

ABSTRACT

DIGITAL DIPLOMA DATA (*IN DEUTSCHLAND?*)

Exchanging diploma data digitally instead of on paper

DUO (Dienst Uitvoering Onderwijs) is the executive agency of the Dutch Ministry of Education Culture and Science. DUO manages digital registers with student data. All state funded schools and universities in the Netherlands are obliged to send their student data to DUO, safely and digitally. DUO also uses these data to reduce the administrative burden of students and educational institutions by supporting the enrolment processes. DUO and all its chain partners realised this process for higher education in 2013, with Studielink as the national enrolment portal. The results are very positive: a faster process, the use of secure digital data, and a major reduction of costs. DUO also contributes to the EU 2020 policy target that 20% of higher education students is mobile. Therefore DUO has set up a programme for 2017 to support cross border enrolment with digital diploma data experimenting with 3 different methods:

- SFTP: 1:1 exchange of pdf's through Secure File Transport Protocol
- EMREX: a network for exchanging diploma data in xml (Erasmus+ project)
- eDelivery: a EU project for secure file transport in Europe.

Since about 40% of foreign students in the Netherlands come from Germany and because a lot of Dutch students study in Germany it would be very appropriate for DUO to engage in projects with Germany. Who in Germany dares to join us?

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1. INTRODUCTION

The purpose of this document is to present information about projects which support the European aim of increasing international mobility of students. One of the main obstacles for this mobility is the administrative burden: when applying for an international study, students have to submit a significant amount of documents, both originals and copies. The key document is, of course, the diploma.

The projects we present in this document deal with replacing paper documents with secure digital ones. In the Netherlands, incidentally, this has already been realised in 2013. Since then, no paper whatsoever is involved in the process of enrolment in higher education.

The goals of the projects are:

- Contributing to the EU 2020 policy target that 20% of higher education students is mobile
- The prevention of fraud
- The reduction of the administrative burden of students and educational institutions
- A quicker administrative process
- Cost reduction.

This document starts with an introduction of DUO. After that we will cover the Groningen Declaration and the projects that have emerged worldwide.

2. DUO

DUO (Dienst Uitvoering Onderwijs) is the executive agency of the Dutch Ministry of Education Culture and Science. DUO executes laws and regulations for the Dutch education system. Its core business is providing student loans and financing educational institutions. To support this, DUO manages digital registers with student data. All state funded schools and universities in the Netherlands are obliged to send their student data to DUO, safely and digitally. DUO also uses these data to reduce the administrative burden of students and educational institutions by supporting the enrolment processes. DUO and all its chain partners realised this process for higher education in 2013 with Studielink as the national enrolment portal. The results are very positive: a faster process, the use of secure digital data, and a major reduction of costs.

3. DIPLOMA REGISTER AND GRONINGEN DECLARATION

In 2012, DUO made the Diploma Register available online. This virtual register contains the diploma data of various digital registers DUO keeps, from secondary to higher education. Everybody who has graduated in the Netherlands can access the Diploma Register via the Dutch digital identification service DigiD. The alumnus can check his diploma data online and download a free extract of his diploma data in the form of a secure pdf (with a digital signature of DUO). The extract can be used when a certified copy of a diploma is required. This way DUO helps to prevent fraud and reduces both alumnus' and employers' administrative burden.

When the Diploma Register was presented in April 2012, DUO organized an international conference which was attended by managing bodies of diploma registers from all over the world. At the conference, (almost) all parties present signed the Groningen Declaration (GD). The GD is a declaration of intent to support international mobility of students by using digital (national) data. DUO supported the GD by running its secretariat until 2016. Since 2012 an annual conference is organised (2013 Beijing, 2014 Washington, 2015 Malaga, 2016 Cape Town). This year the GD-conference took place in Melbourne.

Over the years, many more organizations have signed the GD. All around the world activities within the framework of the GD have been initiated, for example in Scandinavia, Italy, Poland, the US, China and Australia.

4. DUO PROJECTS

In 2015, the Ministry of Education Culture and Science established a Steering Committee International which governs Dutch initiatives within the framework of the GD. All chain partners involved in the process of international enrolment participate in this committee. On behalf of the Netherlands, DUO has explored the possibilities for pilots that will facilitate the enrolment process of international students in Europe, but also in China. The Steering Committee International also requested DUO to explore various methods and ways of working.

This resulted in the following programme for 2017:

- Sending PDFs through SFTP with partners in China, Flanders and Germany;
- Joining the EMREX network;
- Participation in an EC project for e-Delivery.

The programme will be amplified in chapter 5.

Both the SFTP-process and the EMREX-process aim to support the international mobility of students, to prevent fraud, and to make life easier for students and university staff members. This way DUO and all its partners contribute to the EU policy of increasing student mobility.

A further benefit is the reduction of costs. A 2011 study showed that the enrolment of one foreign student costs about € 400¹. Furthermore, foreign students tend to apply at several universities simultaneously, so a lot of work at the universities is done in vain. When universities will receive the diploma data digitally from a trusted source the process of enrolment will become easier and faster and therefore cheaper².

5. THREE METHODS: SFTP, EMREX AND E-DELIVERY

5.1 SFTP: Secure File Transport Protocol

The Secure File Transport Protocol (SFTP) is a secure 1:1 internet connection which is very suitable for sending pdf-files.

In 2016, DUO started a pilot project with China for Chinese students coming to the Netherlands. It involves the Chinese diploma register CHESICC, three Dutch universities, a large number of Chinese students, and DUO. In this process DUO received Chinese diploma data (English translation) in the form of a pdf directly from CHESICC.

Each year about 6,000 Chinese students enrol in Dutch universities. The enrolment process is very elaborate and involves the translation and verification of diplomas, the exchange of paper documents and scans, and the checking of all these documents.

The SFTP process is initiated by the student and works as follows (figure 1):

1. A Chinese student applies at the website of the Dutch university
 2. There he receives a student number and a link to CHESICC
 3. He identifies himself at CHESICC and collects his data (verification reports translated into English in pdf)
 4. The student gives his consent to CHESICC to have his data sent to the Netherlands, and CHESICC sends the data via SFTP to DUO
- 5/6 DUO passes the data to the university involved.

¹ [Eindrapportage Rode Loper Studielink](#), Projectgroep Rode Loper Studielink, 06-10-2011, s.l. (Final report of project aimed at facilitating the process of enrolment of foreign student in the Netherlands. The proposals suggested in the report were not implemented because the universities were unable to reach agreement. On page 6: "(...) kosten voor studenten uit bijzondere doelgroepen zoals internationale studenten, tussen de € 350 en € 450 per student liggen". Translation: "(...) costs for students from special target groups such as international students are among € 350 and € 450 per student".

² [Eindrapportage Rode Loper Studielink](#) page 6: "Instellingen die aan het onderzoek hebben deelgenomen, gaven aan 25-30% te kunnen besparen op de uitvoeringskosten (...)". Translation: "Institutions participating in the research indicated to be able to reduce the costs with 25-30% (...)".

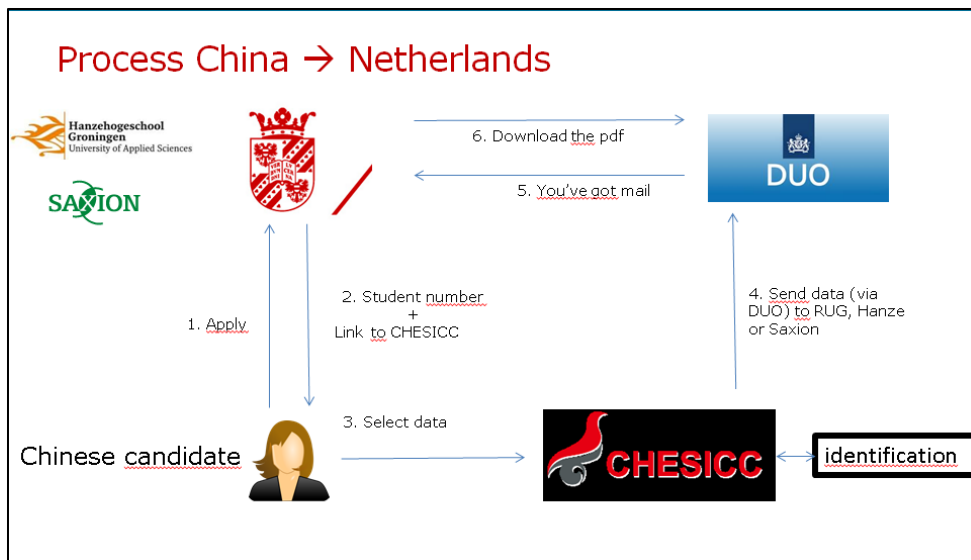


Figure 1 SFTP process CHESICC - DUO

The pilot had 3 goals:

1. Are the CHESICC transcripts of use to the Dutch universities.
2. Do the Chinese students want to participate in this process
3. Working together with CHESICC.

The pilot was a great success. The three universities were able to test the communication with the Chinese applicants and the usefulness of the data in the transcripts CHESICC offers. As a result they have accentuated the information for the Chinese applicants, for now the universities now exactly which transcripts the students have to select at CHESICC. The Chinese students prove to be very willing to participate in this digital process. And the cooperation between CHESICC and DUO was efficient and easy-going.

In 2017 this project is continued and 9 more Dutch universities participate.

DUO will simultaneously start similar projects with Flanders (involving the Flemish agency AHOVOKS and three Flemish universities), with China (for Chinese students returning to China who need to have their Dutch diploma validated by the Chinese authorities) and with Germany (see chapter 6).

5.2 EMREX

EMREX is an Erasmus+ project. EMREX is the solution for electronic transfer of student records between higher education institutions in Europe. The EMREX field trial aims at testing new ways to make the administration of student mobility easier, promoting higher attainment level to student mobility in higher education, encouraging more effective recognition of prior learning and avoiding overlapping studies. In the first phase the trial (figure 2) is set-up between four Nordic countries (Norway, Finland, Denmark and Sweden) and Italy. The electronic transfer of the student achievement is initiated by a student's approval through the Student Mobility Plug-in (EMREX client), installed in the student web / the student portal at the home university. The student records are then fetched from the National Contact Point (NCP) of the host university in question. In 2017, the service is available for higher education institutions in the Nordic countries, Italy and Poland. These countries test and evaluate the functionality and the impact of the solution.

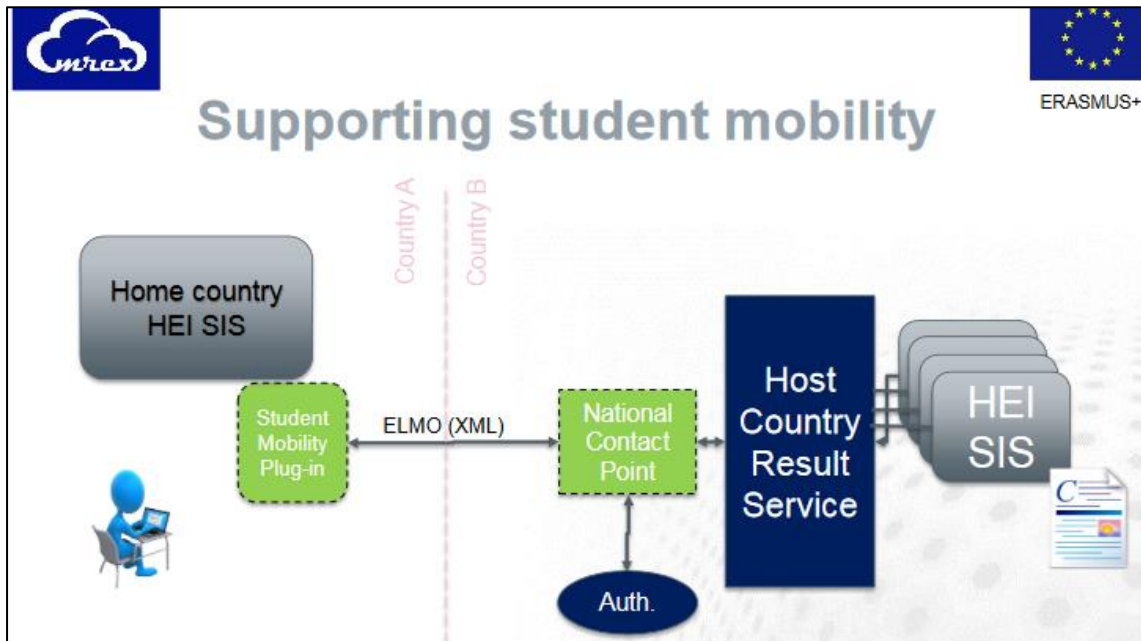


Figure 2 EMREX process

DUO will join EMREX in 2017. From that moment on, students from all participating countries will be able to send their diploma data through the EMREX platform to the Dutch university of their choice. And Dutch students can send their diploma data to a foreign university. The data are machine readable (xml) and can be imported (directly) into the universities' databases.

5.3 e-Delivery

e-Delivery is one of the building stones of e-SENS, a combination of EU Large Scale Projects. The aim of e-SENS is to facilitate the deployment of cross-border digital public services through generic and re-usable technical components, based on the building blocks of the Large Scale Pilots. The consolidated technical solutions, with a strong focus on e-ID, e-Documents, e-Delivery, Semantics and e-Signatures, aim to provide the foundation for a platform of "core services" for the eGovernment cross-border digital infrastructure foreseen in the regulation for implementing the Connecting Europe Facility.

e-Delivery helps public administrations to exchange electronic data and documents with other public administrations, businesses and citizens, in an interoperable, secure, reliable and trusted way. Through the use of this building block, every participant becomes a node in the network using standard transport protocols and security policies.

On behalf of Dutch governmental institutions a connection to the e-Delivery network is established as proof of concept in 2017. DUO is part of the consortium and will provide the e-Enrolment process as a use case.

6. GERMANY

The Steering Committee International has urged DUO to seek German participation in the GD projects, because 40% of foreign students in the Netherlands come from Germany, and because a lot of Dutch students study in Germany.

It proved to be very difficult to find suitable partners in Germany. There are no Diploma registers in Germany, the enrolment processes are paper based and Germany is very sensitive in privacy matters. But since the rest of the modern world can deal with these issues, why not Germany? Thanks to the networking activities of the secretary of the GD, in October 2016 DUO was invited to the Stiftung für Hochschulzulassung (SfH) in Dortmund and the Bundesministerium für Bildung und Forschung (BMBF) in Berlin. DUO staff members informed the German hosts about security measures, the Dutch Diploma Register and the digital enrolment procedures in the Netherlands. This resulted in a request from the BMBF and the Hochschulrektorenkonferenz for DUO to initiate projects on digital enrolment with German universities, and in the initiative of the SfH to start a project with DUO.

6.1 Project with the Stiftung für Hochschulzulassung using SFTP

This project facilitates the participation of Dutch applicants in the “zentrales Verfahren” for the selection of applicants for medical studies in Germany. The process is very similar to the process used by DUO and CHESICC.

DUO and the Stiftung für Hochschulzulassung (SfH) are aiming at this procedure (figure 3):

1. A Dutch student applies for the selection process at the website of the SfH
2. There he receives a student number and a link to DUO
3. He identifies himself with DigiD (Dutch digital ID) and selects his diploma data
4. The student gives his consent to DUO to have his data sent to the SfH, and DUO sends the data via SFTP to SfH.

The SfH then uses the data in the “zentrales Verfahren”.

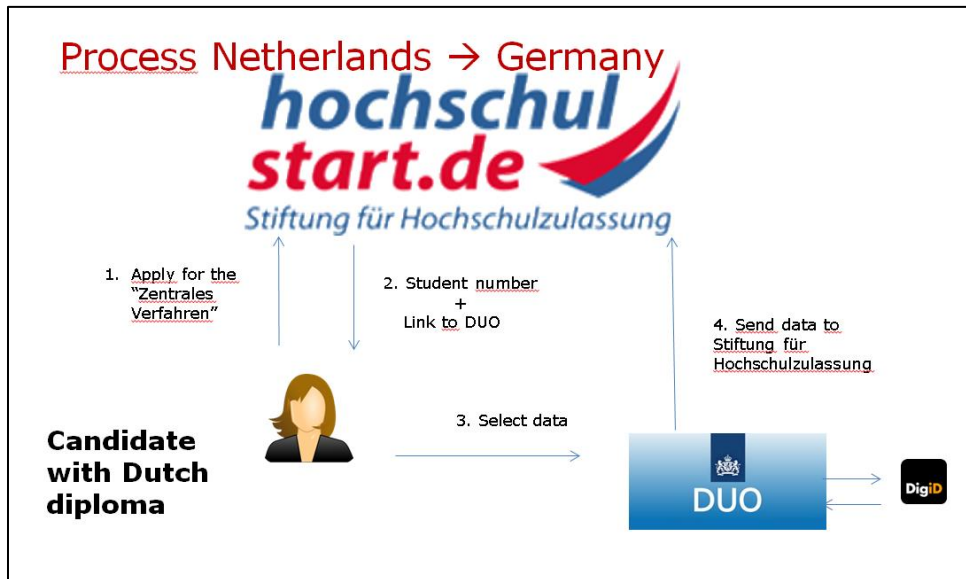


Figure 3 SFTP process DUO - Stiftung für Hochschulzulassung

6.2 The EMREX process in Germany

DUO is the National Contact Point (NCP) for the Netherlands. Therefore, Dutch students using the EMREX-client (Student Mobility Plug-in) of a foreign university will be directed to DUO, where they can select their diploma data. EMREX can be used for Dutch students who intend to study in Germany.

Once German universities use EMREX, they can apply this process for students coming from all the countries participating in EMREX. This is a very strong feature of EMREX.

Another strength of EMREX is that the EMREX client (Student Mobility Plug-in) is very easy to implement.

At the moment of writing this paper the management of the Hochschulrektorenkonferenz is looking for German universities to participate in a project with DUO.

Figure 4 shows how the EMREX enrolment process with a German university could look like.

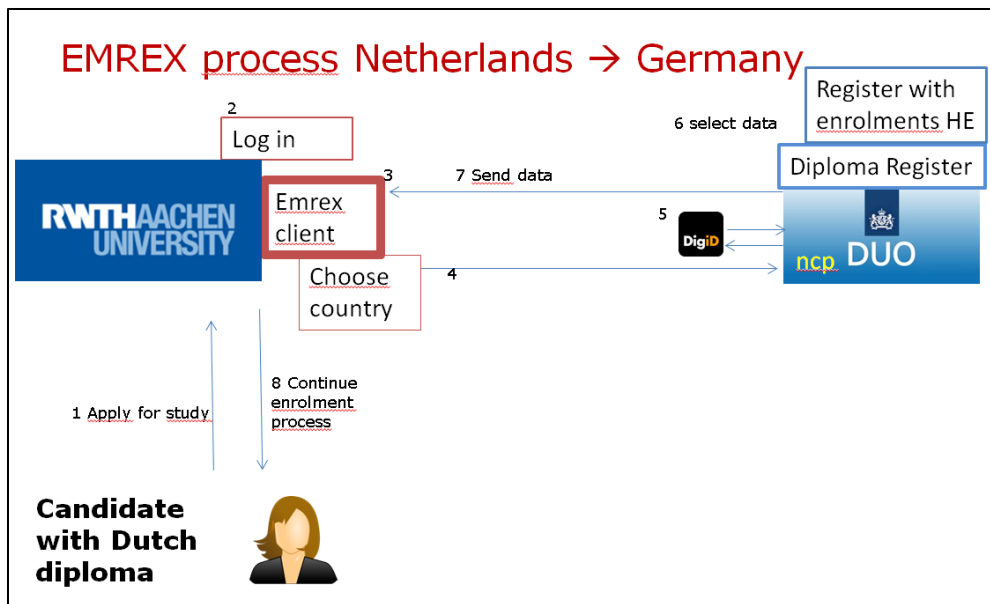


Figure 4 EMREX process DUO - German university (example Aachen University)

The EMREX process for a German university works like this:

1. A Dutch student applies for enrolment at the website of a German university
2. The student identifies himself and is redirected to the EMREX client (Student Mobility Plug-in)
3. There he chooses the country where he received his diploma (in this case the Netherlands)
4. He is redirected to the NCP of that country (in this case DUO)
5. He logs in at DUO via DigiD (Dutch digital ID)
6. At the NCP (DUO) he collects his diploma data (in this case at the Diploma Register)
7. By pressing a button he will send the diploma data to the EMREX client of the German university.

7. CONCLUSION

Experiments with projects for cross border enrolment using digital diploma data are in full swing in the Netherlands. The SFTP method proves to be very easy applicable and is appropriate to test whether the transcripts that can be exchanged between countries are useful.

EMREX is a more sophisticated approach and Dutch universities are very eager to try it out. e-Delivery seems to be more suitable for a back office process like the check on actual enrolment for students who receive student loan from their home country. This check can be executed without the individual consent of the student, because there's a legal ground for it.

In the meantime new methods have appeared, like block chain technology. The Flemish and Dutch authorities are now sensing the prospects of this approach.

We think at the end one or two methods will remain. And as we see it now EMREX will be one of them.

ADDENDUM (June 2017)

The abstract for this paper ends with the words "who in Germany dares to join us?".

We already have an answer to that question.

Just a week before the EUNIS conference uni-assist decided that they will implement the EMREX client in 2019. Uni-assist is the "University Application Service for International Students."

Uni-assist processes applications from international students on behalf of 182 German higher education institutions. Uni-assist performs preliminary processing and evaluation of the applicant's university entrance qualification materials, running a check of the applicants' certificates to determine which grades they have on the German grading system. This preliminary evaluation

informs applicants whether they qualify to study all subjects (general qualification) or only certain subjects (subject-restricted qualification).

From the moment on that uni-assist has implemented the EMREX client (Student Mobility Plug-in) the process for the enrolment of 182 German higher education institutions could look like is shown in figure 5.

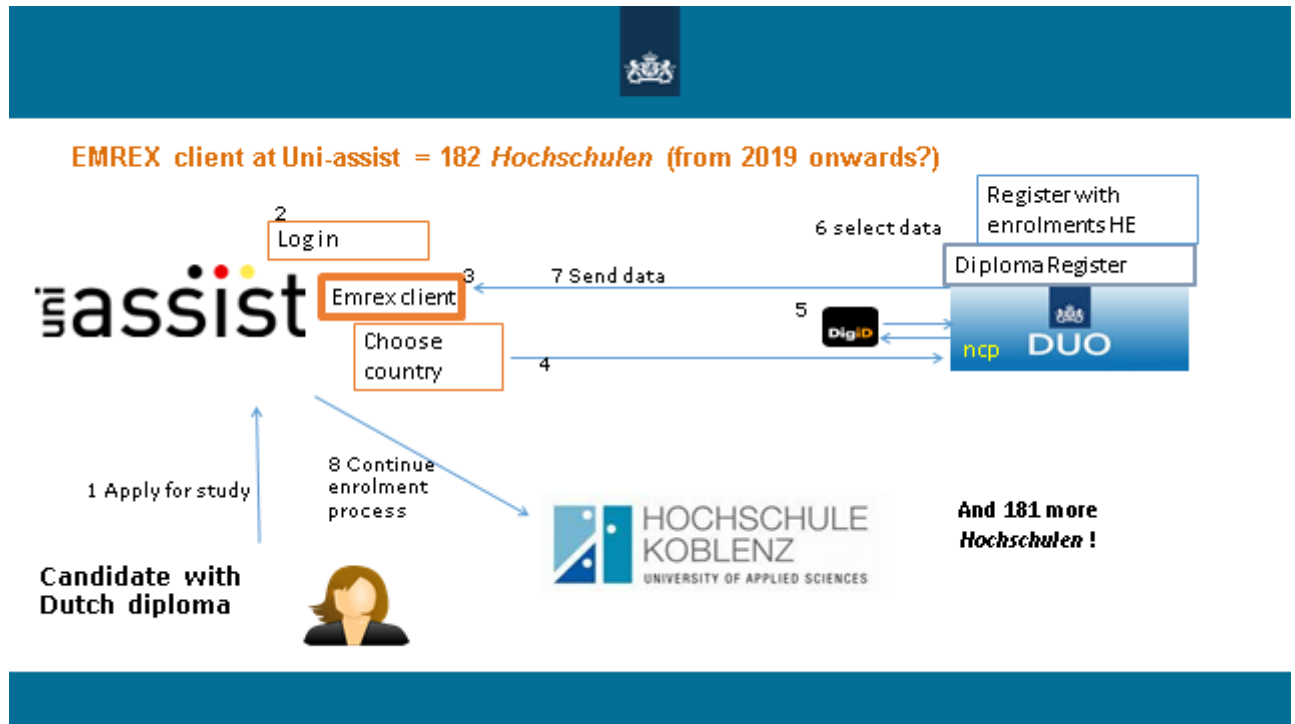


Figure 5: EMREX client at uni-assist on behalf of 182 German higher education institutions.

The EMREX process than would work like this:

- 1 Person with Dutch diploma applies at website of uni-assist for Hochschule Koblenz
- 2 Applicant identifies himself
- 3 Applicant is redirected to EMREX client (Student Mobility Plug-in)
- 4 Applicant chooses Dutch NCP (DUO)
- 5 Applicant identifies himself at DigiD
- 6 DUO receives Burger Service Number from DigiD (BSN; = Dutch social security number)
DUO redirects applicant to Diploma Register
- 7 Applicant chooses diploma and sends his data to EMREX client at Hochschule Koblenz
Applicant is redirected to EMREX client at uni-assist
Applicant checks his data and sends it to uni-assist
- 8 uni-assist sends data through safe internet connection to Hochschule Koblenz
Hochschule Koblenz contacts the applicant and continues the enrolment process.



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- 1987 Master of Arts, Groningen University, Medieval studies.
- 1988 Post-academic Study, University of Amsterdam, scientific librarian.
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- 2001 - now DUO: Policy adviser on Higher Education; Secondary Education; Examinations; and Diplomas successively.
- From 2007: Development of DUO's Diploma register (ongoing)
- From 2012: Involved in the development of pilots on digital international enrolment within the framework of the Groningen declaration (ongoing).



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- 2003 - 2012 DUO: Callcenter studentsregistration sytem.
- 2013 - now DUO: Project coordinator international services department
- From 2014: Involved in the development of pilots on digital international enrolment within the framework of the Groningen declaration (ongoing).



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- 2015 - present: Master of Science, University of Bonn (Germany), Economics
- 2016 - present: Board member of Nederlandse Wereldwijde Studenten (Dutch Worldwide Students): Interest Representation & Secretary for the network of Dutch students pursuing a degree abroad.



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2016-now: K.A.V. Alcuinus: President of the student association for all Dutch students at the universities of Aachen.