The EMREX network – how to achieve both horizontal and vertical growth

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Abstract

The EMREX network addresses the EU target of increased mobility of both students and staff within Europe. EMREX focuses on the electronic exchange of student achievement records between higher education institutions or other organizations. EMREX – together with other initiatives, like Erasmus Without Paper and EDSSI – is part of a wider set of activities supporting digitalization and mobility of student data. The EMREX network is now aiming at vertical growth which means spreading out to new institutions and countries but equally much at horizontal growth by increasing the use cases for EMREX (for instance admission, recruitment, licenses). This paper aims at presenting news from the EMREX network – on numbers, development, expansion, collaboration with neighboring projects and plans for the future.

1 Introduction

The EMREX network since the project period has had a stable production environment with a yearly growth but it does not encompass the whole of EU. In the beginning the scope of EMREX was only to include Transcript of Records relating to student exchanges within Europe but it was soon discovered that the tool can be useful in many more ways. By making it useful in more ways we can speed up the

growth considerably. And potential partners naturally want to be sure that their investment in development pays off so everyone wants to wait until others have joined. Therefore, the network has set up a strategy to grow not only vertically (meaning getting more Higher Education Institutions to join) but also to grow horizontally (meaning getting more different use cases of EMREX). This paper will discuss these issues briefly and a EUNIS presentation will go into further detail. The presentation will also give an overview of current usage of the service.

2 How EMREX works

EMREX is a solution for transferring student data internationally in a machine-readable way. It consists of two parts: the technical solution and the international network of partners (EMREX User Group – EUG). It originated as an EU-funded project 2015-2017, aiming to simplify and increase the quality of the credit transfer process after a student exchange. The EMREX service network went into production before the successful project ended and has been in production ever since, being one of EU projects maintaining itself and being able to grow after the project officially ended. EMREX is not limited to the EU i.e. it can be used worldwide. At present, EMREX is operational in a number of countries in Europe. It is a technical solution used to securely exchange educational data between students and third parties, for example higher education institutions (HEIs) or potential employers.

The technical solution is extremely flexible, the only requirement is that participating clients (Student Mobility Plugin – SMP) and National Contact Points (NCP) follow the ELMO standard. ELMO is the data standard used in the EMREX network to describe student achievements and supporting data. It is used also by other projects and organizations (such as Erasmus Without Paper[1]). Any actor can be behind an NCP, for instance a single HEI, an organization or a national level data provider. The requirements for participation for data providers and consumers are low – anyone can build an EMREX client and any local system that delivers data upon request can be connected to an NCP. Security is maintained in an adaptive manner, from initially a basic solution to coming technologies. More information on this can be found at www.emrex.eu[2]. All specifications and software are open source and can be found in Github[3]. It is an easy and cost-efficient solution for implementing transfer of student records between institutions.

3 Use cases

Below are some examples of different ways that data transported through EMREX has been put to other uses than just recognition at the home university after an exchange period.

Self-sovereign data ownership

The Norwegian Diploma Registry (Vitnemålsportalen) has seen a large increase in sharing of educational results via EMREX in the last years, due to the growing number of web services connecting as EMREX clients to the Diploma Registry in the last couple of years, especially recruitment services. The main goal of the Diploma Registry is to help individuals collect their results from higher education and share them with potential employers, educational institutions and other relevant recipients. Since 2017 logins have nearly doubled each year, with almost 600 000 in 2020.

Digital certificates in Germany using EMREX

The first prototype for digitally authenticated and machine-readable certificates in Germany is running and successfully using EMREX. In cooperation with the ministries of the federal state of North Rhine-Westphalia (NRW), various German universities and the Stiftung für Hochschulzulassung (SfH), the German Bundesdruckerei (BDR) has succeeded in creating a first fully functional prototype for digitally authenticated and machine-readable certificates.

Trans-border admission

Since October 2018, Dutch applicants for nationwide admissions restricted study programmes can download their certificates stored in the Diploma Database at DUO directly via the SfH (Stiftung für Hochschulzulassung) application portal. The EMREX system is used for this purpose.

PIM-platform

Since April 2020, the project "PIM" (platform international student mobility) funded by the BMBF (German Federal Ministry of Education and Research) has been working on the incorporation of Emrex. The platform serves as a central student mobility plugin for students of all universities to import their data in order to apply for a recognition request at German higher education institutions (HEI).

Electronic validation

Within the framework of the German "Online-Zugangsgesetz" ("Online-Access-Act" – OZG), a prototype for the electronic validation of certificates (upper secondary school and university) in Germany was created. This solution is to include the PIM project and the support of EMREX.

Data compatibility with other systems

No single system can solve all problems and different initiatives have different purposes. One example is EUROPASS[4] which has a much wider scope than EMREX but where the data received from EMREX plays an important role. EMREX has a liaison with Europass concerning cooperation on the future format, to ensure the compatibility with ELMO.

Admission automation

NOKUT, the ENIC/NARIC organisation in Norway has implemented a connection to EMREX into NOKUT's applicant portal. That means that users from countries connected to EMREX can attach their diplomas and transcripts to their application. The first implementation is a pilot where only documents are added to the application. The plan is to retrieve diplomas as structured data, so the verification can be done automatically.

University alliances and partnerships

There are a number of existing alliances and partnerships between universities in Europe today. EMREX is a convenient way to share educational data. Several universities already use EMREX and the effort to create a client or a node is small. EMREX has support in the ELMO format for Transcript of Records and diplomas and micro credentials are about to be implemented.

4 What lies ahead?

The development of new ways to use educational data is still active which will be elaborated in the presentation. As the title indicates, the EMREX network not only works with getting more countries or members to join but also to extend services so that usage in increased for other purposes. Ongoing plans include:

- Continued communication with ongoing and future projects in the area of student mobility. This applies also to eID-projects that are not limited to the education area but may turn out useful.

- Support for results of recognition.

- Extended support for recruitment systems.

- Support for the digitalization of licenses for the labour market, for instance the **HSE Card** (Health, Security, and Environment).

- Automation of processes.

This means adherence to ongoing projects and working environments especially in Europe. Since new ways of using student data may mean changes in formats (like ELMO) and routines, the audience will be encouraged to be active in new needs in the ELMO-format.

References

All links last visited on March 12, 2021
[1] Erasmus Without Paper website – www.erasmuswithoutpaper.eu
[2] EMREX website – https://www.emrex.eu
[3] Github, repository for specifications and software – https://github.com/emrex-eu/
[4] Europass website – https://europa.eu/europass/en

5 Author Biographies

Tor Fridell, M. Sc. in Computer Science and Engineering. Currently Head of Student Information System at Linkoping University and also coordinator for international affairs for the national Swedish Ladok Consortium. Previous jobs include Operations manager for the Ladok Consortium, IS manager for Linkoping Institute of Technology, and programmer. Tor has been employed by the university since 1996. Tor has long been involved in international cooperation regarding exchange of student data and is also active in standards work and development of student information systems. Tor has been President of the European Campus Card Association and Chairman of the National Swedish Standards Committee SIS TK450, the national body for CEN TC 353, working with Learning Technologies.Tor has been involved in the EMREX project since start and is also active in development of student information systems. Tor is currently Chair of the EMREX User Group Executive Committee.

Geir Vangen has more than 20 years' experience in developing nationwide systems within higher education. He is head of development at Unit – The Norwegian Directorate for ICT and Joint Services in Higher Education and Research. He participates in national and international standardisation work. He has been member of national committees appointed by the Ministry of Education and Research, and has led projects on behalf of the Ministry. Geir Vangen graduated from University of Oslo, Institute of Informatics in 1989. https://www.linkedin.com/in/geir-vangen-7a7aa44/.

Janina Mincer-Daszkiewicz graduated in computer science in the University of Warsaw, Poland, and obtained a Ph.D. degree in math from the same university. She is an associate professor in Computer Science at the Faculty of Mathematics, Informatics and Mechanics at the University of Warsaw. Since 1999, she leads a project for the development of a student management information system USOS, which is used in 70 Polish Higher Education Institutions, gathered in the MUCI consortium. Janina takes an active part in many nation-wide projects in Poland. She has been involved in Egracons, EMREX, Erasmus Without Paper, European Digital Student Service Infrastructure European projects.
http://www.mimuw.edu.pl/~jmd.

Jan Joost Norder works at the Dienst Uitvoering Onderwijs, part of the Dutch Ministry of Education, Culture and Science. In his role as Product Owner he is responsible for the Dutch Diplomaregister and also Chair of the Executive Committee of EMREX. He has many years of experience in improving the digital enrolment process and exchange of student data in higher education. Since 2016 he has been involved in the international projects.

Jukka Kohtanen MSc (econ.) works as a development manager at CSC – IT Center for Science, a non-profit company owned by the Finnish state and Finnish higher education institutes. Jukka is responsible for a variety of digitalization and collaboration services for the Finnish higher education institutes – such as EMREX and VIRTA – the Finnish national data warehouse for higher education institutes. He has been working with digital services and student registers for 10 years.

Guido Bacharach, Head of Strategy and Digitization Unit at the Stiftung for Hochschulzulassung in Dortmund since 2014. After his study he had managing positions especially in the sales area and in public services. The focus of his work is on strategic digitization, process improvement and project management. He is member of the Deutsche Gesellschaft für Projektmanagement (GPM e.V.). http://www.hochschulstart.de

Igor Drvodelić, Assistant Director, Agency for Science and Higher Education participated in the introduction of the central admission of study programs and national secondary school's final exams of in Croatia as one of the project managers. He has 16 years of experience in information systems and services in higher education and has been heading the Central Admission Office since its foundation in 2009. Igor has actively participated in launching projects which better link higher education and the labor market (e.g. graduates tracking). He also actively promotes the introduction of new technologies into Croatian higher education.