Financial / Administrative co-ordinator

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Executive Summary

The present report refers to work progress that took place during

M19-M21, i.e. December 2003 to February 2004

1- Overview

Objectives

Objectives	*Progress towards achieving objectives*

WP4/5/6: System Prototype I (M20)
Remote Scenarios
• Development of a methodology (Task 4.2)
  o for connecting experiments to the network
  o this includes adding external cameras for recording images, and adaption of new sensors of actuators to physical systems
• Development of the COLDEX Client API (Task 4.2)
  o reflecting the methodology
  o runs on the client computer controlling / monitoring the experiment, used to implement COLDEX client software for
	UDUI
	Task 4.2
	Development of the first web services for the telescope in Chile:
	• Watching photos taken by the telescope
	• Remote control
	• Taking pictures using the telescope
	• Ideas to ensure the availability of the telescope via web services
	
	Development of Cool Modes reference frames in the astro scenario:
	• Astro Reference Frame for image processing
	• Moon Reference Frame for calculating altitude of moon craters
	
	Task 5.2
	Further development of the maze Scenario:
	• Cool Modes Reference Frame
	• Design of a physical jigsaw puzzle for constructing arbitrary mazes
	• Integration of the Lego Mindstorms robots into the new virtual environment
	
	UCH
	Task 4.2
	Control via web services has been tested.

Objectives	***Progress towards achieving objectives***
different experiment sites o interfaces between experiment and the COLDEX network Local Scenarios • Implementation of local learning environment; COLDEX client software for the learner (Task 5.2) o extend and / or adapt tools developed in previous projects o develop tools to define collaborative workflow of the experimental learning activities o automate the acquisition, storage an sharing of data from experiments • Construction of realities (Task 5.2) o support the setting of (real) experiments o develop 3D, interactive virtual models (visual perception) o develop (computer-controlled) physical artefacts (in particular tactile perception) possibly using construction kits Communication and pedagogical networking • Development of the COLDEX Server software, including interfaces for people and institutions, the tools developed in WP3 and generic, also external, learning resources as well as	Implementation of a class to download and process images within one module. First discussion about scheduling for telescope queries and saving of telescoped images in a database. Metadata definition for later retrieval of these images. First ideas for a notification mechanism for the group which has sent a query: Information as soon as the image is prepared for downloading. Taks 5.2 A Java-palette for the FreeStyler was developed in order to support Java teaching/learning. This palette was tested in a real environment (Java lecture in Tokyo). Support access to seismological and astronomical experiment data within a CiC (Computer integrated Classroom) environment. I.e. debugging of CiC system to enable management of FreeStyler files (seismology and java plug-in, later on also planned for astronomy plug-in). Task 6.2 Implementation of a COLDEX server where seismographic data will be collected, distributed and published. Discussion how the download of the seismology plug-in for FreeStyler will be realised, including requirements for the telescope control, access rights etc. **VXU** Contribution to Task 5.2 of WP5: • Implementation of local learning environment • Develop physical artefacts possibly using construction kits **USB** Contributions to Task 4.2 of WP4 Continued development of a framework for capture and replay of data with Lego Mindstorms (potential basis for experiment protocol), started discussion with VXU to extend and apply it for the biosphere scenario. Contributions to Task 5.2 of WP5 Continued work on first prototype of seismic scenario (construction of realities), started work on moon crater scenario **UNED (Leader in WP6)** Contributions to Task 5.2 of WP5 Work on the ontology for experiments, the

Objectives	Progress towards achieving objectives
real world, virtual world and constructed world experiments (Task 6.2) • Implementation of services for the support of collaborative learning activities with regard to customisable user and group profiles including different user roles, learning workflow as defined by WP2 and integrated support for asynchronous / synchronous collaboration (Task 6.2) • Development of intelligent learning material transfer mechanisms, especially considering resources (e.g. bandwidth, client software and hardware) and availability on proxy servers in the COLDEX network (Task 6.2) • Development of retrieval mechanisms using task- and tool-specific metadata (Task 6.2) • Integration of the active document archives (WP3) with group archives (Task 6.2)	development of the chemistry scenario and the planning of the pilot: In this period part of the effort was dedicated to the development of the experiment ontology, a first version having been proposed and discussed with VXU and UDUI. The design of the next chemistry scenario is now finalised; work is being undertaken in collaboration with people from the UPM to integrate remote experimentation: physical devices are already in place, and software integration is nearly completed. We have started the planning and preparation with UNED lecturers, of a pilot test bed for this chemistry scenario. This pilot will also involve tutors and current UNED students, in at least two study centres. The foreseen schedule is for late April and May 2004. Contributions to Task 6.2 of WP6 • The work that has been carried out can be divided in three areas: the COLDEX system architecture, the portal and the metadata synchronisation service (MSS). • For the COLDEX architecture two basic components, the object repository and the knowledge management have been identified. The general architecture has been defined following the standard Model-Viewer-Controller distinction. The view takes the form of the portal, i.e. the interface of the object repository. Implementation of a first prototype is under way. **UPM (Leader in WP4)** Task 4.1 • Analysis of technical requirements at different remote experiment sites • After installing the chemical scenario in the UNED, we have continued studying and improving the system • We have also continued studying improvements on the telescope scenario Task 4.2 • Development of a methodology for connecting experiments to the network • We have finally chosen a video server and we have installed it in the telescope scenario and in the chemical scenario in the UNED • We have finalised the construction of the chemical scenario and we have installed it

Objectives	*Progress towards achieving objectives*
	Development of COLDEX client API • We have finished the API for the chemical scenario, in this way the UNED can interact with the active document. • We have continued working in the API for the UPM telescope, implementing some of its functionality via web services. • The telescope could be working, however we do not have a dome and we can not use it in the laboratory. However we can control it completely via web and we manage the images from it. • The chemical laboratory prototype has been finished. Task 4.3 Test of the prototypes • We have performed many tests with the chemical scenario at the UNED. **INESC-ID (Leader in WP5)** Task 5.2 • Study and comprehension of the biological plant model prepared by the agronomics expert. Study and implementation of the biological model of greenhouses developed by an expert of the domain. • Preparation of the computational model based on the biological model. • Verifying the compatibility between the agent platform and the computational model. • Beginning the implementation. • Planning of specific experiments regarding user interface design issues and the use of multiple external representations in virtual environments • Coordination of the BeLife work. • Support in the use of the Framework. Update of the ION-Agent's framework to the requirements of the BeLife system.
WP7: Learning Material and User Guide (M21) Continuous enlargement of the user group (M18-M33) • Defining rules (business model) to establish user communities of learners and content providers (Task 7.2)	**UDUI (Leader)** Task 7.2 of WP7 • Dissemination activities on an E-Learning Trade Fair • Enlargement of school contacts and preparing of a technical school trade fair in March 2004 • User guide for Cool Modes available (in German): www.collide.info • Learning material for Moon Crater Reference Frame, to be first used in a school in Germany

Objectives	*Progress towards achieving objectives*
	UCH Development of a user guide within a thesis. **VXU** Contribution to Task 7.1 of WP7 Establishing of connection to Latin America educational institutions. **USB** Contributions to Task 7.1 of WP7 • Presentations at PH Ludwigsburg and KU Eichstätt • Cooperation with geography department to develop and test learning material for moon crater scenario **INESC-ID** Task 7.2 • Preparation of suitable documentation to explain the BeLife project to teachers and involve them in the design activity
WP2/8: Evalutation Plan (M20) • Definition of an evaluation plan considering the learning activity design (Task 2.3) • Testing of the first prototype with pre-defined users (Task 8.1)	**UDUI** Task 2.3 of WP2 Discussion about the contribution of UDUI for the evaluation plan Task 8.1 of WP8 Testing of the maze scenario **VXU (Leader)** Contributions to Task 2.3 of WP 2 Definition of an evaluation plan considering the learning activity design. **INESC-ID** Planning of design sessions and experiments, contacts with informants (teachers and students)
WP8: Technical Evaluation (M21) • Testing of the first prototype with pre-defined users (Task 8.1)	**UDUI** • Discusison about the evaluation approaches and preparing and realisation of an astro lesson in a German school • Adjustment and test of the metadata mechanism for Cool Modes 2.0 **UCH** Evaluation of the Java plug-in for FreeStyler in a course in Japan. **VXU (Leader)** Elaboration of ideas and methods for the final evaluation plan

1.1 Milestones

Milestone	Planned date	Actual date	Comments
Milestone10 - Continuous enlargement of the user group	30 Nov 2003 to 29 Feb 2005		
Milestone11 – Technical Evaluation done	31 Jan 2004		

1.2 Deliverables

Deliverable Code & Name	Planned delivery date	Actual delivery date	Comments
D1.2.1 – Project presentation		10 Feb 2004	Added: flyer and poster (at www.coldex.info)
D2.2.1 – Learning Requirements	31 May 2003	22 Jan 2004	
D2.2.2 – Collaborative Scenarios	31 May 2003		Final version is coming in Mar 2004
D3.2.1 / D3.2.2 - TOOLBOX documentation	31 May 2003	22 Jan 2004	
D2.3.1 - Learning Activity Design	31 May 2003	22 Jan 2004	
D6.1.1 – Network Specification	31 May 2003		
D2.3.2 / D8.1.1 – Evaluation Plan	31 Jan 2004		Final for Evaluation Plan I: " Methodology and Examples " is foreseen to be delivered in Mar 2004
D4.2.1 / D5.2.1 / D6.2.1 – System Prototype 1	31 Dec 2003		
D7.2.1 – Learning Material and Guidelines	29 Feb 2004		

1.3 Deviations from Plan

Causes and Description	Corrective actions
D4.2.1 – System prototype I	There is some delay in the chemical laboratory and in the deliverable D4.2.1 because one of the persons in charged of it has been dissmissed from November 28th until February 10th. He had an accident and he broke both legs.

2 - Contractual Arrangements

The amendment and mandate letters have been sent to the partners to be signed.

3 - Project Meetings (held and foreseen)

Title	Date and Place	Main conclusions
Chile: Programmers workshop (UDUI/UCH)	4 - 11 December 2003, Santiago, Chile	Further work on the astro scenario (telescope)
COLDEX metadata workshop	18 -19 December 2003, Madrid, Spain	Experiment ontology will be developed for LOR

Dagstuhl: Project meeting – discussion about technical aspects of the astro scenario	29 - 30 Jan 2004, Dagstuhl, Germany (UDUI/USB)	Further development of the astro scenario (tools)

4 - Dissemination / Promotional Information

4.1 Conferences and / or Workshops organised / foreseen by the project

Date	*Title*	*Number of persons attended + other information*
2 - 5 December 2003	ICCE 2003	Milrad, M., Gottdenker, J., Strobel, J., Björn, M. & Karlsson, M. (2003). Exploring Technologies and Activities to Support Authentic Scientific Inquiry Learning. To be published at Proceedings of The International Conference on Computers in Education 2003, Hong Kong.
7 – 10 December 2003	Winter Simulation'2003, New Orleans, USA	Diehl, S., Goerg, C. (2003). Experiencing Natural Phenomena with Virtual, Constructed and Mathematical Models. In Proceedings of Winter Simulation'2003, New Orleans, USA.
18 – 19 December 2003	Metadata workshop, Madrid, Spain	COLDEX Metadata workshop in December in Madrid. Presentations and minutes of the discussion are included in the COLDEX BSCW archive. Attendance: VXU: Marcelo Milrad, Philipp Rossmanith UDUI: Maria Oelinger, Niels Pinkwart UNED: B.Barros, J.Velez, J.I.Mayorga, A.Ruiz, E.Ruiz, T.Sastre, T.Read, F.Verdejo
26 – 27 January 2004	CEN/ISSS workshop, Madrid, Spain	Presentation at the session: LT applied research in Spain, 26th January 2004. At the occasion of the 17th CEN/ISSS workshop on learning technologies, held jointly with IEEE LTCS, UNED, Madrid. (CEN/ISSS – Comité Européen de Normalisation / Information Society Standardization System
4 February 2004	Invited Talk, Ludwigsburg, Germany	Lernen mit komplementären Modellen, Stephan Diehl, invited talk at the Pädagogische Hochschule Ludwigsburg, February 2004
10 – 13 February 2004	LearnTec, Karlsruhe, Germany	Hoeksema, K., Oelinger, M. (2004). Presentation and stand "COLDEX – Collaborative Learning and Distributed Experimentation", 12th European Conference and Specialist Trade Fair for Educational and Information Technology, Karlsruhe, Germany.
23-25 March 2004	WMTE 2003, Taiwan	Milrad, M., Hoppe, U., Gottdenker, J., & Jansen, M. (2003). Exploring the Use of Mobile Devices to Facilitate Educational Interoperability around Digitally Enhanced Experiments. Proceedings of The 2nd IEEE International Workshop on Wireless and Mobile Technologies in Education, WMTE 2004, Los Alamitos, California (USA)

Date	Title	Number of persons attended + other information
23-25 March 2004	WMTE 2003, Taiwan	Jansen, M., Oelinger, M., Hoeksema, K., Hoppe, U. (2004). An Interactive Maze Scenario with Physical Robots and Other Smart Devices. In: Jeremy Rochelle, Tak-Wai Chan, Kinshuk, Stephen J. H. Yang (eds). Proceedings of the 2nd IEEE International Workshop on Wireless and Mobile Technologies in Education, WMTE 2004, Los Alamitos, California (USA)
March 2004	Evaluation meeting, Växjö, Sweden	Meeting in March with members of VXU to discuss evaluation plan and development of experiment protocol in the context of the biosphere scenario.
31 March 2004	Technical trade fair, Germany	Presentation and Demonstration of COLDEX scenarios at a technical trade fair for pupils in Bottrop, Germany
30 April 2004	Human Centred Technology Group seminars, Great Britain	Presentation of the BeLife project at the Human Centred Technology Group seminars, University of Sussex.
3 – 5 May 2004	Agent-Based Simulation, Lisbon, Portugal	Preparation of the paper describing BeLife to be submitted to the International Workshop on Agent Based Simulation.
10 – 11 May 2004	OUS Workshop Buenes Aires, Argentina	

4.2 Articles Published, Press coverage etc.

Date and Type	Details
February 2004	Further elaboration of the COLDEX Website
May or June 2004 Paper in proceedings	F.Verdejo, B.Barros, J.I.Mayorga, T.Read. Designing a semantic portal for collaborative learning communities. To appear in a LNAI volume 3040. Springer.

5 - Main results

Description	Details
Software prototypes	• Web services for the telescope in Chile and Spain • Cool Modes Reference Frames: Astro, Moon Crater and Maze • Seismological and astronomical data access within a computer integrated classroom • Seismic scenario (construction of realities) • Chemistry scenario prototype has been finished
Specifications	Experiment ontology: Initial ontology has been developed

6 - Project Effort

The effort for the reporting period and the cumulative effort to-day is presented as an Excel sheet which is attached to this management report.

Summary

List of technical, business and administrative highlights, including:

Overall assessment of the main milestones achieved, or results delivered

The prototypes are ready for tests, some are already tested, partly technical evaluation, partly real-user tests.The enlargement of the user group is now the next topic to be done. This will be realised in a more distributed way at the Open User Scheme workshop in May. Meanwhile there are several local contacting activities, mainly with schools, i.d. teachers and students.

Problems encountered and decisions taken

There are still some technical problems with the software integration, but it will be completed soon.

Conclusive statement on correspondence between planned project progress (as detailed in the Project Programme) and actual accomplishments

The project management now is regaining delays by tighten strings in reporting record tasks. Deliverables and software prototypes are already available or will be completed soon. Conclusion of the actual project statement is that the project progress is still behind the time schedule, but the overall achievements are on a high level and by now give the outlook of the project success which can be guaranteed if the current status is extrapolated.

Work progress overview

Specific objectives (for the reporting period)

This reporting period has mainly to do with software prototype implementation, tests and debugging. Furthermore the learning material and user guides should be initialised now. There is also a technical evaluation part of the period's objectives. The website is part of every reporting period now and is permanently updated with materials.

Achievements

List of Deliverables

Several of the required Deliverables are now available. On the quality plan we are currently working. System prototypes are developed. Learning material and guidelines are locally available and will be public at the latest when the OUS workshop takes place.

Progress by Workpackage / task

Remote and local scenarios have their prototypes and the first tests for the support of web services have been done. Concerning the communication the COLDEX server for seismographic data has begun. The metadata synchronisation service, the LOR portal and the COLDEX system architecture have been carried out.

Dissemination activities, user test lessons and some user guides are developed now.

The evaluation plan has been splitted into two parts, one of them – the methodology and examples – is available in March 2004.

Deviations if any and corrective action

There are still deliverables missing, but we are on the way to deliver them as soon as possible.

Project reviews

Follow-up of recommendations from previous review and / or preparation of inputs to upcoming review

The first review has taken place in July 2003. The reporting is currently restructured and the delay is decreasing. The missing finals for the deliverables are elaborated and will be delivered soon, some at the beginning of the next reporting period, i.e. in March.

There are some dissemination activities in Europe planned, e.g. for the EU presentation of an E-Learning Trade Fair and a Technical Trade Fair for schools which addresses the target group itself. Also the OUS workshop will enlarge the user group to a wider community in Latin America. Workshops in Sweden are planned, again for the target group. Of course all these activities will be reflected at appropriate conferences to disseminate the results to a scientific community.

The next review is envisaged for 2004 likely to be held in Växjö.

Work planned for the next reporting period

(UDUI)

- Technical trade fair: Dissemination of the COLDEX project
- Open User Scheme Workshop in Argentina: Preparation (participants, invitation, materials and tools as well as OUS brochure)

(INESC-ID)

a) Aims

- Conclusion of the implementation of the biological model.
- Continuation of the definition of the user interface and learning requirements and corresponding specifications.

b) Potential Issues

Envision of some challenges concerning the development of a user interface for blind learners as well as development of strategies to foster collaboration between blind and sighted learners.

Project Management

Contractual issues

The amendment / mandate letters have been sent to the partners to be signed.

Co-operation within the consortium, including project meetings

Three project meetings have taken place in this reporting period: A programmers' workshop in Chile, the metadata workshop in Spain and a project meeting in Germany concerning the astronomy scenario.

Contribution to clustering, concertation and standardisation

The main aspect here is the integration of web services which allow the connection to interfaces for various technologies, may it be a database queried with the help of PHP or an application where Java technology is the fundament to access the same data. Another aspect is the focus on the web. There is a web interface for several systems, namely the telescope control at UPM, a web interface for the metadata mechanism for Cool Modes documents which are now switching to web services, too, and the portal located on the COLDEX servers, developed at UNED.

Participation in workshops and / or conferences, publications, etc.

UNED documents included in the COLDEX archive:

- Experiment ontology: It contains the experiment ontology as well as an example of different experiments, which have been annotated according to this ontology.
- A pilot UNED Chemistry evaluation

Effort breakdown

Fundamental work being done in this reporting period is the testing of the implemented software prototypes, the evaluation for the systems running and the dissemination of so far results.
The testing and impelmentation effort has led to a successful prototype pool which now allows the refinement for the users' requirements and then afterwards the distribution of the tools and learning material that will connect different learning groups via the technical basement of services developed by the involved partners.
The technical evaluation supports this aim and the evaluation of the scenarios and pedagogical aspects has now be discussed to lead to a well-founded evaluation plan considering the learning activity design.
Finally the dissemination of the project outcome has now reached the international scientific community in the domain of computer supported (collaborative) learning.