

# COLDEX



**Collaborative Learning and Distributed Experimentation**

**Information Society Technologies Programme**

**Project number: IST-2001-32327**

## **Quality Plan**

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# 1 Introduction

## 1.1 General

This document is the overall quality plan for the Fifth Framework project COLDEX, i.e. Collaborative Learning and Distributed Experimentation. The aim of the Quality Plan is to monitor conformance to the quality procedures, including documentary procedures. It defines the common management and technical procedures which are to be used on the project, the specific activities and resources necessary to complete the work, plus the organisation in which the activities are to be performed.

## 1.2 Project identification

Project name: COLDEX

Project type: The project is part of the European Commission Information Society Technology (IST) RTD programme; there are eight contractors forming a consortium. EC funding for the project varies from 100% to 50% according to the partner; exact details are contained in the contract.

Contract: The project is being carried out under EC contract number IST-2001-32327. This contract defines the consortium.

Project start date: 1 June 2002  
Estimated end date: 31 May 2005

Estimated total elapsed time: 36 months

Size of project: 215 person months (+ 55 pm contribution of non-european partners)

## 1.3 Overview

The following quality assurance activities are proposed:

- detailed planning of the work, including resource and time plans;
- review of all project activities and deliverables by the partners as appropriate (final approval of project deliverables will be by the Co-ordinator);

- regular review of the progress of the work and of the Quality Plan by the Co-ordinator to seek agreement on any corrective actions required and completion of such actions;
- an audit of the work on completion, attended by all the personnel involved in the work, to ensure that quality procedures have been correctly applied, to instigate any corrective action for subsequent projects.

## **2 Organisation**

### **2.1 *Project management***

The project management is mapped out in Section 9.6 of Annex I and concerns:

- internal communication and communication flow;
- co-ordination and cooperation;
- management structures and procedures;
- organisation and meetings.

### **2.2 *Personnel***

The partners responsible for each work-package are given in Section 9.2 of Annex I.

### **2.3 *Work-package leaders***

Each work-package is led by one partner. Activities for the work-package leader consist of

- co-ordination of tasks and activities towards the work-package objectives;
- co-ordination with other work-packages
- monitoring and control of the work-package progress;
- reporting to the Co-ordinator about deviations from scheduling, suitability or expected results;
- production of the deliverables specified for the work-package;
- monitoring and control of quality within the standards defined in the quality plan and work-package quality procedures.

## **3 Quality Procedures**

### **3.1 *Internal Documentation***

The partners will maintain a list of documents they produce and provide regular updates for the other partners, either directly to the other partners or to the Co-ordinator. A copy of each stable document must be made available to all partners, either directly or by sending it to the Co-ordinator who will upload it on the BSCW server (Basic Support for Cooperative Work) or the website, depending on its nature (public, internal, preliminary, final etc.).

Material as poster, flyer, presentations will be published at the COLDEX website, <http://www.coldex.info>.

### **3.2 Durable infrastructure and communication**

The Co-ordinator will create, issue and maintain a COLDEX mailing list, based on information provided by the partners. Most of the everyday communication will take place via email. Additionally, project members can also use ICQ ("I seek you"), a handy tool for even more immediate, direct communication.

Pre-existing know-how material will be used as background information. Persistent data will be stored on a BSCW server and accessible by every partner and associated COLDEX members. The preparation of events, deliverables and collaborative work on projects reports and publications is based on the communication via email and the central database on the BSCW server.

Furthermore, we plan to install a forum on the COLDEX website that allows to discuss topics related to the workpackages both, in an asynchronous way and more structured than via email. Additionally, a chat tool based on the IRC protocol will be installed on the website, allowing the partners to discuss questions about the project synchronously or to organise stuff related to project meetings. At the same time this setting could be seen as a testing scenario for a candidate of the portal that should later on be developed in the project to allow the exchange of different learner groups.

For communication and publishing issues we will not only arrange project meetings and workshops, but also use the BSCW, the COLDEX website and, of course, the usual communication ways like email, phone as well as phone and video conferences.

The general language of this kind of communication will be English. It is planned to provide some information also in German and Spanish.

The general communication in the COLDEX project will work since

- several of the involved persons have experiences with European projects
- the partners will get to know each other from the project meetings or from former research activities (this point is crucial for remote communication)
- all partners have knowledge about electronically supported ways of communication and usage of the associated common software tools

### **3.3 Project plan**

The overall project plan is contained in the Annex I of the contract. For the work-packages a timetable is given in Section 9.4 of Annex I. For each work-package a Section 9.2 of Annex I gives a description including the relevant milestones for the work-package.

### **3.4 Meetings**

Personal meetings are necessary in intervals to meet face to face, discuss questions which concern the whole project team, to give guidelines for the further steps, to solve problems and to visit local installations and sites. Meetings are planned in Lisbon, Portugal,

Antofagasta, Chile, Växjö, Sweden, Duisburg, Germany, Madrid, Spain, Santiago de Chile, Chile. Further meetings can be held at different associated locations. Various workshops are foreseen, e.g. programmers' workshops and a metadata workshop.

### **3.5 Deliverables**

These will describe the progress of the project. Their date of delivery, scope and responsible work-packages are defined in the Annex I of the contract. The deliverables will be available at the COLDEX website, on a password protected webpage. For deliverables the following principles should hold:

- A preliminary version will be produced by the editor and sent to – at least – the involved partners for discussion. This should contain:
  - scope;
  - structure;
  - preliminary content.
- A final version will be produced by the editor and sent to all partners. If no veto is received within a week, the deliverable will be sent by the Co-ordinator to the European Commissioner.

A layout template can be seen in Appendix B.

#### **3.5.1 Delivery**

All project deliverables will be submitted in 3 (three) hard copies, two for the Commission and one for the Co-ordinator, and an electronic version. All project deliverables should be provided in .doc or .rtf, .pdf, graphics in .gif or .jpg format or other widely-used formats. All public deliverables should be available for electronic access and dissemination for example through FTP or WWW.

#### **3.5.2 Project management deliverables**

The partners will deliver quarterly management reports. A template for these reports can be seen in Appendix C. The periodic progress report is added to this template (from "Summary" to "Effort breakdown"). The cost statements will be sent every 6 months.

### **3.6 Internal deliverables**

#### *Quarterly management reports*

Each partner has to produce quarterly management reports on its activities, from which the Co-ordinator can compile the quarterly management report for the whole project. The precise contents are described in a template which will be available at the BSCW and which will be provided by the Co-ordinator.

#### *Minutes*

Minutes of all meetings between two or more partners shall be produced and distributed to the partners. Minutes of the project meetings are the responsibility of the work-package leader, the host partner or the Co-ordinator, depending on the nature of the meeting. The responsibility for other meetings among partners is to be agreed among the participating partners.

### *Emails*

To ensure the smooth running of the project, partners are requested to copy relevant emails to the Co-ordinator, to assist in his co-ordinating role with the European Commission. Relevant usage of the BSCW should be announced to all partners by email.

## **3.7 Internal reviews**

### **3.7.1 Individual reviews**

In an individual review, each reviewer will study the work, in conjunction with appropriate background and associated material. Comments will be produced, for the author to consider and incorporate as appropriate.

### **3.7.2 Call for comments**

This is similar to individual reviews, except that there is a need for review comments to be solicited from a number of individuals. Project requirements will dictate whether the need arises to hold a review meeting following the provision of the opportunity to review in this way.

### **3.7.3 Group reviews**

In a group review, a number of people will walk through the work at a meeting, after everyone has had an opportunity to study the work beforehand.

## **3.8 Acknowledgement**

Papers should contain a COLDEX acknowledgement. The following text is suggested:

*"Work partially supported by European Community under the Information Society Technology (IST) RTD programme, project COLDEX contract IST-2001-32327. The author is solely responsible for the content of this paper. It does not represent the opinion of the European Community, and the European Community is not responsible for any use that might be made of data appearing therein."*

This applies not only to paper based documents (e.g. papers, communications to conferences, articles in specialised magazines, books - inc. the text as a footnote) but also to websites and other electronic publications.

## **3.9 Confidentiality of COLDEX internal information**

COLDEX internal information must be handled confidentially.

# **4 Pedagogical Aspects**

## **4.1 Principles**

Partners who will conduct educational activities in the COLDEX framework, should consider and apply the following principles:

- problem-based and open-ended activities (challenge-based learning)

- perception of natural phenomena should be given in important weight in combination with scientific modelling and analysis
- collaborative elements should be stressed
- intercultural aspects should be dealt with
- start from local communities and expand to global communities

#### **4.1.1 Social Aspects**

Concerning intercultural aspects, COLDEX starts in the tradition of the Enlaces project in Chile: *Enlaces is a model in how to take a "computers in school" initiative to scale. The project provided important planning and implementation lessons based on the experiences of teachers and students using computers as an additional learning device. [...] The vision of Enlaces was to create a national learning network of Chilean schools to improve education and meet the future needs of society. [...] Researchers found that student-teacher relationships within computer labs were more personal than in traditional classrooms and that students showed greater ability to work and learn independently. Computers also have increased the likelihood of cooperative learning situations* [ENLACES].

Beyond this the Open User Scheme aims at opening the learning environments and the learning object repository (LOR) not only to a well-defined group, but to every learner who is interested in sharing the scientific work which is done within the COLDEX context.

#### **Heterogeneity**

The target groups will range from higher secondary education to academic beginners. So the COLDEX project will foster students of different ages supporting each other not only by re-using learning objects, but by building learning groups or learning communities. Furthermore intercultural exchange (not only within Europe, but also between Europe and South America) of experiences will enrich the so-called challenge-based learning approach.

#### **4.2 Common tools**

During the project a complex educational environment will be built. The elements of this environment will be the following:

- a portal as the external interface of the COLDEX system
- a learning object repository (LOR)
- a browsable and searchable metadata catalogue which reflects the LOR contents

There will be several sites for the LOR server: UNED, VXU and UDUI will install the COLDEX system and manage the synchronisation between the sites. The LOR will contain learning objects (LOs), i.e. from raw data to tools, from models to complex results. As far as it is reasonable, these LOs will be available in different versions which enables following its elaboration process. Thus storage and retrieval will be possible in a common platform.

During the runtime of the project we will discuss several technologies that allow the synchronisation of the different COLDEX servers. Therefore, we will on the one hand discuss approaches done by former research work of the partners [JANSEN], but on the other hand we will also have a look on up-to-date technologies like EJB's, WebServices, JavaSpaces and several other middleware approaches. Hereby, the discussion will focus on the question which technology tackles the problems of synchronisation of our data structure best.

To ensure on the one hand a stable communication between the COLDEX servers and on the other hand a high availability of the COLDEX servers to the public, we either deploy new high quality servers and on the other hand develop a fault-tolerant protocol for the synchronisation of the different servers.

### 4.3 Evaluation

For evaluation the project partners will contact teachers and students and test the developed systems with them. Workshops for students and lessons in schools will take place. The evaluation plan will consider and describe the appropriate demands which are addressed in the COLDEX project.

The evaluation plan will elaborate the theoretical background in the following sense, but use multiple data sources and analysis methods:

Input Data	Analysis	Description
<b>Video</b>	<ul style="list-style-type: none"> <li>• Content analysis</li> <li>• Discourse analysis</li> <li>• Video protocol analysis</li> <li>• Video observational analysis</li> <li>• Interaction analysis</li> <li>• Performance analysis</li> </ul>	The ability to capture the interaction of the learner with an object reveals possible downfalls and ways of improvement. The capturing of collaboration behavior between and among peers allows to accurately evaluating a learning environment or a learning activity.
<b>Learning products (artefacts)</b>	<ul style="list-style-type: none"> <li>• Content analysis</li> <li>• Hermeneutic analysis</li> <li>• Structural analysis</li> </ul>	Artefacts such as written documents and software mediated artefacts should be used when the evaluation focuses on technological aspect or cognitive aspects. Student-produced artefacts serve then as mental model representations that help to expose thought processes.
<b>Process log</b>	<ul style="list-style-type: none"> <li>• Integrated analysis</li> <li>• Feedback mechanism</li> </ul>	Barros and Verdejo (2000) use integrated analysis and feedback mechanism in their collaboration platform to provide qualitative description of group activities in relation to each member and to other groups. [BARROS]
<b>Network log</b>	<ul style="list-style-type: none"> <li>• Social network analysis</li> </ul>	This provides means to visually and a mathematically analyse human relationships. Humans are the node and relationships are the links. These measures help determine the prominence of a node and the structure of the relations in the network.

<b>Interviews</b> (open-ended or semi-structured; structured)	<ul style="list-style-type: none"> <li>• Discourse analysis</li> <li>• Conversation analysis</li> <li>• Inference and evidence</li> </ul>	Interviews may elicit reasons and explanation; past experiences; constructions of claims, activities, concerns; and project into the future [COHEN].
<b>Questionnaire</b>	<ul style="list-style-type: none"> <li>• Content analysis</li> <li>• Factor analysis</li> <li>• Cluster analysis</li> </ul>	Can be used to collect both qualitative and quantitative data. Use to find persons' opinions about an activity, some conditions, or relationships between specific events.
<b>Observations – direct or participant</b>	<ul style="list-style-type: none"> <li>• Analytic memo</li> <li>• Interaction analysis</li> <li>• Ethnography</li> <li>• Time-Series analysis</li> <li>• The analysing goes often hand in hand with fieldwork and interpretation most often takes its final form as a text.</li> </ul>	There could be different focus, for example event focus, person focus, place focus and object focus. Different research questions require different observational strategies. The goal is to build an understanding of the environment, context, prerequisites and the people involved, teachers, students, etc., and how they interact with each other, tools and the environment.
<b>Think-aloud</b>	<ul style="list-style-type: none"> <li>• Grounded theory</li> <li>• Discourse analysis</li> </ul>	It is a way to capture the mental processes, the persons are asked to describe their thoughts and actions, to reflect on why and how choices are made.

Table 1. Data collection and analysing methods

## 5 Technological Aspects

### 5.1 Software

For software developed by the project, change control will become effective. Therefore, we will use standard version control systems like CVS. Furthermore, the quality of critical parts of the software will be ensured by automatic unit tests. The usability of the developed software will be guaranteed by user tests. Results of the above mentioned tests will be part of the further development of the software. Software will be available at the latest when the prototypes are running.

### 5.2 Storage and backup

Each partner is responsible for defining and following procedures for storage of products and system backup, and in particular for backup of word processed documents and computer system application software components. The Co-ordinator has the right to review these procedures, and request changes where deemed necessary to protect the project against undue risk.

### 5.3 Archiving of project material

Archiving of project material is the responsibility of each partner who will define and follow appropriate procedures. The BSCW will be used for this purpose. Project records will be available an appropriate period of time after the project ends. Appendix A lists the recommend documentation tools.

## 6 References

[BARROS] Barros, M., and Verdejo, M. (2000). *Analysing student interaction processes in order to improve collaboration. The DEGREE approach.* In *International Journal of Artificial Intelligence in Education*. 11, 221-241.

[ENLACES] Contreras-Budge, E. (2003). *Chile: Building the National Learning Network "Enlaces".* In *Digital Opportunities for Development: A Sourcebook on Access and Applications*. Washington, DC, USA: LearnLink Academy for Educational Development.

[COHEN] Cohen, L., Manion, L., Morrison, K. (2000). *Research Methods in Education*. London: Routledge/Falmer.

[JANSEN] Jansen, M. (2003). *MatchMaker - A Framework to Support Collaborative Java Applications.* In Hoppe, U., Verdejo, F., Kay, J. (eds). *Shaping the Future of Learning through Intelligent Technologies.* Proceedings of the 11<sup>th</sup> Conference on Artificial Intelligence in Education. Amsterdam: IOS Press. 535-536

## **Appendix A: Recommended documentation tools**

### **A.1 Document Preparation**

Microsoft Office or StarOffice / Open Office is recommended for document processing, generation of slides and spreadsheets.

### **A.2 Document Interchange Format**

The appropriate Microsoft file formats will be used as the default document interchange formats for the respective document types, in particular:

- .doc
- .xls
- .ppt

It is agreed that whoever fails to comply with this will sort out a solution. Documents, including deliverables, which are made publicly available, e.g. on the project website, shall be in .html or .pdf format, unless agreed otherwise by the project partners.

Documents may also be distributed in .pdf format unless the document is available in MS Office formats.

### **A.3 Document Distribution**

#### *Email*

Email will be used to distribute documents within the group (but recognising that certain relevant, externally sourced documents may only be available in hard copy). Please note that compression is only necessary for documents bigger than 1 Megabyte.

#### *WWW*

As required in the contract, a website will be established and operated to facilitate access to project information and results. The address of the website is <http://www.coldex.info>.

#### *WWW operation*

The website will be hosted at the University in Duisburg, Germany. Additions to the website are to be sent to the Co-ordinator, agreed by him, for putting into the website.

## Appendix B: Template for deliverables

Cover sheet

# COLDEX



**Collaborative Learning and Distributed Experimentation**

**Information Society Technologies Programme  
Project Number: IST-2001-32327**

**<TITLE of DELIVERABLE>**

**Deliverable Number:** <D.x.x.x>  
**Contractual Date of Delivery:** <M12>  
**Actual Date of Delivery:** <M13>  
**Version:** <first draft | final | etc.>  
**Work Package:** <WP 2>  
**Lead Partner:** <UDE>  
**Contributing Partner:** <VXU>  
**Authors:** <(last name, first name)<sup>+</sup>>  
**Contact:** <email address>

## Appendix C: Template for management reports

Quarterly Management Report #(number)

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Project Number-Project Acronym Reporting Period: Month/Year to Month/Year

### Financial/Administrative co-ordinator

Name:

Address:

Phone Numbers:

Fax Numbers:

E-mail:

Project website:

### Executive Summary

#### - Main achievements

- Progress in implementation of the 'Description of Work'

- Highlights/anticipated problems for next reporting period

## 1 – Overview

### 1.1 Objectives

<i>Objectives</i>	<i>Progress towards achieving objectives</i>
<input type="checkbox"/> General objectives .....	
<input type="checkbox"/> Specific objectives .....	
Etc...	

### 1.2 Milestones

<i>Milestone</i>	<i>Planned date</i>	<i>Actual date</i>	<i>Comments</i>
M01 - .....			
M02 - .....			
Etc...			

**1.3 Deliverables**

<i>Deliverable Code &amp; Name</i>	<i>Planned delivery date</i>	<i>Actual delivery date</i>	<i>Comments</i>
D01 - .....			
D02 - .....			
Etc...			

**1.4 Deviations from Plan**

<i>Causes and Description</i>	<i>Corrective actions</i>
List any deviation from plan including a brief description of the reasons.	Corrective action envisaged by the project to overcome the issue. This should include the expected impact in terms of delays, quality and quantity of work.

**2 – Contractual Arrangements**

*State any serious problems that cannot be addressed at project level and/or require a contract amendment (including change of consortium, substantial change of description of work,...)*

**3 - Project Meetings (held and foreseen)**

<i>Title</i>	<i>Data and Place</i>	<i>Main conclusions</i>
Project Management meeting	31 December 1999, Brussels	
Next Project Management meeting	31 December 2000, Antwerp	
<i>Applications Concertation meeting</i>	4 February 2001, Brussels	All partners will attend

**4 - Dissemination / Promotional Information**

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

<i>Date</i>	<i>Title</i>	<i>Number of persons attended + other information</i>

**4.2 Articles Published , Press coverage etc.**

<i>Date and Type</i>	<i>Details</i>
31/12/99 – BBC1 News	Interview regarding the evolution of IST after 2003
31/12/99 – Regional newspapers	4 separate articles in 3 newspapers to present the project application

**5 – Main results**

<i>Description</i>	<i>Details</i>
Patents, Software prototypes, systems specifications,...	

**6 – Project Effort**

<b>Effort for the reporting period (person months)</b> (preferably presented as an Excel sheet with one row per person)										
<b>Contractor designation</b>	<b>Names of key staff</b>	<b>WP 01</b>	<b>WP 02</b>	<b>WP 03</b>	<b>WP 04</b>	<b>WP 05</b>	<b>WP 06</b>		<b>W P n n</b>	<b>Tota l</b>
CO										
CR1										
CR2										
...										
AC3										
<b>Total</b>										

<b>Cumulative Effort to-date (person months)</b> (preferably presented as an Excel sheet with one row per person)															
<b>Contractor designation</b>	<b>WP 01</b>		<b>WP 02</b>		<b>WP 03</b>		<b>WP 04</b>		<b>WP 05</b>		<b>WP 06</b>			<b>W P n n</b>	<b>Total</b>
	<b>P</b>	<b>A</b>													
CO															
CR1															
CR2															
...															
AC3															
<b>Total</b>															

*P: planned*  
*A: actual*

## **Summary**

List of technical, business and administrative highlights, including:

***Overall assessment of the main milestones achieved, or results delivered***

***Problems encountered and decisions taken***

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

## **Work progress overview**

***Specific objectives (for the reporting period)***

### ***Achievements***

**3. List of Deliverables**

**4. Progress by Workpackage / task**

Deviations if any and corrective action

### ***Project reviews***

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

***Work planned for the next reporting period***

## **Project Management**

### ***Contractual issues***

### ***Co-operation within the consortium, including project meetings***

### ***Contribution to clustering, concertation and standardisation***

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

### ***Effort breakdown***

Summarised effort breakdown for this reporting period

- Positioning of project development vis à vis world wide trends
- Assessment of impact of current / foreseeable technical economical social regulatory developments on project exploitation potential
- Discussion: Are the initial assumptions of the proposers still valid or suggest new developments the need to revisit the project objectives, work description, etc.