STUDENT eID FRAMEWORK

Deliverable 1: Report on State-of-the-Art

Report Date: 31st October 2019

European Campus Card Association

vietsch foundation

ECCA Student eID Framework

Acknowledgement

I would like to extend my sincere appreciation to all those that have contributed to the development of this report on Deliverable 1: the current state-of-the-art on Student eID in Higher Education Institutions. I would like to acknowledge the important role of our project management team for their efforts in the review of past, present, and on-going projects that are aligned to the provision of a trusted eID and secure data transfer**.**

I would also like to acknowledge and thank the stakeholders of the various projects for their contribution and willingness to share their views and information and I look forward to their continued engagement with our efforts to determine the need and requirements for a European Student eID.

In conclusion, I thank the Vietsch Foundation for the funding support and assistance with this project.

Sinéad Nealon
Executive Director

Contents

1. Introduction

1.1 ECCA PROJECT OVERVIEW

The European Campus Card Association (ECCA)[1] is actively progressing with a "Consultation Process on the Development of a Proposal for a Trusted Student Identification Framework" (Student eID Project) that will use internet technologies to support the provision of secure identification and authentication of students on a cross-border basis in Europe. Since established in 2002, the main policies and strategies of ECCA are dedicated to promoting research for the development and implementation of student electronic identification (eID) credentials in Higher Education Institutions (HEI) that supports student mobility and the provision of trusted identification and secure access to services across European countries.

Achieving cross-border student mobility will enable students to complete transactions online using internet technologies. This requires secure identification and authentication. The absence of trusted interoperable and an easy-to-use form of eID and authentication can pose obstacles to students completing these transactions securely and efficiently between the relevant HEI.

The main goal of this project is to obtain a consensus between European HEIs, Service Providers and the relevant stakeholders on the necessary structure, technology and requirements that will facilitate the implementation of a common student eID throughout Europe.

This is an essential first step in the process of delivering the student eID. The project will deliver an impartial across-the-board consultation process throughout Europe, which will culminate with the dissemination of recommendations for a trusted student eID.

The main objectives of this project are:

(i) Engage in a process of dialogue with the relevant stakeholders to seek out their views and opinions on the needs and requirements of a trusted Student eID credential (eIDAS compliant) that supports cross-border services;

(ii) Establish recommendations on innovation in internet technologies for the development of a proposal for a trusted student eID framework that will support the provision of secure identification and authentication on a cross-border basis in Europe;

(iii) Disseminate and promote the recommendations to the relevant stakeholders on the future requirements of eID technologies in-line with EU policy.

---

[1] http://www.ecca.eu/

1.2. PROJECT DELIVERABLES

The project outcomes will result in the following four deliverables:

Deliverable 1: Researching the state-of-the-art

Deliverable 2: Direct market research through an online survey

Deliverable 3: Regional workshops

Deliverable 4: Final Project Report

Deliverable 5: Dissemination of Results

> **Deliverable 1: the current state-of-the-art of Student eID in HEIs, which includes a review of past, present, and on-going projects that are aligned to the provision of a trusted eID and secure data transfer.**

1.3 STUDENT eID OVERVIEW

The traditional student identification (ID) in HEIs across Europe generally consists of bespoke, stand-alone solutions that do not conform to any common standard. These solutions operate in isolation and therefore are incapable of facilitating mobility, interoperability or student authentication between HEIs. The current process of student identification is generally based on the student's unique ID number; however, the format and process used to issue the student ID number varies from country to country, and in many cases, this format varies within a country. Furthermore, in some countries, there is no formal process in place to issue student ID numbers. In recent years, through innovation in technology and the use of mobile devices, the requirements for secure electronic identification is now becoming an important mechanism in the evolution of student life on campus. However, the customary core function of the student ID usually remains restricted to facilitating local access to services for students, academics and visitors. This has resulted in a multiplicity of student identities in HEIs, which are required for the diverse range of academic and non-academic services both on and off campus. To overcome this problem, it is essential that there is effective collaboration with past and on-going initiatives to develop and integrate an infrastructure that supports the concept of a European Student eID for HEIs.

The European Commission, under the Connecting Europe Facility (CEF) in the field of trans-European Telecommunication network has prioritised its support for initiatives on cross-border student mobility. This support is focused on solutions that facilitate cross-border online access to academic and non-academic e-services for students, together with the trusted electronic transfer of student information between students and the relevant HEI.

1.4 COMPLIANCE WITH EU REGULATIONS ON eID

(i)   EU Policy on Trust Services and Electronic Identification (eID)

One of the primary aims of this project is to assist in the process of generating knowledge and awareness of the benefits derived from a student eID credential, compliant to eIDAS, which supports the statutory activities of ECCA and EU policy. In particular, _Regulation (EU) N°910/2014 on electronic identification and trust services for electronic transactions in the internal market_[2] (eIDAS Regulation) is to provide a predictable regulatory environment to enable secure and seamless electronic interactions between businesses, citizens and public authorities. The implementation of eIDAS provides the right foundations and a predictable legal framework for HEIs and students to have secure access to services and perform transactions on a cross border basis.

The eIDAS Regulation:

- ensures that citizens and businesses can use their own national electronic identification schemes (eIDs) to access public services in EU where eID is available

- creates a European internal market for electronic Trust Services (eTS) - namely electronic signatures, electronic seals, time stamp, electronic delivery service and website authentication - by ensuring that they will work across borders and have the same legal status as traditional paper-based processes. Only by providing certainty on the legal validity of all these services, businesses and citizens will use the digital interactions as their natural way of interaction.

(ii)   Digital Agenda for Europe

The Digital Agenda for Europe[3] (DAE) is one of seven flagship initiatives under the Europe 2020 strategy. It focuses on modern technologies and online services that will allow Europe to create jobs and promote economic prosperity. It aims to improve the daily lives of EU citizens and businesses in a variety of ways. The overall aim of the DAE is "_to deliver sustainable economic and social benefits from a digital single market based on fast and ultrafast internet and interoperable applications_".

In January 2018, the EU adopted the Digital Education Action Plan[4] with the goal of making better use of digital technology for teaching and learning. The plan aims to:

- Enable students to identify in a trusted manner (once-only principle);

- Digitally connect HEI information systems.

---

[2] https://ec.europa.eu/digital-single-market/en/trust-services-and-eid

[3] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010DC0245R(01)&from=EN

[4] https://ec.europa.eu/education/education-in-the-eu/digital-education-action-plan_en

- Facilitate secure exchange and verification of student data / academic records.

- Streamline administrative procedures.

- Enable international students to access campus services.

(iii)   Once only principle

The once-only principle (OOP) needs to be seen in the context of public sector digitalisation. It means that citizens and businesses provide diverse data only once in contact with public administrations, while public administration bodies take actions to internally share and reuse these data – even across borders – always in respect of data protection regulations and other constraints. When the OOP principle is widely applied, it significantly reduces the administrative burden on citizens. In addition, citizens gain better control over their information when it is provided to public administrations on a once only basis. Moreover, it helps public administrations work faster, more transparently and efficiently. There are two EU projects, SCOOP4C[5] and TOOP[6] that relate to the implementation of the OOP. SCOOP4C ended in April 2019 and its work is now taken over by the TOOP project until March 2020.

(iv)   Data Protection Policy

The EU has implemented a legal framework (REGULATION (EU) 2018/1725[7] OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2018) for the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data. The main aim of the new Regulation is to adapt its rules to comply with General Data Protection Regulation (Regulation (EU) 2016/679), which has been fully applicable since May 2018. Regulation 2018/1725 establishes a coherent framework, while guaranteeing the free flow of personal data within the Union.

---

[5] https://www.scoop4c.eu/

[6] www.toop.eu

[7] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018R1725

2. State-of-the-Art on Student eID

2.1 LIST OF PROJECTS REVIEWED

The following table provides a list of the main projects and reports reviewed as part of this state-of-the-art review.

No.	List of Projects / Reports Reviewed	Project Start/End Date	Funding Programme/EU Contribution	Project Website
1	Feasibility study on cross-border use of eID and authentication services (eIDAS compliant) to support student mobility and access to student services across Europe	Completed April 2018	European Commission €60,000	https://ec.europa.eu/digital-single-market/en/news/study-cross-border-use-eid-and-authentication-services-support-student-mobility-and-access
2	Study on CEF Information Systems Architecture Solution eIDAS+ for banking and education	Completed August 2018	European Commission	https://ec.europa.eu/cefdigital/wiki/pages/viewpage.action?pageId=78551061
3	Transformation of Greek e-Gov Services to eIDAS Cross Border Services/academia services	Completed May 2018	CEF Telecom €459,812	https://ec.europa.eu/inea/en/connecting-europe-facility/cef-telecom/2015-el-ia-0083
4	e-Signature and Erasmus Student eCard in Greece	September 2018 to March 2020	CEF Telecom €270,400	https://ec.europa.eu/inea/en/connecting-europe-facility/cef-telecom/2017-el-ia-0034
5	Erasmus without Paper (EWP1.0 & EWP2.0)	EWP1.0; November 2015 to October 2017 EWP2.0; January 2018 to December 2019	Erasmus+ EWP1.0 €499,982 EWP2.0 €499,613	https://www.erasmuswithoutpaper.eu/

6	EMREX Project	Completed 2017	Erasmus+ €1,425,000	http://www.emrex.eu
7	European Student Card	September 2016 to August 2018	Erasmus+ €292,223	https://www.europeanstudentcard.eu
8	ESMO	April 2018 to June 2019	CEF Telecom €689,209	http://www.esmo-project.eu/
9	SEAL	April 2019 to March 2021	CEF Telecom €1,188,121	https://project-seal.eu/
10	StudIES+	March 2018 to December 2019	CEF Telecom €1,421,253	https://studies-plus.eu/
11	eID4U	February 2018 to April 2019	CEF Telecom €592,205	http://security.polito.it/eid4u/
12	MyAcademicID	January 2019 to June 2020	CEF Telecom €1,039,639	http://www.myacademic-id.eu/
13	Olympus Project	September 2018 to August 2021	Horizon 2020 €2,564,480	https://olympus-project.eu/
14	European Education Connectivity Solution (EECS)	June 2009 to May 2011	FP7 €1,001,087	Final EECS Report Summary – https://cordis.europa.eu/project/rcn/90751/reporting/en

2.2 DESCRIPTION OF PROJECTS

2.2.1 Feasibility study on cross-border use of eID and authentication services (eIDAS compliant) to support student mobility and access to student services across Europe

The European Commission launched a call for tenders for a service contract on this feasibility study in May 2017[8]. The feasibility study was carried out by Atos and Universitat Jaume I, for the European Commission DG Communications Network, Contents & Technology, and was published in April 2018. The contract was for the delivery of a Feasibility study on cross-border use of eID and authentication services (eIDAS compliant) to support student mobility and access to student services in Europe.

The aim of the study was to analyse the cross-border use of Electronic Identification and Authentication Services to support Student Mobility and Access to Student Services in HEIs of the EU, together with identifying the issues preventing the wider adoption of systems that may contribute to facilitate this access.

The study involved key Higher Education stakeholders in the EU and included an online survey to collect the relevant information. This survey was divided into four different segments:

(i)   Introductory questions regarding the relevant Higher Education Institution.

(ii)   Student services offered through a student e-card or other similar electronic identification solutions and the solutions to access them.

(iii)   Barriers to implement online access to student services in an institution.

(iv)   Other (miscellaneous) information.

This report analyses the feasibility of eID and Authentication Services to support Student Mobility and Access to Student Services in Europe. It provides a valuable insight into the current landscape of electronic identification solutions, together with analysing higher education student services in the EU that are accessed through a student e-card or other similar eID solutions. It also assesses the technological solutions and standards that are being used to provide access to those services and presents a cross- border pilot scenario based on eIDAS compliant solutions.

More specifically, the report assesses the opportunities generated by the eIDAS regulation on services offered by HEIs. It also studies possibilities of convergence with already implanted initiatives, such as eduGAIN[9] and other projects dealing with student services and mobility with a focus on identity

---

[8] https://ec.europa.eu/digital-single-market/en/news/feasibility-study-cross-border-use-eid-and-authentication-services-eidas-compliant-support-0

[9] https://edugain.org/

management and academic information exchange. Regarding eIDAS compliance, a two-level approach is considered: on the one hand, the development of an eID system with full technical interoperability with eIDAS (even as Identity Provider), and alternatively, the need of a fully legal-compliant system with the potential to become a notified identity provider.

The report proposes a pilot scenario aimed at filling the gaps detected in identity federation and academic information exchange, based on the background and expertise obtained from the STORK and STORK 2.0 academic pilots[10]. This approach implies building an identity system providing a solution not only to the current needs of the Higher Education sector eID ecosystem, where multiple identities for a single individual exist, with different levels of trust, as well as a system of interconnected federations revolving around eduGAIN, but also taking into account the eID compliance constraints. Therefore, one of the major goals within the pilot scenario is the convergence of eIDAS and eduGAIN. The proposed pilot proposed is a duration of two and a half years and will revolve around the generation of a single European student identity through a European Student Number (ESN), based fully on online and not physical card solutions.

The report conclusions states that the pilot drafted in the report *"is an ambitious project, but with the proper focus on the technical and procedural aspects it will be a successful vehicle to accelerate the adoption of eIDAS compliant eID solutions for cross-border access to student access and maximise its impact, renovating academic services and offering to EU students better, more efficient, friendly and useful services"*.

It states these outcomes from this feasibility study will contribute to the further implementation of the EU Student eCard initiative by the European Commission, DG CONNECT.

2.2.2 Study on CEF Information Systems Architecture Solution eIDAS+ for banking and education

This study[11] was carried out for the European Commission by Everis. The purpose of this study was to analyse using the Connecting Europe Facility (CEF) eID building block in the domains of banking and education and to understand the business and technical requirements of the two pilot domains in terms of granting access to their services, as well as any technical or regulatory constraint. As part of this study, the objective was firstly to develop a flexible and neutral architecture solution for the exchange of

---

[10] https://ec.europa.eu/cefdigital/wiki/display/EIDCOMMUNITY/STORK+2.0+Project

[11] https://ec.europa.eu/cefdigital/wiki/pages/viewpage.action?pageId=78551061

domain attributes through eIDAS on the basis of the requirements identified that could be easily adapted to fit other domains. Secondly, this study identifies the gap between the out-of-the-box eIDAS and the current functioning of electronic identification in the selected domains, advancing recommendations for integration. Thirdly, it makes the proposed solution credible, concrete and appealing to target stakeholders through user stories, and show how it could be potentially re-used and bring value to any business domain. Finally, it presented a high-level roadmap outlining the key steps for a successful implementation of the proposed architecture solution.

This document has shown that both HEIs and financial institutions established in Europe significantly benefit from using the eIDAS network to exchange trusted and secured information about students and customers, and improve some of the services they currently provide. In this document, two services were examined in detail: namely the online student mobility services offered by Universities that participate in the Erasmus+ programme, and the online customer on-boarding of non-nationals by banks. These services were shortlisted due to their importance for the analysed service providers, based on the results of a series of interviews conducted as part of the project's design phase. The minimum dataset provided via the eIDAS network (to-be scenario) provides basic trusted and reliable identification data that allows a HEI and a bank to establish the identity of a student or a customer in a non-ambiguous manner, without any need for further verification. When coupled with the proposed extended solution (to-be+ scenario), which provides a framework for the exchange of sector-specific attributes or data relevant for the domain at stake, this administrative burden can be further reduced. Indeed, the Educational and the Banking domains were analysed pilot sectors where the proposed solution was found to bring value. However, given the domain-agnostic approach of the proposed architecture, it could be applied to additional domains where the exchange of domain-specific attributes can also be of added value. The benefits offered by the solution proposed can be mainly summarised as: higher data accuracy and reliability due to the trusted input system; efficiency gains for the service provider as a result of the removal of the data verification step and enhanced user/customer experience with less or no physical presence required.

2.2.3 Transformation of Greek e-Gov Services to eIDAS Cross Border Services/academia services

The action connected existing Greek public services to the Greek eIDAS node, allowing the access to those services by the citizens from other EU countries. The following groups of e-services were connected:

- Government services for business and citizens (the government portal 'ERMIS', transparency portal 'Di@vgeia', eProcurement portal 'Prometheus', GEMI – General Commercial Registry);

- Healthcare and social security related services (for example social security number electronic registry and national e-prescription system);
- Academia and research services in partner Universities (foreign students enrolling for ERASMUS courses, e-Diploma Supplement Provision Service, Student Information System, academic programs for e-voting, on-line student community).

The connection of the foreign students' enrolment for ERASMUS courses at the University of Piraeus Research Centre (UPRC), as foreseen in the Grant Agreement, was not implemented. The Action's results were tested with the use of the Spanish eID. The access with other EU eID schemes will be possible once the obligations related to eIDAS Regulation become fully applicable.

2.2.4 e-Signature and Erasmus Student eCard in Greece

The Action aims at promoting the uptake and use of eSignature in the Greek Public Administration and the use of cross-border eIDs among ERASMUS students.

It will develop a central service for remote eSignature for the Greek Public Administration to enable the creation of legally binding electronic signatures for the needs of the Greek Public Administration and the cross-border validation of the e-signature. The system will be built on top of 2 components: the existing eIDAS infrastructure and a Qualified Trust Service Provider (QTSP). The remote e-signature solution will be based on eSignature DSI (DSS) and will be deployed in 2 services.

The Action will also connect AcademicID service to the eIDAS node in Greece in order to allow Erasmus exchange students from EU universities outside Greece to use their eID when applying for this service. This will allow the Erasmus exchange students from EU universities to thus gain access to several student discounts and benefits provided by the Greek Universities, the State or even private entities.

2.2.5 Erasmus without Paper (EWP)

The EWP project[12], co-funded by the Erasmus+ Programme of the EU, aims to bring Erasmus administration into the 21st century by going digital. It will create a network that will allow any Erasmus+ HEI, which organizes student exchanges, to be part of an online exchange network. It supports the electronic exchange of student data and information by interlinking the existing Erasmus student information systems in HEIs.

This innovative approach has the potential to link all HEIs, resulting in a reduction of administrative costs, increase efficiency of labour and to create better access to student data across Europe. It can lead

---

[12] https://www.erasmuswithoutpaper.eu/

to the permanent migration from a paper world to an electronic world of student data. Although the majority of HEIs in Europe use software to handle mobility and transfer the locally stored data, however the data is reproduced or printed on paper in order to send it to the partner institution where, because of the format, it needs to be handed manually.

The project partners believe a lot of work in the context of international student mobility can be avoided by using technology. By replacing the huge paper-based workload with an electronic exchange of data, it will allow mobility to be managed in a more efficient way. It is a response to the current needs of a modern information society, and more specifically a large number of potential end-beneficiaries, that includes students, institutional Erasmus coordinators, IRO staff, HEIs, National agencies and the European Commission. In doing so, HEIs will be able to focus on the inherent quality of mobility rather than on coping with a great variety of administrative procedures. For the mobile students themselves, a lot of double administration will be abolished. For potential mobile students an obstacle for going on a transfer programme will be tackled.

A consortium of 11 partners, supported by 11 associate partners, conducted the EWP1.0 project. The consortium comprised of public institutions, HEIs, Organisations, and companies, from eight European countries that constituted an exhaustive representation of the Higher Education sector. The project commenced in November 2015 and concluded in October 2017.

The EWP follow-up project phase (EWP 2.0)[13] commenced in January 2018 and is due to be completed in December 2019. It will build on the achievements of the previous project with some important additional features. The main aim of this project is to move from a proof of concept to a network open for all universities. Therefore, more attention is given to support and universities that do not have IT-solutions. Two thirds of all Erasmus Charter holders have no tool available. They can rely on the Erasmus+ dashboard[14] to exchange data with their partner institutions. The dashboard is bringing together different tools and is linked to the Erasmus+ app[15] that in the future will also facilitate the application process. The Erasmus+ Dashboard will be integrated with other tools in EWP into what will ultimately become the EWP Dashboard.

---

[13] https://www.erasmuswithoutpaper.eu/news/ewp-kicks-2nd-project-phase

[14] https://www.erasmuswithoutpaper.eu/dashboard

[15] https://www.erasmusapp.eu/

2.2.6 EMREX Project

EMREX (*Field trial on the impact of enabling easy mobility on recognition of external studies*) was an Erasmus+ project 2015-2017 funded by the European Commission. Its objective is to increase international student mobility by enabling electronic exchanges of student achievement data between institutions of higher education. By enabling this, the number of credited studies will increase. This project addresses the EU 2020 target that 20% of higher education students should be mobile. The EMREX solution[16] supports student mobility by facilitating the electronic transfer of student records between HEIs in the EU. It will improve the availability, quality and reliability of information about student records. The EMREX solution can be used:

(i)   By mobile students who want a fast, secure and digital transfer of their achievement records from abroad;

(ii)   By students applying for education in other countries;

(iii)   By students who want to share their achievement records with others – future potential employers etc.

This project focused on the development of international and national tools to enable student records from a higher education institution to be electronically and securely transferred to another institution. Upon the student giving permission for the data transfer, no new contracts between institutions will be required. There will be a reduction in the manual handling of documents and certificates required to facilitate the transfer process. The biggest benefit of EMREX will be the increased availability, quality and reliability of information about student records of achievement information.

In total, participants from six countries took take part in the EMREX project: (Finland, Sweden, Norway, Denmark, Poland, Italy). The first phase of the project involved testing the solution among four Nordic countries and Italy. The test was a success and since the project ended the system has been in production with an increased number of partners. Currently there are eight countries as full partners and more coming in.

The solution utilizes existing infrastructure only. There is no central database and the requirements on the local systems are very small. The systems only need to communicate via the standard ELMO and can have any configuration at all behind that.

---

[16] https://emrex.eu/

It should be noted that EMREX goes beyond Erasmus+ mobility. It became clear during the project that the scope can be significantly broader than first anticipated. It can be useful in many situations, such as

- – student mobility programs
- – joint degrees, double degrees
- – admission services
- – recruitment solutions
- – credential evaluation
- – All countries in the world

2.2.7 European Student Card

The European Student Card (ESC) states that it is a new standard created by European Higher Education Institution (HEI) to promote student mobility within Europe (EHEA zone). The long-term objective is to give all European Students the same rights as a local student when travelling abroad.

The ESC aims[17] to simplify the mobility of students in Europe by interconnecting HEIs information systems. It would allow for the recognition of student identity and status, regardless of institution, in accordance with each country's specific procedures and for easier access to student services in any EU member State, which is part of the scheme.

The following is the ESC published project summary report[18]:

Context: initiative of Cnous and its partners grouped within the ECSTA, the European Council of the student life. The social dimension essential to the development of mobility by giving access to social tariff services and by working towards simplification and administrative fluidification: identify and register electronically easily and safely in higher education institutions.

At the local level, student multiservice cards give access to the services of universities, specialized organizations and communities: housing, university catering, social assistance, health, sport, culture, public transport, etc. Digital services are becoming increasingly important and rely on the recognition of electronic identity and student status.

---

[17] https://europeanstudentcard.eu/

[18] https://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details/#project/2016-1-FR01-KA203-024084

Several countries are working on the establishment of a valid electronic student ID throughout life. The growth of the Erasmus + program and the European card are the two priorities adopted by the EU leaders in November 2017 in Gothenburg. For the European Commission, the goal is to implement this initiative by 2021 for all higher education institutions participating in the future Erasmus + program which will start in 2021 and make this card available to all European students by 2025. Beyond the students, the project will simplify the administrative burden of higher education institutions. The European Commission has promoted the convergence between Erasmus Without Paper, EMREX and the European Student Card, which will be extended from 2019 and articulated with the eIDAS e-ID regulation of EU citizens.

Concrete benefits for mobility: Electronic recognition of student status without additional administrative procedures, easy access to course material before mobility, online course registration and automatic recognition of ECTS credits, immediate access to host university services such as library, transport and accommodation, restaurants, discounts on cultural activities throughout the European Union, sports activities, transport ... and, for higher education institutions, management of the entire electronic mobility process, selection students to recognize ECTS credits and the possibility of exchanging / verifying student data, including academic records, in a secure manner.

Objectives: recognition of the status and identity of the student throughout Europe through a simple device acceptable to all institutions and students, without questioning the diversity of existing situations: development of a platform for exchange and the technical and graphic characteristics of the student card. Develop access to the first services and test the device through an experiment on real mobility for cohorts of students, to know the needs and expectations and measure the impact for campuses.

Participants: the nine core partners are specialized student service organizations representing national higher education in the four countries concerned: the CSSI in Ireland, Fondazione Endisu in Italy, DSW in Germany, Cnous in France and field structures closer to the students. Among the 17 associated partners are universities and university networks, student organizations, digital networks, networks for digital services in local communities, similar projects funded by the EU. Have joined the project institutions or digital specialists in higher education: ECCA, EYCA, EUF, Groeningen declaration, service companies ....

Results and impacts: the project made it possible to define the technical specifications of the exchange platform and student cards, to develop them and to make them available to schools for testing. The number of universities already connected, more than 40 institutions from 8 different countries, the first services tested, the current accession of national higher education systems as a whole, show the enthusiasm that this project raises, also highlighted by the statements of the political leaders of several countries, the EU and the Bologna Process.

This project has already reached a critical mass and has a strong capacity for federating digital service projects, in connection with the eIDAS recognition of the electronic identity of European citizens. In addition to the spontaneous adherence of the institutions, this project offers a remarkable potential for the development of digital services accessible on a European portal via a single authentication.

2.2.8. ESMO

The ESMO project[19] aims were to offer cross-border technical solutions to HEIs ensuring ease of integration with eIDAS and exchange of (simple)

academic attributes. It also aimed to facilitate widespread mobility based on paperless procedures enabled by a EU cross-border use of eIDAS accepted eIDs, leveraging strong legal foundation of eIDAS, streamline administrative procedures and efficient access to a wide range of services for students incl. virtual learning and information assets, enable sectorial governance and trust of the HEI connectivity to MS eIDAS nodes and Academic Domain Specific Attributes through the HUB node concept. In addition, it provides phased & scalable interconnection of academic eServices and data sources (incl. future mutual eIDAS & eduGAIN inter-federation) and propose recommendations, road-mapping and collaboration measures through consultative interactions with key EHEA stakeholders.

ESMO was designed with the goal of boosting the adoption of the CEF eID (also referred to as the eIDAs network), with a focus on the mobility in the academic sector, but not limited to it. The idea was to:

1. Facilitate adoption of CEF-eID as a service provider, by minimising adoption costs through;
   - Multiple federation protocol support (SAML2Int, SAML2-eIDAS, OpenID Connect);
   - Translation between these protocols;
   - Delegating trust management: Service providers just trust a proxy and don't care what's behind it (full proxy model).

2. Increase CEF-eID infrastructure usage and service potential by enabling the transference of additional sector-specific data (academic data, but also can be extended to other sectors);
   - The data of the user is located in many different sources (universities, education bodies, etc.), so the aspects of point 1 which apply for service providers also apply for data providers.

This brought the development of the ESMO Gateway, a flexible proxy tool with the capacity to aggregate data from an unbounded number of sources, and able to be deployed in many network topologies, to fit the needs of a sector. During the project, the Gateways were deployed in the three

---

[19] http://www.esmo-project.eu/content/esmo-final-workshop

participating countries forming a network that wrapped around the eIDAS network. Gateway was deployed using a micro-service architecture, to maximise modularity, scalability and extendability to new protocols or deployment scenarios.

In summary, ESMO developed a proxy tool for federations, which allows unbounded attribute aggregation and protocol translation, and which has been deployed as a support network to enable academic data exchange along eIDAS. The project ended successfully, having deployed services in production from the three participating academic institutions. Services included: enrolment apps, apps that imported data, a Facebook bot which authenticated the user on eIDAS and talked only to students from other universities, and a Moodle application which allowed automated course enrolment based on the profile of the user (affiliation and institution of origin). Code of the Proxy is open source (EUPL). Partners agree to maintain and evolve the code (especially focusing on usability of UI and easier deployment), and ESMO plan to involve other HE IT community people, to foster adoption of the proxy and try to form an open source community around it.

2.2.9. SEAL

The SEAL project[20] aims at combining the benefits of Member-State backed citizen (natural person identification and authentication through eIDAS) and student and researchers identities (eduGAIN from GÉANT and European Student Identifier from European Student Card) to enable a cross-sector interoperability between eIDAS and Higher Education/Research domains. This will be achieved through the deployment of the SEAL linking service platform, which will establish inter-linking mechanisms between different identities in order to support authentication mechanisms for multiple identities. SEAL identity linking service will centralise the checks of the identities on a trusted third party and provide common query interfaces so the burden of having to compare/validate the match between two identities is taken out of the services to a dedicated platform.

The SEAL platform will include the following modules/interfaces:
- Identity Provider Interface and Modules. Linking modules will be established for identities such as eIDAS eID, eduGAIN, and ePassport. The linking of other identities (such as ESC and OrcID) will be also considered;
- Identity bootstrapping: the user will be able to bootstrap unique and persistent or temporary identifier by authenticating through eIDAS (other bootstrapping methods may be considered). This will enable linking eIDAS identities to any other integrated identities establishing a persistent link between both identifiers while the user wishes to keep it;

---

[20] https://project-seal.eu/

- Identity Management Interface through which the user of the platform will be able to manage his/her wallet of links and identities (perform the identity linking procedures, as well as to manage the linking information stored in the service) through a web and a mobile interface. Mobile application will build on and reuse existing functionalities of the Erasmus+ APP (preferred option) or on UMA app;

- Service Provider Interface and Modules will allow the connection of academic institutions as consumers of the linking service (to indirectly support establishing trusted links between the datasets transferred between institutions);

- Validation Interface and Modules: Validation methods will be established based on the assurance level of the identities and validation guarantees of each validation mechanism (it can include local, remote, automated, semi-automated or third-party validation).

Existing software solutions will be taken into account when implementing the modules to avoid double coding and to reduce maintenance costs. A blockchain implementation will be integrated to reinforce integrity and accountability of the interlinked information and to provide a higher degree of trust. The action will also leverage the results from ESMO Action 2017-EU-IA-0032 (mainly ESMO Gateway) which as a multi-protocol proxy solution will facilitate implementing authentication and linking modules supporting several protocols on the SEAL identity linking service.

2.2.10 StudIES+

StudIES+[21] is developing a solution for digital student identities, the mobile student card, as well as secure and certified document exchange based on the European eIDAS Regulations. They have identified three key aspects that they are taking to the next level: known as the Three Pillars:

1. Higher Education Institution processes - facilitating and digitalizing workflows and processes;
2. Student identity - Keeping track of academic and national IDs across borders, institutions and devices;
3. Document signatures - Taking documents, signatures and security to the digital age.

StudIES+ facilitates the mobility of students in the European Union and builds trust for secure e-services among students by deploying and operating apps across the distributed platform StudIES+. The StudIES+ platform will incorporate digital services for Higher Education Institutions (HEIs)-students. Services will be accessible via:

- eID (including eIDAS eID) and

---

[21] https://studies-plus.eu/

- derived eIDs (Student eCard) as well as provide
- eSignature/eSeal/time stamp services that rely on DSS for eSignature generation and verification.

To provide a modern document and signature solution, a Digital Transaction Management (DTM) platform is connected to the StudIES+ platform. This enables eSigned document exchange between students, HEI, HEI services organisations on the one hand and businesses on the other hand. Secure exchange of the documents will also be ensured by deploying secure document exchange (ePROSECAL) and notarization platform/services (eNOTAR).

2.2.11. eID4U

The eID4U project aim was to use the eIDAS electronic identities to provide advanced cross-border services to the European academic environment. This required the definition of new personal attributes related to the academic life of citizens and to augment the standard eIDAS network with the ability to transport such attributes. The standard eIDAS identities and these academic attributes were to be exploited to simplify three electronic services: application to academic programs, access to electronic resources, and generalized WiFi access.

2.2.12. MyAcademicID

MyAcademicID is a project funded under the Connecting Europe Facility of the European Union and is an important part of the European Student Card initiative, spearheaded by the European Commission. The project runs from January 2019 until June 2020, and it has 13 partners. Its aim is to build a European Student eID scheme for higher education to allow students to authenticate online and access e-services through a single sign-on when they go abroad on mobility.

To this end, and following a federated approach, MyAcademicID is building connections between three networks: eduGAIN, eIDAS and the European Student Card Project. This means that they are not building anything from scratch, nor are they creating any databases or issuing new cards, but rather connecting and bootstrapping the digital infrastructure that is already out there. The connection with eduGAIN will allow students to use their academic credentials to access e-services abroad; in the context of the project, they will test this by having the Erasmus+ digital tools (Erasmus+ Mobile App, Erasmus Dashboard and the Online Learning Agreement) adopt this scheme, together with the PhD Hub.

On the side of eIDAS, the project aims modestly at making a connection with eduGAIN possible, since the implementation of the eIDAS regulation depends completely on the political will of the Member States. Nonetheless, by connecting eIDAS and eduGAIN, a door will be open for universities

in the future to be able to allow students to register and authenticate using their national eIDs. Of course, the range of use cases will be multiplied as more services join eIDAS and eduGAIN, but that goes beyond the scope of this project.

MyAcademicID are currently working on the technical blueprint and discussing the format and roll-out of the electronic student identifier.

2.2.13. Olympus Project

OLYMPUS[22] will address the challenges associated to the use of privacy-preserving identity management solutions by establishing an interoperable European identity management framework based on novel cryptographic approaches applied to currently deployed identity management technologies. In particular, OLYMPUS will employ distributed cryptographic techniques to split up the role of the online IDP over multiple authorities, so that no single authority can impersonate or track its users. By not requiring users to store any long-lived credentials, the OLYMPUS framework will not rely on any protected hardware or software environments on user devices and will be able to offer a much better streamlined user experience.

Rather, users will obtain short-lived access tokens after authenticating to the system using readily available and platform-independent mechanisms such as passwords or biometrics.

The oblivious identity management scheme that OLYMPUS will design will be integrated into popular existing identity solutions such as SAML, Identity Mixer, or OpenID Connect in order to minimize the changes required for service providers. OLYMPUS will also address the security problems of virtual identities by linking citizens' physical identities to their digital identities, but in in such a way that new digital identities can be derived to preserve citizens' privacy when accessing different online and offline services.

Finally, the project will produce a GDPR-compliant procedural and legal standard to make use of the obliviously identity management scheme in real business processes, maximising user privacy while maintaining or even increasing the security levels required by service providers. The application of GDRP recognized security measures such as data minimisation and separation, pseudonyms and cryptographic techniques will also reduce legal risk to service providers, especially in respect to explicit consent management.

---

[22] https://olympus-project.eu/wp-content/uploads/2019/07/Flyer.pdf

2.2.14. European Education Connectivity Solution (EECS)

The EECS Project, which was funded under the FP7 – Research for SME's, was undertaken by a consortium partnership of three European SME's (small to medium enterprises) and three RTD's (research and technological development) located in four European countries. It commenced in June 2009 and was delivered in the two-year period to the end of May 2011 at a total cost of €1.4834m.

This project[23] was established to research and develop a prototype solution for a secure, standardised, interoperable campus card system that would overcome the barriers that existed in relation to the absence of standards and interoperability between campus card systems across Europe. In addition, the concept enabled the provision of services on a cross-border basis and supported academic mobility by facilitating the electronic transmission of student data between HEIs.

This research and development project:

(i) Researched the current and potential European campus card market, the current state of the art and future requirements;

(ii) Applied the research results to develop a design for an integrated, standard-based, EECS Campus Card prototype which includes three component software modules;

- Card Application Management System (CAMS)
- Client Application Interface (CAI)
- Student Connectivity Module (SCM)

(iii) Built a working EECS prototype that provided access to services on a cross-border basis and tested the secure transfer and sharing of student records and other information between HE institutions across Europe;

(iv) Developed a marketing and dissemination plan to inform potential customers of the new concept for campus card systems.

The outcomes from the EECS project achieved the following:

- It successfully developed a prototype for a secure and standardised campus card management system that serves the unique needs and requirements of European HE institutions;
- The project has proved that student mobility and access to services on a cross-border basis can be facilitated by interoperable campus card systems, thus helping to overcome obstacles to the effective exercise of free movement of students and academics and fulfilling one of the main objectives of the 1999 Bologna Declaration;

---

[23] https://cordis.europa.eu/project/rcn/90751/reporting/en

- The architecture and technical design of the EECS prototype has no comparison, and represented a breakthrough in dealing with the problems of standards and interoperability that have up to now inhibited the development of the campus card market;
- It has opened the way for new commercial opportunities by overcoming some of the current barriers to exploitation of the market by the Service Providers and SMEs.

The concept and outcomes from the project are an important step in the process of establishing a standardised interoperability system that can provide student mobility and access to services on a cross border basis. The prototype, which was tested in a real live working environment, provided a standardised interface that facilitated the electronic transmission of student data between two Educational Institutions in different countries (Poland and Ireland) under the rules of the Erasmus programme framework. The test validated that students were able to use their home HEI student card in the visiting HEI to access a range of physical services on the campus and transfer academic data electronically. The consortium SME partners have subsequently developed the CAMS and CAI modules into a successful commercial product that are in operation in HEIs in Ireland since 2012. However, the SCM module, which was a key innovation that supports access to services on a cross-border basis and the transfer of data requires further development beyond the prototype stage before commercialisation.

3 Summary

This report aims to provide a high-level description of a diverse range of reports, projects and studies, all of which are relevant to the delivery of a European eID credential that supports student mobility and the provision of trusted identification and secure access to services across borders. These initiatives have resulted in a lot of valuable research and knowledge of the current technological landscape of eID, which if utilised effectively can provide an important resource in the successful outcome for a European student eID. Many of these projects focused on the use of digital technology for connecting HEIs and facilitating secure exchange and verification of student data, interoperable with eIDAS. Compliance with EU policies and regulations in relation to eID and trust services is demonstrated in many of these projects.

The outcome of this review has resulted in the review, and collation of the most recent and relevant student eID projects. Over the past 10 years these projects have resulted in successful outcomes individually, but many are done in isolation from each other with inadequate collaboration between projects. There is a need to achieve better cooperation between the various project stakeholders to enable the exchange of information and the sharing of best practices in the process of establishing a student eID. It is important for the stakeholders to be aware and understand the evolution of the eID landscape in order

to support the needs and requirements of students and HEIs. This cannot be analysed or achieved in isolation.

In July 2019 the CEF Telecom call was announced (CEF-TC-2019-4: EU Student eCard Core Service Platform) and the objective is to design, develop, and roll-out a solid technical infrastructure to support European higher education institutions in offering to students a secure cross-border electronic identification and authentication as well as cross-border electronic exchange of data required by online student services. It states that the future solution should integrate the eIDAS eID framework with various existing projects and infrastructure. The goal of this future solution is to enable European students in a cross-border mobility context to use the different academic online services as well as non-academic services.