

European Student eID Framework Proposal

Sinead Nealon¹, Tor Fridell², Eugene McKenna³ and Jorge Lanza⁴

¹European Campus Card Association, Ireland

²Linköping University, Sweden

³European Campus Card Association, Ireland

⁴Universidad de Cantabria, Spain

snealon@ecca.eu, tor.fridell@liu.se, emckenna@ecca.eu,
jlanza@tlmat.unican.es

Abstract

The European Campus Card Association (ECCA)¹ recently completed a research project on the development of a *'Proposal for a Trusted Student Identification Framework'*². This involved collaboration with the relevant stakeholders including: HEIs, Students and Service Providers. The purpose of the project was to engage in a process of dialogue to seek out their views and opinions on the needs and requirements of a trusted Student eID Credential that supports cross-border services.

The outcome from the project provides an important foundation to enable the establishment of a European student eID and how it can be a key enabler for secure cross-border electronic transactions, which is central to the Digital Single Market policy. In addition, there is strong evidence of support for EU policies on student mobility enabling access to academic and non-academic services across Europe. The project has identified the stakeholders' requirements, potential barriers and provides a series of recommendations that are fundamental to its successful development and integration.

The recommendations resulting from the various activities of the Student eID Framework project provide a sequence of important requirements for consideration and evaluation, and include the following: Campus Card/eID; Mobile Devices; Security, Trust and User Authentication; eIDAS; HEI & Services Providers requirements and standards; Legal issues and GDPR; Supporting European Strategy and Initiatives; Engagement and Collaboration with the EU and Stakeholders; Marketing, Dissemination and Promotion of a European Student eID. The project has established a strong collaborative partnership with the relevant stakeholders and provided valuable knowledge and information on the needs and requirements of a European Student eID Credential that supports cross-border services. The outcomes have identified many potential solutions to the obstacles that may be encountered in the task of implementing a student eID by 2025.

¹ <https://ecca.eu/>

² <https://eidproject.eu/>

1 Project Rationale & Methodology

The European Campus Card Association (ECCA) is actively progressing with a “Consultation Process on the Development of a Proposal for a Trusted Student Identification Framework” (Student eID Project) that will 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, which 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 Student eID Framework engaged in a process of dialogue involving the relevant stakeholders and policy makers to facilitate the requirements of the EU policy on a student eID. Combining their knowledge, opinions and requirements was an integral part of the Student eID Framework proposal to ensure it complements and supports the objectives of both the Educational and Service Providers requirements. The project delivered an impartial across-the-board consultation process throughout Europe, which will culminate with the dissemination of recommendations for a trusted student eID.

1.1 Project Objectives

- Engage in a process of dialogue with the relevant stakeholders to seek their views and opinions on the needs and requirements of a trusted Student eID Credential that supports cross-border services.
- Identify the barriers that excludes stakeholders from enjoying the full benefits of a trusted eID that will facilitate cross-border provision of student services (academic and non-academic) and enable access to these services using their mutually recognized national student eID.
- Establish recommendations 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.
- Promote innovation and networking, particularly in the education, business, and technological sectors, associated with the use of a cross-border student eID that supports mobility and access to student services together with supporting active European citizenship and intercultural exchange programmes.

1.2 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 requirement 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.

1.3 EU Student eCard

The EU Student eCard³ initiative will enable every student to easily register electronically at the host educational institutions and thus have access to cross-border online student services when moving abroad. This will eliminate the need for on-site procedures and paperwork. It will also allow secure and seamless communication between the information systems of the HEIs in Europe, ubiquitous automatic recognition of the student status and identity, electronic exchange of academic data, as well as access to online campus and other student services, with a high degree of security.

The Student eCard initiative is part of the vision of the European Education Area⁴ aiming to improve the quality of student mobility in Europe. The goal is to make the eCard available to all students in Europe by 2025. The initiative is linked to the EU's electronic identification rules (eIDAS Regulation⁵) and aims at re-using several CEF Building Blocks to provide a seamless cross-border electronic exchange of student data and documents based on the Once Only Principle (OOP). It is interlinked with several digital projects of the Erasmus+ programme aiming to simplify student mobility: Erasmus without Paper, EMREX and the European Student Card.

2 Collaboration with Existing eID Projects

There is 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. Table 1 provides a summary of the 13 projects reviewed:

List of Projects/ Reports Reviewed	Project Start/End Date	Funding Program/ EU Contribution	Project Website
e-Signature and Erasmus Student eCard in Greece	Sept. 2018 to March 2021	CEF Telecom €270,400	https://gnet.gr/en/gnet_projects/cef-eid/
Erasmus without Paper (EWP1.0 & EWP2.0)	EWP1.0-Nov. 2015 to Oct. 2017 EWP2.0- Jan. 2018 to Dec. 2019	Erasmus+ EWP1.0 €499,982 EWP2.0 €499,613	https://www.erasmuswithoutpaper.eu/
EMREX Project	Jan. 2015 to Jan. 2018	Erasmus+ €1,425,000	https://www.EMREX.eu
European Student Card	Sept. 2016 to Aug. 2018	Erasmus+ €292,223	https://www.europeanstudentcard.eu
MyAcademicID	Jan. 2019 to Dec. 2020	CEF Telecom €1,039,639	https://www.myacademic-id.eu/
SEAL (Student and Citizen Identities Linked)	April 2019 to March 2021	CEF Telecom €1,188,121	https://project-seal.eu/
StuDIES+	March 2018 to Dec. 2019	CEF Telecom €1,421,253	https://studies-plus.eu/
Olympus Project	Sept. 2018 to Aug. 2021	Horizon 2020 €2,564,480	https://olympus-project.eu/

³ <https://ec.europa.eu/cedigital/wiki/display/CEFDIGITAL/EU+Student+eCard>

⁴ https://ec.europa.eu/education/education-in-the-eu/european-education-area_en

⁵ <https://digital-strategy.ec.europa.eu/en/policies/eidas-regulation>

Cross-border authentication in European cloud platforms (EUROLogin)	Oct. 2018 to Sept. 2020	CEF Telecom €598,952	https://lmtgroup.eu/projects/eurologin/
eID4U	Feb. 2018 to Oct. 2019	CEF Telecom €592,205	https://security.polito.it/eid4u/
European Digital University Card Student	Sept. 2019 to Aug. 2022	Erasmus+ €183,896	https://www.univ-rennes1.fr/
European Digital Student Service Infrastructure (EDSSI)	Sept. 2020 to Aug. 2022	CEF Telecom €2,499,308	https://www.edssi.eu/
EU Student Card Extension and Adoption (ESC-tension)	Nov. 2020 to Oct. 2022	Erasmus+ €299,138	https://www.esc-tension.eu/

Table 1: Summary of Projects Reviewed

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.

3 Market Research

The market research involved an on-line survey, which was commissioned in 2021, to obtain the views and opinions of all relevant stakeholders regarding their requirements and the benefits of a European Student eID that will overcome the obstacles to the cross-border mutual recognition of students. This survey was representative of all stakeholders, which included HEIs, service providers, students, and others, from 25 countries across Europe, USA, Canada, and Asia. The total number of fully completed responses was 207 and HEIs accounted for 41%, students 44%, service providers 9% and others 6%. The following is a summary of the main research findings.

The level of awareness among the stakeholders varied extensively (shown in Figure 1) and in the student group was considerably lower, with only 30% 'somewhat aware' to 'very aware' and 70% 'not aware' at all. These findings suggest that the HEIs and Service providers have a higher level of awareness. Nevertheless, the awareness of Students cohort, who probably are the most important stakeholder as they are the end user, is low. This is an issue that should now be addressed, as the opinion of the students must be taken into consideration when defining the requirements of an eCard.

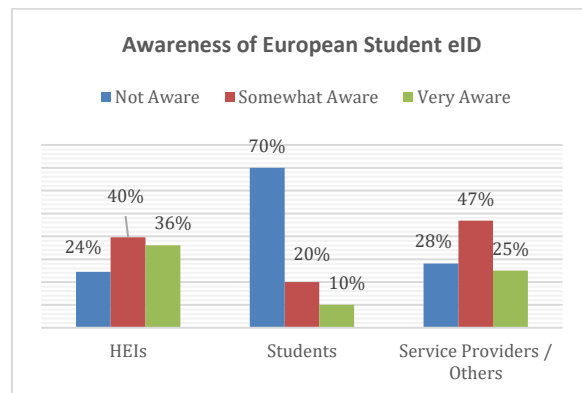


Figure 1.

The research has identified that there is little if any barrier to the implementation of a European Student eID as a high percentage of stakeholders were of the view that it could replace the existing Student ID and integrate with the relevant services (shown in Figure 2). This was most notable among students. This is encouraging as it shows there is a high level of positivity among all the stakeholders that a common and unified solution can be agreed.

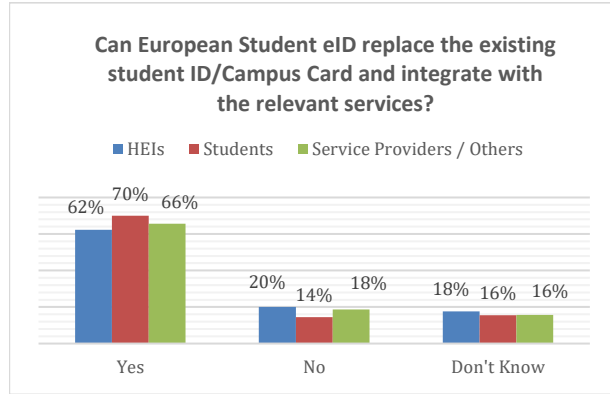


Figure 2.

The research clearly demonstrates that the preferred format of this new eID is a hybrid system consisting of a smart card, incorporated with a mobile device or another format (shown in Figure 3). This is not surprising considering the emerging use of mobile and digital technology for eID credentials in recent times. *This* combined solution for students makes it possible, in the transition to a full mobile ecosystem, to provide access to services, particularly to those that do not have access to a compatible mobile device.

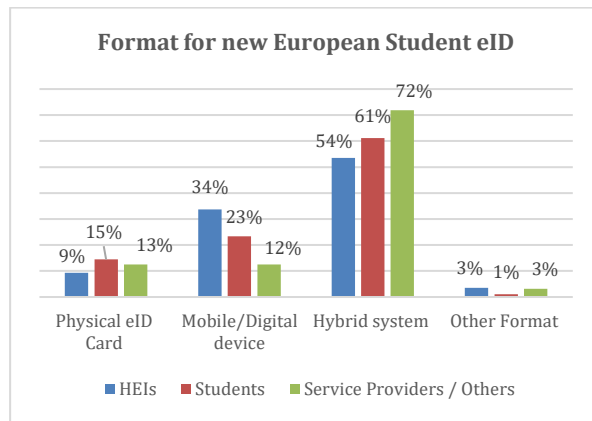


Figure 3.

In terms of functionality, it was generally agreed that the Student eID should extend beyond providing secure identification and authentication to also include access to services both on and off-campus (shown in Figure 4). Therefore, discounts will be important if the use of the Student eID is to extend to services off-campus and particularly for services relating to travel, technology & mobile phones, and food. In addition, mobile applications for student identification are now popular as are other apps for various services on and off-campus. Consequently, the demand for a hybrid system.

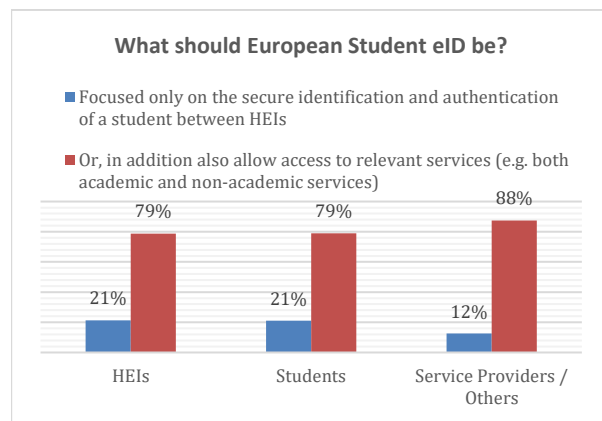


Figure 4.

Furthermore, Biometric technology for digital identification was popular, particularly among Students and HEIs, as was the requirement for the electronic signature to be linked to the eID. Despite the increase in banking technology card payments, there is still a demand for the European Student eID to have its own electronic purse.

Overall, the study revealed there is strong support for the European Student eID and also identified further important information in terms of its format and other functionalities. The awareness levels do need to be addressed and further dissemination, particularly among the student group, is necessary using the HEIs social networking platforms and other communication tools. The current methods of information dissemination, mainly through HEIs are not effective. Relevant European associations and groups could be used to assist in this process.

In summary, analysis of the results from the 207 stakeholders', has identified much knowledge and potential for establishing a European Student eID, which clearly revealed that there are significant benefits for all stakeholders and this data will make a valuable contribution towards the implementation and rollout of the European Student eID set for 2025.

4 Framework Proposal Recommendations

The recommendations resulting from the consultations undertaken are summarized as follows:

4.1 Campus Card / eID

- The physical/virtual identity of the student both on and off campus is important and in line with the European Student Card Initiative. It is of value to the student as it can represent a student's identity in the most traditional and effective way and also enable access to a wide range of services on a cross-border basis. The campus card and the eID can integrate and evolve together to provide the necessary form of identification for the particular situation.
- There is a need to connect the traditional physical card to an electronic ID (eID), as part of a hybrid solution that uses multiple technologies. The physical card can coexist with a virtual card. It is perceived that in the future, a virtual card may be capable of replacing a physical one to provide compatibility with legacy systems across European HEIs for on and off campus services.
- The requirements of a physical ID card will continue and the use of a physical ID card in a hybrid system should be promoted, as this is the favoured option with HEIs and students.
- The student eID needs to be a flexible solution in order to be integrated as part of a hybrid solution that facilitates a wide range of applications and services provided by HEIs & Service Providers.
- Multiple eID devices should be available, and the use of one or another will depend on the services that are being accessed, which means that the enablers of such devices will play an important role on the entire ecosystem.
- As European countries have different needs and requirements for a student eID, it will be challenging in the future to develop a standardized European student eID as the regulations/laws/systems in every country differs diversely as does the lifecycle of the card/eID.

4.2 Mobile Devices

- There is a growth in the use of mobile devices as an alternative to the traditional campus card in North America, which are retro-compatible with existing legacy systems such as access control and other applications. In the European context, several initiatives have emerged in recent years, i.e., AppCrue (<https://tic.crue.org/app-crue/>). The positive reaction to their introduction must be evaluated immediately in a European wide context, to explore the potential opportunities of similar mobile

credentials, allowing users to use their mobile devices in systems where physical campus cards are currently used. However, it would be advisable that OEM or OS mobile manufacturers are not allowed to impose their proprietary solutions.

- There is an increasing demand for the use of identification application using mobile devices, together with services that traditionally were provided using the physical ID/campus card. There needs to be a coordinated approach to the use of mobile devices for campus applications to establish best practices and avoid duplication of efforts.
- It is important to note that currently it is not possible to reach 100% of the educational community, and must be extremely careful not to exclude any potential user and try to offer alternatives to access services, maybe not with the same high security standard, but with a similar quality of experience. In any case, it should be without jeopardizing the functionalities and security of the whole new ecosystem.

4.3 Security, Trust and User Authentication

- The convergence of campus identities from physical to digital, together with the projected market growth for digital identity by 2025, requires trusted infrastructure in establishing reliable identity and the provision of interoperable validation of the student regardless of their location.
- The card, the mobile phone or any security module hosted in the cloud are secure locations where the identification information (e.g., a certificate) is stored. Using self-owned certified devices as a traditional smartcard or delegating the identification in a trusted third party as a remote Hardware Security Module accessed through the non-secure user's mobile phone could lead to different levels of trust between users and service providers considering the security requirements and the risks involved. We must enforce not only the technical means, but also the user concerns, to properly and seamlessly perform the authentication and authorisation processes.
- The issuing of the eID credentials in terms of authentication and trust is of paramount importance and the process for certifying and issuing needs careful consideration. The different laws and regulations in need to be addressed to establish a mutual solution. The process must provide a high level of trust. Therefore, a good trust framework that uses existing standards and infrastructure is desirable.
- Security in the verification process – a secure structure of trust is essential to confirm the authentication of a genuine student identity. This process should provide the required verification to allow access to relevant services both on and off campus.
- Mutual authentication between the eID credential or token and the service is mandatory in order to avoid token counterfeit and/or impersonation.
- Both HEIs and Students support the use of Biometric technology in a European Student Card/eID to provide trusted digital identity of a student. Further innovation and research should be pursued to establish trust and acceptance for the use of this technology.

4.4 eIDAS

- Compliance with eIDAS regulations is important and there is a need to link with qualified certificates/signatures to unify systems.
- eIDAS – requires parallel profile. Focus should be on ecosystem development that is adaptable to HEIs. Profile could be accessed joining both government and HEI services with global adoption.
- There is already an acceptance at EU level that eIDAS is based on a country issuing the credential. The lack of a European issuer was identified.

4.5 HEI Requirements and Standards

- HEI environments continue to evolve and therefore the eID solution needs to be future proofed and adaptable to on-going changes in technologies and the requirements of HEIs. Implementation

of standards are important in this regard to avoid the reliance on proprietary solutions.

- Local existing standards or legacy systems are relevant as they cannot be changed and therefore the challenges of integrating such systems needs to be considered.
- Existing established federated identity standards should be built upon. e.g., eduroam and eduGAIN.
- In the use of online based systems, enabling the availability of real- time student data should be independent to the service. The solution should be valid for online and offline mode.
- Supporting student mobility is one of the higher priorities for the use of a European Student Card/eID. On a cross-border basis, access to host and guest HEIs services and availing of discounts to services is important to students. This should be a basic requirement of a Student Card/eID.

4.6 Service Provider Requirements and Standards

- In the creation of an identifier and authentication process for a student eID there is a need to make it generic and use online/offline systems or APIs to facilitate service providers requirements.
- In the provision of academic and non-academic services both on and off campus, Service Provider will require a process that provides a trusted single student identity to facilitate access to services.
- European Standards are important as without them the process is currently fragmented, direction is required on this and the semantics and syntactics are important. Not having a single agreed standard for data interchange is a hindrance. An accepted standard would be beneficial and would result in good cooperation and enable investment by service providers for a secure future.

4.7 Legal Issues and GDPR

- The European Student eCard as an ID will need to consider the legal aspects of personal data/GDPR.
- It is recommended that further clarification is required on the EU Regulation N°910/2014 (electronic identification and trust services) in terms of the student card.
- Compliance with European Guidelines/laws to harmonise national laws that allows HEI to issue identity documents for the processing of a European Student eID is necessary.
- Engagement with the HEI sector is required to deliver recommendations and guidelines that will determine how the specific law/regulations in each country can be implemented.
- Creation of specific educational qualified digital certificates should be considered. Depending on their needs, the student would require the issuance of a certificate where the student will share only the desired information. The certificate should therefore be valid and created in real-time.
- Cross-border eID validation is essential and should be valid as student identification in any country. This interoperability will allow students to benefit from discounts, access to libraries, etc.
- Despite numerous legal issues/GDPR, the implementation of the Digital Covid Passport should be analyzed. With all its imperfections, there was an urgent need, so the implementation was done minimalist/effective technology (e.g. QR Codes linked to personal profiles and mobile phones/).

4.8 Supporting European Strategy & Initiatives

- The student eID must support the European Digital Education Action Plan in advancing student mobility and cooperation between HEIs and the acceleration of existing trends towards online and hybrid learning.
- The European Student Card Initiative will enable every student to identify and register electronically at HEIs within Europe thus eliminating the need for onsite registration. It is part of the Digital Education Action Plan and is aimed at improving student mobility.
- The ESC-tension project aims to promote the adoption and roll-out of the European Student Card (ESC), the card management systems harmonization, and the local students service systems. This

adoption is currently slowed down due to technological, administrative, and operational gaps: the main goal of the project is to fill these gaps, through an open-source, multilingual and multi-country platform, providing the results and guidelines.

- The European Digital Student Service Infrastructure (EDSSI) project aims to develop a system which will allow HEIs to exchange and authenticate student data in a seamless and secure way. It will allow students to find all the information they need to experience a high-quality mobility experience abroad. There is a need to develop a structure to promote the values and benefits that may accrue to the stakeholders, which could be far-reaching and cost-effective for all.

4.9 Engagement and Collaboration with the EU and Stakeholders

- There is a need for more engagement between HEIs with the relevant department responsible for electronic identification of students in the EU to develop agreed regulations and guidelines for the issuing of a Pan-European student eID.
- Knowledge and expertise in eID innovation continues to grow throughout Europe resulting from the successful outcomes of numerous research projects, however much of this has been done in isolation. There is a need to develop a structure of knowledge convergence and collaboration, the benefits of which could be far-reaching and cost-effective for all stakeholders.
- There is significant support for the concept of a European Student eID from HEIs and Student particularly in a hybrid system. Both stakeholders express a strong view (Market Research Survey) that the concept could replace the existing student ID/campus card. Engagement and collaboration are required to promote this belief.
- This project reviewed 13 past and on-going projects. It was particularly difficult in many cases to source the relevant information and/or the project outcomes. It is recommended that a more transparent process be provided by the EU to facilitate easier access to this valuable research.

4.10 Marketing, Dissemination and Promotion of a European Student eID

- Collaboration between the EU, HEIs and all Stakeholders to implement a marketing strategy to promote the acceptance of a European student eID needs to be established.
- In gaining end-user acceptance there is a need to determine what is the priority of a student for a European Student eID as they are fundamental to its overall acceptance and use. It has been identified that the awareness of this group is extremely low and that needs to be addressed.
- The ESC-tension – EU Student Card Extension and Adoption research project, promotes the services which represent the driver for the adoption of the European Student Card, which are digital services and physical services. There needs to be a pan European approach to the dissemination of the outcomes.
- The research survey undertaken as part of this project has established that two out of every three students believe that that European Student eID can replace the traditional physical card and integrate with the relevant services. Initiatives should be developed to promote this positive trend.

5 Summary

This project has established a strong collaborative partnership with the relevant stakeholders and has provided valuable knowledge and information on the needs and requirements of a European Student eID Credential that supports cross-border services. The outcomes from this partnership, through a knowledge-sharing process has identified many potential solutions to the obstacles that may be encountered in the task of implementing a student eID credential. The networking and collaboration achieved throughout the project demonstrates a strong enthusiasm and commitment of

support from the stakeholders to the concept and requirement for a European student eID. There is a need to exploit and build upon this cooperation, together with the significant expertise, research, and innovation available from existing eID research projects.

Finally, the concept of a European student ID card was first mooted with the foundation of the European Campus Card Association in 2002 (as per their constitution). Although it has been a 20-year journey, this concept is now a reality and will be an important requirement in the provision of trusted student identification and authentication, together with supporting mobility and facilitating access to services across European countries.

6 Acknowledgements

ECCA would like to acknowledge the funding support of the Erasmus+ (Project # 610780-EPP-1-2019-1-IE-EPP JMO-SUPPA). In addition, the role of the project advisory committee.

Author biographies



Sinead Nealon graduated from Waterford Institute of Technology in Ireland with a Bachelor of Arts and a Master of Arts. She also has an advanced diploma in employment law from Kings Inn School of Law Dublin and is a chartered member of the CIPD. She is the Executive Director of the European Campus Card Association. Prior to this she was General Manager of Campus Services at Waterford Institute of Technology in Ireland.



Tor Fridell, MSc. in Computer Science, is Head of Student Information Systems at Linköping University in Sweden. Tor is also involved in the national development of the common Swedish SIS; Ladok. He was one of the founders of the European Campus Card Association and served as President of the Board. He is currently chair of the EMREX User Group Committee.



Eugene McKenna, was a Senior Academic in Engineering Technology at Waterford Institute of Technology (WIT) from 1979 to 2018. In addition to his academic role there, he was CEO of Campus Services. He currently serves on the Board of the European Campus Card Association and is Director for Research & Innovation Division. His contribution to student life and pioneering research has been globally recognised through numerous awards - the USA National Campus Card Association Distinguished Service Award, and EUNIS Elite Award.



Jorge Lanza is Telecommunications Engineer (2000) and PhD (2014) from Universidad de Cantabria where he currently is Associate Professor. His research is mainly in the framework of collaborative projects, both national and international. For over 10 years he led a collaborative project with Santander bank towards defining new student eID solutions world-wide. He is a board member of the European Campus Card Association. He has co-authored over 15 publications in JCR indexed journal and over 50 contributions in conferences.