EUROPEAN COMMISSION
DIRECTORATE-GENERAL Employment, Social Affairs and Equal Opportunities

Social Protection and Integration
Coordination of Social Security Schemes, Free Movement of Workers

Open Call for Tender VT/2008/019

Informatics services and products in the context of the EESSI (Electronic Exchange of Social Security Information) project

Administrative Specifications

Annex A4 – Final Report of Feasibility Study

ANNEX A4: Administrative Specifications
EESSI Project VT/2008/019

Subject: **Feasibility Study on EESSI (E**lectronic **E**xchange of **S**ocial **S**ecurity **I**nformation**): Final Report.**

The 'Final Report' below was delivered as the last and final document of the Feasibility Study (includes the Global Implementation Plan, Summary of Work, and Other Recommendations) from Sword Technologies who undertook the Feasibility Study on EESSI (**E**lectronic **E**xchange of **S**ocial **S**ecurity **I**nformation). This Final Report was delivered to the Commission prior to the 35th meeting of the Technical Commission on Data Processing on *22 & 23 October 2007* when this report was discussed.

Readers of this document are alerted to the following:

Please be aware that this document comes with a health warning – in other words readers must not assume that all that is said in the Final Report has found its way into the EESSI project call for tender. Tenderers must solely rely on the Tender Specifications (both Administrative and Technical) for preparing their responses.

DG EMPLOYMENT, SOCIAL AFFAIRS & EQUAL OPPORTUNITIES

ELECTRONIC EXCHANGE OF SOCIAL SECURITY INFORMATION - EESSI

FINAL PRACTICAL STRATEGY REPORT

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Executive Summary

The present document is the Final Report of the EESSI Feasibility Study. As such, it summarises the work performed during the project and presents the main results. With the exception of Chapter 3 “Recommendations”, which presents some new recommendations for the project management approach of EESSI, the present document, expectedly, draws on the contents of the project deliverables.

Document organisation

The document has the following structure:

- Chapter 1 “Executive summary” gives a high-level overview of the present document, as well as its organisational structure.
- Chapter 2 “Work performed” describes the work carried out and the main deliverables.
- Chapter 3 “Recommendations” presents our recommendations for the Project Management approach, which reflect the unique characteristics of EESSI.
- Annex I “Project Organisation and Work-plan” gives the proposed project organisation and work-plan as described in the Global Implementation Plan.
- Annex II “Functional Specifications” gives the list of the EESSI Functional Specifications that were laid down in deliverable FS-02 “Functional Requirements and Constraints” and subsequently approved by the Administrative Commission.

Work Performed

This chapter describes the work performed in the EESSI Feasibility Study. The description is given in terms of the project deliverables.

FS-01 "Description of the current exchanges"

Deliverable FS-01 "Description of the current exchanges" presented the findings of Sword Technologies for the current paper and electronic exchanges of information in the area of social security, as of November 2006. The document constituted the starting point for the work in the project, namely the documentation and analysis of the user requirements and the subsequent development of three or more alternative architectures of EESSI.
The main input for the preparation of this document has been the analysis of the documentation provided by the European Commission, documents located in the goTESS Website, the answers of the Member States in the questionnaire distributed in early October 2006 and the bilateral meetings between the Member States and Sword Technologies project team held in October and November 2006.
The analysis of the existing situation aimed at assessing the technical and organisational capabilities of the involved Member States in order to identify measures that will make possible for the relevant social security administrations to use a common architecture for the electronic information exchange.
Given the short time-frame of the present project, fact-finding missions to each Member State was not a practical approach, due to the fact that conducting such missions to all Member States would require more than two months. As an alternative, bilateral meetings were organised with the Member States in clusters. For each cluster, this entailed the conduct of several bilateral meetings in a period of a few consecutive days. Those meetings were attended by key members of Sword Technologies project team and with representatives of the Member States. They provided the means, first, to further discuss the Member States' answers in the questionnaire, and second, to elicit the views, opinions and preferences of the Member States on the architecture of EESSI.
Table 1 lists the clusters of the bilateral meetings.

Table 1: Bilateral meetings

Venue	Member States and number of attendees (in parenthesis)
Helsinki	FI (8), NO(1), LV(2), SE(6), EE(5), LT(5)
Amsterdam	DE(3), UK(4), NL(3), IE(3)
Athens	GR(10), CY(4)
Paris	NL(2), BG(1), ES(2), PT(2)
Budapest	AT(1), SK(9), HU(8), PL(2), CZ(2)
Brussels	LU (1), SI(2), IT(3), BE(2), DK(2), FR(1)

Member States provided written answers to the questionnaire; the discussion of those answers was a very important subject of the bilateral meetings. Sword Technologies drew up minutes of the meetings, which were circulated to the Member States for their comments and approval.
The answers of the Member States provided data to estimate the volume of information exchanges, both in paper and in electronic form. Table 2 and Table 3 give the statistics of the paper and electronic forms exchanged on an annual basis.

Table 2: Statistics of paper forms exchanged in all sectors

Sector	Number of Member States which provided statistics for the sector	Paper forms exchanged (incoming and outgoing) in thousands (1,000)
1. Pensions	16	2,294
2. Health	14	2,547
3. Unemployment	7	67
4. Family Benefits	7	62
5. Posting	5	185
6. Totals (1+2+3+4+5 above)		5,155
Grant total of number of forms(different from (6) above)	23	6,666

Table 3: Statistics of electronics forms exchanged in the pension and healthcare sectors

Sector	Number of Member States which provided statistics for the sector	Electronic forms exchanged (incoming and outgoing) in thousands (1,000)
1. Pensions	7	638
2. Health	10	1,827
3. Totals (1+2)		2,465
Grant total of number of forms (different from (3) above)	15	2,983

On the basis of the statistical data provided by the Member States, estimation was made for the total volume of paper and electronic forms exchanged annually. Table 4 and Table 5 give those estimations for the paper and electronic forms.

Table 4: Estimation of EU 25 paper-based volume of information exchange in pensions and healthcare sectors

Item	Pensions, paper forms	Healthcare, paper forms
Number of Member States that provided figures for the sector	16	14
Estimation for EU 25	3,570,000	4,860,000

Table 5: Estimation of volume of electronic information exchange in pensions and healthcare sectors

Item	Pensions, electronic forms	Healthcare, electronic forms
Number of Member States that provided figures for the sector	7	10
Estimation for Member States engaged in electronic exchanges	820,000	2,210,000

In the context of the bilateral meetings with the Member States, Sword Technologies received limited input from the unemployment, family benefits and posting sectors, and therefore it has not been possible to derive statistics for those sectors as we have done for the pensions and healthcare ones.

FS-02 "Functional Requirements and Constraints"

Deliverable FS-02 "Functional Requirements and Constraints", gives the high level functional requirements and constraints of the EESSI architecture. Prior to the development of the functional requirements and constraints, it was necessary to collect and document the user requirements. Those were collected from the answers Member States provided in the questionnaire. Deliverable FS-01 "Description of the current exchanges" documented the current status of affairs. The first part of the FS-02 deliverable analysed the EESSI architecture user requirements.

Structured Electronic Documents – SED and Access points

A key concept in the EESSI feasibility study has been the **Structured Electronic Document-SED**, which is an electronic document with a predefined structure and content and having a formal status in EESSI. Strictly speaking, an SED is the same as the "standardised electronic message" in the draft implementing regulation of Regulation 883/2004.

An equally important concept has been the access point, which is defined as the entity providing the functions of (i) an electronic contact point and (ii) intelligent routing of inbound SED on an optional basis.

Figure 1 illustrates the functionality of access points and Figure 2 the routing of inbound SED by access points.

- The function of the electronic contact point entails the sending and receiving of SEDs, both from counterparty access points and also from Competent Institutions. All access points implement **automatic routing**, in which an international inbound SED (i.e. sent from a counterparty access point) is forwarded automatically to the intended recipient Competent Institution, provided that the SED complies with the EESSI standards and the recipient is adequately defined
- The **optional** intelligent routing function is activated when automatic routing is feasible and comprises the following two optional components:
    - Software-assisted routing, whereby a software application attempts to identify the target recipient Competent Institutions by analysing several parameters of the SED. An example of software-assisted routing may be the implementation of a rules-based engine.
    - Human-assisted routing, whereby a person with sufficient experience in social security in a Member State will identify the recipient Competent Institution

Member States have full discretion as to whether they provide in their own access points the functionality of intelligent routing for inbound SED, and whether this entails (i) software-assisted routing, (ii) human assisted routing, or (iii) both.

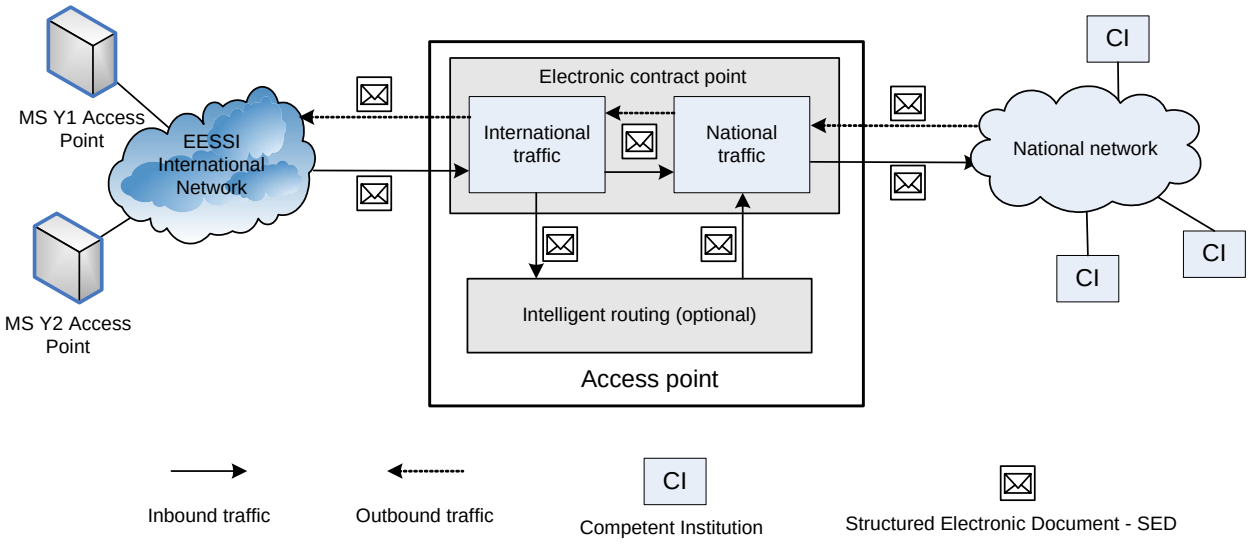


Figure 1: Access point functionality

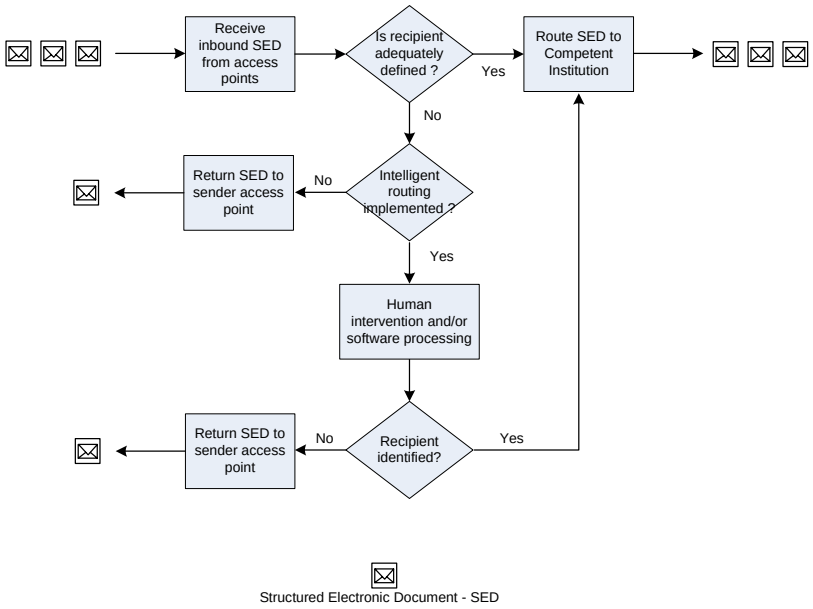


Figure 2: Access point SED routing

Clearly, the definition of an access point does not merely refer to a computer with an address in an international network, but to an entity providing also the business function of SED routing. Therefore, access points have staff with experience in social security (if human assisted routing is provided) and adequate IT infrastructure.

EESSI network architecture

The Member State input to the user requirements meant that there was overwhelming support to the following two principles:

- International data exchange is exclusively performed by access points
- Use of a closed network as the EESSI backbone network, such as TESTA

Those two principles resulted in adopting s-TESTA as the EESSI backbone data network and a network topology as illustrated in Figure 3.

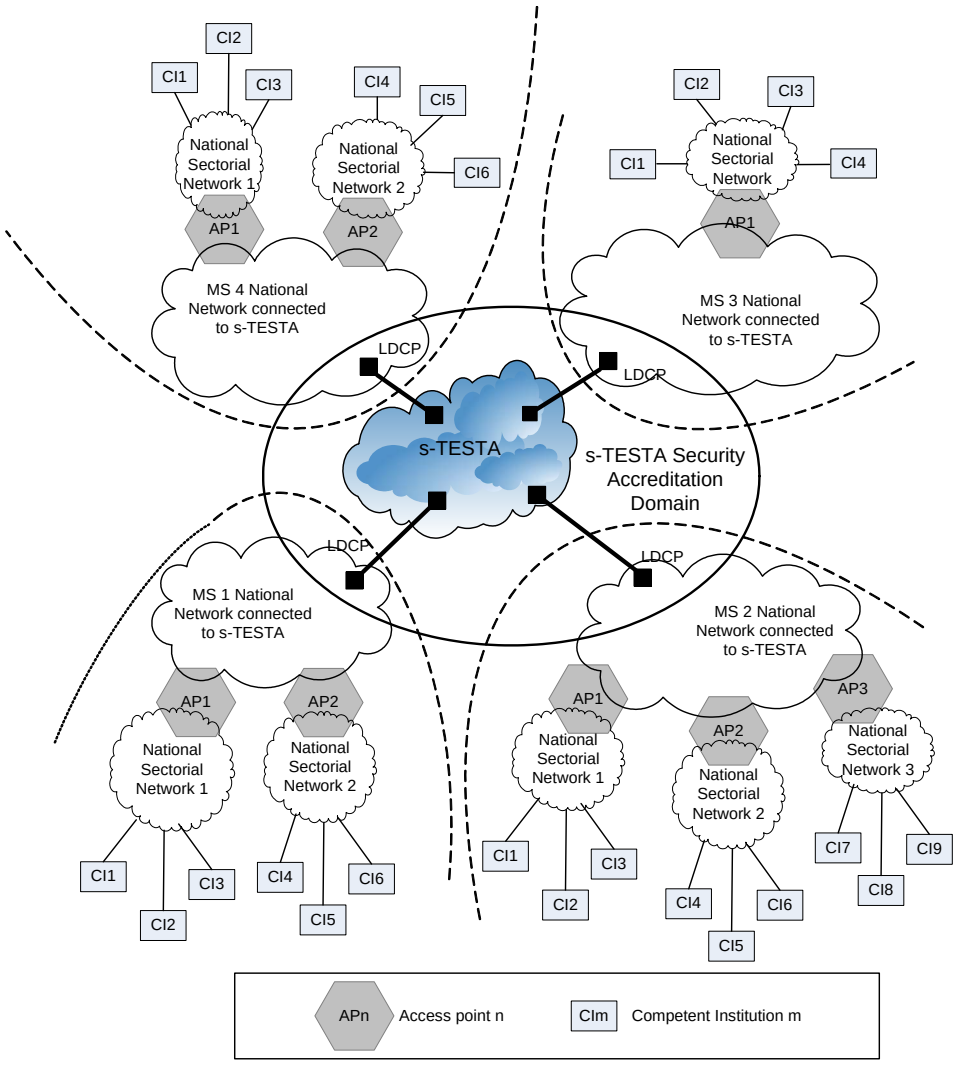


Figure 3: s-TESTA and EESSI

Access points have on-line connections with the s-TESTA Local Domain Connection Point – LDCP through a national network. Figure 4 illustrates in more detail the high-level national EESSI network architecture and s-TESTA. Both the (i) national networks through which access points have on-line connection with the s-TESTA LDCP and (ii) the sectorial networks with which Competent Institutions are connected with access points are, in principle, Member State specific. As such, their architecture and technical features are beyond the scope of the present feasibility study. The only EESSI requirement is that access points have on-line network connections with the s-TESTA LDCP.

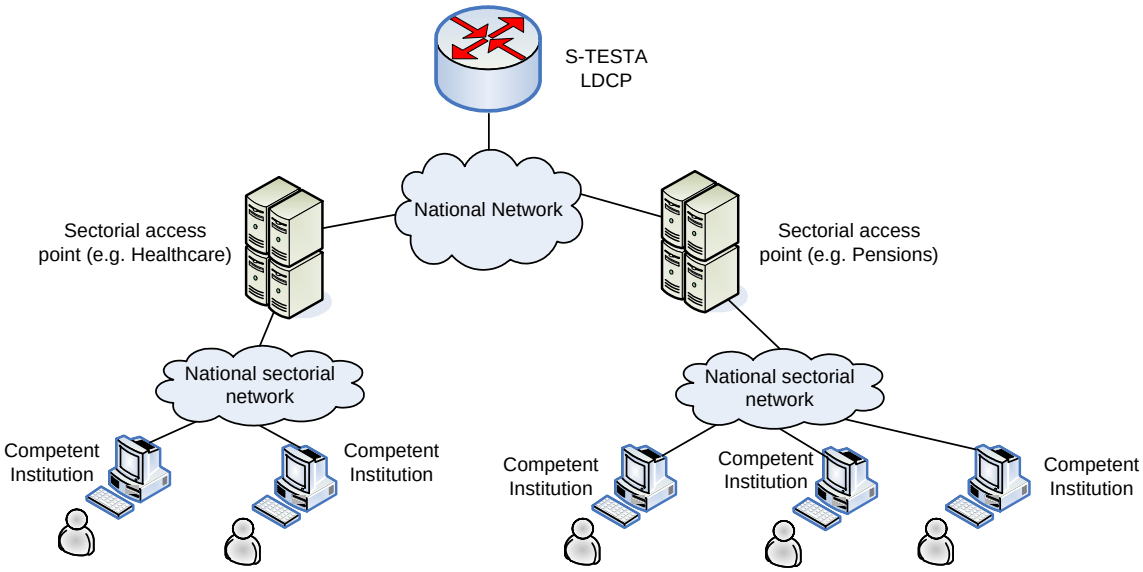


Figure 4: EESSI Network Architecture in Member States

Figure 5 depicts the EESSI high-level architecture, in which there are two domains:

- **EESSI International Domain**, which comprises the EESSI International Network, the coordination node and the international part of access points
- **EESSI National Domains,** which comprise the national part of access points, the Competent Institutions and the national networks connection the former with the latter

The essential features of the logical network architecture illustrated in Figure 5 are:

- The EESSI backbone network and the coordination node are entirely within the EESSI international domain
- Competent Institutions are connected to EESSI via access points
- There may be many access points per Member State
- There may be one or many national sectorial networks
- Access points have two parts, one dealing with the international EESSI domain and another one dealing with the national domain

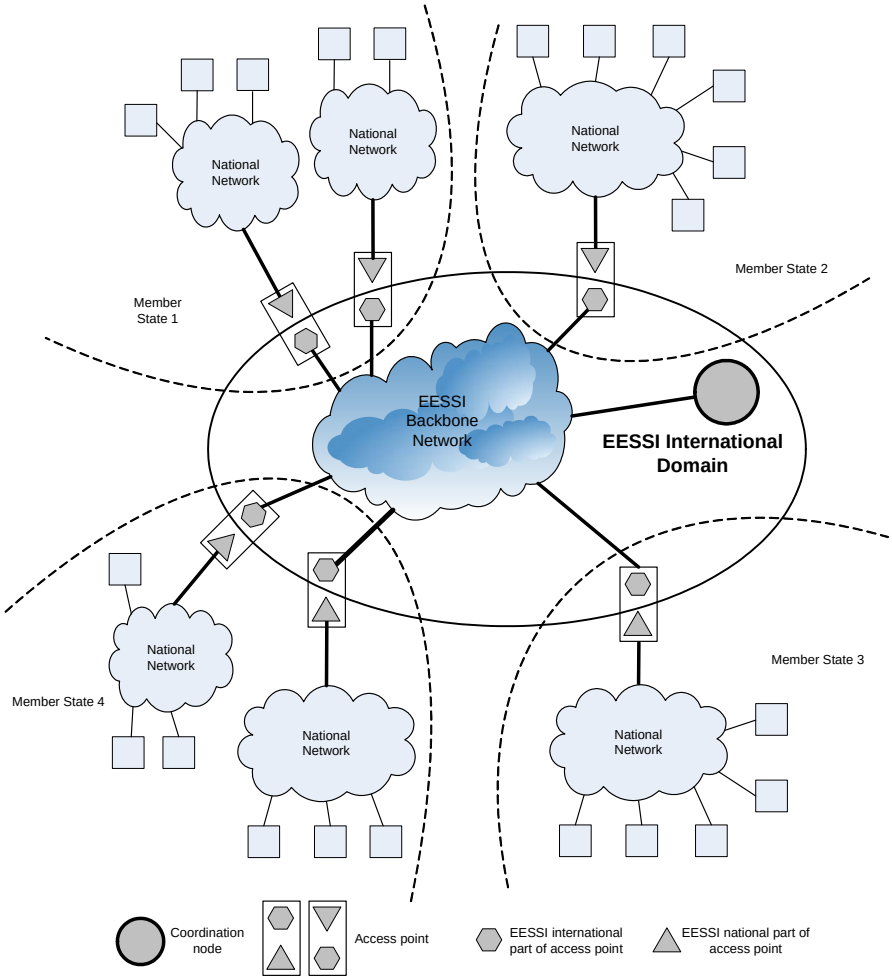


Figure 5: EESSI High-level Architecture

Functional specifications

The scope of the EESSI functional specifications covers the following two areas:

- EESSI international domain, which comprises (i) the EESSI network backbone, (ii) the coordination node in its entirety and (iii) international parts of the access points
- End-user functionalities of the Competent Institutions that are directly related to the EESSI data exchange. The activities of Competent Institutions are much wider than the EESSI international data exchange. Furthermore, Competent Institutions enjoy a very broad discretion on how they conduct their own business. Only a narrow part of the Competent Institutions businesses falls within the scope of EESSI.

Annex II gives a list of the functional specifications.

FS-03 “Draft Architecture”

The FS-03 “Draft Architecture” deliverable describes a number of alternatives of the EESSI architecture. The starting point and the basis for the work presented in FS-03 has been the results of the deliverable FS-02 “Functional Requirements and Constraints”.

Business protocols and SED formats

The exchange of SEDs will be governed by the EESSI business protocols, which define the conventions and standards that enable or control the exchanges of the SEDs between Competent Institutions and access points. Those protocols will define aspects such as:

- How a Competent Institution initiates the dispatch of a SED to counterparty Competent Institution
- The processing steps at the access points and the auxiliary SED exchanged during this processing
- How corrupted or improperly formatted SED are handled by a receiving access point or Competent Institution
- Termination of the business processes for a given SED

An essential and fundamental part of the EESSI implementation is the comprehensive definition of the SED formats and the business protocols. **The importance of SED cannot be overemphasised**.

Technical protocols and message formats

The technical protocols in the EESSI International Domain concern the exchange of messages between access points and the coordination node (referred to as EESSI nodes). The information exchanged between those nodes will take place as **messages**, which encapsulate information of interest such as SED, collections of SED, status, errors and faults, system conditions and so on.
The technical protocols define the standards and conventions that govern the exchange of messages between the access points and the coordination node. Examples of elements of those protocols are:

- How the messaging services of an access point are invoked
- Error and warning return codes to notify the status of receipt of a message

Message formats in the EESSI International Domain are concerned with standards and conventions defining what are the contents and the semantics of messages. An example of a message format is a specification requiring that compound files have a header with information about the types, size and a file signature of (each of) the “payload” files.
The technical protocols and the message formats have similarities with the business protocols and the SED formats defined above. However, the former concern lower-level specifications than the latter.

EESSI Web services

A fundamental element of the EESSI architecture is that electronic exchanges between access points take place using Web services and more specifically using the following Web services standards:

- SOAP 1.2
- MTOM, which stands for “SOAP Message Transmission Optimization Mechanism”
- WS-Addressing
- WS-ReliableMessaging
- WS-Security
- WS-Eventing (optional)

As shown in Figure 6, the proposed EESSI Web services have a layered structure (i.e. stack). For this reason we will refer to them as the EESSI Web services stack.

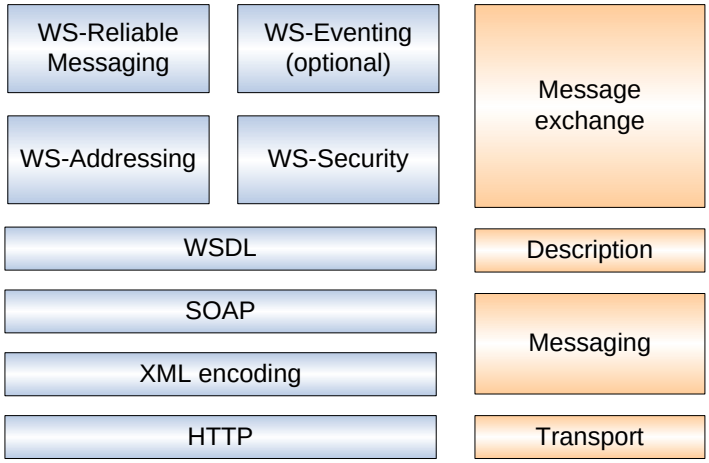


Figure 6: EESSI Web services stack

EESSI Directory

The EESSI Directory will be hosted by the coordination node. The Directory will store the following types of information.

- Reference and operational data that are needed for the electronic routing of SED to Competent Institutions
- Certificates and keys
- Administrative information

The coordination node will host the EESSI directory, while access points may keep local copies of the EESSI directory. This amounts essentially to replicating the major parts of the EESSI directory to the access points. Replication is the mechanism that automatically copies directory data from one LDAP directory server to another. It enables copying of directory trees or sub-trees between servers.

Reference Implementation - RI

The Reference Implementation - RI is a set of software applications that implement the functionality of the International Part of Access Points - IPAP. It will consist of a set of software modules providing the common functionalities of the access point's services, with well-defined interfaces for data exchange with the national part of the access point.
The European Commission will undertake the development, maintenance and support of the RI. For Member States, it is an out-of-the-box implementation (in the sense that the European Commission will develop it though a contractor and make it available for free to the Member States) of the international part of the access point.
Figure 7 illustrates the architecture of the reference implementation. The RI has the following key features:

- Supported SED formats: XML-encoded SED, which is the native EESSI format
- Access point services
    - Conversion
    - Directory

  - Messaging
  - Monitoring and logging
  - Security
- Additional services
  - Human-assisted routing, on an optional basis and entirely at the discretion of each Member State National portal
- Interfaces with national part of access point
  - File system
  - Database (RDBMS)
  - Web services
  - Java Messaging Service - JMS
  - Enterprise Java Beans - EJB
- Interfaces with national on-line systems
  - Web services
  - Java Messaging Service - JMS
  - Enterprise Java Beans – EJB
  - Other, to be defined

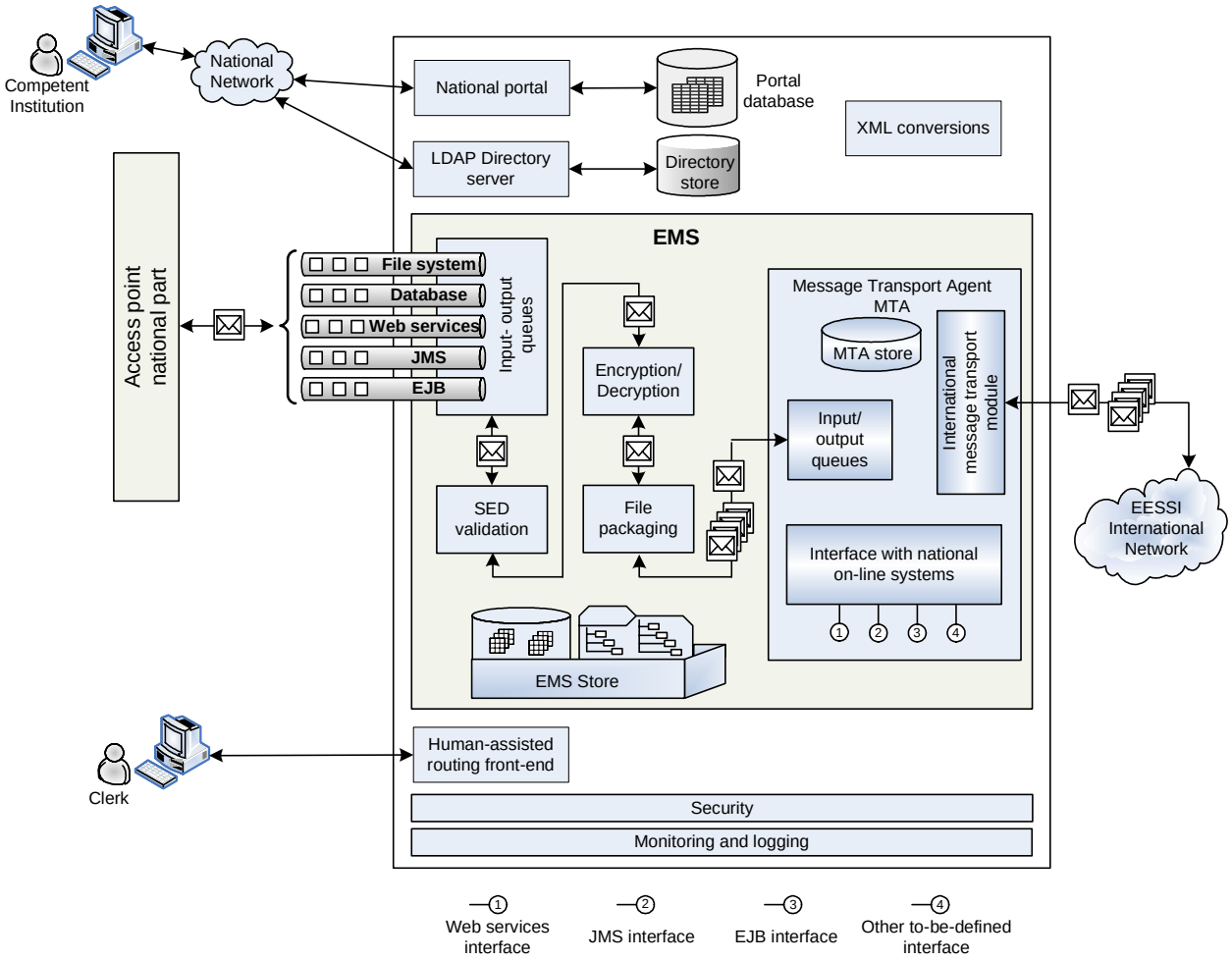


Figure 7: Reference implementation architecture

Coordination node

The coordination node will host and provide the following functionality:

- Central Message Relay – CMR
- Host the EESSI directory
- Document repository with a portal front-end

The European Commission will procure, host, operate and manage the coordination node.

Testing applications

Two purpose-built testing applications will be developed and used by Member States undertaking their own implementation of the IPAP. Member States opting to use the Reference Implementation – RI are not concerned with those two applications and will not use them.

Level 1 testing will aim at validating the IPAP implementation in an one-to-one exchange basis, which means exchange of data with a simulated single counterparty. The Level 1 testing application will simulate a single counterparty access point. Level 2 testing will commence once the IPAP Level 1 testing is passed. Level 2 testing will aim at validating the IPAP implementation with many counterparties. The Level 2 testing application will simulate the operation of several counterparty access points.

Level 1 testing will primarily focus on functionality testing, while Level 2 testing will focus on concurrency and perhaps on stress testing.

Alternative architectures

Several different architectural alternatives were proposed and considered. The alternatives were based on the following three axes:

1. Full-mesh architecture whereby access points exchange data directly between them
2. A Central Message Relay through which access points exchange data
3. Mandatory use of the Reference Implementation

Combining different elements of the above three basic alternatives six (6) different architectures were considered, which are listed in Table 6.

Table 6: Alternative EESSI architectures

Variations in the basic alternative	**Alternative**
1. Full mesh architecture	
Optional use of reference implementation	1B
Mandatory use of reference application	1C
2. Central Message Relay - CMR	
Optional use of a central message relay	2B
Mandatory use of a central message relay	2C
3. Mandatory use of reference implementation	
Optional use of message relay	3A
Mandatory use of message relay	3B

Those six different alternatives were ranked according to their flexibility and ease of deployment and operations. Figure 8 illustrates their correlation.

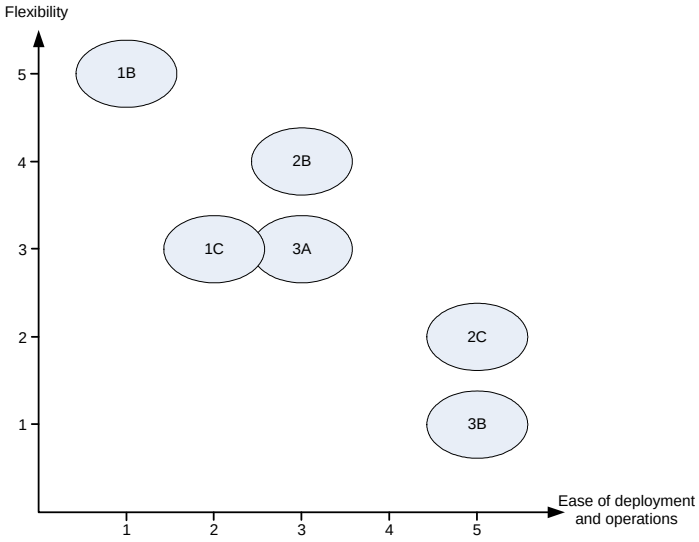


Figure 8: Flexibility versus ease of deployment and operations of six different EESSI architectures

FS-04 "Cost-benefit Analysis"

Deliverable FS-04 "Cost-benefit analysis" presents a cost model which is used to estimate the costs of different architectural alternatives. The model considers the costs Member States and the European Commission will incur in developing EESSI and operating it for a period of five (5) years. Regarding Member States, the model accounts for the international part of access points only. The cost of preparing the core EESSI specifications has been left out of the model. The two main reasons are, first, there are uncertainties about the organisation of the work and, second, this cost is roughly the same for all different architectures and therefore it would not have affected the cost ranking.

The cost model should be considered as a useful tool in selecting the EESSI architecture with the lowest cost. It should not, however, be used as an absolute guide providing highly accurate cost figures. It should be regarded as identifying general directions and trends of the costs of different EESSI architectures. Figure 9 illustrates a decision-making tree for selecting a particular architecture.

FS-04 considered several different technical features of the alternative architectures and ranks the alternatives on the basis of those features.

The architectures were ranked according to their features and a composite technical score was computed as an overall technical ranking figure. Figure 10 juxtaposes the technical score and the total cost. FS-04 concluded that architecture 3B has superior characteristics as it combines the highest technical and operational score with the lowest total cost.

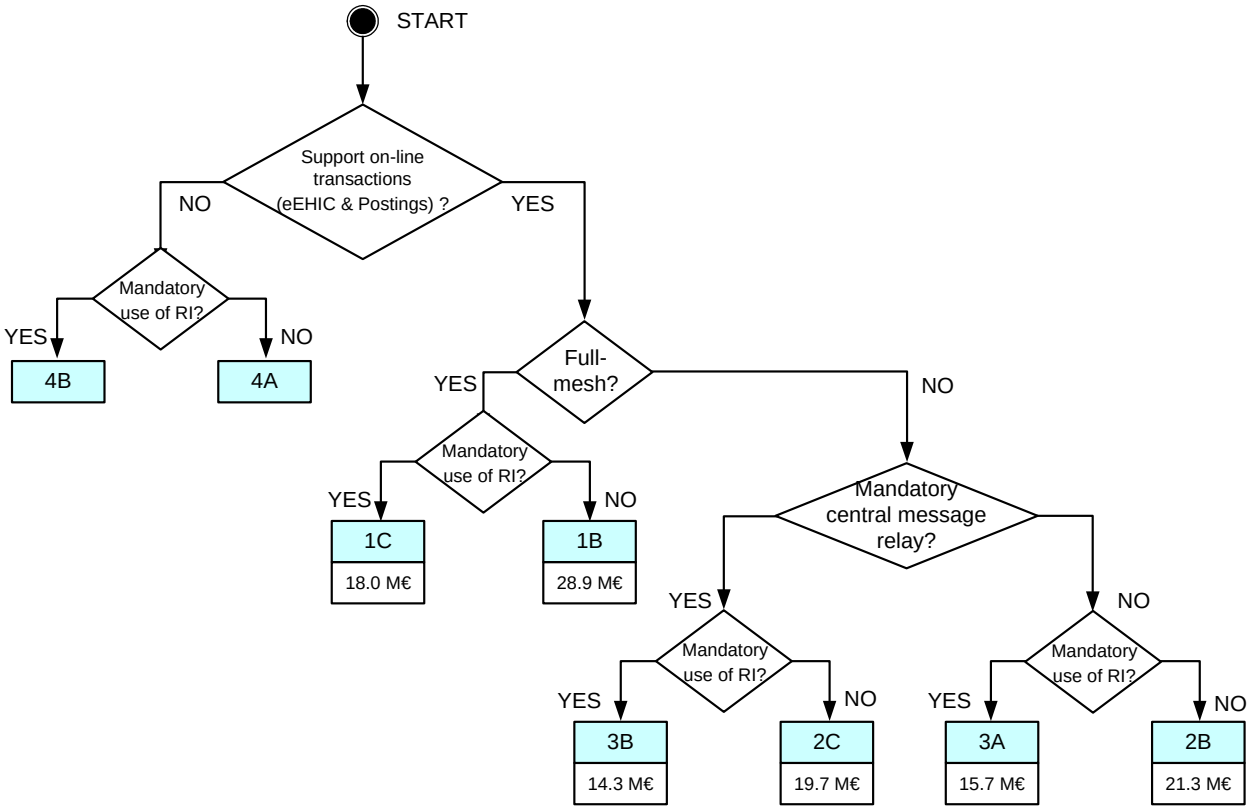


Figure 9: EESSI architecture decision making tree

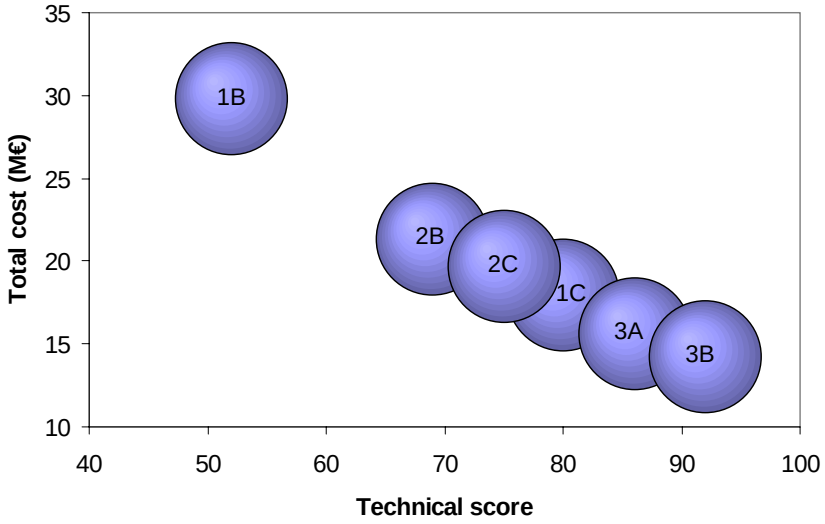


Figure 10: Technical score versus total cost

Recommendations

Our recommendations are concerned with project management and control. Given that EESSI entails both electronic data standardisation and exchange activities (i.e. definition of the SED and their exchanges) and also the development and deployment of a pan-European IT system, the major challenges are not technical but organisational and managerial ones. The successful and timely deployment of EESSI depends on a systematic and comprehensive coordination of the activities of all stakeholders. It is precisely for those reasons that our recommendations are concerned with the project management discipline.

Selected Architecture Key Characteristics

In June 2007 the Administrative Commission adopted the recommendation of the Technical Commission regarding the EESSI Architecture, which is a blend of the proposed architectures 2C and 3B. A Central Message Relay-CMR will be used on a mandatory basis, but ultimately Member States will not be obliged to use the Reference Implementation. During the initial phases of the EESSI deployment and operations it is expected that all Member States will employ the Reference Implementation, thereby reaping the benefits of using the same software application for the exchange of messages in the EESSI International Domain. Subsequently, Member States may develop their own national implementation of the International Part of Access Points IPAP and phase out the use of the RI. In the long term future, it is expected that the majority of Member States will be using the RI and a few Member States will use their own implementations of the IPAP.

Provided that all Member States use initially the RI, this arrangement will lessen the testing needs in the EESSI technical domain at the initial deployment phase. However, the specifications of the EESSI technical domain will be of fundamental importance and the need to develop the two testing applications will be maintained. The reason is that since some Member States will develop their own implementation of the IPAP, the specifications should reflect this feature from the outset. Similarly, comprehensive testing of the latter IPAP will be necessary, which creates the need to develop the two testing applications.

The proposed GIP has taken into account the above considerations in the work breakdown structure and the time-plan of the relevant tasks.

Global Project Management

All EESSI stakeholders should appreciate the importance of **Global Project Management - GPM** as a key success factor in the accomplishment of the ESSIS objectives and the realisation of the anticipated benefits. The term **Global** Project Management encompasses both the European Commission (and the EESSI Contractor) and the Member States, and focuses on project planning and control.

The EESSI project planning establishes the tools and techniques needed to plan EESSI. It includes the following activities.

- Development of a Global Project Plan that structures and controls the execution of the entire EESSI. It entails the drawing up of a comprehensive work breakdown structure (WBS), identification of the critical path, estimation of the project timelines, and the definition of the project organisation.
- Definition of major milestones and deliverables to establish the key outcomes of the project. The milestones and deliverables define the work-products with which progress can be measured

as part of monitoring the project. Typically, the major milestones and deliverables are aligned with the work-products of the software development stages.

- Development of a risk management plan aiming to mitigate the risks to the project's success. The risks need to be identified, the impact on the project's critical path defined, the probability of occurrence established, and mitigation measures developed.

The EESSI Feasibility Study Global Implementation Plan – GIP contains (i) an elaborate work breakdown structure – WBS, (ii) a list of major milestones and (iii) the Contractor's deliverables. However, the GIP is not very detailed about the undertakings of the Member States. It is highly advisable that the GIP is further elaborated for the Member States deliverables and milestones. This elaboration is to be documented in the Global Project Plan.

Project control is a project management function, which involves the comparison of the actual performance against the planned performance, and the subsequent initiation of corrective action(s) to achieve the desired outcome(s) in cases of significant differences between them. By monitoring and measuring progress regularly, identifying variances from plan, and taking corrective action when necessary, project control ensures that project objectives are met. Project control includes the following activities:

- Implementation of a monitoring scheme, which usually includes the identification of key control points, establishing the project review schedule, and holding formal project monitoring meetings. The project's progress is typically evaluated based on the rate at which it is meeting the major milestones and producing the deliverables.
- Implementation of corrective actions to address risks and address issues identified as part of monitoring scheme. The corrective action(s) have to be defined, responsibilities for carrying out the corrective actions are defined and allocated, the corrective action(s) are taken and the project plans are modified accordingly.

Project Management Bodies

EESSI Coordination Committee

It is strongly recommended that the at very early stages of the EESSI Specifications Phase the European Commission and the Member States (through the Administrative and Technical Commission) define, implement and maintain global project control structures. As described in the GIP, the primary actors in EESSI are:

- Administrative Commission
- Technical Commission
- Ad-Hoc Groups
- Task Force

The current allocation of responsibilities between the above actors may prove sufficient for managing EESSI. However, it will be worthwhile to consider the establishment of a separate body, which for the purposes of this document will be referred to as the EESSI Coordination Committee and which may well be another Ad-Hoc Group, charged with the management of EESSI at a global level. The Coordination Committee will be concerned with a high-level view of EESSI and seek to coordinate the activities of the European Commission, Member States and the Contractor. Members

of the Coordination Committee will be drawn from the European Commission and the Member States. The Contractor is not expected to participate in it.
The main task of the Coordination Committee will be Global Project Management.

Steering Committee

The Steering Committee will be a management body whose main purposes will be to:

- Monitor at a high level the Contractor's work
- Take decisions concerning the directions of the Contractor's work

It is clear from the above that the scope of the Steering Committee will be delineated by the scope of the Contractor's work.
The Steering Committee will be chaired by a European Commission official, who will determine its organisation, including the participants and working arrangements. The activities of the Steering Committee may include the following:

- Committing resources
- Approval and monitoring of resource consumption (personnel effort, purchasing of IT infrastructure)
- Approval of the Project Quality Plan - PQP
- Monitoring of progress to ensure compliance with GQP and the PQP, project standards and guidelines and resolutions of problems referred to it by the Project Manager

A typical composition of a Steering Committee for a project like EESSI is outlined below:

- A European Commission official who represents the Project Owner (European Commission)
- The European Commission Project Manager
- The DG DIGIT representative, if required
- Members of the Secretariat of the Administrative Commission
- Ad hoc Specialists Consultants.
- The Contractor's Management Representative
- The Contractor's Project Manager

Global Quality Plan - GQP

It is highly recommended that a Global Quality Plan – GQP be drawn up. Major parts of the GQP will be the Global Implementation Plan – GIP, the roles and responsibilities of the EESSI stakeholders (e.g. European Commission, Member States, Administrative Commission etc.) and the project control mechanism(s). The GQP will typically elaborate on the commitments Member State will undertake and the associated schedules, together with a risk and contingency plan to address any delay a Member State may encounter in meeting the deadlines laid down in the GQP.
The GQP is different and distinct from any Project Quality Plan – PQP that the EESSI Contractor will develop and maintain. The Contractor's PQP will cover a part of the activities covered in the GQP. More specifically, the scope of the PQP will be limited to the activities the Contractor is directly responsible for. There are interdependencies between the Member States and the Contractor's work. To give an example, the Contractor's work and adherence to the project plan depends on (i) the availability at the start of its work of the full description of the business

processes, associated data flows and data elements involved in the electronic exchanges of Social Security information (to be produced by the Task Force and Ad-Hoc Groups), and (ii) the timely approval of key deliverables such as the Functional Specifications. Member States will use the Reference Implementation for their International Part of Access Points – IPAP; the trials of EESSI by the first group of the six (6) Member States will be conducted by Member States using the Reference Implementation. Delays in meeting the above goals will have a knock-on effect in the timely production of subsequent project deliverables.

The GQP should describe in sufficient details organisation and responsibilities of Member States, so that the responsibilities for supplying input (e.g. specifications, plans) are laid down, thereby enabling Member States representatives to be involved during the planning and review stages. It is stressed that early and continued involvement of the Member States will reduced the risk of a mis-match of assumptions and expectations.

The GQP will facilitate a better understanding from everyone about each other's responsibilities and ensure active co-operation to make EESSI a success. It should be reviewed regularly and updated if necessary to ensure that it meets the needs of the project.

The above highlight that the scope of the GQP is wider than that of the PQP, and that adherence to the GQP involves the active participation of the Member States.

In pan-European administrative data exchange programmes such as EESSI, the GQP is typically drawn up and maintained by the European Commission, which has the discretion to delegate or subcontract several aspects of its production and maintenance. It is also important that a reporting scheme be established for the GQP, with regular reports (e.g. on a trimester basis) be drawn up and discussed in a body in which all Member States participate.

Annex I: Project Organisation and Work-plan

Project Organisation

The contents of this section are the same with Chapter 3 “Project Organisation” of the Global Implementation Plan.
Figure 11 illustrates the project organisational hierarchy. As it can be seen, the European Commission supervises and directs the workings of the Contractor.

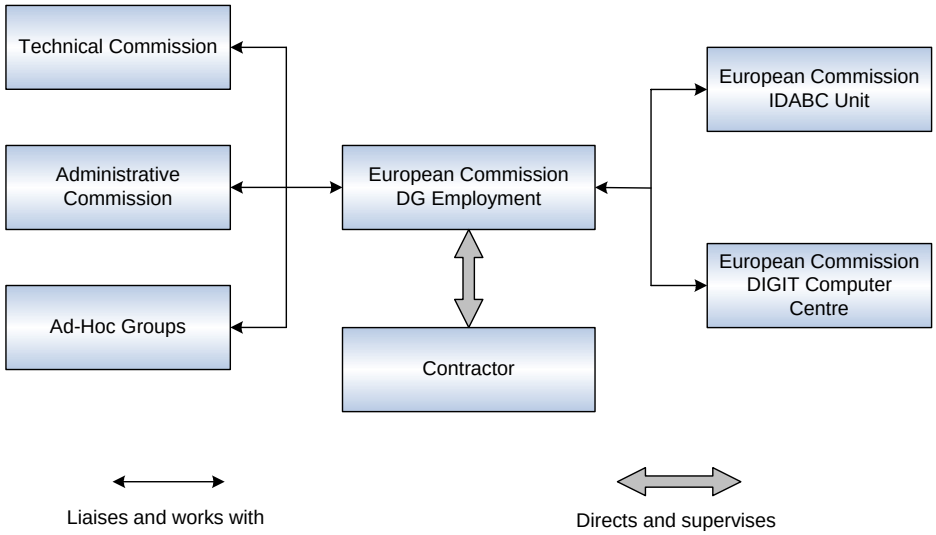


Figure 11: Project organisational hierarchy

The subsequent paragraphs describe the roles and responsibilities of the EESSI actors.

I. European Commission

The main roles and responsibilities of the European Commission are described below:

- Provide a Project Management Team – PMT that will manage the planning, specifications, development, testing and operational phases of EESSI
- Ensure the management of the project in view of the final installation of the expected deliverables. In this respect, the European Commission will provide and update a general planning and will co-ordinate the development, validation and implementation phases with the concerned organisations of the Member States, the IT services of the European Commission and the selected Contractor.
- In the context of the DIGIT sTESTA Framework Contract establish with the sTESTA contractor specific agreements for the implementation and operation of the EESSI International Domain.
- On the basis of open Call for Tenders (CfT) establish agreement(s) with a service provider (Contractor) for the specifications, development, testing, commissioning and maintenance of the EESSI IT applications
- Establish a communications programme, which will seek to collect and disseminate pertinent information to the EESSI stakeholders
- Act as a moderator in cases there are conflicting views of the project stakeholders
- Secure funding for the design, development, and continuous maintenance of the Centrally Developed Applications – CDA

- Perform Site Acceptance Tests – SAT
- Procure, install, operate and maintain the coordination node IT infrastructure (testing and , operational environments)
- Take over the Contactor's work (e.g. maintenance of the specifications and the IT applications) at the end of the corresponding contractual arrangements
- Operate and manage the coordination node applications (Central Message Relay, Directory, Document Repository etc.)

II. Member States

The main responsibilities of the Member States are given below:

- Provide experts as needs may arise who will participate in the Ad-Hoc Groups dealing with the several aspects of the EESSI specifications (e.g. contents of EESSI Directory, SED definition, SED workflow) and so on.
- Timely provide feedback and approve project documents and deliverables requiring the approval of Member States (e.g. EESSI Functional Specifications document)
- Liaise and plan with the Competent Institutions the implementation of EESSI at the national domains. Subsequently undertake the implementation of the sectorial networks linking Competent Institutions with Access Points.
- Implement the Access Points falling under their responsibilities. It includes:
    - Procuring the necessary IT infrastructure
    - Making available the necessary Social Security experts and IT staff
    - Implement and subsequently operate Access Points, including electronic exchanges between Access points and Competent Institutions
    - Evolve Access Points according to the evolution of the EESSI specifications
- Participate in testing and trials

III. Commissions on Social Security

- **Administrative Commission.** The Administrative Commission on Social Security for Migrant Workers (known simply as the "Administrative Commission" or CA.SS.TM), taking input from the Technical Commission, the Task Force and Ad-Hoc Groups, will oversee the developments in the project and approve all major deliverables and milestones.
- **Technical Commission.** The Technical Commission is the official body in which all technical matters pertaining to the EESSI implementation will be first discussed. The Technical Commission makes recommendations to the Administrative Commission, which may then take decisions binding all Member States. The Technical Commission will monitor the progress of EESSI and provide input to the European Commission for the technical guidance of the EESSI Contractor.
- **Ad-Hoc Groups.** The Administrative Commission may form Ad-Hoc Groups, which will have a mandate to work on a specific topic with direct relevance to EESSI (e.g. an Ad-Hoc Group charged with the development of the XML schema(s) of the pensions sector SEDs). Ad-Hoc Groups may work closely with the Technical Commission for matters requiring their guidance and approval from the Technical Commission.

- **Task Force, as co-**ordinator of Ad-Hoc groups and with the role of ensuring coherency in the recommendations that the Groups put forward to the CASSTM.

IV. Contractor

It is envisaged that the development of the IT applications of the EESSI International Domain will be performed in the context of a single contract. The Contractor will undertake the specifications, development, test, deployment and maintenance of the Centrally Developed Applications – CDA. The EESSI Contractor will not be responsible for activities in the National Domains of EESSI (e.g. National Part of Access Points).

V. European Commission Directorate-General for Informatics - DIGIT

- The Computer Centre will host and perform the technical operations for the IT infrastructure of the coordination node (i.e. Central Message Relay, Directory, and Document Repository)
- The IDABC Unit will act as a facilitator in the workings of the Project Management Team with the IDABC contractor.

Work Plan

The work-plan given in this section is essentially chapter 4 “Work-plan” of the Global Implementation Plan – GIP.
The work-plan assumes that by the time a Contractor commences its work, the Member States and the European Commission, through the workings of the Administrative and Technical Commissions and Ad-Hoc Groups, have already documented the business processes, associated data flows and data elements involved in the electronic exchanges of Social Security information. The availability of a comprehensive documentation of those business processes is a fundamental assumption and a prerequisite which underpins the present plan. In other words, it is expected that the Contractor will be able to start work on defining the SEDs without any need to review and modify the description of the business processes and associated data and workflows. Any delays at the start of the Contractor’s work in the availability of the EESSI business processes comprehensive description or any need for the Contractor’s review of it will have as a consequence the delay of the project.
EESSI is a pan-European Information System, with all Member States participating in it, and whose technical architecture allows Member States to undertake their own national IT implementations, provided that they comply with the EESSI specifications. Those features have the following key consequences:

- Elevate the importance of the technical specifications, which are beyond the SED specifications
- Emphasise the needs for comprehensive application testing
- Require in the operational phase the systematic maintenance of (i) the specifications and (ii) the IT applications

The present plan builds on the Commission’s plan to conduct initially extensive trials of EESSI by a group of six (6) volunteer Member States, prior to all Member States joining the testing activities. In fact, the present GIP expands this idea by forming three groups, namely:

- Group 1: the above six (6) volunteer Member States, which all use the Reference Implementation - RI
- Group 2: Member States not belonging to Group 1 and using the RI
- Group 3: Member States developing on their own the International Part of Access Points (i.e. not using the RI)

The EESSI trials period starts after the successful execution of the Site Acceptance Tests – SAT and last for a period of 12 months. While there may be scope for reducing the length of the 12-month trials phase, nonetheless the trials have to be sufficiently long to validate the performance of EESSI (e.g. guarantee that no SED is lost while in transit) and inspire confidence to commence the fully-fledged operational phase.

Process model

EESSI has a number of key features which will shape the organisation of work.

- **Trans-European IT Applications.** EESSI is concerned with mission critical IT systems, some of which will be implemented by Member-States. The large number of the Member States, the need for consensus, the criticality of the systems, and the long time-span of these applications (several years) call for a systematic organisation of work, long term view and exploitation of the acquired experience.
- **Centrally Developed Applications – CDAs**, which the European Commission will develop and make available to the Member States, which will then:
    - Be deployed at Access Points to provide the functionality of the International Part (Reference Implementation)
    - Be used as guidance by Member States for their own development of the International Part of Access Point.
- **CDAs with a trans-European layer**. The two key applications are the Central Message Relay and the EESSI Directory.

The ITIL (IT Infrastructure Library, http://www.itil.org.uk/) is one of the most widely accepted approaches to IT service management in the world, providing a cohesive set of best practices. ITIL principles are currently being used at the European Commission in several large-scale IT projects, including the Directorate-General (i) Information Technology-DIGIT and (ii) Taxation and Customs.

Given the pan-European nature of EESSI, its criticality in the electronic exchanges of Social Security, and its very long-term characteristics it is highly appropriate to adopt the ITIL principles in EESSI. Figure 12 illustrates the six stages of the ITIL Application Management, which are grouped into the Application Development and the Service Management processes.

- The Application Development Process is concerned with the activities to design and build an application that will ultimately be used to fulfil the business requirements. It is not concerned with the deployment or ongoing daily management of the application.
- The Service Management Process in concerned with the activities that are involved with the deployment, operation, support and optimisation of an application. The main objective is to ensure that the application, once built and deployed, can meet the service levels that have been defined for it or expected from it.

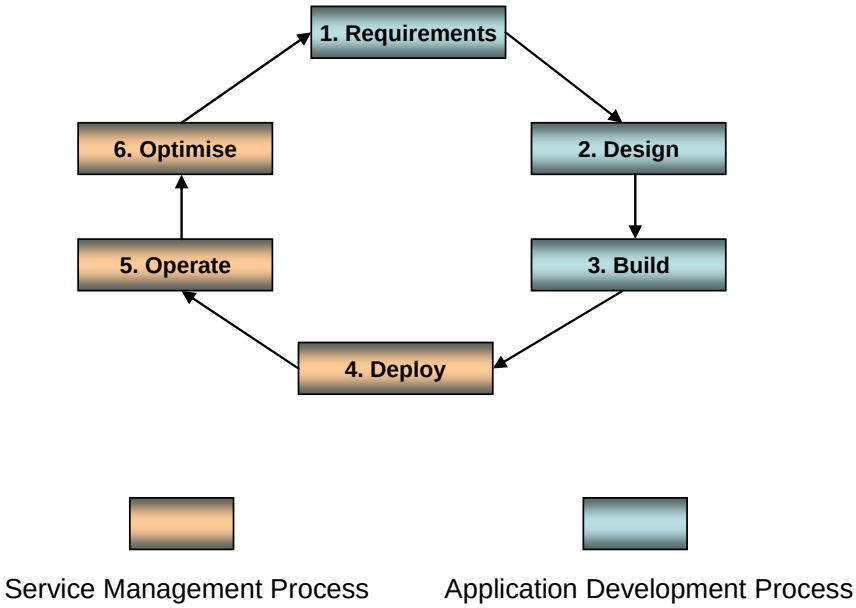


Figure 12: ITIL Application Management

ITIL stresses that those two processes have a tight relationship and the paramount need for alignment between both processes in every single stage. The subsequent paragraphs outline those six stages, which combine the phases of application development and Service Management.

- **Requirements:** This is the stage during which the requirements for a new application are collected, based on the business needs of the organisation. Typically, the following three groups of requirements are defined and documented:
  - **Functional requirements** are concerned with the functions of a system specifically required to support a particular business function.
  - **Non-functional requirements** cover the need for a responsive, available and secure system, and deal with such issues as deployment, operations, system management and security.
  - **Usability requirements** are those which deal with the needs of the end user, and result in features of the system that facilitate its ease of use.
- **Design:** This is the stage during which requirements are translated into feature specifications. The goal for application designs is to meet the organisation's requirements. It includes the design of the application itself, and the design of the operational environment on which the application will run on. Technical architecture considerations are important aspect of this stage, since they can impact on the structure and content of both the application and its operations
- **Build:** In the build stage, the application and its IT operational environment (e.g. IT staff such as operators, IT infrastructure such as computer servers) are made ready for deployment. Application components are coded or acquired, integrated, and tested. Often the distinction is made between a development and test environment. The test environment allows for testing the combination of application and its IT operational environment.
- **Deploy:** In this stage, both the IT operational environment and the application itself are deployed. The IT operational environment is incorporated in the existing IT environment and the application is installed on top of the IT operational environment)

- **Operate:** In the operate stage, the IT services organisation delivers the service required by the business. Normally, the performance of the service is measured against predefined service levels indicators, which quantify the degree to which the IT service meets the business needs.
- **Optimise:** In the optimise stage, the collected and analysed service level indicators are reviewed and if deemed necessary acted upon. Possible improvements are discussed and developments initiated if necessary. The two main strategies in this stage are to maintain and/or improve the service levels and to lower cost. This could lead to a further iteration in the lifecycle or to justified retirement of an application.

Traversing the lifecycle

It should be stressed that the circular nature of the application lifecycle means that the same EESSI application can reside in different phases of the lifecycle at the same time. For example, when the next version of the Reference Implementation – RI is in the design stage, and the current version of it is in the deployment stage, the previous version may well still be in operation by one or more Member States. **This obviously requires strong version, configuration and release control**.

ITIL underlines the point that while particular stages might take longer to complete or appear more significant than others, they are all crucial. All EESSI IT applications must go through all of them at least once, and, because of the circular nature of the lifecycle, will go through some more than once. Given the pan-European characteristics of EESSI, good communication is the key as an application progresses through the stages of the lifecycle. It is essential that high quality information is passed along by the EESSI Contractor(s) to the Commission, the Member States, and the other EESSI stakeholders. It is also important that a designated entity (perhaps a Project Support Office at the European Commission) monitors the quality of the Application Management lifecycle. Changes in the lifecycle, for instance, in the way the Contractor's organisation conveys information between the different stages, and may have an impact on the quality.

Work-package description

WP 0: Project Management

The Project Management Work-Package entails the tasks and activities that are necessary to implement EESSI. Its primary aims are to:

- Describe the ways of working
- Ensure that the business goals of EESSI are reached
- Maintain control and confidence over the content and quality of the deliverables
- Facilitate the European Commission – Contractor decision making regarding the project's progress
- Monitor the progress of the project
- Take corrective action in cases the project deviates from its stated objectives and plans
- Manage Communication concerning the project
- Ensure that the project owner and its stake-holders (decision-making bodies, testers, MS) are involved at the right times

WP 0.1: Production and maintenance of the Project Management Quality Plan

The main objective of WP 0.1 is to produce, deliver and maintain the Project Quality Plan – PQP, which provides a description of the measures and actions to be taken to meet the quality and technical requirements of the project.
The PQP will cover the following areas:

- Roles and responsibilities of the European Commission, Contractor and project stakeholders
- Work Breakdown Structure (WBS) of the activities
- Deliverable Tracking Matrix (DTM), in line with the life cycle chosen
- Planning schedule of the activities
- The Contractor's internal procedures for team organisation and composition
- Quality Assurance and Quality Control mechanisms
- Security plan, which will be a description of the security policy that will be put in place for the project, the different level at sTESTA, EESSI, etc.

Typically, the Contractor will draw up the first version of the PQP at the initial stages of the project (i.e. the first few weeks). The PQP is subsequently reviewed and ultimately approved by the Commission. The approved PQP is periodically updated to reflect the current status of the project.

WP 0.2: Quality Assurance and Control

The objective of this task is to undertake the Quality Assurance-QA and Quality Control – QC activities in order to ensure that the provisions of the PQP are implemented and adhered to in a consistent manner access all project work and activities. More specifically, it entails:

- Technical management of the activities, ensuring that the PQP and the other provisions are followed
- Internal quality review of all deliverables, prior to delivery to the European Commission, ensuring that all quality criteria are complied with consistently across all deliverables.

WP 0.3 Risk Management

Risk management has the primary goal of identifying and responding to potential problems with sufficient lead-time to avoid crisis situations, so that is possible for the management team to achieve the project's goals. Risk management is concerned with the identification and mitigation of risks in the lifetime of the project.

WP 0.4: Coordination with the European Commission management team, project stakeholders and service providers

This task is concerned with the coordination and communications between, on one hand, the Contractor and, on the other hand, the various actors in the project, the primary one being the European Commission. It is expected, first, that coordination between the Contractor and project stakeholders (e.g. Administrative Commission, Technical Commission, Member States) will always take place through the active and prominent involvement of the European Commission's services, and second, that the Contractor will not directly enter into communication with the project stakeholders on its own initiative, unless instructed to do so by the European Commission. Service providers with which the Contractor may communicate include the sTESTA contractor and those providing the IT infrastructure at the European Commission premises.

The objectives of the coordination with the E.C. management team are:

- The E.C. management team to effectively monitor the progress of the project obtaining

information from the Contractor, and requesting clarifications whenever needed

- The Contractor to understand the needs and priorities of the E.C. and the project stakeholders as these are evolved in time.
- Both the E.C. management team and the Contractor to discuss issues, and decide on effective solutions and quality improvement actions

Additional coordination activities include:

- Participation and assistance in preparation (e.g. drafting minutes) of technical meetings with the European Commission or other entities involved in EESSI
- Active participation and contribution or passive attendance to the meetings of the Administrative Commission, Technical Commission and Ad-hoc Groups and its sub-Groups (if any), which involve the European Commission and the Member States. Active contribution typically includes the preparation presentation, questions & answers sessions
- Participation in other ad-hoc meetings
- Provision of technical input and feedback on EESSI-related issues (e.g. implication of new sTESTA security policy)

WP 0.5: Regular reporting

The purpose of this task is to report on a regular basis (e.g. monthly) on the contractual situation, the activities, status of deliverables, resource allocation, plans. If applicable, the inventory of hardware and software should be included.

Typically, the Contractor will submit Monthly Progress Reports – MPR which will be the basis of conducting managerial meetings with the European Commission.

WP 0.6: Planning activities

Planning involves all preparatory activities concerning the specifications (design, functional, etc), business modelling, and actual development and implementation.
Sound project management principles dictate that the Contractor maintains his own internal project plan on a monthly basis. It is updated at least once a month together with the Monthly Progress Report - MPR.

WP 1: Set up and Maintenance of Resources

This work package concerns the set up, operation and maintenance of all the resources required to bring EESSI into a full operational status. It concerns the European Commission, Member States and the Contractor. The three main categories of resources are listed below.

- Office infrastructure
- Development, Test and Operations IT infrastructure
- Telecommunications infrastructure and services

The subsequent sections briefly describe the tasks of each stakeholder

- **WP 1.1 Office infrastructure.** Office infrastructure primarily concerns the availability of suitable premises for the hosting of the IT and telecommunications infrastructure, as well as office space for the workings of the various project teams.

  1. **WP 1.1.1 European Commission.** At the initial phases of the project, the bulk of the needs will concern office space for the Commission's project management team. Later in the project, when the EESSI Directory and the Central Message Relay development approaches

its completion and are about to undergo Site Acceptance Test - SAT, the Commission will have to allocate space in a computer room for the testing and operational IT infrastructure. When EESSI becomes operational, the demands on computer room space will reach a plateau. During the conduct of the SAT, the Commission will make arrangements for the temporary hosting of a few members of the Contractor's project team, who will assist in the execution of the SAT.

2. **WP 1.1.2 Member States.** A provision for suitable space in a computer room must be made to host the access point server(s).
3. **WP 1.1.3 Contractor.** The Contractor will allocate in its own premises adequate space for the project team (designers, developers, testers, technical writers etc.), as well as for the hosting of the development and testing computer servers

- **WP 1.2 Development, Test and Operations IT infrastructure**

1. **WP 1.2.1 European Commission.** The Commission must deploy the IT infrastructure for the SAT and the subsequent operational phase. Typically, in pan-European projects like EESSI a separate testing environment is maintained that allows comprehensive testing of a release prior to entering the production phase. This will become more important several years from now, when EESSI is fully operational, as new versions of the EESSI applications will be developed and tested while the then current version will be in full operation. Regarding the development environment, it is not strictly necessary, as the Contractor will develop and maintain the EESSI applications at its premises. On the other hand, good practices suggest that a minimum development environment is maintained at the Commission, such that, if necessary, the Contractor's development activities can be validated.
2. **WP 1.2.2 Member States.** All Member States must deploy and operate the IT infrastructure which is necessary for the National and International Parts of Access points. In addition, Member States opting for their own implementation of the access points (i.e. not using the Reference Implementation) have to make provisions for a development and testing IT infrastructure.
3. **WP 1.2.3 Contractor.** All development activities as well as the Factory Acceptance Test will take place at the Contractor's premises. Adequate infrastructure has to be provided, both for the members of the team (workstation) as well as for the computer servers.

- **WP 1.3 Telecommunications infrastructure and services**

1. **WP 1.3.1 Commission.** Since the Commission will host the EESSI Central Node, it will have to establish a highly available network connection with the sTESTA backbone network. Such an arrangement typically includes the operation of two independent network connections with the sTESTA backbone. sTESTA will provide the IP (Internet Protocol) backbone network services to EESSI. The provisions of the sTESTA SLA will apply to the data network services of EESSI.
2. **WP 1.3.2 Member States.** Access Points require a network connection with the sTESTA Local Domain Connection Point – LDCP, which is the sTESTA national node in their own country. At the National Domain, it is expected that the majority of Competent Institutions will have on-line network connections with the Access Points via national sectorial networks.

3. **WP 1.3.3 Contractor.** The Contractor will have to make available an Internet connection enabling Internet email and, subject to the security requirements, remote access to selected Commission-hosted servers via Virtual Private Networks – VPN. It is not envisaged that the Contractor will need a connection to sTESTA.

WP 2: Support via Training, Workshops and Missions

The main objective of this work package is to provide support to the Member States in their implementation and deployment of the International Part of Access Points. The main areas of support are:

1. Central Message Relay
2. Reference Implementation - RI
3. EESSI Directory information maintenance
4. EESSI Directory replication at national sites
5. Use of EESSI Technical Protocols
6. Use of testing applications

The last two areas are of particular interest to Member States undertaking their own implementation of the International Part of Access Points.
It is envisaged that the Commission will consider the organisation of missions to Member States by members of the Contractor's team. The purpose of such missions will be to support and assist Member States in their tasks. The primary role of the Contractor in such missions will be:

- Consult on the development of interfaces between the Reference Implementation and the National Part of Access Points
- Support the installation, configuration and the transition to operational status of the Reference Implementation
- Support the use of the Testing Applications

It is stressed that the Contractor will only provide supporting services to Member States, and in any case Member States will be responsible themselves for executing all tasks.

WP 3: Specifications

Overview

The core EESSI specifications phase encompasses all the activities that will be undertaken to develop, draw up and maintain the specifications of the EESSI electronic documents, their workflow and associated IT applications. Given that in the EESSI architecture some Member States will have the option to develop their own implementation of the access points, the specifications will have to cater for the entire spectrum of needs, ranking from the high level (i.e. EESSI business domain) down to the lower level of the EESSI specifications (software domain).
A fundamental principle in WP 3 and in the development of the present GIP is that by the time the Contractor formally enters into the project the Member States and the European Commission, through the workings of the Administrative and Technical Commissions and Ad-Hoc Groups**, would have already documented the business processes and the associated data flows, data elements and protocols.** The result of those activities will be the drawing up of document detailing the EESSI business processes, together with their associated business data and workflows. Provided that there is no need the contractor to review and modify the latter document, the availability of

such a document will enable the Contractor to start work on defining the SEDs, Any delays in the availability of the EESSI business processes description at the start of the Contractor's work or any need for the Contractor's review of it will have as a consequence the delay of the project.
By its very nature, EESSI will constitute a trans-European Information System and as such it will require the drawing up of detailed specifications that will guarantee that the different system components interact and cooperate in the appropriate manner, thereby facilitating the electronic exchange of information in Social Security.
In general, the work in WP 3 covers the following areas:

- Elicitation and drawing up of requirements
- Production of functional specifications
- Development and drawing up of design specifications
- Maintenance of the specifications

Specifications maintenance can be of the following nature:

- Evolutive maintenance, which concerns evolution of the specifications resulting from the evolution of the business needs (e.g. modification of a SED as a result of changes in the European Social Security coordination rules)
- Corrective maintenance, which will be triggered by incidents resulting in errors and subsequent correction.

As the maintenance of the specifications falls under WP 6 "Operations and maintenance", we will describe in WP 6 the approach for maintaining the EESSI specifications.

WP 3.1: Requirements Specifications

The purpose of WP 3.1 is the production of the Requirement Specifications, which define in detail the expectations of EESSI in terms of:

- The user or stakeholder: e.g. functional and data requirements
- Operations: e.g. statistical and monitoring requirements
- Training: development of a strategy in function of the type of system or application
- Testing: develop strategy to be applied
- Security and data protection

Requirements management process

Given the importance of EESSI and its nature as a trans-European Information System, we propose that a systematic **requirements management process** be adopted. Such a process deals with controlling the identification, allocation, and flow-down of requirements from the system level to the module or part level, including interfaces, verification, modifications, and status monitoring.
Requirements management is the set of activities that concentrate on assuring that the requirements are met to the users' and project stakeholders' satisfaction. It is a process that begins at project inception and continues until the resulting product(s) is no longer needed. Requirements management includes the major requirements management phases, such as organising, implementing and sustaining and the key requirements management activities, such as gathering, documenting, verifying and managing changes.
Figure 13 illustrates the requirements management process. The subsequent paragraphs outline the key activities of the process.

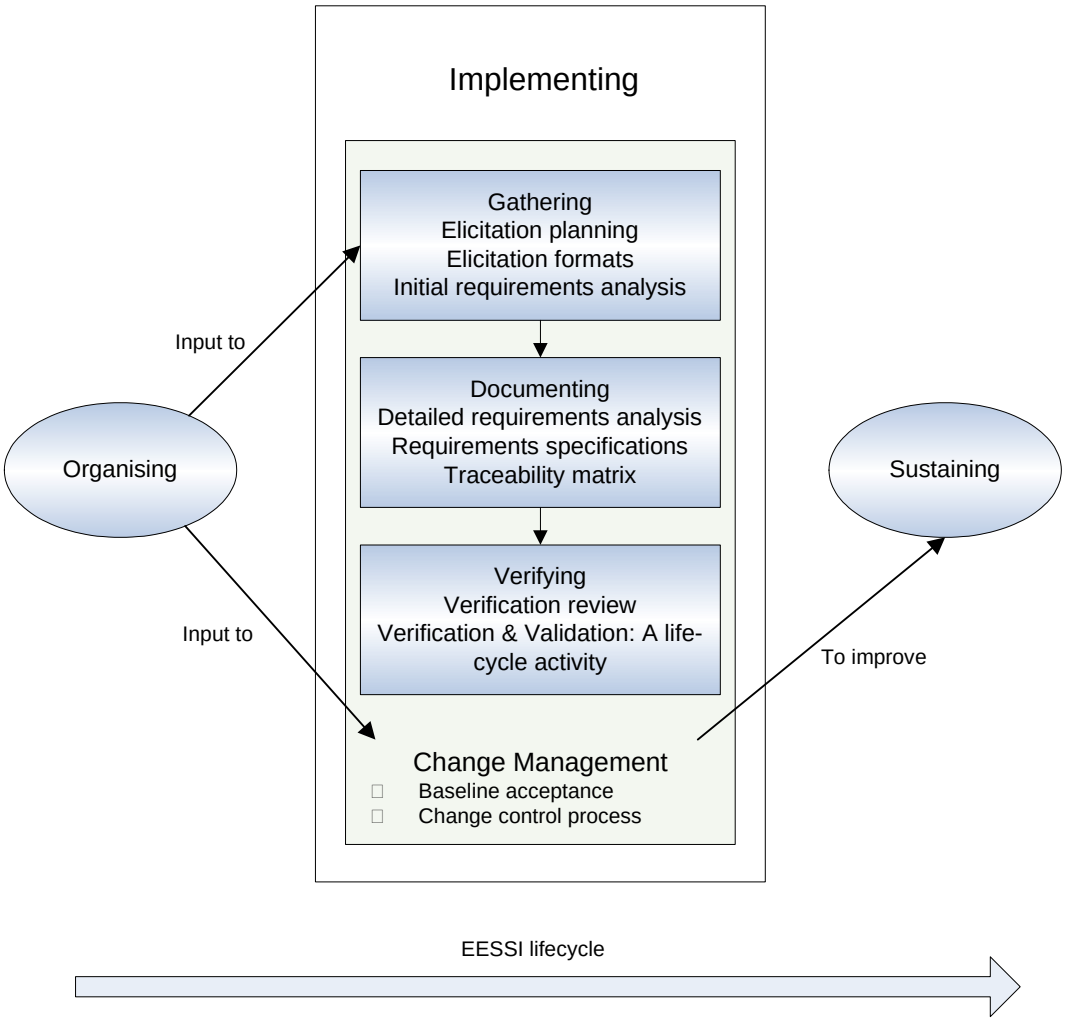


Figure 13: Requirements management

- **Gathering**. Gathering and documenting requirements is an iterative communication activity between the project stakeholders (including, if possible, end-users) and the Contractor to discover, define, refine, and record a precise representation of requirements. Various methods may be used for gathering requirements. Some initial analyses, such as grouping, categorising, prioritising, are performed during this activity. A more detailed analysis is performed in the Documenting activity.
- **Documenting.** After the requirements have been gathered, they are analysed in detail and documented into a requirements specification. These specifications are tracked using a Requirements Traceability Matrix and are subject to verification and change management throughout the product lifecycle.
- **Verifying.** Once the requirements specification has been developed, the requirements are verified. Verifying requirements is a process to ensure that the system requirements specification is an accurate representation of the users' and project stakeholders' needs. This process also ensures that the requirements are traced and verified through the various lifecycle phases; particularly in the design, build and testing stages. Requirements must be cross-traceable to design, build, and test artefacts to ensure that those requirements have been properly fulfilled.

- **Managing Changes.** After the requirements, as documented in the requirements specification, have been verified and agreed upon, they can be baselined and the last task, managing changes, begins. Managing changes is a formal process to identify, evaluate, track, and report proposed and approved changes to the baselined specifications

Requirements Specification Document

The requirements specification is a documented and organised interpretation of all the information collected from the interviews with the stakeholders/users, analysis of existing documentation, and other elicitation activities which are refined through the requirements analysis process. It is a baseline of EESSI and is subject to verification and change management throughout the duration of EESSI. Developing clear and complete requirements before full-scale functional and technical specifications, and practicing good requirements management is important because this leads to:

- A mutual understanding between the project stakeholders (European Commission, Member States) and the Contractor's specifications team about the system requirements.
- An agreed-upon and subsequently approved requirements specification that becomes the initial baseline for the subsequent specifications activities
- Approved communications between the Commission, Member States and the Contractor
- Facilitation of Achieving the desired functionality and performance for the operation of EESSI
- Improved testability and maintainability of EESSI

The collection of the information into a formal requirements specification document occurs initially when enough information is available to begin the associated configuration control activities.
Once approved, the requirements specification is then ready to be verified. In cases where there are non-concurrences, solutions and actions should be offered to overcome the issues and concerns. Non-concurrences should be tabled and resolved during the verification process. After the initial document is created, reviewed, verified, and accepted by Member States and the Commission, it is placed under configuration management in order to control the iterative changes that occur over the rest of the EESSI lifecycle.

Traceability Matrix

A traceability matrix is a verification tool to trace a requirement throughout the system's/application's lifecycle. It is necessary to be developed because it provides visibility into completeness of the quantitative definition and testability of each requirement. A graded approach may be embedded into this matrix to clarify the relative importance of the items to the overall quality of the system.
Traceability is the tracking of the disposition of a requirement from its inception in the Gathering activity to its corresponding functional and technical specification, design, build and to the test case(s) necessary for validating the requirement, and finally to implementation (i.e., throughout the lifecycle). Traceability shows that user needs are met and assures that the system/application will not work in unintended ways. Traceability provides:

- The how and why the system/application satisfies the stated requirements
- Information on testing, performance measures, non-functional characteristics

Traceability is necessary for change control, development process control, and risk control purposes. It is also a key factor in establishing audit ability of the system/application during development and maintaining it after it becomes operational.

WP 3.2 SED development

The EESSI Structured Electronic Document – SED is an electronic document with a predefined structure and content and having a formal status in EESSI. It will be expressed in terms of an XML document, with its own semantics expressed in a model. Developing the models of the EESSI SEDs is a very important task in the project.
It is envisaged that the work will commence with the definition of UML models for the underlying business processes and associated data elements. Ultimately, those UML models will be approved by the Technical Commission.
A mapping algorithm will be defined to enable automatic production of XML descriptions (e.g. XML Schemas, WSDL, Schematron, etc.).

WP 3.3: Functional specifications

The purpose of WP 3.2 is to produce the functional specifications of the EESSI. The functional specifications define what a system/application will implement to satisfy the system/application requirements; in a manner that compliance to the business model is ensured.
Functional Specifications is a "key" deliverable for the system/application under development that forms the basis for all subsequent design, building and testing activities. In that sense, functional specifications have to be:

- Complete, ensuring that all related processes have been included, the defined requirements have been covered and all operations, testing and training aspects have been taken into account
- Well structured, concise, and detailed enough to ensure the proper understanding by its readers, the avoidance of any ambiguity, and the easy navigation through its contents.
- Fully compliant to the applicable regulations and the business processes that the target system/application is concerned with.

Functional specifications define what an EESSI application must do to support the respective business functions and stakeholders objectives. They provide answers to the following questions:

- How are inputs transformed into outputs
- Who initiates and receives specific information
- What information must be available for each function to be performed

The Contractor will undertake the following tasks in the drawing up of the EESSI functional specifications:

- Study and analysis of applicable models/specifications (e.g., business models, requirements specifications, etc.) and related documentation.
- Organising workshops/interviews with project stakeholders aiming at making clarifications on any issues identified in the context of the study and analysis activity exchanging views, and resolving discrepancies.
- Identify functionality (whether it is to be automated or manual) pertinent to the system/application at hand.
- Describe the inputs, processing, outputs, and conditions for all functions.
- Develop a functional model for the system/application at hand, typically by UML Use Cases and UML Activity Diagrams

- Define the functional structure of information that will be exchanged with other systems/applications
- Identify exception handling issues and describe generic and specific responses to exceptions.
- Provide a traceability matrix between stakeholders needs (possibly expressed in a requirements specifications document) and the developed functional model
- Compilation of a Functional Specifications document including all items produced in the context of the abovementioned activities.
- Internal review of the produced document to ensure its completeness, accuracy, consistency, traceability, simplicity and project standards.

WP 3.4 NPAP Functional Specifications

Member States will have to implement themselves the National Part of Access Points – NPAP. This part will provide the functionality for transporting SEDs between the Competent Institutions and the International Part of Access Points. For Member States using the Reference Implementation – RI, the NPAP will use the RI-supplied interfaces to exchange the SEDs.
The development of the NPAP is entirely within the Member State sphere of responsibilities, and therefore Member States have complete freedom, both in adopting a particular technical approach, and also into how they carry out the corresponding activities. However, good software engineering practices mandate that Member States do indeed draw up detailed functional specifications of their own NPAP.

WP 4: Development

This work-package deals with the documenting, programming and unit testing of the EESSI applications and software components. The work will be based on the results of WP 3 "Specifications". More specifically, the work in WP 4 will cover:

- Specification, development and unit testing of programmes or software components
- Draw up of manuals
- Assembling and packaging of a software release together with the installation procedures
- Unit testing
- Remote support to the national administrations

Evolutive maintenance of the CDAs will be triggered on request by the Commission. Corrective maintenance will be triggered by incidents resulting in error recording requiring subsequent correction. The incident can be initiated either during the execution of the Site Acceptance Tests of later in the operational phases. As corrective and evolutive maintenance of the CDA will primarily be performed during the operational phase of EESSI, we describe those two work-packages in WP 6.

WP 4.1: Construction of programmes

This task involves generating the source and object code for the IT applications and software components. The code will be written in accordance with the coding practices defined in WP 3 "Specifications", and any other applicable coding standard adopted in EESSI. It is most likely that the most extensively used programming language in EESSI will e Java. Regardless of the particular coding language, the construction of the code must adhere to a consistent, well-proven set of coding practices and error prevention procedures. This will promote homogeneity, maintainability, and ultimately cost efficiency.

Code units shall be generated in a sequence based on factors such as criticality, difficulty, integration and test issues, and needs of the users and stakeholders, as appropriate. One principle to be adopted in EESSI should be that “risky” or “difficult” code will be scheduled for early development. This will allow extensive review and validation of the code.
The source and object code should be uniquely identified and stored in the version control tool (such as Rational Clear Case, PVCS, Microsoft SourceSafe).

WP 4.2: Unit tests

Unit testing will be performed to verify the input and output of each code unit and module. Successful testing indicates the validity of each function and sub-function in the module. It is recommended for the purposes of such testing a Unit Test Plan are drawn up. The Plan defines the approach to be adopted, the tools to be used, the way in which features will be demonstrated, and how results must be documented.
During unit testing, each module will be tested individually and the module interface is verified for consistency with the design specifications. All important processing paths through the module will be tested for expected results. All error handling paths will also be tested.

WP 4.3 Documentation

This tasks is concerned with the production of the different types of documentation, which are necessary for the use of the EESSI applications/software modules. The documentation has the form of the following types of manuals

- User guides and on-line help
- Administrators and operator guidelines

It is noted that installation manuals/instructions fall under the subsequent task WP 4.4.
As the name implies, the former types of the documents are used by the end-user whereas the latter are used by the application/software administrators.
It is proposed that the EESSI IT applications manuals entail the following distinct documents:

- System overview, which is a high-level document presenting the main system features
- Users manual, which provides a complete reference guide for users of the system
- Operator manual, which provides the computer-level instructions for the system.
- Help text, which provides the required level of instant help for the users of the system and will be integrated into on-line help facilities

WP 4.4: Release packaging and installation

This task is concerned with the EESSI applications that will be developed by the Contractor and be used by the Member States in their own premises, that is, (i) the Reference Implementation – RI and (ii) the testing application which will be used those which will develop their own implementation of the IPAP. Those applications have much higher demands in how they are released to the Member States in relation to the EESSI applications that will be deployed in the coordination node only (e.g. Central Message Relay).
Building and installing the software consists of compiling all the source files, linking the object files, and copying the resulting executable files into the target media or environment. The installation package also includes installation scripts, scripts for changing the database model and data (if necessary), and installation manual/instructions.
The installation consists of:

- Configuring the target environment so that the software can run

- Performing the installation procedure as described in the Installation manual/instructions

Installation should be automated to the maximum possible extent. Instructions to the administrator, or instructions issued on screen by the installation scripts, should be simple and clear. Complicated installation procedures requiring extensive manual input should be avoided.
Installation software should prompt the user for permission before making any changes to the system configuration (e.g. database configuration settings). Procedures should be provided for uninstalling, so that rollback of the system to the state before installation is possible.
Note this should be in strict collaboration with DG DIGIT, which has already tools that manage this. It is important that the Contractor starts on the right foot and uses these tools, as DG Employment will have to take care of deploying updates.

WP 4.5: Remote support to Member States

The objective of this task is to provide remote support to Member States, including support for:

- Resolving EESSI Specifications issues
- Advice to Member States implementing on their own the International Part of Access Points
- Advice on procuring and commissioning the IT infrastructure

It is noted that this task is concerned only with cases of requests for remote assistance and does not cover on-site support. It is expected that a Member State will initially issue the request to the DG Employment, which will then pass on the request to the Contractor

WP 4.6: Development of NPAP by Member States

In WP 4.6 Member States will develop the National Part of Access Point - NPAP. Those activities are Member State-specific, as the nature of the business and technical arrangements will have to reflect the local particularities. Member States will be free to adopt their own approach in how they design and implement the NPAP.
Member States using the Reference Implementation for the International Part of Access Point – IPAP will have to adhere to the technical standards defining the interface between the NPAP and IPAP. The Functional Specifications document will fully document those interfaces.
As described above have divided Member States into the following three (3) distinct Groups. Each Group has dedicated task, namely WP 4.6.1, WP 4.6.2 and WP 4.6.3. The time-frames for completing WP 4.6 are not the same of all Groups.

WP 4.7: Development of IPAP by Member States

Member States opting for their own, national development of the International Part of Access Point – IPAP, i.e. belonging to Group 3, will have to undertake the corresponding task. Those Member States will have complete freedom in their implementation, provided that the IPAP is fully conformant to the EESSI business and technical protocols, as well as to the EESSI Web services stack (defined and documented in the Functional Specifications).

WP 5: Testing

WP 5.1: Factory Acceptance Test - FAT

For a given application/software module, the Factory Acceptance Testing - FAT is conducted at the Contractor's development site prior to the delivery to the European Commission. It entails the full business and functional testing of the application, including the verification and validation of the reliability and interoperability. It concerns only the full (major) releases of an application with a significant number of changes/fixes.
Factory Acceptance Test involves the following activities:

- FAT preparation. This entails all preparatory activities required such as the set-up of the test team and the test environment.
- FAT Execution. Testers responsible for FAT a will conduct the tests according to the test procedures defined in the Test Plan. Typically, one or more of the following categories of tests will be performed:
    - Functionality Tests, which provide evidence that both technical and business requirements are fulfilled by the developed application
    - Performance Tests, aiming at verifying the ability of the system to execute specific functions within accepted periods of time depending on the load that the system is subjected to at that time
    - Interoperability Tests, aiming at verifying the proper integration and interoperability of the applications with other applications/systems

FAT should be executed under a FAT Test File, which contains all data and information necessary to test the correct functionality of a system/application. Typically, a FTA Test File comprises the following elements:

- Test Plan, which defines the testing strategy and the approach to be adopted, and how the test results will be documented.
- Test Cases, which define the test scope and objectives, list specific conditions, which will need to be proven (processing pathways, data ranges, etc.), and specify the termination and success criteria
- Test Scripts, which take as an input the Test Cases, expand them into step-by step instructions (including preparation and close-down) and predict detailed results

At the end of a successful FAT execution a report will be drawn up summarising the main results of the FAT test. Typically, such reports are to be submitted to the Commission for review and discussion in a meeting.

Central Message Relay performance tests

The Central Message Relay - CMR is the most critical component of the EESSI architecture, since it will act as the sole message hub through which all EESSI messages will be exchanged. The CMR must be able to cope with peaks in demand for message exchange, particularly for messages requiring on-line response (i.e. entitlement to healthcare and postings of workers). It is important that there is a high degree of confidence that the CMR will cope satisfactorily under stress conditions (high volume of message exchange).
Performance testing aims at verifying the ability of the system to execute specific functions within accepted periods of time depending on the load that the system is subjected to at that time. These tests consist of performance tests conducted under specific conditions, stress tests, and volume tests (tests regarding large amounts of data).
It is highly recommended that FAT includes the production and execution of test scenarios simulating the production load of the CMR. Such tests should also be conducted during the SAT activities.

WP 5.2: Site Acceptance Test - SAT

The purpose of the Site Acceptance Test – SAT is to verify that an EESSI IT application performs according to the specifications in the production environment, or in an environment quite similar to the production environment (testing site at the Commission's premises). The main difference between the FAT and SAT tests is that the former takes place in the Contractor's site, meaning that

the testing environment will not necessarily be similar to the production environment. A successful SAT will inspire confidence that the IT application will performed as expected during the operations phase.
It must be stressed that the Site Acceptance Test will verify and validate the Contractor's developments and its successful execution is not sufficient to proceed to the operational phase of EESSI. The key reason is that SAT will not involve Member States in its execution.
Prior to the actual conduct of the SAT, the Commission should have make arrangements for the full availability of the production/testing environment on which the SAT will be executed.
The SAT entails the installation of the application at the production/testing environment and the conduct of the tests. Typically, SAT are quite similar to the FAT performed at the development environment. Any defects/faults will be registered and documented, and will subsequently be submitted to the Contractor for further assessment and correction.
Typically, SAT execution is guided by the SAT Test File, which will be very similar to FAT Test File described in the preceding section.

WP 5.3: NPAP tests

In WP 5.3 Member States will test their own implementation of the National Part of Access Points - NPAP. Those activities are Member State-specific, as the nature of the business and technical arrangements will have to reflect the local particularities. Member States will be free to adopt their own approach in how they test the NPAP.
Member States using the Reference Implementation for the International Part of Access Point – IPAP will have to perform adequate testing of the interface between the NPAP and IPAP.

WP 5.4: Nationally develop IPAP tests

Member States opting for their own, national development of the International Part of Access Point – IPAP will have to test their own implementation of the IPAP. They will use the two testing applications (Level 1 and Level 2) to perform those tests.

WP 5.5: EESSI Trials

The purpose of the EESSI trials is to test the electronic exchanges of SED between Member States, leading to the verification and validation of the implementations by all Member States and the coordination node (European Commission). Successful conduct of the trials means that the full operational phase of EESSI can commence.
The EESSI trials entail the following tasks.

- **WP 5.5.1 Migration of CLD content to Directory.** The existing Code-list Database content will be migrated to the EESSI Directory. As it is unlikely that the Directory and the CLD will contain identical information for the Competent Institutions, a data migration plan will have to be drawn up. The Contractor will most likely develop special migration software programmes to facilitate the automatic migration. After the completion of the data migration activity, Member States will have to verify and validate the data and make the necessary updates.
- **WP 5.5.2 Public Directory data loading**. The public EESSI Directory will contain a subset of the Directory data. The Contractor will undertake the task of extracting the pertinent data from the Directory and load them into the public Directory. It is expected that a purpose-built application will be developed which will enable the automatic one-way synchronisation between the master Directory and the public one.
- **WP 5.5.3 Population of Document Repository - DR.** In this task the Contractor or the Commission will populate the Document Repository with the relevant content. It is envisaged that the Technical Commission will provide guidance concerning its contents.

- **WP 5.5.4 Group 1 Member State trials.** The six Member States of Group 1 will commence trials of exchanging SEDs through the coordination node. Trials will start with using test data and will evolve into pair-wise tests with other Member States.
- **WP 5.5.5 Group 2 Member State trials.** After the successful execution of the first set of trials in WP 5.5.4 and the approval of the results, the remaining Member States using the RI will enter the trial phase.
- **WP 5.5.6 Group 3 Member State trials.** Those trials concern the Member States with their own implementation of the International Part of Access Points. Those Member States will have to perform an additional testing of their IPAP with the two testing applications prior to starting trials with counterparty Member States.

In the last phase of WP 5.5 all Member States will perform pair-wise tests with all counterparty ember States to verify and validate the correct exchange of SED.

WP 6: Operations and maintenance

WP 6.1: Help Desk

The Contractor's Help Desk will provide **application support** services to the Commission and to the Member States, being responsible for the resolution of problems reported to it. It is stresses that it will deal with application level support, which is very distinct from the network support services that will be provided by the sTESTA Help Desk.
The key objectives of the Help Desk will be:

- To provide centralised support for corrective maintenance services, where designated Member State IT personnel will be able to submit problems for registration, diagnosis and resolution
- To seek the immediate resolution of blocking problems; in cases the problem is beyond the competencies of the Help Desk staff, then the problem will be passed on to the maintenance team.

Figure 14 illustrates the high-level organisation of the Help Desk. It is expected that access to the Help Desk services will be granted to Access Point staff and not to the Competent Institutions. Such an arrangement will have the benefit of an initial screening of issues reported by Competent Institutions, as Access Points will act as a filter and in several cases be able to resolve the issue(s) themselves without calling on the services of the EESSI Help Desk.
The Help Desk will be responsible for recording the status of a problem from its registration to through its final resolution according to the proposed solution. In addition, helpdesk statistics will be provided in order to indicate the overall resolution time of a call and assess the performance of the Help Desk

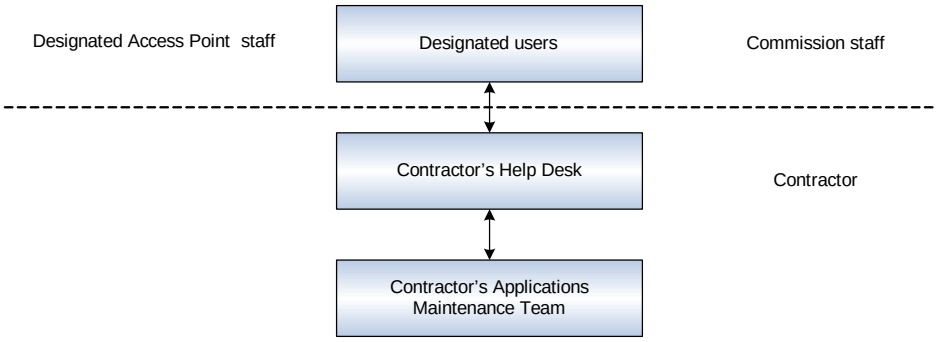


Figure 14: Help Desk organisation

WP 6.2: Information processing

WP 6.2.1 Document repository

The Functional Specifications lay down in FS-78 that the coordination node shall provide and host document repository functionality for (i) data dictionary, (ii) SED definitions, (iii) workflows (iv) Regulations (v) reference material assisting Member States in carrying out their tasks, with access to the repository being performed via a portal interface.
To a very large extent, the document repository will contain stable information, in the sense that it will not require frequent updates. As a result, the effort in maintaining it will be small. Either the European Commission or the Contractor may be assigned the responsibility for carrying out this task.

WP 6.2.2 Directory

The EESSI Directory, which will be hosted at the European Commission premises, will be the authoritative repository of information for both business (e.g. a whole range of information about Competent Institutions and Access Points from the Social Security perspective) and technical matters (e.g. computer addresses of Access Point servers in the EESSI International Domain). The approved Functional Specifications deliverable envisaged a hierarchical responsibility model for the entry and maintenance of business information. More specifically, Member States are responsible for the full maintenance of the directory entries in their own domain, such as full details of Competent Institutions. The coordination node will be responsible for maintaining the information on Access Points and the node itself.
From the above, it is clear that the bulk of the work for maintaining the Directory entries falls on Member States, since the bulk of the information concerns Competent Institutions. The workload of the Central Node will be quite modest in the Directory information maintenance, as the number of entries will be relatively small.

WP 6.3: Computer Operations

Computer operations primarily concern, first, the monitoring of computer servers and networks, and second, the resolution of incidents and problems when they arise.

- **Server and network monitoring.** This activity concerns the monitoring of the servers and networks including utilisation of resources (disk space and memory utilisation), running processes, checking of log files, etc, in order to ensure the availability and performance of the IT equipment. The implementation of security measures (e.g. checking firewall logs) will provide the means to affront potential security violations and intrusions
- **Incident and problem resolution.** In case of abnormal IT system behaviour (application is not available); a series of actions will have to take place, including (i) an analysis to identify the cause, (ii) the resolution of the incident/problem by means of taking action (e.g. replacement of a faulty part, different configuration) and (iii) the recording of the pertinent details for subsequent management reporting.

It is worth drawing a distinction between incidents and problems. An incident refers primarily to the non-availability of an IT application or a system that is usually resolved directly by the IT operations team (e.g. restarting the application). A problem has a more serious nature and cannot be resolved by the latter team, but requires the intervention of specialised IT staff. Two typical examples are (i) the failure of a computer server due to hardware malfunction that requires the intervention of the server manufacturer and (ii) a serious fault in an EESSI application severely impairing its functionality which requires the urgent intervention of the application maintenance team and the release of a patch or a bug-fix.

WP 6.4: Specifications maintenance

Corrective maintenance of specifications

The purpose of WP 3.4 is to correct any EESSI specification that may found as being erroneous, after the specification(s) in question has been formally approved. Corrective maintenance of the specifications is expected to be triggered by:

- Problems reported by the Commission and the Member States on specification documents.
- Specification problems identified by the Contractor's project team.
- Decisions for corrections in specifications made in the context of meetings and workshops with project stakeholders.
- Test Incident Reports (TIRs) produced in the context of the FAT and SAT activities

A corrective maintenance assignment to specifications team will trigger the performance of the following activities:

- **Root cause analysis.** This activity concerns the analysis to fully understand the problem and to identify the specifications that will have to be updated in order for the problem at hand to be resolved. A work session may also be necessary with project stakeholders concerned in order to verify findings of this analysis.
- **Specifications correction.** The problematic specification(s) identified in the context of the previous activity will be corrected accordingly.
- **Identification and corrections of other specifications affected by changes**. A detailed analysis will be performed in order to identify and accordingly correct other specifications impacted by the changes described in the previous activity.

Evolutive maintenance of the specifications

The purpose of this WP 3.4 it to keep the EESSI specifications up-to-dated, fully reflecting any changes in the applicable Social Security rules and regulations, as well as modifications stemming from user feedback to improve EESSI. Any development in the evolutive maintenance will only be undertaken after the explicit instruction to do so by the European Commission, and under the oversight of Administrative and Technical Commissions.

Maintenance of the EESSI specifications entails the following activities:

- **Analysis of required evolutions**. The evolutive maintenance of specifications will commence with the Contractor performing an analysis of the evolutive maintenance assignment. In principle, this assignment is expected to be accompanied with a set of requirements for new/modified functionality.
- **Identification of affected specifications**. The Contractor, after the completion of the above activity, will identify the specifications that will have to be evolved and the necessary evolutions that will have to be performed in these specifications. It should be noted that modifying a particular specification may have a far-reaching impact, in that it may not only affect the "obvious" ones, but it may also have a "ripple" effect affecting a considerable number of other specifications.
- **Workshops/meetings with stakeholders** (when necessary). This is an optional activity that will be executed if it's required.

WP 6.5: Applications maintenance

Software maintenance is an integral and important part of a software life cycle. More specifically, maintenance is regarded as one of the primary software life cycle processes, and is described as the process of a software product undergoing "modification to code and associated documentation due to a problem or the need for change. The objective is to modify the existing software product while preserving its integrity."
Following the acceptance of an EESSI application (successful execution of the corresponding SAT) and its transition into the operational phase, the application will enter into the guarantee and maintenance phase. Once in operation, defects may be uncovered, operating environments may change, and new user, legislative, etc., requirements may emerge. The maintenance phase of the application life cycle begins following a guarantee period or post-implementation support delivery, but maintenance activities occur also during guarantee.
Software maintenance is classified in following four categories:

- **Adaptive maintenance.** The modification of an application, performed after delivery, to keep the application usable in a changed or changing environment
- **Corrective maintenance.** The reactive modification of an application performed after delivery to correct discovered problems
- **Perfective maintenance.** The modification of an application after delivery to improve performance or maintainability
- **Preventive maintenance.** The modification of a software product after delivery to detect and correct latent faults in the software product before they become effective faults

The maintenance process model supports the concept that planned changes should be grouped and packaged into scheduled releases that can be managed as mini-projects. This approach will allow the Contractor's EESSI maintenance team to better plan, optimise use of resources, take advantage of synergies between various EESSI applications, and better control outcome in terms of both schedule and "product" quality.
Problems are typically classified into the following three types:

- **Blocking,** in which one or more business-important function of the IT application becomes severely impaired, with business users not being able to execute their tasks
- **Non-Blocking,** in which the application continues to provide its core business functions but one or more aspects fall below the user-expected behaviour (e.g. response is slower than expected)
- **Minor,** in which a relatively low-importance application feature is not satisfactory (e.g. text fields in a Web form have small-size fonts)

For dealing with emergency changes that cannot be implemented as part of a scheduled release of an EESSI application, a procedure will have to be applied to handle such events. Broadly speaking, these changes include fixes to correct defects and updates to meet unscheduled business or legal requirements. Typically, such changes will be released as hot-fixes or patches.

Schedule

The project schedule is given for a period of three (3) years, with trials (i.e. live exchange of SED in the new XML formats) starting at the 19th month. It is based on the work-packages described above. The major assumptions made in the development of the project schedule are listed below:

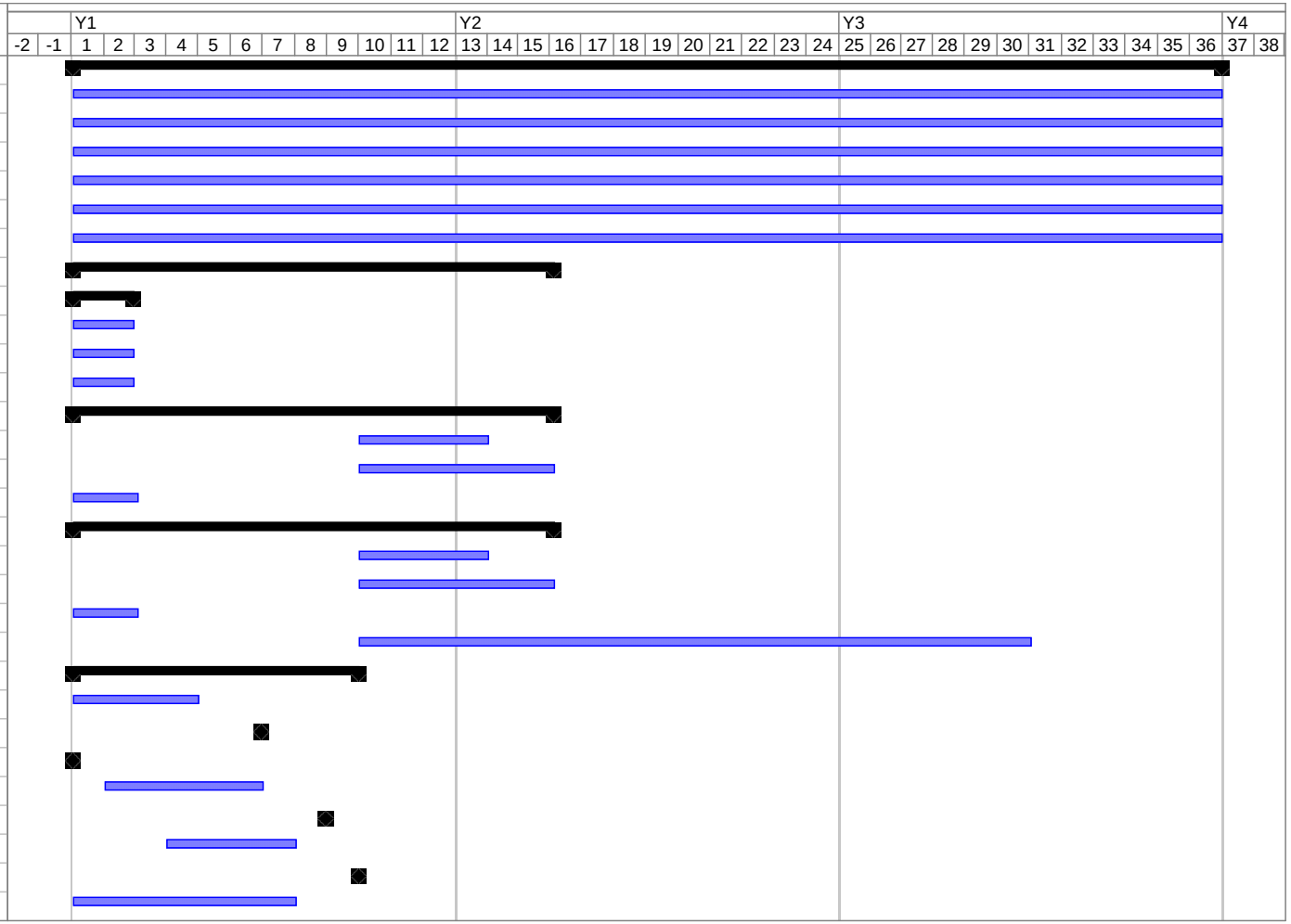
- At the start of the project the Member States and the Commission will have already documented the business data and the business workflow for all types of information exchange in EESSI.

- Prior to the commencement of a new major project development (e.g. start of the writing of software code) the deliverable(s) guiding it will be formally approved by the competent body (e.g. Administrative or Technical Commission). This approval will be given within two months from the submission of the relevant document(s) to the relevant body.

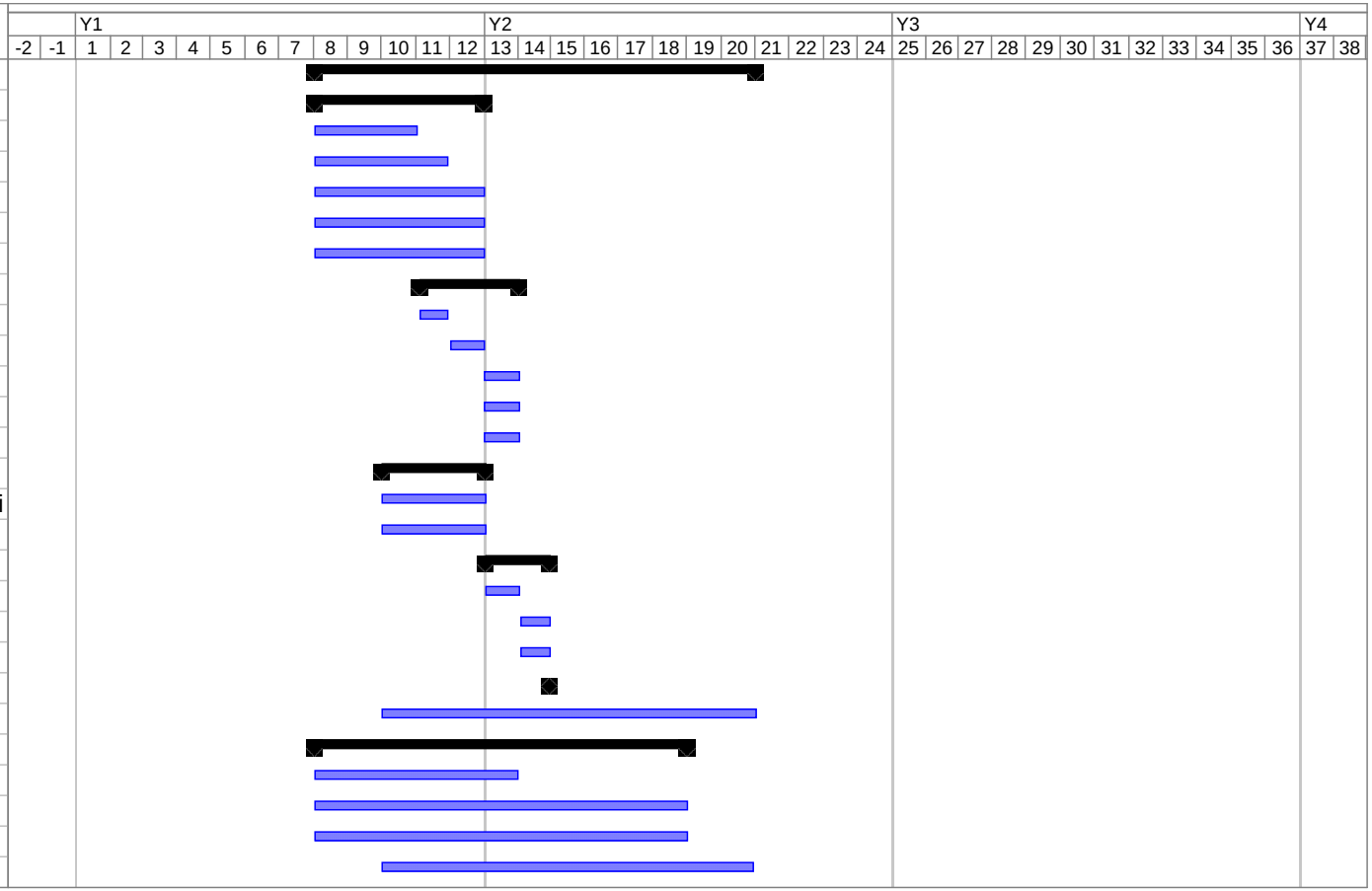
In cases where the approval of those "guiding" deliverables takes longer than two (2) months, then the affected work-package will start later.

Figure 15 gives the Gantt chart for a period of 3 years.

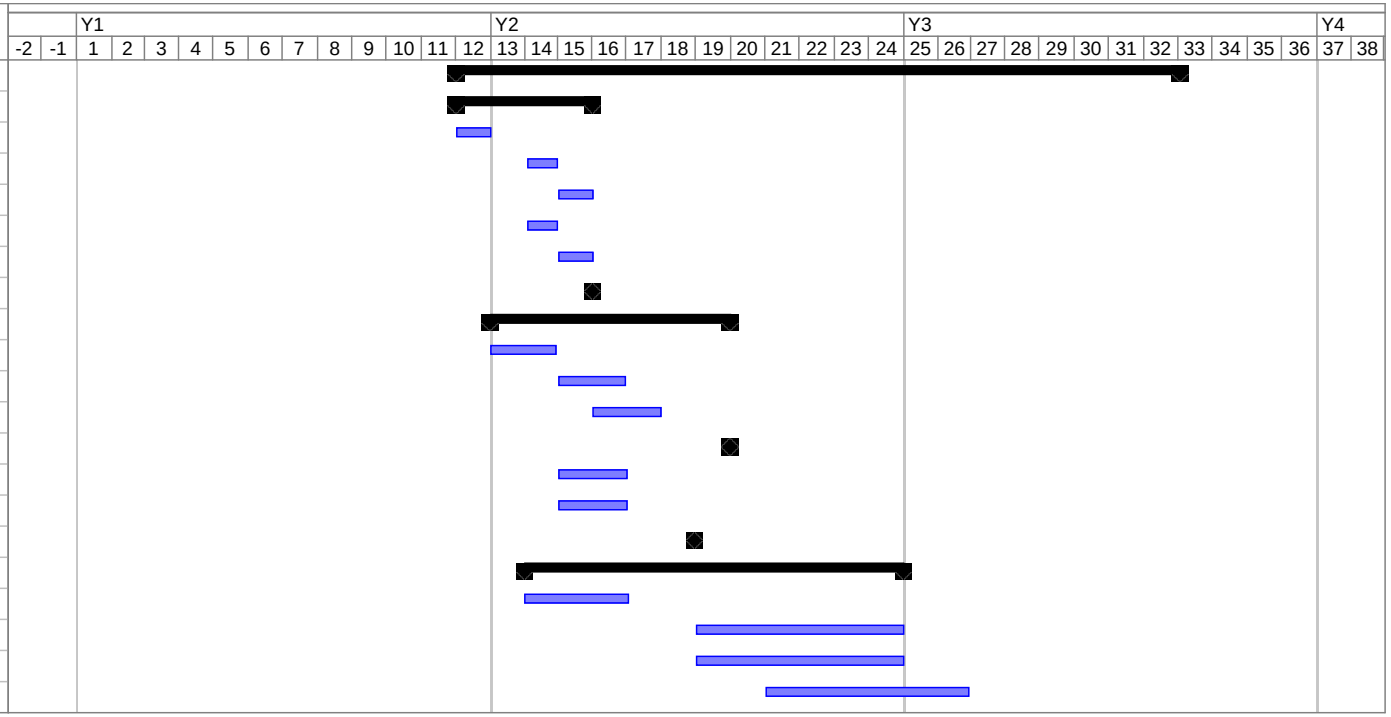
ID	Task Name
1	**WP 0 Project Management**
2	WP 0.1 Production and maintenance of PQP
3	WP 0.2 Quality Assurance and Control
4	WP 0.3 Risk Management
5	WP 0.4 Coordination
6	WP 0.5 Reporting
7	WP 0.6 Planning
8	**WP 1 Set up and Maintenance of Resources**
9	**WP 1.1 Office infrastructure**
10	WP 1.1.1 - European Commission
11	WP 1.1.2 - Member States
12	WP 1.1.3 - Contractor
13	**WP 1.2 IT infrastructure**
14	WP 1.2.1 - European Commission
15	WP 1.2.2 - Member States
16	WP 1.2.3 - Contractor
17	**WP 1.3 Telecommunications**
18	WP 1.3.1 - European Commission
19	WP 1.3.2 - Member States
20	WP 1.3.3. - Contractor
21	WP 2 Support via Training, Workshops and Missions
22	**WP.3 Specifications**
23	WP 3.1 Requirements Specifications
24	Approval of Requirements Specifications
25	Business data model and workflow specification
26	WP 3.2 SED development
27	Approval of SEDs
28	WP 3.3 Functional specifications
29	Approval of Functional Specifications
30	WP 3.4 NPAP Functional Specifications



ID	Task Name
31	**WP 4 Development**
32	**WP 4.1 Construction of programmes**
33	WP 4.1.1 Document repository
34	WP 4.1.2 Testing Applications
35	WP 4.1.3 Directory
36	WP 4.1.4 Central Message Relay
37	WP 4.1.5 Reference Implementation
38	**WP 4.2 Unit tests**
39	WP 4.2.1 Document repository
40	WP 4.2.2 Testing Applications
41	WP 4.2.3 Directory
42	WP 4.2.4 Central Message Relay
43	WP 4.2.5 Reference Implementation
44	**WP 4.3 Documentation**
45	WP 4.3 .1 Document repository, testing applicati
46	WP 4.3.2 Directory, CMR, RI
47	**WP 4.4 Release packaging and installation**
48	WP 4.4.1 Testing Applications
49	WP 4.4.2 Directory
50	WP 4.4.3 Reference Implementation
51	End of CDA development
52	WP 4.5 Remote support to MS
53	**WP 4.6 Development of NPAP by MS**
54	WP 4.6.1 Group 1 MS NPAP development
55	WP 4.6.2 Group 2 MS NPAP development
56	WP 4.6.3 Group 3 MS NPAP development
57	WP 4.7 Development of IPAP by Group 3 MS



ID	Task Name
58	**WP 5 Tests**
59	**WP 5.1 FAT**
60	WP 5.1.1 Document repository FAT
61	WP 5.1.2 Testing applications FAT
62	WP 5.1.3 Directory FAT
63	WP 5.1.4 Central Message Relay FAT
64	WP 5.1.5 Reference Implementation FAT
65	End of FAT
66	**WP 5.2 SAT**
67	WP 5.2.1 Document repository SAT
68	WP 5.2.2 Testing applications SAT
69	WP 5.2.3 Directory SAT
70	Approval for deployment of Directory & DR
71	WP 5.2.4 Central Message Relay SAT
72	WP 5.2.5 Reference Implementation SAT
73	Approval of CDA SAT
74	**WP 5.3: NPAP Tests**
75	WP 5.3.1 Group 1 MS NPAP tests
76	WP 5.3.2 Group 2 MS NPAP tests
77	WP 5.3.3 Group 3 MS NPAP tests
78	WP 5.4: Nationally developed IPAP tests



ID	Task Name
79	**WP 5.5 EESSI Trials**
80	WP 5.5.1 Migration of CLD content to Directory
81	WP 5.5.2 Public Directory data loading
82	WP 5.5.3 Population of DR
83	WP 5.5.4 Group 1 MS trials
84	Approval Group 1 MS trials
85	WP 5.5.5 Group 2 MS trials
86	WP 5.5.6 Group 3 MS trials
87	End of EESSI Trials
88	Approval of EESSI Trials, start of full-scale productic
89	**WP 6 Operations and maintenance**
90	WP 6.1 Help Desk
91	**WP 6.2 Information processing**
92	WP 6.2.1 Directory
93	WP 6.2.2 Document repository
94	**WP 6.3 Computer Operations**
95	WP 6.3.1 Directory & Document Repository
96	WP 6.3.2 Central Message Replay
97	WP 6.4 Specifications maintenance
98	WP 6.5 Applications maintenance

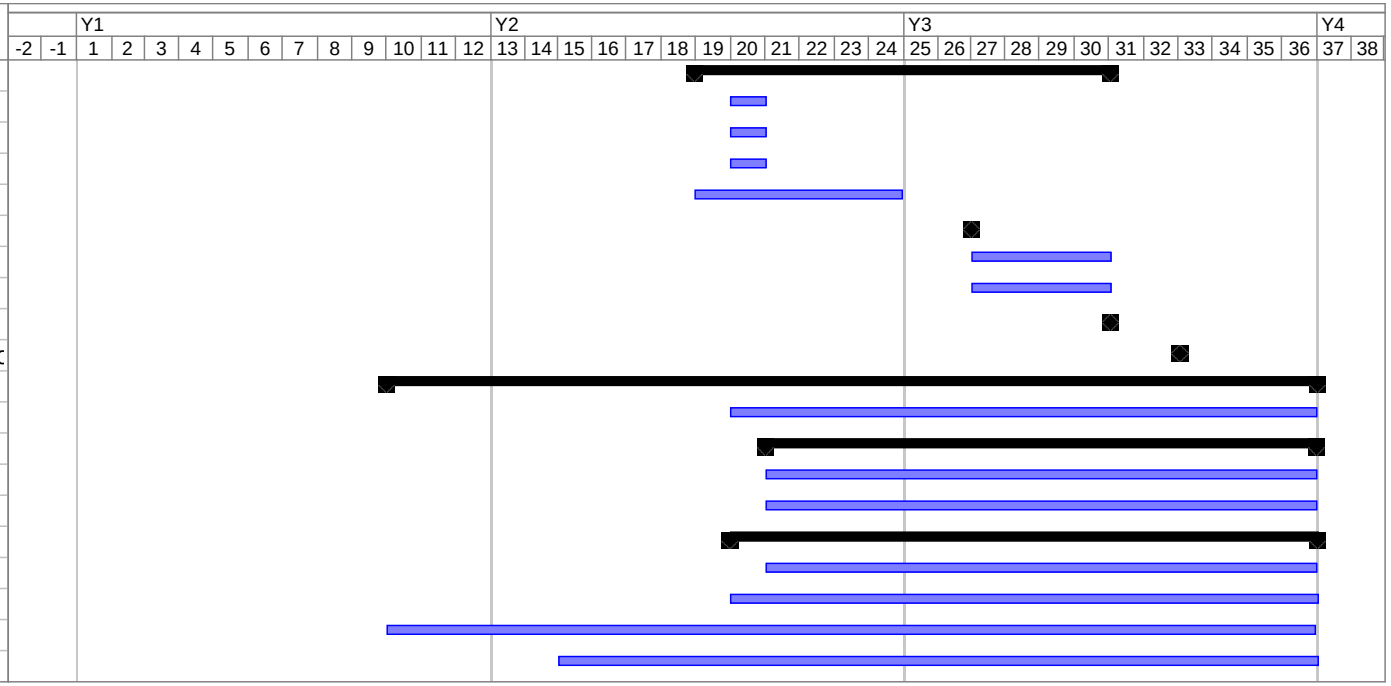


Figure 15: Gantt chart

Table 7 gives the schedule of the work-packages/tasks.
Table 7: Work-package/task schedule

ID in Gantt	Work-package/task	Start month	End month	Duration (months)
1	WP 0 Project Management	1	36	36
2	WP 0.1 Production and maintenance of PQP	1	36	36
3	WP 0.2 Quality Assurance and Control	1	36	36
4	WP 0.3 Risk Management	1	36	36
5	WP 0.4 Coordination	1	36	36
6	WP 0.5 Reporting	1	36	36
7	WP 0.6 Planning	1	36	36
8	WP 1 Set up and Maintenance of Resources	1	15	15
9	WP 1.1 Office infrastructure	1	2	2
10	WP 1.1.1 - European Commission	1	2	2
11	WP 1.1.2 - Member States	1	2	2
12	WP 1.1.3 - Contractor	1	2	2
13	WP 1.2 IT infrastructure	1	15	15
14	WP 1.2.1 - European Commission	10	13	4
15	WP 1.2.2 - Member States	10	15	6
16	WP 1.2.3 - Contractor	1	2	2
17	WP 1.3 Telecommunications	1	15	15
18	WP 1.3.1 - European Commission	10	13	4
19	WP 1.3.2 - Member States	10	15	6
20	WP 1.3.3. - Contractor	1	2	2
21	WP 2 Support via Training, Workshops and Missions	10	30	21
22	WP.3 Specifications	1	9	9
23	WP 3.1 Requirements Specifications	1	4	4
26	WP 3.2 SED development	2	6	5
28	WP 3.3 Functional specifications	4	7	4
30	WP 3.4 NPAP Functional Specifications	1	7	7
31	WP 4 Development	8	20	13
32	WP 4.1 Construction of programmes	8	12	5
33	WP 4.1.1 Document repository	8	10	3
34	WP 4.1.2 Testing Applications	8	11	4
35	WP 4.1.3 Directory	8	12	5
36	WP 4.1.4 Central Message Relay	8	12	5
37	WP 4.1.5 Reference Implementation	8	12	5
38	WP 4.2 Unit tests	11	13	3
39	WP 4.2.1 Document repository	11	11	1

40	WP 4.2.2 Testing Applications	12	12	1
41	WP 4.2.3 Directory	13	13	1
42	WP 4.2.4 Central Message Relay	13	13	1
43	WP 4.2.5 Reference Implementation	13	13	1
44	WP 4.3 Documentation	10	12	3
45	WP 4.3 .1 Document repository, testing applications	10	12	3
46	WP 4.3.2 Directory, CMR, RI	10	12	3
47	WP 4.4 Release packaging and installation	13	14	2
48	WP 4.4.1 Testing Applications	13	13	1
49	WP 4.4.2 Directory	14	14	1
50	WP 4.4.3 Reference Implementation	14	14	1
52	WP 4.5 Remote support to MS	10	20	11
53	WP 4.6 Development of NPAP by MS	8	18	11
54	WP 4.6.1 Group 1 MS NPAP development	8	13	6
55	WP 4.6.2 Group 2 MS NPAP development	8	18	11
56	WP 4.6.3 Group 3 MS NPAP development	8	18	11
57	WP 4.7 Development of IPAP by Group 3 MS	10	20	11
58	WP 5 Tests	12	32	21
59	WP 5.1 FAT	12	15	4
60	WP 5.1.1 Document repository FAT	12	12	1
61	WP 5.1.2 Testing applications FAT	14	14	1
62	WP 5.1.3 Directory FAT	15	15	1
63	WP 5.1.4 Central Message Relay FAT	14	14	1
64	WP 5.1.5 Reference Implementation FAT	15	15	1
66	WP 5.2 SAT	13	19	7
67	WP 5.2.1 Document repository SAT	13	14	2
68	WP 5.2.2 Testing applications SAT	15	16	2
69	WP 5.2.3 Directory SAT	16	17	2
71	WP 5.2.4 Central Message Relay SAT	15	16	2
72	WP 5.2.5 Reference Implementation SAT	15	16	2
74	WP 5.3: NPAP Tests	14	24	11
75	WP 5.3.1 Group 1 MS NPAP tests	14	16	3
76	WP 5.3.2 Group 2 MS NPAP tests	19	24	6
77	WP 5.3.3 Group 3 MS NPAP tests	19	24	6
78	WP 5.4: Nationally developed IPAP tests	21	26	6
79	WP 5.5 EESSI Trials	19	30	12
80	WP 5.5.1 Migration of CLD content to Directory	20	20	1
81	WP 5.5.2 Public Directory data loading	20	20	1
82	WP 5.5.3 Population of DR	20	20	1
83	WP 5.5.4 Group 1 MS trials	19	24	6

85	WP 5.5.5 Group 2 MS trials	27	30	4
86	WP 5.5.6 Group 3 MS trials	27	30	4
89	WP 6 Operations and maintenance	10	36	27
90	WP 6.1 Help Desk	20	36	17
91	WP 6.2 Information processing	21	36	16
92	WP 6.2.1 Directory	21	36	16
93	WP 6.2.2 Document repository	21	36	16
94	WP 6.3 Computer Operations	20	36	17
95	WP 6.3.1 Directory & Document Repository	21	36	16
96	WP 6.3.2 Central Message Replay	20	36	17
97	WP 6.4 Specifications maintenance	10	36	27
98	WP 6.5 Applications maintenance	15	36	22

Table 8 lists the project milestones. For milestones associated with an approval the body providing it will be the Administrative or the Technical Commission.

Table 8: Milestones

No	ID in Gantt	Milestones	Time (end of project month)
1	24	Approval of Requirements Specifications	6
2	27	Approval of SEDs	8
3	29	Approval of Functional Specifications	9
4	51	End of CDA development	14
5	65	End of FAT	15
6	73	Approval of CDA SAT	18
7	70	Approval for deployment of Directory & DR	19
8	84	Approval Group 1 MS trials	26
9	87	End of EESSI Trials	30
10	88	Approval of EESSI Trials, start of full-scale production	32

Several work-packages/tasks cannot start prior to the completion of another work-package/task. Table 9 gives the predecessor dependencies.

Table 9: Predecessor dependencies of work-packages and tasks

ID in Gantt	WP/Task	Predecessor WP/Task
14	WP 1.2.1 - European Commission	Approval of Functional Specifications
15	WP 1.2.2 - Member States	Approval of Functional Specifications
18	WP 1.3.1 - European Commission	Approval of Functional Specifications
19	WP 1.3.2 - Member States	Approval of Functional Specifications
26	WP 3.2 SED development	Full documentation of business flows and data
28	WP 3.3 Functional specifications	No earlier than one month from the completion of WP 3.1
32	WP 4.1 Construction of programmes	Completion of WP 3.3
33	WP 4.1.1 Document repository	Completion of WP 3.3
34	WP 4.1.2 Testing Applications	Completion of WP 3.3
35	WP 4.1.3 Directory	Completion of WP 3.3
36	WP 4.1.4 Central Message Relay	Completion of WP 3.3
37	WP 4.1.5 Reference Implementation	Completion of WP 3.3
39	WP 4.2.1 Document repository	Completion of WP 4.1.1
40	WP 4.2.2 Testing Applications	Completion of WP 4.1.2
41	WP 4.2.3 Directory	Completion of WP 4.1.3
42	WP 4.2.4 Central Message Relay	Completion of WP 4.1.4
43	WP 4.2.5 Reference Implementation	Completion of WP 4.1.5
45	WP 4.3 .1 Document repository, testing applications	Approval of Functional Specifications
46	WP 4.3.2 Directory, CMR, RI	Approval of Functional Specifications
48	WP 4.4.1 Testing Applications	Completion of WP 4.2.2
49	WP 4.4.2 Directory	Completion of WP 4.2.3
50	WP 4.4.3 Reference Implementation	Completion of WP 4.2.5
52	WP 4.5 Remote support to MS	Approval of Functional Specifications
54	WP 4.6.1 Group 1 MS NPAP development	Completion of WP 3.4
55	WP 4.6.2 Group 2 MS NPAP development	Completion of WP 3.4
56	WP 4.6.3 Group 3 MS NPAP development	Completion of WP 3.4
57	WP 4.7 Development of IPAP by Group 3 MS	Approval of Functional Specifications
60	WP 5.1.1 Document repository FAT	Completion of WP 4.2.1
61	WP 5.1.2 Testing applications FAT	Completion of WP 4.4.1
62	WP 5.1.3 Directory FAT	Completion of WP 4.4.2
63	WP 5.1.4 Central Message Relay FAT	Completion of WP 4.2.4
64	WP 5.1.5 Reference Implementation FAT	Completion of WP 4.4.3
67	WP 5.2.1 Document repository SAT	Completion of WP 5.1.1
68	WP 5.2.2 Testing applications SAT	Completion of WP 5.1.2
69	WP 5.2.3 Directory SAT	Completion of WP 5.1.3

71	WP 5.2.4 Central Message Relay SAT	Completion of WP 5.1.4
72	WP 5.2.5 Reference Implementation SAT	Completion of WP 5.1.5
75	WP 5.3.1 Group 1 MS NPAP tests	Completion of WP 4.6.1
76	WP 5.3.2 Group 2 MS NPAP tests	Completion of WP 4.6.2
77	WP 5.3.3 Group 3 MS NPAP tests	Completion of WP 4.6.3
78	WP 5.4: Nationally developed IPAP tests	Completion of WP 4.7 and WP 5.2.2
80	WP 5.5.1 Migration of CLD content to Directory	Approval for deployment of Directory & DR
81	WP 5.5.2 Public Directory data loading	Approval for deployment of Directory & DR
82	WP 5.5.3 Population of DR	Approval for deployment of Directory & DR
83	WP 5.5.4 Group 1 MS trials	Approval of CDA SAT and completion of WP 5.3.1
85	WP 5.5.5 Group 2 MS trials	Completion of WP 5.3.2 and Approval of Group1 MS trials
86	WP 5.5.6 Group 3 MS trials	Completion of WP 5.3.3, WP 5.4 and Approval of Group 1 MS trials
90	WP 6.1 Help Desk	Approval for deployment of Directory & DR
91	WP 6.2 Information processing	Approval for deployment of Directory & DR
92	WP 6.2.1 Directory	Completion of WP 5.5.1
93	WP 6.2.2 Document repository	Completion of WP 5.5.3
94	WP 6.3 Computer Operations	Approval for deployment of Directory & DR
95	WP 6.3.1 Directory & Document Repository	Completion of WP 5.5.1
96	WP 6.3.2 Central Message Replay	Approval of CDA SAT
97	WP 6.4 Specifications maintenance	Approval of Functional Specifications
98	WP 6.5 Applications maintenance	End of CDA development

Table 10 gives the Contractor's deliverables and their due dates.

Table 10: Contractor's deliverables

ID	Title	Due date (end of month)
DLV-1	Project Quality Plan	1
DLV-2	Monthly Progress Report - MPR, Minutes of meetings	Monthly
DLV-3	Requirements Specifications Document	4
DLV-4	EESSI Functional Specifications	7
DLV-5	Manuals of Document Repository and Testing Applications	12
DLV-6	Manuals of Directory, CMR and RI	12
DLV-7	Testing Applications installation package	13
DLV-8	Directory installation package	14
DLV-9	Reference Implementation installation package	14
DLV-10	Document Repository having passed FAT	12
DLV-11	Testing Applications having passed FAT	14
DLV-12	Directory having passed FAT	15
DLV-13	Central Message Replay having passed FAT	14
DLV-14	Reference Implementation having passed FAT	15
DLV-15	Document Repository having passed SAT	14
DLV-16	Testing Applications having passed SAT	16
DLV-17	Directory having passed SAT	17
DLV-18	Central Message Replay having passed SAT	16
DLV-19	Reference Implementation having passed SAT	16
DLV-21	Help Desk reports	Monthly
DLV-22	Updated Functional Specifications	As needed
DLV-23	Updated Centrally Developed Applications-CDA	As needed

Annex II: List of Functional Specifications

The functional specifications were classified as Level 1 and Level 2 ones. The former stem directly from the user requirements, as expressed by the Member States. The latter involve either policy decision (to be taken by the Technical or the Administrative Commission) or have been included by Sword Technologies for the purposes of having a complete set of functional specifications. By the end of June 2007 and the Administrative and Technical Commissions have approved all Level 2 specifications.

Table 11: List of Level 1 Functional Specifications

ID	Functional specification
L1:FS-1	The EESSI directory shall be hosted by the coordination node
L1:FS-2	Any Competent Institution participating in whichever way in the EESSI information exchange shall be listed in the Directory. It is not restricted to electronic exchanges; even Competent Institutions that exchange information with their access points in non-electronic form shall have entries into the Directory
L1 FS-3	Access points shall be listed into the Directory
L1:FS-8	The Directory shall store full contact details of the Competent Institutions and access points (e.g. official postal address, telephone, telefax etc.).
L1:FS-9	At the technical and implementation levels, the Directory shall be the single and authoritative repository for: (a) the addressing scheme, addresses and routing information, (b) how services provided by access points and the coordination node are accessed, (c) digital certificates of the EESSI international domain
L1:FS-19	The Directory shall keep records for Competent Institutions for several years. It shall provide facilities to be able to go back in time and inspect the entries for a Competent Institution.
L1:FS-22	A special application shall be developed for searching and viewing directory entries
L1:FS-26	The preferred encoding of SED is XML
L1:FS-27	Data elements in the XML shall be standardized.
L1:FS-28	Currently existing non-XML encodings of SED (e.g. EDIFACT, MTF, MS-Excel) shall be valid formats for the exchange of SED.
L1:FS-29	Non-XML encodings of SED will be phased out. The timing of the phasing out shall be determined by the Administrative and Technical Commissions.
L1:FS-30	Structured data (e.g. the fields of the present E paper forms) shall be encoded as XML data elements. Non-structured data (e.g. images accompanying a medical report) shall be non-XML electronic files attached to the XML-encoded documents.
L1:FS-31	EESSI will provide facilities with which Competent Institutions will be able to exchange unstructured information, including the exchange of text and binary files, on an ad-hoc basis.
L1:FS-32	Access points shall timely (I) route messages to Competent Institutions and (ii) timely process outbound messages and deliver them to counterparty access points
L1:FS-33	When necessary and for the purposes of routing Seeds to Competent Institutions,

	access points may inspect parts of a SED; such human intervention shall be timely completed
L1:FS-34	For the national data traffic, access points shall implement security measures complying with the national legislation for the protection of the SED, as well as with the European Data Protection Directive
L1:FS-35	Message headers submitted by Competent Institutions shall be checked and validated. Only when all relevant checks and validations have been successfully passed the corresponding SED will be transported to the counterparty access points
L1:FS-36	Access points shall keep full records on the exchange of social security documents (e.g. SED, paper forms, and other electronic files) with the Competent Institutions they serve. On the basis of such records, they shall also produce statistical reports for the exchange of SEDs.
L1:FS-38	When necessary, access points shall provide facilities for bidirectional conversions between: (a) XML to EDIFACT, (b) XML to MTF, (c) XML to proprietary formats (e.g. XML to MS-Excel), (d) XML to human-oriented document formats such as HTML, MS-Word, PDF, (e) XML to XML, in transforming between different versions of an XML
L1:FS-40	Transliteration of non-Latin-1 characters to the Latin-1 character set shall be provided. It will be based on a unique, standard mapping of characters.
L1:FS-43	The addressing scheme shall have no dependencies on the message payload.
L1:FS-44	The addressing scheme shall define how the message is routed in the EESSI international domain (i.e. whether it will be routed through the coordination node)
L1:FS-46	The EESSI Messaging Service-EMS shall provide facilities for the exchange of messages within a single session in a query and response paradigm.
L1:FS-48	Message headers shall contain all the necessary data for the further processing, routing and delivery of messages to their recipient.
L1:FS-49	Message headers shall be processed in a standardised way
L1:FS-50	EMS shall be able to transport any type of files. All information specifying addressing, routing and processing of files shall be contained in the message header.
L1:FS-52	EMS shall predominately transport messages in a point-to-point manner
L1:FS-56	The EMS shall allow the transport of large files. If necessary, large files may be broken in smaller parts and reconstituted at the receiving side.
L1:FS-63	Access points may provide a gateway service for the accessing of national applications.
L1:FS-64	The security provisions and the architecture of the underlying data exchange network shall provide the basis for the trust between access points
L1:FS-65	Access points shall provide encryption facilities at the message exchange level; those may be used in cases higher layers of the access point services have not encrypted the contents of the message.
L1:FS-66	The EMS shall protect integrity of messages in transit, and at rest; it shall provide the means to verity the integrity of a message.

L1:FS-68	Access points shall provide functionality such that they identify and authorise each other. Digital certificates may be used for such purposes
L1:FS-69	Access points shall provide network transport level encryption (e.g., SSL, HTTPS).
L1:FS-70	All information exchange transactions shall be logged for future reference
L1:FS-78	The coordination node shall provide and host document repository functionality for (i) data dictionary, (ii) EESSI XML schemas, (iii) Regulations (iv) reference material assisting Member States in carrying out their tasks. Access to the repository will be performed via a portal interface
L1:FS-79	The coordination node shall be operational 24 hours a day, 365/6 days in a year
L1:FS-80	For the purposes of supporting the current electronic exchanges, the FTP protocol shall be supported at the network level

Table 12: List of Level 2 Functional Specifications

ID	Functional specification
L2:FS-4	Access points: Member States shall fully describe the identities of their access point(s) and submit the information to the coordination node, which shall be responsible for checking the correctness and completeness of information and then inserting it into the Directory.
L2:FS-5	Competent Institutions: Member States first shall be responsible for collecting and checking the necessary information; and second to enter it into the Directory.
L2:FS-6	Access points: The coordination node shall update (or delete where appropriate) the entries. Member States shall provide, when necessary, the pertinent information.
L2:FS-7	Competent Institutions: Member States shall be responsible for updating the information on a timely basis
L2:FS-10	Information about Competent Institutions can be made available (read-only) to the public, in a form suitable for browsing and searching by citizens.
L2:FS-11	If a public view of the Directory is provided, it shall be implemented in a purpose-built application that will draw data from a separate database containing copies of the relevant material listed in specification L1: FS-9, thus completely eliminating risks associated with providing Internet access to the operational EESSI Directory. Information used for the operational and administrative purposes (e.g. whether a particular Competent Institution has an on-line connection with its corresponding access point) shall not be accessible to the public.
L2:FS-12	Competent Institutions shall have a full, view-only access to the Directory entries of their counterparties and access points. Viewing of technical information (e.g. network addresses of access points) may be withheld from them.
L2:FS-13	Access points shall have (i) full, read-only view of the entire Directory contents, (ii) full access rights to all entries concerning the Competent Institutions they are responsible for; may keep local copies of the entire EESSI Directory
L2:FS-14	The coordination node shall have full access to all entices

L2:FS-15	Access points shall be responsible for maintaining the entries of Competent Institutions falling under their responsibilities
L2:FS-16	The coordination node shall be responsible for maintaining the entries of the access points, the EESSI network backbone and the services itself provides
L2:FS-17	Access points shall timely submit to the coordination node any change of the entries falling under their responsibility
L2:FS-18	All modifications to Directory entries (insert, update, delete) shall be logged.
L2:FS-20	Prior to accessing the Directory for the purposes of modifying entries, users shall be identified and authenticated
L2:FS-21	Prior to any attempt for a modification of an entry, the user's authorisation to perform this action will be checked. Any unauthorised action shall be rejected and logged.
L2:FS-23	User-friendly applications shall be developed for: (a) maintenance of entries by access points (e.g. responsibility for entries of a Member State sector), (b) bulk uploading and downloading entries (e.g. Competent Institution directory tree for a Member State)
L2:FS-24	The design of the EESSI Directory should anticipate a growth in the number of roles and attributes for inclusion in the Directory. This may call for a federated or tiered directory design rather than a single, monolithic directory server located in the coordinating node.
L2:FS-25	In case access points maintain local copies of the EESSI directory, one-way replication of directory content between the coordination node; the access point in question shall be automatic in the sense that it shall not require human intervention
L2:FS-37	Access points may provide a notification service to Competent Institutions for incoming SED. Member States may also host a national portal that will enable the exchange of SED at the national level between Competent Institutions and access point(s); it will also provide a dedicated data entry application facilitating the entry of data by social security clerks.
L2:FS-39	To the maximum possible extent, transformations shall be implemented with XSLT
L2:FS-41	A hierarchical addressing scheme shall be implemented, uniquely identifying message originators and recipients
L2:FS-42	The addressing scheme shall have two parts, an international one and a national one. The international one concerns the message transfer between the access points, while the national one the message transfer between the Competent Institution and the access point
L2:FS-45	EMS shall provide functionality for receiving unsolicited messages from another sending EMS site, or by polling a sending EMS site.
L2:FS-47	EMS shall provide status information to the sending side about the successful or otherwise completion of the message transfer.
L2:FS-51	EESSI shall be based on static routing
L2:FS-53	EMS may make available a publish-and-subscribe service for configuration and control information
L2:FS-54	EMS may provide a broadcast service for control or signal messages with a dynamic list

	of recipients.
L2:FS-55	EMS shall reliably deliver messages to the recipient EMS. Messages shall be sent once only and any duplicates shall automatically be removed.
L2:FS-57	The EMS shall provide data for the sequencing of messages by the sending side.
L2:FS-58	EMS shall gracefully handle network failures. It shall automatically resume full operational status when the network is up and running.
L2:FS-59	EMS shall implement a mechanism to alert other sending sides about its ability to process more incoming messages.
L2:FS-60	Access points may provide read-only access to local copies of the master Directory.
L2:FS-61	Metrics will be collected in real-time (performance counters) for a variety of parameters (e.g. data transfer rate, message transfer rate, bandwidth utilisation etc.), such that the status of the services be quantitatively established.
L2:FS-62	All activities relating to the transport of SED outside the boundary of the access point and any message processing within the access point (e.g. conversion) shall be logged. It includes keeping logs of (i) SED submitted from Competent Institutions for transmission to counterparty Member States and (ii) SED forwarded to Competent Institutions.
L2:FS-67	The EMS may provide functionality to provide evidence for the non-repudiation of messages.
L2:FS-71	Access points shall be able to complete transactions for (i) entitlement to health care (ii) posting of workers in an on-line basis. This specification will not be applicable if the underlying national IT systems cannot process the corresponding requests in an on-line basis.
L2:FS-72	The coordination node may provide the same messaging services as those provided by the access points.
L2:FS-73	The coordination node will log activities in an manner enabling an audit trail
L2:FS-74	The coordination node will collect metrics in real-time (performance counters) for a variety of parameters (e.g. data transfer rate, message transfer rate, bandwidth utilisation etc.), such that the status of the services be quantitatively established.
L2:FS-75	If the coordination node provides messaging services, then those shall be logged, both for incoming and outgoing messages.
L2:FS-76	The coordinating node may provide getaway services to other access points.
L2:FS-77	The coordinating node shall implement the security functional specifications laid down for access points

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