



Erasmus Without Paper Network from development to production

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of the European Union

erasmuswithoutpaper.eu



Agenda

- Erasmus Without Paper Project 2.0.
- Launching the EWP Network.
- What is the EWP Network?
- How to build the EWP node and get connected?
- What are possible user scenarios?
- Connecting to Mobility Tool+.
- Competence Center.
- What going into production means?

Online DEMO, if time allows

Erasmus Without Paper Project 2.0

- Funded by the Erasmus+ Programme, Key Action 3, years 2018-2019.
- Basing on the results of EWP 1.0, aims at building the sustainable infrastructure for digitized exchange of mobility data.
- Various pieces of the puzzle:
 - The EWP Network.
 - Connectors for SISs developed at home, by national consortia, by commercial providers.
 - Competence Center to help with dissemination and development.
 - Dashboard with IIA editor, OLA etc. for the others.
 - Open Source University Alliance to share code.

Official launch of the EWP Network

- Took place at the launch conference in Ghent, December 2018.
- More than 350 participants from across Europe.
- Live DEMO by teams representing:
 - SOP (Austria),
 - QS Unisolution (Germany),
 - SIGMA (Spain),
 - MUCI (Poland),
 - University of Ghent (Belgium),
 - University of Porto (Portugal)
- <https://www.erasmuswithoutpaper.eu/launch-conference>

Transcript of Records sent live from the University of Warsaw to Porto University

Erasmus Without Paper conference 12.12.18



UNIWERSYTET WARSZAWSKI

Transcript of Records
DEMO UNIVERSITY

Warsaw, 12.12.2018

INFORMATION ON THE STUDENT

Student: Jacek
Date of birth: 01.01.1990
Date of birth (day, month, year): 01.01.1990
Student identification number (in code: 41-6)

INFORMATION ON THE STUDIES

Name of the programme: International Studies
Level of qualification: long cycle programme
Name of study: Full-time

INFORMATION ON THE RESULTS GAINED

Course by academic cycle	Language of instruction	Typicality of the curriculum	Grade	Grade by ECTS
English language: JESTYJ	EN	100.00.00	7.8	100.00.00

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What is the EWP Network?

Design

- Network architecture, protocols, services etc. fully described in **GitHub** which is **publicly** available repository of source code:
 - **ReadMe** part – high level description in „common” language.
 - **Flowcharts** explaining the mobility process – for „business” oriented people.
 - **XML, XSD files** – for technical staff.
- Available at: <https://github.com/erasmus-without-paper/>



Erasmus Without Paper

A common space for all EWP-related Git projects.

<http://developers.erasmuswithoutpaper.eu/> usos@usos.edu.pl

[ewp-specs-mobility-flowcharts](#)

"EWP Mobility Process Explained" document.

Updated on 25 Jan

[ewp-specs-api-discovery](#)

Specifications of EWP's Discovery API.

🔗 2 1 issue needs help Updated on 25 Jan

[ewp-specs-architecture](#)


Description of EWP's Architecture and Security.

Updated on 24 Jan

What is the EWP Network?

Registry

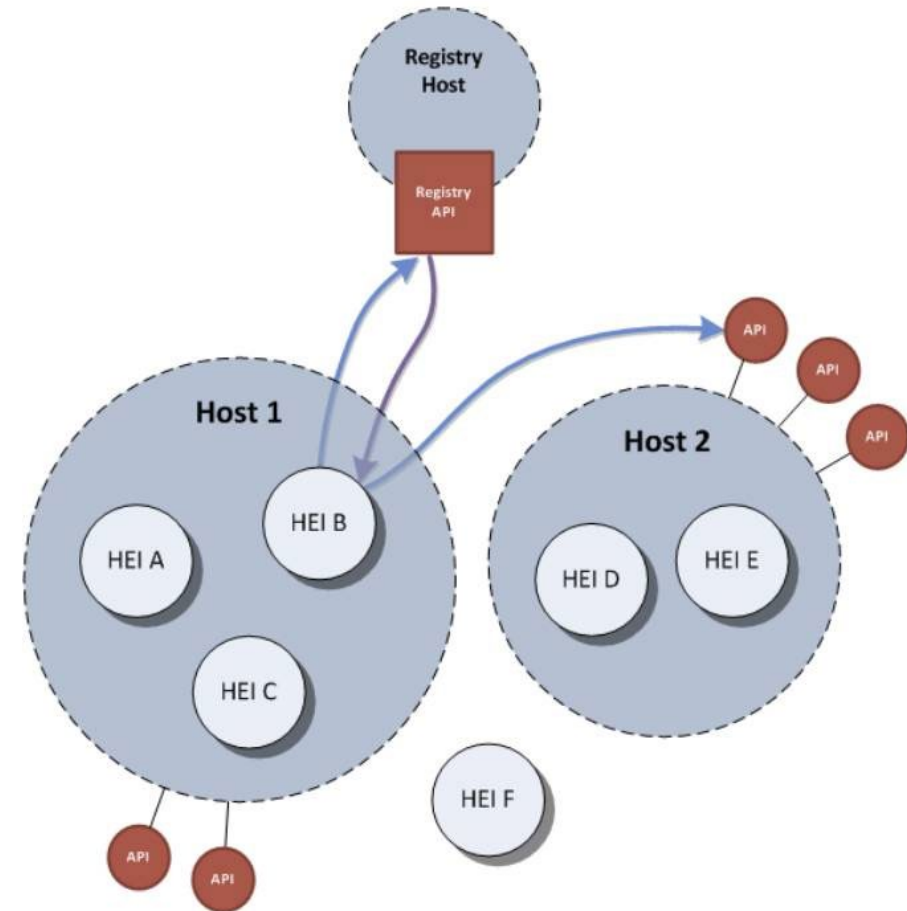
- Address book which gathers in one place information about:
 - **who** – is connected,
 - **where** – how to find him,
 - **what** – services are offered.
- Registry is updated automatically.
- Available at:
 - PROD: <https://registry.erasmuswithoutpaper.eu/>
 - DEV: <https://dev-registry.erasmuswithoutpaper.eu/>
- Eventually PROD registry will have a couple of instances synchronized in real time (SLA, HA).

A dark blue banner for the EWP Registry Service. It features the Erasmus Without Paper logo on the left. The main title 'EWP Registry Service' is in large white font. Below it, a subtitle reads 'Automated discovery service of APIs related to Higher Education in Europe' and 'Provided and supported by Erasmus Without Paper project'. A paragraph states: 'At the following URL you will find the XML catalogue which describes all the institutions and APIs exposed by them:'. Below this is a white box containing the URL 'https://registry.erasmuswithoutpaper.eu/catalogue-v1.xml'. Another paragraph says: 'This catalogue is continuously refreshed. Read the Architecture document for more information. Also check out the Developers Hub for useful tools and documents.' Below this are links: 'Manifest Importer Status', 'HEI/API Coverage Matrix', and 'XML Schema Validator'. At the bottom is 'EWP Developers Hub'. On the right, a box titled 'Uptime ratios' shows: '100.00% - 24 hours', '100.00% - 7 days', '100.00% - 30 days', and '100.00% - 365 days'. At the bottom right, it says 'v1.6.2-SNAPSHOT' and 'Contact: usos@usos.edu.pl'.

What is the EWP Network?

Connector (EWP server)

- Piece of software which is a SIS's **agent** in the EWP Network.
- Has to implement:
 - Security transport protocols (**ECHO**).
 - **Discovery** service (**Manifest** file).
- May implement some **business oriented** APIs.
- Exposed to the public by **URL** available in the Registry.
- One **EWP node** can host more than one HEI (recognized by domain names=SCHAC codes).



Discovery API (Manifest file)



DEV Registry Service

Manifest Importer Status

Currently defined manifest sources and their statuses:

https://dev-registry.erasmuswithoutpaper.eu/manifest.xml	OK	details
https://ewp.demo.usos.edu.pl/ewp/manifest	OK	details
https://ewp-hei.demo.usos.edu.pl/ewp/manifest	OK	details

```
-<ns41:manifest>
-  <ns41:host>
    <admin-email>hostmaster@usos.edu.pl</admin-email>
  -<ns40:apis-implemented>
    -<ns15:discovery version="5.0.0">
      <ns15:url>https://ewp.demo.usos.edu.pl/ewp/manifest</ns15:url>
    </ns15:discovery>
    +<ns3:echo version="2.0.0"></ns3:echo>
    +<ns12:imobilities version="0.3.0"></ns12:imobilities>
    +<ns11:imobility-cnr version="0.1.1"></ns11:imobility-cnr>
    +<ns8:institutions version="2.1.0"></ns8:institutions>
    +<ns4:organizational-units version="2.1.0"></ns4:organizational-units>
    +<ns13:iias version="2.1.0"></ns13:iias>
    +<ns14:iaa-cnr version="2.0.2"></ns14:iaa-cnr>
    +<ns5:omobilities version="0.15.0"></ns5:omobilities>
    +<ns7:omobility-cnr version="0.4.1"></ns7:omobility-cnr>
    +<ns16:courses version="0.7.1"></ns16:courses>
    +<ns9:imobility-tors version="0.7.0"></ns9:imobility-tors>
    +<ns10:imobility-tor-cnr version="0.1.1"></ns10:imobility-tor-cnr>
  </ns40:apis-implemented>
  -<ns41:institutions-covered>
    -<ns40:hei id="demo.usos.edu.pl">
      <ns40:other-id type="erasmus">PL WARSZAW01</ns40:other-id>
      <ns40:other-id type="pic">999572294</ns40:other-id>
      <ns40:name xml:lang="pl">Uniwersytet Warszawski</ns40:name>
      <ns40:name xml:lang="en">University of Warsaw</ns40:name>
    </ns40:hei>
    </ns41:institutions-covered>
    +<ns41:client-credentials-in-use></ns41:client-credentials-in-use>
    +<ns41:server-credentials-in-use></ns41:server-credentials-in-use>
  </ns41:host>
</ns41:manifest>
```

Other APIs (offered services)



DEV Registry Service

```

- <ns41:manifest>
- <ns41:host>
  <admin-email>hostmaster@usos.edu.pl</admin-email>
- <ns40:apis-implemented>
  + <ns15:discovery version="5.0.0"></ns15:discovery>
  + <ns3:echo version="2.0.0"></ns3:echo>
  + <ns12:imobilities version="0.3.0"></ns12:imobilities>
  + <ns11:imobility-cnr version="0.1.1"></ns11:imobility-cnr>
  + <ns8:institutions version="2.1.0"></ns8:institutions>
  + <ns4:organizational-units version="2.1.0"></ns4:organizational-units>
  + <ns13:iias version="2.1.0"></ns13:iias>
  + <ns14:iia-cnr version="2.0.2"></ns14:iia-cnr>
  + <ns5:omobilities version="0.15.0"></ns5:omobilities>
  + <ns7:omobility-cnr version="0.4.1"></ns7:omobility-cnr>
  + <ns16:courses version="0.7.1"></ns16:courses>
  + <ns9:imobility-tors version="0.7.0"></ns9:imobility-tors>
  + <ns10:imobility-tor-cnr version="0.1.1"></ns10:imobility-tor-cnr>
</ns40:apis-implemented>
- <ns41:institutions-covered>
  - <ns40:hei id="demo.usos.edu.pl">
    <ns40:other-id type="erasmus">PL WARSZAW01</ns40:other-id>
    <ns40:other-id type="pic">999572294</ns40:other-id>
    <ns40:name xml:lang="pl">Uniwersytet Warszawski</ns40:name>
    <ns40:name xml:lang="en">University of Warsaw</ns40:name>
  </ns40:hei>
</ns41:institutions-covered>
  
```

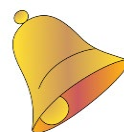
HEI/API Coverage Matrix

Institution	General Purpose APIs				IIAs			OMobilities				IMobilities			IMobility ToRs		
	inst.	ounits	courses	course replic.	ver.	CNR		ver.	update types	CNR		ver.	CNR		ver.	CNR	
						sends	recv.			sends	recv.		sends	recv.		sends	recv.
demo.usos.edu.pl	2.1.0	2.1.0	0.7.1		2.1.0	yes	2.0.2	0.15.0	NN	yes	0.4.1	0.3.0	yes	0.1.1	0.7.0	yes	0.1.1
hei.demo.usos.edu.pl	2.1.0	2.1.0	0.7.1		2.1.0	yes	2.0.2	0.15.0	NN	yes	0.4.1	0.3.0	yes	0.1.1	0.7.0	yes	0.1.1
uw.edu.pl	2.0.0	2.0.0	0.7.0		2.0.0	yes	2.0.1	0.15.0	NN	yes	0.4.0	0.3.0	yes	0.1.0	0.7.0	yes	0.1.0
up.pt	2.1.0	2.1.0			2.1.0	no	2.0.2	0.15.0	NN	yes	0.4.1	0.2.0	no	0.1.1	0.7.0	no	0.1.1

identials-in-use>
edentials-in-use>

What is the EWP Network?

- **APIs** (***Application Programming Interfaces***) — a set of clearly defined methods of communication between various software components used to build applications.
- There are many APIs supporting the **EWP business model**:
 - **Primary Network** APIs (Discovery Manifest, Echo, Registry).
 - **General Purpose** APIs (Institutions, Organizational Units, Courses).
 - **Erasmus Mobility** APIs (Interinstitutional Agreements, Outgoing Mobilities, Incoming Mobilities, Nominations Approval, Mobility Arrival and Departure, Transcripts of Records, CNRs).
 - **MT+** APIs (Institutions, Projects, Dictionaries).
- Each API is relatively simple and can be implemented separately from the others.
- APIs may be implemented one by one, gradually building support for the whole process.
- There are APIs for **sending** (pushing) data and for **requesting** (pulling) data in response to **change notifications** (CNR). It is possible to handle EWP data exchange **automatically** by subscribing to notifications and firing triggers when they come.



What is the EWP Network?

EWP Client

- EWP functionalities spread over the **User Interface** of the Mobility module used by IRO.
- The most **business oriented** part of the project.
- Should be designed with close contact with the **business owner** (mostly IRO staff).
- May (will) change in time from less to more automated.

International cooperation ▸ Arrival Nominations

New EWP notifications Pending nominations

<input type="checkbox"/>	No	D	Family name	Given names	Country	Higher Education Institution
<input type="checkbox"/>	1	2018	Cassio	Aguinaldo	Portugalia	Universidade do Porto
<input type="checkbox"/>	2	2018	Diogo	Diego	Portugalia	Universidade do Porto
<input type="checkbox"/>	3	2018	Fernando	Barnabe	Portugalia	Universidade do Porto

No	Name in national language	Name in English	WWW
1	Katedra Białorutenistyki	Department of Belarusian Studies	http://www.kfb.uw.edu.pl
2	Katedra Ukrainistyki	Department of Ukrainian Studies	http://www.ukraina.uw.edu.pl
3	Wydział Zarządzania	Faculty of Management	http://www.wz.uw.edu.pl

How to build EWP node and get connected?

- Implement the **EWP connector** with ECHO and Discovery (or take it from OSUA).
- Send URL to the Registry administrator (usos@usos.edu.pl).
- Start testing.
- Implement other APIs as agreed with local users.
- Update your manifest file as new APIs become available.
- Test, test, test (using automated tests, reference connector, demo installations of the partners, or you own).

How to build EWP node and get connected?

In the meantime:


- Design the **EWP client** with your business clients.
- Search for inspiration looking at installations of the partners.
- Integrate EWP services into your local processes.
- Test, test, test in DEMO EWP Network.
- Go to production.

The collage displays four screenshots of the MoveON system interface:

- Top Left:** A sidebar menu with options like Pipeline, Workplace, Connect, Favorites, History, Help, and Logout. The main area shows a list of institutions under the 'Connect' tab, including ARISTOTELEIO PANEPISTIMIO THESSALONIKIS, DEMOCHSCHULE/DEMOINSTITUTION, DIAKONIA-AMMATTIKORKEAKOULU, FONTYS HOGESCHOLEN, JYVASKYLÄN YLIOPISTO, ÖZGÜĞÜN UNIVERSITY, PÄDAGOGISCHE AKADEMIE DES BUNDES IN OBERÖSTERREICH, TAMPEREEN TEKNILLINEN YLIOPISTO, TAMPEREEN YLIOPISTO, TURUN AMMATTIKORKEAKOULU - ÅBO YRKESHÖGSKOLA, UNIVERSIDAD CARLOS III DE MADRID, UNIVERSIDADE DO PORTO, UNIVERSITÀ DEGLI STUDI DI SALERNO, UNIVERSITÄT BREMEN, UNIVERSITAT DE BARCELONA, and UNIVERSITEIT GENT.
- Top Right:** A screenshot of the 'EWP Organizational Units' section, showing a table with columns for EWP Institution, EWP Institutional Unit, and Parent EWP Organizational Unit Name. The table lists various units like EM LogDynamics, EMBC - Marine Biologie, FB01 Physics, Electrical Engineering, FB01 Physics, MSc Environmental Physics (PEP), FB02 Biology, FB02 Chemistry, FB03 Informatics, Digital Media, Computer Science, FB03 Mathematics, FB04 Production Technology, Economic Engineering, FB05 Geology, FB06 Law, FB07 Economics, FB08 Geography, FB08 History, FB08 Integrated European Studies, FB08 Political Science, FB08 Social Policy - 14, FB08 Sociology, and FB09 Arts.
- Bottom Left:** A screenshot of the 'Institutions - (19 Entries found)' section, showing a table with columns for Name of institution, Code, and Status. The table lists various institutions like ARISTOTELEIO PANEPISTIMIO THESSALONIKIS, DEMOCHSCHULE/DEMOINSTITUTION, DIAKONIA-AMMATTIKORKEAKOULU, FONTYS HOGESCHOLEN, JYVASKYLÄN YLIOPISTO, ÖZGÜĞÜN UNIVERSITY, PÄDAGOGISCHE AKADEMIE DES BUNDES IN OBERÖSTERREICH, TAMPEREEN TEKNILLINEN YLIOPISTO, TAMPEREEN YLIOPISTO, TURUN AMMATTIKORKEAKOULU - ÅBO YRKESHÖGSKOLA, UNIVERSIDAD CARLOS III DE MADRID, UNIVERSIDADE DO PORTO, UNIVERSITÀ DEGLI STUDI DI SALERNO, UNIVERSITÄT BREMEN, UNIVERSITAT DE BARCELONA, and UNIVERSITEIT GENT.
- Bottom Right:** A screenshot of the 'User notifications' section, showing a table with columns for Date, Message, and Buttons. The table lists various notifications about updates available on the Outgoing Mobility, including messages from U.Porto to demo.usos.edu.pl.

How to get help on a technical level?

- Developers Guide:
<https://developers.erasmuswithoutpaper.eu/>
- Self testing: API Validator.
- Self testing: XML Validator.

**Specifications, Validators and Tools**

Who should be reading this?

The following chapters and tools are written **by developers and for developers**. If you're a project manager, then please assign developer(s) from your team to keep track of the changes in these specifications.

Developers chosen by the partners SHOULD:

- Understand **Git** and be able to work with it fluently, in order to **continually** keep track and review all the changes to the specifications.
- Have significant experience with **XML namespaces**, and **XML Schema** language.

- ⊕ Chapter 1. Working with EWP Technical Documentation **v1.2.0**
- ⊖ Chapter 2. Introduction to EWP Network
 - ⊕ Chapter 2.1. Architecture and Common Datatypes **v1.10.0**
 - ⊕ Chapter 2.2. Authentication and Security **v2.0.2**
 - ⊖ Chapter 2.3. Client Authentication Methods
 - ⊕ Chapter 2.3.1. Handling Anonymous Clients **v1.1.0**
 - ⊕ Chapter 2.3.2. Authenticating Clients with TLS Certificate **v1.1.0**
 - ⊕ Chapter 2.3.3. Authenticating Clients with HTTP Signature **v1.0.1**
 - ⊖ Chapter 2.4. Server Authentication Methods
 - ⊕ Chapter 2.4.1. Authenticating Servers with TLS Certificate **v1.1.0**
 - ⊕ Chapter 2.4.2. Authenticating Servers with HTTP Signature **v1.0.1**

APIs defined in manifest <https://ewp.demo.usos.edu.pl/ewp/manifest>:

ECHO 2.0.0 <https://ewp.demo.usos.edu.pl/ewp/echo>

Security method ⓘ

- ☒ STTT
- ☐ SHTT
- ☐ HTTT
- ☐ HHTT

Parameters ⓘ

No parameters available.

Validate

[Show results](#)

STTT

[Show results](#)

SHTT

INSTITUTIONS 2.1.0 <https://ewp.demo.usos.edu.pl/ewp/institutions>

Security method ⓘ

- ☐ STTT
- ☐ SHTT
- ☐ HTTT
- ☒ HHTT

Parameters ⓘ

hei_id

Validate

[Show results](#)

HHTT

ORGANIZATIONAL-UNITS 2.1.0 <https://ewp.demo.usos.edu.pl/ewp/ounits>

Security method ⓘ

- ☒ STTT
- ☐ SHTT
- ☐ HTTT
- ☐ HHTT

Parameters ⓘ

hei_id

ounit_id

Validate

[Show results](#)

STTT

hei_id

← ewp.demo.usos.edu.pl

ounit_id

← 10000000

COURSES 0.7.1 <https://ewp.demo.usos.edu.pl/ewp/courses>

Security method ⓘ

- ☐ STTT
- ☐ SHTT
- ☐ HTTT
- ☐ HHTT

Parameters ⓘ

hei_id

los_id

Validate

API Validator
performs
thousands of tests
with parameters
selected randomly
or entered by
hand

API Validator

6	Trying Combination[GSTTT] GET request with a list of echo values [a, b, a]. Expecting to receive a valid HTTP 200 Echo API response, with proper hei-id and matching echo values.	SUCCESS
▼ Show/hide details		
▶ Preliminary request snapshot (#-2)		
▶ Actual request which was made (#-1)		
▶ Response received from server (#+1)		

12	Trying Combination[PSTTT] with additional "gzip" added in Accept-Encoding. Expecting the same response, but preferably gzipped.	NOTICE
The client explicitly accepted gzip, but the server didn't compress its response. That's not an error, but it might be useful to support gzip encoding to save bandwidth.		
▶ Show/hide details		

16	Request for one of known ounit-ids with unknown hei-id, expect 400.	FAILURE
HTTP 400 expected, but HTTP 200 received.		
▶ Show/hide details		

28	Request with correct hei_id and incorrect hei_id, expect 400.	FAILURE
HTTP 400 expected, but HTTP 200 received.		
▶ Show/hide details		

9	Request for one of known los-ids, expect 200 OK.	FAILURE
HTTP response status was okay, but the content has failed Schema validation. Our document parser has reported the following errors: 1. (Line 1) cvc-complex-type.2.4.a: Invalid content was found starting with element 'ns2:end-date'. One of '{"https://github.com/erasmus-without-paper/ewp-specs-types-academic-term/tree/stable-v1":display-name, "https://github.com/erasmus-without-paper/ewp-specs-types-academic-term/tree/stable-v1":start-date}' is expected. 2. (Line 1) cvc-pattern-valid: Value 'IUCL2' is not facet-valid with respect to pattern '(CR CLS MOD DEP)/(.{1,40})' for type 'LosID'. 3. (Line 1) cvc-type.3.1.3: The value 'IUCL2' of element 'los-id' is not valid. 4. (Line 1) cvc-pattern-valid: Value 'IUCL1' is not facet-valid with respect to pattern '(CR CLS MOD DEP)/(.{1,40})' for type 'LosID'. 5. (Line 1) cvc-type.3.1.3: The value 'IUCL1' of element 'los-id' is not valid.		
▶ Show/hide details		

XML Schema Validator

This tool will help you with writing EWP XML documents. For example, you can paste the contents of your [Manifest file](#) here before you upload it onto your production site. You should be able to validate any XML document described in all **RELEASED**, **DEPRECATED** and **OBSOLETE** specifications listed on [Developers Hub](#) website (plus, perhaps, some of the **DRAFT** ones).

Note, that this tool will validate **against the schema only!** Even if such validation succeeds, your file **may still be invalid** (if, for example, you didn't adhere to the guidelines described in `<xs:documentation>` elements included in the XSD files).

Paste your XML document below and press

```
<ounits-response
  xmlns="https://github.com/erasmus-without-paper/ewp-specs-api-ounits/tree/stable-v2"
  xmlns:ns2="https://github.com/erasmus-without-paper/ewp-specs-types-address/tree/stable-v1"
  xmlns:ns3="https://github.com/erasmus-without-paper/ewp-specs-types-contact/tree/stable-v1"
  xmlns:ns4="https://github.com/erasmus-without-paper/ewp-specs-types-phonenummer/tree/stable-v1"
  xmlns:ns5="https://github.com/erasmus-without-paper/ewp-specs-sec-cliauth-tlscert/tree/stable-v1"
  xmlns:ns6="https://github.com/erasmus-without-paper/ewp-specs-sec-cliauth-none/tree/stable-v1"
  xmlns:ns7="https://github.com/erasmus-without-paper/ewp-specs-sec-cliauth-httpsig/tree/stable-v1"
  xmlns:ns8="https://github.com/erasmus-without-paper/ewp-specs-sec-srvauth-httpsig/tree/stable-v1"
  xmlns:ns9="https://github.com/erasmus-without-paper/ewp-specs-sec-srvauth-tlscert/tree/stable-v1"
>
  <ounit>
    <ounit-id>3ccc54505221791ae51bc8bb43825830</ounit-id>
    <ounit-code>DEMO01_EWP</ounit-code>
    <name xml:lang="de">University of Schönbrunn (Partner)</name>
    <name xml:lang="en">University of Schönbrunn (Partner)</name>
    <ns2:street-address>
      <ns2:recipientName>University of Schönbrunn (Partner)</ns2:recipientName>
      <ns2:addressLine>Tivoligasse 70/13</ns2:addressLine>
      <ns2:postalCode>1120</ns2:postalCode>
      <ns2:locality>Wien</ns2:locality>
      <ns2:country>DE</ns2:country>
    </ns2:street-address>
```

Result **OK**

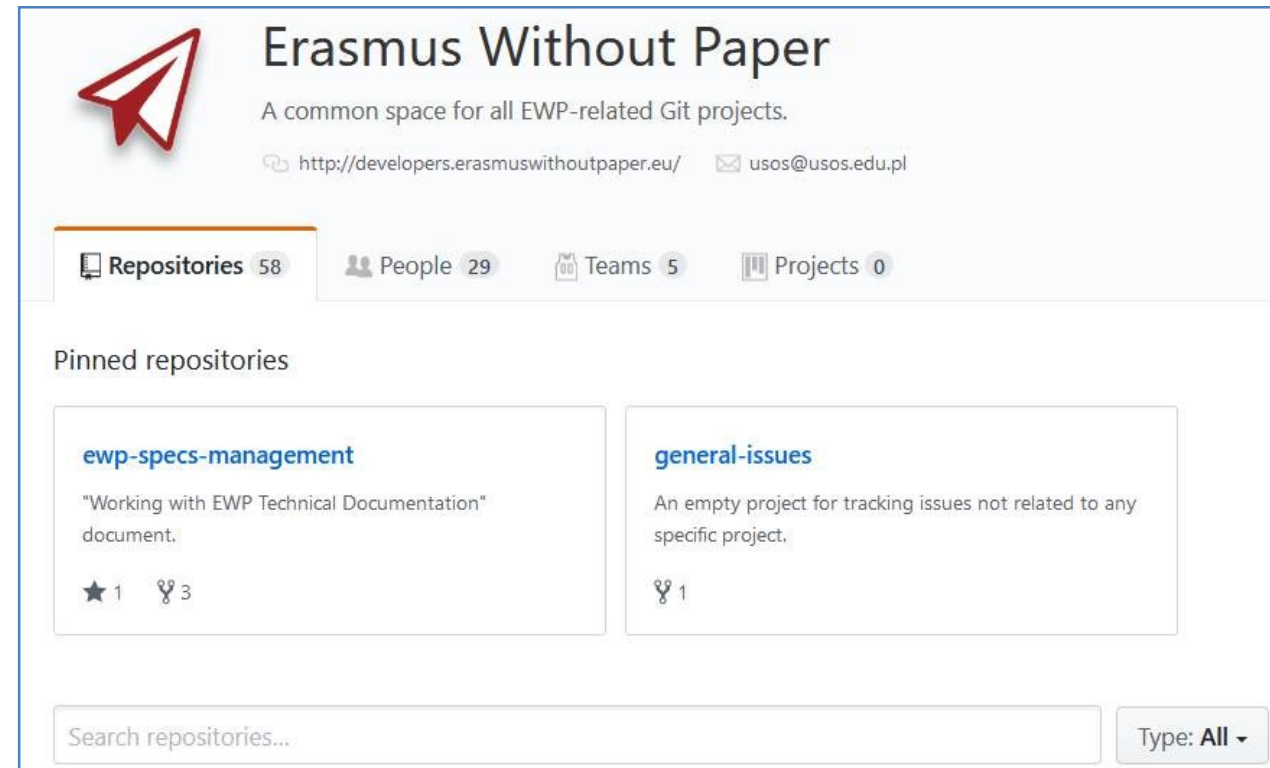
This seems to be a valid `ounits-response` element (from <https://github.com/erasmus-without-paper/ewp-specs-api-ounits/tree/stable-v2>).

Schema Validator

Where to find technical stuff?

GitHub: <https://github.com/erasmus-without-paper>

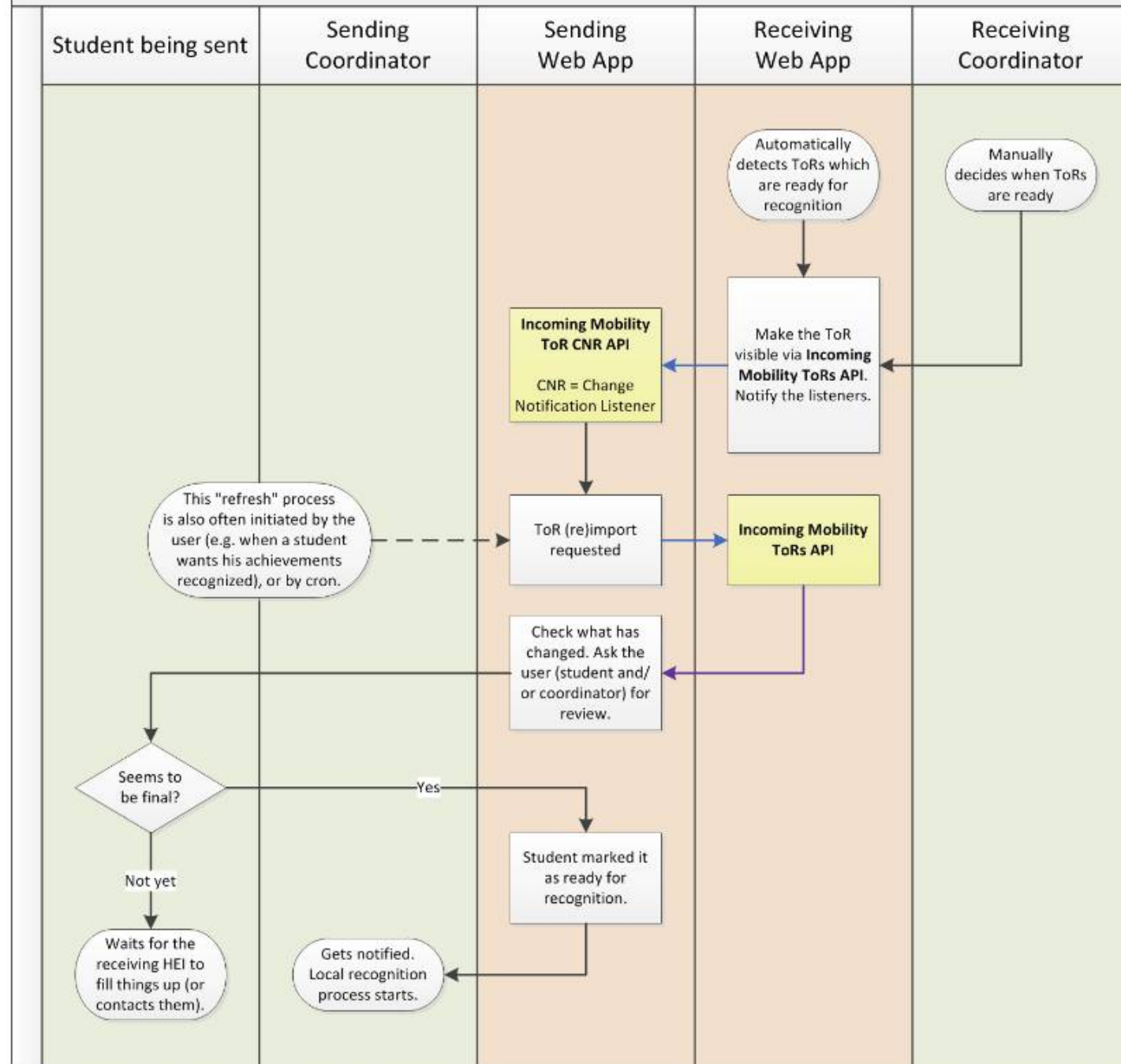
- Specifications.
- Common data types.
- XSD Schemas.
- Examples of requests and responses in XML.
- Issue tracker.
- Libraries of code.



GitHub

Mobility process explained on flowcharts

Exchanging ToRs (Transcripts of Records) after the mobility



Mobility Tool+ Institutions API

- [What is the status of this document?](#)
- [See the index of all other EWP Specifications](#)

Summary

This document describes the **Mobility Tool+ Institutions API**. It is assumed that this API is implemented by only one host managed by the Directorate-General Education and Culture Unit (DG EAC) of the European Commission. However, the specification itself does not limit the number of hosts.

Once implemented by the host, it allows external clients to retrieve general information on institutions known by this host.

Request method

- Requests MUST be made with either HTTP GET or HTTP POST method. Servers MUST support both these methods. Servers SHOULD reject all other request methods.
- Clients are advised to use POST when passing large number of parameters (servers MAY set a limit on the string length).

Request parameters

Parameters MUST be provided in the regular `application/x-www-form-urlencoded` format.

pic (repeatable, required)

A list of institution PICs the client wants to retrieve information on (no more than `<max-ids>` items).

This parameter is *repeatable*, so the request MAY contain multiple occurrences of it. The server is REQUIRED to parse them.

Server implementers provide their own chosen value of `<max-ids>` via their manifest entry (see [manifest-entry](#)). Servers SHOULD parse this value (or assume it is equal to `1`).

Clients may retrieve proper PICs from other EWP APIs (most often, the [Registry Service](#)).

eche_at_date (required)

A date in the `YYYY-MM-DD` format. The Erasmus Charter for Higher Education (ECHE) accreditation included in the response should be the one valid at this date.

GitHub Specification of the API request parameters Response example

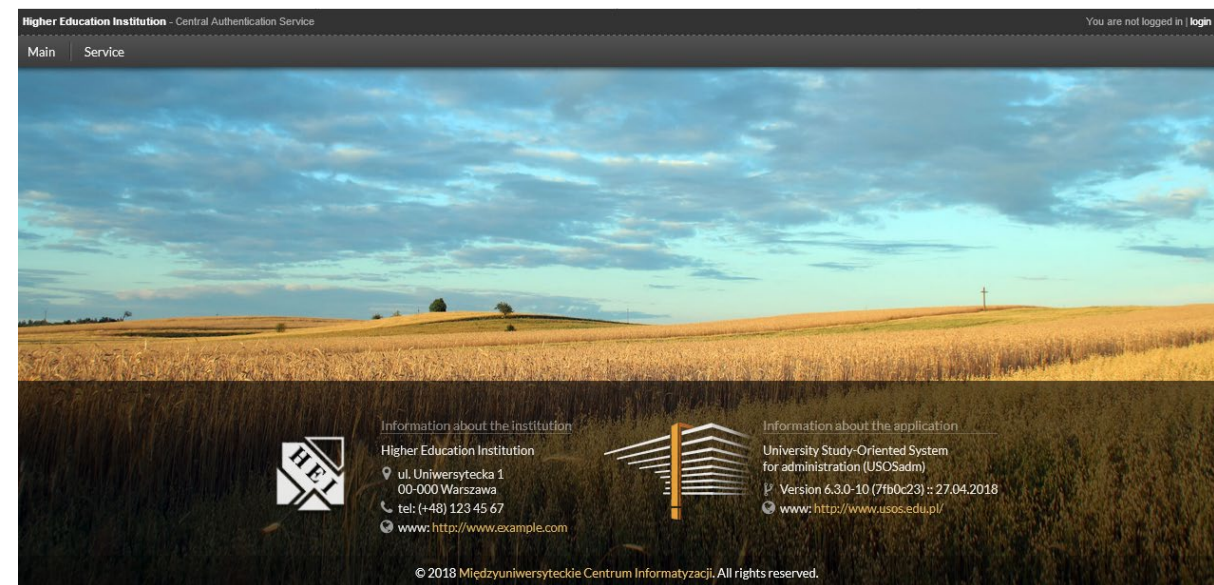
```
<mt-institutions-response>
  <hei>
    <pic>999975814</pic>
    <erasmus>N OSL001</erasmus>
    <erasmus-charter startDate="2014-01-01" endDate="2020-12-31">29714-EPP-1-2014-1-NO-EPPKA3-ECHE
  </erasmus-charter>

    <name xml:lang="en">University of Oslo</name>
    <name xml:lang="no">Universitetet i Oslo</name>

    <a:mailing-address>
      <a:addressLine>University of Oslo</a:addressLine>
      <a:addressLine>PROBLEMVEIEN 5-7 1073</a:addressLine>
      <a:postalCode>03313</a:postalCode>
      <a:locality>Oslo</a:locality>
      <a:country>NO</a:country>
    </a:mailing-address>
  </hei>
</mt-institutions-response>
```

DEMO installations to test mobility scenarios


- Two installations:
 - University of Warsaw at <https://usosadm.demo.usos.edu.pl/usosadm/>
 - Some other HEI at <https://usosadm-hei.demo.usos.edu.pl/usosadm/>



Scenarios and APIs

- Sharing institutional details, contacts, organizational units and factsheets.
- Negotiating inter-institutional agreements.
- Exposing course catalog.
- Sharing nominations, approval/rejection, changes.
- Learning agreements – all parts (before, during, after the mobility).
- Confirmation of the arrival and departure dates → grants.
- Digitally signed Transcript of Records with grade distributions (XML and PDF).

University of
Warsaw displays
all obtained
factsheets in
the web portal
for students
and staff



[NEWS](#)
[DIRECTORY](#)
[MY USOSWEB](#)
[STUDENT'S SECTION](#)
[STAFF SECTION](#)
[COMMON SECTION](#)
[ADMINISTRATION](#)


[INTRODUCTION](#)
[MY PROFILE](#)
[TESTS](#)
[EXAM REPORTS](#)
[EDITING COURSES](#)
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[POSTULATES](#)
[OPINIONS ON APPLICATIONS](#)

[STUDENT MOBILITY](#)

- ▶ coordinated faculties
- ▶ **partner institutions**
- ▶ university's agreements
- ▶ my commissions
- ▶ my opinions

[APPLICATIONS COORDINATING](#)
[SURVEYS RESULTS](#)






Partner institutions



This page displays foreign higher education institutions with which DEMO University has signed at least one agreement for international exchange that fulfills the following criteria:

- agreement comes into effect within a year from now,
- end date is later than today or is not determined.

FILTER OPTIONS

Country: 
City: 
Institution name (in native language): 
Institution name (in English): 
Erasmus code: 
Factsheet (for institutions and/or units): ☒

[CLEAR FILTERS](#)
[APPLY](#)

Showing elements 1..7 (out of 7)

No.	Country and city	Erasmus code	Institution name	Institution name (Eng.)	Web page	Factsheet
1	Belgium (Antwerp)	B ANTWERP01	Universiteit Antwerpen (show units)	University of Antwerp	http://www.ua.ac.be	show from partner show from USOS
2	Belgium (Gent)		Universiteit Gent (show units)	Ghent University		show from USOS
3	Portugal (Porto)	P PORTO02	Universidade do Porto (show units)	University of Porto	http://www.up.pt	show from partner
4	Russia (Ulan-Ude)		Бурятский государственный университет	Buryat State University	http://www.bsu.ru/	show from USOS
5	Sweden (Lund)	S LUND01	Lunds Universitet (show units)	Lund University	http://www.lu.se	show from partner show from USOS
6	Sweden (Umea)	S UMEA01	Umea Universitet (show units)	Umea University	http://www.umu.se	show from partner
7	Switzerland (Geneva)	CH GENEVE01	Université de Geneve (show units)	University of Geneva	http://www.unige.ch	show from USOS

HEI generates ToRs for incoming students and notifies the partner (ToR CNR API)

No new notifications

Get data from EWP

Transcript of records ▾

?

Set the filter

📄 Reports ▾

? Help

Arrivals filter

Generate for all from the filter

Generate for selected

Choose a person by typing PESEL, student number or

Place number

Contactless interface number

Choose program unit

Choose program

Choose stage

Choose didactic cycle

-- no filter -- ▾

Choose a place where program i

Specify filters

<input checked="" type="checkbox"/>	No	Family name ▾	Given name ▾	PESEL ▾	Main student i ▾	Main program ▾	Person's unit ▾
<input checked="" type="checkbox"/>	4	Brzezińska	Danuta	64022034104	123451263	ZD-HUM (Humanistyczne Studia Doktoranckie w zakresie nauk o polityce)	21000000
<input checked="" type="checkbox"/>	5	Szyjka	Maria	61031100901	123433308	DD-FL (Studia trzeciego stopnia, stacjonarne na Wydziale Neofilologii)	33000000

Number of checked: 2 Uncheck all

First«««12»»Last

3 ▾

Form of education:

Type of study:

Year of study:

Generate

Download

Notify the partner about the change

Transcript of records ▾

Host units

Accommodation

Finances

Registrations

Documents

University of Warsaw receives notification and then downloads ToR to the local system (Incoming Mobility ToR API)

Notifications of dates Download TOR notifications Download Replies to nominations Show ? Set the filter Reports ? Help

Departures filter

Choose a person by typing PESEL, student number

Choose program unit

No	Brzezińska	Danuta
1	Brzezińska	Danuta

2017 Add

Folder number: 1000008
Organizational unit: 2200000
Foreign Higher Education Institution: Higher Education
ERASMUS code:
City/village: Warszawa (Ochota)
Country: Polska
Agreement: BI/1/18
Type of agreement: Bilateral
Type of cooperation: studenci-studia
Cooperation level: drugi
Domain: 10000 Prawo
ISCED code: 0421 Prawo
In second round: No
Agreement with student: Yes
Erasmus in the past: No
Speaks Polish: Yes
Classes in the official language: Yes
Type of departure: Studies
Status: Active
Reasons for resignation:

Transcript of records

Family name	Brzezińska	Download TOR
Given names	Danuta	
Academic year	2017	
Mobility id	6236B741AC3B5D02E05000C1924172FD	
Transcript of records	YES	
Family name	Bagiński	Download TOR
Given names	Robert Zygmunt	
Academic year	2017	
Mobility id	6A9FB1EEB544A452E05000C19241D900	
Transcript of records	YES	

Close

Departure information

Program:	Date of departure:
Type of study:	Date of return:
Study mode:	Actual date of departure:
Year of study:	Actual date of return:
Academic year: 2017	Prolongation/Shortening:
Academic year of funding: 2017	Number of months with scholarship: 5, days: 150
Scholarships group: Trzecia stawka stypendialna (najniższa)	Number of months of prolongation:
Disability subsidy: No	Number of months without scholarship: 0.17, days: 5
Co-financing from organizational unit: None	Notes (visible in USOSweb):
Received scholarships: Other	Notes (not visible in USOSweb):
If other, then which: Opis otrzymanego stypendium	

Edit Delete EWP Transcript of records

Mobility Tool+

- Mobility Tool+ is managed by the *Directorate-General Education and Culture Unit* (DG EAC) of the European Commission. It is used for reporting purposes.
- It exposes:
 - MT+ Institutions API
 - MT+ Projects API
 - MT+ Dictionaries API

MT+ Institutions API

Akademia Cybernetyki Poutnej - Authentication Service

Main People Employees Students Pa

» Dictionaries » Nationwide dictionaries » Institutions

+ Add

Institutions

No Ostrava

3 Vysoká škola báňská - Technická univerzita Os

Details Address Telephones External un

Name in national language: Vysoká
Name in English: VŠB - T
Type of institution: Foreign
Parent unit:
Participant Identity Code: 999868
ERASMUS code: CZ OST
POL-on code:
SCHAC code: vsb.cz
Institution code:
Institution code in HR system:
NUTS region:
WWW: http://v
E-mail:
E-mail addresses for nominations:
Display: Yes
Is public entity:
Is non-profit:

Edit institution

Data from EWP

SCHAC code:
Name in national language: * VYSOKA SKOLA BANSKA - TECHNICKA UNIVERZITA OSTRAVA
Name in English:
Participant Identity Code: 999868144
ERASMUS code: CZ OSTRAVA01
ECHE number: 49166-EPP-1-2014-1-CZ-EPPKA3-ECHE
Date of ECHE validity: 01.01.2014 - 31.12.2023
Factsheet:
WWW:
Logo:

Data in USOS

vsb.cz
Vysoká škola báňská - Technická univerzita Ostrava
VŠB - Technical University of Ostrava
999868144
CZ OSTRAVA01
Not stored in USOS
Not stored in USOS
Bytes remaining:2000
http://www.vsb.cz/cs/
Characters remaining:79

Correspondence address VYSOKA SKOLA BANSKA - TECHNICKA UNIVERZITA OSTRAVA
17 LISTOPADU 15/2172
Country: Czechy (CZ) Choose
Foreign code: 70 833
City/village: OSTRAVA PORUBA
Street:
House number:
Address type: Adres stały

MT+ Projects API

Logged in user: LOGIN1 (Role: PELNA)

Get data from EWP

Call year: 2015

Project ID 2015-1-PL01-KA104-000181
Start 01.07.2015
End 01.07.2016
Action type KA104

Project ID 2015-1-PL01-KA104-000181
Start 01.07.2015
End 01.07.2016
Action type KA104

* - required fields

Get data from EWP Close

Background interface details:

- Navigation: Dictionaries > Nationwide dictionaries > Institutions
- Buttons: + Add, Details, Address, Telephones, External units
- Table: Institutions
- Table 1: Download project IDs, Download
- Table 2: No, 1, Uniwersytet Warszawski
- Table 3: SCHAC co, Institution, Ty, demo.usos.edu.pl, A012, UZ, 1
- Table 4: 5
- Buttons: Set the filter, ? Help, ? Help

MT+ Dictionaries API

Dictionary > Nationwide dictionaries > Institution

+ Add

Institutions

No Uniwersytet Warszawski

1 Uniwersytet Warszawski

Details Address Telephones

+ Add Download project IDs

No

Education fields

Code	Description
0110	Education, not further defined
0119	Education, not elsewhere classified
0213	Fine arts
022	Humanities (except languages)
0322	Library, information and archival studies
04	Business, administration and law
0412	Finance, banking and insurance
0413	Management and administration
0416	Wholesale and retail sales
05	Natural sciences, mathematics and statistics
051	Biological and related sciences
06	Information and Communication Technologies (ICTs)
0911	Dental studies
1014	Sports
1020	Hygiene and occupational health services, not further defined
1021	Community sanitation
103	Security services
1088	Services, inter-disciplinary programmes
0915	Therapy and rehabilitation
102	Hygiene and occupational health services

1 2 3 4 5 6 7 8 9

Competence Center

- Provides all stakeholders with guidance on digitalising the internationalisation processes at any Higher Education Institution.
- Web portal available at <https://cc.erasmuswithoutpaper.eu/>
- Resources, tutorial videos, presentations and other tools and material to support the transition to **digital Erasmus+ management**.
- Entry/Exit procedure (DEV, PROD), SLA and any other legal issues.
- Single point of contact.
- *Work in progress.*



[Back to the website](#)

[Editor login](#)

MENU

▼ Erasmus Without Paper

- **Erasmus Mobility Coordinators**
- Higher Education leadership
- IT Teams & 3rd party mobility soft
- Entry procedure
- Download
- Contact

➤ eQuATIC user documentation

Erasmus Mobility Coordinators

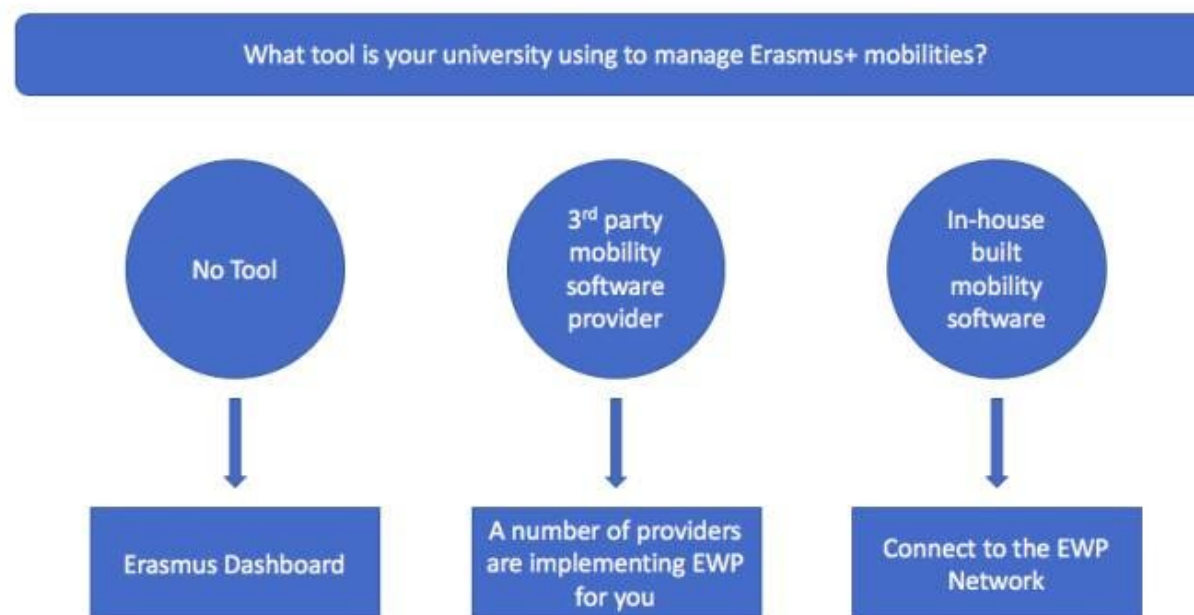
Utworzone przez Stefan Jahnke, ostatnia modyfikacja 27 maj 2019

Erasmus Without Paper allows your Higher Education Institution (HEI) to digitalise Erasmus+ mobility management processes.

Depending on the way your currently manage Erasmus+ mobilities at your institution, this page will offer an overview of the different scenarios

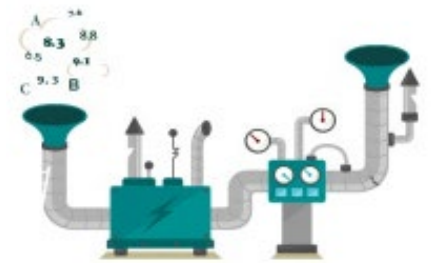
- 1. No Tool? Use the Erasmus Dashboard.
- 2. In-house built mobility management software? Connect to the EWP Network.
- 3. Use of 3rd party mobility management software? They will connect to EWP.

The following picture gives an overview of the different options. On this site you will find information and tools for all three scenarios.



Further development plans

- Designing MT+ API for reporting mobilities – *work in progress*.
 - Authorisation of end users.
 - Draft mobilities, final mobilities.
- Connecting Dashboard (with OLA and IIA editor) to the EWP Network – *work in progress*.
- Fine tuning and extending existing APIs (e.g. automatic Egracons grade conversion) – *work in progress*.
- Automatic tests for all APIs – *work in progress*.



What going into production means?

- Industrializing the EWP Network and its elements.
- Integrating various elements of the EWP ecosystem.
- Increasing network coverage by accepting new institutions.
- Supporting new partners in joining the network, on a political, organizational and technical level.
- Integrating data transfer with business processes of student mobility carried at higher education institutions.
- Integrating services offered by other networks into one digital platform for education sector.



SGROUP
EUROPEAN
UNIVERSITIES'
NETWORK



Janina Mincer-Daszkiewicz, jmd@mimuw.edu.pl



- EWP project is co-funded by the Erasmus+ Programme of the European Union.
- In Poland it is also co-financed by the Polish Ministry of Science and Higher Education from the funds allocated in the years 2018-2019 for science,

<http://erasmuswithoutpaper.eu>

<http://developers.erasmuswithoutpaper.eu>

<http://github.com/erasmus-without-paper>

<https://www.linkedin.com/groups/13590744>

<https://twitter.com/hashtag/ErasmusWithoutPaper>

<https://www.erasmuswithoutpaper.eu/launch-conference>

