FernUniversität in Hagen

Real Virtual Erasmus (REVE)

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WP2: Services

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Overview

- Objectives
- Approach
- CURE

Objectives

Virtual mobility

- affects courses and course elements
- can be a complement to physical mobility
  - as preparation or
  - follow-up of physical mobility
- offers new learning opportunities
  - following elective courses in a foreign university
- requires new learning approaches and technologies for collaborative learning

Objectives

Collaborative learning among distributed learners and teachers requires

- an e-learning infrastructure supporting the
  - set-up of collaborative learning
  - organisation of collaborative learning
  - execution of collaborative learning
- services for
  - group formation
  - collaborative work (sharing and joint manipulation of artefacts, communication, coordination within learning groups)
  - collaborative learning (scaffolding, monitoring, feedback)

Objectives

Due to diverse mobility aspects the e-learning infrastructure has to

- support different modes of access such as
  - on-line
  - mobile
  - off-line
- offer an interface for integrating the different administrative systems of the participating universities

Approach

First steps

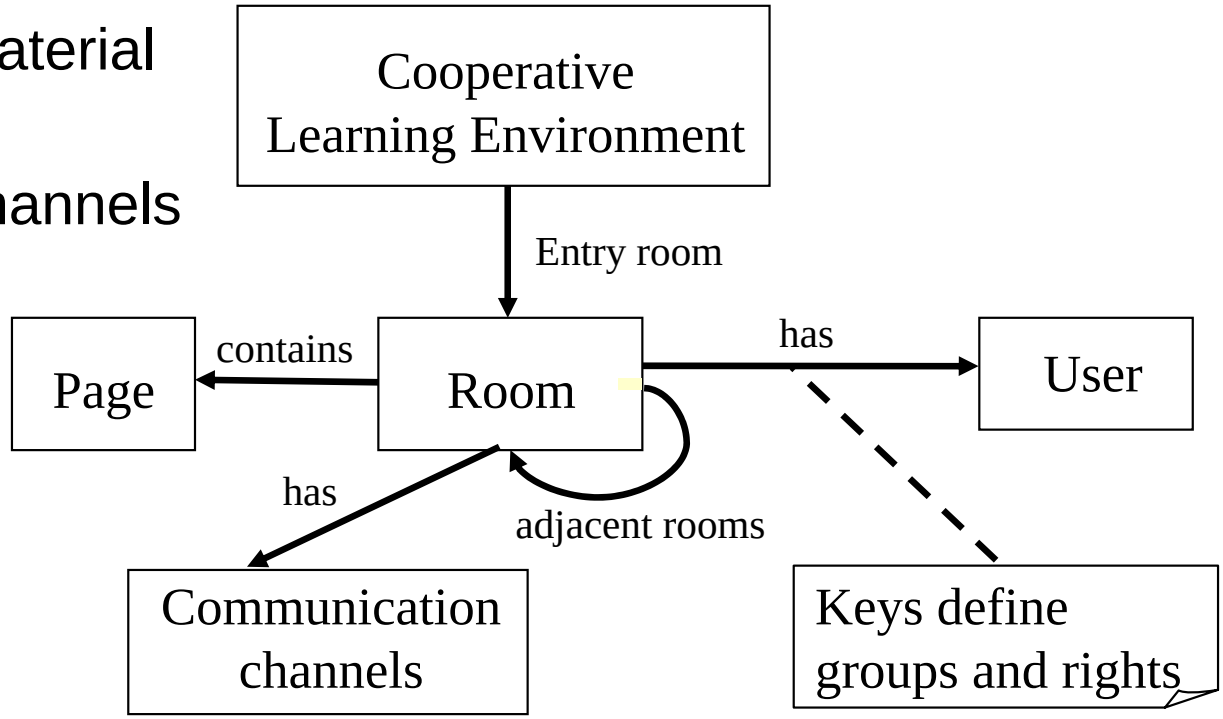
1. Requirements analysis and pilot tests basing on real use cases
2. Based on these use cases develop
   - a CSCL platform
   - necessary administration services and
   - test the infrastructure in virtual mobility cases

Example use case "*International SW development project in distributed systems*":

- computer science students from different universities carry out a SW development project in teams over one semester
- communication, coordination, and cooperation are carried out using our CSCL platform

CURE offers the following abstractions

- Room: shared workspace for group
- Group = { users with key to the same room }
- A rooms provides:
  - Pages: learning material & tools
  - Communication channels
  - Awareness
- Adjacent rooms form learning environment

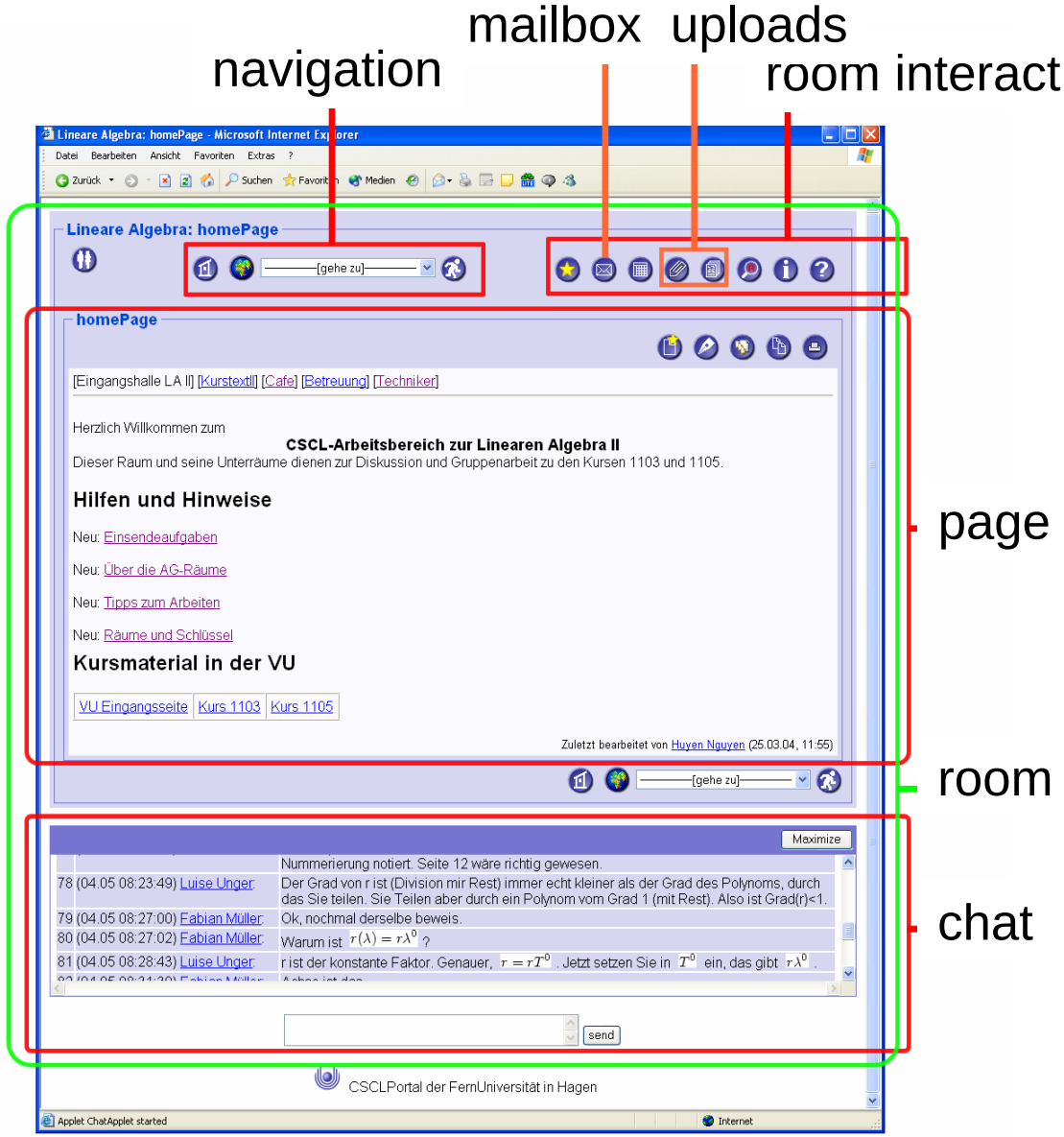


CSCL platform CURE

http://cure.pi6.fernuni-hagen.de

CURE

- facilitates collaborative learning in distributed teams,
- can be accessed with a standard Web browser, and
- combines the room metaphor, WIKI ideas, and communication tools.

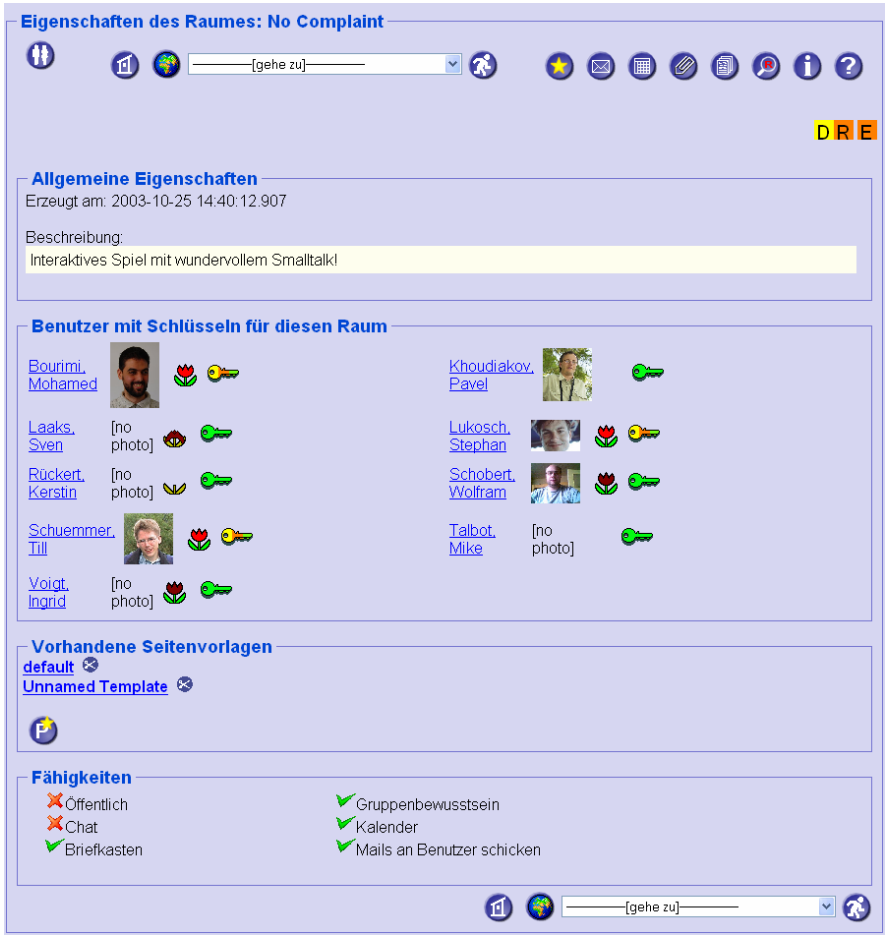


Managing Collaboration Spaces in CURE

- Create/manipulate rooms
- Communication: chat, threaded mailbox
- Cooperation: shared pages
- Coordination
  - Change notifications
  - Shared plans (pages)
  - Calendar, meeting scheduler
- Access management

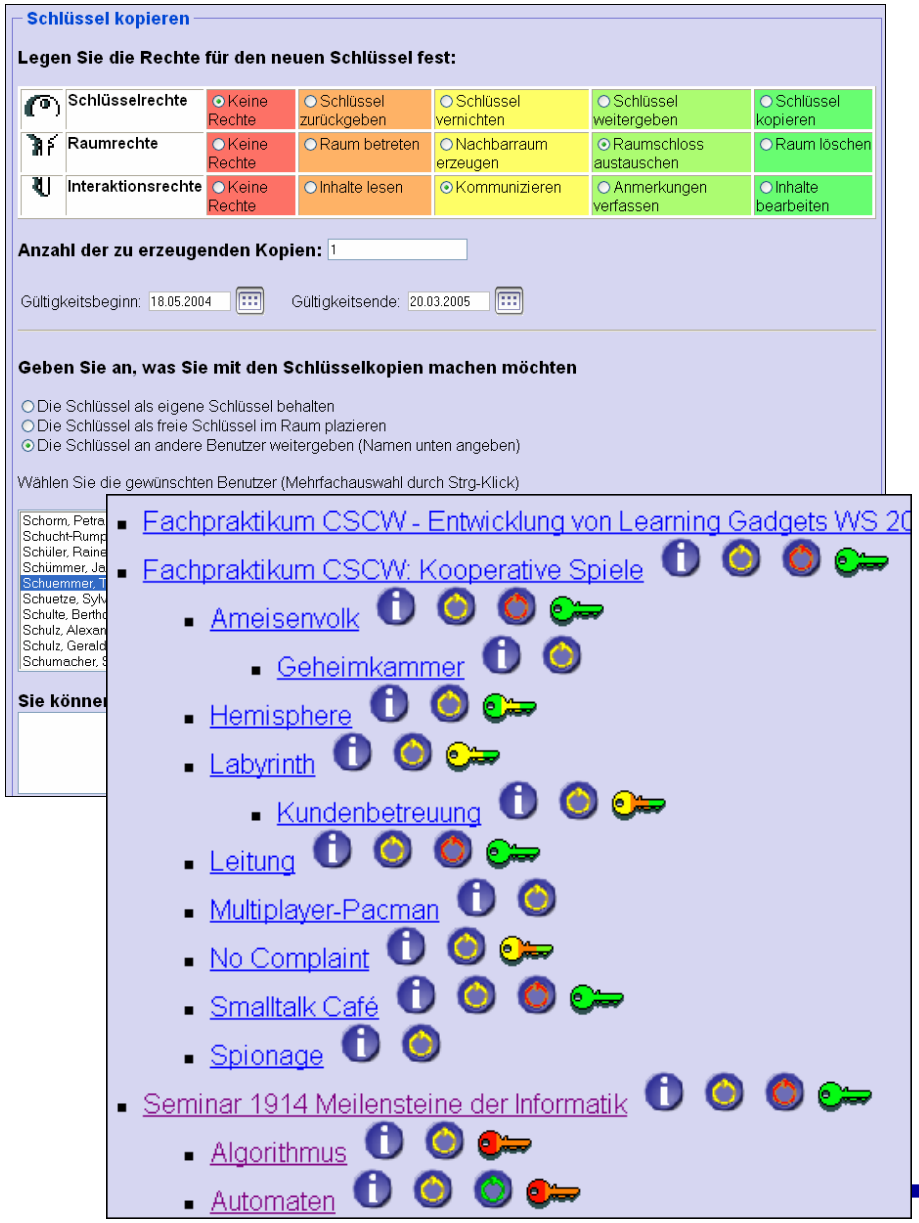
Group Representation

Room properties



Creation of Keys

Group formation in CURE



Spectrum of group formation:

- Assignment
- Invitation
- Free enrollment
- Confirmed enrollment
- Public spaces

Experiences

Project-based course on “Synchronous cooperative systems”

- Winter term 2003/04
- 36 students, 6 groups à 6 students
- Task: development of a cooperative game
- SW development environment: Eclipse/Java, Smalltalk
- Blended learning
- Group formation
  - Each group created a group sub room in the shared workspace accessible only to group members and two teachers

Experiences (2)

- Use of shared rooms
  - Two groups created a private room
  - Teachers created publicly available rooms for discussing technology related issues; these were rarely used
- Use of shared documents
  - Before the first meeting, students created game ideas on pages
  - During project work, all groups used
    - Attachments to share documents
    - Pages to jointly write development documents

Experiences (3)

- Use of communication
  - During distributed work, groups used mainly the threaded mailbox
  - Two groups used chat
  - Several (sub)groups had regular phone conferences
- Structuring the group process
  - All groups created work plans in CURE
  - One group created a special template for planning card pages to support XP
  - Two groups created sub rooms
- Student & Teacher feedback
  - Very positive

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Group projects in SWE education

- SWE is a collaborative practice
- SW project often fail due to social/communication problems
- Students need collaboration skills
- Group projects as a teaching method
  - Complexity requires non-trivial long-term collaboration: 1-2 semesters
  - Methodological skills (SWE)
  - Collaboration skills

Social aspects of distributed group projects

- Lack of collaboration skills for distributed settings
- Students and teachers are geographically distributed
  - Few f-t-f meetings possible,
  - Synchronous interaction limited,
  - Mainly computer-mediated interaction,
  - Coordination and cooperation more difficult
- Students and teachers don’t know each other
  - Trust building, commitment
  - Social interaction

=> approach: blended group projects

Requirements on support for blended group projects

- Group building
  - Introduction of participants,
  - Social encounters, trust building,
  - Group formation
- Sharing of artefacts
  - E.g. documentation, work plan, code
  - Joint editing
- Openness
  - Group work process: dependent on method, group
  - Group product: dependent on SWE environment
- Synchronous & asynchronous communication in plenary and groups
- Interaction among all participants
- Monitoring
  - Progress/changes within group (coordination)
  - Group behaviour, results (facilitation)
  - Feedback from facilitators to groups
- Tailoring of group work process and collaboration environment

Organisation of group projects

	Mode	Activity	Main actors
Administration	distributed	announcement	teachers
		enrollment	students
		selection	teachers
Group building		Project idea generation & discussion	students
	F-t-f	Project idea selection	Students/teachers
		Group formation	students
Group work		Introduction of methodology	teachers
		Creation of workplan	students
		Assignment of roles	students
		Monitoring of workplan and roles	teachers
	distributed	Group work (delivery of milestones)	students
		Monitoring of group behavior, results	teachers
Group evaluation	F-t-f	Presentation of results	students
	distributed	Assignment of final changes	teachers
		Delivery of final results	students
		Grading	teachers

feedback

Scaffolding in CURE

Scaffolding: guiding the learning process

- Organizing learning activities through rooms and pages
- Explicit instructions, milestones
- Organization
  - Predefined (teacher)
  - Self-organized

Supporting distributed group projects in CURE

	activity	actors	Supported by
Administration	announcement	teachers	WWW; create CURE room structure
	enrollment	students	E-mail
	selection	teachers	Assign keys for rooms to students
Group building	Project idea generation & discussion	students	Pages in Ideas room
	Project idea selection	Stud./teach.	F-t-f discussion, CURE
	Group formation	students	F-t-f clustering, CURE
Group work	Introduction of methodology	teachers	F-t-f presentations, CURE
	Creation of workplan	students	F-t-f meeting, CURE
	Assignment of roles	students	F-t-f meeting, CURE
	Monitoring of workplan and roles	teachers	F-t-f feedback
	Group work (delivery of milestones)	students	Rooms, pages, attachments, chat, mailbox, SWE env.
	Monitoring of group behavior, results	teachers	Logs, change notifications; mailbox
Group evaluation	Presentation of results	students	F-t-f presentation, PPT
	Assignment of final changes	teachers	mailbox
	Delivery of final results	students	Rooms, pages, attachments
	Grading	teachers	Rooms, pages, attachments, logs

Conclusions

- CURE provides support for organising and performing group projects
- Appropriate scaffolding in terms of method, milestones and facilitation seems crucial
- Open issues include
  - Better integration with SW development environment

Test it at http://cure.pi6.fernuni-hagen.de

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Supporting Blended Group Projects in CURE

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