



DESK RESEARCH
Erasmus Without Paper

Desk Research - Erasmus Without Paper

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By European University Foundation

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1. EXECUTIVE SUMMARY

The Erasmus without Paper (EWP) project aims to create a network supporting the electronic exchange of exchange student data and documents by interlinking Higher Education Institutions and their student information systems. This innovative approach has an unprecedented 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. Holistically speaking, this will lead to the permanent migration from a paper world to the electronic world of student data.

The EWP project is conducted by a consortium of 11 partners, supported by 11 associate partners. The consortium is composed of public institutions, Higher Education Institutions and Organisations and companies, from 8 European countries that constitute an exhaustive representation of the Higher Education sector. The project is co-funded by the EU's Erasmus+ programme under its Key Action 3: Support for policy reform and runs from November 2015 – October 2017 (2 years).

This Desk-Research represents the first major step of the project, as it sets the framework in which the EWP technical team develops the EWP network and creates an IT infrastructure that allows for HEIs to connect to each other. With this end in mind, the author reviewed the relevant documents that inform European credit mobility (chapter 2), considered the findings of other EU projects that have dealt with the subject matter (chapter 3) and mapped the current practices and challenges faced by several higher education institutions, service providers and national data repositories (chapters 4-6).

This research has been complemented with one of the largest consultations carried out among European Higher Education institutions, for which contributions from more than 1050 HEIs have been received (chapter 7).

Lastly, the latest release of the Desk-Research includes a chapter on the compatibility of the current prototype technical specifications (as of July 2017) with the US system (chapter 8). This allows for continuing the discussion on streamlining systems beyond Europe and can be seen as a first step towards a more global approach. It also highlights the need to achieving a streamlined European system before an exchange of data with other systems around the globe can be considered.

This vast amount of information resulted in concrete use-cases that serve as the basis for the technical team of the EWP project consortium to model the data standards and the architecture of the EWP Network.

Before the EWP technical team can transition into the implementation of a European-wide network for the exchange of exchange student data, some fundamental decisions about the future of the Erasmus Without Paper project needed to be taken. While the overarching goal of EWP is perfectly reflected through its name, the idea of digitising European student mobility is a highly challenging task which will need to take into consideration current realities and find a balance between adapting the EWP to as many stakeholders as possible while at the same time building a standard that is a driver for streamlining European student mobility data transfer.

The impact of this discussion will extend well beyond the scope of the current project. Until then, the consortium has to deliver a proof of concept of its IT solution. This is well within reach; whereas the real challenge is to make sure that the designs that will be agreed upon are able to scale from just 8 partners implementing the prototype within the EWP project to more than 5000.

In order to clarify what exactly EWP will become, we need to explore two contrasting realities: the power user and the standard user.

The research carried out during the first project phase shed a crucial light on the extent to which different HEIs engage in Erasmus+ exchanges. Several of the universities interviewed send about 1000 students per year, which entails a very heavy administrative workload - and creates a strong incentive to find ways to automatise it. However, 47% of the Erasmus+ Charter holders send 30 or less outgoing students per year.

It stands to reason that a university with 1000 outgoing Erasmus+ will have a very different infrastructure than one that sends less than 30 students. It is important to clarify whether EWP wants its work to support mobility across all of Europe's HEIs or cater primarily to the needs of institutions that have more resources, expertise and capacity to lead the transition towards a paperless approach.

While the former solution could be justified from a technical viewpoint, it is very hard to estimate when or whether the project benefits would trickle down to all Erasmus Charter holders. Accordingly, the EWP consortium has agreed that its solution must be universal and fit for purpose for all Erasmus Charter holders.

It is important to remark that students themselves, not just institutions, stand to benefit considerably from an administrative infrastructure that eases the management of their mobility and enhances the overall experience. In this sense, it would be unacceptable to positively discriminate students from larger HEIs. This decision will be highly relevant for the work of the EWP technical team, insofar its members are themselves affiliated with large universities and the consortium will need to take into account institutional and organisational realities that may elude the consortium's own experience.

Having established the desired scope of EWP beneficiaries, another fundamental question arises: are we developing a tool for managing Erasmus+ student mobility data or a platform on top of which a variety of solutions can be deployed?

The research that has been carried out would allow a design and implementation of an IT solution that would manage all processes and documents, such as the inter-institutional agreements, learning agreements, transcripts of records, user-management, etc. However, there are several reasons why this is out of scope for the EWP project.

Firstly, there is no strong evidence that one single tool could cope with the diversity of procedures and approaches. Additionally, the majority of HEIs surveyed already have an IT infrastructure in place.

The consortium has thus agreed that its goal is not to try to leapfrog existing IT solutions (commercial or in-house solutions by institutions) but rather to provide a platform that enables the electronic exchange of information amongst the tools used by HEIs in an electronic format, putting an end to duplicate or redundant workflows once and for all. In other words, EWP will amount to a platform on top of which existing IT tools will see their functionality significantly enhanced (System interoperability). An apt analogy would be to equate it to a GSM infrastructure that enables a wide variety of phone models to function with each other.

An important side benefit of this approach is that it may facilitate the emergence of a vibrant marketplace for IT solutions that support the management of student mobility. From a policy viewpoint, it might also be desirable to consider whether public funding should support the development of low cost open source solutions that smaller HEIs could install. We expect that competition between various actors may drive the adoption rates of digital data transfer by providing solutions tailored to HEIs of varied sizes and with diverse needs. Such a development is consistent with the logic of the EU Digital Single Market strategy, which has the purpose of creating a competitive market in which everyone can benefit from digital tools without limitations while at the same time giving the right environment for competitive solutions to prosper.

IN SHORT

The EWP Network is a trusted network that will be open to all actors involved in the management of student mobility. Its design should realistically allow all HEIs, national data repositories and service providers to connect their IT solutions and benefit from the electronic and automatic exchange of information.

The EWP Network must also be flexible and scalable, so that HEIs with diverse needs and requirements are able to use the network for exchanging more or less detailed information about their exchange students. The network itself will allow data to travel in a non-linear way, with a view to cope with the maximum diversity of administrative workflows.

Accordingly, a successful implementation of the Erasmus without Papers concept will amount to:

1. Decentralised P2P network (resilience & security)
2. Where student data itself is never stored (minimizing exposure to regulatory issues)
3. Underpinned by a robust discovery manifest
4. A common data standard (for all steps of mobility process)
5. Open to all (trustworthy) stakeholders
6. And allowing non-linear data exchange among all actors: HEIs, services and modules

Further to the implementation of the EWP Network based on the conclusions of the Desk-Research, it became evident that the EWP project is a starting point for a development that will have far-reaching positive consequences for the Higher Education sector and how student data is handled in Europe. Further investments in such developments will be necessary from the European and the right policy support of national governments can contribute substantially to the swift roll-out of such solutions. Lastly, Higher Education Institutions will need to factor in this changing landscape when taking strategic decisions on their digitalisation and internationalisation strategies for the upcoming years.

2. EUROPEAN MOBILITY DOCUMENTS

As a first step, a range of official documents have been analysed to identify possible existing quasi-standards, recommendations by European institutions and bodies and to create a foundation which serves to conduct further research and interviews.

2.1 ECTS Users' Guide

2.1.1 The European Credit Transfer and Accumulation System (ECTS)

It is described as a learner-centred system for credit accumulation and transfer, based on the principle of transparency of the learning, teaching and assessment process. Its objective is to facilitate the planning, delivery and evaluation of study programmes and student mobility by recognising learning achievements and qualifications and periods of learning.

The ECTS Users' Guide of 2015 is the revised Users' Guide, based on the former 2009 version. It describes the meaningful implementation of learning outcomes in the European Higher Education Area (EHEA). The guide itself is offered to students, other learners, academics and administrative staff in higher education institutions. It describes the whole process of ECTS, starting from how to use ECTS for programme design, delivery and monitoring, to how ECTS can be used for mobility and credit recognition, and how ECTS and lifelong learning co-relate. It finishes with ECTS and quality assurance and gives an overview of supporting documents for the use of ECTS.

For the EWP project, the chapters "ECTS for programme design, delivery and monitoring" as well as "ECTS for mobility and credit recognition" are the most relevant parts of the guide. Additionally, the "ECTS and supporting documents" chapter provides a resource for analysis.

2.1.2 ECTS for programme design, delivery and monitoring

In this chapter, the guide describes how ECTS can be used to create a coherent programme. It is important in the context of student mobility as a certain timeframe of studies at a sending institution is replaced by a certain timeframe of studies at a receiving institution.

It states that: *"The programme profile is broken down into educational components which may consist of single or several modules, other types of course unit, work and clinical placements, research projects, laboratory work and other relevant learning activities. They may also include social and community activities (for example, tutoring and mentoring) provided they fit the programme learning outcomes and carry credits."*

2.1.3 ECTS for mobility and credit recognition

This chapter notes that: *"Successful learning mobility requires academic recognition and transfer of credits. Recognition of credits is the process through which an institution certifies that learning outcomes*

achieved and assessed in another institution satisfy the requirements of one of the programmes they offer. Given the diversity of programmes and HEIs, it is unlikely that the credits and learning outcomes of a single educational component in two different programmes will be identical. [...] An open and flexible approach to the recognition of credits obtained in another context, including learning mobility, is therefore recommended, based on compatibility of learning outcomes rather than on the equivalence of course contents. In practice, recognition means that the number of credits gained for compatible learning outcomes achieved in another context will replace the number of credits that are allocated for compatible learning outcomes at the awarding institution.”

This is highly relevant for many fields, e.g. recognition of other degrees, former work experience, etc. In the context of EWP, the relevance is limited to credit mobility, more specifically the Erasmus mobility.

The ECTS Users’ guide describes Credit mobility as follows:

“ECTS was designed to facilitate learning mobility between institutions for short-term study periods (‘credit mobility’). As this Guide makes clear, ECTS has developed and been adopted for purposes of credit accumulation but it still plays a vital role in student mobility – facilitating the transfer and recognition of the achievements of the mobile student. In ECTS, the following supporting documents help facilitate credit recognition for the purpose of mobility:

- Course Catalogue
- Learning Agreement
- Transcript of Records
- Traineeship Certificate

These documents provide information on the learning outcomes achieved, on which the qualification-awarding institution can make decisions on credit recognition and transfer.”

It also mentions in a Nota Bene:

“The golden rule of recognition of credit mobility within the framework of inter-institutional agreements: All credits gained during the period of study abroad or during the virtual mobility – as agreed in the Learning Agreement and confirmed by the Transcript of Records – should be transferred without delay and counted towards the student’s degree without any additional work by or assessment of the student.”

In the following paragraph the relevant process is described in further detail:

“Before the credit mobility period in order to facilitate the organisation of credit mobility and its recognition, the three parties involved – the student, the sending institution and the receiving institution or organisation/enterprise – should agree on the programme abroad. They should formalise this in a **Learning Agreement**, to be signed by the three parties before the start of the mobility period. The Learning Agreement is intended to give the student the confirmation that the credits he/she successfully achieves during the mobility period will be recognised. The Erasmus+ programme provides **templates for the Learning Agreement** for studies and for traineeships for institutions participating in the programme.”

The templates for the Learning Agreement are analysed further on in the Desk-Research.

The guide further elaborates:

“The Learning Agreement should identify a set of suitable educational components to be taken at the receiving institution and how they will be integrated into the programme of the sending institution. [...] The receiving institution commits to register the incoming student in the planned educational

components, verifying that these components are available for the foreseen mobility period. Once it is signed by all three parties, the Learning Agreement can be modified thereafter, if necessary, by agreement of all three parties concerned.”

For the time after the credit mobility period the guide continues:

“The receiving institution provides the sending institution and the student with a Transcript of Records [...]. Upon successful completion of the set of educational components included in the Learning Agreement and confirmed by the Transcript of Records sent by the receiving institution, the sending institution should recognise fully the agreed number of ECTS credits, transfer them into the student’s programme and use them to satisfy the qualification requirements. [...] When applicable, grades are converted. All this information should be recorded in a Transcript of Record (or equivalent document/database) made available to the student. [...]

The Diploma Supplement is designed to provide graduates with a transparent record of their achievements. Therefore, the educational components successfully completed abroad will be included in the Transcript of Records attached to the Diploma Supplement with their original titles (and their translation into the language(s) in which the Diploma Supplement is issued), the indication of the institution where they have been taken and the credits and grades awarded.”

For the EWP project, the **Transcript of Records** is highly relevant, as it is transferred between the receiving and the sending institution.

Additionally, the information regarding **grade conversion** needs to be made available and is therefore also relevant data that needs consideration. The guide elaborates: *“To ensure transparent and coherent information on the performance of the individual student, each HEI should provide – in addition to their national/institutional grading scale and an explanation of the scale – a statistical distribution table of the passing grades awarded in the programme or field of study attended by the student (grade distribution table) showing how the grading scale is actually used in that programme. The grade distribution table was first introduced in the ECTS Users’ Guide in 2009, as a replacement for the previous ECTS grading scales (A, B, C, D, E), which are not used anymore.”*

The Diploma Supplement on the other hand is not relevant, as it is issued to the student at the sending institution and no data transfer between sending and receiving institution takes place.

Lastly, the chapter mentions a range of documents relevant for EWP:

“In the Erasmus+ programme, several charters such as the Erasmus Charter for Higher Education (Institutional Commitment), the European Quality Charter for Mobility, the Erasmus Student Charter (European Code of Good Practice for Erasmus+ students) provide a framework for arranging credit mobility and recognition.”

2.14 ECTS and supporting documents

The last chapter of the guide gives an overview of documents relevant to support the implementation of the ECTS. The following summary of all mentioned documents will give an overview of why they are relevant or not for the EWP Network.

Course Catalogue

“The Course Catalogue includes detailed, user-friendly and up-to-date information on the institution’s learning environment that should be available to students before entering and throughout their studies to enable them to make the right choices and use their time most efficiently.’ [...] The Course Catalogue should be published on the institution’s website, indicating the course/subject titles in the national language (or regional language, if relevant) and in English, so that all interested parties can easily access it. It should be published sufficiently in advance for prospective students to make their choices. The institution is free to decide the format of the Catalogue, as well as the sequencing of the information. However, following a common structure as set out below makes Course Catalogues more easily comparable and improves transparency. In any case, the Course Catalogue should include general information on the institution, its resources and services, as well as academic information on its programmes and individual educational components.”

The Course Catalogue as such is highly relevant for Erasmus+ mobility. It needs to be provided to the student prior to initiating the Learning Agreement. As described in the guide, the structure of the catalogues is not standardised, although ideally it should provide comparable information. It is important that the Catalogue is made available to the student but only the information on where it is made available, typically a URL, is transferred between institutions. This makes the Course Catalogue as such less relevant for the current scope of the EWP project. The information on where to find the Course Catalogue needs to be included in the EWP Network and the network will need to allow the possible implementation of an exchange of course catalogue data at a later stage.

Learning Agreement

“The Learning Agreement provides an official, binding commitment between the student, the sending institution, and the receiving institution/organisation/company on all the learning activities to be carried out. The approval of the Learning Agreement and its amendments is possible through digital signatures or copies of scanned signatures, sent electronically, according to institutional regulations or practice.”

The Learning Agreement is one of the most crucial documents and highly relevant for the EWP Network, as it is standardised to a high extent and exchanged between institutions, in some instances multiple times due to changes and amendments.

Transcript of Records

“The Transcript of Records provides an up-to-date record of students’ progress in their studies: the educational components they have taken, the number of ECTS credits they have achieved, and the grades they have been awarded. [...] In case of credit mobility, the receiving institution provides a Transcript of Records to all mobile students and sends it to the sending institution and the student at the end of their period of study, in order to certify formally the work completed, the credits awarded, and the local grades received during the mobility period. [...]

In mobility for studies, it is recommended to include the components that have been replaced in the student’s home degree, the number of credits that they represent and, when applicable, the translation of the grades received by the student abroad.”

The Transcript of Records is highly relevant for the EWP Network, as it inherits some of the most crucial information exchanged between the receiving and sending institution.

Work Placement Certificate

“The Work Placement Certificate aims to provide transparency and bring out the value of the experience of the student’s work placement. This document is issued by the receiving organisation/enterprise upon the trainee’s completion of the work placement, and it can be complemented by other documents, such as letters of recommendation.”

The Work Placement Certificate is out of scope of the EWP project, as it goes beyond the scope of Erasmus+ student mobility for studies.

2.2 Learning Agreement Template & Guidelines

The European Commission is providing a standardised template (Annex 1) which includes three parts: Before, During and After the mobility. The template is accompanied by Learning Agreement guidelines for studies (Annex 2). Both documents are analysed in this chapter to get a clearer overview of the process envisioned by the European Commission.

2.2.1 The Learning Agreement template

Provided by the European Commission (version 2015) it is divided into different parts:

- Administrative Data
- Before the Mobility
- During the Mobility
- After the Mobility
- Annex

The part for **Administrative Data** gives an overview of the data of the student, the sending and the receiving institution.

The **Before the Mobility** part has four sub-parts. The first one is the overview of educational components that the student intends to take at the Receiving institution, the second part is the language competence the student has or agrees to acquire by the start of the studies. The third part is the list of educational components that the student would usually take at the sending institution. The fourth and last part is the Commitment to the agreement including the three signatures of student, sending and receiving institution.

The **During the Mobility** part is an overview of the exceptional changes to the educational components that might occur after the student arrived at the receiving institution.

The **After the Mobility** part is divided into two sub-parts, the **Transcript of Records at the Receiving Institution**, which is the list of educational components and the overview of ECTS and grades received at the receiving institution, and the **Transcript of Records and Recognition at the Sending Institution**, which gives an overview of the recognised educational components and the corresponding ECTS and grades registered at the sending institution.

Lastly, the **Annex** serves as a glossary, describing the terms used in the template.

2.2.2 Learning Agreement Guidelines for Studies

The document gives an overview of the expected process of mobility and also describes each part of the template in greater detail.

It is important to note that even though the Guidelines clearly state that the use of the template is recommended, HEIs that already have an IT system in place to produce the Learning Agreement or the Transcript of Records can also use their own system. It further elaborates that all information in the templates should be seen as a minimum requirement, meaning that further fields can be added if needed.

The **Administrative data** needs to be provided prior to the mobility and the link to the Mobility Tool+ is made, since most of the information related to the student, sending and receiving institutions will have to be encoded therein.

The EWP Network has to take this data into account and include it into the data dictionary, also considering matching data required for the Mobility Tool+.

Before mobility

According to the guidelines, both the educational components that will be taken at the receiving institution and the educational components replaced at the sending institution need to be completed before the mobility. A key information is that the educational components do not need to have a one-to-one correspondence but can be rather seen as groups of learning outcomes taken abroad which replace a group of learning outcomes at the sending institution.

In addition, any additional components a student might take at the receiving institution, independently of whether they count towards the degree at the sending institution, should be included in the agreement. The guidelines further elaborate that in case the educational components taken at the receiving institution take place within a Mobility window, the Mobility window should be indicated as an educational component at the sending institution.

The language competence that is already indicated in the Interinstitutional Agreement between institutions needs to be indicated in the Learning Agreement as well. The guidelines refer to the Erasmus+ Online Linguistic Support (OLS), which serves as an assessment and language course system for a range of languages.

Signatures in the Learning Agreement can be scanned or digital, as long as national or institutional regulations allow it.

During Mobility

Regarding the timeline, the guide suggests that changes to the study programme agreed upon in the initial Learning Agreement should be done within five weeks after the start of each semester and they require an agreement by all three parties within two weeks following the request.

Changes regarding the extension of the mobility period should be made by the student at least one month before the foreseen end date of the agreed mobility period.

In case changes happen to the **Administrative Data**, the changes should be initiated by the sending or receiving institution.

All changes can be agreed upon without a signature if national legislation allows it.

After Mobility

The **Transcript of Records at the Receiving Institution** should be sent to the student and the sending institution within the framework agreed upon in the Interinstitutional Agreement, which should normally be within five weeks after the publication/proclamation of the students' results.

Grade distribution should also be provided, either by annex to the ToR or via a web link. For the EWP Network this means it should be considered as a separate data entity, as it might not be part of the ToR itself.

The **start and end date** of the study period should be transferred to the sending institution.

The **Transcript of Records and Recognition at the Sending Institution**, where applicable, includes the translated grades, taking into account the grade distribution information that the receiving institution provides. The sending institution should record the results in their local system and make it accessible to the students, usually within five weeks after having received the ToR of the receiving institution.

2.3. Conclusion

The analysis of the EU/EHEA documents gives a general overview of the most relevant documents and data for the EWP Network:

- Interinstitutional Agreement
- Learning Agreement
- Transcript of Records¹
- Grade Distribution

¹ Possibly, the Transcript of Records and Recognition at the sending institution should be also made available to the receiving institution.

24 Mobility Tool+

24.1 Meeting with Mobility Tool+ technical team

Rational

The development of data standards and connectors meant to allow the automatic exchange of information among HEIs can also enable seamless interactions between the IT systems of the HEIs and those of national data repositories or the Mobility Tool+. This would evidently amount to an important efficiency gain for all parties involved (HEIs and EC).

In order to anticipate how the connection with the Mobility Tool+ (MT+) can be best achieved, contact

was already established with the European Commission during the initial phase of the EWP project. As a result, a meeting with the Erasmus+ Mobility Tool+ technical team was organised.

While the DG colleagues have been very supportive of the work of EWP, the matter of discussing such aspects with the MT+ was approached with noticeable caution. A vetting process about the usefulness of such contact was carried out internally, based on a phone meeting and written documentation justifying the importance of starting such a contact. When the meeting was authorised it was made abundantly clear that such discussions ought to be considered only from a post-2017 perspective, as it was not conceivable that there would be availability to develop an EWP connector in the scope of the existing project.

Technical meeting

On 2 March 2016 representatives from the European University Foundation (EUF) and the University of Ghent were invited to the DG premises to meet with two colleagues from the MT+ technical team. The meeting was accompanied by Daphne Scherer and Elena Tegovska and facilitated by Vanessa Debais-Sainton.

The first round of questions concerned the stability of the existing data flows and data dictionaries. The workflows are likely to change from 2017 onwards, when the European Commission will introduce the concept of draft mobility. This will mean HEIs will have to report outgoing mobilities already before the mobilities take place. The aim is to automate the process of issuing of OLS licenses, which means the data flow will substantially change and therefore also influence at what point the EWP Network will have to interact with the Mobility Tool+. It is expected that changes to the existing data dictionaries will be small or non-existent. Seeing how the implementation of draft mobilities would introduce an extra step in the management of Erasmus exchanges it strengthens the case for linking the EWP and MT+.

From here the discussion moved towards the question of how such connection could be envisaged, and it was immediately clear this is likely to prove a complex feat, owing to the fact that the EC has stringent security requirements that must be met. Current authentication procedures are manual and person based through a front-end interface and no API for connecting has so far been considered. Automatic connection to the authentication systems of the EC seem to be of concern, as the responsibility for the infrastructure is distributed between different DGs and Units of the EC. It was elaborated that in case an automatic entry point would be established, it should be a single point of entry, which then has to fulfil strict security guidelines and present a full technical outline and the concrete business case before being considered for approval. As there will not be a need to receive any data from the MT+ but rather to insert data, the process should still be relatively straightforward.

Several assorted matters were touched upon, including the notion of using the unique user identifiers generated by the MT+ and the possibility of setting up a dedicated web service to be able to relay institutional information associated to PIC codes.

The meeting has more than met the purpose of starting building bridges with the EC technical teams with a view to build trust and pave the way for future cooperation. The MT+ team colleagues were also made aware of the EWP related discussions on GitHub.

To conclude, further discussions in regard to the connection between MT+ and the EWP Network will need to follow and are likely to bare fruits.

3. RESEARCH PROJECTS

For the analysis, two major research projects in the field were identified: HEION project (EU-funded consortium) and Mobility Project (Rome Student Systems and Standards Group (RS3G) & University of Warsaw).

Both projects have been conducted under the assumption that flows of mobility could be improved substantially by digitising some of the information exchanged between institutions.

HEION has been concentrating on the Learning Agreement and Mobility Project on the overall flow of mobility for Erasmus mobilities and beyond.

3.1 Higher Education Institutions Online for ECTS (HEION)

HEION is an EU funded project concluded in 2013. Its aim was to have a proof of concept for a working online tool for handling the complex processes of a Learning-Agreement, one of the core documents for Erasmus+ student mobility.

To have an overview of the workflow for the Learning Agreement as described in the HEION project, consult the [HEION final report](#) published by the European Commission.

Implication: The highly complex processes of establishing a Learning Agreement focuses mainly on the interaction between the student and the institution, which is not in the scope of the EWP Network, which addresses the data transfer between institutions.

As the EWP needs to focus solely on the moments of data exchange between the institutions, the following two moments can be identified.

1. After the Sending Institution and the student agree on a **Learning Agreement**, the latter is sent to the receiving institution. The institution should check whether the chosen components (e.g. courses) are available and correct. In case of conflict, the Receiving Institution needs to inform the student and the Sending Institution, and the Learning Agreement needs to be re-done. Potentially, this process can occur in multiple iterations until all parties agree on a final Learning Agreement.
2. After the student arrives at the receiving institution, there is a chance that some of the components of the Final Learning Agreement are either not offered anymore or might have overlapping schedules. The student needs to initiate an amendment to the **Learning Agreement**, which has to be transferred to the sending institution. The sending institution needs to confirm the amendments. In case they do not accept the amendments, they have to inform the student and the receiving institution and a new Learning Agreement Amendment must be proposed. This process can occur in multiple iterations until all three parties agree.

3.2 Mobility Project

The project was led by the Rome Student Systems and Standards Group (RS3G) and the implementation work was mainly carried out by the University of Warsaw. The history of the project is tightly connected with a range of workshops conducted by EUNIS and RS3G.

In the context of the project, two Master theses have been written: “The Mobility Project” by Rafal Nagrodzki in 2009 [Nag09] and “Integration of services in the Mobility Project” by Karol Kanski in 2011 [Kan11], both supervised by Dr. Janina Mincer-Daszkiwicz from the Institute of Informatics. The project focuses on student mobility in general, which means beyond the Erasmus mobility.

The Master thesis [Nag09] concluded the simplified processes of a student mobility as followed:

1. Making an agreement
2. Making nominations
3. Creating initial Learning Agreement
4. Updating LA
5. Creating ToR

As part of the Mobility Project, a RS3G Coding Camp was conducted at the Campus Ciutadella in Barcelona, Spain from 23 - 25 March 2011. A range of universities were asked to analyse their mobility processes and summarise them in presentations to the participants.

In the framework of this Desk Research, the presentations of the following universities were analysed: University of Oslo, University of Helsinki, University of Linköping, University of Porto and University of Warsaw.

3.2.1 University of Oslo

The University of Oslo describes the simplified Erasmus student mobility procedure as follows:

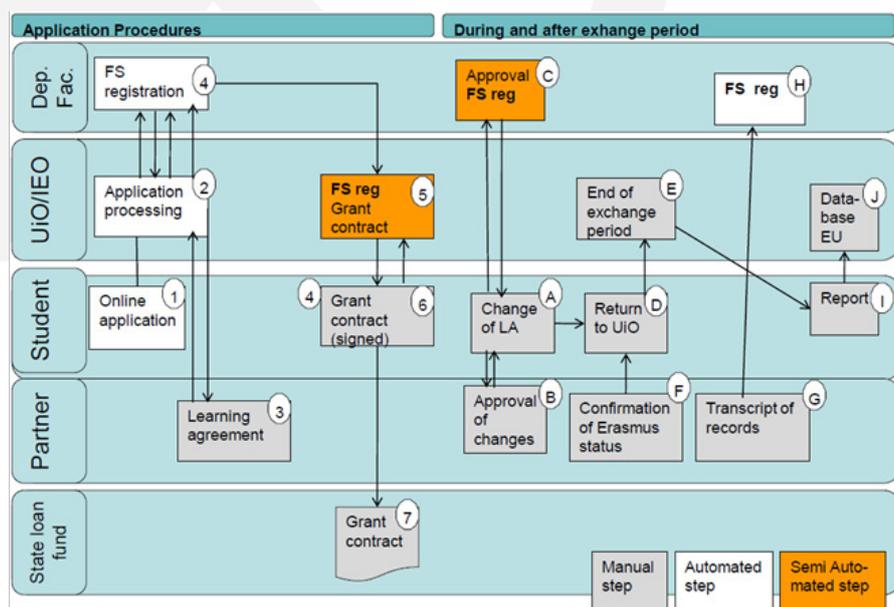


Figure 2 - University of Oslo - E+ process

The moments of data exchange between institutions according to the scheme are the following:

- Learning Agreement
- Approval of Learning Agreement changes
- Confirmation of Erasmus status
- Transcript of Records

Additionally, they identified a more comprehensive list of information as useful to be exchanged electronically:

- Learning Agreements (and subsequent amendments)
- Confirmation of Erasmus Status
- Student Nominations
- Erasmus Coordinators/Contact Persons
- Academic Calendars
- Housing
- Language Courses

3.2.2 University of Helsinki

The presentation of the University of Helsinki summarised the situation as following:

Every year more than 1000 Learning Agreements + 1000 Transcript of Records need to be handled. In practice, the receiving institution has records in electronic form in their SIS, prints them out for mailing, and they are manually put into the SIS of the sending institution.

During the recognition process different educational units at the sending institution require the original transcript for recognition purposes (Language courses via language centre, major subject via home department, minor subjects via department in question, free choice courses via corresponding faculty). The original paper is only available to one educational unit at a time, which creates delays in the recognition process.

The following data is suggested to be able to be interchanged between institutions in an electronic format:

- Personal data,
- Study rights,
- Course contents,
- Learning Agreements,
- Transcript of records

The recommendation to create a SIS <-> SIS connection is put forward.

3.2.3 University of Linköping

The University of Linköping presented a rather complex overview of the whole process of mobility.

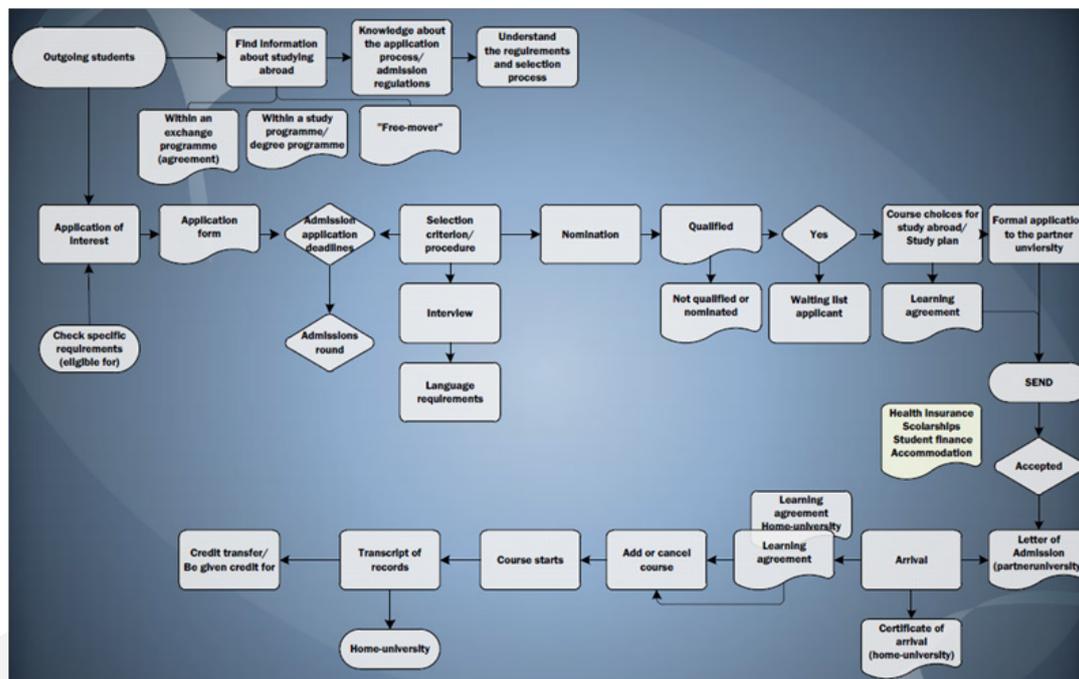


Figure 3 - University of Linköping - E+ process

The data that is transferred between the sending and receiving institution according to the process is the following:

- Formal student application
- Learning Agreement
- Letter of Admission)
- Certificate of arrival
- Transcript of Records

3.24 University of Porto

The University of Porto analysed the mobility process with a division between Interinstitutional Agreement and the actual mobility flow. In the following diagram the process of the Interinstitutional Agreement can be visualised:



Figure 4 - University of Porto - Interinstitutional Agreement process

The following figure 5 visualises the mobility flow:

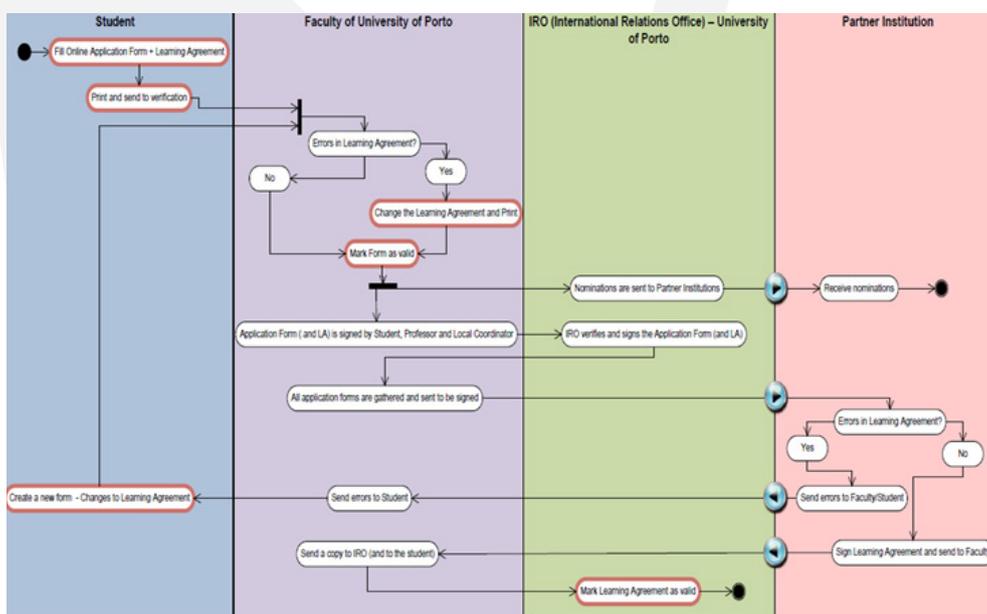


Figure 5 - University of Porto - E+ process

The information that needs to be exchanged between the institutions is identified as follows:

- Interinstitutional Agreement
- Nominations
- Learning Agreement + Changes to Learning Agreement
- Arrival and departure dates confirmation
- Transcripts of Records

3.2.5 University of Warsaw

The University of Warsaw analysed each of the flows separately and in detail. As a result, they identified the following information to be exchanged:

- Interinstitutional Agreement
- Erasmus Nominees
- Confirmation of Acceptance
- Confirmation of Stay
- Learning Agreement
- Transcript of Records
- Other data

3.3 Mobility Project: Summary

The following is an overview of the data relevant for potential electronic data exchange between the sending and receiving institutions, as identified from the presentations:

Mobility Project

- Making an agreement
- Making nominations
- Creating initial Learning Agreement
- Updating LA
- Creating ToR

Linköping

- Formal student application
- Learning Agreement (Letter of Admission)
- Certificate of arrival
- Transcript of Records

Helsinki

- Personal data
- Study rights
- Course contents
- Learning Agreements
- Transcript of Records

Oslo

- Learning Agreements (and changes to it)
- Confirmation of Erasmus Status Student
- Nominations
- Erasmus Coordinators/ Contact Persons
- Academic Calendars
- Housing
- Language Courses

Porto

- Interinstitutional Agreement
- Nominations
- Learning Agreement + Changes to Learning Agreement
- Arrivals and departures dates confirmation
- Transcripts of Records

Warsaw

- Interinstitutional Agreement
- Erasmus Nominees
- Confirmation of Acceptance
- Confirmation of Stay
- Learning Agreement
- Transcript of Records
- Other data

In order to find common data that would be relevant for the EWP Network, find a summary of the identified data below:

1. **Interinstitutional Agreement**, mentioned 4x (the Academic Calendar mentioned is usually part of the Interinstitutional Agreement)
2. **Student nomination**, mentioned 4x (Nominations)
3. **Learning Agreement + changes**, mentioned 6x (includes 'Erasmus Coordinators/Contact Person' and 'course content')
4. **Transcript of Records**, mentioned 5x

Other data is described in a broader sense and also in different stages of the process. This is in line with the initial assumption of a very divergent mobility process environment.

For simplification, some of the non-coherent data is grouped, as "Student Data". This could include the following: Confirmation of Erasmus Student, Housing information, Language information, Formal student application, Certification of arrival, Arrival and departure confirmation, Confirmation of stay, Letter of admission.

3.3.1 Conclusion

The detailed look into concluded research projects gives a first impression on how the reality of Erasmus mobility processes looks like at institutional level. Data and documents are sometimes exchanged multiple times until a final result is established, a fact that the EWP Network needs to take into consideration. Also, institutions require additional data to be transferred between institutions, for which the European Commission does not provide templates.

This leads to an elaborated list of the required data relevant to the EWP Network, taking into consideration the itemisation of the same document according to different moments of data exchange:

- Interinstitutional Agreement
- Student Nomination
- Learning Agreement
- Learning Agreement Amendment
- Information on Start and End date of the mobility
- Transcript of Records
- Grade Distribution

From the research projects it becomes evident that there it is not possible to identify a unified **flow of data**. It is clear that certain data is transmitted earlier than other. The given projects and data information do not give any conclusion on exact order or dependencies though. There seems to be a pattern of sequence but with many irregularities. These aspects are being concluded through the following chapters (Interviews and Surveys).

4. SIS PROVIDER - INTERVIEW & CONTRIBUTION PAPER

4.1 SIGMA

Date: 21 DEC 2015
 Interviewer: Stefan Jahnke (European University Foundation)
 Interviewees: Victoria Montenegro, Jordi Cuni

The **Interinstitutional Agreements** (IIA) are handled by the software but no data transfer between institutions takes place.

The system handles the allocation of spots with the data of the IIAs to create the **nominations**.

The **Learning Agreement** is handled via the SIGMA software and subjects are pre-registered at the sending institution as mobility courses.

The SIGMA software enhances the management of mobility data substantially and eases the process between different steps.

The SIGMA solution does not enable the communication between institutions via the Software. As a follow-up of the interview, SIGMA provides an overview of the usual mobility process of institutions using the SIGMA solution.

4.1.1. SIGMA Use cases and mobility scenarios report

Introduction

This document provides an overview of the contribution from SIGMA to deliverable 02-WP2, "Use cases and mobility scenarios report". The input to this report consists of a description of the current practices established at several of the universities that use the SIGMA application for administering student mobility, collected through personal interviews with the staff in charge of the management of mobility programmes.

Until now interviews have been conducted with one university, and it is expected to gather data from several other universities shortly.

Interinstitutional agreements

An interinstitutional agreement is usually started at the initiative of a teacher who has a contact in the foreign university. When the agreement is established its data are entered into the SIGMA application, where all information and attributes of each agreement are registered (with one exception: SIGMA does not keep the language level in the case of teachers).

The signed document of the agreement is generated with the SIGMA application using the corresponding model. All contact addresses (IROs) are reported in the application, which sends the agreement by e-mail to the partner university. The latter signs the agreement and sends it back by e-mail (PDF), and also on paper. The status of the agreement is kept by SIGMA at all times, and it is updated to "signed".

There may be several interactions until the final version of the agreement is closed. All changes are made through the application.

A number of agreements may be modified every year, but when there is a change in the framework programme (e.g. when the Erasmus+ programme was established for the 2014–2020 period) it is necessary to renew the agreements with many universities.

Some changes occurred in partner universities (e.g. when two universities merge) are notified immediately, but others may take longer to be reported (e.g. when there is a change of coordinator, of university address, etc.). Sometimes the change is not noticed until some student participates in an exchange.

The mobility agreements for university staff (teaching and administrative) are usually ad hoc, without a general agreement being set up.

Outgoing students

Learning agreement

The learning agreement for each student, where items like the host university, the period of stay, the subjects taken, the language of instruction, etc., are recorded, is managed through SIGMA. However, the grant agreement for the management of payments is internal to the university.

SIGMA manages the process from the registration of student applications, allocation of places, etc., to the final outcome, which is the learning agreement. This agreement may undergo many changes a posteriori (e.g. because there is no exact match between subjects in the home and host universities, information about subjects may be insufficient, there may be overlapping class schedules in the chosen subjects, etc.), but the SIGMA application keeps track of the whole history of changes.

The numerous changes in the learning agreement are due to the fact that there is usually little information equivalent to teaching guides. Although the philosophy of the programme at a European level is not to work with specific subjects but with credit blocks of related subjects, this is usually not yet observed. This problem does not occur in the Diploma Supplement, because it states exactly the specific subjects taken in the host university.

The student carries the learning agreement with herself or himself on paper, and it is signed by the home coordinator, the host coordinator, and the student.

Certificates

The certificate of arrival at the host university is necessary for the management of the first payment. Therefore, the home university receives it scanned by e-mail, or sometimes by fax.

The final certificate of stay is necessary for the calculation of the total payment, based on the exact number of days. This certificate cannot be dated on a date prior to the end of the stay, because it would then be invalid (if it is electronic, it should not allow the specification of an invalid date).

Furthermore, for the audits carried out by SEPIE (Spanish Service for the Internationalisation of Education, formerly Autonomous Body for European Educational Programmes) the stay certificates must be originals. It will be possible to avoid the use of paper once the European directive on mutual recognition of electronic signature systems of each country becomes effective.

The Transcript of Records is sent directly from university to university, so that the student cannot manipulate it. The electronic delivery is handled by SIGMA. Some universities also send it on paper by mail.

Incoming students

The home university notifies the list of students selected to go to the host university. This list is sent by e-mail.

The student fills out the incoming application through SIGMA. Once it is validated, the admission and formalisation of the registration to the requested courses can be carried out. (From the host university it is not possible to know the corresponding subjects in the home university.)

The student census card is also generated, containing the date of arrival and departure, address during the stay, etc. The documentation associated with the census card includes:

- Certificate of arrival.
- Documents for the Ministry of Interior: for residence permits, etc. (For non-EU students requiring a formal invitation from the university in order to obtain a visa, the arrangements can also be made from SIGMA.)
- Certificate of stay (issued at the end of the stay).
- Transcript of Records, sent to the home university (without going through the student, as in the case of outgoing students). It is generated from the academic record of the student kept in SIGMA.

Other issues

The transfer of the Transcript of Records may take a long time, depending on the country and the university, so the inclusion of the student's marks in the home university record will very likely be delayed. Starting with the Erasmus+ programme a commitment was established to complete the process within five weeks, but it is often not fulfilled.

Some universities offer accurate and well-organised information to Erasmus students. They usually have a fact sheet in their website with the details of the courses, etc.

Suggested recommendation at a Spanish level (CRUE-TIC): universities should offer the information of the teaching guides of subjects in a standardised (open data) and machine-processable (metadata, semantic web) format.

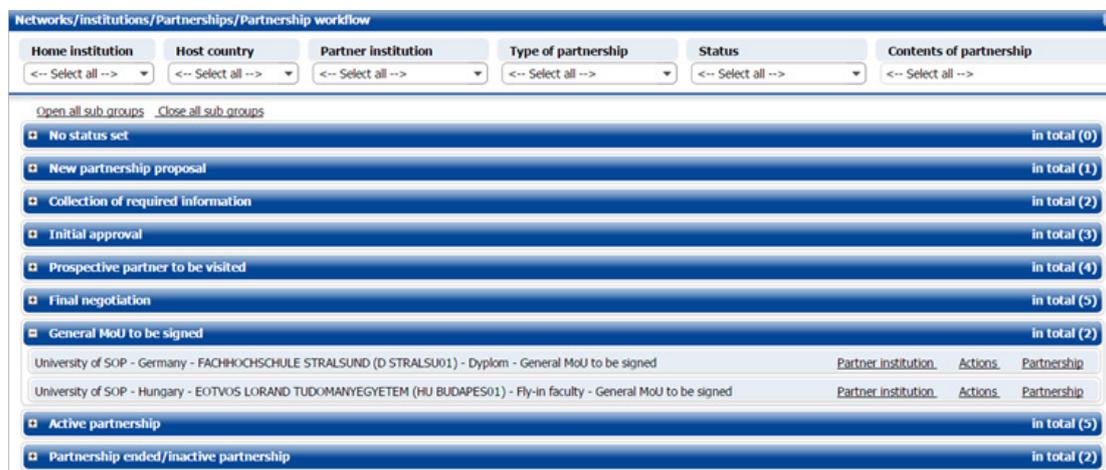
4.2. SOP – Mobility-Online

The SOP solution for managing mobility is called Mobility Online. It is implemented in more than 110 European universities (status February 2016). The solution is available as an online version and can be deployed as a local version at the institution.

Mobility-Online divides the process of mobility in (a) before, (b) during and (c) after mobility.

4.2.1 Before the mobility

Before the mobility, data is interchanged between home and host university regarding their master data and their agreements based on a specific workflow (partnership workflow). Here is an example of the demo version.



Home institution	Host country	Partner institution	Type of partnership	Status	Contents of partnership
<-- Select all -->	<-- Select all -->	<-- Select all -->	<-- Select all -->	<-- Select all -->	<-- Select all -->
Open all sub groups Close all sub groups					
No status set					in total (0)
New partnership proposal					in total (1)
Collection of required information					in total (2)
Initial approval					in total (3)
Prospective partner to be visited					in total (4)
Final negotiation					in total (5)
General MoU to be signed					in total (2)
University of SOP - Germany - FACHHOCHSCHULE STRALSUND (D STRALSU01) - Dyplo - General MoU to be signed					Partner institution Actions Partnership
University of SOP - Hungary - EOTVOS LORAND TUDOMANYESYETEM (HU BUDAPES01) - Fly-in faculty - General MoU to be signed					Partner institution Actions Partnership
Active partnership					in total (5)
Partnership ended/inactive partnership					in total (2)

Within this process the participating institutions transfer data and/or documents such as:

- General master data (address data, personal details, etc.)
- Interinstitutional agreements, bilateral agreements, etc.

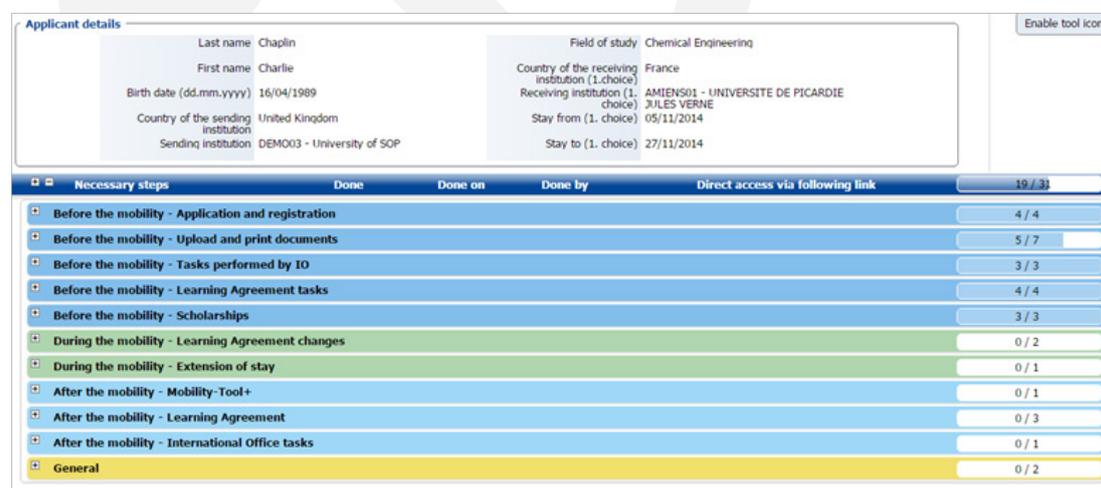
Additionally, data is interchanged between home and host universities regarding:

- Nominated outgoing students
- Uploaded documents by the students
- Completed and signed Learning Agreements



➔ Application documents complete - Application not yet allocated to partner institution	(2)	Allocate application to host institution
➔ Application allocated to partner institution - Student not yet informed about allocation	(0)	
➔ Student informed about allocation - Application not yet nominated at partner institution	(5)	Send nomination e-mail to partner institution

Another data interchange happens regarding application documents of students (e.g. application forms, diplomas, Learning Agreement, etc.). Here is an example for such a possible workflow for a student.



Applicant details		Field of study		Country of the receiving institution (1.choice)		Receiving institution (1. choice)		Stay from (1. choice)		Stay to (1. choice)	
Last name	Chaplin	Field of study	Chemical Engineering	Country of the receiving institution (1.choice)	France	Receiving institution (1. choice)	AMIENS01 - UNIVERSITE DE PICARDIE JULES VERNE	Stay from (1. choice)	05/11/2014	Stay to (1. choice)	27/11/2014
First name	Charlie										
Birth date (dd.mm.yyyy)	16/04/1989										
Country of the sending Institution	United Kingdom										
Sending Institution	DEMO03 - University of SOP										

Necessary steps	Done	Done on	Done by	Direct access via following link	10 / 31
Before the mobility - Application and registration	4 / 4				
Before the mobility - Upload and print documents	5 / 7				
Before the mobility - Tasks performed by IO	3 / 3				
Before the mobility - Learning Agreement tasks	4 / 4				
Before the mobility - Scholarships	3 / 3				
During the mobility - Learning Agreement changes	0 / 2				
During the mobility - Extension of stay	0 / 1				
After the mobility - Mobility-Tool+	0 / 1				
After the mobility - Learning Agreement	0 / 3				
After the mobility - International Office tasks	0 / 1				
General	0 / 2				

In these workflow steps of an applicant there are a few sub-groups for uploading, printing and signing documents.

Before the mobility - Upload and print documents					5 / 7
Passport photo uploaded	<input checked="" type="checkbox"/>	17.11.2014	Charlie Chaplin	Upload passport photo	
Letter of motivation uploaded	<input checked="" type="checkbox"/>	17.11.2014	Charlie Chaplin	Upload letter of motivation	
Confirmation of language proficiency uploaded (optional)	<input type="checkbox"/>			Upload confirmation of language proficiency	
Transcript of records uploaded (optional)	<input type="checkbox"/>			Upload transcript of records	
CV uploaded	<input checked="" type="checkbox"/>	17.11.2014	Charlie Chaplin	Upload CV	
Application form printed	<input checked="" type="checkbox"/>	17.11.2014	Charlie Chaplin	Print application form	
Signed application form uploaded	<input checked="" type="checkbox"/>	17.11.2014	Charlie Chaplin	Upload signed application form	

As well as for completing, printing, signing and uploading the Learning Agreements (with all the changes and extensions).

Before the mobility - Learning Agreement tasks					4 / 4
Courses entered into the Learning Agreement	<input checked="" type="checkbox"/>	14.01.2015	Charlie Chaplin	Enter courses into the Learning Agreement	
Courses in the Learning Agreement approved by IO	<input checked="" type="checkbox"/>				
Learning Agreement printed	<input checked="" type="checkbox"/>	24.11.2015	Charlie Chaplin	Print Learning Agreement	
Learning Agreement signed by all parties and uploaded	<input checked="" type="checkbox"/>	12.03.2015	admin (kah)	Upload Learning Agreement signed by all parties	

4.2.2 During the mobility

During the mobility, an interchange of changed Learning Agreements takes place.

During the mobility - Learning Agreement changes					0 / 2
Changed courses entered into the Learning Agreement	<input type="checkbox"/>			Enter changed courses into the Learning Agreement (during the mobility)	
Learning Agreement (during the mobility) printed	<input type="checkbox"/>			Print Learning Agreement (during the mobility)	

4.2.3 After the mobility

Only the Interchange of Transcript of Records takes place.

4.2.4 Other

SOP provided the consortium with detailed information regarding the data types and mobility flows. For reasons of copyright, that information is used to feed into the EWP data dictionary but it is not shared through the project deliverables.

5. NATIONAL STUDENT DATA REPOSITORIES

5.1 Ladok (Sweden)

Ladok is used in Sweden. It is owned by a consortium of 38 higher education institutions (including all major universities, as well as for example artistic schools and the Police Academy) plus the governmental Student Aid Agency (CNN). The Ladok system development is done together with all the higher education institutions, but each institution owns and is responsible for the content of its own register. It covers more than 99% of all Swedish students.

There are about 5000 users throughout Sweden and various stakeholders in higher education use Ladok in different ways. Notable examples include the following:

- Administrators at the institutions use the system for accepting applications, to award degrees and to follow up on the day-to-day activities. They also register course results, plan course selections and use it for guidance of students.
- Faculty Boards (or whoever is in charge of this) use it for various administrative decisions, including recognition of courses.
- Students can use the system for printing out their grades, see their study results so far and other simple things.

Ladok's stored information is also sent to other external institutions, for example the Ministry of Education, the Swedish Higher Education Authority and the Government statistical agency. Ladok is financed by its owners and its annual turnover is approximately 11,000,000 EUR. A few other key figures include the following:

- More than 500,000 students active in Ladok every year.
- More than 4,000,000 students in Ladok in total.
- More than 2,000,000 course registrations per year.
- More than 1,000,000 certificates drawn out by students themselves every year.

Outgoing Erasmus students are registered as such in Ladok by the institutions prior to departure. Upon return, their credits earned abroad are approved/recognised by a Programme Director (or equivalent) and registered in Ladok by an administrator. The information in Ladok will thus say that the student has spent, for example, one semester at University of AAA, and 30 credits have been recognised.

It should be noted that Ladok is in the middle of a transformation between "old Ladok" and "new Ladok". The changes are being implemented gradually and the new one will be fully operational in 2017.

Perhaps a bit off-topic, but relevant for EWP, is that every piece of information stored in Ladok is considered to be a public document ("allmän handling"). This means that the public has the right to access this information.

More information (only in Swedish): www.ladok.se/

5.2 VIRT A higher education achievement register (Finland)

VIRT A higher education achievement register is a service from the state-owned company IT Center for Science Ltd. (CSC). It is owned by the Finnish Ministry of Education and Culture and used by 38 Finnish higher education institutions, meaning that approximately 1,300,000 degree students are registered in it.

According to its website (<https://www.csc.fi/-/virta>), “records of graduations, study attainments, grades, rights to study in higher education as well as information on study place acceptance and enrolment to study a degree are incorporated in the national data warehouse for higher education. In future, information on e.g. international mobility programmes will be included in the VIRT A student achievement register”.

VIRT A is integrated into several other functions, including the Digital Registration Service for Higher Education Institutions (OILL, which checks whether a student has a right to study at a certain higher education institution), Studyinfo.fi (which looks into information on previously completed degrees) and Statistics Finland (which gathers statistics on completed credits and courses and provides the Ministry with reports).

Similarly to Ladok, VIRT A is in the middle of a transformation. This is very important for EWP, since the new and updated system will include data on international student mobility. Much of the data regarding student mobility are presently collected by these different bodies:

- CIMO (providing information about internationalisation of higher education in Finland)
- Ministry of Education and Culture
- National Board of Education
- Statistics Finland
- EuroSTAT

From 2017 all of the above will be standardised into one common data warehouse. This will require all of the Finnish higher education institutions to standardise their data.

More information in English: <https://www.csc.fi/-/virta>

5.3 Felles studentsystem (Norway)

Felles studentsystem (FS) is used by 51 institutions in Norway, including all universities, university colleges, among others. Its development is sub-contracted to the University of Oslo.

Approximately 4,000 administrators use it and in addition there are many others (including teachers) who can access the student data. Approximately 220,000 students can access their grades and administer parts of their studies.

Examples of modules that can be used in the FS include:

- Enrolment, where the admission procedures are done
- Recognition, where results from exams from other universities are validated
- Scholarship, where student scholarships are managed

Important from the EWP perspective, there is also a Student Exchange module. It is “used for registering and administering an institution’s student exchange agreements with institutions from other countries”, according to the FS website. All the modules are connected to each other and dependent on each other.

More information in English: <http://www.fellesstudentsystem.no/english/>

54 ESSE3 (Italy)

ESS3 is a student management system developed by KION, which also has developed systems for Turkey and Albania. ESSE3 is used by 80% of the Italian universities and started in 1999 as a tool to support universities in implementing the Bologna Process.

ESSE3 deals with a variety of student data, including enrolment, course syllabus and grades recording. It also includes transfer of credits to/from other universities.

Students can use ESSE3 to sign up for exams and check results, print various certificates or view course programmes, for example.

More information in English: <http://www.kion.it/en/solutions/esse3-student-management-system>

6. HIGHER EDUCATION INSTITUTIONS - INTERVIEWS

To further deepen the Desk Research, the overview of mobility processes that has been created through the analysis of EU/EHEA documents and the analysis of concluded research projects, a range of interviews with HEIs was conducted. All Higher Education Institutions interviewed are part of the EWP consortium. This chapter gives a summary of the most relevant information extracted from the interviews, highlighting the most relevant particularities of the respective institutions.

6.1 Ghent University

Date: 21 Jan 2016

Interviewer: Stefan Jahnke (European University Foundation)

Interviewees: Kelly Van Malderen, Greet Naessens, Paul Leys

Ghent University has 11 faculties and the majority of the processes for student mobility are decentralised.

Interinstitutional agreements - faculties decide on the partners they want to sign an IIAs with according to a range of quality procedures. Data of the agreements are entered into the Database by faculty members. The UGent is using a SIS called OASIS for this purpose. Once the IIA is entered, it is sent to the partner institution by the IRO. Changes to the IIA can be made within OASIS, without the need for a new signature.

Faculties set the deadline for students to apply and use different selection procedures for students. Students need to apply via OASIS where the faculties select their students. Some faculties require their students to already have a first proposal of the **Learning Agreement** in this stage of the application. The Learning Agreements can be created via a web service, where they can also see typical courses that students of the same faculty who went on Erasmus have taken in the former two years.

Once the application is finished, the faculty needs to approve it. LAs are not obligatory for all applications though. Sometimes the LAs are created only after selection; sometimes students need to create the agreement for all institutions they would like to apply for.

The digital **Signature** of the head of office is automatically added to all LAs as soon as the responsible person from the faculty agrees by electronically approving the LA.

Faculty members might send the LA to the academic person responsible, who can, via a web service, approve the LA. The signature of the receiving institution is mandatory.

Nominations can be exported via OASIS as a list, which is usually sent via e-mail to the receiving institution, even though sometimes the receiving institution requires the sending institution to enter the information about nominations in an online platform provided by the receiving institution.

Confirmation of Arrival needs to be uploaded to OASIS by the student. Only then the Grant agreement

can be signed. The Erasmus funding is paid in two instalments (70% + 30% upon return). To obtain the final payment, a Confirmation of Departure with signature is required.

Transcripts of Records are also decentralised and the International Relations Office does not have any involvement in the process of how the ToR arrives for the faculty/student.

Prolongation of stay is only possible as 'zero-grant' students (Students that are taking part in an Erasmus+ mobility without receiving a grant) with approval of both institutions.

For incoming students at UGent a simplified version of the grading table is attached to the ToR.

Priorities for the EWP according to the interviewees are:

- Setting up the agreements
- Signing agreements
- Learning Agreements
- Nomination -> (In 20 - 30% of cases, Nominations need to be inserted through an online system at the receiving institution, in contrast to the traditional list of nominations being e-mailed -> this seems to be a trend and the percentage is constantly increasing)
- Confirmation arrival/departure
- Transcript of Records

Implication

Although Ghent University is a decentralised institution, mobility is processed by all faculties via the centralised Oasis system. The fact that in some faculties the LAs need to be generated before the actual process of application is finished, differs from the usual process.

6.2 University of Oslo

Date: 16 Jan 2016

Interviewer: Stefan Jahnke (European University Foundation)

Interviewees: Sara Marie Ullero, Kine Robertsen, Kristine Staerfelt
(International Relations Office of University of Oslo)

The management of Interinstitutional Agreements is decentralised at department level.

A software called EPHORTE is used and fed into the national student data system FS.

Offers are published by the departments, taking information from the FS.

Agreements are only renewed when there are major changes. Minor changes like information of contact person, URLs, etc., are exchanged via fact sheets and entered into FS.

Most of the data transfer happens via e-mail and the University of Oslo is using scanned signatures (print, sign, scan) for the IIA.

Nominations 15 February (Autumn Semester) + 15 September (Spring Semester).

Erasmus students apply via an online portal and can choose between 3-5 alternatives. Nomination procedures are handled by faculty/department. Nominations are either sent to the partner institution as a list via e-mail, or typed into an online system that the partner institution provides.

Learning Agreement handled by Departments

Central level receives information via the internal system about the chosen students and is responsible for grant agreements and payments.

Confirmation of Arrival is sufficient for the University of Oslo - an estimate of the days of stay is enough. Sometimes partner institutions do not want to sign a confirmation of stay/departure.

Centralised level also takes care of entering data into the Mobility Tool+.

Currently it is done manually by copying some of the data of the FS and gathering data from other documents and putting them into an excel file which is then uploaded to the MT+.

The University of Oslo created a Working Group for Learning Agreement common procedures for the whole University - one of the recommendations was to send the LA via e-mail to the students. Currently this Working Group has been put on hold.

Academic recognition of courses:

Two parallel processes - academic recognition application to the UiO (department level -> paper or e-form) for all students and then creation of the LA according to this process. The procedures and strictness differ on department level.

Transcript of Records arrive to the departments.

The application for final recognition happens according to the information available in the internal system in line with the ToR.

Grade Conversion

Diploma Supplement states only ECTS.

Bologna System used A-F (needs to be confirmed with departments).

Implication

The University of Oslo works in a very decentralised way. They use a national student data system, accessible to the relevant personnel but most of the workflows differ from department to department, as they have autonomy over the processes.

6.3 University of Essex

Date: 21 Dec 2015

Interviewer: Stefan Jahnke (European University Foundation)

Interviewee: Anthony Vickers (also external expert to the EWP project)

The interview focused mainly on the **Transcript of Records**. The University of Essex is using the standard process for mobility as described within EU documents.

The process for the student starts when the **Interinstitutional Agreement** (IIA) exists.

Students need to apply to the University by selecting three universities. The IRO selects the students by matching applications to available spots according to the IIA and nominates the students. After

the receiving institutions have accepted the nomination, the **Learning Agreement** is initiated and the student participates in the mobility.

After the mobility, the receiving institution provides the sending institution with the **Host Transcript of Records**. Through the grade conversion, the grades indicated for the courses in the Host ToR will be converted into the local grades. An examining board validates the local grades and the grades are recorded into the local database of the student's degree. The result is a **Home Transcript of Records**, in accordance with the UK Quality for Higher Education (Chapter B10: Managing higher education provision with others). It ensures that records are held at the degree awarding institution in a way that does not create a bias between students that have taken a mobility period and the ones that have not.

Implication

The Transcript of Records as provided by the receiving institution needs to be integrated into the sending institution's student information (data) system and a Home Transcript of Records is created. This Home ToR should be made available to the receiving institution.

64 University of Warsaw

Date: 7 December 2015

Interviewer: Stefan Jahnke (European University Foundation)

Interviewee: Klementyna Kielak (Head for short term mobility at University of Warsaw)

For **incoming** Erasmus mobilities within the University of Warsaw an **Interinstitutional Agreement** needs to exist to initiate any flow of information.

Related to that are the **Fact sheets** of universities, which need constant updating, as links, contact persons, accommodation information, etc., change much more frequently than the Interinstitutional Agreement, which is a more static document.

Klementyna Kielak recommends that having a tool that centralises and stores all that information for all institutions would be a great added value.

The University of Warsaw uses the Student Information System (SIS) University Study-Oriented System (USOS), developed by the Polish consortium of HEIs MUCI. USOSweb is an online tool deployed at the University that has a web-interface.

All faculty coordinators (20 faculties at the University of Warsaw) see agreements and the available number of places and publish them in USOS for the students.

To initiate the process, students need to apply, ideally online, but sometimes also through paper applications, using the USOS. Following different criteria, a committee at each faculty evaluates and approves places in the USOSweb. Then, the IRO verifies what the committee has approved and students receive notifications of approval.

Afterwards, **Nomination lists** are created by the IRO in form of PDF files and sent via e-mail.

Remark: more and more universities set up interfaces for entering nominations, which creates a lot of work for the IRO, as they now have to enter the information in the system of the receiving institution instead of just sending a PDF which the receiving institution would use to enter the information into their SIS themselves (shifting workload to the sending institution).

In case a faculty would like to send a different number of students than what has been agreed upon in the Interinstitutional Agreement, they usually ask the University via e-mail. In case a partner institution nominates more students than what has been agreed upon in the Interinstitutional Agreement, that also needs to be clarified via e-mail.

Amendments to the nomination list are necessary as 15-20% of students resign from nomination. Due to the lengthy mobility process, it is uncommon at the University of Warsaw that students from a reserve list are nominated. Instead, a second phase of application takes place where students can apply for the so-called zero grant. This allows them to go on exchange without receiving funding.

The **Student dossiers** are not a priority for the University of Warsaw, since most partner universities have online application systems where students have to enter information manually by themselves.

In the next step, students start preparing **Learning Agreements** prior to the mobility in paper version. Once that has been finalised with the signature from the Erasmus coordinator at the University of Warsaw and the signature from the receiving institution, the student receives the grant-agreement (the first grant instalment is only paid if a final Learning Agreement exists).

This means that the process for creating the initial LA is relatively independent from the IRO and they serve solely as an adviser.

Learning Agreement amendments are entered online through USOSweb as modifications are accepted or rejected by coordinators at the University of Warsaw. The discussion regarding amendments typically takes place via e-mail.

The **Transcript of Records** is received in different manners, depending on the partner institution. Most of the times, a copy is sent via post to the Erasmus coordinators, students and the IRO.

According to Klementyna Kielak, the ideal solution would be to receive the ToR via e-mail with an e-signature (sufficient for the University of Warsaw).

Grade conversion is mostly part of the ToR but sometimes some partner institutions still use the old ECTS grading scale.

For **incoming students**, the simplified process is the following:
After the Interinstitutional Agreement has been signed, nominations are received and accepted. The application of the students at the University of Warsaw happens online and the faculty coordinator needs to accept the students. Data needs to be transferred into USOS and the student receives confirmation of acceptance.

When receiving the **Learning Agreements**, the respective faculty needs to sign them and send them back.

The **Confirmation of arrival**, which is usually a template from University of Warsaw, is completed and signed by the institution as soon as the student arrives.

The **Confirmation of stay** is given to every student as soon as his or her exchange period finishes. The University of Warsaw tries to use their own template but often other forms are requested by the partner institutions (especially with students from Turkey, Spain, Italy, Lithuania, and sometimes Germany).

The original **ToR** is sent to the sending institution and a copy to the student.

Implication:

- The Fact Sheet, based on the Interinstitutional Agreement, seems to be a very important document that needs regular updating.
- Students on the Nomination amendment differ from the students in the regular Nomination, as the ones that are nominated in a second round are not eligible for a grant.
- Many institutions create online interfaces for the sending institution to enter Nominations manually.
- Confirmation of stay seems to have stricter requirements and therefore institutions insist on using their own templates.

Conclusion

The in-depth interviews gave a more elaborate perspective on some particular issues that created a different level of complexity after the analysis of Chapter - Research Project.

The new conclusions result in a comprehensive list of data/documents that are relevant for the EWP Network:

- Interinstitutional Agreement
- Fact sheets
- Student Nomination
- Student data
- Learning Agreement
- Learning Agreement Amendment
- Information on Start and End date of the mobility
- Transcript of Records receiving institution
- Transcript of Records sending institution
- Grade Distribution

It is important to mention that there is no clear distinction between data and documents at this point. Some documents and data described here overlap (e.g. Interinstitutional Agreement and Fact sheets). The concrete data sets are defined in the Data dictionary.

Another important aspect is the decentralisation of processes and data at some institutions, which might make it necessary to have different EWP connectors for different departments.

7 EWP SURVEY

In the context of the EWP Desk Research, the [European University Foundation](#) conducted a large-scale survey with Higher Education Institutions. From 17 February 2016 to 7 March 2016, a total of 1050 answers were collected. Participating Higher Education Institutions (HEIs) are represented in 31 different countries and the survey was fully completed by 86% of the participants. Given that there are currently 5029 HEIs holding the Erasmus Charter for Higher Education (ECHE) holders, this means up to 20.87% of all ECHE holders.

7.1. General data

The participating HEIs have on average 8078 students, of which 52% of respondents indicated to have 2,500 or less, and 10% 25,000 or more students. This indicates a fair representation of Higher Education Institutions regarding size. The average amount of outgoing mobilities was 143 students. With 272,497 mobilities in the academic semester 2013/14, the average number of students being sent by ECHE holders is approximately 54. This means that larger institutions were more likely to answer the EWP survey than smaller institutions. As 47% of respondents indicated to have 30 or less students, the representation of smaller institutions is sufficient to give a good overview of the realities in different types of institutions though.

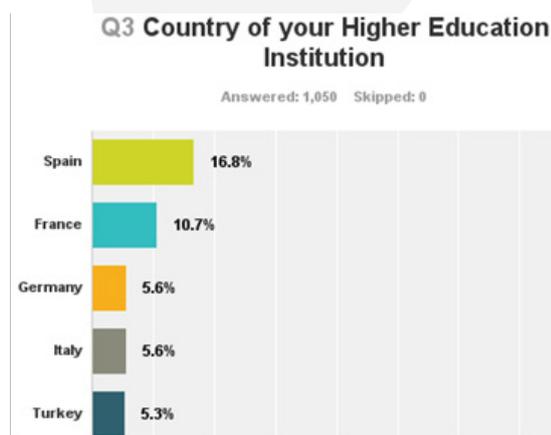


Figure 6 - Countries of respondents

Figure 6 shows that the majority of respondents comes from Spain, France, Germany and Italy. The top four countries sending students on Erasmus+ mobility are also Spain, France, Germany and Italy, which shows a direct correlation between top sending institutions and the institutions answering the EWP survey. More information regarding statistical distribution of Erasmus+ students can be found in the [Erasmus Programme – Annual Report 2014](#)

7.2. Satisfaction & Need Analysis for Erasmus Without Paper Network

To analyse the current situation and therefore the potential need for the Erasmus Without Paper Network, a range of questions were asked to the survey participants to measure their general satisfaction and their interest in EWP.

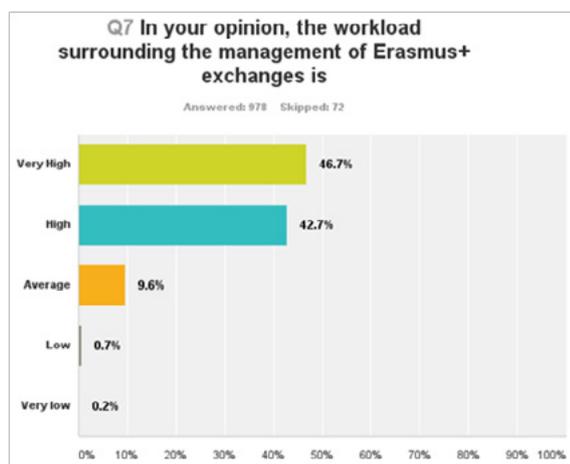


Figure 7 - Perceived workload Erasmus+

As Figure 7 clearly shows, almost 90% of respondents consider the workload surrounding the management of Erasmus+ exchanges very high or high. Only 9.6% of the institutions answered that the workload is average and not even 1% answered that the workload is either low or very low.

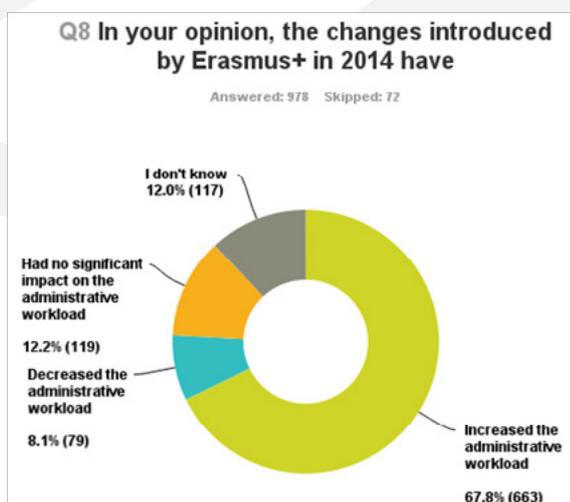


Figure 8 – Perceived changes in workload compared to LLP

Putting the workload into the historical context, institutions were asked to share their perception of the changes to the workload of managing Erasmus+ mobilities in comparison to its predecessor programme, the Lifelong Learning programme.

As seen in Figure 8, more than 2/3 of all institutions perceive the workload has increased in comparison with the former programme and only 8,1% perceived the workload to have decreased. 24.2% of institutions said there is either no significant impact or they did not know if the workload had changed.

The result of the questions regarding the workload outlines once again the importance to conduct the EWP project also for reducing administration and management at institutions. This will save resources that can be used more efficiently in other areas such as student support and staff training.

Experience has shown that the Mobility Tool+ (MT+) and the distribution of licenses for the Online Linguistic Support (OLS) are some of the main reasons for the perception of increased workload. To test this hypothesis, institutions were asked how useful they would consider a more efficient way to upload information to said systems.

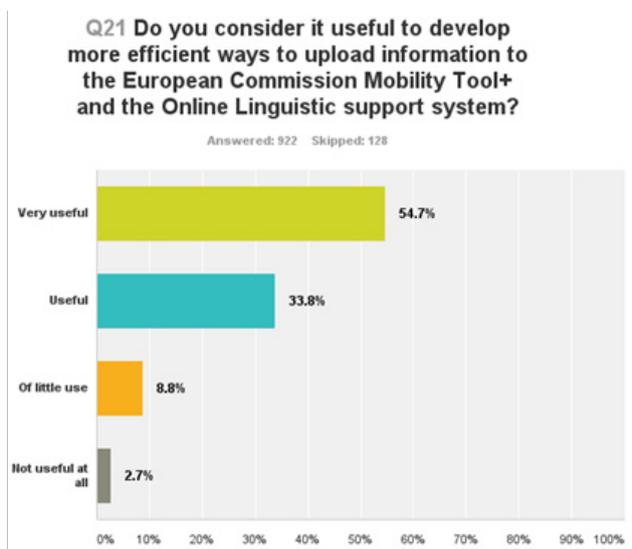


Figure 9 - Usefulness of improving connection to MT+ and OLS systems

In line with the previous findings, almost 90% of respondents believe it would be useful to develop more efficient ways to upload information to the MT+ and the OLS of the European Commission, as shown in Figure 9. This should be considered sufficient proof that the initial implementation of the MT+ and the OLS is increasing the work load of institutions to a substantial level and that the EWP project should tackle not only the data transfer between institutions but also between institutions and the European Commission.

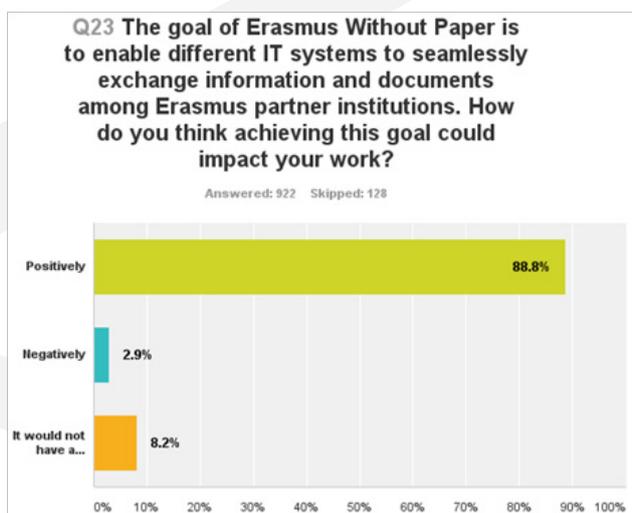


Figure 10 - Usefulness of EWP

Almost 90% of the surveyed institutions find the possibility of having IT systems that exchange Erasmus+ student data seamlessly among institutions very useful. The high interest in the EWP project and therefore the EWP survey reflect this high interest.

To conclude, the satisfaction with the current workload of Erasmus+ is very low and therefore the interest in EWP very high. It is especially important to notice that the connection with the Mobility

Tool+ and the Online Linguistic Support will play an important role in reducing the administrative workload through EWP.

7.3 Roles and Infrastructure

In the following section, the different roles and infrastructures of surveyed institutions will be presented. This mapping is crucial to understand the different realities and needs from the institutions' point of view and will support the construction of a coherent infrastructure that caters for said needs.

As seen in Figure 11, almost 50% of respondents manage their Erasmus+ mobility centrally, while 24% indicate that it is predominantly the central International Relations Office (IRO) that manages mobility. A substantial amount of institutions manages their Erasmus+ mobility in a decentralised manner though. This is an important fact to consider when developing the architecture and flexibility of the EWP Network.

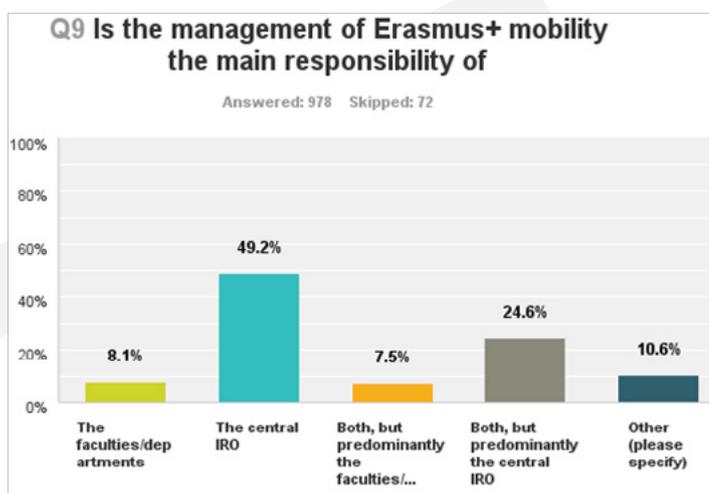


Figure 11 - Distribution of work at Higher Education Institutions

To further understand the state of the art technologies in institutions, they were asked to indicate the systems they are currently using and whether they developed those solutions in-house, use commercial solutions or still do not have any specific IT system.

As seen in Figure 12, more than 1/3 of the respondents do not have any IT tool in place yet, which means EWP will have to cater for a substantial amount of institutions that still uses simple excel files or other simplistic means to manage their Erasmus+ mobility. 26% of institutions use software that has been developed in house while 11.7% rely solely on commercial solutions. 18.3% use a mix of both.

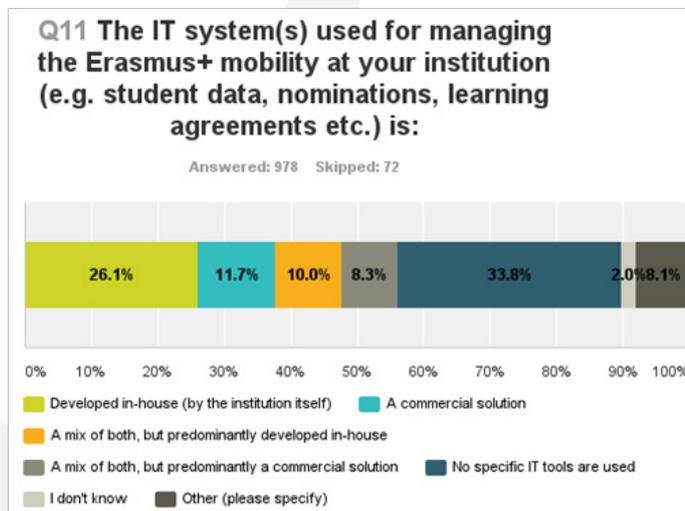


Figure 12 - State of IT systems for managing Erasmus+ mobilities

Looking at the institutions that indicated in the previous question that they use an IT system (566 answered this question), around 73% of them use different systems for managing Erasmus+ mobility data and general student data at the institution. 58.3% of those needs to manually import and export data between these systems and only 15.6% have an automatically linked system. 21.9% of institutions use the same system for managing local and international student data. The level of automatisisation is very low and additional workload is also created by inconsistent means of managing mobility at the institution itself. The EWP Network will be able to streamline and ease the processes for those institutions.

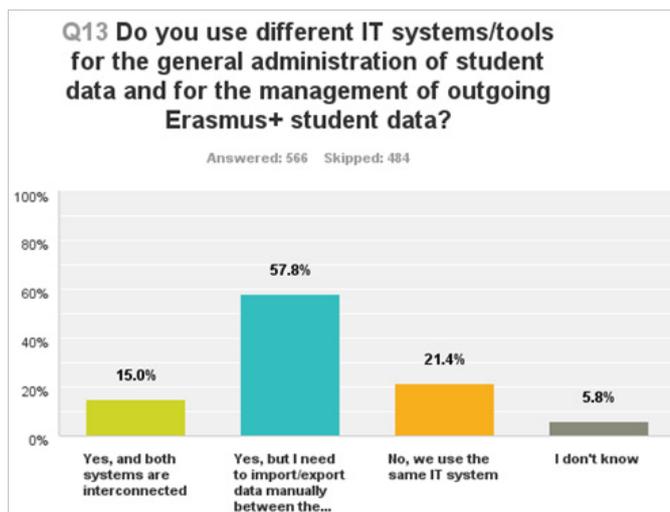


Figure 13 - Relation between storage of student data and management of Erasmus+ data

Figure 14 shows that from the subset of around 10% of the surveyed institutions (104 answers) that use an IT system where the incoming Erasmus+ students fill in their Learning Agreement online, around half can automatically fill in the course as it is connected to the course catalogue. This translates into only 5% of all surveyed institutions offering their students a fully automated system to manage the Learning agreement online at this stage.

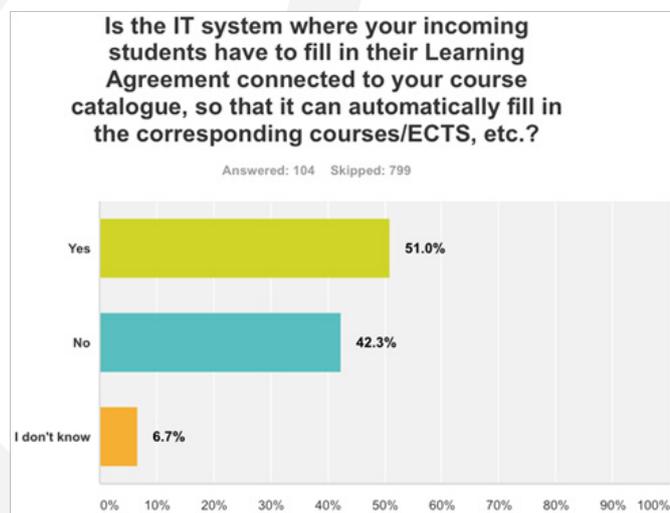
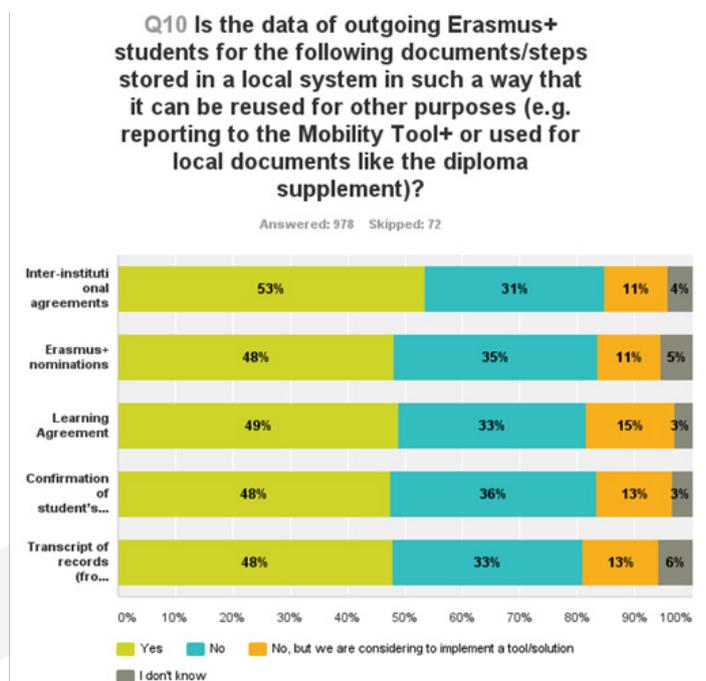


Figure 14 - Link between Learning Agreement and course catalogue IT systems

74 Data flows and ownership

To better understand the processes, flows and ownership of data, a range of questions was asked to set the ground on which the EWP Network will base its Use-Cases.



An important aspect of the EWP mapping process is to understand how Erasmus+ student data is stored and if it can be reused for other purposes. One of the most relevant re-uses is inserting the information into the MobilityTool+ of the European Commission. The results as seen in Figure 15 show coherence between all document types and around half the institutions answered positively. About half of the institutions do not save Erasmus+ student data in a reusable format, of which 11-15% are considering implementing such a solution.

Figure 15 - reusability of stored Erasmus+ data

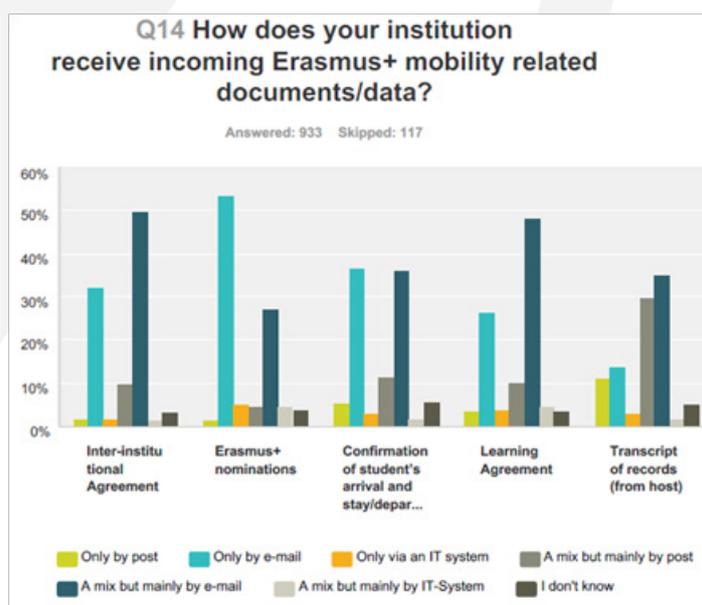
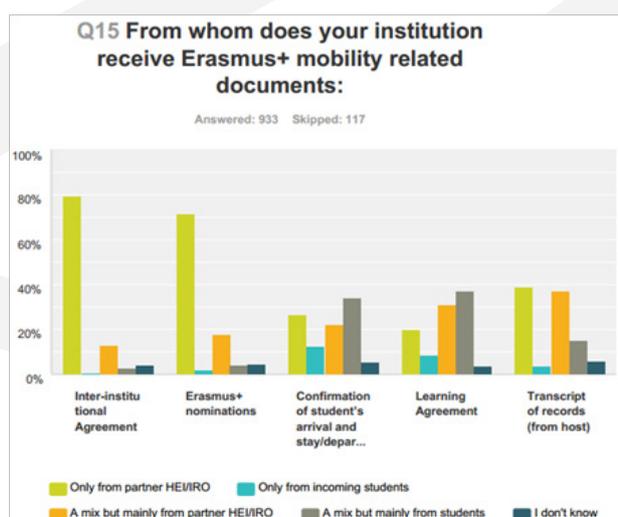


Figure 16 - Flow of data (visual)

	Only by post	Only by e-mail	Only via an IT system	A mix but mainly by post	A mix but mainly by e-mail	A mix but mainly by IT-System	I don't know	Total	Weighted Average
Inter-institutional Agreement	1.9% 18	32.0% 298	1.7% 16	9.8% 91	49.8% 464	1.5% 14	3.2% 30	931	3.91
Erasmus+ nominations	1.5% 14	53.5% 495	5.1% 47	4.5% 42	27.0% 250	4.5% 42	3.9% 36	926	3.31
Confirmation of student's arrival and stay/departure	5.3% 49	36.6% 339	3.0% 28	11.4% 106	36.1% 334	1.8% 17	5.7% 53	926	3.65
Learning Agreement	3.6% 33	26.4% 245	3.8% 35	10.2% 95	48.0% 446	4.5% 42	3.6% 33	929	4.01
Transcript of records (from host)	11.2% 104	13.8% 128	3.0% 28	29.7% 276	35.2% 327	1.9% 18	5.2% 48	929	3.90

Figure 17 - Flow of data (numeric)

To understand the data flow, institutions indicated in which format they are transferring certain documents or data to the other institutions. As seen in Figure 16 and 17, email is in most cases still the predominant way of how institutions cope with data transfer. Interestingly, the Transcript of Records is in more than 10% of the cases still transferred via mail. As institutions often work with dozens of partner institutions, the reflection gives a great mapping of the general state of data transfer.



Another important element to understand the data flow is the question of from whom institutions receive the Erasmus+ student data. Figure 18 and 19 show that IIA and Erasmus+ Nominations are predominantly received from institutions whereas the confirmation of arrival/departure, Learning Agreement and Transcript of Records are transferred equally often by institutions and students.

Figure 18 - Responsibility of transferring data (visual)

	Only from partner HEI/IRO	Only from incoming students	A mix but mainly from partner HEI/IRO	A mix but mainly from students	I don't know	Total	Weighted Average
Inter-institutional Agreement	79.5% 740	0.6% 6	13.0% 121	3.1% 29	3.8% 35	931	1.51
Erasmus+ nominations	71.6% 664	1.8% 17	17.9% 166	4.0% 37	4.7% 44	928	1.69
Confirmation of student's arrival and stay/departure	26.3% 243	12.6% 116	22.0% 203	33.8% 312	5.3% 49	923	2.79
Learning Agreement	20.0% 186	8.5% 79	31.2% 290	36.9% 343	3.4% 32	930	2.95
Transcript of records (from host)	38.8% 360	3.3% 31	37.0% 344	15.0% 139	5.9% 55	929	2.46

Figure 19 - Responsibility of transferring data (numeric)

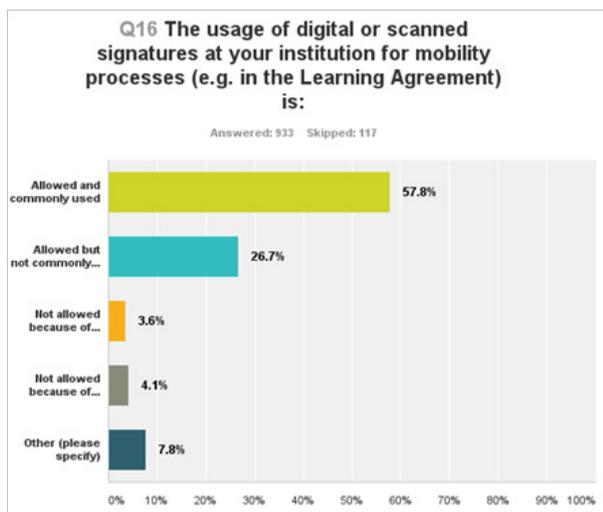


Figure 20 – Usage of digital or scanned signatures

The new Learning Agreement template provided by the European Commission encourages the usage of digital or scanned signatures, which is a first step for the digitalisation of the Erasmus+ process. To explore the usage of digital and scanned signatures, institutions were asked to indicate whether they use them and if the usage is allowed in their institutions. Figure 21 shows that 84.5% confirmed that there is a possibility to use those options whereas only 57.8% actually use it.

Thirty-four institutions (3,6% of all participating institutions) say it is not allowed because of national legislation. When looking at the originating countries of those institutions (Figure 20), there is no clear pattern of countries that have national legislation in place forbidding the use of digital or scanned signatures. This leads to the reflection that the staff members answering the questionnaire only assume that there is national legislation forbidding them the use of digital/scanned signatures.

4.1% of institutions answered that internal institutional regulations do not allow the usage. With the introduction of EWP and the continuous advertisement of the possibility of using digital/scanned signatures or even a digital system, current institutional regulations can be neglected for the architecture of the EWP Network.

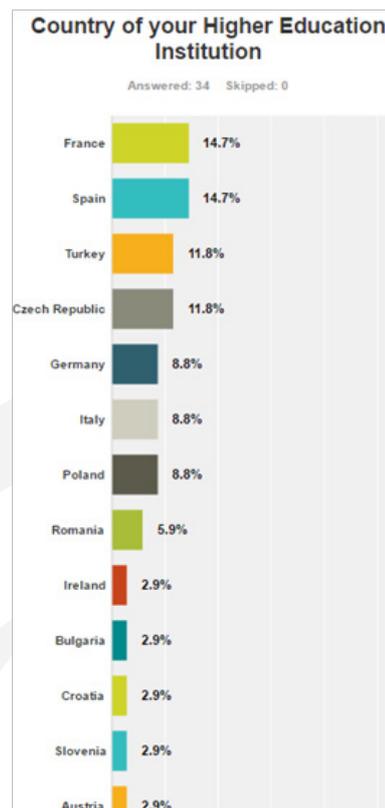


Figure 21 – Countries where institutions answered that digital and scanned signatures are not allowed

7.5 Priorities

To identify which steps of the Erasmus+ procedure need to be core elements of the EWP Network, institutions were asked to prioritise among the different documents.

	1	2	3	4	5	Total	Weighted Average
Inter-institutional Agreement	31.7% 265	16.7% 140	15.3% 128	14.1% 118	22.2% 186	837	2.78
Erasmus+ nominations	16.0% 130	24.6% 200	17.2% 140	21.0% 171	21.2% 172	813	3.07
Confirmation of student's arrival and stay/departure	15.7% 131	21.7% 182	27.6% 231	24.4% 204	10.6% 89	837	2.93
Learning Agreement	7.5% 64	16.3% 139	19.8% 169	22.5% 192	34.0% 291	855	3.59
Transcript of records (from host)	26.2% 229	18.3% 160	20.1% 176	18.5% 162	16.8% 147	874	2.81

Figure 22 - Priorities for implementation of EWP Network

Figure 22 shows that the Learning Agreement was the most relevant document for institutions. As it also poses the most complex process, the result is not surprising. The Interinstitutional Agreements and Transcript of Records, which are rather simple documents with simple procedures, are rated lower on the other hand. Despite this slight divergence, all documents have a weighted average of at least 2.78, making all of them more than relevant for the EWP Network.

8. COMPATIBILITY WITH THE US DATA SYSTEM

This chapter provides a comprehensive overview on the compatibility of the Erasmus without paper (EWP) data dictionary (EWP data standard) and its functionalities with the US system. Special focus is given to the elements that can be improved to foster future data exchange between the European and the US system according to the expertise of the US National Student Clearinghouse.

The chapter has been developed based on the latest proposal of the EWP technical specification as of July 2017. The technical specification is based on observations made in the previous chapters and therefore complements this Desk-Research after it has been used by the EWP technical team to create the prototype technical specifications after its first release in July 2016.

Context

The EWP project seeks to develop a data standard for European student data by providing a data glossary and data dictionary, taking into consideration existing European standards (e.g. ELMO) and practices (e.g. ECTS Guidelines and Erasmus+ Mobility Tool data dictionary). This will enable a significant simplification in data transfer between European higher education institutions and other relevant stakeholders.

The US National Student Clearinghouse (NSC) is a non-profit education partner to the nation's higher education institution, providing them with critical educational reporting, verification, and research services. Their approach to data collection and processing makes the NSC able to serve as a valuable source for longitudinal and other studies on educational progress.

The NSC works closely with an organisation called the Postsecondary Electronic Standards Council (PESC), who is a signatory to the Groningen Declaration Network. PESC promotes the use of electronic standards by the higher education community. It enables cost-effective connectivity between data systems in order to accelerate performance and service, to simplify data access and research, and to improve data quality along the Education lifecycle in the US. PESC uses standards which are developed, approved, ratified and maintained through a transparent, open, rigorous community-based collaborative process, which includes a formal public notification when development initiates, and a formal public comment period for developed & proposed standards, all governed by PESC Members. Following the publication of an education white paper on the eXtensible Mark-Up Language (XML) in 2001, which was used by the community leaders to work on bringing XML into the daily operations within education, the PESC Board of Directors and Steering Committee announced the release of the XML Postsecondary Transcript version 1.0 as a community standard in 2004. This milestone laid out the foundation for the community to achieve a timely, uniform, accurate and secure exchange of the

academic records for students who are enrolled or have previously been enrolled in higher education institutions in the US.

For students that transfer (or intends to transfer) from one higher education institution to another, it is essential to have their prior academic record made available to the receiving institution as quickly as possible, so that a decision can be made about their admission. In addition, the academic record must be made available to the new institution, so that an evaluation may be made and the student may be advised how his prior academic record will be used to satisfy course requirements at the new institution. The XML Postsecondary Transcript therefore offers institutions the option for the standardised electronic exchange of information. The student transcript contains personal history and identifying information about the student, the current academic status, dates of attendance, courses completed with grades earned, degrees, diplomas and certificates awarded and selected test scores.

Comparison

The NSC and the EWP consortium have carried out a comparison between the first draft of the EWP data dictionary and the PESC XML College Transcript standard (v1.4.0).

Both parties agree that the breadth of the documents required for student mobility and the number of students participating in mobile learning would suggest the establishment of a European standard. The standard would need to cater for both data being transmitted, as well as the means of transmission. This will result in reducing the administrative burden currently being experienced by administrators.

When comparing the PESC standard and the suggested EWP data standard, **high data compatibility** has been found with:

- Student personal data;
- Term, course, grade data, and language of instruction;
- Sending and receiving institution.

Similarities have been noticed with:

- The number of identifiers used in the US and the unique identifier awarded by ECHE, through the Mobility Tool+;
- The ISCED codes used for the Erasmus Subject Code and the Classification of Instruction Program (CIP) codes that are issued by the US Department of Education.

At this stage, there is no widely accepted standard for identifying higher education institutions. This does not limit the data exchange as such but would surely limit the usability in terms of trust. To enable data exchange across continents, the establishment of such a global identifier would be advisable. Alternatively, an official validation mechanism for institutions would need to be created. This could be either a trusted global organisation establishing a symmetric validation procedure or one or multiple trusted national or pan-national agencies that validate identifiers of asymmetric identification systems. The scope of such discussions is beyond the aim of this paper and will need to be carried forward on a political level.

A more in-depth analysis of the compatibility of the ISCED codes and the Instruction Program Codes (CIP) would not be necessary in regard to data transfer for EWP, as it would be up for national or pan-national systems to use this data. A comparison between the systems for the benefit of the higher education community would be strongly advisable though.

Differences have been noticed with elements that are not included in the PESC standard:

- The nationality of students;
- There are no faculty or department contacts within the sending and receiving institution data;
- There is no institution's local name;
- There are no language assessments or grade distribution data.

The reason for certain elements not being included in the PESC standard are the different realities in the US and Europe. Different languages in Europe, different grade distribution mechanisms between countries and a multitude of different nationalities in Europe are the reason for the inclusion of such elements in the EWP standard as a pan-European standard. These elements would also cater for data exchange with stakeholders outside of Europe and can therefore be seen as useful addition.

Regarding the data exchange, PESC is currently focusing on shifting from the exchange of transcripts in PDF format to data files created in various formats (e.g., XML and EDI). PESC has set-up a working group that is focusing on further developing standards for certificates, degrees, and diplomas. The EWP uses XML as the primary data exchange format but also allows for other data formats, should they be well-established and agreed upon by the consortium. XML-based data formats are being described through XML schemas.

In conclusion, the proposed EWP standard (as of July 2017) is highly compatible with the PESC standard utilised by the US's National Student Clearinghouse and adds elements that would be useful for transfer of data also with stakeholders outside of Europe. Certain data elements will require a conversion or some sort of validation mechanisms. Further discussions on the data exchange beyond Europe/Erasmus+ will need to take place.

9 ANNEX

Annex 1 - Learning Agreement Template

http://ec.europa.eu/dgs/education_culture/repository/education/opportunities/higher-education/doc/learning-studies_en.pdf

Annex 2 - Learning Agreement Guidelines

http://ec.europa.eu/dgs/education_culture/repository/education/opportunities/higher-education/doc/learning-studies-guidelines_en.pdf

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