

A contribution to improve the level of mobility in Electrical and Information Engineering Higher Education in Europe

Coordination: Hamed Yahoui

PARTICIPANTS OF THE TASK: Jan Ligus (Technická univerzita v Košiciach/Technical University of Košice, Slovakia), Lars Ericsson (Uppsala universitet, Sweden), Anselmo Seoane (Universidade de Vigo, Spain), Almudena Suarez (Universidad de Cantabria, Spain), H el ene Fremont (Universit e Bordeaux 1, France), Fabrice Meriaudeau (Universit e de Bourgogne, France), Christian Perra (Universit a degli studi di Cagliari, Italia), Hubert Roth (Universit at Siegen, Germany), Bahar Karaoglan (Uluslararası Bilgisayar Enstit s  / Ege University, Turkey), Daniel Pasquet (Ecole Nationale Sup erieure de l'Electronique et de ses Applications, Cergy, France), Jean Marc Thiriet (Universit e Joseph Fourier Grenoble, France), Cyril Burkley (University of Limerick, Ireland), Michael Hoffmann (Universit at Ulm, Germany), Michael Chmela (Vysok e u en ı technick e v Brn  / Brno University of Technology, Czech. Rep.), Silvia Stefanova (Русенски университет "Ангел К ънчев" / University of Rousse, Bulgaria), Zbigniew Mrozek (Politechnika Krakowska im. Tadeusza Ko ciuszki, Poland), Hamed Yahoui (Universit e Claude Bernard Lyon 1, France), Juan Carlos Burguillo (Universidade de Vigo, Spain), Christophe Simon (Universit e de Nancy 2, France).

Associate partners: Tamara Forza (BEST Organisation)

ABSTRACT: The work presented in this report gives at first a survey of existing tools to help international students aiming to study in Europe. The undergraduate and graduate programme profiles are not always easy to find for the student who wishes to prepare themselves for mobility. Information such as description of courses and schools, contact details, application procedures, admission requirements, scholarships, degrees/qualifications awarded and other relevant information are not always available but are fundamental to help with the preparation of the learning agreement between the two institutions. After studying the problems associated with mobility for engineering students, we propose a new tool using the information provided by institutions of our network which have adopted the Bologna process.

1. Introduction: Current Situation of Erasmus mobility design

The main aim of the Erasmus programme is to allow students and teachers of European Higher Institution to participate in an exchange period within the mobility actions financed by the European commission. For student exchanges, there are two kinds of mobility, one is dedicated to a training period and mainly used at the end of a Master curriculum and the second is a scholar one mainly used at the end of a bachelor curriculum or at the beginning of a Master curriculum.

The previous Erasmus Socrates programme (until 2007) was based on the signature of a bilateral agreement between two European institutions in a specific discipline. In this way, the two institutions were encouraged to respect the set of rules related to the implementation of the ECTS which is a credit accumulation system in the Lifelong Learning European programme.

Considering the engineering field Figure 1 shows the evolution of mobility of engineering students.

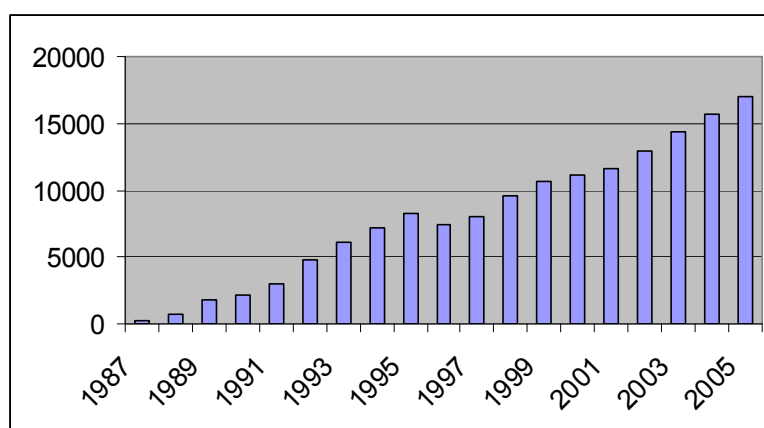


Figure 1

The Kerstin Janson's survey [1], has shown clearly that an Erasmus mobility is an important factor in improving qualification, competencies and professional success of our students but at the same time his work underlines the need for transparency and the availability of the necessary information before the ERASMUS period for the selection of host High Education Institution. Another important recommendation was to ensure a systematic procedure of recognition at the departmental instead of individual recognition to avoid a duplication of the procedure.

To participate in the Erasmus programme under the new European commission programme (Lifelong Learning Programme 2007-2013), all higher education institutions have to get an Erasmus University Charter [2]. For this application, the higher education institution is required to develop and include an Erasmus Policy Statement which will be published and given wide visibility with the international strategy defined in the mission statement of the institution.

2. Difficulties encountered during the mobility agreement preparation.

Submissions for Erasmus mobility are usually required in the year before the training period in which you have to study, but the process of finding a corresponding institution and the right contact and designing a good proposal can take a significant time and represent a considerable workload for the

supervisor [3-4]. Information related to the description of courses are not always available making the recognition a difficult step to achieve between the two institutions (Figure 2).

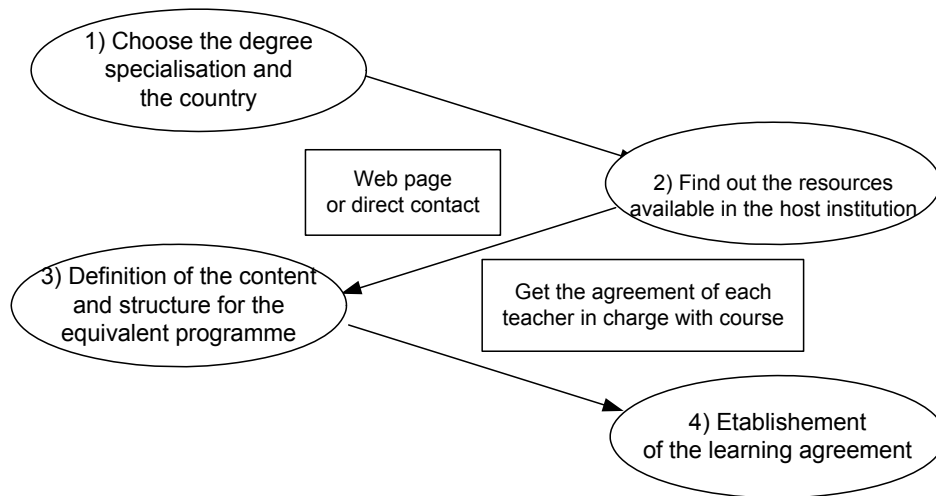
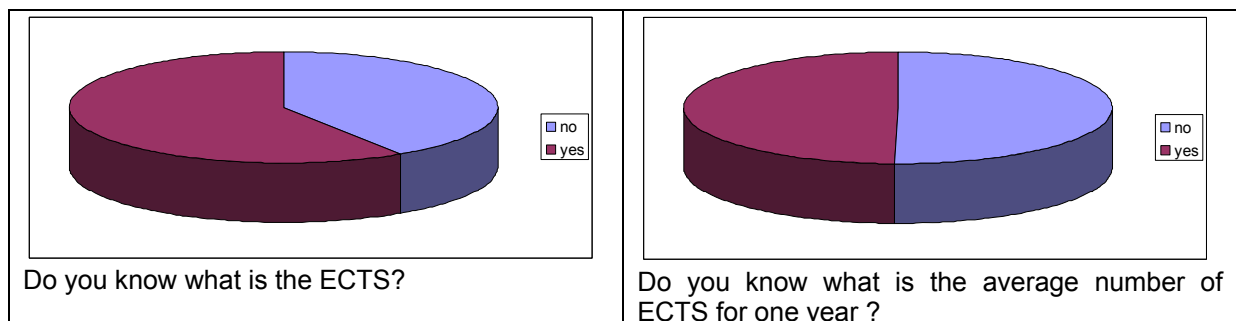


Figure 2: Mobility learning agreement flowchart

3. Results on Mobility Survey for the EIE: The student and supervisor point of view.

At this time all the result has not been gathered and the current data is based on a 1490 Students sample. Most of them 70% were at bachelor level; around 27% at master level and 3% at were Phd student. One of the questionnaire purposes was to know if the student has a clear view about the current Bologna process through the following questions (figure 3):



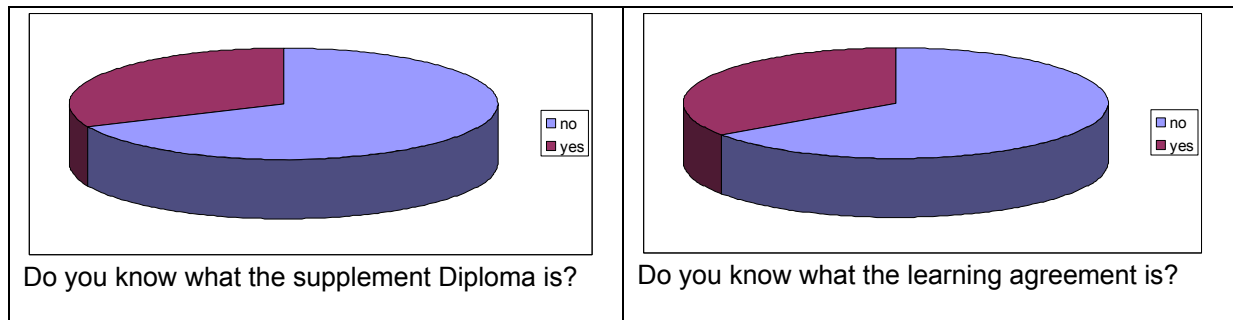


Figure 3: Knowledge about Bologna process

It is interesting to see with these results that they are not aware of the current harmonisation process in the Erasmus programme. The lack of transparency about mobility opportunity at student level will not motivate them to apply in this kind a project. We can imagine that without a practical experience of mobility it will not help them to insert their future professional careers in the global market job. It means that the universities and higher institutions in Europe should have a strong policy to incitate and encourage students for the mobility, considering mobility as an important aspect of the education of students. The accreditation procedures [5] should also integrate this aspect strongly.

In the second part of the questionnaire we dedicated a set of questions to validate how are perceived the propositions to bring to our students the possibility to undertake a learning mobility.

Main problems and issues related to mobility	Very Important %	Important %	Not Important %	Not applicable %
Insufficient information on possibilities to go abroad	30	47	14	9
Foreign Language problem	45	55	0	0
Not enough financial support	55	45	0	0
Distance from home	11	32	0	57
Studies not recognized in home country	43	57	0	0

Motivation for choice of your destination:	Very Important %	Important %	Not Important %	Not applicable %
Availability of bilateral agreement	32	62	0	6
Contacts in the receiving institution	29	64	0	7
Specialized courses relevant for job placement	42	53	0	5

Useful factors to facilitate mobility :	Very Important %	Important %	Not Important %	Not applicable %
Website	56	39	0	5
Open Network of Education: Harmonisation of degrees by the design of linked Master at European Level to facilitate the mobility and the Recognition in the same spirit of an Erasmus Socrates agreement?	42	53	0	5

We can notice through these main student questionnaire results that transparency of curricula is an important step to facilitate mobility at the student level. This opinion is confirmed by the mobility supervisor through the result of their questionnaire where 100% of them have showed their interest to work on the design of mobility network.

4. Conclusions and recommendations.

As a result of the Bologna process considerable progress has been made in relation to the harmonisation of University curricula in a number of countries. The two main innovations are:

a) The European Credit Transfer System; The European Credit Transfer System (ECTS) has been introduced to facilitate student mobility and international curriculum development. The main features that an institution must achieve to comply with ECTS are:

- ECTS has to be based on the principle that 60 credits measure the workload of a full-time student during one academic year (the workload of a full-time study is around 1500-1800 hours per year and in those cases one credit stands for around 25 to 30 working hours),
- The institution has to provide the Information on the Course Catalogue by publishing it in its national language and in English on the Web or in a hard copy.

b) The introduction of a two or three cycle system makes it necessary to revise all existing study programmes which are not based on the concept of cycles. In practice these programmes have to be redesigned because in a cycle system each cycle should be seen as an entity in itself.

At this stage of the Bologna Process, many of the European countries have adopted the reform but only a few of them have provided the Information on the Course Catalogue by giving it in an English version. Following our survey results, we recommend a new tool to assist the mobility and to help in the preparation of the learning agreement. To Evaluate the feasibility of using this tool through experimental implementation into some chosen bachelors, masters and PhDs programmes, within a network of exchange, a working group will participate to test the methodology on some test cases, and see how to adapt the curricula accordingly (market needs, Tuning approach, EQF qualification system), even at the experimental level. With the help of the

ECTS and through the involvement of our network partners, we can develop a new tool to ensure the transparency of our curriculum in the European higher education area. The project is not only dedicated to Socrates mobility but it could help the 'free mover' students too. However it is not always possible to make an Erasmus agreement for a specific destination particularly when the number of students is not large enough to meet the annual agreed target number or when the institution make a limitation in this number.

5. References

[1] Kerstin Janson, "the professional value of Erasmus mobility, a short report of the VALERA Project" Opening Conference for 20 years Erasmus Programme Erasmus Student Network Celebrations, 18th January 2007

[2] http://ec.europa.eu/education/programmes/socrates/erasmus/what_en.html

[3] H. Yahoui, J. Ligus, H. Fremont, JM. Thiriet, D. Genon-Catalot

Existing and new Tools to improve student mobility at university level in Electrical and information engineering, 17th EAEEIE Annual Conference on Innovation in Education for Electrical and Information Engineering, Craiova, Romania June 2006

[4] J.M. Thiriet, M.J. Martins, M. Robert, H. Yahoui, O. Bonnaud, P. Gend, Un réseau thématique, force de proposition pour l'université de demain, CETSIS EEA 2003, 13-14 Novembre 2003.

[5] F. Maciel Barbosa, Cyril Burkley, Michael H.W. Hoffmann,

and Jean Marc Thiriet - Accreditation of higher education in EIE in Europe - 18th EAEEIE Annual Conference on Innovation in Education for Electrical and Information Engineering (EIE), EAEEIE'2007, July 2nd-4th, 2007, Praha (Cesko), ISBN 978-80-01-03745-4.<

6. Appendices

DESIGN OF A SOFTWARE TO HELP IN THE MOBILITY IN ELECTRICAL AND INFORMATION ENGINEERING

The design of the software needed to run the Web portal has been built by a dedicated task managed by the partners from Vigo and Nancy II. The Web tool is able to search compatible courses and contains standard method to describe the course contents. The level of authorised access will depend of the user body as shown in the following figure 1:

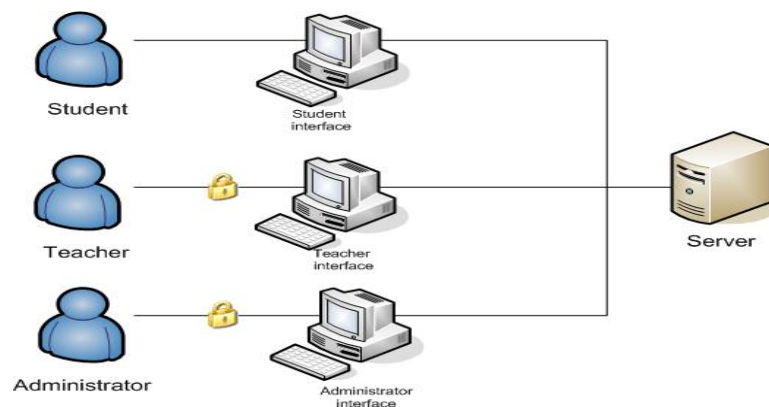


Figure 1

The student interface will permit two types of requests:

- Course to course (Chained lists and Database percentages) presented in figure 2a,
- Group of courses (Group formation, Whole description) presented in figure 2b.

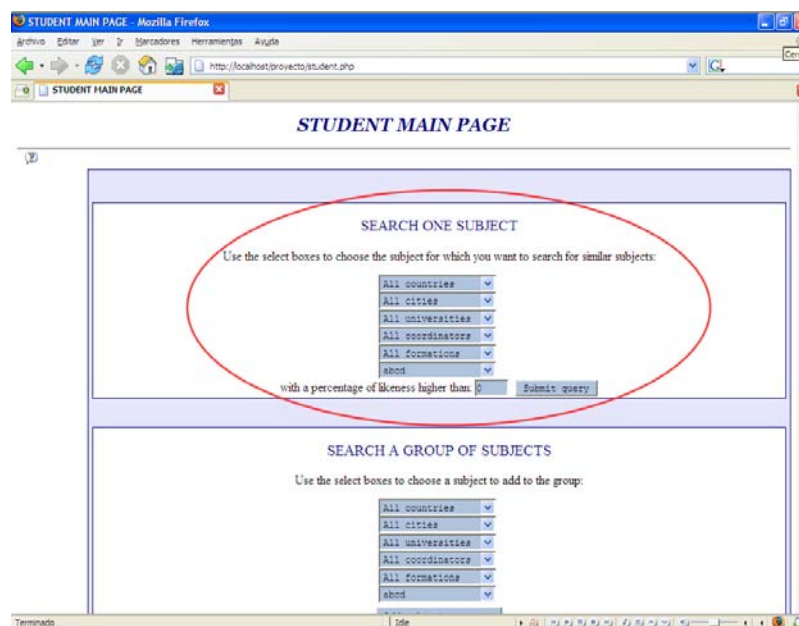


Figure 2a Student Interface: Searching a subject

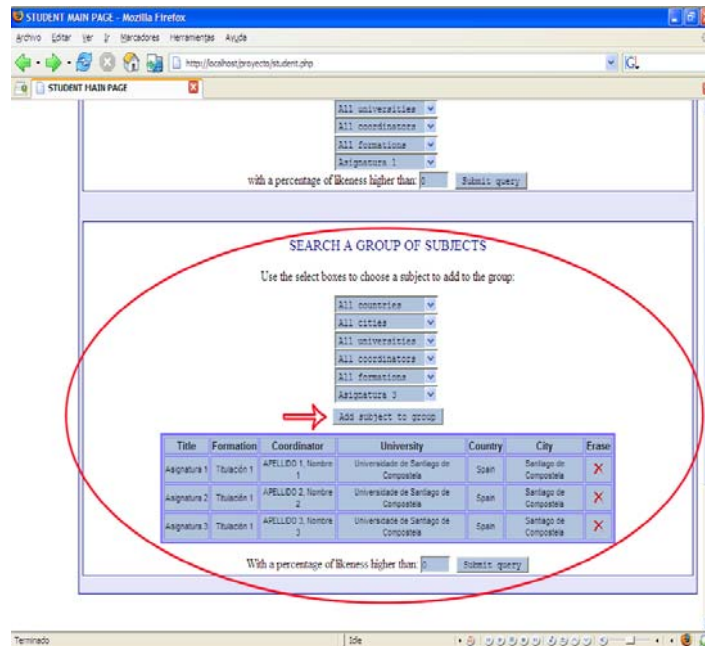


Figure 2b Student Interface: Searching a group of subjects

Figure 3 shows the application teacher's interface that allows a teacher to:

- Register,
- Add a course,
- Modify a course,
- Erase a course,
- View course information,
- Modify personal data.

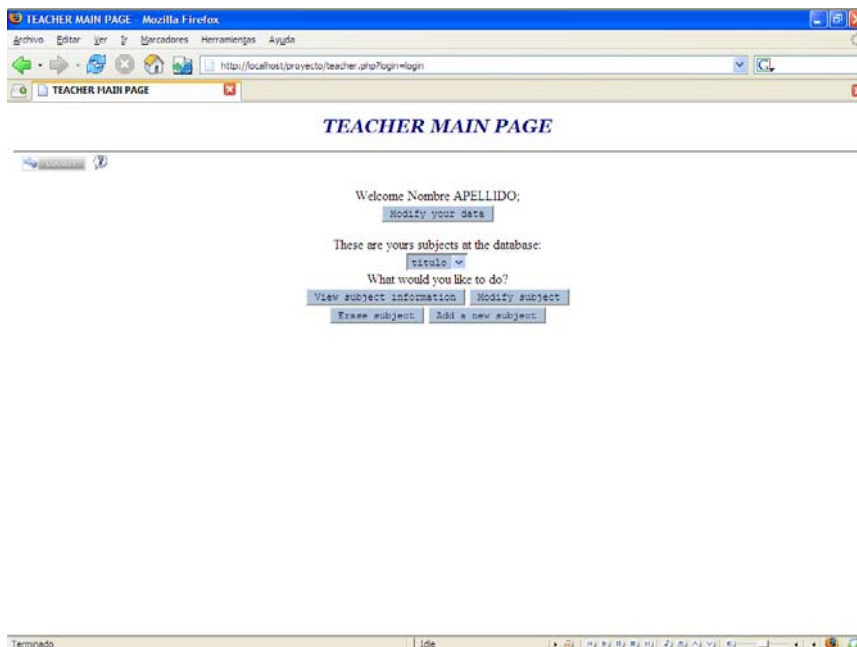


Figure 3: Teacher interface

The administrator's interface (figure 4) allows him to make some statistic on the whole Web site such as:

- Universities
- Countries
- Cities
- Professors
- Degrees
- Courses
- Verbs
- Concepts
- Pairs

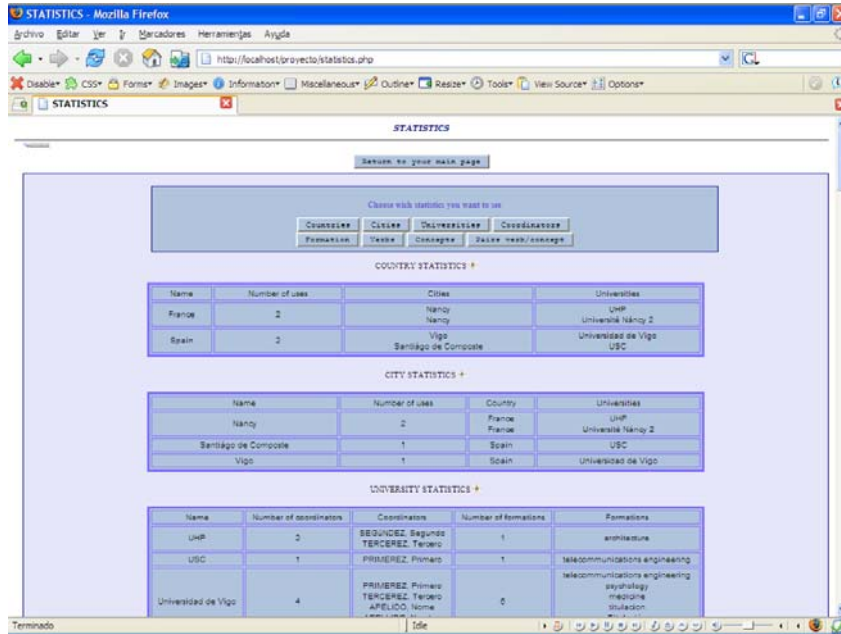


Figure 4: Administrator interface