

European Awards on Technology Transfer template

“Extensive exchange between scientists, practitioners and politicians are essential if we want to increase science-based teaching and educational decision-making”. Carmen Zahn Kaleidoscope Member

1. Contextual information on your research activity

- Stage of your research -beginning, middle, end- (*conceptual design, test bed and evaluation*)

Our research there is in the middle stage. We have set up a cluster with five European Universities (see below) and we have design a Joint European Master in Remote Engineering

- Explain the **objectives** of your research

The main objective of our research is the creation of the IT environment which allows the usage of E-learning facilities in the specialisations which need experimental training for practical skills.

The well development of human sciences using e-learning indicate that this virtual environment might be an opportunity for many categories of learners beginning with school boys and finishing with adults.

The new European policy regarding LLL (Life Long Learning) impose the increase of the addressability of remote studies. For engineering (our goal) and for all of specialisations which need applications in laboratory the research for remote experiment design becomes of

- Explain the present and expected **results**

In this moment we have the curricula for master in remote engineering, in final form, agreed by all of partners, and all of courses written and posted in our e-learning platform.

Now we have the period of accreditation at national levels, due to the fact that each country ask for different constrains and rules.

This master has the purpose to create the needed specialists able to realize design of remote experiments in engineering field.

In this moment there is in function and bilateral remote laboratory between Transylvania University of Brasov Romania and Catinthia Technological Institute-Austria. This laboratory is named REL and cover the specialisation of electronic circuits.

2. Case study analysis

2.1. SYNTHESIS INFORMATION

name of the case study	Joint European master degree in Remote engineering-MARE
Short description (maximum 10 lines)	A cooperation between five countries regarding development of master degree for formation of specialists in design and realisation of remote experiments, in the idea of application of e-learning in engineering without the actual limits regarding laboratory works which need face to face training
territorial level	<input type="checkbox"/> international <input type="checkbox"/> national <input type="checkbox"/> regional <input type="checkbox"/> local
nature of the case selected (policy, initiative, action...)	It was an initiative in the frame of Socrates-MINERVA environment

2.2 DESCRIPTION

- What were the key reasons this initiative originated?
The creation of the possibility to apply the e-learning advantages in the engineering domains, so that LLL policy to become feasible for the specialisations which need practical skills formed in laboratory.
- What are/were the main objectives?
 - *Real chance to do engineering studies without geographical limits;*
 - *Creation of www.remoteexperiment.net site which will allow for all of students to apply in own formation the best existed applications in laboratory;*
 - *Reduction of endowment costs as a results of cost sharing between the clients of this environment ;*
 - *Creation of the new opportunities for SME's to have the possibility to have access at high tech equipment for their measurements, tests and so on;*
- Who are the target users involved in this case study (profile, socio-cultural features)?
 - *The target users will be in the first stage of development the Universities.*
 - *In the second stage will be create the access for SME's as the important target (SME's will never have the possibility and financial capacity to have unrestricted access at the expensive equipment)*
 - *In the third stage the target users will be all of adults involved in the LLL system;*
- How are/were they involved?
Using all of facilities created in the www.remoteexperiment.net for remote experiment in training or in research;

- What are/were the end users' expectations and concerns in relation to the case study?

The end users might be the learners which will be able to know the best experiments put in function at all of the universities involved in the program. In this moment five, but the extension is predicted to be exponential.

The SME's as end users will have at disposal a lot of cooperation alternatives for tests, measurements and research, without high investment in endowment

The adults as end users will have the chance to do LLL in the mean time with work and family care, without the obligation of the presence.

- Could you please describe the organisational features of the case study (e.g. management, funding, structure of the initiative, lifecycle positioning)?

The MARE project was financing by the Socrates-MINERVA European Program for three years of research. Management was assured by the CTI-Austria as coordinator and by the Transylvania University of Brasov-Romania, Technical University of Ilmenau Germany, University of Limerick-Ireland and University of Maribor-Slovenia.

The initiative was launched by the CTI and Transylvania University because before of application for funding they have realised REL bilateral remote laboratory.

Lifecycle will be for three years of European funding (with 26% own contribution from all of partners) and accordingly with Juridical Agreement signed by the partners during of the Project running, other 7 years of self sustaining of this cluster, using funds created as a result of the master degree function.

2.3 ANALYSIS

- How are you collecting user's input and/or feedback? *(please choose if used)*

Specific meetings at the beginning and during the project.

We invite them to project meetings.

We take advantage of events or meetings organized by others to interview users, present results, test results, etc.

We do face-to-face interviews.

We do telephone interviews.

We do online surveys.

We discuss exploitation of our results with users.

We ask users to test the usability and usefulness of the tools developed.

Others: *Organising the winter school under TARET project funding (also European project) with four of the courses developed in the frame of the MARE master project. The answer of the industrials at these courses was amazing, because this school have at first call 25 learners from industry and from five countries*

- What is /has been the **impact** of the case study on the **target users**? Have their expectations been met?

Only the above mentioned winter school was an occasion for target user's impact evaluation. Only when this master will be perform, we will have complete information about the impact on the above mentioned target users

- What is the **broader impact** at macro level?

In the actual situation when engineering studies need a compilation between face to face teaching systems with e-learning methodology, the future of LLL in engineering becomes in strong dependency with geographical position. If this research will be operationally, LLL in engineering will be possible with all of advantages of e-learning regarding costs, distance limits, global economy implications, and cultural area contacts and so on.

An impact realized in the period of the project MARE running was the invitation of the DEUSTO University-Bilbao-Spain addressed to the some researchers members in the MARE project to publish a book "Advances on remote laboratories and e-learning experiences" a synthesis of actual gained experience in the field of remote engineering.

- Are there **unexpected** side effects?

YES! We do not control the reaction of national bodies of accreditation, regarding the proposed master, which has a strong interdisciplinary character.

- What are the elements of **innovation** (in terms of methodology and processes, in organisational terms, in relation to the pedagogical, economic, technological, socio/cultural dimension)?

The innovation is the creation of the www.remoteexperiment.net environment as a site for all of remote experiments existed in the world and as a continuously development environment which will be able to offer all of the best results in advanced experiment.

- What are the good practice elements (with specific reference to transferability, coherence, efficiency, and sustainability of the case study)?

If this environment will be created, it will contain all of good practice elements regarding industrial skills development at students. The learners will be in the front of the best applications, the best training methods in experimental skills development, with strong coherence and efficiency. The system will be self sustaining because teaching system is every time in front with science and technology and this environment will reflect this tendency.

- What are the key reasons of success/failure in users' involvement and the lessons learnt?

The failure reason might be the refuse of the advanced Universities to become members of this environment (but it is of small probability because of the financial advantages of the sharing costs);

The industry involvement we predict that will be at high level because of the fact that industry has a strong interest to have students trained on their devices and equipment.

Annex I . Communication with other researchers

How to communicate with other researchers?

Examples:

We communicate our progress to other universities/organizations every quarter

We inform them about expectations collected from users

We communicate through informal meetings

Others: For this communications MARE project management has launched an European Conference named REV (Remote Engineering and Virtual Instrumentation) an itinerant Conference which started in Austria-Villach(REV2004), continued in Romania-Brasov (REV2005), Slovenia - Maribor(REV 2006), Porto-Portugal (REV 2007) and will be in Dusseldorf-Germany in 2008 and in Bridgeport-USA in 2009

Also was created an on-line journal iJOE and International Association of Remote Experiment (IAORE) with more than 15 members

- What **technologies/results** do you need to perform correctly your research?

We need for correctly perform we need a strong Internet connection, with high speed, good firewalls and protection software and hardware, some high tech equipments needed for design and realisation of laboratory works, and bilateral agreement for sharing costs in any situation of development, and juridical platform for correct access of laboratories members at the www.remotexperiment.net

- Describe the **relevant documentation** you wrote about your project (*public and private*) and where it has been published.

We have the possibility to indicate only our publications, apart of the publications realized by the rest of partners:

BOOK: "Advances on remote laboratories and e-learning experiences"

Papers:

- Samoila C, Ursutiu D. "Virtual tutor in e-learning" Conference ICL-2003 Villach, Austria 24-26 Sept 2003, Editors M.E.Auer, U.Auer-Kassel University Samoila Press, ISBN-3-89958-029x

- Samoila, C. "E-learning. cause and effect of the balances and unbalances in the educational system modernization" Interactive Computer Aided Learning-Conference ICL-2002-Villach Austria, 25-27 Sept 2002, Editors-M.E.Auer si U.Auer, Kassel University Press-ISBN-3-933146-83-6

- P. Cotfas, D. Ursutiu, C. Samoila "Graphical programming and educational technologies" "Experience and Visions" ICL-2001Editors M.E.Auer si U.Auer, Kassel University Press, ISBN-3-933146-67-4

- P. Cotfas, D. Ursutiu, C. Samoila « Virtual laboratory and virtual instrumentation" ,Internet as a vehicle for teaching, Ed. Susan English, Mihai Jalobeanu, Nicolaie Nistor, Romanian Internet Learning Workshop "RILW2001", august 11-20- 2001, ISBN 973-85023-7-3

- Samoila C. "E-learning. cause and effect of the balances and unbalances in the educational system modernization"- in EURODL -1 Sept.-2002, ISSN-1027-5207

Annex II. Exploitation of results

In your opinion, the ways to get good exploitation of results are:

- Exploitation should be discussed earlier in the project
- We should keep a long-term relation with industry
- We should try to contact the industry for advertising/sponsorship issues
- Ask industry for regular feedback (as they have cyclic business pressures).
- Try to build up a long term relationship with industry
- Others: *To convince the academic community about the good advantages created by usage of this environment*

- Explain the **market research** done recently.

In Romania, Austria and Slovenia there is prepared the files needed for authorisation obtained for open the master degree at 1 of Oct.2007. The rest of partners will sustain the master running in these three countries with own teachers and labs. And will ask for accreditation after gained experience in courses teaching.

- Are you updating information of your **competition** before, during and after the project? Please explain the information you have.

*Because the subject of our applications was quite new, we do not have competitors, only partners.
The information at start was the REL laboratory which proved the chances and advantages of remote experiment*

- What about **prices**? Do you know how much do you want to sell it for? Are you aware of how much the customer wants to pay for it?

At this moment of the beginning we don't have this information. But using the permanent increase of the attendants at REV Conferences, the high interest in LLL development, the limits of access at knowledge due to the geography, we consider that in the future all of the engineering universities will express their reserve to become member of this community of www.remoteexperiment.net

- Explain discussions with users about **exploitation issues** (industry, policy makers or end users).

*This aspect was mentioned above in enough extent.
During the exploitation of this new created environment the main accent will be put on the cost sharing with the same high tech results.*