



MS2.1 Updated requirements analysis report

Christos Kanellopoulos (GÉANT)

Licia Florio (GÉANT)

Stefan Liström (SRC)

Leif Johansson (SRC)

Ferran Abarca Peris (UB)

23/12/2022



Table of Contents

1. Introduction	2
1.1. EDSSI Usability Report for eArchive and eSignature: key findings	2
eArchiving	3
eSignature	3
2. Analysis of the requirements under EDSSI L2	4
2.1 eSignature service	4
2.2 eArchive service	5
3. Next Steps	6

1. Introduction

The EDSSI L2 project builds on the results of its predecessor the EDSSI project which ended in August 2022. The EDSSI project focused on consolidating, expanding and further digitalising the Erasmus+ infrastructure and on enabling federated access to Erasmus+ core services as well as on progressively ensuring a seamless integration of eIDAS authentication and identification, eduGAIN and ESI.

One of the outcomes of EDSSI was the report on the [“Usability Report for other CEF Building Blocks in relation to the European Digital Student Service infrastructure”](#). The report, in short called the CEF Building Blocks Report, went through multiple iterations and the final version of the report was published at the end of the EDSSI project. The final version was the result of a collaboration between the EDSSI and EDSSI L2 project.

The CEF Building Blocks are a series of initiatives promoted, adopted, or developed by the European Commission’s Connecting Europe Facilities (CEF) programme to obtain a set of components to offer basic capabilities in many fields of the digital activity that can be reused by any European public entity to facilitate the delivery of digital services across borders and sectors (including private sector entities) of the digital market scene. These Building Blocks are reusable specifications, software and services that can potentially form part of a wide variety of IT systems in different policy domains of the EU.

The CEF Building Blocks Report provides a comprehensive analysis of the mission and functionalities of three CEF Building Blocks, eSignature, eDelivery and eArchiving and an overall analysis of the potential they can offer for the future evolution of the European Digital Student Service Infrastructure.

The EDSSI L2 project further analysed the findings of the CEF Building Blocks Report, in light of the work planned under Activity 2 “Deploying CEF building blocks and e-Services”.

The analysis is described in this report; the focus is on the requirements for solutions that build on the eSignature and eArchive CEF building blocks; a dedicated report on the eTranslation CEF building block will be produced in 2023.

This document is purposely kept rather short, as it is intended to be an extension of the CEF Building Blocks Report which is very exhaustive. For more details on CEF Building Blocks it suggested to refer to the EDSSI Report.

1.1. EDSSI Usability Report for eArchive and eSignature: key findings

The CEF Building Blocks help promote the adoption of the same open standards and technical specifications across different sectors of the EU, for basic and common functionalities to many digital services, thus helping achieve the effective interoperability across borders and sectors. By using one or more of the building blocks, digital services can be developed faster, in a simpler and more cost-efficient way, using existing, proven and “policies’ compliant” technologies, instead of requesting each organization to re-develop those services on their own.

This chapter summarises the main findings about the eArchive and eSignature building blocks that were presented in the CEF Building Blocks Report and how these blocks are used in the EDSSI L2 project to prototype services that can be used in the context of Erasmus+.

eArchiving

The goal of eArchiving is to keep large amounts of digital documents accessible and reusable for long periods of time, regardless of the system used to store it, and facilitating the migration to future technologies.

The EDSSI report noted that the need for document management within the EDSSI project was limited in both data volume and lifespan; this need remains the same within the EDSSI L2 project. Participating HEIs in general have their own internal processes to enable eArchiving; most of these processes are usually managed within the HEI workflows and policies; in some cases there are national initiatives available to HEI for the longer term archiving.

EDSSI and EDSSI L2 projects have not identified additional long-term needs related to that require additional provisions to what is already available within the universities. HEIs could use eArchiving built on generic Member States centred deployments, but this would be outside the scope of EDSSI.

The only convergence would be for EDSSI to have interfaces to generate relevant data in a format that is compliant with the eArchive specifications so that the Erasmus+ process can be integrated with general-purpose eArchiving deployments either within the universities or nationally.

The CEF building block report noted that:

- In the EDSSI/EDSSI L2 priority was given to the integration of eduGAIN, eIDAS, roll out of ESI and support for not federated institutions. As such no specific need for eArchiving was identified to pilot a centralised solution
- national/regional education organisations are best fit to understand the archiving needs of the participants which can easily accommodate Erasmus+ requirements
- the institutions adapt to and/or deploy the eArchiving infrastructure solutions, in order to maximise preservation, migration and interoperability capabilities of Erasmus+ documentation among others,
- *EDSSI L2 could use the OLA (online learning agreement) as a long term preservation use case and explore how to use the eArchive CEF block to deliver a proof-of-concept service to be applied to the eArchiving of transcript of records and how to make that available in open source to the HE community to deploy it locally.*

eSignature

The CEF eSignature building block provides the tools to enable the electronic signature for any digital document across Europe; it also allows for the proper verification of the signature and to validate the trust chain, in line with the [eIDAS Regulation \(910/2014\)](#) for e-signatures (meant for citizens), e-seals (the electronic signature for a legal entity, that is a business or an organisation) and related services offered by Trust Service Providers.

The EDSSI report noted that the Erasmus+ infrastructure considered under EDSSI could benefit from trusted and legally signed documents. The EDSSI report suggested investigating the following aspects:

- needs in EDSSI to issue legally valid signatures, that is qualified signatures (assuming that universities being public bodies would all comply with the eIDAS regulation);
- legal framework that defines liability and the legal actions of stakeholders (students, institutions, the EC); in theory as all ECHE holders are already vetted to be able to participate in Erasmus+ and given the differences among the various country, a softer approach could be to start using some form of signatures that could be tested on the Erasmus+ infrastructure.

- Assessment of costs/benefits for using eIDAS eSignature building blocks, given that the available tools in the building block are not many and they are pretty basic, so any integration would require significant effort.
- The Erasmus+ activities including EDSSI L2 should focus on eSignature implementations where the user flow can be integrated into the business-tools in such a way that the user does not have to download and install additional software and so that the resulting solution is secure enough but still reasonable simple to implement.

2. Analysis of the requirements under EDSSI L2

This section describes the requirements for the deployment of new services based on the eSignature and eArchive CEF building blocks.

2.1 eSignature service

We have identified 3 major requirements on a EDSSI eSignature service:

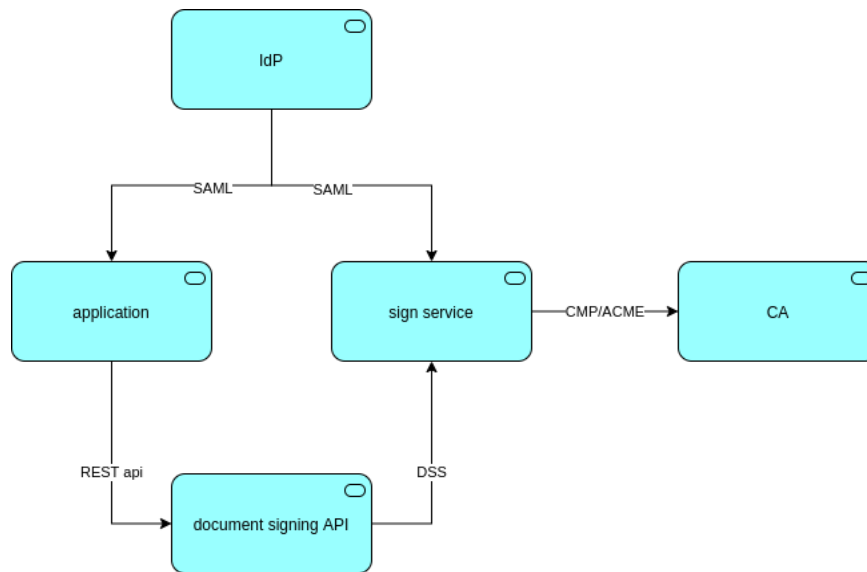
- Ease of deployment
- Compatibility with eIDAS
- Clear path towards the EU digital wallet

These are high-level requirements and are detailed below:

1. **Ease of deployment.** The first requirement on an eSignature service is that it is easy to make available to users. This probably means building a service which is fully web-based and does not require the deployment of separate clients (at this stage anything requiring dedicated signature clients or security token would not be successful), complex enrollment process etc. Additionally the service should (for the same reasons) rely on existing authentication mechanisms such as eIDAS eID and eduGAIN.
2. **Compatibility with eIDAS.** The service must generate signatures compatible with formats specified for XML, PDF and JSON signatures supported by the eIDAS reference architecture. The service should also generate and validate both Simple, Advanced and Qualified signatures.
3. **Clear path towards the EU digital wallet.** The service should have a strategic path that leads towards compatibility and eventual integration with the EU digital wallet both as a way to manage identity and signatures. Deployment of client software for digital signatures today would be a waste of time and effort when dedicated funding has been made available to create an EU digital wallet. Instead the service should be created in such a way that the wallet can be connected to and eventually assume some of the functionality of the eSignature service.

The Swedish Research Council has started to work on the deployment of eSignature service based on the [eduSign service](#) that will be tested with the OLA and later on the housing application pending its availability that is delayed.

e-signature architecture



The e-signature architecture includes:

- An Identity Provider - in EDSSI L2 this role will be fulfilled by the MyAcademicID proxy
- An application that relies on document signatures - eg the OLA portal
- A document signing API that is responsible for creating a DSS signature request
- Signing service which creates and applies a signature
- Certification Authority (CA) that issues certificates for the signature

2.2 eArchive service

Following EDSSI conclusions, the EDSSI L2 project proposed to move forward exploring the tools available for long term preservation of data, documents and records and will be running a pilot test of the software provided by CEF eArchiving itself (RODA).

For that purpose, the EDSSI L2 project has identified a suitable use case for testing the eArchive software: OLA (Online Learning Agreement). This document seems to be a candidate to test eArchive building block specifications and become an archive record and thus, use it for long time preservation purposes. Also, OLA will be digitally signed using the e-signature solution defined in section 2.1

We have identified 1 major requirement on a EDSSI eArchive Building Block service:

- Plug and play

This is the high-level requirement and is detailed below:

1. **Plug and play.** The main requirement on an eArchive service is that it should be easy to install and use.

For test purposes we will be using RODA¹, an open-source digital repository designed for preservation and the tool the members of the eARK consortium² pointed us in order to check eArchive building block specifications applied on a piece of software.

In order to check its “plug and play” functionalities we will be installing and running RODA software at the University of Barcelona in a Microsoft Azure Cloud in order to deploy an image in the Azure Container and carry out the tests.

RODA is based on ISO 14721:2012 OAIS model (Open Archival Information System) and, among other specifications and functionalities, includes the functionalities for generating SIP (submissions information packages) AIP (Archival information packages) and DIP (Dissemination information packages). According to the information gathered so far, RODA includes those functions and our aim is to test them in a real environment.

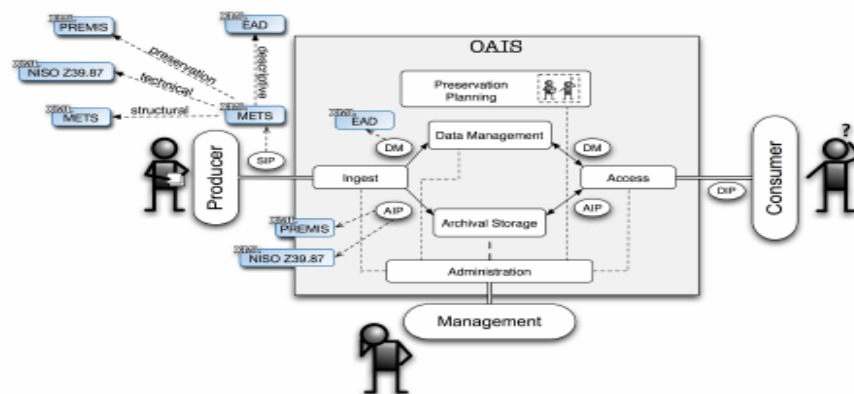


Figure 01. Roda general architecture³

The outcome of EDSSI L2 activity 2.3 consists of a final report containing two different sections of information, one technical and another one functional.

The technical report section will inform about the actual requirements to run an instance of RODA in house. The functional report section will inform about its usability for end users and conclusions will follow considering further suggestions in order to implement the software provided by CEF eArchiving on Erasmus Without Papers project.

3. Next Steps

Work has progressed on the development of pilot services built on the eSignature and eArchive building blocks. The eSignature service, under the lead of the Swedish Research Council following the test with the OLA service, will be upgraded to be operated at European level.

The eArchive service is being developed by the University of Barcelona, as a proof of concept, which will be tested with solutions such as the OLA.

¹ RODA documentation: <https://github.com/keeps/roda>

²eARK consortium: <https://e-ark4all.eu/>

³ RODA and CRiB a service-oriented digital repository: https://www.researchgate.net/publication/228695239_RODA_and_CRiB_a_service-oriented_digital_repository



www.edssi.eu