



Erasmus Without Paper: dream becoming reality

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Abstract

The year 2022 will be crucial for the digital future of the Erasmus administration. The renewal of inter-institutional agreements will be done in a digital fashion and Higher Education Institutions need to support online learning agreements. While many of us are still struggling to make it work, the next digitalisation steps are already awaiting around the corner with nominations and Transcript of Records to be exchanged in a digital manner. Moreover the European Student Identifier will both facilitate data exchanges and ease authentication of students.

During the years to come, the Erasmus Without Paper+ (EWP+) consortium aims to better support universities implementing the digitalisation roadmap. Transparency will be increased by establishing a new governance structure and by sharing more frequent updates for the HEI community about the state of play and next steps. Technical challenges and usability issues in the EWP Dashboard (also known as the Erasmus Dashboard) will be addressed and the EWP Network will improve its services in order to facilitate more efficient data exchanges between universities. Helpdesk services will be further enhanced. Moreover the consortium, together with a wide range of stakeholders, will lay the technical foundations for the further digitalisation of the Erasmus+ administrative processes.

1 Erasmus Without Paper: the journey

In June 2013 an informal meeting took place in Ghent to discuss the idea to digitalise Erasmus mobility paperwork. What in 2013 seemed a dream to many of the participants present at that meeting, was firstly demonstrated in public during the Erasmus Without Paper (EWP) launch conference in December 2018 where live data exchanges between different types of systems took place in front of 350 participants from across Europe (Erasmus Without Paper launch conference, 2022). Then it began taking shape of a reality in the new Erasmus programme where the digitalisation of the Erasmus administration is one of the main innovative elements (Priorities of the Erasmus+

Programme, 2022). The importance of digital Erasmus processes was once again reinforced in a recent Commission Communication on a European strategy for universities (European Commission, 2022a, p.5) where one of the four flagships to boost the European dimension in higher education and research is the European Student Card Initiative, the European policy umbrella that encompasses Erasmus Without Paper. This umbrella is also highlighted in the Proposal for a COUNCIL RECOMMENDATION on building bridges for effective European higher education cooperation (European Commission, 2022b, p.2, p.10, p.12, p.15).

Speaking about dreams and realities. If you ask many IROs, struggling to get their Inter-Institutional Agreements (IIAs) or Learning Agreements (LAs) signed in a digital manner, about their dreams they would probably tell they do dream of having tools that work. After years of preparations and development, 2021 was supposed to be the transition year when their systems would be connected, if not completely at least partially. At the time universities needed to secure their mobility spots via their IIAs for the 2022/23 academic year, working EWP-implementations were lacking behind. This led to thousands of emails being sent back and forth between current and future Erasmus partners (How well does EWP work? The latest updates in a snapshot, 2022).

And yet there are some relatively bright lights at the end of this tunnel. At the time of writing this paper in February 2022, 9 third-party providers had successfully completed the technical testing of the IIA with the EWP Dashboard (also known as the Erasmus Dashboard) and more and more IIAs are being exchanged and signed for real across systems. The attention to the IIA renewal has been such that the first deadline of the ESCI roadmap has come and gone without much fanfare, in that 2021 was meant to be the year where Learning Agreements would go digital (although the 2021/2022 transition period applies to them as well, making it a rather soft deadline). That, for the most part, seems like a success story. Although five technical tests with third-party providers have so far been completed, experience suggests more systems do exchange LA data correctly, and its noteworthy colleagues seem to have struggled far less to implement this particular service in their systems. The fact that the Online Learning Agreement provided such a strong reference implementation is a key factor here, and speaks to the importance of the work of this particular project team, which stretches back to 2015 (How well does EWP work? The latest updates in a snapshot, 2022).

Moreover the core team that worked on EWP via different Erasmus+-funded projects between 2015 and 2019, and held the system above water during a funding gap of 2 years signed a Framework Contract for Services (FWC) with DG Education and Culture that is the result of a competitive tendering process. The FWC will provide funding for the next 4 years.

2 EWP main components

Managing Erasmus+ mobility can be a cumbersome, complex and costly process. The Erasmus Without Paper (EWP) initiative uses the latest digital technology to pave the way to manage mobilities more efficiently. This allows Higher Education Institutions to exchange information in the context of student mobility swiftly and securely. In doing so EWP supports replacing paper-based workflows by digital ones (EWP Competence Centre, 2022).

EWP consists of two chief components (EWP competence centre, 2022):

- the Erasmus Without Paper Network that interconnects a multitude of student information systems (whether individual universities or third-party providers which represent multiple institutions) through the use of APIs (i.e. connectors between the Network and the users);
- the EWP Dashboard that provides a web solution for exchanging student data electronically for HEIs lacking the required mobility software.

2.1 EWP Network

The EWP network itself is strictly a middle layer solution that interconnects different nodes in the network. It functions on the basis of a **peer-to-peer communication** protocol, where no information exchanged among the parties is ever stored. The only centralised component of the network is the EWP Registry that contains the identification info of the various members' in the network and the list of APIs (the connectors) supported by those members. An institution wishing to initiate a data transaction consults the identification data of the concerned partner in the Registry and sends a data package directly to the partner via the relevant API. The data package itself is encrypted according to EWP defined standards ensuring the communication cannot be accessed by other parties; this guarantees high levels of security and privacy. Each server takes care of the authentication and user rights of its own users (Mincer-Daszkiewicz, J. Baszkiewicz, P. (2022), p. 8).

Another important part of the EWP infrastructure are the **Application Programming Interfaces (APIs)** that allow point to point communication in a standardised format between the network nodes. All API specifications are shared with the developers community via the [EWP Developers Guide](#) and in an open [Github repository](#). The list of APIs is related to the mobility processes EWP aims to support.

Figure 1 and Figure 2 show the general overview of the architecture of the EWP Network (Mincer-Daszkiewicz, J. Baszkiewicz, P. (2022), p. 9).

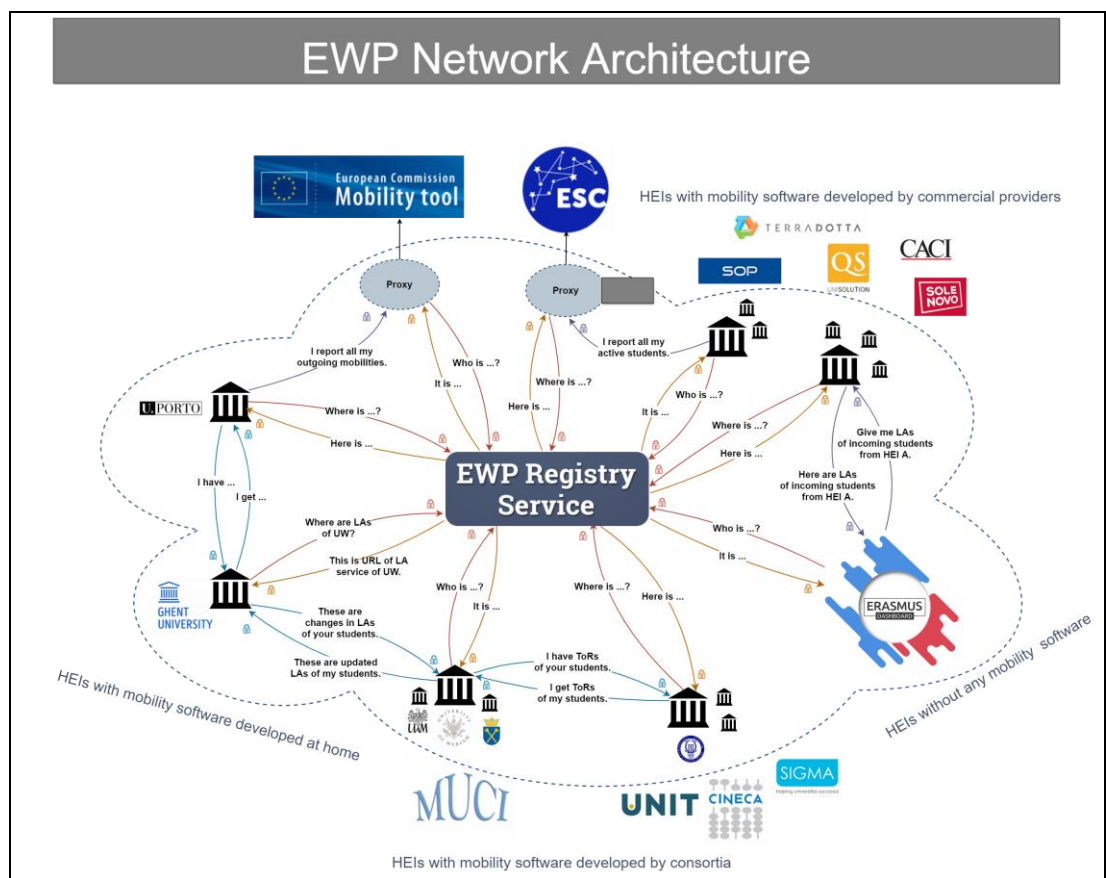


Figure 1: Architecture of the EWP Network (EWP projects)

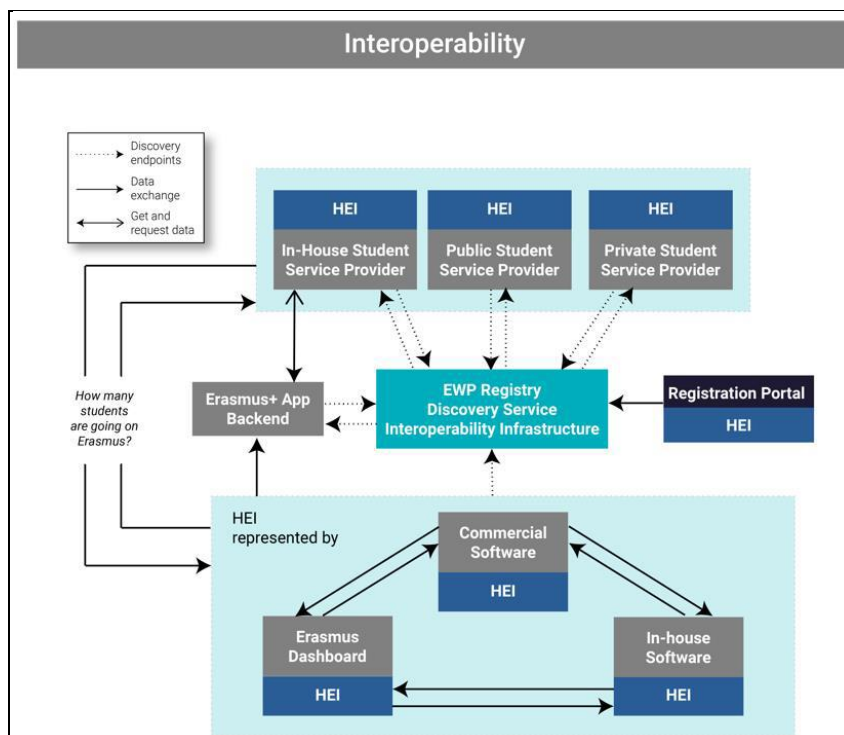


Figure 2: Architecture of the EWP Network (EDSSI project)

The **registry service** itself allows all EWP hosts to access the list of other EWP hosts, and to list APIs implemented by these hosts, along with the URLs these APIs are implemented at. The registry is being updated automatically. It periodically reads all the information which all EWP hosts provide within their so-called Discovery manifest files, and these changes are instantly reflected in the registry service responses (Mincer-Daszkiewicz, J. Baszkiewicz, P. (2022), p. 10).

At the time of writing this article, 2.490 HEIs are registered in the EWP Network, in approximately 200 manifest files.

2.2 EWP Dashboard

The **EWP Dashboard** was designed specifically for institutions that are not using any digital solution to address their Erasmus+ mobility management needs, as per European Student Card Initiative roadmap. It is available to all Higher Education Institutions holding an Erasmus+ Charter.

The EWP Dashboard is an online tool to support handling a wide range of managerial aspects of the Erasmus+ programme:

- oversee students' (online) Learning Agreements;
- manage Inter-Institutional Agreements;
- manage Nominations/Applications;
- submit data to be displayed in the Erasmus+ mobile app.

The EWP Dashboard is also a node in the EWP Network, representing many clients. At the time of writing this article, 3.054 institutions were registered in the Erasmus EWP application for handling some aspects of their Erasmus+ mobility needs. 1.718 institutions were subscribed to utilize Dashboard's EWP connector for exchanging inter-Institutional Agreements (referred to as the IIA

API), and 1.524 institutions were subscribed for exchanging Learning Agreements (referred to as the LA API).

The current architecture is a mix of different components, being databases and APIs, that are tied together through the EWP Dashboard backend. The overview of the current Dashboard architecture is presented in Figure 3 (Karaoglouglou, K., et al (2022), pp. 6-7).

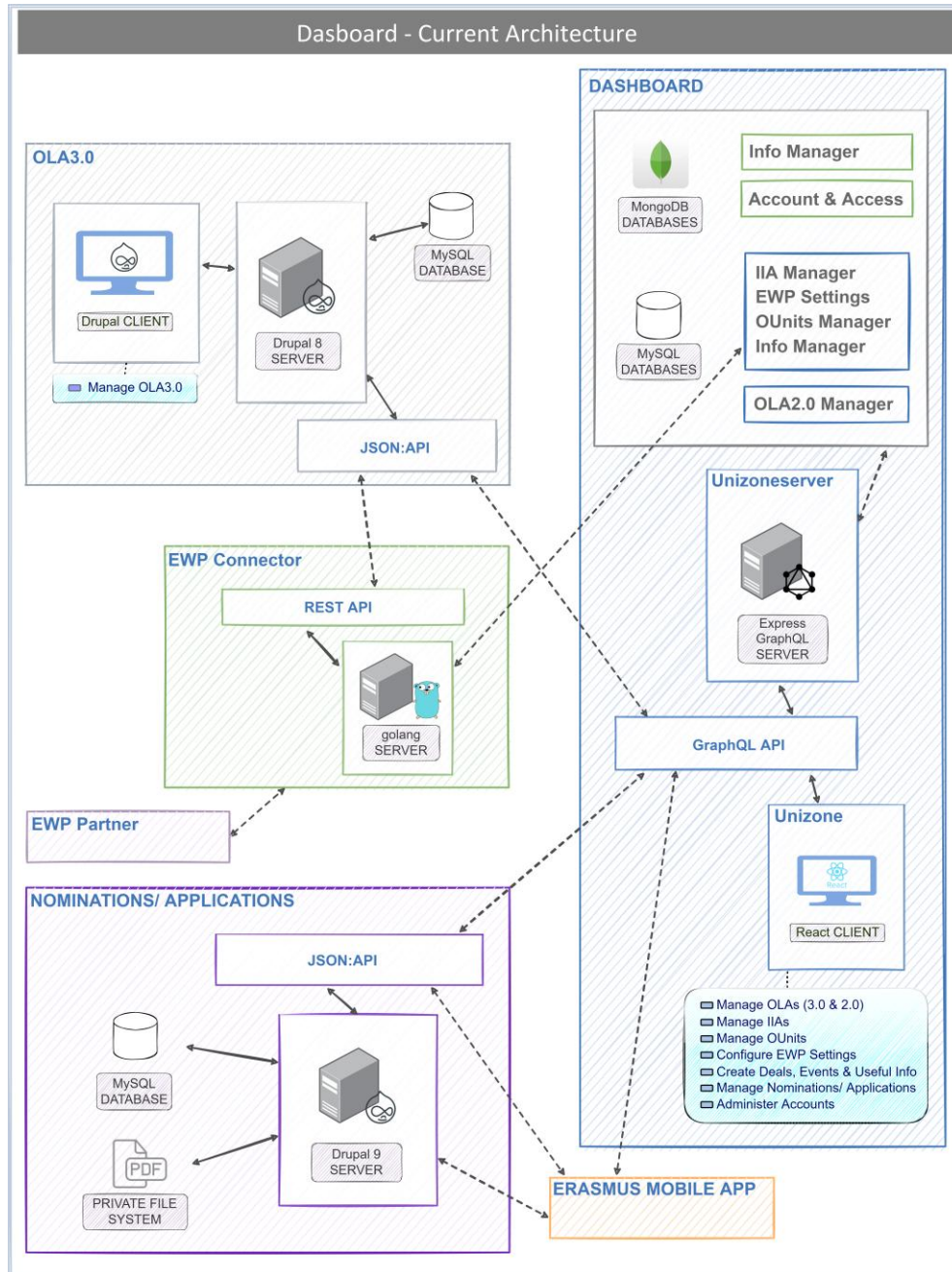


Figure 3: Dashboard's current architecture

3 Year 2022 priorities

High on the priority list for 2022 is the continued availability of both the EWP Dashboard and the Erasmus+ App. The **EWP Dashboard** was set up as a solution for rather smaller institutions that had no other tool available to get connected to EWP. However the digitalisation roadmap and struggle of some universities to connect led to an influx of HEIs and the EWP Dashboard currently caters for 77-84% of all EWP users. Such unforeseen popularity clearly led to performance issues in this centralized solution. In the first 6 months of 2022 stability and scalability issues will be addressed. Moreover the Dashboard user interface will get a makeover by the end of this year. This combined with enhanced support channels should lead to a better experience for Dashboard users.

Closely connected to the Dashboard is the **Erasmus+ App** that functions as the main gateway for mobile students interacting with all relevant content about their Erasmus experience. For those institutions using the Dashboard for managing mobilities, the Erasmus+ App offers functionality for students to apply for mobility, manage learning agreements, get general information about studying abroad. The back-office application to manage those on the side of the HEI, is the EWP Dashboard. For those institutions that use in-house or third party solutions for managing student mobility, connections should be established to seamlessly guide students through the preparations, administrative steps, their actual stay abroad and the follow up.

On the **EWP network** side both in-house solutions and third party software providers will be served with increased technical testing possibilities against the reference implementation to make sure they are ready to switch to the productive environment. The API validators will also be enhanced and expanded. The voice of the technical community will be consulted via the so-called infrastructure forum where technical issues, like changes to APIs, will be discussed with the technical community. Also during 2022 a new central registration portal will be added to the EWP infrastructure where end users will be able to manage the tools they use to connect to their partners.

A crucial piece of digital infrastructure is the **European Student Identifier (ESI)** (European Student Identifier (2022)). It is (or will become) part of all student-related EWP APIs and will allow systems to uniquely identify students across the different EWP-processes. Its roll out is foreseen for 2022 (European Commission, 2022ab, p. 6), exact timelines should still be decided. The potential usage of the ESI is much wider than just EWP and lays the foundations for a truly European digital student card allowing students to consume services across Europe based on a safe and secure authentication mechanism.

Given the need for universities across Europe to implement some pieces of the puzzle outlined above, it is crucial that the HEI community can count on the **support** of the EWP+ Consortium members, both on a technical level and business level. Therefore support services will be enhanced by setting up a centralized service desk providing L1-L2-L3-L4 support.

Finally for planning ahead, transparency about the digitalisation roadmap and decision making is of vital importance. The new **governance** structures, where all stakeholders will be involved in the decision making, aims to increase such transparency. This combined with improved **outreach and communication** towards the community at large is a crucial building block to increase both transparency and engagement. Regular updates, updated materials and webinars will be offered in the short term to reach such goals.

4 Challenges

The current set up of the EWP infrastructure entails some challenges where, in an open network of trust, the individual nodes are responsible for the diligence about their implementation. The first 9 months of running the infrastructure in production, clearly led to some implementation issues

preventing interoperability and had a negative spill-over to end users. And while the Erasmus Dashboard enhancements are in the pipeline and are under control of the body operating the infrastructure, implementation by third-party providers and in-house solutions are an external factor difficult to control. To mitigate such risks one can think about stricter entry rules based on expanded testing protocols leading to more sound vetting processes. But this won't prevent implementation issues once a node is part of the productive environment, leading to disruption in the much-needed interoperability. Different options to address this challenge will be discussed with all involved parties.

5 Conclusion

In this paper the policy context was outlined where Erasmus Without Paper is a crucial cornerstone of the European Student Card Initiative and the Erasmus programme. The current implementation status was discussed and the building blocks of a seamless and paperless mobility experience were shared.

In order to make EWP happen some important steps are underway in the year 2022 and a consortium of universities, companies and stakeholder organisations will build upon the foundations of the current infrastructure to further work on the dream becoming reality. In this context the whole EWP ecosystem will be critically evaluated and the road towards a sustained future approach examined, at any stage, keeping in mind the user needs and efforts by IT-teams across Europe already undertaken. In this future approach the challenge of interoperability, hindered by implementation from nodes in a network of trust, will be a crucial element to discuss with session participants.

It is important to remember that Erasmus Without Paper is about connecting systems, but one shouldn't forget about why we are doing this. The main aim is to connect people. By reducing the administrative burdens on Erasmus exchanges we do believe that we can do more to support our incoming & outgoing exchange students, to invest in the quality of the exchange experience itself and to focus on international and intercultural competencies for all students. Therefore it's crucial to hang on and to raise our efforts to connect.

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8 Author biographies



Paul Leys is working as policy advisor at the International Relations Office at Ghent University. He is responsible for (re)designing business processes aiming to reduce the administrative workload for student mobility as well as supporting correct implementation of ECTS principles. In this capacity he plays an active role in Erasmus Without Paper and is involved in European Student Card Initiative discussions. He is service lead for a task on communication and outreach under the EWP+ Framework Contract.

Paul Leys graduated as MA of Science in EU-Studies at Ghent University and started working at his alma mater soon after his graduation. After more than five years at the Office of Counselling, he joined the International Relations Office of Ghent University in May 2012.

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