e-Learning Projects

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10 Partners

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Jožef Stefan Institute (JSI) - Slovenia
University of Leicester (ULE) - UK
Universidad Politécnica de Madrid (UPM) - Spain
Vienna University of Economics and Business Administration (VUE) - Austria
University of Science and Technology (AGH) - Poland
Kaunas University of Technology (KTU) - Lithuania
Işık University (ISIK) - Turkey
Tallinn University (TLU) - Estonia
Tomas Bata University in Zlín (TBU)- Czech Republic
Project Vision

... to become
THE Educational Web
for Higher Education in
an Enlarged Europe of 25+

- Interoperable social software
- Social-constructivist theories
Objectives

- Investigate, develop and validate innovative pedagogical models for competence advancements

- Provide a validated portfolio of open source systems and tools

- Provide an open virtual learning environment consisting of a network of tools, platforms, and repositories (interoperability issue)

- Derive best practices for the design of cross-cultural online learning environments from validation trials
Exploitation Plan

**Developer Community**
- *In-house tools*: Objectspot, Videowiki, Mupple, iLogue, etc.
- *Open source tools*: Moodle, Wordpress, Scuttle, Feeds-on-feed, xLite, etc.
- *Sourceforge*

**Scientific Community**
- Workshops, Conferences, Symposium (e.g. Mashup Personal Learning Environments)
- Publications in conferences, journals and press

**User Community**
- Tools
- Didactic models
- iCamp Handbook
**Project Title / Acronym:**

Around an Inspiring Virtual Learning World in Eighty Days

**80Days**

**Project type:**

- Small or medium-scale focused research project (STREP)
- Start: April 2008, duration: 30 months

**Global topic:**

- Game-based learning /
- Learning in immersive virtual learning environments
80Days strives for the (re-)evolution of educational technology based on computer games.

Inspired by Jules Verne’s novel ‘Around the world in eighty days’, technology and underlying theory will be developed that enables children and adolescents to immerse into a flow experience of gaming and learning.

The long-term vision is to make learning as appealing as gaming.
► University of Graz, Austria (Coordinator)
  ▪ Cognitive Science, Media Psychology, Educational Psychology
► Eidgenössische Technische Hochschule Zürich, Switzerland
  ▪ Cartography, Geography, Educational Design
► Takomat, Germany
  ▪ Game Design, Game Development, Educational Design
► Trinity College Dublin, Ireland
  ▪ Computer Science
► Testaluna, Italy
  ▪ Game Development, Game Design, Asset Production
► University of Leicester, United Kingdom
  ▪ Human-Computer Interaction, Usability Engineering, Software Evaluation
► Zentrum für Graphische Datenverarbeitung, Germany
  ▪ Adaptive, Interactive Digital Storytelling
Using the full potential and characteristics of state-of-the-art computer games for educational purposes

Computer games: are immersive, engaging, appealing, intrinsically motivational, they enable realistic and super-realistic multidimensional representations, they are simulative, competitive, collaborative, they offer a large degree of freedom, they are responsive and enable individualized interactions, …
and: playing is the most natural form of learning

This idea is not new and there is a large body of examples and research in the field of game-based learning.
Educational games are still in their infancy

“Although [digital games] may educate, that is not their primary goal or their most important design feature. Moving forward, educators must hope for games based on learning theory and research”

Diana Oblinger (2006)

The by far largest part of educational games address small children

Most often educational games are rather small and simple games, demonstrating processes and complex issues (e.g., the Palestine conflict) or addressing particular sets of skills (e.g., job application trainings)

They generally do not related to school curricula

Existing games do not provide sound assessment methods

Generally there is an imbalance between learning and gaming

While game intelligence is well developed, educational games do not include adaptation to the learner in terms of knowledge, learning progress, motivation, or individual preferences
**ELEKTRA** (FP6, STREP, March 2006 - Feb 2008)

- ELEKTRA attempted to address adolescents, combining competitive game design with educational objectives related to school curricula (prototypically physics)
  - **Immersive** game environment, story, and gameplay
  - Psycho-pedagogically / didactically sound educational strategies
  - Theory and technology for adaptive assessment and interventions on a **macro level** [learning events, 8LEM]
  - Theory and technology for non-invasive assessment and interventions on a **micro level** [interpreting the learner’s behaviour in terms of available or missing skills and responding to that in a non-invasive way, e.g. by hinting]
Important questions are still open in order to make learning a more pleasant task:

- Fully utilizing games’ potential requires a significant adaptation and personalization of the game to the needs and preferences of individual learners. The upfront aim is to balance challenge and ability/knowledge.

- Educational games that can compete with their commercial counterparts are extremely costly. Thus, technology must be developed that allows reducing development costs.
► Advancing **micro-adaptivity**, as it is a new approach to educational technology and still is at an early stage

► Realizing **macro-adaptivity** in terms of sequencing learning and gaming activities including interactive adaptation of the narrative

► Embedding formalized **motivational/emotional theories**

► Embedding a formalized model of **dynamic (self-regulated) navigation** behaviour within the virtual learning environment

► Establishing a methodology to reduce the development costs by integrating existing external **resources** and by referring to a common pool of game assets

► Establishing a **higher-level theoretical framework** melding adaptive competence development, motivational/emotional models, and interactive, adaptive storytelling

► Developing a framework for **evaluating DEGs** at design and at runtime
80Days will produce a methodology and game technology based on a triangulation of:

- an engine that is monitoring the learner's behavior and learning progress and giving psycho-pedagogical recommendations (**Adaptive Engine**),
- an engine that is controlling the storyline and ambience (**Narration Engine**)
- the **Game Engine**, which is realizing the game based on the recommendations of Adaptive and Narration Engines.
Based on a **single pool** of game and educational assets

- an educational game will be able to tailor individual learning experiences
  - in terms of different stories, different atmospheres, different educational measures, different educational strategies, and different curricula
- technology will allow to realize several different games
80Days’ project lifecycle:
3 subsequent research-design-development-evaluation phases for 3 demonstrator scenarios.
Introduction of the Project MeRLab
What is mechatronics?

mechanical engineering

mechatronics

information technology

electrical engineering
Issues

- Market demand is much greater than supply
- Current expert workers do not use all the potential
- Market interest for vocational trainings in electronic control systems
- Needs for time, cost and location efficient training
Target groups

Primary group
- formal studies in mechanical or electrical engineering
- workers in the production processes, where mechanical devices are handled by electronic control systems

Potential users
- employed or unemployed
- requalification providing necessary theoretical and practical knowledge
Aims of the project

1. to introduce good practices from abroad into the vocational mechatronics training field
2. to support the content with advanced IT and established didactical approaches
3. to improve quality and efficiency of vocational training
4. to increase recognition and attractiveness of the profession
5. to positively influence the gap between supply and demand of mechatronic staff on the market
Partners in the MeRLab project

- remote laboratory, content, e-training
- project coordination
- usability evaluation
- market research, usability evaluation, dissemination
- applicant, e-content coding, VLE
- remote laboratory innovation
- market research, content
Direct results

- Expert articles and presentations
- Market research report
- Implemented virtual lab
- Interactive e-content with multimedia
- Promotional material
- Virtual learning portal
- E-training documentation
- Pilot e-training

Results
Sustainability

1. Free e-content for training providers
2. Possible commercialisation of mechatronic training
3. Bilingual (SI/EN)
4. Expert public announcements