Project No.
ASO 3-01-2007

Project Title:
Technical and Social Challenges related to Collaborative E-Learning in Central and South Eastern European Countries

Submission Date: August 29th 2008

ASO Call:
Research Cooperation and Networking between Austria and South Eastern Europe

Start date of project: Oct. 1st 2008
Duration: 7 months
Deliverable: MS4(b)

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Participating: Universities of:

Belgrade  Graz  Maribor  Tuzla
Table of Contents

1. Organisational Details ................................................................. 3
2. Project Aims ............................................................................. 3
3. Project Activities ................................................................. 4
4. Project Content .................................................................... 4
5. Achieved Aims ........................................................................ 4
6. Achieved Activities ............................................................ 5
7. Communication & Project Management .................................. 6
8. Challenges ................................................................................ 6
9. Future Plans ............................................................................ 6
This final technical report summarizes information that can be found at the projects homepage, http://coronet.iicm.tugraz.at/aso/, together with detailed materials.

1. Organisational Details

Project co-ordinator: Denis Helic, Dipl.Ing. Dr.techn. Univ.-Doz.
Project partners:
AT-partners:
   IICM, Institute for Information Systems and Computer Media, University of Technology, Graz
BG/SLO-partners:
   UM FERI, Faculty of Electro Engineering and Computer Sciences, University of Maribor
SEE-partners:
   1. Automated Reasoning Group, Faculty of Mathematics, University of Belgrade
   2. UCDED, University Centre for Distance Education, University of Tuzla

ASO-Funding: 11.850,- €
Project start: Oct.07
Project end: Apr.08 ++

2. Project Aims

Networking between partners and their respective co-workers
e-learning and computer mathematics
Perform a case study on e-learning mathematics
Compile a “roadmap to advance web-based e-learning in SEE”
   research the status of ICT in education in SLO, SR and BIH
   specify goals according to EU strategy papers
   plan an educational platform accessible regardless nationality, age, gender, literacy, social status
   as a kick-off for wider social and community purpose
   identify areas of action for policy, national and international
Prepare for a proposal to an EU call
3. Project Activities

Joint research on boot-strapping e-learning systems:
  meeting at Maribor, Nov.15 - Fri, Nov.16, 2007:
  mapping state-of-the-art
  publication of outcomes
Perform a case study on new technology for math-tools
  meeting at Belgrade, Mon, Jan.28 - Fri, Feb.1, 2008:
  methodology scenarios
  knowledge transfer: "computer theorem proving" workshop
  survey on existing math-tools for e-learning
Joint research towards an RTD roadmap for e-learning
  meeting at Tuzla, Wed, Mar.26 - Fri, Mar.28, 2008:
  dissemination and roadmap
  research contacts with respective ministries

4. Project Content

E-learning: research the state-of-the-art, map EU – SEE, outlook to future developments with respect to
  technology: standards, tools, networks
  organisation: universities, schools, teacher-training
  social impact: collaboration, multicultural contexts

Case study: join e-learning and mathematics
  formulas (not as graphics !) on the web
  sound logical base for math tools (also in education)
Roadmap: compile a practicable actionplan for policy makers

5. Achieved Aims

Networking between
  partners and their respective co-workers
  e-learning and computer mathematics
Perform a case study on e-learning mathematics
Compile a “roadmap to advance web-based e-learning in SEE”
research the status of ICT in education in SLO, SR and BIH
specify goals according to EU strategy papers
identify areas of action for policy, national and international

Prepare for a proposal to an EU call

This color above indicates not completely achieved aims:

- Networking between e-learning and computer mathematics:
  Our project clarified to a great extent the challenges raised by this aim: The research communities, both in e-learning and computer mathematics, belong to completely different fields. Only in recent years some cooperation started under the title „mathematical knowledge management“. Our other topics „transparent knowledge“, „single-stepping systems“, user guidance, entered completely novel grounds of cooperation: thus not completely achieved, and very promising!

- proposal to an EU call
  During the runtime of the project there was no appropriate call open; preparations for a proposal are in the appendix of the Roadmap.

6. Achieved Activities

Joint research on boot-strapping e-learning systems
  meeting at Maribor: mapping state-of-the-art
  publication of outcomes

Perform a case study on new technology for math-tools
  meeting at Belgrade: methodology scenarios
  knowledge transfer: “computer theorem proving” workshop
  survey on existing math-tools for e-learning

Joint research towards an RTD roadmap for e-learning
  meeting at Tuzla: dissemination and roadmap
  research contacts with respective ministries

This color above indicates not completely achieved activities:

- Research on boot-strapping e-learning systems, publication of outcomes:
  The work on mapping the state-of-the-art in Western European countries and in SEE countries immediately led to the first chapters in the „Roadmap to Advance Web-based E-Learning in South Eastern European Countries“, thus a separate publication was not adequate.
  The roadmap required more effort than expected: researching at ministries for the present state of e-learning, equipment and planning required several required months of mailing (postal and electronic), telephone calls and personal inquiries. After compilation of the roadmap in cooperation with the partners in the different countries, a professional layouter and the printing process required additional time, such that the publication was done at the end of August 2008.

- Case study on new technology for math-tools, survey on existing math-tools:
The compilation of the roadmap occupied our resources more than expected; thus this plan had to be canceled in March.

7. Communication & Project Management

Major part of the work was done during 3 meetings a 2-3 days meetings organized by local partners invitation of local co-workers (e-learning, mathematics)

Budget flexibly shifted due to banking problems (14.50 € per transfer to SR and BIH, delay of transfer)

Research for roadmap done in an efficient (in time, costs) mix partially by partners partially by paid co-workers

8. Challenges

Mutual understanding e-learning <= computer mathematics math objects and operations are different from multimedia collaborative work etc is unfamiliar for mathematicians finally: we did great preparatory work!

Administration of finances at TU Graz insisted on original bills from the partners in SEE, which conflicted with the respective national rules enforcing to keep the originals as well. Finally Graz released their rules according to the text in the call „Original bills are not normally required but have to be recorded in the bookkeeping system for 10 years from the conclusion of the project. An audit has to be possible at any time.“

A severe obstacle for performing future projects with 10% overheads (like the project under consideration) is, that the central administration at TU Graz deducts 20% from the Institutes budget for any project. Thus for this project the coordinating institute, IICM, had to sell of additional 10% (earned from other projects).

9. Future Plans

This project successfully accomplished several tasks already fruitfully effective and preparing for future activities as well, activities to promote media and information literacy among the citizens as well as preparing for academic R&D in the field of e-learning:

1. Networking between Austria, backed by respective international contacts, and Western Balkan countries. One existing EU-project, TYPES www.cs.chalmers.se/Cs/Research/Logic/Types, contributed to a part of the subsistence of an instructor in the Isabelle workshop.

2. Interdisciplinary networking started to bring together three different academic communities: e-learning (for web-based, user-adaptive and collaborative front-
ends), applied mathematics (for content development) and computer mathematics (for transparent single-stepping calculations).

3. **Comparative research** concerned definition and selection of key competencies in the participating countries. These were projects and strategies of implementation, already existing ones as well as potential ones) in the field of web-based e-learning. Analytical frameworks prepared by strategy papers (UNESCO, UNDP) and completed projects (ASO eMapps) were particularly helpful in this respect, and will guide future activities.

4. **Knowledge transfer** concerned technologies of e-learning and strategies of implementation. And it concerned computer mathematics due to the Isabelle workshop. Academic mathematics education is, as expected from beginning, on a high level (even higher than in Western European countries, still present from before opening SEE countries to the west).

5. The „**Roadmap** to Advance Web-based E-Learning in South Eastern European Countries“ identifies schools as a well suited kick-off for wider social, cross-cultural networking and community purpose. The roadmap addresses the key stakeholders and policymakers in e-learning and respective R&D.

We hope to have addressed important points for deeply embedding generalised accessibility support within future mainstream ICT-based products and services; the project partners feel well underway on this direction, and concretely prepare for proposals on joint projects.