=HR

- R5.4-UC1-4/ R5.4-UC2-4 and R5.4-UC1-5/R5.4-UC2-5 have been changed from the Attribute Provider SAT to eID (ABB-Cross Border Attribute Provision).
- R5.4-UC1-11/ R5.4-UC2-11 have been changed from the Process SAT to eDocument (ABB - Business Rules Integration).

- Finally, D5.7b consolidates all pilot requirements of the domain use cases captured across the domains of the project and synthesizes them in the **final Requirements Framework** that is **aligned with the final WP6 Architectural Framework**. The final pilot blueprint descriptions of the domain use cases including the requirements are stored in the **WP5 electronic repository, (wiki for e-SENS Pilots),** and more specifically in the **Pilot Blueprints and Requirements Repository**[4]**.** Additionally, the requirements are **mapped** and **linked** to the **entities of the e-SENS EIRA (SATs, ABBs)** which are stored in the WP6 wiki for the e-SENS EIRA.

  The related links to the repository are shown below:

- **WP5 wiki for e-SENS Pilots:**
  http://wiki.ds.unipi.gr/display/ESENSPILOTS/e-SENS+Pilots+Home
  - **Pilot Blueprints and Requirements Repository (related to D5.7b)**
    http://wiki.ds.unipi.gr/display/ESENSPILOTS/Pilot+Blueprints+and+Requirements+Repository

The **target audience** for this deliverable includes interested parties that want to look in more detail at requirements from e-SENS pilots that influence the scope of pilots and the design of building blocks. It supposes that the reader has technical background and is familiar with basic technical concepts of software and systems design and/or has worked within business domains taking into account the technology dimension. The reader should also be familiar with the e-SENS Technical Annex and deliverables D6.1, D6.3, D6.6 and D6.7 for reference to technology BBs.

The statement of requirements from piloting domains in D5.7 cannot act as a determinant of piloting choices if these are not conformant to the overall e-SENS principles for pilot value, eligibility and priority, as agreed in the project and described in deliverable D5.2.

1.2. WP5 General Objectives and Vision

D5.7b, as one of the deliverables of WP5, contributes to achieving the objectives of WP5.

The vision of WP5 is to demonstrate that it is feasible, realistic and sustainable to deploy real-life ICT services within and among countries across Europe. The pilots will be in so-called production pilot environments where actual transactions among public administrations, or between them and European citizens and

[4] The other part of the WP5 wiki for e-SENS Pilots, is the **Repository of Pilot Solutions**, which includes documentation about the final pilot solution architectures of the domain and national pilots of all domain use cases with details on technical architecture as well as additional documentation produced by each pilot such as documentation about the specifications of ABBs, testing activities and test results, evaluation of pilots and other material. The Repository of Pilot Solutions is produced in the context of the deliverable D5.6.

businesses, can take place based on technological BBs in a cross border context. These BBs can in turn be re-used and integrated in different combinations. Thus, the BBs will be weaved into the fabric of public ICT infrastructure that underpins A2C, A2B, A2A applications and ultimately enhances the information society that underpins the Single European Market. Furthermore, the extensibility of BBs in the case of C2B and B2B will also be considered and handed over to WP3 with respect to long term sustainability and governance.

It is useful to include in this section the inter-relation of the WP5 deliverables, concerning the batch of deliverables D5.1, D5.2 and D5.3, that have been produced in parallel and delivered at the end of M12, the deliverables D5.4, D5.7a which have been produced in the context of the second year, the deliverables D5.5 (submitted before the third year Annual Review) and the final deliverables D5.6 and D5.7b which are produced in the fourth and last year of e-SENS.

- The description of the piloting use cases is included in deliverable D5.3 (including wave 1 domain and national pilot plans), in deliverable D5.4 (including wave 1 updated and wave 2 domain and national pilot plans) and in deliverable D5.5 (which includes wave 3 national pilot plans on wave 1 domain pilot plans and wave 3 domain and national pilot plans on the use cases approved by the e-SENS General Assembly in Oslo on 27 March 2015). These are the business processes that are piloted, and also contain the value proposition for the domains and the stakeholder communities.
- The business requirements of stakeholders and their relationship and/or mapping to e-SENS Building Blocks are included in deliverable D5.1, (the first version of the e-SENS Requirements Framework), in deliverable D5.7a, (the interim version of deliverable D5.7 submitted at M24), which updates deliverable D5.1 and produces the second version of the e-SENS Requirements Framework, and in deliverable D5.7b, the final version of the e-SENS Requirements Framework that is submitted at the end of the project. In its final version, the Requirements Framework of WP5 Pilots is mapped and linked to the Architectural Framework of WP6 Building Blocks.
- The documentation of the final pilot solution architectures of the domain use cases with details on technical architecture, actual pilot deployment evidence including locations; parties involved; testing for BB technical readiness, end-to-end transactions etc. as well as the documentation about pilot evaluation and description of final pilot results, recommendations and guidelines towards the handover of pilots is included in deliverable D5.6.
- The piloting principles, processes, workflow and tools are included in deliverable D5.2, which is a handbook-style document that will be used as reference throughout the entire process of identifying, selecting, planning, executing, monitoring and evaluating pilots throughout their entire lifecycle.
- In the context of the work for the last year of e-SENS and in alignment with the work of WP6, WP5 produced an electronic repository, the **wiki for e-SENS Pilots** which includes documentation about e-SENS pilots and is related with the final WP5 deliverables **D5.6** and **D5.7b.**

1.3. Methodology of Work

As it has been stated in the previous sections, D5.7b incorporates the pilot blueprints and the related requirements of the new domain use cases of e-SENS, (two new UCs of the e-Justice domain and the UCs of the Citizen Lifecycle domain), and fine-tunes the pilot blueprints, including the requirements, of the four initial domains of e-SENS (eProcurement, eHealth, e-Justice and Business Life Cycle). Moreover, D5.7b produces the **final Requirements Framework, consolidates** all pilot requirements of the domain use cases and **synthesizes** them in a common Requirements Framework that is **aligned** with the final WP6 Architectural Framework.

In summary, deliverable **D5.7b** uses the same requirement description methodology and the same **template** as that used in deliverable **D5.7a**. Moreover, in order to link the WP5 requirements with the entities of the e-SENS EIRA, the mapping of requirements to BBs, (in the requirements table of a pilot blueprint description), includes for each requirement, apart from the corresponding SAT, the ABB(s) which are related with the requirement. Thus, SATs and ABBs which are included in a requirement description are used to create **links** from the Pilot Blueprint and Requirements Repository of the WP5 wiki for e-SENS Pilots to the entities of the e-SENS EIRA stored in the WP6 wiki for e-SENS BBs. Additionally, the proposed BB for each requirement is used to **consolidate** the requirements from all domains and group them by SATs. The common template is used by all the WP5 working groups to describe the pilot blueprints including the related requirements of the domain UCs. The material is stored at the **Pilot Blueprints and Requirements Repository of the wiki** for **e-SENS Pilots** and the requirements are linked with the SATs and ABBs of the e-SENS EIRA.

In the context of the work for the deliverable D5.7b, the repository is updated with the final pilot blueprint descriptions, (including the requirements), of all domain use cases as well as their **mapping** and **linking** to the **entities of the e-SENS EIRA**. From WP6 side, in the context of the work for the final deliverable D6.7, the WP5 requirements for the domain use cases are further analysed and **synthesized** into **generic requirements** for e-SENS SATs and ABBs of the e-SENS EIRA.

More specifically, the methodology used in order to produce the current deliverable and achieve the objectives was an **iterative process** which was initiated in the second year of the project, continued during the third year and completed in the fourth and last year:

- In the context of deliverable **D5.7a**, WP5 domain leaders and work group coordinators and participants, based on the work carried out in the context of deliverable D5.1, and taking into account the remarks of the 1st year technical review of e-SENS, **revised and updated** pilot blueprints and the related requirements of domain use cases. The amendments were based on some changes in the **requirement modelling methodology** that had been used in the context of deliverable D5.1. The updated requirement modelling methodology is described in **chapter 2**. Moreover, additional activities for the revision of pilot blueprints and the related requirements of domain use cases included setting up of boards with WP5 pilot architects and WP6 BB architects as well as several joint alignment meetings with WP6.
- In the context of deliverable **D5.7b** the work finalized by describing the pilot blueprints of the new domain use cases (two new UCs of the e-Justice domain and the UCs of the Citizen Lifecycle domain), and by fine-tuning the pilot blueprints including the requirements of the four initial domains (eProcurement, eHealth, e-Justice and Business Lifecycle). Moreover, additional activities have been carried out, regarding the **mapping** of the WP5 pilot requirements to e-SENS SATs and ABBs as well as the implementation of the final Requirements Framework as a user friendly **electronic Repository** that is **linked to** the entities of the e-SENS Reference Architecture**.** A description of the Pilot Blueprint and Requirements Repository is provided in **chapter 2.**

As it is mentioned above, deliverable D5.7b is based on a **common template** for all domains that includes the following sections (the overall methodology is described in more detail in **Chapter 2**):

- **Pilot Blueprint Description:** it provides a high level pilot blueprint description, a problem statement (identified barriers and issues to address), a reference to the actors involved in a particular use case and the stakeholders consulted. The latter are chiefly organizations which have the role of a "consultant" in the context of a domain UC and have the power and/or interest to influence the working groups of WP5 that participate in the description of a domain UC (e.g. organizations from member states that participate in a domain UC, organizations that define the technical framework for a domain UC such as CEN/BII etc.). Moreover, “stakeholders consulted” may also be projects (such as epSOS, eHealth Network) that “influence” the working groups of WP5 as regards the description of blueprints for the domain UCs. In

fact domain experts, (this is the term that is used in section 2 that describes the requirement modelling methodology), that participate in pilot blueprint descriptions for domain use cases, are members of the WP5 working groups who take under consideration the "stakeholders consulted ".

- **Pilot Scenario Goals and Scope:** it describes a list with the goals of the pilot scenario as well as the pilot scenario scope.
    - Well documented **goals** lead to better and more easily communicated pilots. Each goal is documented in a table with an identifier (assigned by the team). When the requirements are captured, the identifier is used to refer to which goal(s) the requirement is meant to help achieve.
    - The **scope section** is used to identify the outer boundaries of the pilot by defining what is included and possibly what is out of scope (sometimes defining what's out of scope - in addition to what is in scope - will help in understanding the context). The scope section serves the purpose of quickly obtaining an understanding of the intentions and context of the pilot.
    - A goal description includes a **Goal ID, a Goal Name, a Goal Description and a Scope Statement**.
    - **Codification of goals** is based on the following format: "**G5.x-UCy-GoalNo"**, where G means Goal, 5.x is the domain code (see the table below), UC means Use Case, y is the use case code within the domain (see the table below) and GoalNo = 1, 2, 3 etc.

      For domain 5.5 (Citizen Lifecycle) the codification is as follows "G5.x-UCy.z-GoalNo ", where z is the sub-use case code for the four sub-use cases of the Citizen Lifecycle UC, (values for z: 1, 2, 3, 4).
- **Key examples:** A key example is a narrative description of the envisioned pilot scenario in order for all to have a common understanding of the need which is fulfilled by the pilot. For most people, examples are easier to relate to than technical specifications. The key examples cover the main functionality of the pilot. The requirements of a pilot blueprint are derived from the related key examples.
    - A Key Example description includes an **Example ID,** and an **Example Description**
    - **Codification of Key examples** is based on the following format: "**KE5.x-UCy-ExampleNo"**, where KE means Key Example, 5.x is the domain code (see the table below), UC means Use Case, y is the use code within the domain (see the table below) and ExampleNo = 1, 2, 3 etc.

      For domain 5.5 (Citizen Lifecycle) the codification is as follows "KE5.x-UCy.z-ExampleNo ", where z is the sub-use case code for the four sub-use cases of the Citizen Lifecycle UC, (values for z: 1, 2, 3, 4).
- **Requirements:** By taking examples (and scope/goals) into consideration, requirements are derived and specified. A **complete description of a requirement** includes the following fields:
    - a **Requirement ID**: **codification of requirements** is based on the following format: "R5.x-UCy-RequirementNo", where R means Requirement, 5.x is the domain code (see the table below), UC means Use Case, y is the use code within the domain (see the table below) and RequirementNo = 1, 2, 3 etc.

      For domain 5.5 (Citizen Lifecycle) the codification is as follows "R5.x-UCy.z-RequirementNo ", where z is the sub-use case code for the four sub-use cases of the Citizen Lifecycle UC, (values for z: 1, 2, 3, 4).
    - a **Requirement Description**: a free text description of the requirement.

- a **Requirement Category**: this field, initially included in D5.7a, is used to clearly categorize the requirements so that we understand what they represent and how they should be considered when designing or building a system. The following categories of requirements are used:
  - F=Functional Requirement,
  - NF=Non-Functional Requirement. It is further categorized according to one of the following sub-characteristics[5]:
    - Functional suitability,
    - Performance Efficiency,
    - Compatibility,
    - Usability,
    - Reliability,
    - Security,
    - Maintainability,
    - Portability,
    - Quality in use.

  A complete description of the above terms is given in **Appendix I**.
- the **Area** of the requirement (such as infrastructure and inter-connection, information exchange and semantics, trust and security, performance, user functionality, legal requirements etc.).
- the **Proposed BB**: as regards the values for the field "Proposed BB", in the context of **D5.7b**, the "Proposed BB" includes for each requirement, apart from the related SAT, the ABB(s) which are related with the requirement. Thus, SATs and ABBs in the requirement description are used to create links from the Pilot Blueprint and Requirements Repository of the wiki for e-SENS Pilots to the entities of the e-SENS EIRA.

  Moreover, information about the proposed BB for each requirement is used to **consolidate** all requirements from all domains and group them by the e-SENS BBs.
- a **Reference to one or more goals**: This field includes the goal ids of the goals that are described in the Goals and Scope section of the pilot blueprint. Each one of the goals should be related to one or more requirements. Each requirement should be related to one or more goals.

The following table summarizes the domain codes and names and the domain use case codes and use case names that are used in the description of the information mentioned above.

[5] ISO/IEC. Systems and software engineering -- Systems and software Quality Requirements and Evaluation (SQuaRE) -- System and software quality models [PDF or Paper]. Edition 1. 2011-03-01. Available from Internet: http://www.iso.org/iso/catalogue_detail.htm?csnumber=35733.

Domain Code	Domain Name	Domain Use Case Code	Domain Use Case Name
5.1	eProcurement[6]	5.1.1	eTendering
		5.1.2	Virtual Company Dossier (VCD)
		5.1.4	eInvoicing
5.2	eHealth[7]	5.2.1	ePrescription/Patient Summary
		5.2.2	eConfirmation
5.3	e-Justice[8]	5.3.1	Matrimonial matters and parental responsibility
		5.3.4	European Account Preservation Order (EAPO)
		5.3.5	Mutual Legal Assistance/ European Investigation Order (e-CODEX pilot)
		5.3.6	Financial Penalties (e-CODEX pilot)
5.4	Business Lifecycle	5.4.1	Business Registration
		5.4.2	Activity Registration
5.5	Citizen Lifecycle	5.5.1	Citizen Lifecycle (NemKonto, Patient Access, eEducation, Record Matching)
		5.5.2	eAgriculture

Table 1: Domain codes and names, domain use case codes and use case names

As it has been mentioned above, to carry out the process for the preparation of deliverable D5.7b, a common template and guidelines were given to all WP5 domain contributors in order for them to describe and/or fine-tune pilot blueprints at domain level, the related requirements and the associated proposed e-SENS BBs.

The work described above was carried out using moderated workshops and the results and findings elaborated and further evolved in smaller task teams using collaborative tools or online conference facilities.

The result of the process is documented in the so-called "**Pilot Blueprint**". The intention of a pilot blueprint is to provide a clear top-down description of a chosen pilot scenario. A Pilot Blueprint offers a clear picture of the involved actors and the requirements for necessary BBs.

Moreover, in parallel to the above process, a **Quality Assurance process (QA)** was carried out in order to check and harmonize the descriptions. The QA process controlled all descriptions and provided comments

[6] The eProcurement domain decided to shelve UC 5.1.3 eCatalogues in the pre-award and post-award phase.

[7] UC 5.2.3 eInvoicing during reimbursement, which was a cross domain UC with eProcurement, has been shelved.

[8] The e-Justice domain decided to shelve UC 5.3.2 Maintenance Obligations and UC 5.3.3 Supervision of Probation Measures and Alternative Sanctions. UC 5.3.5 and UC 5.3.6 are the new domain use cases of the e-Justice domain.

and recommendations to all contributors as regards the completeness and accuracy of the descriptions in relation to objectives of the deliverable.

The final step of the process includes the following activities: collection of all "**Pilot Blueprints**" (including the requirements), **consolidation** of all requirements into a common Requirements Framework, **grouping** of all the requirements by the e-SENS BBs, **update** of the repository on the wiki and **linking** with the entities of the e-SENS EIRA.

1.4. Relations to the Internal Environment of e-SENS

D5.7b which continues and completes the work of D5.7a, contributes and underpins achievement of WP5 objectives. It also contributes to other work packages that are related to WP5.

One of the main objectives of WP5 that is directly related to D5.7a and D5.7b is the maintenance of a Framework of Requirements, (that was initially produced with D5.1), for e-SENS services across Europe taking into account the views of all relevant stakeholders and activities. In the context of the above objective, the Requirements Framework synthesizes and validates demand-driven needs for generic and specific public services that involve administrations, citizens and businesses. It also provides a basis for the acceptance of e-SENS BB design and implementation and ultimately provides a basis for further uptake.

D5.7b also contributes to achieving another objective of WP5 which is the synthesis of requirements coming from the domains and countries involved in WP5 with the architectural framework and the technical work done by WP6 teams, in order to ensure that the supply of **WP6** technology will match the demand of WP5 services.

Furthermore, D5.7b contributes towards the definition of piloting scenarios and use cases for the real-life implementation of the e-SENS services across a variety of domains, countries, administrations and end users, in order to clearly demonstrate that the e-SENS BBs defined and developed within WP6 can be re-used in a wide spectrum of domains and environments.

There is an important inter-relation between the requirements described in D5.7a and D5.7b and the legal modelling of use cases, which is one of the objectives of WP4. Furthermore, there are several requirements that already raise legal issues that have been referred to in **WP4** (that provides legal support to the pilots).

The business goals and the scope statements contained in D5.7b, as expressed by the stakeholder communities, are very important for WP3, as they provide a frame of reference for the sustainability issues that **WP3** addresses.

1.5. Relations to the External Environment of e-SENS

There is a considerably intense interest in e-SENS piloting not only inside the project within its participants, but also around the e-SENS consortium, within a variety of interested stakeholders.

Target groups of external stakeholders include national administrations, policy departments of the European Commission, domain-specific bodies, standardization organizations, etc. Within the content of D5.7b, it is possible to communicate to all external target groups, the pilot blueprints and the related requirements for the domain use cases of e-SENS as well as the use of e-SENS BBs foreseen based on the mapping of the requirements to BBs.

1.6. Quality Management

Category	Remarks	Checked by
Conformance to e-SENS template	Yes	WP5 management, WP1 reviewers
Language & Spelling	Yes	WP5 management
Delivered on time	Yes	WP5 management
Each technology description contains the correct elements	Yes	WP5 management
Consistency with description in the TA and in other e-SENS deliverables	Yes	WP5 management, WP1 reviewers
Contents is fit for purpose	Yes	WP5 management, all reviewers
Contents is fit for use	Yes	WP5 management, all reviewers
Commitment within WP	Yes	WP5 management, Domain Leaders, Workgroup Coordinators

Table 2: Quality Checklist

1.7. Risk Management

D5.7b incorporates the pilot blueprints and the related requirements of the new domain use cases of e-SENS (two new UCs of the e-Justice domain and the UCs of the Citizen Lifecycle domain), and fine-tunes the pilot blueprints, including the requirements, of the four initial domains of e-SENS(eProcurement, eHealth, e-Justice and Business Life Cycle) included in D5.7a.

D5.7b is the final version of the pilot blueprint descriptions and the domain-level requirements from the domain use cases. According to the e-SENS Technical Annex, activity A5.0.1.3 “Development and maintenance of the e-SENS Requirements Framework”, (of Task T5.0.1 Consolidation of Requirements Mapping and Validation of WP5, that produces deliverables D5.1, D5.7a and D5.7b), lasts from the 1st to 48th month of the project. D5.1 was the first public version of the Requirements Framework. D5.7a, the interim version of D5.7, was the second public version of the Requirements Framework which submitted before the second Annual Review. D5.7b is the final version of D5.7.

This section describes the process used for effective risk management. It summarises the risks identified for creating deliverable D5.7b. This includes identifying the risks, risk analysis, risk assessment and defining responses and risk owner.

Description	Probability	Impact	Priority	Response	Owner
Contributions from partners are not delivered in time	medium	high	medium	Communicating with partners and monitoring progress	WP5 management and domain leaders
Contributions from partners do not have the sufficient quality – requirements not entirely clear and not covering every aspect of use case	medium	high	high	Working closely with domain leaders and working group coordinators, as well as WP6 task forces for better refinement of requirements. Iterations of the documents with comments, issue lists and clarifications on what is expected	WP5 management
Mapping of use case requirements to BBs unclear due to gaps in requirements documentation and BB definition	high	high	high	Coordinated interaction directly between WP5 domain workgroups and WP6 cluster task forces	WP5 management with WP6 management

Table 3: Risks

1.8. Legal Issues

One of the areas that are investigated in the context of requirements capturing for the domain use cases is legal requirements. The description of pilot blueprints and the related requirements for the domain use cases includes the specification of requirements that are related to legal issues.

Legal questions have been presented to WP4 and are being handled within the WP4 activity on Legal Process Modelling of Piloting Use Cases and reflected in the updated deliverable D4.2.2 Legal Process Modelling of the Proposed Pilots. WP4 assists the domains for capturing legal requirements and challenges rising from the definition of the domain use cases. WP4 engaged the piloting domains further in the analysis of their legal challenges in a series of meetings taking place in Y3 where domain legal experts were invited in order to assess the domain pilots and make sure that domain pilots are sufficiently well conceived and documented from a legal perspective. These are reflected in the updated deliverable D4.2.2 Legal Process Modelling including recommendations to the domains. WP4 also provides advice for the legal provisions and possibly (in some cases) for the agreements that will be necessary for piloting in a real production environment.

1.9. Structure of the document

Deliverable D5.7b “Requirements Framework n^{o} 2” is comprised of two parts:

- A **report** (this document) which is structured as follows:
    - Chapter 1 introduces the deliverable by giving the objective and scope of the deliverable, a general description of its WP (WP5), an overview of the methodology used in the context of the deliverable as well as its relations to internal e-SENS environment (WP5, other WPs), quality management, risk management and legal issues.
    - Chapter 2 describes in more detail the overall requirements modelling methodology used to organize the whole process as well as the electronic **Pilot Blueprints and Requirements Repository** which stores the pilot blueprints including the requirements of all domain UCs. **Section 2.7.2** presents in detail the structure of the repository and includes links to the pilot blueprint descriptions.
    - Chapter 3 presents the results of consolidation of the requirements from all domains use cases. The consolidated requirements are grouped by the e-SENS BBs. The consolidation of requirements per SAT from all domain UCs is also presented in a separate section of the Pilot Blueprints and Requirements Repository on the wiki. (For more details about the structure of the repository see **section 2.7.2).**
    - Chapter 4 summarises the results/findings of the previous sections and includes final conclusions.
- An **electronic part** which is the **Pilot Blueprints and Requirements Repository** stored at the **WP5 wiki for e-SENS pilots**. As regards its structure, the Pilot Blueprints and Requirements Repository includes, in separate sections for each domain, the pilot blueprint descriptions including the requirements of the domain UCs. Moreover, an additional section presents the consolidation of requirements per SAT. A detailed description of the structure of the Pilot Blueprints and Requirements Repository as well as links to the specifics sections for each domain as well as the consolidation section is given in **section 2.7.**

2. Requirement Modelling Methodology used in WP5

2.1. Purpose and Process Overview

The purpose of this chapter is to describe the requirement modelling methodology which has been collaboratively created by WP5 and WP6 and used in WP5 to guide the e-SENS domains and their use case-specific WGs on how to capture goals and requirements relevant for a pilot scenario. Moreover, this chapter describes the evolution of the methodology in the context of the related deliverables D5.1 (1st year deliverable), D5.7a (2nd year deliverable) and D5.7b (final deliverable).

In fact, the proposed method is an iterative process where the domain experts start with describing:

- goals and scope
- key examples
- requirements for BBs

The work is carried out using moderated workshops and the results and findings are elaborated and further evolved in smaller task teams using the project's collaborative working tools for threaded discussions or online conference facilities.

The process is illustrated in the next figure and the result of the process is documented in the so-called "**Pilot Blueprint**". The intention of the pilot blueprint is to provide a clear top-down description of the chosen pilot scenario. The "Pilot Blueprint" offers a clear picture of the involved actors and requirements for necessary BBs.

In **D5.7a**, the requirement modelling methodology includes some changes, regarding the requirement description, compared to the initial methodology that had been used to produce the deliverable **D5.1**. **D5.7b** uses the same requirement modelling methodology with that used in D5.7a with the following addition: the mapping of requirements to BBs in the requirements table of a pilot blueprint description includes for each requirement, apart from the corresponding SAT, the ABB(s) which are related with that requirement. The evolution of the requirement modelling methodology regarding the requirement description in the context of D5.1, D5.7a and D5.7b is described in **section 2.5**.

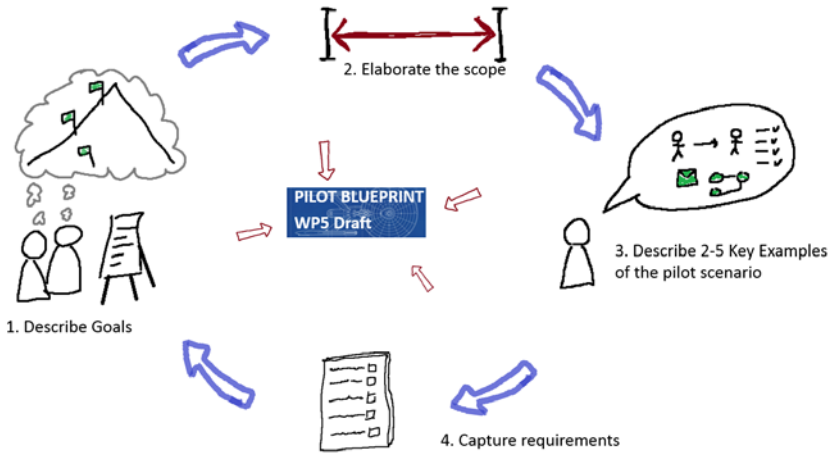


Figure 1: Overview of the requirements modelling methodology

2.2. Define goals

The first step of the process is to get the domain participants, which may be subject matter experts and/or representatives of piloting countries, to agree on and document the goals of the pilot scenario. Well documented goals lead to better and more easily communicated pilots. There can very well be many goals. Domain participants should be as explicit as possible since the scope and requirements will be derived from the goals. They should not think about a single solution that fulfils the goal – rather they should focus on the desired result. Goals can be measurable but are not required to be.

It can also be valuable to capture a "Problem Statement". The goals may often directly address the problems. However, it may be worthwhile to investigate the problem/goals in more detail as the end goal may be more than just solving acute problems.

Examples of goals:

- The process of creating a company is fully automated and requires no human intervention by the Business Registry Authority.

- All European companies (small or large) can use the electronic invoice (no legal barriers)

Each goal is documented in a table with an identifier (assigned by the team). When the requirements are captured, the identifier is used to refer to which goal(s) the requirement is meant to help achieve.

Goal ID	Goal Name	Goal Description
G-1	Simple lookup	The buyer wants a simple way of finding suppliers with eOrdering capabilities
G-2	Cross barrier enabled	The buyer wants a simple eOrdering format that works cross border and cross community
G-3	Common standards	The seller wants to have the same format with as many buyers as possible
…		

Table 4: Example of goal description

This step of the process is perfect for a F2F workshop with domain experts. Well defined goals will make the upcoming steps more straight-forward and simple!

The table below describes different types of goal categories mentioned in TOGAF:

Improve Business Process Performance	*Improve Portability and Scalability*
Decrease Costs	*Improve Interoperability*

Improve Business Operations	*Increase Vendor Independence*
Improve Management Efficiency	*Reduce Lifecycle Costs*
Reduce Risk	*Improve Security*
Improve Effectiveness of IT Organization	*Improve Manageability*
Improve User Productivity	

Table 5: Types of goal categories

2.3. Define Scope

The scope section is used to identify the outer boundaries of the pilot by defining what is included and possibly what is out of scope (sometimes defining what's out of scope - in addition to what's in scope - will help in understanding the context). The scope section serves the purpose of quickly obtaining an understanding of the intentions and context of the pilot. It can also be used to avoid so called "scope creep" (at least on a high level).

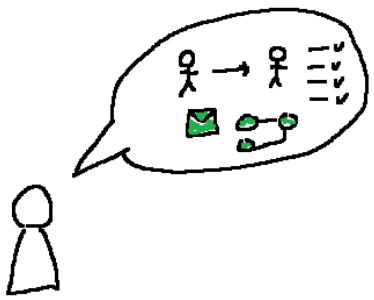
The scope statements are documented in a simple table.

Examples of scope statements
B2B and B2G
Common business processes for cross industry and cross border ordering
Regional procurement within EU and EEA. The business process is expected to be applicable to other regions following a review of regional requirements

Table 6: Examples of scope statements

2.4. Describe Key Examples

A key example, in this context, is a narrative description of the envisioned pilot scenario. The key examples present a somewhat detailed description of how the domain experts would like the pilot scenario to play out. A Key example describes a simple workflow, the actors (trading partners, authorities, and persons) involved as well as the steps they need to take in order to carry out their business – and how this helps reaching the goals. A Key example, is a high level description of flow of events with no technical details and without alternative workflows.



The team may describe at least two key examples (variations of the pilot scenario). The more detailed the better. The examples do not have to take all variations into account. The examples can be further detailed at a later stage in the development/identification of the BBs. It may happen that during the elaboration of

requirements, better ideas or solutions are found. These ideas may very well be incorporated into the examples (as part of the iterative process).

Example ID	Example Description
Key example 1	A typical example of placing an order to a supplier, located in another country would be something like this: The buyer is using his e-procurement system to identify a set of products that are needed in his business. The buyer searches for the products using a catalogue that is available in the system. Some products are chosen and the buyer indicates the quantity of each product. The order is sent internally to the person who is responsible for giving attestation/approval. Once approved, the order is issued and an XML message is created. The order message is put into an electronic envelope. The buyer uses a service provider to send the XML-message to the seller. The service provider uses the information (about the receiver), found in the envelope to look-up the actual electronic address of the receiver's gateway/access point. Using the electronic address, the service provider submits the order. The supplier also uses a service provider for the receiving mechanism. The service provider receives the order in the gateway. By looking at the envelope, the service provider is able to forward the order message to the supplier's ERP-system. Continued…..

Table 7: A Key example

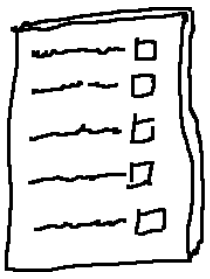
2.5. Capture Requirements

2.5.1. Description of requirements in the context of deliverable D5.1

This section presents the main guidelines of the methodology used for the description of requirements in the context of deliverable D5.1. The next section describes the changes of the requirements modelling methodology in the context of deliverable D5.7.

Thus, in the context of D5.1 the methodology included the following guidelines.

We now have defined the scope and goals. We have a set of key examples offering a very clear picture of the purpose and intentions of the pilot scenario. The next step is to capture requirements for the necessary BBs. On a high level, the e-SENS BBs should be known



to the team and it may be worthwhile grouping the requirements related to the BBs.

The team may, but do not have to, classify if the requirements are functional or non-functional. The important part of this step is to capture the requirements – regardless of classification (this can be done at a later stage). Each requirement should refer to a Goal. This will help later on in the process of mapping the requirement toward the e-SENS BB. The underlying goal may help the experts to understand the context better and overcome differences in terminology, for example.

Areas to investigate and to capture requirement from can be:

- Infrastructure and inter-connection
- Information exchange and semantics
- Trust and security
- Performance
- User functionality
- Legal requirements
- other

If the domain experts already at this point can propose a candidate BB, this can be documented together with the requirement.

Requirement ID	Requirement description	Proposed BB	Reference to goal
Req.-1	An order must provide information about its identity, type (purchase order or consignment order), issue date and validity	eDocument ABC	G-1, G-2, G-3, G-4
Req.-2	To provide flexibility in ordering, an order must allow for free text notes at document level as well as on individual order lines.	eDocument ABC	G-3
Req.-3	An order must provide information about the value of items ordered and what prices, changes and totals (including estimate of VAT) are expected to be paid in a way that can be matched against an invoice.	eDocument ABC	G1
….			

Table 8: Example of requirements description

A good requirement should say what is needed, not necessarily say how it is done. Try to take a step back and refrain from describing the solution.

The capturing of requirements may be done during F2F workshop sessions but can also be done by a small team of domain experts using collaborative tools. The requirements should be written in non-technical language.

2.5.2. Description of requirements in the context of deliverable D5.7a

In the context of **deliverable D5.7a** we went one step further as regards the description of requirements. Having as basis the requirements of deliverable D5.1, the working groups of WP5, had processed the requirements in order to **clearly categorize** them so that we understand what they represent and how they should be considered when designing or building a system. Thus, in the context of D5.7a, the requirements are categorized in the following categories:

- **Functional Requirements**: Also known as "Business Requirements", these requirements are high-level statements of what the customer expects the product to do - *independent of any system or technology*. These requirements typically don't mandate any particular technology solution. Functional requirements describe a specific function or task that the system should perform. They can describe services, reactions, and behaviours of the system. (e.g. "A library system needs to allow a borrower to check-out a book").
- **System Quality** or **Non-Functional Requirements:** Also known as the '-ilities', these requirements usually end in the word 'ility' and include such matters as: **functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, portability etc.**

  Non-Functional Requirements will not directly affect the functional requirements but will have a large impact on lower level requirements such as system requirements and the design of the system. Non-functional requirements are not concerned with the functionality of the system, but instead place constraints on the entire system. Constraints are specific non-functional requirements that restrict the development of the system. Some constraints may be the operating system, implementation language, or hardware configuration.

  The **ISO standard** that most explicitly mentions the qualities of a system is *ISO/IEC 25010:2011 Systems and software engineering* and describes Systems and software Quality Requirements and Evaluation (SQuaRE) and System and software quality models.

  ISO/IEC 25010:2011 defines quality as the degree to which the system satisfies the stated and implied needs of its various stakeholders, and thus provides value. This quality standard provides a good definition and common terminology for the aspects of System/software product quality grouped in eight main properties which are shown in the following figure:

Figure 2: ISO/IEC 25010:2011 Product Quality Characteristics[9]

The software product quality model describes the internal and external measures of software quality. Internal measures describe a set of static internal attributes that can be measured. The external measures focus more on software as a black box and describe external attributes that can be measured.

Quality in use is a second main aspect of the ISO/IEC 25010:2011 standard. Quality in use is the degree to which a product or system can be used by specific users to meet their needs to achieve specific goals with effectiveness, efficiency, freedom from risk and satisfaction in specific contexts of use. The properties of quality in use are categorized into five characteristics: effectiveness, efficiency, satisfaction, freedom from risk and context coverage.

Thus, in the context of deliverable D5.7a, the non-functional requirements are further categorized to one of the following sub-characteristics[10]:

- Functional suitability,
- Performance Efficiency,
- Compatibility,
- Usability,
- Reliability,
- Security,

[9] Figure is reproduced from the following site:
http://a2build.com/architectedagile/Architected%20Agile.html?ISO25010.html

[10] ISO/IEC. Systems and software engineering -- Systems and software Quality Requirements and Evaluation (SQuaRE) -- System and software quality models [PDF or Paper]. Edition 1. 2011-03-01. Available from Internet: http://www.iso.org/iso/catalogue_detail.htm?csnumber=35733.

- Maintainability,
- Portability,
- Quality in use.

A more complete definition for each one of the qualities of a system as they are defined in ISO/IEC 25010:2011 is described in **Appendix I.**

2.5.3. Description of requirements in the context of deliverable D5.7b

Deliverable D5.7b uses the same requirement description methodology as that used in deliverable D5.7a. Moreover, in order to **link the requirements with the entities of the e-SENS EIRA**, the field "Proposed BB" in the Requirements table of a pilot blueprint description includes for each requirement, apart from the corresponding SAT, the ABB(s) which are related with the requirement. Thus, SATs and ABBs in requirement descriptions are used to create **links** from the Pilot Blueprint and Requirements Repository of the WP5 wiki for e-SENS Pilots to the entities of the e-SENS EIRA stored in the WP6 wiki.

2.6. What happens next?

The result of each step in this process mentioned in the previous sections is presented in tables of **goals/scope**, **key examples** and **requirements**. These pieces of information form the Draft "**Pilot Blueprint**". The blueprint provides the reader with a good understanding of the intended pilot scenario (just as a construction blueprint may give the viewer an understanding of the intended building). The Blueprint is supplemented later on with the necessary BBs.

When the draft "Pilot Blueprint" is produced by the Pilot Team, WP6 and other experts within e-SENS are given the task to finalize and provide solutions for the gathered requirements.

Figure 3: Business Modelling and Requirements

The high level process of reaching a final Pilot Blueprint is shown below. The main tasks are to:

1. Document the pilot intentions and requirements (1.)

2. Review "Pilot Blueprint" Drafts and harmonize/synthesize the WP5 pilot requirements into WP6 generic requirements. Map requirements towards BB (2.)
3. Point out or create necessary BBs (3.)
4. Finalize the "Pilot Blueprint" (4.)
5. Compile requirements into a Requirements Framework.

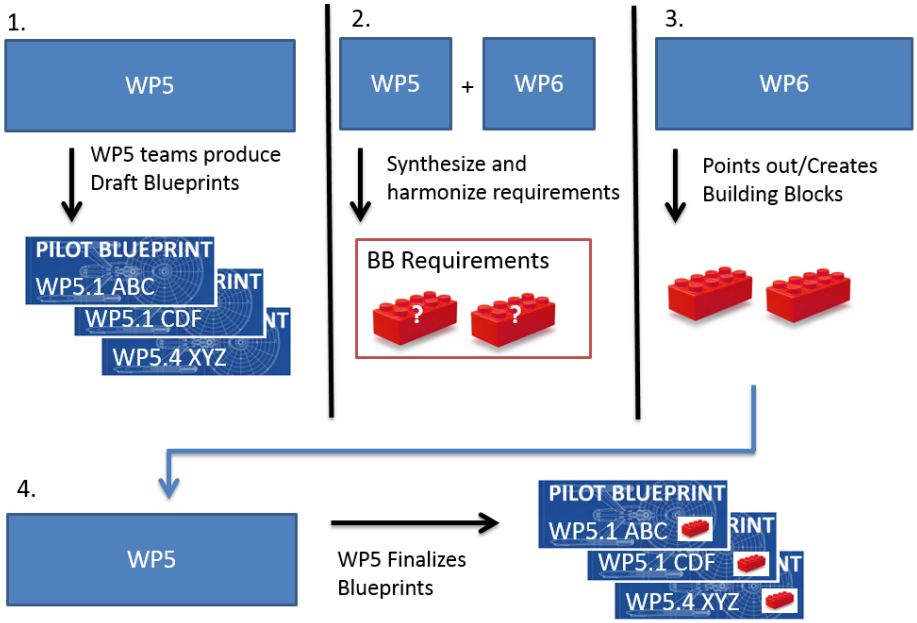


Figure 4: Cooperation of WP5-WP6 in the context of overall requirements modelling methodology

It should be noted that in the context of WP6, the requirements from WP5 are further analysed and mapped to SATs and ABBs according to the methodology that is described in **deliverables D6.3, D6.6 and D6.7**. More specifically, in the context of **deliverables D6.3, D6.6 and D6.7**, the WP5 pilot requirements are further **synthesized** to **generic requirements of SATs/ABBs** and also translated into technical requirements, according to the e-SENS ICT architectural design principles and standards as well as the concepts of the European Interoperability Reference Architecture (EIRA). Main artefacts that are described in the e-SENS EIRA is the **Solution Architecture Templates (SATs)**, **Architecture Building Blocks (ABBs), Specifications, Implementation Guidelines** and **Solution Building Blocks (SBBs)** as well as miscellaneous artefacts e.g. whitepapers. The outcome of the generic requirements is referenced by the SATs and each generic requirement is related to domain level requirements (e.g. functional, non-functional) from WP5. Moreover, in the context of an ABB description, a number of **generic requirements** are also described. Each ABB generic requirement may be related to either domain requirements or to SAT requirements. A WP5 requirement may be referenced by more than one generic requirements of a specific SAT and/or ABBs. Thus, based on the work that is carried out in WP5 and WP6, the WP5 requirements for the domain use cases are further **analysed** and **synthesized** into generic requirements for e-SENS SATs and ABBs.

The outcomes of steps 1-3 are described in deliverables D5.1, D5.7a, D5.7b, D6.1, D6.2, D6.3, D6.6 and D6.7.

Step 2-3 from the WP6 side, i.e. Business analysis and Requirements consolidation of Pilot and Domain Goals, Scope, Examples and Requirements into a consolidated and coherent Reference Architecture (e-SENS EIRA), is described in Deliverable 6.3 – e-SENS EIRA N°2 (Chapter 2), Deliverable 6.6 – e-SENS EIRA N°3 (Chapter 2) and Deliverable 6.7 – e-SENS EIRA N°4 (Chapter 2).

Step 3-4 from the WP6 side, i.e. deployment into Pilot blueprints, is described in Deliverable 6.3 – e-SENS EIRA Nº2 (Chapter 4) and Deliverable 6.6 – e-SENS EIRA Nº3 (Chapter 4) and Deliverable 6.7 – e-SENS EIRA Nº4 (Chapter 3).

Step 4 is related to D6.3, D6.6 and both D5.7a and D5.7b. In fact, D5.7a is the first round of finalization of the pilot blueprint description and the related requirements. In the context of WP6, the WP5 requirements for the domain use cases are further analysed, related and consolidated to generic requirements for e-SENS SATs and ABBs. D5.7b continues and finalizes the work of D5.7a by incorporating the blueprint descriptions of the domain UCs of the Citizen Lifecycle domain and fine tuning the pilot blueprints of the four initial domains.

Step 5 is the work that is done in the context of both WP5 and WP6 in the third and fourth year of e-SENS and its outcomes are described in deliverables D5.7b and D6.6 and D6.7. D5.7b continues the work carried in D5.7a. It produces the **final Requirements Framework** that is **aligned** and **linked** with the **final WP6 Architectural Framework**. In the context of the work for the deliverable D5.7b, the final pilot blueprint descriptions of the domain use cases including the requirements are stored in the **Pilot Blueprints and Requirements Repository** which is part of the WP5 wiki for e-SENS Pilots. Thus, in the context of D5.7b, the final list of WP5 pilot requirements from all domain use cases is fully incorporated within the **wiki for e-SENS Pilots** and associated with the entities (SATs/ABBs) of the e-SENS generic architecture repository, thereby improving the traceability of requirements.

A more detailed description for the Pilot Blueprints and Requirements Repository is given in the next section.

2.7. Pilot Blueprints and Requirements Repository

The **Pilot Blueprints and Requirements Repository** is **part** of the **WP5 wiki for e-SENS Pilots** and it stores the **electronic part of D5.7b.**

The repository includes the pilot blueprint descriptions and the related requirements for the e-SENS domain use cases (see **section 1.3**). Moreover, the requirements are **mapped** and **linked** to the **entities of the e-SENS EIRA** (SATs, ABBs). The repository is produced in the context of deliverable **D5.7b "Requirements Framework nº2 - Final"**, which presents the final pilot blueprint descriptions of the domain use cases, including goals and scope, key examples as well as the related requirements.

Below is the link to the Pilot Blueprints and Requirements Repository:

- **WP5 wiki for e-SENS Pilots:**
  http://wiki.ds.unipi.gr/display/ESENSPILOTS
  - **Pilot Blueprints and Requirements Repository**
    http://wiki.ds.unipi.gr/display/ESENSPILOTS/Pilot+Blueprints+and+Requirements+Repository

The other main part of the WP5 wiki, is the **Repository of Pilot Solutions** that is related to deliverable D5.6. It includes the pilot documentation and evaluation material for e-SENS pilots. A short description of the WP5 wiki is given in the next section.

2.7.1. The WP5 wiki for e-SENS Pilots

The **WP5 wiki for e-SENS Pilots** stores the **e-SENS Solution Repository** which includes documentation about e-SENS pilots and is related with the final WP5 deliverables **D5.6** and **D5.7b**. It stores the **Repository of Pilot Solutions** which is the electronic part of D5.6 and the **Pilot Blueprints and Requirements Repository**[11] which is the electronic part of D5.7b.

According to the following figures, the **e-SENS Solution Architecture**, conforms to the **e-SENS Reference Architecture,** contains e-SENS Building Blocks and is represented by the **Solution Repository** which is part of the **e-SENS Repository.** In the context of the work for the deliverables D5.6 and D5.7b, the e-SENS Solution Repository is implemented as a wiki, the wiki for e-SENS Pilots and is linked with the entities of the e-SENS EIRA (SATs, ABBs, SBBs) that are described in the electronic repository for the e-SENS EIRA:

http://wiki.ds.unipi.gr/display/ESENS/WP6+-+Building+Blocks

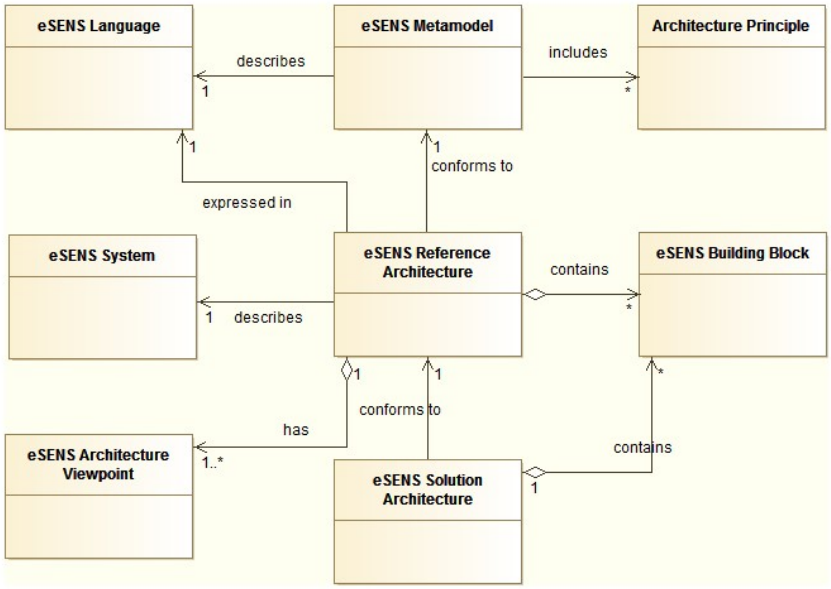


Figure 5: e-SENS Architecture Framework (source D6.6, section 4.2)

The following picture presents the **e-SENS Repository** with all its constituent repositories as well as the relationships between the entities of the different repositories.

[11] The term "Pilot Blueprints and Requirements Repository" is used as the short form for the "part of the Solution Repository for Pilot Blueprints and Requirements". In the following figure (5) the term "Pilot Reqs." equals to "Pilot Blueprints and Requirements".

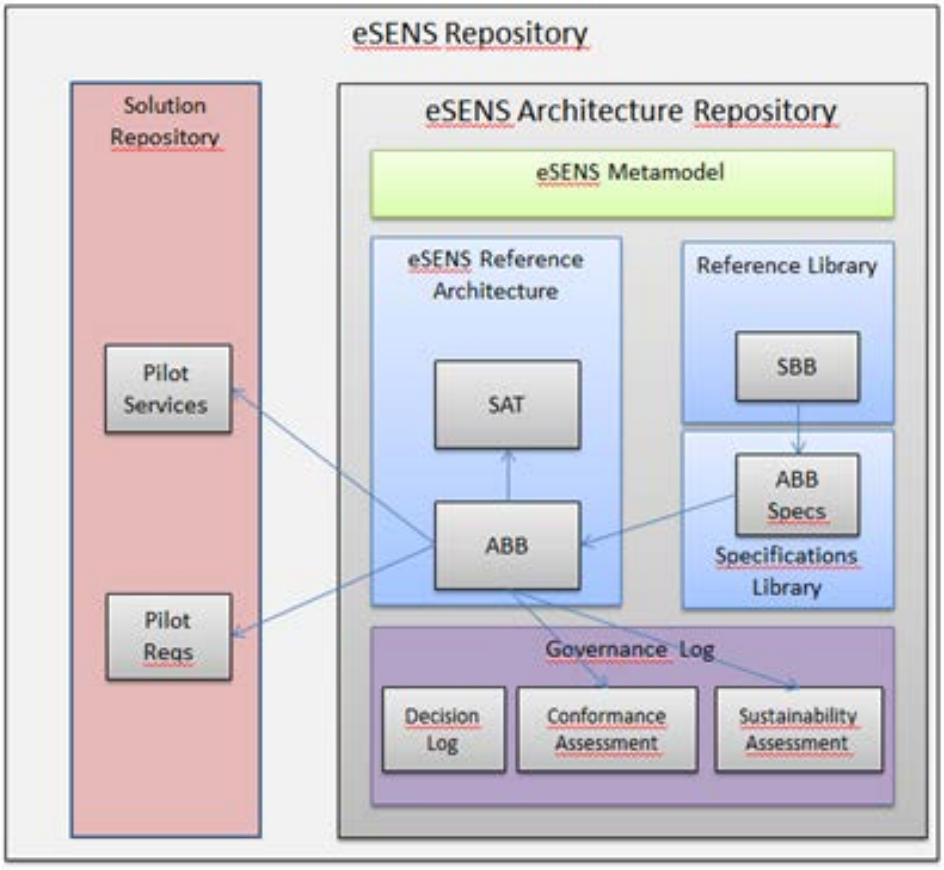


Figure 6: The e-SENS Repository with all its constituent repositories and the links between them (source D6.6, section 5.2)

2.7.2. Structure of the Pilot Blueprints and Requirements Repository and links to WP5 wiki

As regards its structure, the Pilot Blueprints and Requirements Repository includes, in **separate sections for each domain,** the pilot blueprint descriptions including the requirements of the domain use cases presented in **section 1.3**. Moreover, another section of the repository presents the **consolidation of all requirements per SAT.**

More specifically, the repository includes the following sections:

- Domain 5.1 eProcurement: It presents the final pilot blueprint descriptions and the related requirements of the UCs of the eProcurement domain:

  http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-1+-+eProcurement

  There is a sub-section for each domain UC. The links are shown below:

  - 5.1.1 eTendering:

    http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-1+-+Pilot+Blueprint+for+Use+Case+5.1.1+-+eTendering

  - 5.1.2 Virtual Company Dossier (VCD/ESDP):

http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-1+-+Pilot+Blueprint+for+Use+Case+5.1.2+-+Virtual+Company+Dossier

- 5.1.4 eInvoicing:

  http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-1+-+Pilot+Blueprint+for+Use+Case+5.1.4+-+eInvoicing

- Domain 5.2 eHealth: eHealth domain:

  http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-2+eHealth

  There is a sub-section for each domain UC. The links are shown below:

  - 5.2.1 ePrescription/Patient Summary (eP/PS):

    http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-2+-+Pilot+Blueprint+for+Use+Case+5.2.1+eP-PS

  - 5.2.2 eConfirmation:

    http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-2+-+Pilot+Blueprint+for+Use+Case+5.2.2+-+eConfirmation

- Domain 5.3 e-Justice: It presents the final pilot blueprint descriptions and the related requirements of the UCs of the e-Justice domain:

  http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-3+-+eJustice

  There is a sub-section for each domain UC. The links are shown below:

  - 5.3.1 Matrimonial matters and parental responsibility:

    http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-3+-+Pilot+Blueprint+for+Use+Case+5.3.1+-+Matrimonial+Matters+and+Parental+Responsibility

  - 5.3.4 European Account Preservation Order (EAPO) http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-3+-+Pilot+Blueprint+for+Use+Case+5.3.4+-+European+Account+Preservation+Order

  - 5.3.5 Mutual Legal Assistance/ European Investigation Order:

    http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-3+-+Pilot+Blueprint+for+Use+Case+5.3.5+-+Mutual+Legal+Assistance+-+European+Investigation+Order

  - 5.3.6 Financial Penalties:

    http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-3+-+Pilot+Blueprint+for+Use+Case+5.3.6+-+Financial+Penalties

- Domain 5.4 Business Lifecycle: It presents the final pilot blueprint descriptions and the related requirements of the UCs of the Business Lifecycle domain.

  http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-4+-+Business+Lifecycle

  There is a sub-section for each domain UC. The links are shown below:

  - 5.4.1 Business Registration:

    http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-4+-+Pilot+Blueprint+for+Use+Case+5.4.1+-+Business+Registration

- 5.4.2 Activity Registration:

  http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-4+-+Pilot+Blueprint+for+Use+Case+5.4.2+-+Activity+Registration

- Domain 5.5 Citizen Lifecycle: It presents the final pilot blueprint descriptions and the related requirements of the UCs of the Citizen Lifecycle domain.

  http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-5+-+Citizen+Lifecycle

  The links are shown below:

  - 5.5.1 Citizen Lifecycle - Nemkonto

    http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-5+-+Pilot+Blueprint+for+Use+Case+5.5.1+-+Citizen+Lifecycle+-+NemKonto

  - 5.5.1 Citizen Lifecycle - Patient Access:

    http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-5+-+Pilot+Blueprint+for+Use+Case+5.5.1+-+Citizen+Lifecycle+-+Patient+Access

  - 5.5.1 Citizen Lifecycle – eEducation:

    http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-5+-+Pilot+Blueprint+for+Use+Case+5.5.1+-+Citizen+Lifecycle+-+eEducation

  - 5.5.1 Citizen Lifecycle - Record Matching:

    http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-5+-+Pilot+Blueprint+for+Use+Case+5.5.1+-+Citizen+Lifecycle+-+Record+Matching

  - 5.5.2 eAgriculture:

    http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b-5+-+Pilot+Blueprint+for+Use+Case+5.5.2+-+Citizen+Lifecycle+-+eAgriculture

- Consolidation of requirements per SAT: It presents a consolidation of all requirements per SAT.

  http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b+-+Consolidation+of+requirements+per+SAT

The division of the repository in one section per domain facilitates the review of the sections per domain and improves usability. The reasons for providing domain-oriented sections for the Pilot Blueprints and Requirements Repository were the following:

a. The requirements work has been carried out in use case-specific working groups for each domain following the methodology explained in this chapter, with the compilation of one pilot blueprint in each use case. The modular approach that has been followed made it easier for each domain and its internal WGs, where relevant, to take ownership of their scope and requirements. Moreover, the approach allows resource consumption within different domains to be directly linked to the output of the tasks.

b. The separation into domain-specific requirement sections makes it easier for the readers and reviewers to concentrate on the domain where they have more interest in, rather than handling what would be a very large section, if everything was consolidated into one section.

c. The consolidation of requirements per SAT section allows WP5 to provide the beginning of a cross-domain synthesis of requirements; reshuffling them according to the BB they point to. In this way, WP6 clusters and Task Forces can get an easier overview of requirements coming from all the

domains that are directed at their technology areas. Then, reference to the domain sections can be made for a better understanding of the business goals and context that leads to the expression of certain requirements.

The following figure presents a snapshot of the structure of the repository.

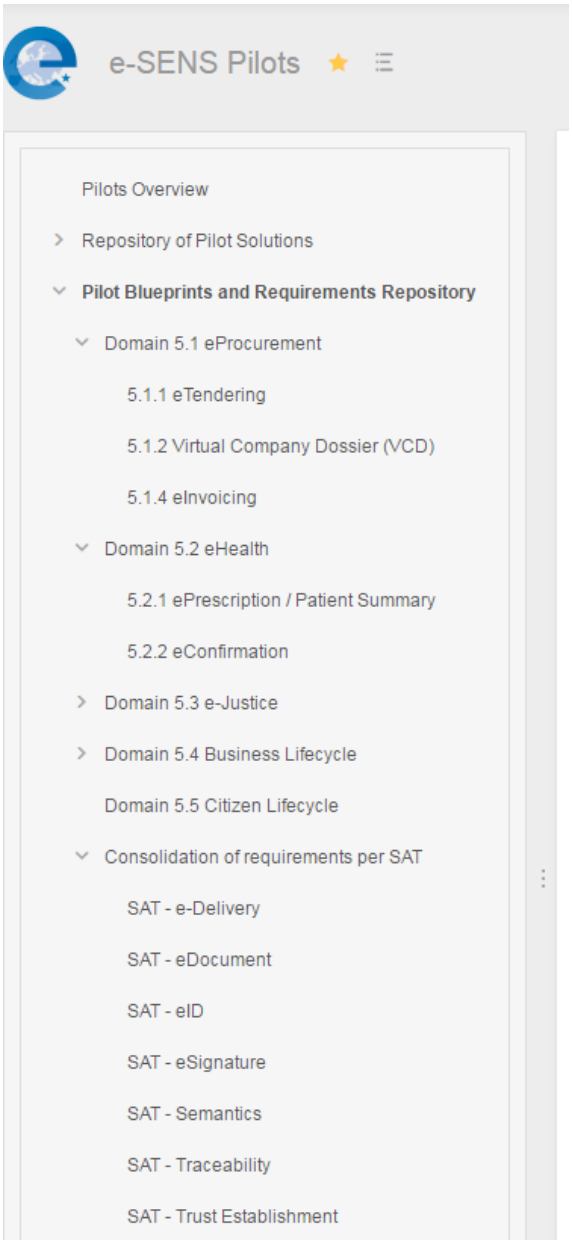


Figure 7: A snapshot of the structure of the Pilot Blueprints and Requirements Repository

3. Consolidation of requirements

Having as initial input the requirement descriptions from all domain use cases that are stored in the Blueprints and Requirements Repository, this section offers a consolidated overview of the requirements from all domains use cases[12]. The consolidated requirements are grouped by the e-SENS BBs and more specifically by e-SENS SATs.

In order to consolidate and group the requirements, all pilot blueprint descriptions from contributors have been processed as follows:

- For the e-Justice domain:
    - The following set of requirements for the e-Delivery SAT are common regarding their description: (R5.3-UC1-2, R5.3-UC4-2, R5.3-UC5-1 and R5.3-UC6-1). Thus, this set of requirements is considered as one requirement in the total sum of the requirements for the eDelivery SAT.
    - The following set of requirements for the eDocument SAT are common regarding their description: (R5.3-UC5-2, R5.3-UC6-2). Thus, this set of requirements is considered as one requirement in the total sum of the requirements for the eDocument SAT.
    - The following set of requirements for the eSignature SAT are common regarding their description: (R5.3-UC1-3, R5.3-UC4-3, R5.3-UC5-3 and R5.3-UC6-3). Thus, this set of requirements is considered as one requirement in the total sum of the requirements for the eSignature SAT.
- For the Business Lifecycle domain the requirements of UC 5.4.1 and UC 5.4.2 are identical. The description of the requirements[13] for the two UCs differ only as per the following:
    - Each requirement is related to different steps of the main flow of the corresponding UC.
    - Each requirement is related to the goals of the corresponding UC.

  More specifically, the common requirements from the UCs of the Business Lifecycle domain are the following: (R5.4-UC1-1, R5.4-UC2-1), (R5.4-UC1-2, R5.4-UC2-2), (R5.4-UC1-3, R5.4-UC2-3)… (R5.4-UC1-36, R5.4-UC2-36). Thus, each one of the above pairs of requirements[14] is considered as one requirement in the total sum of requirements per SAT.

[12] The consolidation of requirements per SAT from all domain UCs is also presented on the following section of the wiki: http://wiki.ds.unipi.gr/display/ESENSPILOTS/D5.7b+-+Consolidation+of+requirements+per+SAT

[13] In the requirement descriptions of the UCs 5.4.1 and 5.4.2, all SATs/ ABBs marked with *** weren't finally implemented.

[14] The consolidated lists of requirements that are presented in the following sections include the requirement descriptions from UC 5.4.1. The column "Requirement ID" includes the corresponding requirement ids from both UCs, e.g.: R5.4-UC1-1 is listed together with R5.4-UC2-1, R5.4-UC1-2 is listed together with R5.4-UC2-2, etc. For each pair of requirements, the column "Reference to goal" includes the corresponding goals for each requirement. In sub-deliverable D5.7a-4 the detailed description of requirements for both UCs is presented).

3.1. Requirements for the e-Delivery SAT

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-1	Integration of existing LSP BB (VCD and eCatalogue) with new solution (XVergabe) to increase overall potential. Pre-Award processes in PEPPOL lacked appropriate e-Delivery function and coverage of all Tendering processes. XVergabe provides a solution for e-Delivery between Tendering Platforms with generic messaging requirements which can be mapped to the e-SENS e-Delivery Infrastructure and which cover the full scope of eTendering processes. VCD and eCatalogue cover specific messaging requirements with regard to qualification of tenders and product specifications throughout the different phases in eTendering which are not yet addressed in XVergabe.	NF/Reliability	General	e-Delivery (ABB -Message Exchange)	G5.1-UC1-6 G5.1-UC1-19
R5.1-UC1-11	The EO - when subscribing - MUST provide identification and make known how to receive electronic messages from the CA.	F	e-Delivery	e-Delivery (ABB -Capability Lookup, ABB - Service Location, ABB - Backend Integration)	G5.1-UC1-9
R5.1-UC1-16	The CA MUST be able to send messages to all subscribed EOs, to a selection of EOs or to one EO.	F	e-Delivery	e-Delivery (ABB -Capability Lookup, ABB - Service	G5.1-UC1-2 G5.1-UC1-16

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
				Location, ABB - Backend Integration)	
R5.1-UC1-18	The CA MUST be able to send messages to EOs who are not online. (Store and notify principle).	F	e-Delivery	e-Delivery (ABB -Message Exchange)	G5.1-UC1-6
R5.1-UC1-34	All relevant transactions MUST be logged and archived.	NF/Security	e-Delivery	e-Delivery (ABB -Message Exchange)	G5.1-UC1-1 G5.1-UC1-14 G5.1-UC1-15
R5.1-UC1-35	The CA SHOULD be able to send the results of the bid evaluation to all EOs who submitted a bid.	F	Infrastructure and inter-connection	e-Delivery (ABB -Capability Lookup, ABB - Service Location, ABB - Backend Integration)	G5.1-UC1-5 G5.1-UC1-15
R5.1-UC1-36	The CA SHOULD be able to send the (preliminary) award to the winning EO.	F	Infrastructure and inter-connection	e-Delivery (ABB -Capability Lookup, ABB - Service Location, ABB -	G5.1-UC1-5 G5.1-UC1-15

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
				Backend Integration)	
R5.1-UC1-40	The infrastructure MUST offer guaranteed delivery.	NF/ Reliability	e-Delivery	e-Delivery (ABB -Message Exchange)	G5.1-UC1-2 G5.1-UC1-4
R5.1-UC1-41	The sender of a message MUST receive feedback if there is an error in the transmission of his message (from corner 1 to corner 2, or from corner 2 to corner 3). Errors in transmission between corner 3 and 4 is out of scope.	F	e-Delivery	e-Delivery (ABB -Message Exchange)	G5.1-UC1-2 G5.1-UC1-4
R5.1-UC1-42	In the online scenario 99,9% of all messages SHOULD be received on time/directly (real time delivery) from corner 1 to corner 4 . In the offline scenario 99,9% of all messages SHOULD be received on time/directly (real time delivery) from corner 1 to corner 3 .See R5.1-UC1-18.	NF/Performance efficiency	e-Delivery	e-Delivery (ABB -Message Exchange)	G5.1-UC1-2 G5.1-UC1-4
R5.1-UC1-43	The average file size attached to a message is non-compressed 50 MB. The maximum file size attached to a message is non-compressed 2 GB.	NF/Performance efficiency	e-Delivery	e-Delivery (ABB -Message Exchange)	G5.1-UC1-2 G5.1-UC1-4
R5.1-UC1-45	Response messages, specific the “receive of acknowledgement of submission”, MUST be received within a limited amount of time (e.g. 2 minutes). The amount of time SHOULD be predictable so the EO can take action if the response is not received within the expected amount of time.	NF/Performance efficiency	e-Delivery	e-Delivery (ABB -Message Exchange)	G5.1-UC1-2 G5.1-UC1-4

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-46	The EO COULD receive an acknowledgement that its bid has been received by the CAs' tendering system for the purpose of Recipient non-repudiation. Some MS opt for a more strict definition of received, meaning corner 4 instead of corner 3. See also R5.1-UC1-28. Content acknowledgement: CA ID, EO ID, business opportunity ID, bid ID, hash code bid and time stamp reception.	F	e-Delivery	e-Delivery (ABB -Message Exchange)	G5.1-UC1-4
R5.1-UC2-6	An EO SHOULD be able to send his offer together with the filled VCD Package or ESPD to the CA, with a guaranteed delivery.	NF/Reliability	Processes requirements-e-Delivery	e-Delivery (ABB - Message Exchange)	G5.1-UC2-1 G5.1-UC2-3 G5.1-UC2-5
R5.1-UC4-2	A CA must have ability to register information in a SMP and BDXL. The eInvoice must be received as a PEPPOL BIS 2.0. The validation service for PEPPOL BIS 2.0 must be available. File transport from access point to a CA are tested ok.	NF/Compatibility	eInvoicing	e-Delivery (ABB Service Location)	G5.1-UC4-1
R5.1-UC4-4	An access point needs to have an agreement with customers, both EOs and CAs and needs to register all receivers in an SMP. An access point has the responsibility to make sure that validation of the PEPPOL BIS has been done before sending the document into the infrastructure and need to send electronic invoices using AS4.	NF/Security	eInvoicing	e-Delivery (ABB Service Location)	G5.1-UC4-1 G5.1-UC4-2 G5.1-UC4-3
R5.1-UC4-5	An EO needs to be able to produce 100 and 1.000 eInvoices and send them to an access point and needs to be able to send eInvoices to many customers simultaneously.	F	eInvoicing	e-Delivery (ABB - Message Exchange)	G5.1-UC4-4

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC4-6	An access point needs to be able to receive from an EO or send to a CA 100 and 1.000 eInvoices and send/receive them into/from the infrastructure based on a look up in BDXL/SMP using AS4 simultaneously. An EO needs to be able to produce an eInvoice at size 10 MB, 100 MB and up to 2 GB and send them to an access point. An access point needs to be able to receive from an EO or send to a CA an eInvoice at size 10 MB, 100 MB and 2 GB and send/receive it into/from the infrastructure based on a look up in BDXL/SMP.	NF/Security	eInvoicing	e-Delivery (ABB - Message Exchange, ABB - Capability Lookup, ABB-Service Location)	G5.1-UC4-5
R5.2-UC1-7	NCP SHALL be able to locate the endpoint and the capabilities of remote NCPs within the EU domain. (epSOS D3.A epSOS Evolving Document Technical specifications).	NF/Compatibility	Infrastructure and inter-connection (CC6.1)	e-Delivery (ABB - Capability Lookup, ABB - Service Location)	G5.2-UC1-1
R5.2-UC1-9	The following resources MUST exist in the same state for every NCP for the cross-country system to operate: A Routing Table in order to locate NCPs within the EU domain; A list of the Trusted Certificates; A Taxonomy for the eHealth pivot format and the Master Value Set Catalogue and Master Translation Catalogue. Those services MAY be duplicated on the national side but SHOULD be maintained centrally, with information about the requirements of each country and acceptable forms of patient identification and consent; Support material for development and testing. (epSOS e1-REQ-4606).	F	epSOS assets, Infrastructure and inter-connection	e-Delivery (ABB - Capability Lookup), epSOS Central Services	G5.2-UC1-4

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.2-UC2-1	The eConfirmation service SHALL, upon request and under the responsibility of the Institution of the place of stay, contact the CI electronically in order to obtain a PRC indicating a person's entitlement to benefits in kind (in accordance to regulation 987/2009).	F	Infrastructure	e-Delivery (ABB - Message Exchange)	G5.2-UC2-1 G5.2-UC2-3
R5.2-UC2-9	When the eConfirmation service communicates the PRC, the data protection legislation of the MS communicating the PRC MUST be applied (in accordance to regulation 883/2004).	F	Legal	e-Delivery (ABB - Message Exchange)	
R5.2-UC2-10	The eConfirmation service MUST be available around the clock 24/7, because providing healthcare is needed around the clock.	NF/Reliability	Infrastructure	e-Delivery (ABB - Message Exchange)	G5.2-UC2-1
R5.2-UC2-11	The eConfirmation service MUST perform (near) real-time, meaning several minutes.	NF/Performance Efficiency	Infrastructure	e-Delivery (ABB - Message Exchange)	G5.2-UC2-1
R5.2-UC2-12	The eConfirmation service MUST use secure communication channels between the Institution of the place of stay and the CI.	NF/Security	Security	e-Delivery (ABB - Message Exchange)	G5.2-UC2-2
R5.3-UC1-2 R5.3-UC4-2 R5.3-UC5-1 R5.3-UC6-1	Transmission should be secure and according to data protection rules (for instance no unnecessary storage).	NF/Security	e-Delivery	e-Delivery (ABB - Message Exchange)	G5.3-UC1-2 G5.3-UC4-2 G5.3-UC5-1 G5.3-UC5-2 G5.3-UC6-1 G5.3-UC6-2

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.3-UC1-4 R5.3-UC4-4	Directories should make it possible at least to send a message to the competent court or authority and at best to identify it.	NF/Compatibility	e-Delivery	e-Delivery (ABB - Message Exchange)	G5.3-UC1-4 G5.3-UC4-4
R5.4-UC1-16 R5.4-UC2-16	The system **must** ensure the transmission of data and/or messages between all the involved entities (e.g. user, back-end system, competent authorities, etc.).	F	Infrastructure	e-Delivery (ABB -Message Exchange, ABB - Capability Lookup, ABB - Service Location, ABB -Backend Integration)	G5.4-UC1-7 G5.4-UC1-8 G5.4-UC1-16 G5.4-UC2-9 G5.4-UC2-13
R5.4-UC1-17 R5.4-UC2-17	The submission of the application, the transmission of the dossier of the case to the back-office system and the transmission of the digital certificate **should** be done through a secure channel.	NF/Security	Trust & Security	e-Delivery (ABB -Message Exchange, ABB -Backend Integration)	G5.4-UC1-7 G5.4-UC1-8 G5.4-UC1-16 G5.4-UC2-9 G5.4-UC2-10 G5.4-UC2-13
R5.4-UC1-20 R5.4-UC2-20	The responsible entity and the consequences in case of non-delivery **must** be clearly defined.	NF/Security	Legal	e-Delivery (ABB -Message Exchange,	G5.4-UC1-7 G5.4-UC1-8 G5.4-UC1-16

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
				ABB -Backend Integration)	G5.4-UC2-9 G5.4-UC2-13
R5.4-UC1-21 R5.4-UC2-21	The system **must** verify the integrity, the validity and the protection against unauthorised access of the data and the information exchanged during the whole transmission process (i.e. between all nodes).	NF/Security	Trust & Security	e-Delivery (ABB -Message Exchange, ABB -Backend Integration)	G5.4-UC1-7 G5.4-UC1-8 G5.4-UC1-16 G5.4-UC2-9 G5.4-UC2-13
			SUM	**31**	

3.2. Requirements for the eDocuments SAT

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-2	The CA wants an interface for exchanging notices with other eTendering platforms and Publication platforms (e.g. Tenders European Daily (TED)). The CA may want to add qualification criteria and catalogue template to the notice. In the Contract notice the EO MUST be able to identify the business opportunity and the CA in order to be able to respond. Identifiers: CA ID, Business opportunity ID, response address ID.	F	eDocuments	eDocument (ABB -Document Provisioning, ABB -Document Routing)	G5.1-UC1-1 G5.1-UC1-3 G5.1-UC1-7

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-3	The Contract notice SHOULD be based on common standards.	F	eDocuments	eDocument (ABB -Document Provisioning)	G5.1-UC1-1 G5.1-UC1-12
R5.1-UC1-4	Structured tender documents (the Call for tender) SHOULD be based on common standards.	F	eDocuments	eDocument (ABB -Document Provisioning)	G5.1-UC1-12 G5.1-UC1-13
R5.1-UC1-5	Structured qualification criteria (the VCD skeleton) SHOULD be based on common standards.	NF/ Usability	eDocuments	eDocument (ABB -Document Provisioning)	G5.1-UC1-12 G5.1-UC1-13
R5.1-UC1-6	Structured product requirements (the Catalogue template) SHOULD be based on common standards.	NF/ Usability	eDocuments	eDocument (ABB -Document Provisioning)	G5.1-UC1-12 G5.1-UC1-13
R5.1-UC1-17	All messages MUST contain DOMAIN META DATA. The Meta data MUST be based on common standards.	NF/Compatibility	eDocuments	eDocument (ABB -Document Provisioning)	G5.1-UC1-6
R5.1-UC1-19	All bids MUST be linked to a business opportunity in order for the CA to be able to evaluate them. This includes the qualification in two phased procedures. Identifiers: CA ID, Business opportunity ID, response address ID, EO ID and Bid ID.	F	eDocuments	eDocument (ABB -Document Provisioning)	G5.1-UC1-5
R5.1-UC1-20	Structured qualification evidence (the VCD) SHOULD be based on common standards.	NF/Compatibility	eDocuments	eDocument	G5.1-UC1-5

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
				(ABB -Document Provisioning)	
R5.1-UC1-21	Provide mapping between qualification criteria and evidence and harmonize solutions at European level: e-CERTIS[15] from DG MARKT, ESPD and the PEPPOL European VCD System[16] (currently the CEMS service).	NF/Compatibility	eDocuments	eDocument (ABB -Document Provisioning)	G5.1-UC1-13
R5.1-UC1-22	Structured product descriptions (the Catalogue) SHOULD be based on common standards.	NF/Compatibility	eDocuments	eDocument (ABB -Document Provisioning)	G5.1-UC1-5
R5.1-UC1-44	Encrypted bids SHOULD be wrapped in an unencrypted message layer with meta data.	NF/Security	eDocuments	eDocument (ABB -Document Packaging)	G5.1-UC1-1 G5.1-UC1-12
R5.1-UC2-1	VCD covers specific messaging requirements with regard to qualification of tenders throughout the different phases in eTendering.	NF/Usability	Pre-award procurement	eDocument (ABB - Document Provisioning, ABB - Document Routing,	G5.1-UC2-1 G5.1-UC2-3 G5.1-UC2-5 G5.1-UC2-8

[15] DG Internal Market and Services. e-Certificate [online]. 30 July 2014, [viewed 03 March 2015]. Available from Internet: http://ec.europa.eu/markt/ecertis/login.do

[16] PEPPOL website. Newly styled European VCD System and open source VCD components [online]. 31 May 2012 11:05 AM, [viewed 03 March 2015]. Available from Internet: http://www.peppol.eu/news/news_repository/newly-styled-european-vcd-system-and-open-source-vcd-components

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
				ABB - Document Packaging)	
R5.1-UC2-2	The CA may want to define qualification criteria in a standardized way and wants to add these qualification criteria to the tender notice or tendering documents.	NF/Functional suitability	Processes requirements - Definition of qualification criteria	eDocument (ABB - Document Provisioning)	G5.1-UC2-3 G5.1-UC2-4 G5.1-UC2-5 G5.1-UC2-8
R5.1-UC2-3	The EO SHOULD be able to download relevant tendering documents including the qualification criteria, in a structured format based on common EU standards, in order to review them and make a decision about participation and include them in the VCD.	F	Processes requirements - Reception of qualification criteria	eDocument (ABB - Document Provisioning)	G5.1-UC2-3 G5.1-UC2-4 G5.1-UC2-6 G5.1-UC2-8
R5.1-UC2-4	The EO MAY need of a system in order to facilitate the creation of a VCD/ESPD, that follows the required information modelling standards (UBL, CEN/BII 3).	F	Processes requirements - Creation of VCD/ESPD	eDocument (ABB - Document Provisioning)	G5.1-UC2-4 G5.1-UC2-6
R5.1-UC2-7	The CA MAY need to use a system for viewing, extracting and validating the VCD Package Container.	F	Processes requirements- Proof of eligibility	eDocument (ABB - Document Provisioning)	G5.1-UC2-2 G5.1-UC2-3 G5.1-UC2-4
R5.1-UC2-9	The CA MUST define the qualification criteria in a structured and standardized way so that the EO can understand the qualification criteria and find corresponding evidences to prove them.	NF / Compatibility	Data and domain specific e-SENS BB	eDocument (ABB - Document Provisioning)	G5.1-UC2-2 G5.1-UC2-3

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
			requirements - Qualification criteria		G5.1-UC2-5 G5.1-UC2-8
R5.1-UC2-11	The structure and the semantic data of the container MUST be based on common EU approved standards.	NF/Compatibility	Data and domain specific e-SENS BB requirements- eDocuments / Semantics	eDocument (ABB - Document Provisioning)	R5.1-UC2-11
R5.1-UC2-12	The system MUST be based on a single, common and standard container format that supports signature attachments, so that it can be used on multiple processes.	NF/Compatibility	Infrastructure and generic e-SENS BB requirements- eDocuments	eDocument (ABB - Document Provisioning, ABB - Document Packaging)	R5.1-UC2-12
R5.1-UC2-16	The VCD Information data model MUST be compatible with the structured ESPD and ESPD Template, as they are defined in CEN/BII 3 Workshop.	NF / Compatibility	Infrastructure and generic e-SENS BB requirements- eDocuments	eDocument (ABB - Document Provisioning)	G5.1-UC2-2 G5.1-UC2-3 G5.1-UC2-5 G5.1-UC2-8

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC4-1[17]	The eInvoice must be sent as a PEPPOL BIS 2.0. The validation service for PEPPOL BIS 2.0 must be available and used. File transport from EOs to their access point are tested ok and PEPPOL BIS must be sent between access points. File transport to CAs from their access point are tested ok.	NF/Compatibility, Governance	eInvoicing	eDocument (ABB-Document Provisioning)	G5.1-UC4-1
R5.1-UC4-3[18]	Between access points, the eInvoice must be produced and sent as a PEPPOL BIS 2.0 and the eInvoice must be received as a PEPPOL BIS 2.0.	NF/Compatibility, Governance	eInvoicing	eDocument (ABB-Document Provisioning)	G5.1-UC4-1
R5.2-UC2-3	When the eConfirmation service is used by a HP, the information elements needed to request, to verify entitlement and to issue a PRC SHALL be provided to the CI. The CI needs the elements to be able to validate if the person is insured and is entitled to benefits in kind. The information elements are based on documents people have. Diacritics may be disregarded when submitting a request.	F	Information Exchange	eDocument (ABB - Document Provisioning, ABB - Document Packaging, ABB - Document Routing)	G5.2-UC2-1 G5.2-UC2-4

[17] Note that the requirements R5.1-UC4-1 and R5.1-UC4-3 for the eDocuments SAT are included in the list of requirements of the pilot blueprint description of the domain UC 5.1.4 in order to have a more complete description. They should not be used by WP6 for further analysis, as these requirements are only for newcomers to the eInvoicing domain such as service providers, economic operators and contracting authorities of the member states. From the eInvoicing domain UC there is no need for further requirements for the eDocuments SAT, but new actors within the eInvoicing domain should be aware of these requirements.

[18] See footnote for R5.1-UC4-1.

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.2-UC2-4	The eConfirmation service SHALL be able to issue a PRC, indicating the person's entitlement to benefits in kind, or deny the entitlement if the person has not a valid insurance policy.	F	Information Exchange	eDocument (ABB - Document Provisioning, ABB - Document Packaging, ABB - Document Routing)	G5.2-UC2-1 G5.2-UC2-3
R5.2-UC2-8	The PRC MUST contain the information elements as defined in decision 190/2003.	F	Information Exchange	eDocument (ABB - Document Provisioning, ABB - Document Packaging, ABB - Document Routing)	G5.2-UC2-2
R5.2-UC2-14	The eConfirmation service MUST comply with the applicable requirements in Regulation 883/2004 on the coordination of social security systems and in Regulation 987/2009, which is laying down the procedure for implementing Regulation 883/2004.	NF/Functional suitability	Legal	eDocument (ABB - Document Provisioning, ABB - Document Packaging, ABB - Document Routing)	G5.2-UC2-2

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.3-UC1-1	Citizens, courts and central authorities should have access to online forms which have to be in line with Regulation 2201/2003 and they could be received in their correspondents' applications.	F	Documents and Semantics	eDocument (ABB - Document Provisioning, ABB - Document Routing, ABB - Document Packaging)	G5.3-UC1-1 G5.3-UC2-1
R5.3-UC4-1	Citizens, legal persons, banks, courts and enforcement authorities should have access to online forms which have to be in line with Regulation 655/2014 and they could be received in their correspondents' applications.	F	Documents and Semantics	eDocument (ABB - Document Provisioning, ABB - Document Routing, ABB - Document Packaging)	G5.3-UC4-1
R5.3-UC5-2 R5.3-UC6-2	Competent authorities should have access to online forms.	F	Documents and Semantics	eDocument (ABB - Document Provisioning, ABB - Document Routing, ABB - Document Packaging)	G5.3-UC5-1 G5.3-UC5-2 G5.3-UC6-1 G5.3-UC6-2

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.4-UC1-11 R5.4-UC2-11	The user **should** be able to retrieve personalised information about the process according to the country of origin, the type of business/activity and the location he/she will offer services in.	F	Information exchange	eDocument (ABB - Business Rules Integration)	G5.4-UC1-1 G5.4-UC1-10 G5.4-UC2-1 G5.4-UC2-4 G5.4-UC2-5
R5.4-UC1-26 R5.4-UC2-26	Two types of documents **should** be supported: (a) structured electronic documents that have a payload which derives from the set of data that constitute its content and (b) scanned documents that contain the information that is required in an image.	F	Information Exchange	eDocument (ABB -Document Provisioning, ABB -Document Packaging)***	G5.4-UC1-4 G5.4-UC1-6 G5.4-UC1-12 G5.4-UC1-14 G5.4-UC2-4 G5.4-UC2-14
R5.4-UC1-27 R5.4-UC2-27	Electronic Documents produced by any already established system in any MS **should** be supported.	NF/Compatibility	Documents provisioning	eDocument (ABB -Document Provisioning)***	G5.4-UC1-4 G5.4-UC1-6 G5.4-UC1-12 G5.4-UC1-14 G5.4-UC2-4 G5.4-UC2-14
R5.4-UC1-28 R5.4-UC2-28	Metadata of the uploaded documents **should** be created in order to ensure the documents' integrity and to simplify their process.	NF/Compatibility	Documents provisioning	eDocument (ABB -Document Provisioning)***	G5.4-UC1-4 G5.4-UC1-6 G5.4-UC1-12 G5.4-UC1-14 G5.4-UC1-15 G5.4-UC2-1 G5.4-UC2-6

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.4-UC1-29 R5.4-UC2-29	The uploaded documents **should** have a specific, predefined structure that will assist the validation process and the metadata creation.	F	Documents provisioning	eDocument (ABB -Document Provisioning)***	G5.4-UC1-4 G5.4-UC1-6 G5.4-UC1-12 G5.4-UC1-14 G5.5-UC1-15 G5.4-UC2-1 G5.4-UC2-6
R5.4-UC1-30 R5.4-UC2-30	The dossier of the case, containing all information provided and all uploaded documents along with all appropriate metadata **should** be automatically created with a specific, predefined structure to assist its processing at the back-office systems.	NF/Compatibility	Documents Provisioning	eDocument (ABB -Document Packaging)***	G5.4-UC1-9 G5.4-UC1-12 G5.4-UC2-6 G5.4-UC2-13
R5.4-UC1-31 R5.4-UC2-31	Encryption of the uploaded documents **may** be needed in some cases.	NF/Security	Documents Provisioning	eDocument (ABB -Document Packaging)***	G5.4-UC1-4 G5.4-UC1-6 G5.4-UC1-9 G5.4-UC1-12 G5.4-UC2-6 G5.4-UC2-13
R5.4-UC1-32 R5.4-UC2-32	A smart data semantic asset that will allow at a later stage the automatic mapping of documents and information in the business domain across Member States **may be** created, similar to what is done in e-CERTIS[19].	NF/Compatibility	Information Exchange	eDocument (ABB -Document Packaging)***	G5.4-UC1-4 G5.4-UC1-6 G5.4-UC1-12 G5.4-UC1-14

[19] DG Internal Market and Services. e-Certificate [online]. 30 July 2014, [viewed 03 March 2015]. Available from Internet: http://ec.europa.eu/markt/ecertis/login.do

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
					G5.4-UC1-15 G5.4-UC2-1 G5.4-UC2-5 G5.4-UC2-6 G5.4-UC2-7
R5.4-UC1-33 R5.4-UC2-33	Documents with signature timestamps **must** be compliant with the decisions 2009/767/EC, 2010/425/EU, and 2011/130/EC.	NF/Security	Legal	eDocument (ABB -Document Packaging)***	G5.4-UC1-4 G5.4-UC1-6 G5.4-UC1-12 G5.4-UC1-14 G5.4-UC1-15 G5.4-UC2-11 G5.4-UC2-13
R5.4-UC1-34 R5.4-UC2-34	Documents with visual signatures **must be** compliant with the decisions 2009/767/EC, 2010/425/EU, and 2011/130/EC.	NF/Security	Legal	eDocument (ABB -Document Packaging)***	G5.4-UC1-4 G5.4-UC1-6 G5.4-UC1-12 G5.4-UC1-14 G5.4-UC1-15 G5.4-UC2-4 G5.4-UC2-11 G5.4-UC2-13
			SUM	**39**	

3.3. Requirements for the eID SAT

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-12	The EO SHOULD be able to identify itself with the national eID.	NF/Compatibility	eID	eID (ABB - Cross-Border Authentication)	G5.1-UC1-11 G5.1-UC1-17
R5.1-UC2-13	The CA MAY require the EO to be authenticated for the proper upload of the VCD Package.	F	Infrastructure and generic e-SENS BB requirements-Use of eID	eID (ABB - Cross-Border Authentication)	G5.1-UC2-5 G5.1-UC2-7
R5.2-UC1-1	Common identification and authentication measures should be adopted by the eHealth Network. (eHealth Network Multiannual Plan: http://ec.europa.eu/health/ehealth/docs/ev_20121107_wd01_en.pdf).	NF/Security	Trust and security (CC6.3)	eID (ABB - Cross-Border Authentication, (ABB - Cross-Border Attribute Provision)	G5.2-UC1-2 G5.2-UC1-3
R5.2-UC1-14	Patient should be properly identified, authenticated and be in a position to authorize HP to access patients' medical data.	NF/Security	Legal	eID	G5.2-UC1-3

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
				(ABB - Cross-Border Authentication, ABB - Cross-Border Attribute Provision)	
R5.4-UC1-1 R5.4-UC2-1	The user **must** be able to identify himself using the eID he possesses, i.e.: • STORK 1.0 or STORK 2.0 identification or • Digital Signature based on Qualified Digital Certificate or • National solutions that will be clarified in the pilot intention UC.	F	Infrastructure	eID (ABB - Cross-Border Authentication)	G5.4-UC1-2 G5.4-UC2-2 G5.4-UC2-3 G5.4-UC2-8 G5.4-UC2-10 G5.4-UC2-13
R5.4-UC1-2 R5.4-UC2-2	The system **must** authenticate the user by validating the credentials he provides and authorize him to have access to the application and/or to data he has already filled in during a previous session.	F	Trust & Security	eID (ABB - Cross-Border Authentication)	G5.4-UC1-2 G5.4-UC1-3 G5.4-UC1-11 G5.4-UC2-2 G5.4-UC2-3 G5.4-UC2-8
R5.4-UC1-3 R5.4-UC2-3	Backward compatibility with infrastructure (e.g. STORK) related to eID services that already exists in several MSs should be taken into account.	NF/Compatibility	Infrastructure	eID (ABB - Cross-Border Authentication)	G5.4-UC1-2 G5.4-UC1-3 G5.4-UC1-11 G5.4-UC2-2

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
					G5.4-UC2-3 G5.4-UC2-8
R5.4-UC1-4 R5.4-UC2-4	The system **should be** able to retrieve the user's attributes from trusted sources during his identification/authentication and grant him the appropriate rights, i.e. give him access to the application form for a specific business type(s) according to his characteristics.	F	Trust & Security	eID (ABB - Cross-Border Attribute Provision)	G5.4-UC1-2 G5.4-UC1-3 G5.4-UC1-11 G5.4-UC2-2 G5.4-UC2-3 G5.4-UC2-7 G5.4-UC2-8 G5.4-UC2-10
R5.4-UC1-5 R5.4-UC2-5	The user **must** provide a valid mandate in case he acts as a legal representative of a legal person.	F	Trust & Security	eID (ABB - Cross-Border Attribute Provision)	G5.4-UC1-2 G5.4-UC1-3 G5.4-UC1-9 G5.4-UC1-11 G5.4-UC2-2 G5.4-UC2-3 G5.4-UC2-7 G5.4-UC2-8 G5.4-UC2-10 G5.4-UC2-13
R5.5-UC1.1-1	A foreign citizen can be identified and authenticated cross border.	F	Infrastructure and inter-connection	eID, (ABB - Cross-Border Authentication)	G5.5-UC1.1-2

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.5-UC1.1-2	The identification information can be trusted.	NF/Security	Trust and security	eID, (ABB - Cross-Border Authentication)	G5.5-UC1.1-1
R5.5-UC1.1-3	Sufficient information is provided in order to identify the foreign citizen.	F	Information exchange and semantics	eID, (ABB - Cross-Border Authentication)	G5.5-UC1.1-2 G5.5-UC1.1-3
R5.5-UC1.2-1	Patients shall be able to authenticate using their national eID.	F	Infrastructure and inter-connection	eID, (ABB - Cross-Border Authentication)	G5.5-UC1.2-2
R5.5-UC1.2-2	Access to eHealth data needs to meet the security and data protection requirements of highly sensitive data	F	Trust and Security / Legal requirements	eID, (ABB - Cross-Border Authentication)	G5.5-UC1.2-3
R5.5-UC1.2-3	Service providers and patients are supported in enforcing the access rights to medical records under the Patient Rights Directive.	NF/Security	Legal requirements	eID, (ABB - Cross-Border Authentication)	G5.5-UC1.2-3

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.5-UC1.2-4	For services providers already operating eID access migration to eIDAS is demonstrated	F	Infrastructure and inter-connection	eID, (ABB - Cross-Border Authentication)	G5.5-UC1.2-1
R5.5-UC1.3-1	Students should be able to login in using their own national eID.	F	Infrastructure and inter-connection/ security	eID, (ABB - Cross-Border Authentication)	G5.5-UC1.3-1
R5.5-UC1.3-4	Contribute authentication module to the Moodle community.	F	Infrastructure and inter-connection	eID, (ABB - Cross-Border Authentication)	G5.5-UC1.3-5
R5.5-UC1.3-5	Proposed authentication solution should be done in a cost effective and efficient way.	F	Performance	eID, (ABB - Cross-Border Authentication)	G5.5-UC1.3-3
R5.5-UC1.3-6	Improve student mobility and choice.	F	User functionality	eID, (ABB - Cross-Border Authentication)	G5.5-UC1.3-4

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.5-UC1.3-8	Teachers should be able to login using national ID.	F	Infrastructure and inter-connection/security	eID, (ABB - Cross-Border Authentication)	G5.5-UC1.3-1
R5.5-UC1.4-1	The record matching process should give a set of eIDAS attributes received for a foreign user determine if that user has a local, national identifier issued, and if so return the local identifier(s).	F	eID	eID, (ABB - Cross-Border Authentication, ABB Attribute Exchange Protocol)	G5.5-UC1.4-2
R5.5-UC1.4-2	The record matching process should allow the user to apply for a national identifier in case the user doesn't have one.	F	National infrastructure	eID, (ABB - Cross-Border Authentication ABB Attribute Exchange Protocol)	G5.5-UC1.4-1 G5.5-UC1.4-3
R5.5-UC1.4-3	The user should only be required to authenticate once during the record matching process.	F	eID	eID, (ABB - Cross-Border Authentication ABB Attribute Exchange Protocol)	G5.5-UC1.4-2

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.5-UC1.4-4	The user should actively consent to attribute release - including multiple consent actions if multiple requests for attributes are sent.	F	eID	eID, (ABB - Cross-Border Authentication, ABB Attribute Exchange Protocol)	G5.5-UC1.4-4 G5.5-UC1.4-6
R5.5-UC1.4-5	The binding between an eIDAS identifier (e.g. DK/DE/2634872634) and a local, national identifier should be visible and manageable to the user.	F	National infrastructure	eID, (ABB - Cross-Border Authentication)	G5.5-UC1.4-4 G5.5-UC1.4-6
R5.5-UC1.4-6	The user should be able to link multiple eIDAS identifiers (e.g. different credentials for the same user) to the same national identifier.	F	national infrastructure	eID, (ABB - Cross-Border Authentication)	G5.5-UC1.4-4 G5.5-UC1.4-5 G5.5-UC1.4-6
R5.5-UC2-1	eIDAS MW and NL eIDAS STORK = eIDAS adapter available	NF/Compatibility	eID	eID, (ABB - Cross-Border Authentication)	G5.5-UC2-1 G5.5-UC2-2 G5.5-UC2-3 G5.5-UC2-4
R5.5-UC2-2	Hosted MW (AT) available.	NF/Compatibility	eID	eID, (ABB - Cross-Border Authentication)	G5.5-UC2-1 G5.5-UC2-2 G5.5-UC2-3 G5.5-UC2-4

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
			SUM	**29**	

3.4. Requirements for the eSignature SAT

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-23	If imposed by the CA the EO MUST sign his bid before submission. This includes the qualification in two phased procedures.	NF/Security	Security & Trust	eSignature (ABB -eSignature Creation)	G5.1-UC1-10
R5.1-UC1-24	The EO SHOULD only use for signing his bid digital certificates which are supported by the EU Trusted Lists of Certification Service Providers.	NF/Security	Security & Trust	eSignature (ABB -eSignature Creation)	G5.1-UC1-6 G5.1-UC1-10
R5.1-UC1-33	The CA SHOULD use the European eSignature validation services.	F	Security & Trust	eSignature (ABB -eSignature Validation)	G5.1-UC1-6 G5.1-UC1-10
R5.1-UC2-14	The CA MAY require that the evidences and the container of the documents are signed using advanced and/or qualified signatures.	F	Infrastructure and generic e-SENS BB requirements-Use of eSignatures	eSignature (ABB - eSignature Creation)	G5.1-UC2-5 G5.1-UC2-7
R5.1-UC2-15	The CA MUST be able to verify the validity of the attached attestations and documents.	F	Infrastructure and generic e-SENS BB requirements-Use of eSignatures	eSignature (ABB - eSignature Validation)	G5.1-UC2-5 G5.1-UC2-7
R5.2-UC1-5	ePs SHALL be signed by C1 and C2 for authentication and integrity.	NF/Security	Trust and security (CC6.3)	eSignature	G5.2-UC1-4

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
				(ABB - eSignature Creation)	
R5.2-UC2-5	The PRC MUST be electronically sealed by the eConfirmation service, (with advanced signature under responsibility of the issuing CI), to provide proof of origin and integrity to the receiving Institution of the place of stay.	F	Trust and Security	eSignature (ABB - eSignature Creation)	G5.2-UC2-2
R5.2-UC2-6	The seal of the PRC MUST be validated by the eConfirmation service, (under responsibility of the Institution of the place of stay), to proof origin and integrity.	F	Trust and Security	eSignature (ABB - eSignature Validation)	G5.2-UC2-2
R5.2-UC2-7	The electronic seal of the PRC MUST comply with the applicable requirements in regulation 910/2014 on electronic identification and trust services for electronic transactions in the internal market (eIDAS regulation) repealing Directive 1999/93/EC. Formats are being adopted by implementing acts.	NF/Functional suitability	Legal	eSignature (ABB - eSignature Creation)	G5.2-UC2-2
R5.3-UC1-3 R5.3-UC4-3 R5.3-UC5-3 R5.3-UC6-3	The receiving party should be able to establish the authenticity of the documents, thanks to the use of authentication or electronic signature by the sending party and the provision of a validation report.	NF/Security	eID and eSignature	eSignature (ABB - eSignature Creation, ABB - eSignature Validation, SBB-SD-DSS signature tool)	G5.3-UC1-3 G5.3-UC2-3 G5.3-UC4-3

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.4-UC1-6 R5.4-UC2-6	The user **must** be able to electronically sign the application before the submission.	F	Trust & Security	eSignature (ABB -eSignature Creation)	G5.4-UC1-5 G5.4-UC1-13 G5.4-UC1-14 G5.4-UC2-3 G5.4-UC2-12 G5.4-UC2-13
R5.4-UC1-7 R5.4-UC2-7	The dossier of the case, containing the application data and any required documents, **may** be electronically signed to verify its integrity.	NF/Security	Trust & Security	eSignature (ABB -eSignature Creation)	G5.4-UC1-4 G5.4-UC1-13 G5.4-UC1-14 G5.4-UC2-11 G5.4-UC2-12
R5.4-UC1-8 R5.4-UC2-8	The system **must** verify the user's signature. This service **must** be compliant with the specifications of the decisions 2009/767/EC[20],	NF/Security	Trust & Security	eSignature (ABB -eSignature Validation)	G5.4-UC1-5 G5.4-UC1-6 G5.4-UC1-9 G5.4-UC1-13 G5.4-UC1-14 G5.4-UC1-15 G5.4-UC2-3 G5.4-UC2-6

[20] EUR-LEX -Europa. Commission Decision of 16 October 2009, setting out measures facilitating the use of procedures by electronic means through the 'points of single contact' under Directive 2006/123/EC of the European Parliament and of the Council on services in the internal market. Official Journal of the EU [online]. 20/ 10/2009, L 274/36, [viewed 31 March 2015]. Available from Internet: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:299:0018:0054:EN:PDF

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
	2010/425/EU[21], and 2011/130/EC[22]. Moreover documents that were singed following a proprietary format must also be verified provided that there is a public verification service.				G5.4-UC2-11 G5.4-UC2-12 G5.4-UC2-13 G5.4-UC2-14
R5.4-UC1-9 R5.4-UC2-9	The Signature Creation Service (XAdES, CAdES or PAdES) **must be** compliant with the specifications of the decisions 2009/767/EC, 2010/425/EU, and 2011/130/EC.	NF/Security	Trust & Security	eSignature (ABB -eSignature creation)	G5.4-UC1-5 G5.4-UC1-13 G5.4-UC1-14 G5.4-UC2-3 G5.4-UC2-11 G5.4-UC2-12 G5.4-UC2-13 G5.4-UC2-14

[21] EUR-LEX -Europa. Commission Decision of 28 July 2010, amending Decision 2009/767/EC as regards the establishment, maintenance and publication of trusted lists of certification service providers supervised/accredited by Member States. Official Journal of the EU [online]. 31/ 07/2010, L 199/30, [viewed 31 March 2015]. Available from Internet: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:199:0030:0035:EN:PDF

[22] EUR-LEX -Europa. Commission Decision of 25 February 2011, establishing minimum requirements for the cross-border processing of documents signed electronically by competent authorities under Directive 2006/123/EC of the European Parliament and of the Council on services in the internal market. Official Journal of the EU [online]. 26/ 02/2011, L 53/66, [viewed 31 March 2015]. Available from Internet:

http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:053:0066:0072:EN:PDF

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.4-UC1-10 R5.4-UC2-10	Backward compatibility with the infrastructure that already exists in several MSs (e.g. STORK) for the creation and validation of eSignatures **should** be taken into account.	NF/Compatibility	Infrastructure	eSignature (ABB -eSignature Creation, ABB -eSignature Validation)	G5.4-UC1-5 G5.4-UC1-13 G5.4-UC1-14 G5.4-UC1-15 G5.4-UC2-3 G5.4-UC2-12 G5.4-UC2-14
R5.5-UC1.3-2	Students should be able to use eSignature when handing in assignments and exams.	F	Infrastructure and inter-connection /security /Legal	eSignature, (ABB - eSignature Creation)	G5.5-UC1.3-2
R5.5-UC1.3-3	Teachers should be able to sign student feedback and grading.	F	Infrastructure and inter-connection /security /Legal	eSignature, (ABB - eSignature Creation)	G5.5-UC1.3-2
R5.5-UC1.3-7	Contribute eSignature assignment and quiz module to Moodle community.	F	Infrastructure and inter-connection	eSignature, (ABB - eSignature Creation)	G5.5-UC1.3-5
			SUM	**18**	

3.5. Requirements for the Semantics SAT

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC2-5	The EO MAY need of a system in order to facilitate the creation of a VCD/ESPD which includes the necessary evidence for the qualification criteria.	F	Processes requirements - Creation of VCD/ESPD	Semantics (ABB - Semantic Mapping Service)	G5.1-UC2-4 G5.1-UC2-6
R5.1-UC2-8	The System used by the CA for viewing, extracting and validating the VCD Package, should be able to validate that the evidences are valid for proving the criteria they have been chosen for.	F	Processes requirements- Proof of eligibility	Semantics (ABB - Semantic Mapping Service)	G5.1-UC2-2 G5.1-UC2-3 G5.1-UC2-4
R5.1-UC2-10	Both the EO and the CA SHOULD have access to a, preferably single, Semantic Mapping System, that will provide mapping between qualification criteria and evidence.	F	Data and domain specific e-SENS BB requirements- Criteria to evidence mapping	Semantics (ABB - Semantic Mapping Service)	G5.1-UC2-2 G5.1-UC2-3
R5.4-UC1-12 R5.4-UC2-12	Mapping of similar concepts between the different MS applications **should** be done in order to ensure the compatibility of the information exchanged between different services.	NF/Compatibility	Information exchange	Semantics (ABB - Semantic Mapping Service)***	G5.4-UC1-1 G5.4-UC1-9 G5.4-UC1-10 G5.4-UC2-1

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.4-UC1-13 R5.4-UC2-13	The application form, the description of the process the description of the required documents, the guidelines and any other information presented to the user **may be** automatically translated.	NF/Usability	Information exchange	Semantics (ABB - Semantic Mapping Service)***	G5.4-UC1-1 G5.4-UC1-10 G5.4-UC2-1 G5.4-UC2-5 G5.4-UC2-7 G5.4-UC2-11
R5.4-UC1-14 R5.4-UC2-14	The concepts defined **should** be compliant to the principles of the ISA core vocabularies.	NF/Compatibility	Information exchange	Semantics (ABB - Semantic Mapping Service)***	G5.4-UC1-1 G5.4-UC1-10 G5.4-UC2-1 G5.4-UC2-5 G5.4-UC2-6 G5.4-UC2-7 G5.4-UC2-14
R5.4-UC1-15 R5.4-UC2-15	Backward compatibility with the infrastructure that already exists in several MSs (e.g. SPOCS) **should** be taken into account.	NF/Compatibility	Infrastructure	Semantics (ABB - Semantic Mapping Service)***	G5.4-UC1-1 G5.4-UC1-10 G5.4-UC2-6 G5.4-UC2-14
R5.4-UC1-25 R5.4-UC2-25	Mapping between the required documents in one MS and the documents provided in the user's MS **should** exist in order to verify the compatibility of the documents provided	NF/Compatibility	Information Exchange	Semantics (ABB - Semantic Mapping Service)***	G5.4-UC1-1 G5.4-UC1-4 G5.4-UC1-9 G5.4-UC1-10 G5.4-UC2-1 G5.4-UC2-4

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.4-UC1-35 R5.4-UC2-35	The metadata that support the information regarding a process, a structured document or application form **may** indicate the version of the content in order to be able to identify any official change in the content, since the competent authorities usually update the information that they provide according to the changes in the legal framework.	NF/Usability	Information exchange	Semantics (ABB - Semantic Mapping Service)***	G5.4-UC1-7 G5.4-UC1-9 G5.4-UC1-11 G5.4-UC1-12 G5.4-UC1-15 G5.4-UC2-7 G5.4-UC2-13
			SUM	**9**	

3.6. Requirements for the Traceability and Non-Repudiation SAT

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-26	All bids COULD be time stamped at the moment the EO submits his bid (corner 1).	NF/Security	Security & Trust	Traceability and Non Repudiation (ABB Time Stamping)	G5.1-UC1-4 G5.1-UC1-8
R5.1-UC1-27	All bids MUST be time stamped at the moment the CA receives the bid (corner 3/4).	NF/Security	Security & Trust	Traceability and Non Repudiation (ABB Time Stamping)	G5.1-UC1-4 G5.1-UC1-8
R5.1-UC1-28	The EO MUST receive an acknowledgement that its bid has been received by the CA for the purpose of Recipient non-repudiation. In the 4-corner model corner 3 is contracted by the tendering system used by the CA and therefore under the control of the CA. "Received by corner 3" means received by the CA. See also R5.1-UC1-46. Content acknowledgement: CA ID, EO ID, business opportunity ID, bid ID, hash code bid and time stamp reception.	NF/ Usability	e-Delivery	Traceability and Non Repudiation (ABB Time Stamping, ABB Non Repudiation)	G5.1-UC1-4
R5.2-UC1-2	All transactions shall be logged; an audit trail created and stored according with IHE ATNA. NCP shall also provide evidence in a format which is considered to be cross-sector (e.g., ETSI REM). (epSOS D3.A epSOS Evolving Document Technical specifications).	NF/Security	Infrastructure and inter-connection (CC6.1)	Traceability and Non Repudiation (ABB Non-Repudiation, SBB Evidence Emitter)	G5.2-UC1-4

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.2-UC1-3	A patient SHOULD have the right to see the log and know who used or saw his medical data. (epSOS D2.2.7: requirement. #16).	NF/Security	Infrastructure and inter-connection (CC6.1)	Traceability and Non Repudiation (ABB Non-Repudiation, SBB Evidence Emitter)	G5.2-UC1-4
R5.4-UC1-18 R5.4-UC2-18	The messages exchanged between the competent authority/ies and the user **should** include the date and time reference in order to verify the compliance to all time deadlines.	NF/Security	Trust & Security	Traceability and Non Repudiation (ABB Time Stamping)***	G5.4-UC1-7 G5.4-UC1-8 G5.4-UC1-16 G5.4-UC2-9 G5.4-UC2-13
R5.4-UC1-19 R5.4-UC2-19	Each data and/or message exchange **should** be followed with a delivery receipt in order to verify the transaction.	F	Trust & Security	Traceability and Non Repudiation (ABB Non-Repudiation, SBB Evidence Emitter)	G5.4-UC1-7 G5.4-UC1-8 G5.4-UC1-16 G5.4-UC2-9 G5.4-UC2-13
R5.4-UC1-22 R5.4-UC2-22	During the exchange of data and/or messages evidences **should** be sent to the sender about each step of the process (e.g. reception at the intermediate node, reception at the end node, delivery to the end user). This information **should** also contain the exact time and date that these events happened.	NF/Security	Trust & Security	Traceability and Non Repudiation (ABB Non-Repudiation,	G5.4-UC1-7 G5.4-UC1-8 G5.4-UC1-16 G5.4-UC2-9 G5.4-UC2-13

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
				SBB Evidence Emitter)	
R5.4-UC1-23 R5.4-UC2-23	The sender **may** be able to choose under which conditions the recipient will have access to the message (e.g. only after being authenticated).	NF/Security	Trust & Security	Traceability and Non Repudiation (ABB Non-Repudiation, SBB Evidence Emitter)	G5.4-UC1-7 G5.4-UC1-8 G5.4-UC1-16 G5.4-UC2-9 G5.4-UC2-13
R5.4-UC1-36 R5.4-UC2-36	All the evidence for a transaction **may be** created and transferred to be locally stored for audit reasons.	NF/Security	Auditing	Traceability and Non Repudiation (ABB Non-Repudiation, SBB Evidence Emitter)	G5.4-UC1-8 G5.4-UC1-9 G5.4-UC1-16 G5.4-UC2-9 G5.4-UC2-13
			SUM	**10**	

3.7. Requirements for the Trust Establishment SAT

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-7	All EOs SHOULD be able to query publication portals (where the Contract notices are being published) to find interesting business opportunities.	F	Authorisation	Trust Establishment (ABB - Trust Network PKI, ABB - Trust Network Mutual Recognized Certificates)	G5.1-UC1-1
R5.1-UC1-8	All EOs MUST be able to access public tender documents.	F	Authorisation	Trust Establishment (ABB - Trust Network PKI, ABB - Trust Network Mutual Recognized Certificates)	G5.1-UC1-7
R5.1-UC1-10	The EO MUST be able to subscribe to an interesting business opportunity in order to receive the latest information about the call for tender.	F	Authorisation	Trust Establishment (ABB - Trust Network PKI, ABB - Trust Network Mutual Recognized Certificates)	G5.1-UC1-2

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-14	All EOs SHOULD be able to send questions regarding the tender documents to the CA.	F	Authorisation	Trust Establishment (ABB - Trust Network PKI, ABB - Trust Network Mutual Recognized Certificates)	G5.1-UC1-2 G5.1-UC1-3
R5.1-UC1-25	All bids MUST be encrypted upon submission. This includes the qualification in two phased procedures.	NF/Security	Security & Trust	Trust Establishment (ABB - Trust Network Mutual Recognized Certificates)	G5.1-UC1-8
R5.1-UC1-29	When a bid is legally received (meaning the CA has confirmed reception), the bid COULD be validated and conformance of validation COULD be send to the EO, (=business response). Validation of bid is only possible after decryption. The CA cannot access bids before the time limit has passed.	F	Non-Repudiation	Trust Establishment (ABB - Trust Network PKI, ABB - Trust Network Mutual Recognized Certificates)	G5.1-UC1-4 G5.1-UC1-8 G5.1-UC1-10
R5.1-UC1-37	Only selected EOs MUST be able to access restricted tender documents.	F	Authorisation	Trust Establishment (ABB - Trust Network PKI,	G5.1-UC1-2

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
				ABB - Trust Network Mutual Recognized Certificates)	
R5.1-UC1-39	Tendering solutions SHOULD have authorization mechanisms to prevent access to unauthorized tender information.	F	Authorisation	Trust Establishment (ABB - Trust Network PKI, ABB - Trust Network Mutual Recognized Certificates)	G5.1-UC1-14 G5.1-UC1-18
R5.1-UC1-47	Ensuring correct and reliable identification of the senders of the communication as well as the integrity of its content. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, Legal Requirements, LR01).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-8 G5.1-UC1-9 G5.1-UC1-10
R5.1-UC1-48	The level of security required for the tender itself differs because it constitutes a binding offer for the economic operator. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, Legal Requirements, LR02).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-8 G5.1-UC1-10
R5.1-UC1-49	The contracting authority shall not disclose information forwarded to it by economic operators which they have designated as confidential. (In accordance to Directive 2014-24-EU on public procurement. For more details see Legal Requirements for Trust Models, Legal Requirements, LR03).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-8

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-50	Contracting authorities may impose on economic operators requirements aimed at protecting the confidential nature of information. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, Legal Requirements, LR04).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-8
R5.1-UC1-51	All communication and information performed using electronic means of communication tools and devices shall be non-discriminatory, generally available and interoperable with the ICT products in general use and shall not restrict economic operators' access to the procurement procedure. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, Legal Requirements, LR05).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-7
R5.1-UC1-52	In all communication, exchange and storage of information, contracting authorities shall ensure that the integrity of data and the confidentiality of tenders and requests to participate are preserved. They shall examine the content of tenders and requests to participate only after the time limit set for submitting them has expired. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, Legal Requirements, LR06).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-4 G5.1-UC1-8 G5.1-UC1-14
R5.1-UC1-53	Contracting authorities may, where necessary, require the use of tools and devices which are not generally available, provided that the contracting authorities offer alternative means of access, support an alternative channel for electronic submission of tenders. (In	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-8 G5.1-UC1-14

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
	accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, Legal Requirements, LR07).				
R5.1-UC1-54	Rules shall apply to tools and devices for the electronic transmission and receipt of tenders and for the electronic receipt of requests to participate: encryption and time-stamping shall be available to interested parties. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, Legal Requirements, LR08).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-4 G5.1-UC1-7 G5.1-UC1-8
R5.1-UC1-55	The level of security required for the electronic means of communication in the various stages of the specific procurement procedure shall be proportionate to the risks attached. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, Legal Requirements, LR09).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-4 G5.1-UC1-7 G5.1-UC1-8
R5.1-UC1-56	Contracting authorities shall accept advanced electronic signatures supported by a qualified certificate, taking into account whether those certificates are provided by a certificate services provider, which is on a trusted list provided for in Commission Decision 2009/767/EC. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, Legal Requirements, LR10).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-4 G5.1-UC1-7 G5.1-UC1-8 G5.1-UC1-9
R5.1-UC1-57	In case a different format of electronic signature is used, the electronic signature or the electronic document carrier shall include information on existing validation possibilities. (In accordance to Directive 2014-24-	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-9 G5.1-UC1-10 G5.1-UC1-14

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
	EU on public procurement. For more details see: Legal Requirements for Trust Models, LR11).				
R5.1-UC1-58	Contracting authorities shall offer unrestricted and full direct access free of charge to the procurement documents. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, LR12).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-7
R5.1-UC1-59	Contracting authorities shall indicate which measures aimed at protecting the confidential nature of the information they require and how access can be obtained. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, LR13).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-7 G5.1-UC1-14
R5.1-UC1-60	Tools and devices must at least guarantee the exact time and date of the receipt can be determined precisely. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, LR14).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-4 G5.1-UC1-14
R5.1-UC1-61	Tools and devices must at least guarantee before the time limits laid down, no-one can have access to data. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, LR15).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-4 G5.1-UC1-14
R5.1-UC1-62	Tools and devices must at least guarantee only authorised persons may set or change the dates for opening data received. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, Legal Requirements, LR16).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-10 G5.1-UC1-14

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-63	Tools and devices must at least guarantee access to all data submitted must be possible only for authorised persons. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, Legal Requirements, LR17).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-14
R5.1-UC1-64	Tools and devices must at least guarantee only authorised persons must give access to data transmitted and only after the prescribed date. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, Legal Requirements, LR18).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-8 G5.1-UC1-14
R5.1-UC1-65	Tools and devices must at least guarantee data received and opened must remain accessible only to persons authorised. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models , Legal Requirements, LR19).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-14 G5.1-UC1-15 G5.1-UC1-18
R5.1-UC1-66	Tools and devices must at least guarantee the infringements or attempts are clearly detectable. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, Legal Requirements, LR20).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-14
R5.1-UC1-67	A binding offer for the economic operator is defined by the general principles for “offer and acceptance”. (In accordance to Directive 2014-24-EU on public procurement. For more details see: Legal Requirements for Trust Models, Legal Requirements, LR21).	NF/Security	Legal	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-13

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-68	Reliable identification of the senders. (For more details see: Legal Requirements for Trust Models, Business Requirements, BR01).	F	Trust and Security	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-8 G5.1-UC1-9 G5.1-UC1-10
R5.1-UC1-69	Integrity of its content. (For more details see: Legal Requirements for Trust Models, Business Requirements, BR02).	F	Trust and Security	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-8 G5.1-UC1-9 G5.1-UC1-10
R5.1-UC1-70	Reliable identification of the tenderer (constitutes a binding offer). (For more details see: Legal Requirements for Trust Models, Business Requirements, BR03).	F	Trust and Security	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-8 G5.1-UC1-10 G5.1-UC1-13
R5.1-UC1-71	Not disclose confidential information but protecting. (For more details see: Legal Requirements for Trust Models, Business Requirements, BR04).	F	Trust and Security	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-4 G5.1-UC1-7 G5.1-UC1-8 G5.1-UC1-14
R5.1-UC1-72	Tools and devices shall be non-discriminatory, generally available and interoperable. (For more details see: Legal Requirements for Trust Models, Business Requirements, BR05).	F	Trust and Security	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-7
R5.1-UC1-73	Examine the content of tenders after the time limit set for submitting them has expired. (For more details see: Legal Requirements for Trust Models, Business Requirements, BR06).	F	Trust and Security	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-4 G5.1-UC1-8 G5.1-UC1-14

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-74	Support an alternative channel for electronic submission of tenders. (For more details see: Legal Requirements for Trust Models, Business Requirements, BR07).	F	Trust and Security	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-8 G5.1-UC1-14
R5.1-UC1-75	Time-stamping shall be available to interested parties. (For more details see: Legal Requirements for Trust Models, Business Requirements, BR08).	F	Trust and Security	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-4 G5.1-UC1-7 G5.1-UC1-8 G5.1-UC1-14
R5.1-UC1-76	Level shall be proportionate to the risks. (For more details see: Legal Requirements for Trust Models, Business Requirements, BR09).	F	Trust and Security	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-4 G5.1-UC1-7 G5.1-UC1-8
R5.1-UC1-77	Advanced electronic signatures supported by a qualified certificate. (For more details see: Legal Requirements for Trust Models, Business Requirements, BR10).	F	Trust and Security	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-4 G5.1-UC1-7 G5.1-UC1-8 G5.1-UC1-9
R5.1-UC1-78	Offer unrestricted and full direct access free of charge to the procurement documents. (For more details see: Legal Requirements for Trust Models, Business Requirements, BR11).	F	Trust and Security	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-7
R5.1-UC1-79	Guarantee only authorised persons. (For more details see: Legal Requirements for Trust Models, Business Requirements, BR12).	F	Trust and Security	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-2 G5.1-UC1-10 G5.1-UC1-14

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
					G5.1-UC1-15 G5.1-UC1-18
R5.1-UC1-80	Infringements or attempts are clearly detectable. (For more details see: Legal Requirements for Trust Models, Business Requirements, BR13).	F	Trust and Security	Trust Establishment (ABB - Trust Network PKI	G5.1-UC1-14
R5.2-UC1-8	NCP SHALL establish trust among them by means of ETSI TSL containing a list of all trusted certificates. (epSOS D3.A epSOS Evolving Document Technical specifications).	NF/Security	Trust and security (CC6.3)	Trust Establishment (ABB - Trust Network – Mutual Recognized Certificates, ABB - Trust Network – PKI, ABB - Trust Network – Trust Service Status List)	G5.2-UC1-4
R5.2-UC1-10	All data contained in medical documentation, in EHR's and in EHR systems are sensitive personal data and therefore subject to Article 8 of the Directive. The processing of healthcare data must have a clear legal basis.	NF/Functional suitability	Legal	Trust Establishment (ABB - Trust Network – Mutual Recognized Certificates, ABB - Trust Network – PKI, ABB - Trust Network –	G5.2-UC1-4

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
				Trust Service Status List)	
R5.2-UC1-11	Processing of personal and sensitive data can be justified without second consent in country B if it is necessary to protect the vital interests of a data subject or of another person if in the emergency case the data subject is physically or legally incapable of giving his consent. i) In this event the patient should be informed about the override of consent upon leaving the PoC including details of access. OR ii) Patient should be provided access to audit trails. (epSOS D2.1.1 - Legal and Regulatory Requirements at EU level).	NF/Functional suitability	Legal	Trust Establishment (ABB - Trust Network – Mutual Recognized Certificates, ABB - Trust Network – PKI, ABB - Trust Network – Trust Service Status List)	G5.2-UC1-4
R5.2-UC1-12	A high level of IT-security is necessary for e-SENS eHealth services. Especially the following measures and arrangements, that are necessary in order to take full account of security principles which follow from the Directive and the specific risks related to the processing of personal data in e-SENS: a) All staff implementing the project should be provided with clear-cut, written instructions on how to appropriately use the system in order to prevent security risks and breaches.	NF/Functional suitability	Legal	Trust Establishment (ABB - Trust Network – Mutual Recognized Certificates, ABB - Trust Network – PKI, ABB - Trust Network – Trust Service Status List)	G5.2-UC1-4

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
	b) Suitable arrangements should be made in using the PS and prescription storage and archiving systems to protect the data against unauthorized access, theft and/or partial/total loss of storage media. c) For data exchanges, secure communication protocols and end-to-end-security must be adopted. d) With regards to the eP services, additional measures should be deployed in order to ensure that when epSOS pharmacists retain records of dispensed prescriptions these records are used exclusively for the legal purposes documenting the dispensation. e) In emergency situations, any access should be logged and subject to audit. (epSOS D3.8.2: Final National Pilot Set-Up and Deployment Guide).				
R5.2-UC1-13	For the purposes for running the pilots with real patients MS the epSOS framework agreement and its annexes must be adopted by the GA in e-SENS, following consultation in the appropriate bodies of e-SENS and: Be monitored through processes equivalent to those in epSOS. OR It is essential requirements be included in bilateral or multi-lateral agreements between partnering MS in the eHealth pilots and their appropriate inclusion be verified by e-SENS in order to maintain convergence.	NF/Functional suitability	Legal	Trust Establishment (ABB - Trust Network – Mutual Recognized Certificates, ABB - Trust Network – PKI, ABB - Trust Network – Trust Service Status List)	G5.2-UC1-4

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
	(Derived from epSOS D2.1.2 Standard Contract Terms for MS Document for Engagement of Pilot Sites).				
R5.2-UC2-2	Authorization to use the eConfirmation service SHALL be granted only to HPs.	F	Authorisation	Trust Establishment (ABB -Trust Network PKI, ABB -Trust Network Mutual Recognized Certificates)	G5.2-UC2-1 G5.2-UC2-2 G5.2-UC2-3
R5.2-UC2-13	The eConfirmation service MUST keep record of the documents received and send, in order to trace back a document in case of disputes. The PRC is used as a payment guarantee. Computer clocks must be synchronized to a common time base.	F	Track & Trace	Trust Establishment (ABB -Trust Network PKI, ABB -Trust Network Mutual Recognized Certificates)	G5.2-UC2-2
R5.4-UC1-24 R5.4-UC2-24	The external services that are needed to implement the registration process **should be** trusted. The identification, services, the e-Delivery services, the National gateways, the back office systems **should** belong to a circle of trust so that the transaction is more reliable.	NF/Security	Security & Trust	Trust Establishment (ABB - Trust Network Mutual Recognized Certificates)	G5.4-UC1-2 G5.4-UC1-3 G5.4-UC1-7 G5.4-UC1-8 G5.4-UC1-16 G5.4-UC2-9 G5.4-UC2-12 G5.4-UC2-13

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
			SUM	**50**	

3.8. Other Functional and Non-Functional Requirements

This group includes some functional and non-functional requirements which are relevant to specific domain UCs but they are not mapped to e-SENS SATs since they are for domain specific business logic.

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-9	Once tender documents are published, therefore accessible to all EOs, they MUST NOT be deleted.	F	Other Functional	Domain specific business logic - No BB mapping	G5.1-UC1-7
R5.1-UC1-13	All subscribed EOs SHOULD be informed when new versions of the tender documents are published.	F	Other Functional	Domain specific business logic - No BB mapping	G5.1-UC1-2 G5.1-UC1-7
R5.1-UC1-15	The CA MUST answer the questions from EOs in an equal and transparent manner.	F	Other Functional	Domain specific business logic - No BB mapping	G5.1-UC1-2 G5.1-UC1-3
R5.1-UC1-30	The EO MUST be able to withdraw his bid as long as the time limit to submit bids has not passed.	F	Other Functional	Domain specific business logic - No BB mapping	G5.1-UC1-3
R5.1-UC1-31	The EO SHOULD NOT be able to submit a bid after the time limit set out in the tender documents has passed.	F	Other Functional	Domain specific business logic - No BB mapping	G5.1-UC1-3

Requirement ID	Requirement description	Requirement Category	Area	Proposed BB	Reference to goal
R5.1-UC1-32	Bids MUST NOT be accessible before the time limit set out in the tender documents has passed.	F	Security & Trust	Domain specific business logic - No BB mapping	G5.1-UC1-3 G5.1-UC1-15
R5.1-UC1-38	It SHOULD be possible to manage two phased procurement procedures.	F	Other Functional	Domain specific business logic - No BB mapping	G5.1-UC1-5
R5.2-UC1-4	Communications MUST be processed between gateways in a synchronous fashion using epSOS-provisioned protocols (epSOS 2.1.2.21 e1-REQ-4590).	NF/Compatibility	Infrastructure and inter-connection (CC6.1)	eInteraction (epSOS eInteraction)	G5.2-UC1-1
R5.2-UC1-6	Transformation of the original medical documents to the epSOS pivot format should be initiated and signed under the responsibility of NCP-A (C2). Privacy law of some PNs may require that data transformation is performed not in the NCP, but in the system where the information is kept or in the system where the information is exploited. The original document (PDF document compliant to PDF/A-1b) MUST be sent to NCP-B with the transformed document (CDA format) for safety and security reasons. (epSOS e1-REQ-4601).	NF/Security	Infrastructure and inter-connection (CC6.1) Trust and security (CC6.3)	epSOS-specific semantics workflow	G5.2-UC1-4
			SUM	**9**	

4. Conclusions

The e-SENS domains amount to **195** separate requirements from domain use cases. About **185** requirements are related to e-SENS BBs. More specifically, based on the consolidation work, these requirements have been classified under the following e-SENS SATs: **e-Delivery, eDocument, Semantics, Process, eID, eSignature, Trust Establishment and Traceability and Non Repudiation.** The remaining functional and non-functional requirements, although they are relevant to specific domain UCs, they are not mapped to e-SENS SATs since they are for domain specific business logic. The consolidation of requirements shows that there are different numbers of requirements per SAT. The following table summarizes the results of consolidation:

Consolidation of requirements per SAT	Number of Requirements from Domain Use Cases
e-Delivery	31
eDocument	39
Semantics	9
eID	29
eSignature	18
Trust Establishment	50
Traceability and Non Repudiation	10
Other Functional and Non-Functional Requirements	9
SUM	**195**

Table 9: Results of consolidation of requirements per SAT

The high level process, between WP5 and WP6, of reaching a final Pilot Blueprint includes the following tasks:

1. Document the pilot intentions and requirements
2. Review "Pilot Blueprint" Drafts and harmonize/synthesize the requirements. Map requirements towards BB
3. Point out or create necessary BBs
4. Finalize the "Pilot Blueprint"
5. Compile requirements into a Requirements Framework

The outcomes of steps 1-3 are described in deliverables D5.1, D5.7a, D5.7b, D6.1, D6.2, D6.3, D6.6 and D6.7.

Step 4 is related to D6.3, D6.6 and both D5.7a and D5.7b. In fact, D5.7a is the first round of finalization of the pilot blueprint description and the related requirements. In the context of WP6, the WP5 requirements for the domain use cases are (and will be) further analysed, related and consolidated to generic requirements for e-SENS SATs and ABBs. D5.7b continues and finalizes the work of D5.7a by incorporating the blueprint descriptions of the domain UCs of the Citizen Lifecycle domain and fine tuning the pilot blueprints of the four initial domains.

Step 5, is the work that is done in the context of both WP5 and WP6 in the third and fourth year of e-SENS and its outcomes are described in deliverables D5.7b, D6.6 and D6.7.
In the context of the last year deliverable D5.7b, the **final e-SENS Requirements Framework**, is implemented as user-friendly electronic repository, which stores the final blueprint descriptions including the requirements of the domain UCs and presents a consolidation of requirements per SAT. The final list of WP5 pilot requirements from all domain use cases is fully incorporated within the wiki for e-SENS Pilots and associated with the entities of the e-SENS generic architecture repository thereby improving the traceability of requirements.

I. References

1. e-SENS - Deliverable D5.1: Requirements Framework n°1
2. e-SENS - Deliverable D5.2: Pilot Lifecycle Management Methodology and Workflow Support Tools
3. e-SENS - Deliverable D5.3: First-wave Pilot Scenarios and Plans n°1
4. e-SENS - Deliverable D5.4: Second-wave Update of Plans and Status of Domain and National Plans
5. e-SENS - Deliverable D5.5: Third-wave Update of Plans and Status of Domain and National Plan
6. e-SENS - Deliverable D5.6: Pilot Evaluation, Handover and Long Term Sustainability
7. e-SENS - Deliverable D5.7a: Requirements Framework update
8. e-SENS - Deliverable D6.2: Enterprise Interoperability Architecture n°1
9. e-SENS - Deliverable D6.3: Enterprise Interoperability Architecture n°2
10. e-SENS - Deliverable D6.6: Enterprise Interoperability Architecture n°3
11. e-SENS - Deliverable D6.7: Enterprise Interoperability Architecture n°4
12. ISO/IEC 25010:2011

II. Appendix I

The following is a list of terms and definitions of the characteristics of Non-Functional Requirements based on ISO/IEC 25010:2011[23].

Quality	Description
Functional suitability	*The degree to which the product provides functions that meet stated and implied needs when the product is used under specified conditions.* Functional suitability is only concerned with whether the functions meet stated and implied needs, not the functional specification.
Functional completeness	The degree to which the set of functions covers all the specified tasks and user objectives.
Functional correctness	The degree to which a product or system provides the correct results with the needed degree of precision.
Functional appropriateness	The degree to which the functions facilitate the accomplishment of specified tasks and objectives. EXAMPLE: A user is only presented with the necessary steps to complete a task, excluding any unnecessary steps.
Reliability	*The degree to which a system or component performs specified functions under specified conditions for a specified period of time.*
Maturity	The degree to which a system meets needs for reliability under normal operation.
Fault Tolerance	The degree to which a system, product or component operates as intended despite the presence of hardware or software faults.
Availability	The degree to which a system, product or component is operational and accessible when required for use.
Recoverability	The degree to which, in the event of an interruption or a failure, a product or system can recover the data directly affected and re-establish the desired state of the system. Following a failure, a computer system will sometimes be down for a period of time, the length of which is determined by its recoverability.
Usability	The degree to which a product or system can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.

[23] ISO/IEC. Systems and software engineering -- Systems and software Quality Requirements and Evaluation (SQuaRE) -- System and software quality models [PDF or Paper]. Edition 1. 2011-03-01. Available from Internet: http://www.iso.org/iso/catalogue_detail.htm?csnumber=35733.

Quality	Description
Appropriateness recognisability	The degree to which users can recognize whether a product or system is appropriate for their needs. Appropriateness recognisability will depend on the ability to recognize the appropriateness of the product or system's functions from initial impressions of the product or system and/or any associated documentation. The information provided by the product or system can include demonstrations, tutorials, documentation or, for a web site, the information on the home page.
Learnability	The degree to which a product or system can be used by specified users to achieve specified goals of learning to use the product or system with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use. Can be specified or measured either as the extent to which a product or system can be used by specified users to achieve specified goals of learning to use the product or system with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use, or by product properties corresponding to suitability for learning as defined in ISO 9241-110.
Operability	The degree to which a product or system has attributes that make it easy to operate and control. Operability corresponds to controllability, (operator) error tolerance and conformity with user expectations as defined in ISO 9241-110.
User error protection	The degree to which a system protects users against making errors.
User interface aesthetics	The degree to which a user interface enables pleasing and satisfying interaction for the user. This refers to properties of the product or system that increase the pleasure and satisfaction of the user, such as the use of colour and the nature of the graphical design.
Accessibility	The degree to which a product or system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use. The range of capabilities includes disabilities associated with age. Accessibility for people with disabilities can be specified or measured either as the extent to which a product or system can be used by users with specified disabilities to achieve specified goals with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use, or by the presence of product properties that support accessibility.
Performance efficiency	*The performance relative to the amount of resources used under stated conditions.*
Time Behaviour	*The degree to which the response and processing times and throughput rates of a product or system, when performing its functions, meet requirements.*
Resource Utilisation	*The degree to which the amounts and types of resources used by a product or system when performing its functions meet requirements.*

Quality	Description
Capacity	*The degree to which the maximum limits of a product or system parameter meet requirements.* Parameters can include the number of items that can be stored, the number of concurrent users, the communication bandwidth, throughput of transactions, and size of database.
Security	*The degree of protection of information and data so that unauthorized persons or systems cannot read or modify them and authorized persons or systems are not denied access to them.*
Confidentiality	The degree to which a product or system ensures that data are accessible only to those authorized to have access.
Integrity	The degree to which a system, product or component prevents unauthorized access to, or modification of, computer programs or data.
Non-repudiation	The degree to which actions or events can be proven to have taken place, so that the events or actions cannot be repudiated later.
Accountability	The degree to which the actions of an entity can be traced uniquely to the entity.
Authenticity	The degree to which the identity of a subject or resource can be proved to be the one claimed.
Compatibility	*The degree to which two or more systems or components can exchange information and/or perform their required functions while sharing the same hardware or software environment.*
Co-existence	The degree to which a product can perform its required functions efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product.
Interoperability	The degree to which two or more systems, products or components can exchange information and use the information that has been exchanged.
Maintainability	*The degree of effectiveness and efficiency with which the product can be modified.*
Modularity	The degree to which a system or computer program is composed of discrete components such that a change to one component has minimal impact on other components.
Reusability	The degree to which an asset can be used in more than one system, or in building other assets.
Analysability	The degree of effectiveness and efficiency with which it is possible to assess the impact on a product or system of an intended change to one or more of its parts, or to diagnose a product for deficiencies or causes of failures, or to identify parts to be modified. Note 1 to entry: Implementation can include providing mechanisms for the product or system to analyse its own faults and provide reports prior to a failure or other event.

Quality	Description
Modifiability	The degree to which a product or system can be effectively and efficiently modified without introducing defects or degrading existing product quality. Implementation includes coding, designing, documenting and verifying changes. Modularity and analysability can influence modifiability. Modifiability is a combination of changeability and stability.
Testability	The degree of effectiveness and efficiency with which test criteria can be established for a system, product or component and tests can be performed to determine whether those criteria have been met.
Portability	*The degree of effectiveness and efficiency with which a system, product or component can be transferred from one hardware, software or other operational or usage environment to another.*
Adaptability	The degree to which a product or system can effectively and efficiently be adapted for different or evolving hardware, software or other operational or usage environments.
Installability	The degree of effectiveness and efficiency with which a product or system can be successfully installed and/or uninstalled in a specified environment.
Replaceability	The degree to which a product can replace another specified software product for the same purpose in the same environment.
Quality in Use	Quality in use is the degree to which a product or system can be used by specific users to meet their needs to achieve specific goals with effectiveness, efficiency, freedom from risk and satisfaction in specific contexts of use. Usability is defined as a subset of quality in use consisting of effectiveness, efficiency and satisfaction, for consistency with its established meaning.
Effectiveness	The accuracy and completeness with which users achieve specified goals.
Efficiency	The resources expended in relation to the accuracy and completeness with which users achieve goals.
Satisfaction	The degree to which user needs are satisfied when a product or system is used in a specified context of use.
Freedom from risk	The degree to which a product or system mitigates the potential risk to economic status, human life, health, or the environment.
Context coverage	The degree to which a product or system can be used with effectiveness, efficiency, freedom from risk and satisfaction in both specified contexts of use and in contexts beyond those initially explicitly identified.

Table 10: Terms and definitions for Non-Functional Requirements