ANNEX 1 - PROJECT PROGRAMME

ParlEuNet - A Student's Parliament via Educational Multimedia Learning Models and Technologies

Contract Number: MM 1022

Commencement Date: January 1, 1998

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Content List

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Part A - Project Summary

Part B - Project Description

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Part A: Administrative / Financial Forms

Joint call educational multimedia

A.1 - Summary Information on ParlEuNet

Contract Number	Acronym	Title
MM 1022	ParlEuNet	A Student's Parliament via Educational Multimedia Learning Models and Technologies

Programmes involved					
IT	yes X	no …	Socrates	yes	no X
TAP - ET	yes X	no …	LdV	yes …	no X
TSER	yes X	no …	TEN	yes …	no X

ParlEuNet is the first European initiative to permit secondary school students to use state of the art networks and multimedia resources to learn about and do collaborative projects on the European Parliament. Internet connections, videoconferencing and a website containing a well-structured updateable multimedia database of educationally relevant materials will be used by students to access information on the Parliament, create their own projects, and exchange information and views with members of Parliament and students in other countries. The students' work will gradually supplement the website with educational modules and resources which can be used by other students.

A variety of collaborative activities will be planned in the experimentation phase. ParlEuNet will experiment with pedagogical models that promote student-centred problem based learning aiming at the design of guidelines for working in telematics learning environments. Training workshops will be conducted to integrate the telematics learning environment into classroom practice, get feedback on content, the appropriateness of the media involved.

Following the experimentation, the results will be analysed. In addition to educational publications, a practical guide will be produced to disseminate the results to other European schools to generalise the results from the pilot experiment. A hands-on workshop in the European Parliament will be organised for policymakers and Parliamentarians. Workshops will be organised on a national level by parents' associations as well as the distribution of a project video and major on-line hyperlinking with European educational projects.

Major Validation sites (If applicable, sites where the validation with users will take place)

Firstly, the major validation sites will consist of secondary schools throughout Europe. The recruitment of these schools has been and will continue to be organised by the Pegasus Foundation. In the preparatory phase of the ParlEuNet project, Ministries of Education in all fifteen Member countries were informed about a pilot initiative to launch video-conferencing dialogues on European topics of interest between European schools and Members of the European Parliament. A significant number of Education Ministries responded in support of the initiative willing to involve their nation's schools. A first selection of fifteen schools as validation sites was made on the basis of contacts between the Ministries, schools participating in European initiatives in connection with the Pegasus Foundation and industry involvement. All schools chosen in the first round of trials are multicultural, socially and economically diverse, and embody a representative cross-section of European schools. All these schools have highly motivated staff and are technologically ready to participate in the trials, in some cases involving upgrading of their current equipment. They are represented in the following table.

Institution/ Organisations	City/Town + Postal Code	Region ·	Country ·
St-Norbertusinstituut	Antwerp - B-2000	BE21	**BE**
Athénée Adolphe Max	Brussels - B-1040	BE1	**BE**
Bishop's Stortford College	Cambridge	UK4	**UK**
Canterbury High School	Canterbury	UK57	**UK**
St-Andrews College	Dublin	IE002	**IE**
Gymnasium Königin-Olga-Stift	Stuttgart - D-70176	DE11	**DE**
Jeanne d'Arc College	Maastricht	NL42	**NL**
Stella Maris College	Meerssen (Maastricht)	NL42	**NL**
Institut Pere Barnils	Barcelona - E-08540	ES51	**ES**
Katrinelunds skola	Sundsvall - S-850 07	SE01	**SE**
Rudbecksskolan	Örebro - S-701 35	SE01	**SE**
Vilunda Gymnasium	Upplands Väsby - S-104 21	SE01	**SE**

Twelve of these schools have been "adopted" by universities willing to administrate manpower and other project related costs. The adoption scheme for the schools is represented below.

C.2	Katholieke Universiteit Leuven	
		Athénée Adolphe Max
		Gymnasium Königin-Olga-Stift
		Katrinelunds skola
		Rudbecksskolan
		Vilunda Gymnasium
A.2.1	The Research Centre City College Norwich	
		Bishop's Stortford College
		Canterbury High School
A.2.2	Universiteit Antwerpen - UIA	
		St-Norbertusinstituut
C.3	University of Barcelona	

		Institut Pere Barnils		
		St-Andrews College		
A.3.1	Universiteit van Maastricht			
		Jeanne d'Arc College		
		Stella Maris College		

Secondly, another validation site will be the Parent Association of Baden-Württemberg. This Association will organise the training of parents to the ParlEuNet project in co-operation with three additional Parents Associations that will also serve as validation sites.

Parent Association Baden-Württemberg	Boxberg - D-97944	DE11	**DE**
Union Régionale des Associations de Parents d'Elèves de l'Enseignement Libre (URAPEL)	Lyon - F-69002	FR71	**FR**
Federacio d'Associacions de Pares I Mares d'Alumnes d'ensenyament secundari de Catalunya (FAPAES)	Barcelona - E-08020	ES51	**ES**
AGE Lombardia - Associazione Italia Genitori	Bergamo - I-24100	IT2	**IT**

Thirdly, Members of the European Parliament will also be users of the ParlEuNet project during their interchanges with European students. A site at the European Parliament in Strasbourg will also be used. The Pegasus Foundation will also coordinate the functioning of this site.

A site at the European Parliament	Strasbourg F-6700	FR42	**FR**

A second selection of validation sites will be made, involving most probably schools and/or educational institutions. During the commencement of the project, Ministries of Education will once again be alerted about the project. An official letter of participation will be drawn up by the Pegasus Foundation detailing the commitment and participation requirements for schools. Ministries will be encouraged to nominate schools that fulfil these criteria. As the ParlEuNet budget provides for the provisioning of a select number of schools, and educationalists involved in the project are only able to conduct field work on this select number, schools that exceed this quota are encouraged to participate only if they have the necessary equipment and will only be monitored through the statistical information evaluation forum available via the Internet site.

Schools that participate in European initiatives such as COMENIUS are encouraged to participate in the ParlEuNet project. The letter of commitment describing the requirements for schools to participate in the project will be circulated to these schools pending the receipt of an exhaustive list of schools from the COMENIUS project organisers in the Commission. If schools in the COMENIUS scheme meet these requirements, they will be selected during the second round of trials. Ministries of Education will be informed of the involvement of these schools.

During the dissemination phase of the activity, a major conference and workshops are planned in the European Parliament and in the Member countries to promote the promulgation of the project. Communication with official bodies such as Education Ministries and projects supported by the European Union will be maintained by links between the ParlEuNet website and the websites of Ministries, Education departments, academies and universities and through periodical official correspondence to these bodies.

In summary there will be three major types of validation sites: 1)secondary schools and educational institutions 2) Parents Associations in Boxberg, Lyon, Barcelona, and Bergamo 3) a site at the European Parliament in Strasbourg.

Other Characteristics of the Project:

- Users involved (up to 3 lines)

Students between 15-17 in all fifteen Member countries will be the prime users and creators of ParlEuNet. Educational administrators, teachers and parents will use and evaluate these materials. Members of Parliament will video-conference with students.

- Technologies and/or approach used (up to 3 lines)

Students in pilot schools will have Internet access, videoconferencing equipment, telephone, fax and in some cases high speed connectivity. The project will create a website supported by a well-structured updateable multimedia database of educational materials.

- Expected benefits for the citizens (up to 3 lines)

A major benefit will be students' understanding of the European Parliament and of each other as European citizens. A main focus will be on enhancing an understanding of a co-operative European-culture including multilingual/multicultural diversity.

- Expected benefits for the users of the application (up to 3 lines)

Students and teachers will learn how to use powerful new technologies to access, manipulate and present information. These competencies are essential for entry into the information society. Administrators, parents and MEPs will also gain competence in this area.

- Expected benefits for the European Industries (up to 3 lines)

The feedback gained, evaluated by users and educational experts, will provide insight into the use and application of technology from principally a pedagogical rather than a technological focus leading to improved user acceptance of new technologies.

- Contribution to EU-policies (up to 3 lines)

ParlEuNet advances key EU actions by creating a pan-European school network collaboratively developing and exchanging multimedia information using telematics on the European Parliament. Students and teachers integrate new competencies in the information society and a tangible European dimension related to courseware.

- Major characteristics of the validation sites (up to 3 lines)

A first selection of fifteen (three not funded) pilot secondary schools in eight different European countries has been chosen from all fifteen member countries. These schools are regular and technical secondary schools, and are socially, culturally and geographically diverse, which will promote project generalisation. A second selection of secondary schools or educational institutions will be made. There will be four parents' associations and a site at the European Parliament.

- Cross-programme integration aspects (up to 3 lines)

ParlEuNet integrates a pedagogical model involving a telematics learning environment, teacher training and research into the learning process, (TSER, link to Socrates) into the iterative design of an updateable database/knowledgebase viewable on the Internet on Parliament related materials (Esprit, TAP).

Co-ordinator:

Name of Institution/Organisation	City + Postal Code	Region	Country
Pegasus Foundation	*Brussels B-1047*	*BE1*	*BE*

Contact person from the Co-ordinator:

Title, First Name, Name	**M. Eugenio Belloni**	*Address:*	*Pegasus Foundation c/o Parlement Européen* *135, Rue Belliard* *Eastman Building* *B-1047 Brussels*
Tel:	*+32 2 284 36 95*	**Fax:**	*+32 2 284 90 09*
E-mail 1:	**fpegase@europarl.eu.int**	**E-mail 2:**	

Other Contractors:

Contractors Code	Name of Institution/Organisation	City + Postal Code	Region	Country
C.2	*Katholieke Universiteit Leuven*	*Leuven B-3000*	*BE24*	*BE*
C.3	*University of Barcelona*	*Barcelona E-08035*	*ES51*	*ES*
C.4	*DG JRC, ISIS/STA*	*Ispra I-21020*	*IT12*	*IT*
C.6	*The Research Centre City College Norwich*	*Norfolk NR2 2LJ*	*UK4*	*UK*
C.7	*Telia AB*	*Stockholm S-104*	*SE01*	*SE*
C.8	*Eircom*	*Dublin 2*	*IE002*	*IE*

A.2 - Budget Summary Information

Contract Number	Acronym	Title
MM 1022	ParlEuNet	A Student's Parliament via Educational Multimedia Learning Models and Technologies

Human Resources Summary (Person-month)

Total Resources of funded Contractors	104.2
Total Resources of funded Associate Contractors	46.5
Total Resources of funded Subcontractors	0
Subtotal Resources of funded Participants	*150.7*
Total Resources of non-funded Contractors	0
Total Resources of non-funded Associate Contractors	2
Total Resources of non-funded Subcontractors	0
Total Resources of Sponsoring Partners **(*)**	(*)

(*): the European Parliament only provides raw content material for the ParlEuNet database at no cost.

Cost Summary in ECU

Participants codes	Person-Month	1. Personnel Costs	2. Equipment Costs	3. Third Party Assistance (subcontractors)	4. Travel and Subsistance	5. Consumables and Computing	6. Other Significant Specific Project Cost	7. Overheads	8. Total Costs ECU	% of Contribution FC AC	Ecu %	EU Contribution ECU
C.1	28.47	227760	4700	190000	20250	34000	9082	56940	542732	50	FC	271366
A.1.1	4.10	19524	1400		4400	5500	3000	976	34800	100	AC	34800
Subtotal 1	32.57	247284	6100	190000	24650	39500	12082	57916	577532	55		306166
C.2	27.90	144150	13450		10800	1500	20150	28830	218880	100	AC	218880
A.2.2	4.10	23137	2330	30000	4306	1500	8000	2314	71586	100	AC	71586
Subtotal 2	32	167287	15780	30000	15106	3000	28150	31144	290466	100		290466
C.3	11.50	59417	8260		4800	1500	5740	11883	91600	100	AC	91600
A..3.1	13.70	70441	7060		7170	1500	7600	14088	107859	100	AC	107859
Subtotal 3	25.20	129858	15320		11970	3000	13340	25971	199459	100		199459
C.4	19.60	194310	12400		8700	4106		52464	271980	50	FC	135990
A.4.1	14.80	88800	6700		7200	8050		22200	132950	50	FC	66475
Subtotal 4	34.40	283110	19100		15900	12156		74664	404930	50		202465
C.6	12.23	63209	7635		7448	1750	13401	12642	106085	100	AC	106085
A..6.1	4.91	24550			1618			4910	31078	100	AC	31078
Subtotal 6	17.14	87759	7635		9066	1750	13401	17552	137163	100		137163
C.7	3.26	19628	12900		5949	2300	32429	19432	92638	50	FC	46319
Subtotal 7	3.26	19628	12900		5949	2300	32429	19432	92638	50		46319
C.8	2.76	15262	17250		5212	2300	30076	15109	85209	50	FC	42605
Subtotal 8	2.76	15262	17250		5212	2300	30076	15109	85209	50		42605
TOTALS	147.34	950187	94085	220000	87853	64006	129478	241788	1787397	68		1224642

Total estimated allowable costs (ECU)	1787397
EU contribution in % - (EU Contribution excluding 100% additional cost * 100 / Total cost excluding 100 % additional cost)	15.8 %
EU Contribution (ECU)	1224642
Estimated contribution from Sponsoring Partners (ECU)	0

A.3 - Participants List

Contract Number	Acronym	Title
MM 1022	ParlEuNet	A Student's Parliament via Educational Multimedia Learning Models and Technologies

Participants Code	Participant's Institution/Organisation (full legal name)	Participant's - Short Name	Type of organisation	Country + Postal Code.
C.1	Pegasus Foundation	PEG	INT	BE - B-1047
A.1.1	Parent Association Baden-Württemberg	PAR	INT	DE - D-97944
C.2	Katholieke Universiteit Leuven	KUL	EDU	BE - B-3000
A.2.2	Universiteit Antwerpen - UIA	UIA	EDU	BE - B-2610
C.3	University of Barcelona	BAR	EDU	ES - E-08035
A.3.1	Universiteit van Maastricht	MAA	EDU	NL - NL-6200 MD
C.4	DG JRC, ISIS/STA	JRC	ROR	IT - I-21020
A.4. 1	Arboth Learning Technologies	ARB	IND	BE - B-2930
C.6 (formerA2.1)	The Research Centre City College Norwich	RES	EDU	UK - GB-NR22LJ
A.6.1	University of Uppsala	ILU	EDU	SE - S- 750 02
C.7 (formerC.6)	Telia AB	TEL	IND	SE - S-104
C.8 (formerA5.1)	Telecom Eireann	EIR	IND	IE - Dublin 2

Number of Participants

Number of Contractors (including Co-ordinator)	7
Number of Associate Contractors	5
Number of Subcontractors	0
Number of Sponsoring Partners	0
Total Number of Participants	13

A.4 - Programme Funding Summary Information

Project Number	Acronym	Title
MM1022	**ParlEuNet**	**A Student's parliament via Educational Multimedia Learning Models and technologies**

Programmes	Information technologies (ESP)	Telematics Applications (TAP-ET)	Targeted Socio-Economic Research (TSER)

Participants codes	Country	Cost KEcu	% Funding	Funding KEcu	Cost KEcu	% Funding	Funding KEcu	Cost KEcu	% Funding	Funding KEcu
C 1	BE	368744	50	184372	18288	50	9144	155700	50	77850
A.1.1	DE	22280	100	22280	12520	100	12520		# DIV / 0!	
C 2	BE	136780	100	136780	75280	100	75280	6820	100	6820
A.2.2	BE	16279	100	16279	18220	100	18220	37087	100	37087
C 3	ES	55560	100	55560	29220	100	29220	6820	100	6820
A.3.1	NL	60253	100	60253	30330	100	30330	17276	100	17276
C 4	IT	20885	50	10443	6401	50	3201	244694	50	122347
A.4.1	BE	15250	50	7625		# DIV / 0!		117700	50	58850
C 6	UK	76791	100	76791	29294	100	29294		#DIV / 0!	
A.6.1	SE	23278	100	23278		# DIV / 0!		7800	100	7800
C 7	SE	81838	50	40919		# DIV / 0!		10800	50	5400
C 8	IE	79709	50	39855		#DIV / 0!		5500	50	2750
Total		957647	70	674434	219553	94	207208	610197	56	343000
% of total funding				28			55			17

Part B: Project Description

General Project Description

1. Objectives of the project

1.1 Objectives of the Project

1.1.1 Project development and elaboration

♦ To create, experiment and evaluate a rich telematics learning environment.

A rich telematics learning environment will be created which provides increased access capabilities for students that need to learn autonomously, where technology will enable students to overcome both problems of **time** (technology will permit asynchronous communication between students) and **distance** (by means of videoconferencing). In this way, students in different European countries may participate in collaborative learning activities on the European Parliament. These activities will link in as much as possible in to the regular school curriculum in a cross-curricular manner. These collaborative activities may support and enhance the current initiatives of "Parliament for Youth" and Euroscola.

♦ To develop pedagogical models which promote learning in a telematics environment

The ParlEuNet project will compare four pedagogical models which will differ only by level and types of guidance that is provided to the students. These models will promote student-centred and problem-based learning in technology rich environments. The ParlEuNet project aims at elaborating an instructional design model that specifies guidelines for (a) learning with a variety of technological means, (b) collaborative learning, (c) supporting learners working on open-ended tasks, and (d) applying design processes that intensively consider users' needs. The project will add to our understanding of the relationship between group processes and performance, the impact of tutoring on learning and collaborative learning, and the impact of different access structures in databases on both performance and process measures. In addition, students will select for themselves the specific technological tools they will use and help challenge the current conception of classrooms by defining their learning environment for maximum ease and productivity

♦ To develop high quality educational multimedia content on the European Parliament for students

The development of a well-structured multimedia database will take place where students that work in a rich telematics environment can easily retrieve information, and where Content Providers and Curriculum Developers can structure the data inside the database using a clear and easy-to-use application. The database application includes a facility, which is able to generate dynamically updated web pages directly from the database. Hence, the access of the database from the user side will be via a website. Via this database, students will be given access to educational materials on the European Parliament through the development of a website for "Information on the European Parliament for Students." Students will be dynamic creators of information on the website drawing upon content resources. The website may be hosted as part of the current Parliament website, or with the Pegasus Foundation website on the ISPO server. The website will have links to other European institution sites and relevant educational sites.

As part of the educational experience, high quality material on the European Parliament will be produced that will in turn give rise to a variety of multimedia and paper products, such as the above mentioned website, the eventual production of a project video, a CD-ROM and various educational publications.

♦ To propose useful, and transferable models on learning in a telematics environment for generalisation in a maximum number of European schools.

The project will be organised and managed as a major educational pilot study whose results will be generalised and transferable to a significant number of European schools. ParlEuNet will serve as a multimedia educational platform, which will allow the evaluation of innovative tutoring models in a multimedia telematics learning environment. The results will provide essential input for full-scale implementation of multimedia learning models in European schools.

The results of the pilot experimentation on the European, regional and local levels will be disseminated and exploited. The emphasis will be on transferring the results of the trials on the teaching and learning process and the use of telematics learning environments in schools across Europe.

♦ To enhance understanding of the European Parliament, develop a sense of European citizenship

Communication networks between European schools and the European Parliament will be reinforced. Students will gain a greater knowledge of the European institutions and thus come to a greater understanding of European citizenship through the collaborative activities planned and through communication with Parliamentarians. Parliamentarians will gain a heightened understanding of the issues concerning European youth as the building blocks for European integration.

♦ To provide feedback to the technology industry on the needs of real users

Technology providers will gain a greater understanding of the needs of real users, teachers and students, through the careful monitoring and refinement process conducted in the trials in schools. Through the results of the experimentation, services providers and technology developers will better be suited to implement the kinds of products and services that are best applicable for this market segment.

1.1.2 Relevant publication list

For a relevant publication list, please refer to the list in 11.5

1.2 Dependencies

1.2.1 SAVIE

SAVIE is a project within the Telematics Programme.

The objective of the SAVIE initiative is to design and produce a set of training and implementation tools that will enable an increase in the effectiveness, frequency and productivity of education and training supported by videoconference.

Two sets of deliverables will be developed in the SAVIE project:

♦ a **Standalone** training module, equivalent to 4 hours of self-study and designed to teach the basics in using videoconferencing for education and training. It includes a videotape and a handbook.

♦ a **Tele-Tutored** training module, equivalent to 8 hours of study and designed to provide a more comprehensive training. This training package includes a videotape, a handbook. and 4 hours tele-tutored training sessions where an experienced tutor will be linked to your local videoconference site for practical training. This training module also includes access to an on-going electronic discussion service on the topic of videoconferencing in education and training.

The SAVIE training modules can be incorporated in this project as part of the training, because they offer a useful introduction to the use of videoconference in education and training.

1.2.2 EduCase

The EduCase research project is co-funded by IWT (Flemish Government) and aims at designing a methodology for the development of educational applications with a focus on education and not on technology. It proposes a methodology which is built in three layers:

♦ a model layer: describing the knowledge domains on which an edutainment application will be built and comprising prototypes of tools to maintain them

♦ a navigation layer: describing how the user of the edutainment application will be guided through the information offer (from an educational point of view)

♦ a presentation layer: describing how the information will be presented on the screen and comprising SW components for presentation and methods to combine them in an overall application

A set of tools will be developed in the EduCase project to support these three layers.

The results of the EduCase Project are taken as a useful starting point for the development of the multimedia database and the knowledgebase in the ParlEuNet project.

2. Rationale of the project

"At present, the main potential risk for the computer-based instruction field is the indiscriminate and simplistic adoption of this new and fascinating technology by instructional designers. The indiscriminate use of instructional technology would give rise to a proliferation of programs whose projects would be technology-driven, rather than prompted by real needs and educational aims, and thus certainly of scanty effectiveness".

(Antonietta Lanza, in 'Educational Technology', October 1991)

♦ ParlEuNet will serve as a multimedia educational platform, which will allow the evaluation of innovative tutoring models in a multimedia telematic learning environment. The results will provide essential input for full-scale implementation of multimedia learning models in European schools.

ParlEuNet proposes to provide students with an educationally rich telematics learning environment and a high quality educational database, which will have two fundamental axes:

Research Activities (Telematics, Esprit and TSER) in which following tasks are addressed:

       - ET 1.8   for design of the telematics framework and the actual experimentation
       - TSER 1   for pedagogical framework design and for the study of cognitive processes in the pedagogical framework
       - ET 4.4   for telematics framework evaluation
       - ET 4.3   for supportive dissemination
       - ESP 3.4   for database research, implementation and population
       - ESP 3.5   for database analysis and user interface valorisation

♦ A Proven Rationale: ParlEuNet brings the Members of the European Parliament closer to citizens

ParlEuNet is the first European initiative, which seeks to make accessible to secondary school students a well-structured updateable multimedia database on the Internet comprised of educationally relevant materials on the European Parliament. The multimedia database content will be complemented and validated through live dialogues between Members of the European Parliament and European students using videoconferencing facilities. The initiative to promote videoconferencing dialogues between the European Parliament and students was originally launched by the former Secretary General of the European Parliament, Mr. Enrico Vinci. These continuation and further development of these dialogues have received the encouragement of Mr. Jose Maria Gil-Robles, President of the European Parliament and Mr. Georgios Anastassopoulos, Vice President responsible for information policy. Individual Members of the European Parliament have also subscribed to this initiative. National Ministries of Education have also expressed a strong interest to involve secondary schools in this project.

♦ The working languages of ParlEuNet will be English, French and German.

Students when creating their personal web-pages will be allowed to use their native languages and invite other European students to communicate in their native language if they are studying it at their school or show interest.

♦ ParlEuNet is high quality educational material based on users' needs and preferences. This responds to the Socrates concern to promote a European dimension in schools. As highlighted in TAP, telematics is used as a means of overcoming distance and promoting co-operation through networks for students.

ParlEuNet responds to the needs of European students and teachers by providing quality multimedia educational content to enhance the European dimension in schools and to promote the teaching of European citizenship. The need

and enthusiasm of Members of Parliament and students to broaden their communication channels and to enhance available information on the history and functioning of the European Parliament was demonstrated in videoconferencing sessions between Members of Parliament, Foreign Ministers and European students in December 1996, February and March 1997 involving 8 European countries, 75 Members of Parliament, 120 students, 80 teachers, and 600 parents, school administrators and other interested spectators. After these sessions, students and teachers were asked to evaluate the experiment. Generally speaking, students found the videoconferencing sessions an extremely powerful tool of communication and expressed a very strong interest to continue the sessions in the future. Students especially remarked on the importance of communicating amongst themselves and with their political leaders and for the necessity of current information on the Parliament tailored for educational purposes. It is partly on the basis of these evaluations that this current project has been formulated. A telematics learning environment is uniquely capable of providing this possibility as it overcomes the physical barriers between the European institutions and its citizens.

2.1 Research Activities (Telematics, Esprit and TSER)

The validation of an Instructional Design Model (consisting of both a description of the design process and a description of transferable design rules) for the construction of powerful learning environments in a technologically rich telematics-based environment will be a major research activity in the ParlEuNet project. Leading-edge research will review studies on situated and distributed cognition, co-operative and constructivist learning, learning styles and metacognition. An educational experiment will be conducted involving 15 to 17 year old students in an initial cluster of twelve European pilot schools in seven European countries. An additional ten to fifteen institutions, preferably schools, will be recruited for experimentation purposes in the second phase of the project as it is expanded to involve all fifteen European countries. Following the experimentation the project will link up to major national and European school networks. As all material will be viewable on the Internet access will be available to all citizens at all phases of the project.

The ParlEuNet project will compare four pedagogical models,which will differ only by level and types of guidance that is provided to the students. These models will promote student-centred and problem-based learning in technology rich environments. The ParlEuNet project aims at elaborating an instructional design model that specifies guidelines for (a) learning with a variety of technological means, (b) collaborative learning, (c) supporting learners working on open-ended tasks, and (d) applying design processes that intensively consider users' needs. The project will add to our understanding of the relationship between group processes and performance, the impact of tutoring on learning and collaborative learning, and the impact of different access structures in databases on both performance and process measures. In addition, students will select for themselves the specific technological tools they will use and help challenge the current conception of classrooms by defining their learning environment for maximum ease and productivity.

A well-structured multimedia database will be designed and tested to permit information to be linked into packages and retrieved for database users (teachers and students) on the Internet. Students will be equipped with multimedia PC's, Internet access and a videoconferencing platform. Technology is not regarded as the goal of the project but as an effective means for enabling learning. The focus is on two active components of the learning process: learners (students) and support providers (teachers and content developers). The innovative starting point of this project is a result of research that reveals the non-significant contribution of technologies to the learning process. The technologically rich environment is a given; the use of technology determines the learning outcomes.

A variety of collaborative activities will be planned in the experimentation phase of the project focusing on the interaction between students working in inter- and intra-school groups in various European countries. Students may use the Internet and a videoconferencing platform to fulfil concrete tasks. These activities will involve researching, role playing, making recommendations or questioning Parliamentarians as content experts. The manipulation of the Parliament content by students will repopulate the database and form the basis of "The Information on the European Parliament for Students" website.

The research paradigm therefore described will be tested in an applied educational setting using content from the European Parliament. The database will draw upon material available in the Parliament's archives. The Parliament will make available these public access materials at no cost. A selection of this material will initially be put on the database by a Curriculum Developer who will prepare it in an educationally appropriate manner suiting the needs and learning objectives of 15 to 17 years old. Users, in this case teachers, will be invited to attend workshops to familiarise themselves with the telematics learning environment, the objectives of the project and the implementation of the four fundamental tutoring models in schools. During the workshops, the teachers will interact with the Parliament database contents, giving their feedback on the choice of content and the appropriateness of the media involved in the

experiment. Teachers, then, are involved in the development of the well-structured multimedia database and are involved in the development and implementation of the research model.

Following the intensive research and experimentation phases of the project, mostly but not exclusively in the dissemination phase, links will be made between the project's activities and projects that apply the results of the research such as Comenius and Socrates. Special care will be taken on applying the results of the educational research model and the results of the experimentation phase to the classroom experience. Following the experimentation phase, in addition to educational publications, a training syllabus will be produced to disseminate the results to other European schools so as to generalise the results from the pilot experiment.

To exploit the results of the educational research and development and the results of the experimentation phase for decision makers, a hands-on workshop in the European Parliament will be organised where representatives from national ministries, European teachers and parent associations will be invited to experiment live with the media and to listen to case studies of the project. On a national level, workshops will be organised in tandem with national and local technological training and educational initiatives and fairs to widen the results to other schools. The inclusion of the main constituencies' national departments of education, parents, teachers and students will allow for the greater uptake of both the technology and pedagogical innovation in all of the European Unions' schools. The uptake will be maintained through the constant communication forum developed on the ParlEuNet website.

3. European added value

3.1 Added value

In the light of a unified and mobile Europe, the project wants to enhance understanding of the European institutes, and especially the Parliament, through the establishment of a telematics environment, which is shared for co-operation between participants of several European countries.

As such, this project can contribute to bringing European students closer together around subjects of mutual interest and to sensitising them at an early age and possibly from within their traditional school environment for the need of being multicultural in a unified Europe.

Telematics environments that are appropriate for this aim are already introduced and tried out on a national scale in a number of European countries. Several trials, funded by national authorities, are ongoing right now or planned for the early future. Most of them are based on a prescribed pedagogical framework, which may be different in different European countries, and make use of pre-selected technologies as available in these countries.

This project wants to extend the national approaches, by allowing a combination of pedagogical frameworks across European national borders. At the same time, it will make available a multitude of technological media, which can be used by students and teachers on a free basis, or driven by the arising needs instead of being prescribed. It will assess the introduction of new technologies for which cross-border interoperability and availability has not yet been proved.

3.2 Contribution to EU policy objectives for Education, Training and Employment

ParlEuNet project is in line with the following major European Community initiatives:

The European Commissions' Action Plan "Learning in the Information Society" October 1996 argues for the entry of schools into the multimedia era. Enhancing networks, developing educational multimedia content, establishing partnerships, exchanging information are the underlying principles of this plan. Promoting the European dimension in education and training no longer disregard the use of new information technologies. The ParlEuNet project seeks to develop a technologically rich educational learning environment in a selected number of pilot schools for eventual expansion to a growing number of European schools. In this learning environment, the European dimension will be promoted cutting across geographic barriers and stimulating a pan-European school network.

The educational and technological means employed in the project are also in accordance with the White Paper, especially concerning the development of new competencies in the information society. In the course of experimenting with different kinds of media, students in the project will acquire a new set of skills and evaluation strategies associated

with the tools necessary in coping in the information age, and the applicability of these powerful new tools in achieving learning outcomes.

As concerns the bold initiative of Mr. Bangemann and Madame Cresson in the Multimedia Task Force initiative and the scope of this project stimulates the enhancement of high quality learning by developing educationally relevant and useful materials on the European Parliament, a necessary resource for European youth, deployed in an experimental telematic environment though a network of schools building awareness for future exploitation in a significant number of European schools.

Socrates by promoting the growth of European citizenship by introducing the European dimension for all students. Exposure to Parliament content, dialogue with the Members of the European Parliament, and collaborative projects around the theme of the European Parliament enhances this dimension in schools, provides critical content for school based use.

4. User needs addressed

4.1 Target Users

The ParlEuNet project aims at investigating the implementation and effects of four pedagogical models for supporting problem-based, student-centred, collaborative learning in rich technological environments.

The learning environments that will be created and which have both a technological and a pedagogical component, will be used primarily by inter- or intra-school groups of regular students between 15 and 17 years old. In each of the twelve schools, 4 groups of students with 6 members will co-operatively engage in the challenging project. For the actual experimentation in the ParlEuNet project, at least 288 students will be actively operating in the learning environments. Schools from seven of the fifteen European countries have been chosen as pilot schools.

While students are the first users, it is evident given the multidimensional innovative nature of this project, that teachers also will be users. First, teachers will be trained in learning environments highly similar to the ones students will work in. This means that teachers will use the technology and engage collaboratively in a challenging project. Second, teachers will always be present while students are at work, either as an independent consultant or as a pro-active group member. With three teachers in each school, at least thirty teachers will be actively operating in the learning environment during the actual experimentation. The training materials developed for teachers will be used to familiarise parents. Parents associations involved will conduct training and information workshops in Germany, Italy, France and Spain. Through membership in the European Parents Association, results will be diffused throughout Europe on their website.

It is important to highlight that while students and teachers are the targeted users, the project itself will be beneficial not only to the pilot European schools involved in this project, but also to the European schools that hook on during and after the execution of this project and to the educational and technological research community as a whole. Members of European Parliament will be familiarised with the telematic experiment through videoconferencing dialogues with students.

4.2 User needs addressed

This project addresses three types of user needs:

♦ content

♦ pedagogical

♦ technical

4.2.1 User needs on content

By means of the content, the project addresses the concern to spread and deepen the knowledge of the European Parliament within secondary school students in Europe. Frequent international contacts by means of the telematics environment (videoconferences, Internet, E-mail and others) between the participating schools and between the schools and the European Parliament will add to the mutual understanding and pan-European co-operation that is needed in tomorrow's Europe. It has been remarked upon in the preparation for the ParlEuNet project, involving video-

conferencing dialogues with Members of Parliament, that there exists a need for educational content on the Parliament. Links with the Brussels, Luxembourg and Member country information services have been established and their educational information is to be embellished as a project outcome.

4.2.2 Pedagogical user needs

From the pedagogical point of view, the project addresses the need to investigate what is the optimum level of guidance that a specific type of student needs when engaging in problem-based, collaborating learning in a rich technological environment. The results of this research will encourage teachers to develop guidelines in this respect and provide inspiration to the development of advanced interactive coaching systems.

Indeed, today an instructor develops a certain type of guidance for a certain course, although it is known that not all students need the same level of guidance to reach the course objectives (e.g. the outcomes of aptitude-treatment-interaction research: Snow, 1986). Some students need less guidance from the teacher. In such cases, the predefined guidance level can be seen as an economical waste of money. On the other hand, less gifted students may need more guidance to develop their full potential. It is clear that technology can take over part of the guidance, which was traditionally given by a teacher. Research needs to be done to find out which guidance is optimal for which student and how to set this in a context of mixed ability teaching requirements. This research is needed especially when in the educational approach one deviates from more traditional approaches in which teaching rather than learning was put at the core. Especially needed are guidelines that take into account problem-based learning, collaborative learning and technology.

Another argument is that learning is not a purely individual activity, but a **co-operative problem solving process** (e.g. Pressley, & McCormick, 1995; Resnick, 1996). Co-operative means that the knowledge and skills that are needed to solve a problem, are distributed among yourself, others and some technological tools (e.g. Zhang & Norman, 1994). Part of the guidance can therefore be taken over by the students themselves and by the used technology itself. Research needs to be done to find out to what extent this is possible.

This project will also provide increased access capabilities for students to co-operate with students at other locations and even in other countries. Technology, and more specifically, the communication tools help to overcome problems of both **time** (technology will permit asynchronous communication between students) and **distance** (by means of videoconferencing and electronic mail) (e.g. Lowyck, Elen, Proost, & Buena, 1995).

4.2.3 Technical user needs

One obvious user need for group-based, collaborative learning between several schools in different countries is the on-site availability and direct accessibility of a task-related telecommunications infrastructure that allows either synchronous (e.g. phone, videoconferencing) or asynchronous (e.g. fax, email) interaction across school or country boundaries.

Another user need that is addressed in this project is the need for a user-friendly multimedia database application, where users that work in a rich telematics environment can easily retrieve information, and where authors can structure the data inside the database using a clear and easy-to-use application.

In addition, one of the needs is to investigate how the structured multimedia database itself could be used to collect and disseminate questions and discussions of students among each other and among the teachers. This could be done by entering data directly into a knowledgebase or by using a system of annotation in the database.

The performance of the database access is often named to be an important user acceptance parameter. The assessment of this can be done through making broadband Internet access available to (a number of) participating schools.

4.3 User Requirements

The target users are expected to be challenged within the project to develop the necessary maturity for independently guiding their own learning process, within the boundaries of the proposed educational framework. They are equally expected to develop via technological and pedagogical stimuli interest in the subject to be studied in the telematics environment. Some experience with group work will be expected. In any case, the validity of these assumptions about the nature of the challenge will be verified. Outcomes of this verification will be considered when interpreting the research outcomes.

A multitude of technological media will be made available. This will include media for which the user group expresses interest, as well as media which they initially did not think of and which are definitely not present in their daily

education environment. Moreover, specific tasks for the groups of students will require some kind of technology. One goal of the project relates to evaluating the technology selections made by the students.

It is assumed that target users will have some basic computer literacy. For teachers, specific workshops will be organised if this is not the case. Teachers, where necessary, will also be inducted into the range of pedagogical approaches required within the project: e.g. mentoring, tutoring and collegial working. For students, the training syllabus will also contain indications on how to use the different technological tools. If students are completely computer illiterate, specific initiatives will be taken. A recurrent concern in this project is to address users' needs. Hence, if problems arise in this respect, an attractive training programme will be implemented.

5. Exploitation of results and/or market orientation

5.1 Organisations' Dissemination Power

The dissemination capabilities of the proposed consortium include:

♦ The ParlEuNet consortium will explain how the ParlEuNet project, entailing an innovative telematic and pedagogic model may be commercialised and exploited in an educational environment. Exploitation will have implications on the commercialisation of content, the application of state of the art technologies in a wide number of European schools including financing models for schools and the dissemination of the results of educational research for policy makers.

♦ The Pegasus Foundation is able to disseminate in the European Parliament as they are physically housed in the Parliament, have MEPs as board members who are also members of the Culture Committee active in promoting European culture and citizenship. Members involved in ParlEuNet will serve as ambassadors to the project.

♦ The " Students' Information on the European Website" will be hyperlinked to the Pegasus website on the ISPO server; there will be hyperlinks to the Europe server as well as Commission sites

♦ The Pegasus Foundation will exploit its existing network of 350 European schools with a total of 160.000 students in 15 European countries, networked to participate in the Commission supported project: "Schools adopt Monuments". A website is now running.

♦ The Pegasus Foundation will also exploit the "Schulen ans Net" network, a network of 10,000 interconnected schools in Germany. A major partner of this project co-operates with the Pegasus Foundation Community supported project " Students in Museum Internet Learning Environments" a network of European schools involved in a museum pilot. A website will be functioning in June on this project.

♦ The Universities of Leuven, Maastricht, Barcelona, and Norwich are all developers and trainers in training programs. Project results will be integrated into the programs these universities provide for national training. The Academy of Dijon and the IUFM teacher-training institute will also integrate training modules into their courses.

♦ To promote grass-roots, school based initiatives in the pilot schools involved in this project will function as demonstrators or models of good practice for other schools. Teachers and administrators will be encouraged to "adopt" a school in their area or in another part of Europe as to widen the circle of participating schools and transfer results to others.

♦ To promote and sustain public-private partnerships, schools will be encouraged to offer the expertise learned as pilot schools to companies that are particularly interested in schools that have tailored technology for the future. hardware and software providers are especially interested in these "schools of the future."

♦ The Universities involved will utilise networks and collaborative research projects. Barcelona is involved in the Telematics Forum for higher education, Leuven is a Member of the Open Universities Network study as well as the DUNE project on distance education in Europe and the ERT European Round Table of Industrialist study group.

♦ JRC/ISIS (institute for systems, Informatics and Safety) is a major operator of Internet Multimedia Applications. The development of relevant netsites of educational value will be hyperlinked to ParlEuNet.

♦ Telia Sweden and its partners in the Unisource consortium as well as Telecom Eireann operate national educational projects such as " Telia Internet@ School" and the Classroom of the Future project. Thousands of schools involved in these networks may benefit from the ParlEuNet results following the experimental phase.

♦ One of the project partners (Arboth Learning Technologies) is member of the Board of ECLO, the European Consortium for the Learning Organisation, a pan-European organisation of corporations and research institutes. They organise yearly conferences, workshops, have a newsletter and a web site. The ECLO has liaison with ELLI, the European Lifelong Learning Initiative.

♦ The Parents Association of Baden-Wurttemberg with its partner parents' Associations in Italy, Germany, Barcelona and France will disseminate project results in these countries and through the European parents Association. The ParlEuNet website will be linked to the developing European Parents' Association website.

♦ ParlEuNet has invited all Multimedia Task Force projects involving school networks to hook up to the developing website. ParlEuNet is a totally open system; all school networks are invited to join; LinguaNet and the European School Net are encouraged to create hyperlinks.

♦ All research related project partners are active members of the European Association for Learning and Instruction, the largest European professional network of educational psychology and educational researchers on technology.

In addition to the consortium dissemination power for the own project results, the ParlEuNet project also intends to pilot the MIMICS system in a secondary school environment and as such will provide substantial post-project dissemination for the MIMICS project.

5.2 Planned Dissemination Methods

Planned dissemination methods include:

♦ videoconferences

♦ conferences (scientific conferences by university persons)

♦ workshops (national, user training, parents organisations and Parliament promotion amongst MEPs)

♦ WEB-pages (hyperlinks to educationally relevant sites)

♦ newsletters (school publications, university, organisational, Commission and Parliament)

♦ university educational publications

♦ technical journals

♦ school newspapers

♦ media coverage to increase general awareness (e.g. videotapes, CD-ROM, journals, television, radio)

5.3 Transfer of Experience

At least three main benefits are expected:

♦ The introduction of the Information Society in secondary schools for various educational applications. The accomplishment of this task will be, both, a test bed and a testimonial of the worth of this approach to a choice of training approaches and students. This initiative reinforces educational reforms toward a trans-disciplinary curriculum. This will support wider investments for allowing schools to use the richness of the Information Society and promote the use of enabling technologies and services.

♦ The instigation of students to look for knowledge on the Information Infrastructure and transfer this skill to their family environment. At that moment children will act as entry points for networking technology in households, they will also bring to their family the access to culture, economic opportunities, leisure, etc. This process will start the food chain of new services, giving strength and competitivity to the user, the content provider and the service provider (included equipment). The chain stimulates growth and employment as new products and new services are tested and developed. Expanding fields of economic development including the telecommunications industry at large will benefit from the acceptance and use of new technologies. As the content and the service infrastructure are located in Europe this project will mainly promote the growth of European organisations.

♦ Stimulating the development of new competencies stemming from the introduction of new technological tools and quality content. Linking selected content with their school curriculum will demonstrate a useful and necessary

application while simultaneously instructing how to navigate through a large information base. This knowledge will better prepare students for new kinds of work tasks and working situations (teleworking, teleconferencing, etc.) of the year 2,000. A key issue relates to developing learners as authors of knowledge, not mere users. Mastering and manipulating information, will be an important factor to maintain sustainable growth and employment in Europe, global competitiveness and human satisfaction.

5.4 Potential Obstacles

Potential obstacles on the telecommunications environment side are:

♦ user unawareness of possibilities offered

♦ high equipment acquisition cost: with falling equipment cost, the equipment will become available at an affordable price, within a reasonable time period. As the aim of this project is to go to a wide provisioning on short term, we use existing technologies that can evolve with increasing performance of the existing networks and the Internet.

♦ high equipment usage cost: is also expected to fall on short term.

Potential obstacles on the part of the teachers are:

♦ lack of adequate teacher training: this project will offer substantial training and support.

♦ reluctance to change current educational practices

♦ illiteracy in technology

♦ technophobia: this project will remedy this by focusing on the learning process itself instead of technology.

5.5 Exploitation

5.5.1 Supplier Side

The outcome of this project is designed to give suppliers and developers of telematics equipment, applications and tools, real user feedback to be incorporated into the design and implementation of their future products and the delivery of services. The close interaction between suppliers and users in this project will lead to improved understanding of customer needs.

Arboth Learning Technologies is commercially active in the area of learning technology and envisages to play an important role in the further commercialisation of results of this project. Arboth is a commercial organisation, commercialising the results of the EduCase project and by consequence integrating in that commercial product all experiences from the EduCase application and implementation. In this way, results of the ParlEuNet project can "crystallise" in Arboth's commercial products. One example can be the tool which will be developed in the ParlEuNet project for allowing the students to incorporate their own home pages into the database.

The involved telecom industries plan to incorporate the research results of this project in the education and training for both customers and Alcatel personnel. The changing market environment with shorter time-to-market periods and strict competition, forces organisations to review their approach towards training and education. Distance learning in a telematics environment, self-learning and just-in-time learning are the keywords for training in the future. The pedagogical models and research in this project are therefore of great importance to guide this transition from the traditional learning environment of today towards this new training approach.

The pedagocical models developed in this project can all be considered as possible learning models in a real learning environment. The research results will help to decide:

♦ How and how much the content must be structured, in order to reach an economic feasible balance between minimal preparation from the side of the content provider and maximal efficiency at the students side.

♦ what degree of guidance is needed for the students: is coaching of the students needed, and if so, what is the minimum necessary coaching to allow efficient transfer of knowledge.

In connection to that, the development of the database and its corresponding support tools will be of great help to facilitate the insertion and preparation of content, like structuring of the content, user friendly development of student profiles, and so on. The requirements of the database in the ParlEuNet project are made so, that the database platform can be used in the future training environment of the involved Telecom industries.

The outcome of the ParlEuNet project will allow also to decide to what extent the use of videoconference is desirable/indispensable in a telematics self-learning environment.

Feedback on costs for such a telematics infrastructure and for communication, as perceived reasonable by the direct users (universities, secondary schools) may lead to better pricing strategies, which can stimulate the sale of telematics equipment and applications in large quantities. Economic models that can enhance the purchase or loan of equipment based on the costs and benefits of the ParlEuNet project will be investigated. A long-term solution for equipping schools that involves an end to end solution (software, hardware and communication costs involving co-operation between the relative industries) is in the process of being implemented in various ECU countries.

As the interactive structured database will be viewable on the Internet, and as electronic money, banking and payments are starting to become commonplace, micro-payments for accessing web services will start to appear. A micro-payment of a few pence for access to thousands of pages becomes significant to the web provider.

In this environment, a potential future exploitation of the ParlEuNet system may be envisaged following considerations of copyrights and IPR management. Public access may be given to course material, however, micro-payments may be asked of researchers. The payments would allow for the maintenance of the system and return on the cost of developing relevant materials. Another potential commercial use would be marketing the system itself, once trailed and tested, for use in other educational areas.

5.5.2 User Side

The equipping of schools involved in the pilot phase and the dissemination of positive learning outcomes is designed to stimulate the uptake of new technologies in other schools. National governments, teachers, parent associations and students will be convinced of the educational importance of such tools and will therefore seek to acquire them for their own use. As the prices of the equipment become increasingly competitive, the availability of telematics equipment will be more readily available to a wider public.

The content on the European Parliament developed on the multimedia database and Internet site may give rise to a variety of products to be commercialised, including interactive CDs, videos, paper publications including study guides and manuals. Commercialisation of possible educational content products will be investigated during the project.

The ParlEuNet project can demonstrate a case of proof to the challenges imposed by:

♦ customers having higher demands than what is currently offered by didactic methodologies used for designing and developing learning applications

♦ customers in industry looking for viable concepts for supporting learning processes with technology focus shifting from individual learning to collaborative and group/organisational learning

The project will help to establish a network between schools and the departments of educational psychology of the universities. This network will be useful to transfer and exchange knowledge and experiences about problem-based, self-regulated learning and the use of information and communication technology. The topics are highly relevant to the current school-restructuring initiatives (e.g. the "Studiehuis" concept in the Netherlands). It will also offer the universities the possibility to perform follow-up projects with a high practical relevance in co-operation with the school network. The universities responsible for the educational design are all represented in the EARLI Special Interest Group "Instructional Design", which is co-ordinated by one of the project partners.

One of the pilot schools (Jeanne d'Arc College, Maastricht) is already involved in project based education on the European Parliament in a regional initiative including other schools. This school has an international division (English education for foreign students in Maastricht) and therefore aims at an international build-out of this initiative.

In addition, to answer the ever increasing demand for easy-to-use tools that allow customers to design and/or maintain learning applications, the project may demonstrate a set of real life-tested tools to be implemented in other projects in the future.

From previous trials, it has become apparent that:

♦ users want the technology

♦ want to use it

♦ want it to be tailored to their specific needs

♦ want to know more about the European Parliament

6. State of the art and innovation

6.1 Pedagogical Innovation

In the past, research on educational technology, both in Europe and elsewhere, has been characterised by, amongst others:

♦ a focus on isolated media, the medium replacing all other aspects of the learning environment

♦ limited attention for users of media, be they teachers or learners

♦ multiple comparisons of different media in order to detect the best medium or media-attributes

♦ a highly elaborated, rigid and linear design and development process

♦ design guidelines heavily leaning upon behavioristic and/or information-processing insights in learning and instruction

♦ an emphasis on learners working individually with media

♦ an instructional approach that is teacher-centred and oriented towards closed problems.

These different characteristics of past research and development, project in the field of educational technology and are not mutually independent. They rather form a configuration of interrelated characteristics.

As already pointed out, in the ParlEuNet project, the use of technology rather than the technology itself is focused upon. Therefore, and in contrast to the above mentioned characteristics of traditional educational technology research, the ParlEuNet project has the following innovative characteristics:

♦ In the ParlEuNet project, one learning environment is created in four versions. Each version represents a different pedagogical support model, but all four versions are identical with respect to the availability of a variety of technological information and communication tools, the content of the project, and the orientation towards problem-based, student-centred and collaborative learning. The project does not focus on isolated media, but on a learning environment in which an integrated use is made of a variety of media,

♦ The use made by learners and teachers of the learning environment and the effects of that use are at the core of the ParlEuNet project. In other words, the users, not the media, are focused upon,

♦ In the project a comparison of the effects of different media will not be made. The use of different technological tools will be monitored and investigated. In its experimentation and evaluation, the project accepts as given the availability of a rich technological environment consisting of both information and communication tools. The tools are not regarded to have a direct effect on learning. Rather, it is assumed that their effect is mediated by their use by teachers and students

♦ In order to avoid the pitfalls of a highly elaborated, rigid and linear design and development process, the design and development process in the ParlEuNet project is to be characterised as iterative and continuously considering users' needs. Rather than a top-down approach, a bottom-up, rapid prototyping approach will be adopted.

♦ Design and development work will be inspired primarily by moderate constructivist approaches to instruction, recent insights on situated cognition. Research on collaborative and co-operative learning will be considered as well. Consequently, the instructional design model to be constructed will be in line with recent insights.

♦ In contrast to more traditional approaches, where learners were requested to work individually with computers or specific media, the ParlEuNet project will foster collaborative learning. In addition to an analysis at the individual level, groups and the interactions in these groups will also be investigated.

♦ The instructional approach in the ParlEuNet project differs from the traditional one. Different pedagogical models will be investigated, differing from one another with respect to the level of explicit and implicit guidance. All interventions in the environment are oriented towards supporting student activities. The teacher is not at the core of the approach but at the sideline. Moreover, the challenging project for the teams will constitute an open problem

that can be tackled from a variety of perspectives. In contrast to closed well-structured problems, there will be no single right answer. The challenge will be an authentic and highly motivating problem for the learners.

♦ Highly innovative, and in sharp contrast to a lot of current research, is the integration of the design activities into the project (see the difficulties related to the interpretation of a lot of aptitude-treatment-interaction studies). This enables to give a clear description of characteristics of the learning environment in addition to a description of characteristics of the participating students.

To summarise, this project is educational innovative because it accepts technology as a given, puts the learner at the centre of instructional processes, focuses on the adequate use of a variety of technological tools, and more particularly investigates through means of a real instructional design experiment the effects of four different pedagogical models. Results will help to develop guidelines on the optimal use of technology in view of fostering problem-based, student-centred and collaborative learning.

6.2 Technological Innovation

6.2.1 Structured Multimedia Database

Interactive networked multimedia is considered at present a key for the future of education strategy. The aim is to integrate computers, networking and digital media to create an interoperable environment so that educational users will play an active role in searching, handling and learning through multimedia information.

There is a great potential for the launching of a structured multimedia database in the telematics environment. Currently a set of maturing technologies is emerging which will provide a solid foundation for system implementation.

The project emphasises the structuring and use of an appropriate multimedia database which supports the learning process. As such, it introduces and integrates a technologically sound structured database in the traditional education methodology.

The related EduCase (see 1.2.2) project currently uses an Object-Oriented approach to model the knowledge domain related to the educational application under consideration, where the different subjects treated in the knowledge domain are modelled as classes and subclasses. For ease of distribution and for performance reasons this OO-based model is translated into a relational model and stored in a relational database scheme. In the ParlEuNet project further research shall be done to explore the possibilities of storing the OO-model directly into an OODB or into an ORDB (Object-relational Databases). The latter seem promising in combining the conceptual advantages of the OO – approach and the availability and performance of relational databases.

At this moment EduCase allows by means of the EduCase browser to navigate through the knowledge domain in two ways

- Textual : for each subject, a list of related subjects can be retrieved and from this list the next subject to be explored can be chosen
- Graphical : the network of all related subjects is shown in a two-dimensional graphical way whereby clicking on a subject opens a graphical 'web' of related subjects where the user can both explore the related subject as its relations

The proposed structured multimedia database will extend the results of the currently ongoing EduCase project with:

♦ an approach for **multi-domain** learning applications: the system will allow the global application to be developed as a set of different learning domains and will allow the user to switch from one learning domain to another.

♦ learning process wizards needed for the learning processes in the aimed application.

♦ additional "automated" guidance of the students by increasingly making use of the implicit student profiles, i.e. learning style profiles of each student will be built to allow "automatic" personalised tutoring, the preferences of the students will be continuously tracked.

♦ advanced tools for observing the students learning activities, in order to provide sufficient statistics for the analysis of the results.

♦ extended presentation flexibility which better aligns with the student preferences while still suited for conveying the content.

Until recently, design and generation of applications often happened in a stand-alone environment. However, webpages allow for user interactions that are steered by standard HTML or by embedded scripts (VBScript, JAVA,...) in a networked, client-server environment. Arboth Learning Technologies will be providing methodology and tools to

structure and design the learning applications and in doing so will be providing tools on the client-side (both for consultants and students). JRC will be providing their experience on the server-side by porting the applications generated by the EduCase-application (being a set of web pages) to a powerful server platform.

For complex knowledge domains this 2D representation could become very complex to interpret. Therefore research will be done to present this information in a 3D-environment whereby e.g. the most importantly related subjects are represented in the foreplane and other related subjects are presented in backplanes. The possibility to implement this 3D environment in VRML will be explored. Given the implication on hardware to make optimal use of this 3D environment only prototypes will be developed to demonstrate the possibilities of using this technology for learning purposes

Users will have the possibility to make comments/questions and relate those as annotations to the database for easy retrieval by their colleagues and the Curriculum Developer. For student tracking purposes a complete history will be built not only of the learning goals achieved by each student or group of students but also on the parts of the database each student uses to achieve those goals. Therefore at any time the system knows what learning goals and/or parts of the database are used by the student. This information will be used to allow the students to input their comments/remarks about the goals or the database-objects. The system will then automatically link those remarks to the relevant parts of the database. In first instance this information will be used by the Curriculum Developer for fine-tuning the application. It can also be considered to make this information available to the other students to increase the team- and organisational learning level. What is Unique about this Approach ?

♦ Originally, World Wide Web servers provided WWW pages written in HTML. An access to a URL made the server respond with a predefined Web page. This is the way we normally know the WWW, and it can be called **static HTML**. With HTML forms and cgi-scripts it becomes possible to allow the user to supply information to the server. The server responds with a Web-page wherein the content depends of the users parameters passed from the form. In many cases, the complete content is created by the script itself without much predefined HTML. This can be called **dynamic HTML**.

♦ Most existing Web-sites do not allow the user to change the contents of a local database through forms or other parameter-passing methods, and even fewer can update the database in real-time. The approach proposed for this particular Information Exchange is more advanced. Through elaborated database techniques and scripting, the proposed design offers a robust, reliable system. Users may query the database and get the content back embedded in HTML pages. Further, they may submit their own information, documents, multimedia presentation and so forth. The published content is taken care of on the server side, entered into the database, as becomes *immediately available as an integrated part of the service and will immediately be searchable.* Such a system will be based on advanced database technology, advanced scripting and efficient programming and use of the possibilities offered by HTML. Where standard HTML not suffice, in-house inventions such as HTML templates or other extensions will be employed on the server side to facilitate advanced service options. (All output from the system will, however, comply to standards and no specific optimisation or plug-ins will be needed on the user-side).

More information on the user interface for retrieving and navigating this information can be found in 7.2.1.2 below.

It is intended to develop state of the art techniques to handle Web integration of the objects within the multimedia database. The new features that will be researched and developed include:

♦ Virtual Reality Mark-up Language (VRML2) allows students to interact with active worlds. VRML2 brings life to 3-D defined worlds. The tight integration with a multimedia database will allow to define 3-D objects and their interactions. Elements within these worlds can be "hyperlinked" to other multimedia objects and to other 3-D worlds. The design of the database will allow such links to be dynamically defined by the students and teachers. The research will investigate how "dynamic" VRML2 can be exploited in an educational environment

♦ Object design of the database as outlined in the project will place particular attention on the dynamic Web interface. All HTML generated screens will be encapsulated with the objects themselves. Thus a present method will be part of each object

♦ Courses can be dynamically built from underlying media classes. Users will be able to customise their view of course material and thereby construct project work. This feature is an important requirement of the pedagogical research needs of the project.

♦ Research into state handling within HTTP will be carried out. The objective will be to introduce a user profile and tracking system into the Web interface. This is needed for logging purposes and extends the Web model, since HTTP is a stateless protocol.

♦ Research and Development work into multi-cast Internet protocols and video stream protocols will be performed. The objective here is to bring real time video and teleconferencing to the desktops of students via the Internet. This will allow schools without dedicated video conferencing equipment to participate, at a lower bandwidth quality.

Given the international context of this project, linguistic information such as names of objects, communication with the users etc. will be stored separately. In the current EduCase project this is also already the case. Within the EduCase repository all communication with the user is stored in separate language-dependent tables. For each user of the database the language of choice is chosen at login time.

7. Technical approach

7.1 Technical Infrastructure

The pedagogical models that will be studied in the ParlEuNet project will be developed in tandem with the telematics environment that will initially be installed in and across the first twelve participating secondary schools, that are located in different European countries. The telematics environment will allow interactive communication and information exchange between (inter-and intra-school groups of) school students to take place in a synchronous (phone & videoconferencing with whiteboarding/application sharing) as well as asynchronous way (fax, email, Internet access).

The infrastructure that will support the telematics environment is shown in Figure 1.
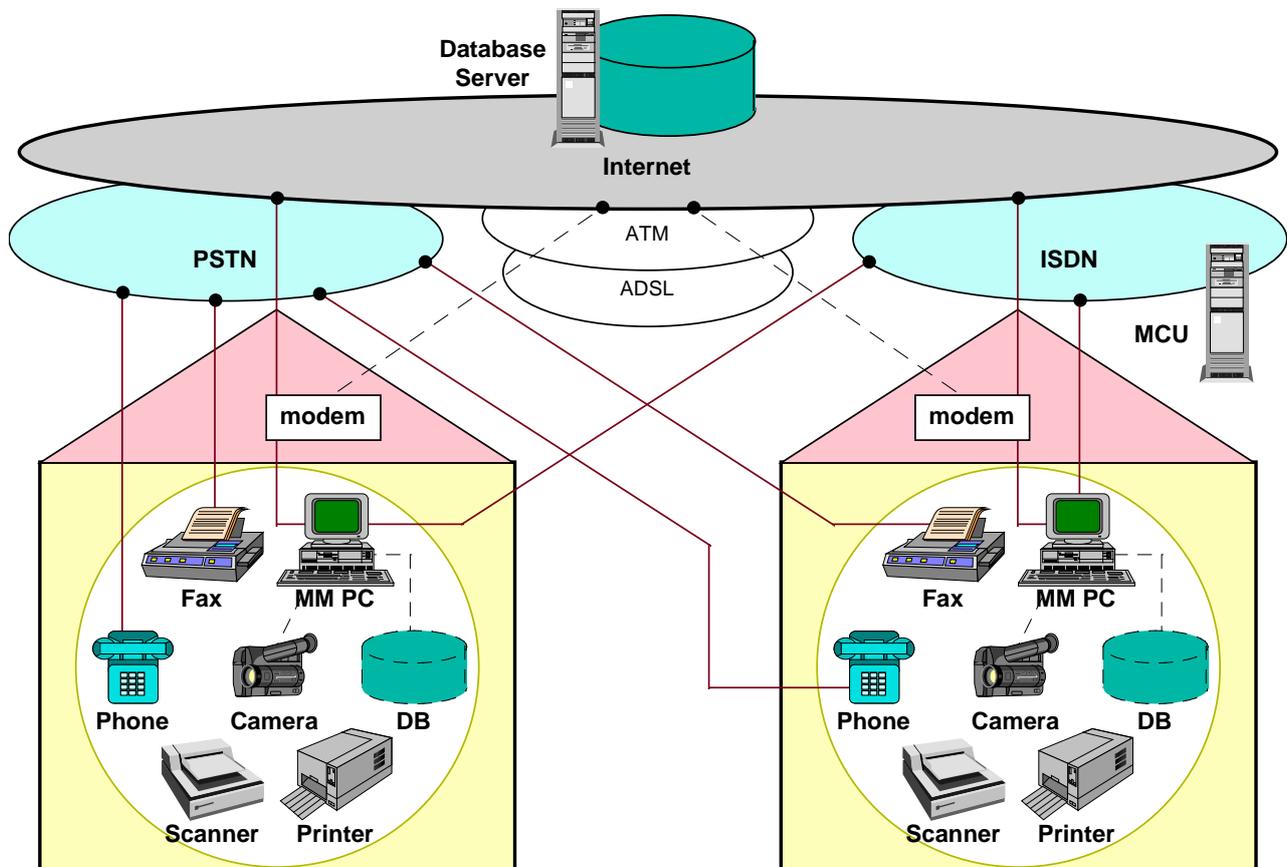
Figure 1: Technical Infrastructure

In each school, an on-site, project-dedicated room where the student-centred telematics environment will be installed, will be reserved. This room will be shared at scheduled times between different groups of students involved in the ParlEuNet project. Groups of co-operating students will be limited in size (max. 6) so as to keep the necessary infrastructure within reasonable bounds. Teachers will also operate from this room with the same equipment.

Experimentation will initially be based on low cost technology that is easily extendible within a limited timeframe to a larger number than the initial twelve schools. Ordinary telephone and fax equipment with unrestricted international PSTN connectivity to (at least) each of the participating schools in the different countries will be made available in the project-dedicated room. PC-hosted N-ISDN -based videoconferencing facilities will be provided as well. To this end, the PC in the project-dedicated room will be connected to the N-ISDN network, through a locally available N-ISDN network termination. Videoconferencing will be possible both on a peer-to-peer basis between two sites and on a partial two-way basis for multiple sites. Simultaneous videoconferencing between different sites will be supported

through the use of a project-dedicated videoconferencing bridge (MCU). This technology will be used in an innovative pedagogical way.

Narrowband Internet access will be provided from the PC in the project-dedicated room through either the PSTN or the N-ISDN, by means of a suitable modem that connects the PC to a local Internet Service Provider (ISP). In addition to the freely available information on the Internet, a specific ParlEuNet database will be hosted on a project-dedicated database server, that will be accessible from the different schools through the Internet.

Except for the videoconferencing, the communication equipment will have no direct interface with the computer equipment. As a consequence, telephone, fax and videoconferencing will not be integrated in the database infrastructure.

Administrative support (such as for room scheduling and for materials and equipment reservation) and document handling facilities (such as a scanner and a printer) will also be provided. They will be hosted in the project-dedicated room or in a separate (supervised) room in the vicinity, when free access to the project-dedicated room is not allowed.

7.1.1 Hardware equipment

In some of the schools, already existing equipment will be used for the project. In certain schools, additional equipment will be purchased to fulfil the objectives of the project or to upgrade the existing equipment.

For the video conferencing component, the ParlEuNet project intends to build on the state-of-the-art results of the ongoing MIMICS (ESPRIT) project on Multiparty Interactive Multimedia Conferencing Services. This will allow the interactive communication capabilities to become fully integrated in the telematics environment, rather than being stand-alone applications. As the final outcome of the MIMICS project will be an innovative HW and SW platform for the management and usage of multipoint communication, allowing for an automatic scheduling of multimedia conferences, it is expected to be directly applicable for the telematics environment in the schools. To this end, the telematics environment in the schools will be built out so as to align with the requirements for the MIMICS system.

For the infrastructure for the database, the ParlEuNet project intends to make use of state-of-art technology that allows experimentation with a 3D environment as described in 6.2.1. For this purpose, the PC equipment in the schools will be upgraded, or provided where needed, in accordance with the necessary requirements.

7.1.1.1 The Student Environment

The student environment in each school will be accommodated with one workposition and additional communication tools that are used by all students in a group. This workposition will be shared between the students of separate groups.

♦ The equipment for this workposition will incorporate a multimedia PC, preferably Pentium 266 MHz based to allow for a 3D graphical user interface, and will accommodate multipoint videoconferencing capabilities in accordance with the MIMICS system. In addition, it will comprise of: datacom capabilities, to access different information sources from both the structured multimedia database and the Internet.

♦ a sound blaster system with headphones, to consult audio and videofiles, e.g. from CD-ROM.

Additional communications tools available are:

♦ a telephone set, which allows the students to contact people outside the learning office.

♦ a fax machine

Students will closely co-operate, using these means.

At carefully scheduled times, an observation camera will be placed in the student environment, in order to observe and register the students' behaviour during the learning process.

7.1.1.2 The Administrative Support Environment

The administrative support environment will be accessible at all times.

It will be accommodated with all supporting equipment that may be needed during the project. It will allow for making arrangements with foreign sites.

General purpose equipment, such as a printer and a (colour) scanner can be used by the students within the scope of the learning process.

It may be necessary to have the support of a secretary during office hours.

7.1.1.3 Shared equipment

A videoconferencing Multipoint Control Unit (MCU), required for the (automatically) scheduled multipoint videoconferences will be centrally available. This equipment will be made available by Telecom Eirann and Telia or through liaising with the MIMICS project partners. Care will be taken in ensuring that the user terminals and the provided MCU will allow the MIMICS system to be run. If possible, this will be done through upgrading the MCU facilities that can be offered by Alcatel in accordance with the MIMICS requirements. Otherwise, this will be done through making use of the MIMICS HW platform. Appropriate server(s) that host the database and knowledgebase will be installed and managed under the supervision of one of the partners. Due to the high number of users and the significant overhead in pushing the data over the Internet, it is expected that massive processing power will be required, indicating that high-end UNIX workstation(s) (or similar) will be needed.

Adequate security mechanisms will be provided to prevent malicious use or access to the server(s).

7.1.2 General Software applications

7.1.2.1 Student Environment

The equipment in the student environment will provide a number of software applications for use within the scope of the learning process. These software applications include:

♦ an appropriate operating system for PC that supports the MIMICS SW platform and the 3D database SW

♦ standard office environment:
  - word-processing software
  - spreadsheet
  - drawing software
  - image handling software
  - network (client) software

♦ groupware:
  - E-mail
  - file transfer
  - scheduler
  - notes

♦ data processing software:
  - database engine, including EduCase tools
  - data conferencing
  - interactive application sharing appliances (Whiteboard): a common electronic piece of paper on which two (or more) participants can share ideas, e.g. typing, drawing, colouring, measuring, etc. It is a special implementation of application sharing.
  - application sharing software

♦ Netscape browser for database and Internet access

♦ Video-conferencing software, both point-to-point and point-to-multipoint. Where appropriate, this SW will include the MIMICS SW platform that is required to run the MIMICS APIs and Application Services.

7.1.2.2 The Administrative Support Environment

The dedicated equipment in the Administrative Support environment includes:

♦ software to control the scanner

♦ software to control the fax, in case this has a direct interface to the computer equipment

7.1.2.3 Software for shared equipment

For the Multipoint Control Unit:

♦ the MIMICS SW platform for the management of multipoint communication (automatic scheduling). If possible, this will be done through upgrading the MCU available at one of the technical partners.

♦ software required to support multipoint videoconferences with concurrent display of all participating sites

For the servers:

♦ additional network server software

♦ additional software for security

7.2 ParlEuNet Database

Remark: additional information about the multimedia database can be found in 6.2.1 and 7.3.2.

An important element of the proposed system will be the WWW services. The Web server will be accessed by both teachers and students via the Internet. It will be closely linked to a Web server which provides the Internet access via networked PCs located at the various schools. The presentation of information will be via generated HTML pages. Users will be able to query the database using HTML forms and via Java and Javascript applications.

The database will contain basic multimedia objects (e.g. HTML files, text files, sound files and videofiles) on European Parliament content. The database will also store the structured information that links these objects together into course material.

It will be possible to construct this structured information interactively. The bulk of the course material will be entered and structured by the Parliament Content Provider in consultation and co-operation with a Curriculum Developer who will also be a registered user of the system, but will have special access rights unavailable to students and teachers.

A novel feature of the system will be the ability to LOGON to the Web server. The database will identify the user (either teacher or student). The user's profile and preferences will be stored in the database. Different levels of access to the database will be offered according to the class of user. In particular:

♦ Curriculum Developers will be able to upload new course material and multimedia material. They will be able to modify the content on-line.

♦ Teachers will be able to access the work of their students

♦ Pedagogical researchers will be able to monitor the activities of all users within the experiment.

♦ Students will be able to search and structure the course material according to their tasks and personal choice.

All items of data stored in the database are "owned" by one of the users. The Web interface will identify each user request and allow update access only to those items that are owned by them or to which they have write access.

Not only will the students be able to access the Web Server, they will also have the opportunity to add their own information and web pages to a restricted part of the database. The primary aim being the stimulation of group learning and learning exploitation between groups. Therefore these pages will be stored in the database and be accessible by any other user of the system. The Web-pages will be written in HTML and have the possibility to include one or more images. A simple tutorial on authoring HTML documents will be included. Similarly, a class project or a joint-school project can create an HTML presentation within the database. This could also contain multimedia elements. Since the major learning goal for the students is the understanding of the European Parliament, a very simple tool will be offered to the students to maintain their home pages. One possibility could be to use the 'Learning Tree Manager'-component of the EduCase Toolkit (see description of EduCase) for this purpose. This would allow the students to construct web pages without any HTML-knowledge. This solution will imply the adaptation of the existing Learning Tree Manager to a leaner and easier-to-use version.

Within the database it will be possible to exchange messages between different users. The messages will be associated with a given home page. This is a type of internal email. Each registered user of the system will be able to leave messages for others. Next time the recipient logs on he will be informed that a new message is waiting. Similarly it will be possible to have a discussion page for a group of students. In this way inter and intra-school groups can work on co-operative projects together via the Internet. JRC has experience in providing such tools and will be developing this function into the database.

7.2.1 Implementation

7.2.1.1 Proposed Structure for the ParlEuNet Database System
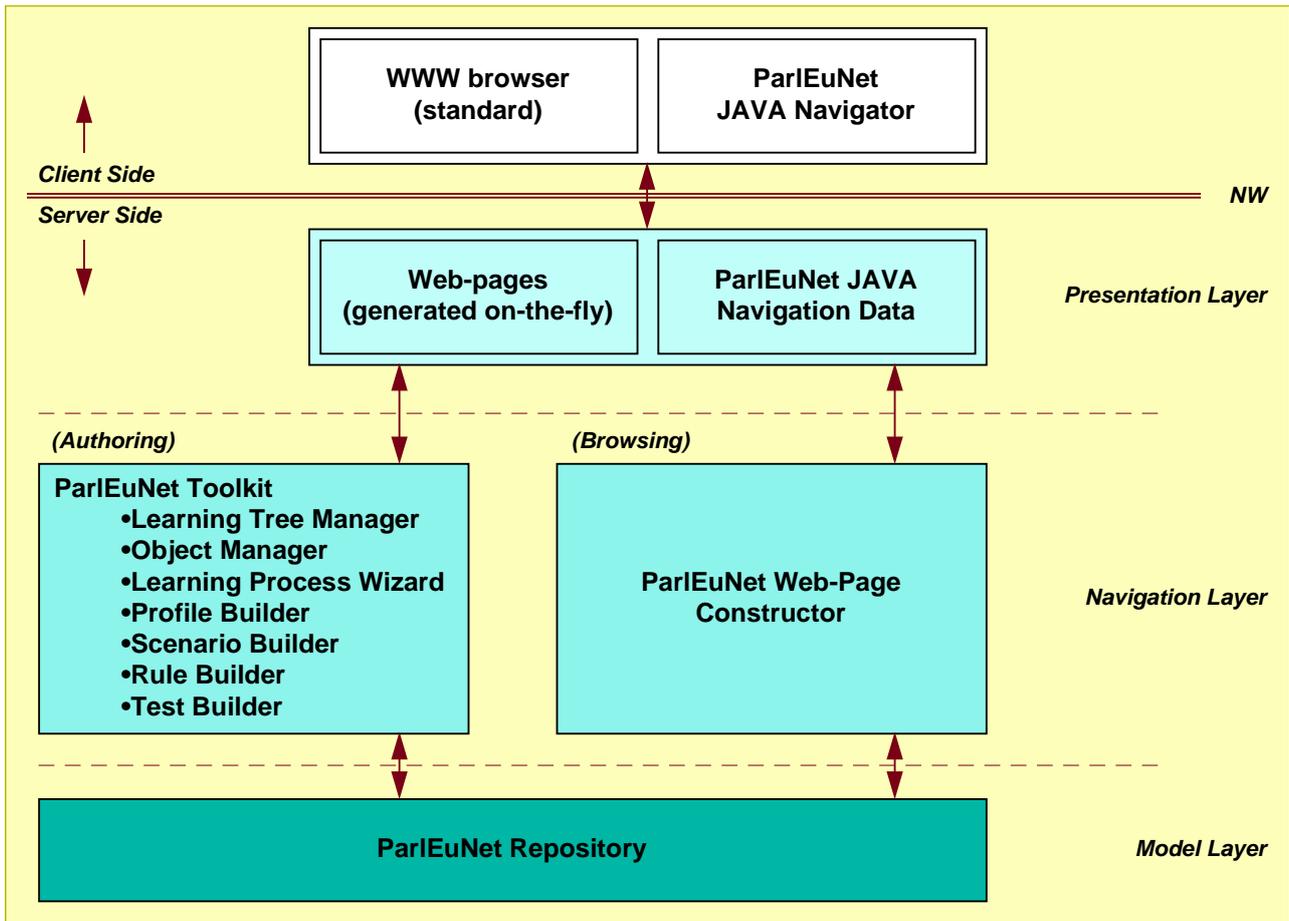
Figure 2: ParlEuNet Database System

7.2.1.2 Design Requirements

It is important that the system as proposed in Figure 2 can monitor student choices and preferred sources of information. This will later be analysed by Pedagogical Researchers. To achieve this the database will contain a logging subsystem, which will allow this type of post-usage analysis. The log will monitor all actions and choices. The level of detail to which this logging takes place will be defined in accordance with the research goals of the pedagogical experts.

In addition, the ParlEuNet Database will:

♦ contain Multimedia data objects (e.g. text, sound, images, video, etc.)

♦ be tightly interfaced with WWW.

♦ allow user registration

♦ support two types of users:

  • Provider (e.g. Teacher)
  • Consumer (e.g. Student)

♦ allow users to customise interface, media type, information level and thematic area.

♦ store profile information in the user database tables.

♦ allow information providers to submit new topics and update existing topics.

♦ allow users to link items together and form their own customised 'hot collection'.

7.2.1.2.1 Metadata Types

The database will be based on a standardised set of metadata types. Metadata are used to construct the objects in the data-base. A preconceived set of metadata is:

Metadata	Format	Example
Name	<string>	"John Johnson'
Title	<string>	"Organigram of the European Parliament"
Address	<string>	"Rue de la Loi 200, 1049 Bruxelles"
Topic	<string>	"Science"
Sub-topic	<string>	"Geology"
Theme	<string>	"Earthquakes"
Media type	<string>	"image"
Language	<string>	"English"
Document	generic	
Local identifier	ID	/home/parleunet/images/boy.jpg
Parent resource	ID	/home/parleunet/our_school.html
Child resource	ID	
URL	URL	http://www.parleunet/index.html

Temporal	<date> <date> (start, stop)	130997 190997
Geographic location	<deg><min><sec>	16 53 12

From these metadata, object classes will be constructed. Some examples:

User:

- Name
- Address
- Password

Event:

- Title
- Address
- Theme
- Document
- Temporal
- Geographic location

Theme

- Title
- Parent resource
- Child resource 1
- Child resource 1
- .
- Child resource n
- URL

The actual database objects will be instances of this type of classes.

An important asset of using this type of metadata structure is that database contents becomes easily searchable by metadata type.

Relations between all this objects will be built using the methodology that is used in the EduCase project.

Based on the concepts of the EduCase Browser, four different schemes will be offered to the students to navigate through the database:

♦ A set of learning goals will be presented to the students. Choosing one of these goals will lead the student in a structured way through the database.

♦ A set of scenario's will be presented (only to the 'guided' students). These scenario's consist of a ordered set of learning goals as described in the point above.

♦ A 'Domain Information Map' will be presented which shows the student in a textual or graphical way the list of subjects in the database and their relation to other subjects. As discussed in 6.2.1. the graphical interface is currently 2D. Research shall be done on converting this to a 3D-environment.

♦ Direct access to a specific topic in the database. This means a search interface will be offered. This interface is described below.

Search interface will allow users to search by:

- subject
- sub-discipline
- language
- organisation
- subject
- geographic location
- date
- free text

- or any combination thereof.

In order to live up to users expectations, the database needs to be fast and efficient.

Database transaction logging will be incorporated to keep a log of student actions and choices. This log will later be used for pedagogical research to decide most useful and intuitive methods of course structuring and presentation.

7.2.1.2.2 *Quantitive Assessment Requirements of the ParlEuNet Database*

♦ **Type of content:** The database can contain any data that can be rendered in a WEB browser, and will at least include:

  - text
  - digital images of 24 bits colour depth and 600*800 pixel size
  - digital audio clips at 44 KHz sample rate in 16 bits resolution stereo
  - MPEG video clips
  - JAVA applets
  - VRML models

♦ **Amount of data:** The database will be populated in two ways. Firstly, before the pedagogical experiments start, information and data about the European Parliament will be entered. Learning presentations will be developed with the ParlEuNet toolkit. This initial population will at least amount to 100 images, 30 minutes MPEG video and 100 Kbytes of text. During the experiments, all involved parties are allowed to add dynamically to the database, so the amount and complexity of content will increase. 10 Mbytes of diskspace is foreseen for each party involved. There is no limit to how much disk-space can be added later on to the UNIX workstation that will host the WWW service and database. Experience with similar services shows that a realistic estimate for the diskspace size is a few gigabytes.

♦ **Number of simultaneous requests.** The number of simultaneous accesses is limited by the UNIX operating system. This project intends to use an Apache UNIX based Web-server. Experience shows that in this type of workstation the number of simultaneous accesses is limited by the operating-system's number of available file-descriptors. In Solaris 2.5 this number is 128. In a Sun Ultra-1 with 128 Mbyte memory, the self-duplicating Apache http deamon will have enough memory to operate in 128 copies and still have vast memory for swapping and data-processing. It is however not likely to have such a high number of simultaneous accesses (this is, clients who have requested data and are waiting for the response). Experiences with existing Web-servers with more than 2000 regular users show that the number of simultaneous accesses has hardly ever been above 10.

♦ **Response-time:** response-time is in fact the time between the user clicking a button in his Web-browser and the actual display of the requested data on his terminal. Many things happen both on the client and the server side during this time, the most time-consuming being the actual transport over the Internet. The time needed for the transport is not constant, it depends on the network traffic, the number of hops, etc. and is not easily predictable. For the ParlEuNet database, it is estimated that the server and database processing on the average will hardly ever constitute more than 10% of the total response-time, even when client and server are close.

♦ **User friendliness of the database.** The actual database will be invisible to the user. The contents of the database will be made visible to the user as Web-pages generated on the fly by the ParlEuNet Web-page Constructor. The user will interact with the database/WWW server through normal Web-pages with Java-applets implementing the Educase functionalities. For user-friendliness of the Educase project, see 6.2.1 for more details. The aim is to achieve graphical user-interfaces operated by mouse point-and-click.

7.3 State-of-the-art

7.3.1 The relationship between technology and education

With respect to the use of technology for educational, instructional or training purposes three categories of approaches can be distinguished:

♦ Focus on the technology

♦ Promotion of technology by considering its functionalities

♦ Focus on the learning process

7.3.1.1 Focus on the technology

In a first approach the focus is on the technology itself. It is assumed that the mere introduction of technology will result in an increase of learning and motivation for learning. This approach results in expensive technological programmes that aim at distributing in the schools as much technology as possible. The use of particular technologies is promoted as their use itself of technology in educational settings is assumed to increase educational quality.

An example are the promotional campaigns for the use in training settings of CD-I. This approach results in European programmes focusing on the distribution of technology.

While these programmes may certainly contribute to supporting the economy, their assumptions have been and repeatedly are questioned by review studies on the effects of media and technology (Clark, 1983; Clark & Salomon, 1986; Clark & Sugrue, 1990).

7.3.1.2 Promotion of technology by considering its functionalities

In a second approach the use of technology is promoted by considering the functionalities of this technology. CD-I, for instance, has been promoted because it is 'interactive' telematics (because it allows synchronous and asynchronous communication), 'multimedia' (because it can deliver words, sound and images) and 'hypermedia' (because users may access large amounts of information from a variety of perspectives) (Jonassen, 1989; Spiro & Jehng, 1990). This approach has resulted in multiple efforts to demonstrate that technological functionalities can be used in educational settings. Hence, it has been shown that through means of videoconferencing, learners, trainees and students can attend lectures, that students may browse through large sets of hypertexts in order to find answers to given questions, etc.

In spite of multiple research efforts, research has not been able to demonstrate any consistent learning effect of such technological functionalities. The use itself of a functionality does not increase learning nor motivation. It has been argued therefore that rather than starting from the potential functionalities of a technology, the purposes of technology use should be focused upon. Moreover, it has been argued that the focus on the technological functionalities has decreased the quality of education as they contradict recent insights on the constructive nature of learning. The extensive use of hypermedia information systems implies an emphasis on the importance of information, lecturing through means of videoconferencing reduces interaction and the unstructured nature of numerous 'instructional' programmes inhibits adequate support of learning processes.

7.3.1.3 Focus on the learning process

In a third approach the learning process itself, not the technology nor its functionalities, is taken as the starting point. It is argued that within an educational or instructional context, learning itself and the delivery of adequate learning support is to be emphasised.

The selection of technological means follows and does not precede the specification of learning goals, the analysis of learning processes and the design of adequate instructional support.

Technology is selected for its functionality only when it effectively and efficiently supports learning processes. Moreover, technology is simply another means. The tools offered and their functionalities can be relevant for certain learning goals and particular learners. Their functionality, however, does also depend on the other elements of the learning environment. At the same time, the introduction of technological tools is never a simple add-on, but affects all other aspects of the learning environment as well (Salomon, 1990).

7.3.2 Database related

Although a lot of applications are commercially delivered, few tools exist in the marketplace today that make the development process of educational applications more efficient and flexible. Most of the tools found (like Toolbook, Macromedia Director, Macao,...) are limited to the development of multimedia scenarios: they put one screen after the other, without looking into the intrinsic logic of the information explained or into the structure of the knowledge domain that is presented in the edutainment application.

It is intended to use state of the art techniques to handle Web integration of the objects within the multimedia database. Features that will be used during the developed of the database will include:

♦ Virtual Reality Mark-up Language (VRML2) allows students to interact with active worlds and brings life to 3-D defined worlds. The tight integration with a multimedia database will allow to define 3-D objects and their interactions. Elements within these worlds can be "hyperlinked" to other multimedia objects and to other 3-D worlds.

♦ Object design of the database as outlined in the project will place particular attention on the dynamic Web interface. All HTML generated screens will be encapsulated with the objects themselves. Thus a present method will be part of each object

♦ HTTP, being a stateless protocol will be needed for logging purposes and extends the Web mode. In this way, it will be possible to introduce a user profile and tracking system into the Web interface.

♦ The use of multi-cast Internet protocols and video stream protocols will be considered. The objective here is to bring real time video and teleconferencing to the desktops of students via the Internet. This will allow schools without dedicated video conferencing equipment to participate, at a lower bandwidth quality.

Further, current state-of-the-art in database technology allows for:

♦ modelling of **one** knowledge domain into a structured database environment

♦ using OO-based approaches for modelling the database but storing the database itself into a relational model

♦ choice from a **limited** set of learning processes that are modelled via learning process wizards

♦ modelling explicit and implicit learning profiles, mainly concentrating on results of pre-, in course- and post-tests and used hardware environment

♦ **retrieval** of different presentation components (e.g. use photo when video not feasible)

♦ graphically navigating through the knowledge domain via a 2D interface

Multimedia integration enhances communicative efficiency since the means for cognition and motivation are integrated. It is, therefore, a fundamental parameter in the learning process. The opportunity of presenting directly the conceptual organisation of the area to be learned makes for numerous cognitive advantages in that it retraces the cerebral structures employed during the learning process. This permits the student not to be passive simply as the destination of a message, but to motivate himself in every sequence of his journey, selecting and indicating his own itinerary. The elements of contact with the "play" dimension (relative to the regeneration of motivation) react in such a way that the entire experience is more similar to complete problem solving functions than to traditional study methods.

The elasticity of the **hypertext** allows everyone to adjust learning-content to his own requirements. **Navigation** on a hypertext is an unconscious learning process which is a relative determination to the structure of the field.

7.4 Proposed Solution in Accordance with User Needs and User Requirements

The primary target users will be secondary school students from several countries of the European Community. In the first phase of the project, there will be a total of twelve schools as mentioned in the summary. A number of industrial partners in the consortium have already sponsored some of these schools on necessary equipment. In a second phase, ten to fifteen more schools from other European countries can join the project, provided they have the necessary funding for the needed equipment. Later on, the project can be opened up to include additional European schools. In terms of university research, any interested school, in addition to the initial twelve of the first phase, is welcome to join, although it will not be monitored and evaluated. However, self-monitoring advice will be offered by the project.

The students will learn in a telematics environment which will be built around a pedagogical framework and a structured multimedia database, that will be designed with their needs in mind and their foreknowledge taken into

account. A large range of media, telematics applications and tools, among which they can make a personal choice according to their own preferences, will be put at their disposal.

The telematics environment will evidently support access to Internet information. Additional effort will be put on providing broadband Internet access to secondary schools in those European countries where the local telecom operators have started the deployment of an ATM backbone.

In order to stimulate a co-operative learning process in a distributed cognition environment, appropriate technologies, including groupware, videoconferencing, LANs, WANs, etc. will be supported.

The students' learning process, in small co-operative teams and according to four models with various degrees of either local or remote explicit guidance, will be lived through, observed (registered, logged) and assessed, within the particular educational framework which is proposed in this project.

The activities planned in the course of this project will have as their objective to deepen the European students knowledge of the European Parliament. The assignments will be developed by the Curriculum Developer in close co-operation with the local teachers and can handle issues such as the history or the functioning of the European Parliament, formulating recommendations to the Parliament, and others.

The educational framework which is proposed in this project will be the same in the participating secondary schools and will provide students with international exposure, through the interaction with students in other European countries. As a result, it will enable students to enhance their learning skills and language capabilities, through jointly exploring the issues associated with a common topic.

7.5 Validation Procedures

The validation will concern the effects of the group interactions, the learning processes and outcomes, and the use and perception of technological tools. For detailed description, see 8.3: Assessment and Summative Evaluation.

The validation procedures in this project will be guarded by the Management Structure as described in chapter 10.

A User Validation Board will be created as an integral part of the Management Structure to ensure validation of procedures and results throughout the project.

University pedagogical experts will act as the assessors of interactions during the experimentation, analysing relevant validation procedures.

Observation and monitoring will be at two levels: one at the pedagogical level (reported in the Educational Working Group), the other one at the technical level (use of tools, problems,...) (reported in the Technical Working Group).

On the pedagogical level, specific mechanisms will be developed to observe and monitor the learning process. They include:

♦ Example videorecorded sequences of student interaction interpreted by educational experts

♦ Guided quizzes

♦ Questionnaires

♦ Case study observations

♦ Self-assessment procedures including student and teacher diaries

♦ Teacher evaluations of students (written and oral)

On the technical level, logs will be kept on:

♦ Internet activities performed by the users

♦ Database activities, including:
   • tracking of the **learning path**: which part of the database has been used, which (Internet)sites have been visited, which learning processes have been activated
   • tracking of the **learning results** via tests at different stages in the learning process
   • tracking of the evolution of the **learning style** preferences of the student

♦ student initiated videoconferences

♦ Emails sent

♦ Phone/fax activities

8. Pedagogical approach

The ParlEuNet project aims at contributing to the elaboration of a useful and applicable model for supporting student-centred, problem-based and collaborative learning in rich technological learning environments. The two major tasks of the project are :

♦ the elaboration and specification of a rich, student-centred and problem-based learning environment in which telematics in the form of information tools and communication tools play a central role. Students will work on a challenging project which is divided in a sequence of tasks that must be performed by groups of students. The tasks are developed in close co-operation with a reference group of students and teachers. Some of the tasks will require that students use the available technological communication and information tools.

♦ elaboration and comparison of the (process and product) effects of four pedagogical models. These models differ only by the **level of guidance** that is provided to the students. In the text, these levels of guidance are referred to as **models**. It should be noted that the learning environment in itself is constant for all four models, except for the presence of explicit and/or implicit guidance. Thus, all specific learning environments that represent the pedagogical models and that will be studied can be characterised as student-centred, problem-based and rich telematics learning environments.

The success of these tasks depends on (1) very good preparation by considering past research and prior experiences, (2) well-designed and implemented teacher training, and (3) the use of adequate research methodologies.

8.1 Description of the pedagogical approach

In this section, the learning environments that will be compared in the ParlEuNet project are described. First, the basic structure of the learning environments is described. Next, the specific characteristics of the four environments, each reflecting a specific pedagogical model, are outlined.

8.1.1 Basic structure of the learning environments

In all environments groups of students will be asked to work on a challenging project consisting of specified tasks that require the use of technological facilities consisting of both communication and information tools. At least part of the work will be done in a non-native language and require the interaction with students from a different country and speaking a different language.

8.1.1.1 A challenging project to be executed in group

Each group of students consisting of 6 members, will receive a booklet which will contain the following elements :

♦ the description of an **authentic, challenging project** : this challenging project will be closely related to issues of great importance to the European Parliament. By confronting the challenge, students will learn about the issues that are tackled by the European Parliament, the way in which members of parliament work, and the necessity for intercultural co-operation. They also will engage in authentic problem-solving and acquire information-processing, and collaboration skills. For instance, a project might be to select a particular topic that is of high relevance to European students and to take all necessary actions to bring this topic on the agenda of the European parliament. Another project might be to set-up and test with both users and members of the European Parliament a frequently asked questions repository (FAQ) on the operations and procedures of the European Parliament or the European integration. The selection of the projects will be the result of close collaboration with the reference group mentioned above. It is essential that the project is authentic and requires students to produce rather than simply consume knowledge. This underlines a central project aim which is to give students the experience of becoming authors rather than mere users of knowledge.

♦ a description of **different tasks** to be executed in order to meet the challenge (e.g. selecting a topic within the group and discussing this selection with groups in other schools, organising a brainstorming session, presenting the results of interviews on the topic with students, contacting members of Parliament and other experts about procedures in the European Parliament, etc.). These tasks provide some structure to the problem-solving activities by the students. Tasks will be specified in order to ensure that for students the use of the technological means made available becomes self-evident. For instance, some tasks require information that is only available in the ParlEuNet database, some tasks require the use of videoconferencing tools in order to interview members of the European Parliament, and some tasks require the co-operation of students from different schools. Irrespective of the specific project selected, the last task in each project will be to present the project outcomes to a larger audience. Especially the quality of this presentation and related documents will be taken as the starting point for evaluating the effects of the different pedagogical models.

♦ an overview of **different roles** (e.g. chair, secretary, external affairs responsible, publisher, etc.) to be assumed during group work. All tasks will require group work, that is, tasks can only be performed by co-operation and different students will have to fulfil different roles. A description of the different roles in combination with a specification of tasks may result in the description of task-specific group work scenarios.

♦ an overview of the **communication and information tools** and a description of their functionalities (cf. infra). This description will enable students to select more deliberately among the technological means available to them. The description will presuppose some computer literacy which will be made available if not present.

♦ a number of **organisational issues** such as timings and persons they may contact for help.

8.1.1.2 Communication and information tools

Group work is done in a rich technological environment. This means students get to their disposal a variety of technological tools. While tasks may require the use of technological tools, it remains up to the student to decide about whether or not to use a specific tool. The environment is labelled technologically rich for two reasons : (1) a variety of modern technological tools is made available, and (2) more traditional tools are made available as well whereas traditionally such tools (e.g. fax; telephone) are not regularly present in ordinary classrooms.

Telematics facilities in the form of information and communication tools play a central role in the learning environment. Communication tools refer to Internet-based facilities (e.g. E-mail and mailing lists, chatterboxes), ISDN-based facilities (whiteboard- and application sharing, videoconferencing), but also to more traditional means such as telephone and fax.

Information tools refer to the World Wide Web, including the project-specific ParlEuNet Multimedia Structured Database, but also to traditional sources of information such as documents available in libraries or other institutions, CD-ROMs, video- and audio-cassettes.

The role of communication tools and information tools in the project is depicted in Figure 3.
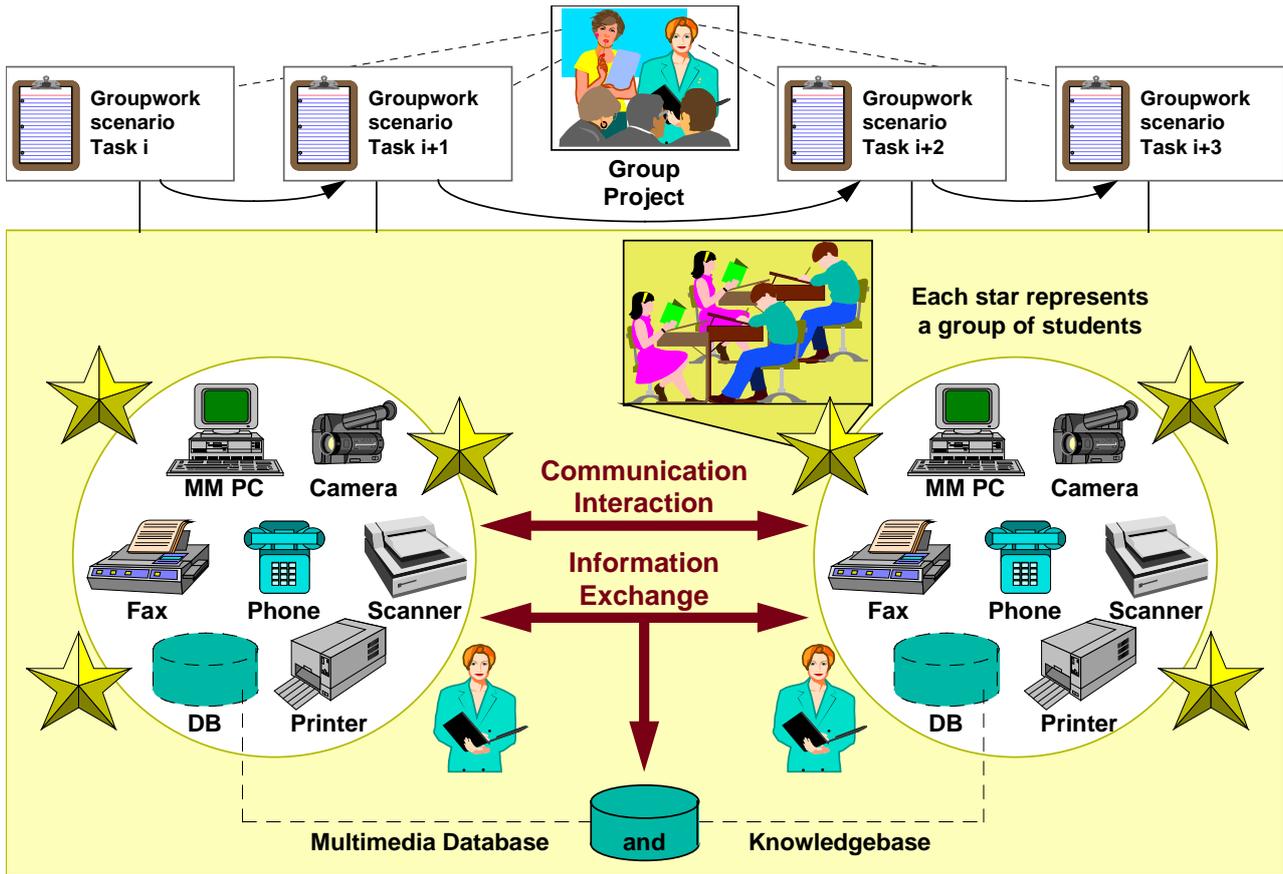
Figure 3: Telematics Environment

While specific documents and information sources may differ from group to group, each group will have access to a common project-specific information tool implemented on the World Wide Web: the **ParlEuNet Multimedia Structured Database.** This database contains information and support systems that inter- or intra-school groups of students working on particular tasks will have to consult or use in order to reach their goals. Students have access to this database -independent of time and place. The database contains basic information elements called topics. A topic is the smallest independent information element; further subdividing a topic into smaller parts would loose the meaning of a topic. Every topic is characterised by a number of attributes that allow the author of the database to control its accessibility and the user of the database to identify and classify the topic. Attributes might, for instance, refer to keywords, particular tasks the topic is relevant for, particular perspectives the topic is presented from, particular user roles for which the topic is important, etc. An outline of the ParlEuNet Multimedia Database is presented in Figure 4.
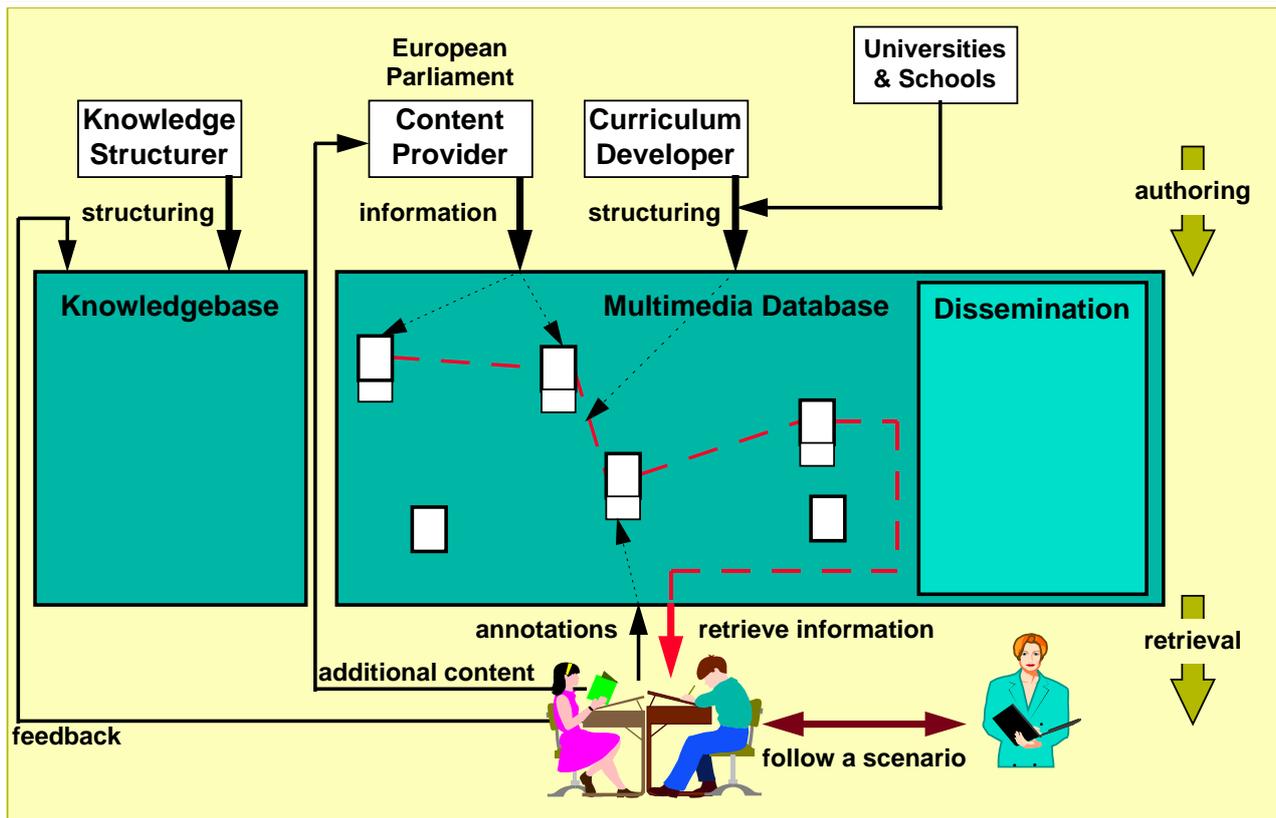
Figure 4: ParlEuNet Database Concepts

Several types of users are situated in the telematics environment and make use of the ParlEuNet multimedia database from two different perspectives: Authors and users. Two types of authors exist:

♦ *The Parliament Content Provider*. The database offers facilities that allow the author to insert information into the database in a user-friendly way, including the attributes that are relevant for isolated topics. The Parliament content provider provides ("populates") the content of the database, in consultation and co-operation with the Curriculum Developer. The Content Provider does not add additional structure to the database information.

♦ *The Curriculum Developer*. The database also offers facilities that allow the author to structure the information in an easy and clear way. In other words: "red wires" might link the independent information topics in the database in order to structure the learning process. The Curriculum Developer selects and structures in the database the information that is relevant for performing the tasks and reaching the educational objectives. He allocates and links attributes accordingly. Pedagogical experts from universities and teachers from participating schools will assist in this activity.

From the user side, there is a need to **retrieve** and purposefully **use** (annotate, extend and discuss) information in a user friendly way. With regard to the retrieval of information, the database will allow for easy and efficient search mechanisms for independent database topics, which might be based on the attributes defined for each topic. Furthermore, students will have access to the database in either an 'open' or a 'scaffolded' mode (see further)

With regard to the actual use of the information, the database will make support systems available to the students. Partly, these support systems are identical to the systems available to the authors of the database ("students as designers"). For instance, students can develop their own slave database from the master database developed by the authors, by populating the database with new information and adding additional structure. Other support systems that are specific for the students are described in the next section. It is essential that populating the database is an important part of the challenging project. The database will be the common information tool for all groups of students. Hence, by populating the database groups of students can mutually co-operate and can "publish" the results of their efforts (see for a similar strategy: Scardamalia & Bereiter, 1991). The ParlEuNet Structured Multimedia Database is a dynamic source of information to which growth students will contribute. By publishing the outcomes of their project students will contribute to the growth of knowledge about the European Parliament and get hands-on experience to be an active, and not only a passive, member of the information society.

8.1.1.3 Support systems

As repeatedly mentioned, students will work in inter- or intra-school groups on an authentic and challenging project with no pre-defined solution to the problems or 'one right way' to do the different tasks. Support for such 'open' environments is primarily process-related and available on students' request. Having to solve practical, interaction, language, technical, organisational, etc. problems is characteristic to authentic problems. Even re-structuring traditional conceptions of classroom lay-out and organisation will be at issue.

Different support systems can be identified. First of all students will get support from their group members. This is the essence of the collaborative challenge. Second, students may request help from their peers in other schools, be it in their own or in a different country. Thirdly, and especially with respect to the basics of using the technological tools and to task directed group processes, teachers play an important support role. Sometimes this support will be more pro-active, in other cases it will be more re-active (see pedagogical models).

At regular intervals of time, videoconferences with members and responsibles of the European Parliament will be organised. These sessions are organised to allow students to ask specific questions for which they don't find an answer in the available documents.

At the technological side, support systems will also be established. The Help Systems of the various communication and information tools must always be the first place where a user starts looking if a problem occurs. In the ParlEuNet database, the help system is context sensitive. This means that the context of the application, from which the request for help was activated, determines the entry point within the help system. This way, information that is displayed is related to the problem and the user does not have to start looking for it.

When a serious problem has to be dealt with and the help system does not give an appropriate solution, the user can rely upon a help desk. This is a service where for instance a teacher is available for consultation.

There are different tools available to contact the help desk :

♦ e-mail for non-urgent problems

♦ chat-type conversation for dialogues. This tool allows a textual dialogue between two or more conferees. Each conferee can type in text. The text is immediately replicated on the terminal of the other participants.

♦ more advanced desktop conferencing, including audio and videoconferencing, application sharing and shared whiteboards. Especially the application sharing is an essential tool here. It allows the tutor to exactly monitor the actions of the student, and to take over control if necessary.

The most interesting information is the knowledge, gathered from the experience of the users. Therefore, we integrate a set of tools in the operational environment that allows us to collect that information and store it in the knowledge-base. Whenever a user has a practical problem, related to the environment where he is working in, he can check this knowledge-base to see whether one of his fellow users has had the same problem before and find out what he did to solve it.

Possible tools include:

♦ News Groups : is a shared mailbox. Each user can post messages in this mailbox. All other users can read these messages and send a reply. Again, these replies can be read by all other students. This makes it a very useful instrument for problem discussions.

♦ Frequently Asked Question (FAQ) lists : problems that occur frequently can be described here. This list can be updated with information, gathered from the news groups or by the tutor from the help desk. Again the content of this list is generated from real life problems.

8.2 Four pedagogical models

Starting from the results of using dedicated courseware design tools such as ID-Expert, GAIDA, PowerSim,..., four pedagogical models will be designed and elaborated. An important component of these models will be the specification of (the use of) a multimedia database.

Each of the groups of students will work within the boundaries of a specific pedagogical model. Four pedagogical models will be implemented. The models do not differ with respect to the kind of project, nor with respect to their student-centred, problem-based or collaborative learning orientation. As mentioned above, the four pedagogical models

differ by the level of guidance that is given to the students. A distinction is made between explicit guidance (support provided by the teacher) and implicit guidance (as embedded in the access to the ParlEuNet Structured Multimedia Database).

♦ Teacher may or may not explicitly guide actions of the students. When teachers provide explicit guidance and deliberately facilitate learning and collaboration processes, e.g. by acting as the chair of the working group, students are operating in a guided mode. The teacher monitors and pro-actively supports the students. In the other case, students do work in an independent mode. Teacher provide assistance to the students upon their request. This means support of teachers is reactive.

♦ In addition to explicit guidance, implicit guidance may also be provided. This type of guidance is embedded in the ParlEuNet Multimedia database. As previously said, the database can be accessed either in an open or in a scaffolded mode. In the open mode, no implicit guidance is provided. In the no-implicit guidance group all information is accessible irrespective of roles and tasks (i.e., an "Internet"-model). The student has full freedom to choose his or her own learning path, based on own intentions, preferences, and strategies. Evidently, use can be made of retrieval facilities ("search engines") and available support systems. In the scaffolded mode, guidance is embedded in the access to the information in the database. The students are prompted to study the information that is most relevant for the tasks they are working on and the role they fulfil in their working group (i.e., they follow a learning path which was prepared during the authoring process). The database allows users to access the database in function of their "learning profile" (e.g., tasks completed, tasks they are working on, role to be fulfilled etc.). For instance, for students working on a particular task only the information in the database will be made accessible that is directly relevant for performing the task. And for a student fulfilling a particular role in a task group, only the information that is relevant to performing this role is made accessible.

Combined, these combinations of guidance yield four pedagogical models that are shown in Figure 5:
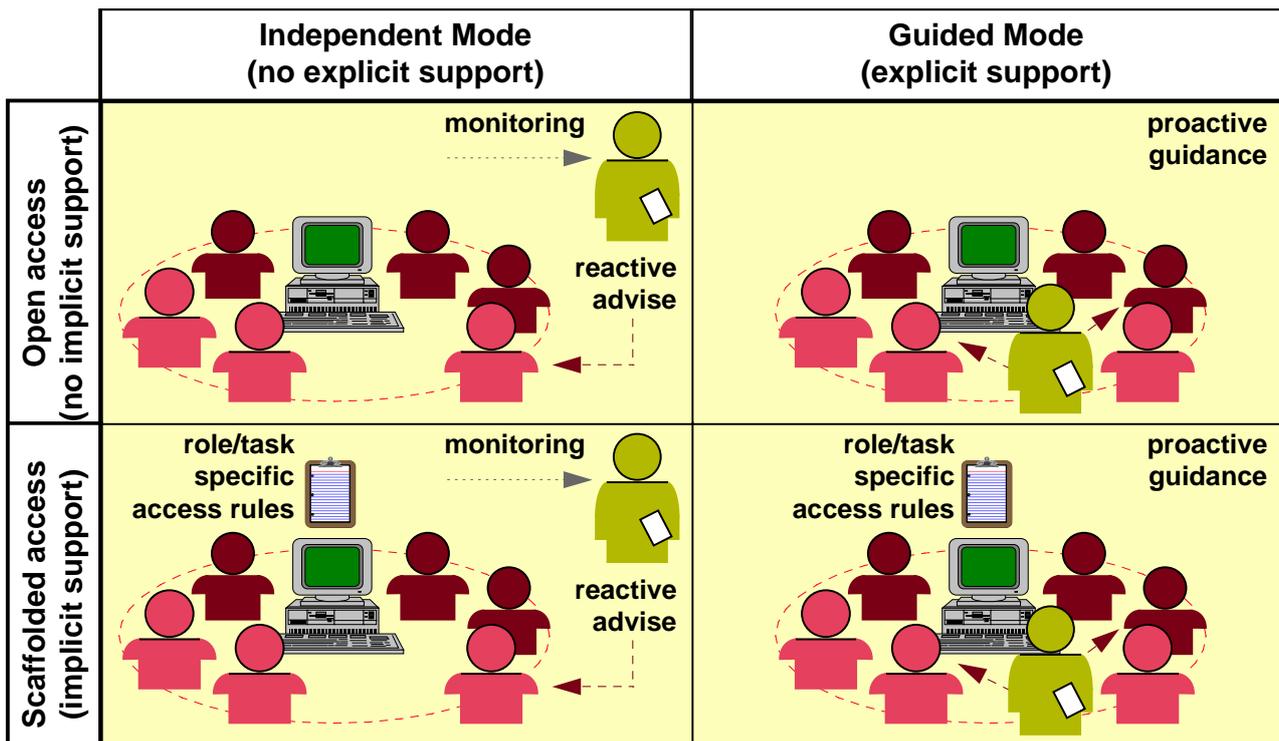
Figure 5: Pedagogical Models

Students in all four pedagogical models have to reach the same set of educational objectives. Of the first set of twelve schools, students from five schools (taken at random) will work with in the guided mode and students from the other five schools will work in the independent mode. In each school, two groups of students will work with an open-access database and the other half with the scaffolded access database.

8.3 Assessment and Summative Evaluation

In the ParlEuNet Project a design experiment is carried out. Four learning environments instantiating different pedagogical models for promoting student-centred, problem-based and collaborative learning in rich technological environments will be investigated. The learning environments will be designed and developed in close co-operation with the users, students and teachers. Hence, users' needs will be continuously considered. In view of comparing the different models in a valid way, it is important that these models are implemented as intended. Hence, it will be necessary to monitor and -in case- align the behaviour of teachers in the different conditions to the guidelines. Assessing the actual behaviour of teachers is a type of formative evaluation. Its aim is to monitor the implementation of the models in view of, if needed, a correction in the direction previously specified. Summative evaluation , aiming at establishing the final effects and learning outcomes of the pedagogical models in the telematics learning environments, will pertain to different aspects of the outcomes, each highlighting a specific perspective from which to assess the learning effects of telematic environments.

The comparison of the four models will provide insight as to the way in which groups of learners can be supported more optimally while working on authentic and challenging projects.

Effects of pedagogical models will be studied with regard to

♦ group interactions : group work is essential as to the success of the work on the challenging project. It can be expected that variations towards both explicit and implicit guidance influence group interactions. The exact nature of intergroup and intragroup interactions and more particularly the roles taken by the different groups (intergroup interactions) or group members (intragroup interaction) will be investigated by analysing diaries, video-recordings of the interactions at specific moments, logs of email messages, and self-reports.

♦ learning processes, in particular the degree of self-regulated, autonomous learning: it is well-known that activities engaged in by the learner determine learning outcomes. Especially important in this project is that in addition to effect measures a better insight is acquired in the effects of the different pedagogical models on the learning activities of the learners. More specifically, an interesting avenue is the investigation of the mindfulness of students' activities. Indeed, within an instructional setting activity as such is not aimed at. Activities of learners are to be directed towards learning or in other words towards acquiring a better understanding of specific phenomena. Targeted observations as well as interviews, diaries, portfolios and document analyses may reveal learning activities of learners as well as their functionality.

♦ use and perception of technological tools: specific tasks will require or at least encourage students to use the technological communication and information tools made available. It is to be expected that the different pedagogical models determine the extent to which these tools are used, the nature of this use and (indirectly) the attitudes of learners towards the use of these tools. Use of technological tools will be monitored and, more specifically, a log-file will be an integrated element of the ParlEuNet Structured Multimedia Database. Moreover in view of better understanding the reasons why students do or do not use particular tools dedicated questionnaires will be administered.

♦ learning outcomes: learning outcomes may relate to knowledge about and attitude towards the operations of the European Parliament. It may also relate to different aspects of working and learning in a group, and working and learning independently. The effects of using and authoring knowledge via technology will also produce distinct learning outcomes. It may be expected that the different pedagogical models by directing group work more or less determine the quality of the learning outcomes. Learning outcomes will be investigated by using both quantitative and qualitative methods.

In addition to studying the students both at the group and the individual level, teachers are to be studied as well. First, it is to be investigated how teachers implement the different pedagogical models. In line with previous research on teacher thinking and their often naive theories on learning and instruction, research will be directed towards investigating whether teachers actually implement the various pedagogical approaches required within the project. Further, changing perceptions of project teachers towards particular educational approaches and the use of technological tools, and how this might parallel or conflict with the practices and conceptions of students, will also be central to the research. This last investigation would be extremely valuable as it would provide indications on how to cope with fear of failure and negative attitudes towards computer use and innovation in educational settings.

In order to analyse the data, quantitative and qualitative methods will be used if appropriate. Data analysis tools such as

SAS, SPSS, STATISTICA, KWALITAN, FOLIOVIEWS, etc. will be applied.

9. Consortium composition

9.1 Composition

The identified members of the consortium cover all areas of expertise needed to execute this project.

Members experienced in IT (database, application), telecommunications (Internet, videoconferencing) and the education world and supporting services are all represented.

Most of the consortium members know each other from previous bilateral, national or European projects.

The consortium is shown in Table 1.

Participants Code	Name of Institution/Organisation Full Name	City + Postal Code	Region	Country
C.1	*Pegasus Foundation*	*Brussels B-1047*	*BE1*	*BE*
A.1.1	*Parent Association Baden-Württemberg*	*Boxberg D-97944*	*DE11*	*DE*
C.2	*Katholieke Universiteit Leuven*	*Leuven B-3000*	*BE24*	*BE*
A.2.2	*Universiteit Antwerpen - UIA*	*Antwerp B-2610*	*BE21*	*BE*
C.3	*University of Barcelona*	*Barcelona E-08035*	*ES51*	*ES*
A.3.1	*Universiteit van Maastricht*	*Maastricht NL-6200 MD*	*NL42*	*NL*
C.4	*DG JRC, ISIS/STA*	*Ispra I-21020*	*IT12*	*IT*
A.4.1	*Arboth Learning Technologies*	*Antwerp B-2930*	*BE21*	*BE*
C.6	*The Research Centre City College Norwich*	*Norfolk*	*UK4*	*UK*
A.6.1	*University of Uppsala*	*Uppsala SE-01*		*SE*
C.7	*Telia AB*	*Stockholm S-104*	*SE01*	*SE*
C.8	*Eircom*	*Dublin 2*	*IE002*	*IE*

Table 1: Consortium Composition

The consortium partners have been chosen because of their expertise in the relevant domains in which they participate.

Special attention has been paid in having universities and educational institutes in these countries where the phase one secondary schools have already been recruited.

PTOs from most of these countries have been included as well, in order to provide telecommunications support to the schools. The other partners either mainly cover the technology aspects, or represent the user community (Parent Association Baden Württemberg) and the interface to them.

Secondary schools listed in Table 2 are representative for the user group. As such, they are no real partners in the consortium. Schools represented with (Ÿ) have already been equipped with a videoconferencing platform, via donations or through previous engagement in national projects.

Next to their role in the pedagogical part of this project, the universities and educational institutes will also interface with the secondary schools on a national level.

(*) The Académie of Dijon is not included as a partner but is enthusiastic for co-operating

(+)   City College Norwich will interface with Irish schools

(#)   Technical support in France and the Netherlands is offered via Unisource through Telia AB

Country	Secondary Schools	Pedagogical Support	Technical Support	Other
BE	Antwerpen (Ÿ) Brussels (Ÿ)	KULeuven	JRC	Pegasus Foundation Arboth Learning Technologies
FR		Académie de Dijon (*)	(#)	Parent Association URAPEL
DE	Stuttgart (Ÿ)	-	-	Parent Association Baden Württemberg
UK	Cambridge (Ÿ) Canterbury (Ÿ)	City College Norwich		-
IE	Dublin (Ÿ)	(+)	Eircom	-
IT	-	-	-	DG JRC, ISIS/STA Parent Association AGE Lombardia
NL	Maastricht Meersen	Universiteit van Maastricht	(#)	-
ES	Barcelona	Universitat de Barcelona	-	Parent Association FAPAES
SE	Sundsvall Örebro Upplands Väsby	-	Telia AB	-

Table 2: Dispersion of consortium partners and user groups

9.2 Division of Work

The work is divided such that it respects the partners' main expertise.

♦ The Pegasus Foundation covers the general project management, interfaces with the European Parliament and assists in the pedagogical support.

♦ The universities' core competence is used for the work on the pedagogical framework, the design of the methodology, the advise on content development and the assessment of experimentation results. Universities also interface with the secondary schools on a national level.

♦ The European Parliament provides the raw database materials at no cost and facilitates the structuring of the database content.

♦ PTOs mainly support the secondary schools with communication infrastructure and provide additional telecom services.

♦ Other technology partners mainly co-operate on the structured multimedia database. Arboth Learning Technologies will provide methodology and tools to structure and design the learning applications and in doing so will be providing tools on the client-side. JRC will provide their experience on the server-side by porting the applications generated by the EduCase-application (being a set of web pages) to a powerful server platform.

9.3 Competence Description

9.3.1 Pegasus Foundation

The Pegasus Foundation was created in 1991 by a group of Members of the European Parliament. The Foundation is housed in the European Parliament and operates under the auspices of the Parliament's Culture, Youth and Media Committee.

The mission of the Pegasus Foundation is to promote the European identity through educational projects in cultural heritage targeted to European youth. The Foundation has experimented with using new technologies as a means of permitting access to European cultural heritage for a wide number of European citizens.

The major project of the Pegasus Foundation, is called "Schools Adopt Monuments". Since 1993 this project has been implemented in fifteen European countries involving more than 300 schools and 160,000 students. This project has been built using a network of national organisations in the fifteen Member countries. These organisations serve as a basis for establishing contacts with appropriate government and non-government bodies in the member States and to select an implement projects in schools.

Starting in March 1996, a multimedia component of this project has been set up to establish schools' Internet network. Children are using multimedia workstations, software applications, the Internet, digital cameras, scanners, and video-equipment to produce and communicate materials related to the adoption of historical monuments in European towns, and thereby also receive an introduction to the tools of the global information society. Samples of students work and project activities may be viewed on The Pegasus Foundation website: http://www.ispo.cec.be/infosoc/educ/pegase.html. This website is hyperlinked to the sites of some of the most technologically advanced schools such as Canterbury High School, UK on http://www.rmplc.co.uk/eduweb/sites/canthigh /heritage.html.

The Pegasus Foundation has also demonstrated substantial experience in the organisation of workshops using new technologies for European students and teachers. During the Summit of Heads of State and Prime Ministers in Florence, June 1996, The Foundation organised a multimedia and artistic atelier attended by thirty European students, fifteen European teachers and local Florentine students and teachers. During this intensive two-day workshop, taught by teachers from the network, students and teachers with little previous experience in the use of new communication and information technologies created and transferred material in text, picture and sound format on to the Internet and produced a CD-ROM. The workshop received wide press coverage as Prime Ministers, Heads of State, Commissioners and Members of Parliament attended.

The Foundation hosted a workshop for fifteen European teachers and seven local teachers at Canterbury High School on the 23-24 of September to promote the use of Internet as an educational and communicational tool and to stimulate the exchange of knowledge and experiences throughout the network of schools involved. These teachers learned how to create web pages and transfer this knowledge to other teachers in their home countries. Both these events have attracted industry and Community support.

The Pegasus Foundation has harnessed the energy and interest of schools in the "Schools Adopt Monuments" network for inclusion in other technology related initiatives. On the 10th of December, the Foundation organised the first videoconferencing link up with European schools and Members of the European Parliament on the suggestion of Mr. Vinci, Secretary General of the European Parliament. Madame Christine Ockrent, a reputed French journalist moderated the session. Eighteen MEPs were able to participate in a two hour question and answer session on current events with students. On the 13th of December, live from the Council meeting in Dublin Castle, Foreign Ministers Hervé de Charette, Malcolm Rifkind, G. Papandreou, Fassino, Belgian Diplomat De Bock, Dutch Secretary of State Mr. Pattign, ICG Belgian Representative Dehousse hosted by Irish Minister of European Affairs Mr. Mitchell dialogued with schools. Ms. Cynthia Ni Murchu a noted Irish journalist moderated the session. Students acting as panel members and spectators from six schools in Canterbury, eight schools in Dijon, a lycee from Brussels, and a school in Dublin participating in "Schools Adopt Monuments" were therefore introduced to videoconferencing techniques as well as European institutions and topics of current interest. The project was sponsored by Alcatel and Telecom Eireann.

On the occasion of the year of life-long learning, the Foundation organised a seminar in Naples to illustrate the important contributions of "Schools Adopt Monuments" for the acquisition of life-long learning competencies. One of the competencies highlighted in the seminar was the acquisition of new skills for the information society including new technologies. A working group was organised around this topic. As a result, a multimedia presentation sponsored by IBM Semea Sud was created summarising the implications of new technologies and life-long learning for the "Schools Adopt Monuments" project with samples of students' work from the Naples network and references to local monuments. Distinguished gets such as Madame Castellina Chairman of the Parliaments' Culture Commitee, local and national authorities attended. Once again it has been the goal of the Foundation to promote new technologies in other initiatives using the richness of the schools network.

In addition to these initiatives, Pegasus has launched the European pilot project supported by ISPO "Students in Museum's Internet Learning Environments" whose objective is to develop and experiment with remote museum content based modules in carefully selected trials in a number of European demonstrator schools.

The Pegasus Foundation has therefore demonstrated competence in the organisation and implementation of European educational projects and events with attention to new technologies.

9.3.2 Katholieke Universiteit Leuven

The Centre for Instructional Psychology and Technology of the K.U.Leuven has experience in research, development and implementation of telematics.

The Centre for Instructional Psychology focuses its research on learning processes in educational organisations and on the design of powerful learning environments.

The Centre for Instructional Psychology and Technology has been involved in a number of research studies related to the design and development of powerful telematics learning environments.

Two recent projects are to be mentioned. The Centre co-ordinated the research part of the European Open Universities Netwerk-study. In addition to the co-ordination of the different research studies at different research centres throughout Europe (Germany, The Netherlands, Italy, Spain) the Centre's main responsibility was the development of a 'Research methodology handbook' and a survey study on perceptions and preferences with respect to telematics. The Centre is also involved in a study requested by the European Round Table of Industrialists on the impact of new (telematics) technologies for the educational chain.

Two other projects are the DUNE project on Distance Education Network of Europe (Socrates programme) where the Centre is responsible for the Research Working Group and a Study of the impact of ICT on the role of the teacher in primary and secondary education (EC-tender 23/96).

Members of the Centre have been asked as experts to participate in project-evaluation committees for various European telematics-related research and development programmes.

9.3.3 Universitat de Barcelona

The University of Barcelona is one of the biggest universities in Spain, with 70.000 students.

The Faculty of Pedagogy has been involved in a number of research studies related to the design and development of telematics learning environments.

The centre is involved in educational network projects (Socrates Programme) and in the organisation of the Telematics Forum for higher education.

Research activities during the last five years for the University de Barcelona include:

♦ the evaluation of expert systems for automation of instructional design

♦ research about teaching activities in higher education

♦ multimedia program for teaching Spanish for foreigners

♦ multimedia about learning and education. Theories of learning.

♦ multimedia program to prevent AIDS in young people

♦ Organisation of the Telematics Forum about higher education

9.3.4 University of Maastricht

The University of Maastricht in the Netherlands is a middle-sized university with about 8000 students. It is nationally and internationally well-known for its successful educational system of problem-based learning. This system is student-centred and stresses the importance of group work and independent self-regulated learning. The educational masters programme in psychology only started in 1995. The programme covers the full range of psychology. However, all teaching is done from two broad encompassing perspectives: biological psychology and cognitive psychology. Educational Psychology is one of the departments within the section of cognitive psychology. The research program of the department of Educational Psychology focuses on problem-based learning. It includes projects studying the instructional design of problem-based learning environments and the use of technology in such environments. More specifically, there are three research topics that are of prime relevance here: One deals with the development of expertise in various domains such as medicine and accountancy. A second concentrates on cognitive and motivational aspects of self-regulated learning. And the third deals with issues in performance-based testing.

9.3.5 Universiteit Antwerpen - Universitaire Instelling Antwerpen

The Initiatief Nederlands, a teaching centre for Dutch as a Foreign Language, was established in Antwerp University in 1990. The centre has developed into an internationally recognised research and teaching institute for foreign languages (15 at the moment). Fundamental and applied research projects in the fields of e.g. phonetics, testing, curriculum development and distance learning are funded by different sources.

The centre has specialised in intensive and result-oriented language acquisition and learning. Because language is inherently embedded in its socio-cultural background, it is approached as such.

The distance learning project Mediaproject Nederlands has been running for four years now and is highly praised by more than 10 ,000 students and adults in more than 50 countries.

The development and implementation of telematics for language learning filter into different research programmes.

The centre has carried out several projects on the use of new technologies: Mediaproject (video, in collaboration with the Dutch Language Union), Alcatel Teleclass (9 children learning Dutch via desktop multipoint with Alcatel Telecom), LinC (curriculum and syllabus design for 15 languages and their cultures - European Commission - LINGUA-project), Telewater (primary school classes in video- and dataconferencing), Teleprovos (English and Dutch for Specific Purposes in video- and data-conferencing - Telepolis Antwerpen), etc.

9.3.6 University of Uppsala

Uppsala is the fourth largest town i Sweden and located 45 miles north of Stockholm. Uppsala university was founded in 1477 and is today a multidisciplinary university with more than 25 000 students and approx. 5000 employees in 7 faculties and about 100 departments. About 30 first degree programs are offered as well as more than 1000 subject courses annually.

The Department of Teacher Training (Institutionen för lärarutbildning, ILU) examines annually more than 700 teachers for primary, secondary and upper secondary schools. ILU has since the beginning of 1985 engaged itself into IT-oriented didactics and has an extensive program for training and in-service training of teachers.

Already in 1987, the Interactive Media Group (IMG) was established as a development unit of the Department. IMG has developed more than twenty interactive databases on CD-ROM which are used in Swedish schools. The World Guide - a yearly updated CD about the countries of the world and distributed all over the world - is developed by IMG. Today IMG is working together with Eurostat, Luxembourg, on a Internet-connected interactive database about the regions of Europe.

ILU is involved as a contractor in PEDACTICE (M1043) , a project dealing with multimedia in compulsory school: From Pedagogical Assessment to Product Assessment.

9.3.7 The Research Centre City College Norwich

The Research Centre, City College Norwich provides research-based solutions to problems. Tailoring various methods to suit the needs of our clients.

Staff undertake a wide range of national and international research projects, programmes and consultancies; bringing an imaginative expertise to address complex issues in work and social environments. Using both traditional and innovative quantitative and qualitative research approaches, we are responsible for a significant portfolio of projects in both public and private sectors, a strong publication list of books, reports and cutting edge research methods. We also have a depth of experience in the delivery of Masters and PhD programmes. Current clients include national and government bodies, large private sector companies, SMEs, research councils and public sector organisations.

Projects receiving national or regional funding have been carried out in areas such as social policy, education and training, business and management, information technology, medical education, organisational restructuring and small business development. International consultancies include work in Canada, Greece, Germany, Austria, Spain, Eire, Central Asia and Eastern Europe. The Research Centre is developing global collaboration with institutions and organisations through information superhighways.

In relation to this project, Professor Sanger at The Research Centre has just completed a national two year study of young children, videos and computer games and their effects upon schooling. He has also directed national projects on information handling in classrooms

9.3.8 Arboth Learning Technologies

The mission of Arboth Learning Technology is to provide world class services and products in the area of Learning Technology. This mission results in core competencies which are specific to this project:

♦ understanding of learning and teaching strategies (most of the people involved in Arboth have hands-on experience in developing and delivering training)

♦ the ability to translate these strategies into technological solutions

♦ the technological competence to develop learning applications both on LAN's and as interactive Web sites, especially in the area of company and vocational training

♦ the technological and conceptual experience gathered in the ongoing research project EduCase, where the focus of the research is on designing a structured database approach to learning and to technologically the support learning processes of the learners involved.

Arboth Learning Technology also has experience in executing and valorising research projects and in working in multi-disciplinary and multinational projects.

9.3.9 DG JRC, ISIS/STA

ISIS (Institute for Systems, Informatics and Safety) is the impartial centre of expertise of the European Union in the science and technology of safety management, the multi-disciplinary analysis of industrial, socio-technical and environmental systems and the innovative application of information technology. ISIS exists to support the industrial base of the European Union and improve the quality of life of its citizens. ISIS supports the European Commission in all aspects of the implementation of Community policies where ISIS' expertise and technology are applied to the wider European economy and, where appropriate, transferred to industry. ISIS aims to provide an increasingly competitive and responsive service driven by customer requirements. The institute, whose staff exemplify the diversity of European culture, maintains the highest standard of scientific quality and acts as a unique focus for international collaboration involving industrial, university and government research organisations throughout Europe.

Within ISIS, the Software Technologies and Automation Unit (STA) has wide experience of leading edge Internet and Multimedia Network applications. It has already successfully implemented a number of WWW systems with on-line data access. See, for example http://ewse.ceo.org, http://www.ceo.org, http://enrm.ceo.org, http://esba-www.jrc.it/.

STA designed, developed and operates the European Wide Service Exchange (EWSE) for the Centre for Earth Observation (CEO). EWSE is a new type of WWW based system where registered users are able to submit and update data held on a public WWW server. EWSE is the public information exchange system of the CEO. After 12 months of operations, over 1500 users and over 200 companies have registered and contributed information to the server The database is searchable via the Web in several ways. It can be searched by free text, by subject keywords, by category and by geographic position. EWSE contains several advanced features including user customisable user interface, several Java applets and real time data applications. EWSE can be visited at http://ewse.ceo.org.

Two new servers have recently been installed for outside organisations by the STA unit. These are the G7 nations project Environmental and Natural Resources (ENRM) project and the CEOS Information Locator system (CILS). Both systems allow on-line database population. A feature of the ENRM and EWSE is that the databases of one system may be searchable by the other. This demonstrated ability for searching distributed databases is directly relevant to this project where the information providers and associated datasets are geographically separated. ENRM can be visited at http://enrm.ceo.org.

STA also has experience of interfacing data application software to the Web. Several earth science databases have been made on-line available. World-wide users can select and view data from a global digital terrain model, an archive of ECMWF data and a world climatology. These and other examples of the work of STA can be viewed at http://www.ceo.org/demo.html.

9.3.10 Eircom

Eircom are the main telecommunications network and service provider in the Republic of Ireland. The company provides the full range of voice, data, mobile and leased line services to a customer base of approximately 1.5 million.

At the end of 1996 the company concluded the legal and formal aspects of a strategic alliance with KPN (Netherlands) and Telia (Sweden). The strategic partners currently own a total of 20% shareholding in the company, with the balance owned by the state - the alliance partners have an option to purchase a further 15% shareholding in the future. The possibility of an employee share ownership programme is also under consideration at present.

Eircom have participated strongly in EU funded research programmes in the past, both directly and through Broadcom (a joint venture with Ericsson for prenormative research activities). Participation has been strongest in the RACE and ACTS programmes. Eircom currently participates in the ACTS / Telematics funded JAMES project on pan European ATM. It also provided the chair for the National Host Forum during the six months of the Irish EU presidency.

Eircom are committed to the provision of advanced technologies for use in educational activities. In recent times Eircom have participated or supported a number of initiatives including:

♦ Distance learning utilising ISDN videoconference, Aran Islands

♦ "Classroom of the future" project, Broadcom

♦ EU summit schools videoconference event, Dublin plus other sites

Eirecom welcome the opportunity to work with the other project partners, in particular the Pegasus Foundation and Telia, in further developing the opportunities for exploitation of technology for educational applications.

9.3.11 Telia Sweden

Telia Sweden has initiated the project "Telia Internet@School" to offer schools end-to-end Internet solutions designed especially for them. The components of this project are: easy-to-use turnkey Internet packages; a WWW information database with teaching and information material for schools (http://www.skolinternet.telia.se); a conference system on Internet with moderated topic-based conferences; free training for teachers; and a free 24 hour helpdesk. Telia has also started a three year 4MECU Teaching Media fund to stimulate the development of information technology teaching material.

9.3.12 Parent Association Baden-Württemberg

For many generations, parents have remained outside formal education structures, leaving the responsibility to teachers alone. More and more, parents are taking up their responsibility of being involved in all decisions concerning their children's education. They are increasingly consulted on government committees on curricular and policy issues, and particularly in areas where they have an influence such as religion, health education, relationship and sex education and moral values. Parents are no longer considered as mere fund-raisers or governors who rubberstamp decisions, but as real partners in education.

There are so many influences on our children in today's society outside the family and formal education systems that it is absolutely vital that parents and teachers communicate and co-operate within the school community.

The parents' association is fighting to maintain a broad and sound general education for our children. As cuts in school budgets have become more and more common the parents' association decided to take measures against this disastrous development. We aim to improve the quality of the school curriculum. Education and training must take into consideration the whole personality of the student. Therefore, we aim to maintain and improve musical and artistic education in schools. We work together to answer the following questions:

♦ How do we imagine the concept of education in the future, and the development of schools?

♦ How do schools handle the increasing problems in education created by the disintegration of the family ?

♦ How can we educate our children so that they become responsible and tolerant citizens of Europe ?

♦ How can we improve health education and environmental education ?

♦ How can we become equal partners with teachers in schools ?

♦ How can we help our children to obtain a stable system of values and to find meaning in their lives in order to develop personality and to prevent drug addiction ?

♦ Preparing Europeans for the information society is becoming a priority. How can we equip ourselves and our children with the skills required to participate fully and to develop the information society we want ? How can we

help our children to become familiar with the media and new technologies and to use them in a responsible, critical and productive manner?

10. Project Management

10.1 Management Structure

The management structure for this project is depicted in Figure 6.
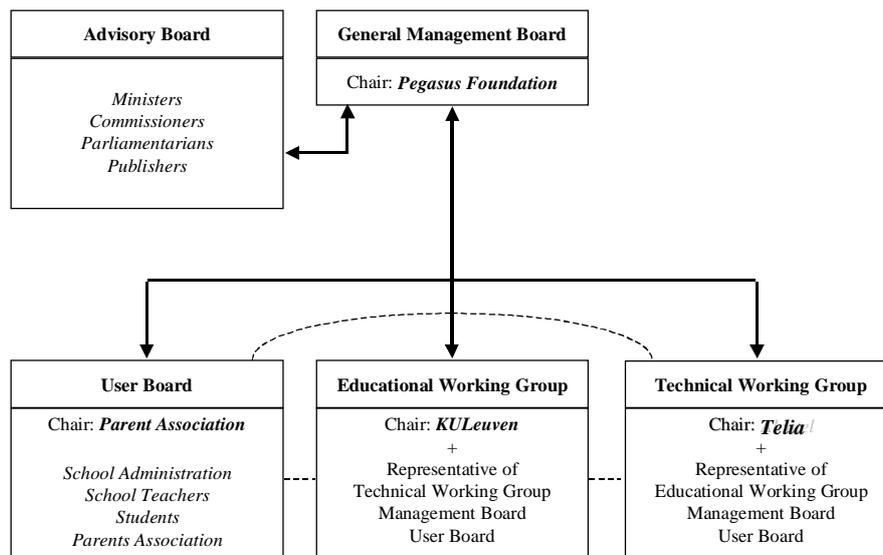
Figure 6: Management Structure

Four groups co-operate within this structure:

the General Project Management Board

♦ the Educational Working Group

♦ the Technical Working Group

♦ the User Validation Board

♦ the Advisory Board

The major vehicle for the exploitation of the project's results between the consortium's members and the educational community will be through the ParlEuNet website. Communication will be maintained through e-mail forums and chat sessions where interested parties in the education field may join in. The e-mail communications will be enhanced through video-conferencing and the dissemination of activities at various conferences and meetings as described in the dissemination workpackage.

10.1.1 The General Project Management Board

The Management structure is maintained by the General Project Manager, The Pegasus Foundation, who chairs the Project Management Board. A representative from the Advisory Board as well as the chair of the Educational and Technical working groups and a representative from the User Validation Board are responsible for steering the project in line with the project objectives and fulfilment of deliverables. This group meets physically three times during two

and one half years and once by video-conferencing. A physical meetings may be replaced by video-conferencing. A report is distributed to all partners. E-mail communication is maintained.

10.1.2 Educational Working Group

The Educational Working Group is chaired by University of Leuven. It consists of one key person from Barcelona, Maastricht and Norwich Universities. This group also hosts a delegated representative of the User Validation Board and the Chair of the Technical working Group and the Chair of the General Project Management Board. This group physically meets twice per year and once by videoconferencing. A report is distributed to all partners. E-mail communication is maintained. The Curriculum developer who updates and structures content on the data base also attends this meeting.

10.1.3 The Technical Working Group

The Technical Working Group is chaired by Telia. It consists of representatives of all partners who are involved in the technical aspects within this project. These representatives are members of the participating telecom equipment suppliers, database technology suppliers and telecom operators. This group also hosts a delegated representative of the User Validation Board , the chair of the Educational working group and the Chair of the General Project Management Board. This group physically meets twice per year and once by video-conferencing. . A report is distributed to all partners. E-mail communication is maintained. The Curriculum developer who updates and structures content on the data base also attends this meeting.

10.1.4 The User Validation Board

The User Validation Board consists of representatives of all participating secondary schools. These representative are members of the school administration, teachers and students. This group only meets through videoconferencing during the course of the project experimentation phase. A representative participates on other Boards. Constant feedback from users is maintained throughout the project's duration through an e-mail interface with the Internet.

10.1.5 The Advisory Board

The Advisory Board watches over the quality of the project and provides feedback on its expected direction. It consists of representatives of independent organisations who have a general interest in the outcome of this project. These representatives will be invited ministers, commissioners, parliamentarians, publishers, etc. A representative from this group attends General Management meetings.

10.2 Arrangements and Responsibilities

The Project Co-ordinator is mainly responsible for carrying out administrative management, co-ordination, and planning activities needed to organise and control project progress. He ensures co-ordination of work between various workpackages and activities, as well as communication between partners. Throughout the complete project period, he keeps the project in line with its objectives.

The Project Co-ordinator executes administrative tasks, such as: accounting and distribution of the global project budget, and preparation of control reports, cost statements, contracts and other required documents.

The Project Co-ordinator enables the liaison with policy makers, educational experts, technology partners, content providers and European schools involved in user trials, insuring feedback on all levels. He acts as the leader of the User Validation Board. The Project Co-ordinator also organises consortium meetings and maintains an inter-consortium communications network (paper mail, e-mail telephone, fax). He prepares for audits and attendance at consortium meetings.

The Project Co-ordinator organises the work needed to produce review reports on each of the WPs and the project's final report submitted to partners and to the EC. He validates partner's deliverables within pre-agreed framework and time frame, according to guidelines of a quality insurance handbook. To this end, he interfaces with the Educational Working Group and the Technical Working Group.

The basic information medium is the deliverable, which copes at the same time with contractual requirements and with internal needs as related to the work process within each WP. In addition to official deliverables, technical documents are exchanged between WP leaders, normally as drafts of the deliverables themselves. These technical documents are only for internal use and are organised by the relevant WP leaders. All document exchanges will be done by email and fax.

The Project Co-ordinator is responsible for consolidating all major decisions that affect the overall goals of the project. He also decides on possible disagreements or inconsistencies in the results of the WPs, to guarantee the fulfilment of all contract obligations.

The Project Co-ordinator develops a strategy for the dissemination and communication of project results on the European and international level and in the Member Countries (e.g. development of a web site, electronic and paper publications in public and private journals, articles in newsletters, presentations at conferences and seminars, synergy with other initiatives).

10.3 Time Scales and Resource Allocation

There will be three yearly meetings, which all representatives of the Educational Working Group, the Technical Working Group and the User Validation Board will attend.

There will be 12 quarterly meetings for the Educational Working Group, the Technical Working Group and the User Validation Board separately. All representatives of the individual groups, as well as a delegated representative of the other groups (generally the chair of the other group) will attend these meetings.

There will be two meetings of the Project Manager with the Advisory Board. Delegated representatives of the User Validation Board will attend these meetings.

Most meetings of the Educational Working Group, the Technical Working Group and the Advisory Board will be physical meetings, that will alternately be organised in the country of each of the partners. A number of them will make use of the available videoconferencing platform.

User Validation Board meetings will either be physical meetings or videoconference meetings which make use of the available videoconferencing platform in the participating schools. The physical meetings of the User Validation Board will alternately be organised in the country of each of the participating schools.

10.4 Quality Assurance and Control Mechanisms

Quality of the project outcome will be guarded from the start by the active participation of the User Validation Board in which the real requesters for the project are represented.

In addition, the Advisory Board will act as an external control mechanism to indicate the directions in which the project is expected to evolve.

10.5 Commitments of Authorities

The ParlEuNet project has received approval from various European and national authorities and reinforces national educational initiatives in a number of European countries. These may be outlined as:

♦ enthusiasm from the president of the European Parliament, Julian Priest and the Vice President, Georgios Anastassopoulos, responsible for information policy

♦ participation in a series of videoconferencing experiments by a significant number of Parliamentarians and continued interest for future such initiatives

♦ letters of support for ParlEuNet from Members of Parliament

♦ letters of interest from a number of national Ministries of education

♦ letter of interest from the Academy of Dijon, the RENATER network operated through the IUFM

♦ strong enthusiasm to participate in the project from schools in European countries initially identified as pilot schools

♦ promotion of the outcomes of the "Classroom of the Future" project in Ireland, organised by Eircom, Ericsson, and Trinity College to encourage the use of the WWW in the classroom

♦ integration into the "Telia Internet@School" project which gives an end-to-end solution to teachers in using new information technologies

- co-operation with the Flemish government EduCase project which aims to design a methodology for educational applications with a focus on technology

- complementarity and support to the existing "European Parliament for Youth" initiative and Euroscola; a participating pilot school hosted the 1996 European Parliament for Youth Forum

11. Detailed description of the project

11.1 List of Work-Packages

Please see form C.1 in part C.

11.2 Timing of the Work

The total duration of the project will be thirty months. The project intends to start January 1, 1998 and to end June 30, 2000.

The project will encompass roughly three large stages. These stages will not follow a strict linear sequence, but will be partially overlapping in time.

11.2.1 Stage 1: Preparatory Stage

Stage 1 will start in the first month of the ParlEuNet project and run until all preparation work needed for a smooth implementation of the project has been accomplished. This will coincide with the start of the first real students' experimentation in the secondary schools.

Activities in this stage cover three main areas.

11.2.1.1 Area 1: Structured Multimedia Database and Telematics Infrastructure

In this area, the main effort will focus on the design and development of the structured multimedia database and the material it contains, as well as on the build-out in the twelve pilot secondary schools of the enhanced network infrastructure. This is considered crucial as a basic building block for the (guided) learning experiment.

Bearing in mind the educational objectives of the project, the multimedia database will be structured to coincide with the tutoring described in the pedagogical framework.

A survey will be conducted to review methods of information retrieval on current database technology. For example:

♦ what kinds of research engines are applicable to open and distance learning?

♦ Which of these engines are most effective for autonomous learning methods?

♦ Do these methods lead the user to the information sought or is intervention by a mentor or other means of guidance still necessary?

Methods of presentation and multimedia tools that particularly lend themselves to fulfilling the tutoring models will be chosen as the fundamental elements of the database structure. Current software tools (e.g. EduCase) concerning what kind of hypertext presentation is the most appropriate for the delivery of content will be reviewed. Feedback from students, teachers, content experts and curriculum developers will be used to update the database. All this user feedback will be integrated into the constantly updated knowledgebase.

Traditional and new telecommunications equipment (based on PSTN and N-ISDN) and communication tools will be made available in the schools at the location where the group work for the ParlEuNet project will be executed.

At the end of stage 1, the network infrastructure that will have been built out, will be frozen. This network infrastructure will then be used as the reference configuration against which the pedagogical framework will be studied.

11.2.1.2 Area 2: Pedagogical Framework

In the twelve pilot schools, the rich technological environment will be used by four groups of students when executing a challenging project. The aim of the ParlEuNet project, then, is to investigate the effects of different pedagogical models with respect to supporting problem-based and student-centred co-operative learning in a rich telematics environment. Based on in-depth analyses of both social interaction processes and learning activities engaged in by the groups of students and the effects of the different pedagogical models, an instructional design model will be elaborated.

The instructional design model will in a structured and integrated way provide guidelines on how to organise and support problem-based, student-centred co-operative learning in rich technological environments.

The project that will be tackled by the different groups in the twelve schools will be a challenging one related to the operations of the European Parliament. For instance, students will be asked to select an important issue, study it and get it on the agenda of the European Parliament. The project description will comprise specific tasks to be fulfilled, overviews of appropriate working methods, roles to be assumed in a group, and of the technological means (information and communication tools) that are available. Some of the tasks will explicitly require the use of technological means available to the students. Intermediate and final outcomes of the co-operative learning activities will be entered by the students in the ParlEuNet Database. While elaborating the project and specific tasks, needs and preferences of students, teachers, and principals will be extensively and systematically considered.

Students will be enabled to do their project while using a variety of information and communication tools. For instance, a videoconferencing system will be available in order to talk directly to members of the European Parliament and groups of students in other schools. As indicated each school will be equipped with a videoconferencing system. In addition phone, fax and electronic mail facilities will be made available to the groups of students. With respect to the information tools, a specific ParlEuNet multimedia database will be made available. This database will contain structured information on the European Parliament, its members, its operations, its procedures and its documents. In addition students will have Internet access and may consult any other kind of documents be they in printed or in digital format.

The educational research in the ParlEuNet project focuses on studying the implementation and effects of four pedagogical models (see Figure 5). The four pedagogical models only differ with respect to the level of explicit and/or implicit support. With respect to explicit support the teacher may either be a pro-active member of the student-group (e.g. (S)He may assume the role of group-leader) or only re-act to questions from the student group and act rather as a consultant. Implicit support refers to access mode to the ParlEuNet Database. Again two modes can be distinguished. In the open access mode (no implicit support) all students can consult the database as if it were a regular Internet site. In the constrained access mode, access to the database is structured by considering group roles and specific tasks to be executed. It is important to specify that each of the models will be implemented view of supporting problem-based, student-centred and collaborative learning activities. Moreover, specific learning environments, implementing different pedagogical models, will be identical as far as the availability of communication and information tools is concerned.

11.2.1.3 Area 3: Intermediate User Needs and Training

The ParlEuNet project is highly innovative with regard to its use of telematics-based technology: students get ample opportunity to execute their tasks in a rich technological environment. From an educational point of view, it is also innovative in at least two other respects. First, innovative instructional strategies will be used in order to promote problem-based, student-centred and collaborative learning. And second, the content of the project will bring both students and teachers alike in contact with original documentation of the European Parliament and provide the starting point for intercultural discussions between groups from different member states and with members of the European Parliament. The question of how to integrate these three innovative approaches is not only relevant to end users or students, but also to intermediate users, i.e. teachers and technical staff of participating schools.

In view of successful implementation of this project and more specifically of the different pedagogical models in the telematics environment, design meetings and training workshops with intermediate users are essential. These workshops are oriented towards the three innovative aspects of the project and fulfil goals that are twofold. First, needs assessment among intermediate users allows the project to be user-centered. For instance, inter-individual differences with respect to the understanding and use of technological tools can be considered so that specific training sessions may be organized for intermediate users having only restricted experience with the use of technology for educational purposes. Second, intermediate users will be made more confident in (1) integrating a variety of technological means both in schools and in teaching methods, (2) using pedagogical approaches that may differ more or less from their regular approach but that are better aligned with the telematics environment, and (3) collaborating with teachers in other schools and European officials on a highly important topic.

The approach adopted during the design meetings and training workshops will closely mirror the different pedagogical models. This means, intermediate users will get hands-on experience with the different information and communication tools and with the different pedagogical models. During the training sessions, intermediate users will co-operate to develop guidelines for the implementation of the different pedagogical models in regular educational settings. The aim is to share and discuss those guidelines with staff of other schools not yet involved in the ParlEuNet project. This "snowballing approach" is expected to be very helpful for involving additional schools in the project.

Design meetings and training workshops will be planned especially in the design phase of the project so as to extensively consider intermediate user needs and teacher input. The workshops will be led by university and technological experts in various European schools.

11.2.2 Stage 2: Experimentation Stage

Stage 2 will start with the first experimentation's in the secondary schools.

During this stage, the actual (guided) learning experiment will be executed with active involvement of teachers (at the start) and students (later on) of all participating secondary schools. Teachers will adopt the telematics environment as part of the students' curriculum, according to their needs and preferences, but within the boundaries of the pedagogical framework which is under study in this project.

In order for the ParlEuNet project to be more or less uncoupled from the restrictions imposed by the timing of the academic year in different European secondary schools, the experimentation will be allowed to be neither continuous across the spanned period, nor concurrent for all participants. A timing for experimentation will be adopted, based on three months periods, that coincide with secondary school terms.

A variety of collaborative activities will be executed during the experimentation, focusing on the interaction between students working in groups in various European countries. Students may use the Internet and a videoconferencing platform to fulfil open assignments, such as researching, role playing, making recommendations or questioning Parliamentarians as content experts.

The manipulation by students of the Parliament content in the ParlEuNet database will repopulate the database and form the basis of "The Information on the European Parliament for Students" website. Carefully monitored trials evaluated using quantitative and qualitative methods will test the learning achieved using the different models proposed in the ParlEuNet project.

Stage 2 will end at end of month 24 of the ParlEuNet project, to allow for sufficient time to conclude evaluation and results assessment.

11.2.3 Stage 3: Evaluation and Dissemination Stage

An evaluation strategy will be developed by competent educational experts. The evaluation will be both formative and summative. Formative in that all aspects of the way that the project is presented to project schools, embraced and developed by them, their processes and products will be monitored and analysed. Summative evaluation will draw together the learning that has accrued over the entire length of the project. Users will be involved at every stage of the project's development. Some of the secondary schools have already participated in videoconferencing experiments between secondary schools and the European Parliament and Foreign Ministers. Their evaluations from these experiments form a first basis of feedback to the ParlEuNet project. The project consortium will start up a discussion forum with teachers and students involved in videoconferencing experiments with the European Parliament, to evaluate the general outline of the project and its applicability to the school environment.

Following the adjustments of the project on the basis of targeted feedback and evaluation from above mentioned students and teachers, the project will be even more closely aligned to meet their needs. During the initial period of populating the educational database, a Curriculum Developer will liaise with the relevant offices of the European Parliament to obtain and tailor material for the project. The material developed by the Curriculum Developer in co-operation with the participating universities will be trialed in the initial set of pilot schools. Teachers and students will comment on the developed informational materials.

As a result of the practical organisation, experimentation results will become available at an early stage in the project. Consequently, the evaluation stage will start almost concurrently with the experimentation stage.

Continuous evaluation will be done in a variety of ways, including computer-based quizzes, questionnaires, student to student testing and student to teacher testing, personal teacher and student diaries, oral evaluation activities, project and portfolio based evaluation strategies. Concerning the effectiveness of the videoconferencing platform, the interactions among students and between students and teachers will be subject to evaluation criteria that test both the effectiveness of the communication medium itself and the student's aptitude to assimilate the learning materials involved and to contribute to the learning process. For more information on the evaluation activities, see 8.3: Assessment and Summative Evaluation. For more information on the evaluation procedures, see 7.6: Validation Procedures.

Towards the end of this stage, conclusions are drawn and translated into recommendations for optimisation of the telematics environment and guidelines for best practices.

In conclusion, dissemination activities will include the following: a report on the exploitation of ParlEuNet as part of the final report, a website, a dissemination seminar for policymakers, a video, publication of educational guidelines, and a training syllabus for schools.

The work is divided in workpackages, which are enumerated on Form C1 and described hereafter.

11.3 Structure of the work

The interworking between workpackages is shown in Figure 7.
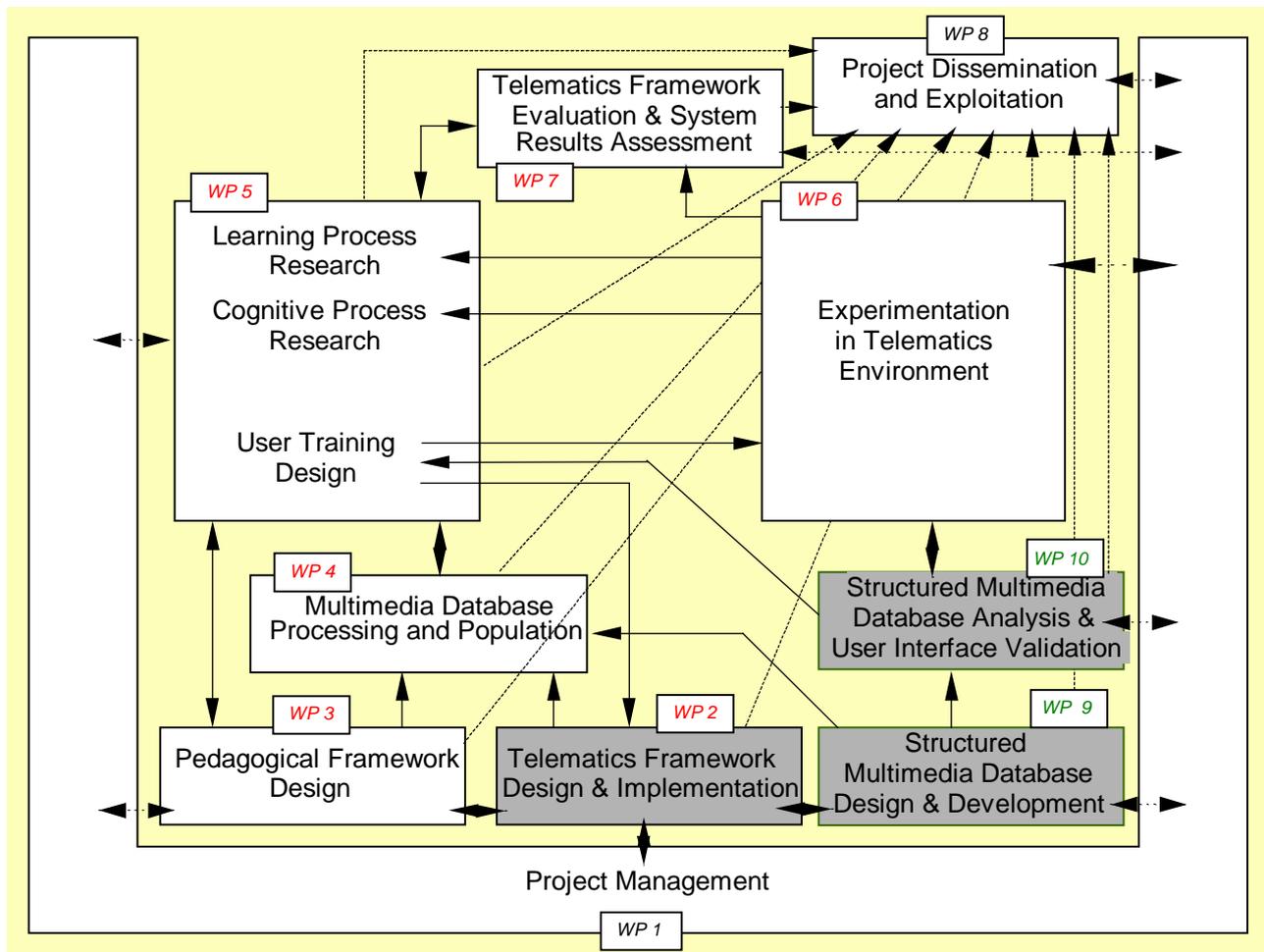
Figure 7: Package Interworking

Within the overall co-ordination of the "*Project Management*", the workpackages are structured according to two separate groups, related to pedagogical aspects (white boxes in the drawing) and technical/telematics aspects (grey boxes).

In workpackage 3 "*Pedagogical Framework Design*" the pedagogical models that will be used in the project will be defined. This will be done in parallel with workpackage 2 "*Telematics Framework Design and Implementation*" where the appropriate telematics framework, that complies with the needs of the pedagogical models, will be designed, implemented and integrated with the pedagogical models and the database. This database is developed in workpackage 9 "*Structured Multimedia Database Design and Development*". The work in this workpackage is linked to that in workpackages 2 and 3, from which it receives the appropriate inputs. Workpackage 9 forms the basis for the subsequent "*Structured Multimedia Database Analysis and User Interface Validation*", in which the database will be tested. Structuring and population of the database will be performed by a Curriculum Developer in workpackage 4 "*Multimedia Database Processing and Population*", that uses the outcomes of workpackages 3 and 9 as a starting base.

Workpackage 5 "*User Training Design, Cognitive and Learning Process Research*" contains three distinctive parts:

♦ Design of the User Training

♦ Learning Process Research

♦ Cognitive Process Research

The user training of this workpackage provides the initial experimentation results for workpackage 6 "*Experimentation in Telematics Environment*", where the actual experimentation phase with the targeted secondary school students will take place. All collected experimentation results are evaluated and assessed in two workpackages: the evaluation of the pedagogical model is done in the second and third part of workpackage 5 (Learning Process Research and Cognitive Process Research), whereas the evaluation of the telematics model will be carried out in workpackage 7 "*Telematics Framework Evaluation and System Results Assessment*".

An additional "*Project Dissemination and Exploitation*" workpackage collects inputs from all other workpackages and guarantees relevant information dissemination within the project and to the outside world.

11.4 Description of the Workpackages

See B.1 - Work Package Description hereafter.

11.5 Relevant reference list

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◆ Elen, J. (1995). Blocks on the road to instructional design prescriptions. A methodology for I.D.-research exemplified. Leuven : Leuven University Press.

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◆ Scardamalia, M., & Bereiter, C. (1991). Higher levels of agency for children in knowledge building: a challenge for the design of new knowledge media. **The Journal of the Learning Sciences, 1** (1), 37-68.

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◆ Winn, W. (1987). Instructional design and intelligent systems : Shifts in the designer's decision-making role. **Instructional Science**, **16**, 59-77.

◆ Zhang, J., & Norman, D.A. (1994). Representations in distributed cognitive tasks. **Cognitive Science**, **18**, 87-122.

B.1 - Work Package Description

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	1 of 15

WP ID **1**	Workpackage title: *Project Management*				Programme: **TAP-ET**	Task(s) **ET 1.8**
WP LEAD	**PEG**	Start	**1**	End	**30**	Dur	**30**
Total Person month	**11,6**			Total KECU		**136,45** EU Contribution: 68,225

Objectives:

1. General streamlining of the project (periodic management reports)

2. Expanding list of all participating parties that act as users to the project, schools, teachers, parents, MEPs

3. Project promotion materials (WEB)

Work Description:

1. General project management

   - ensure that consortium-member obligations towards the EC are properly fulfilled technical project co-ordination

   - organise and participate in General All Partner Management meetings

   - ensure internal project management

   - provide quality management and control

   - submission of progress and final reports

2. Ensure educational project co-ordination

   - convene and participate in Educational Working Group meetings

   - recruit core number of twelve European schools and involve participation of secondary schools (consensus building)

   - extend set of participating partners by involving additional European institutions, mainly schools, in an expanding network that can liaise with other European Programmes such as Comenius

   - distribute and account for financing for equipment and manpower in participating schools

   - more from all fifteen European countries

   - generalise school participation to maximum number of equipped and self-supporting European schools

   - create hyperlinks with European schools networks

3. Ensure technical project co-ordination

   - convene and participate in Technical Working Group meetings

Deliverables:

D1.1: Project Reports

D1.2: Final Report

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	3 of 15

WP ID **2**	Workpackage title: *Telematics Framework Design and Implementation*				Programme:	**TAP-ET**	Task(s) **ET 1.8**
WP LEAD	**Telia**	Start	**1**	End	**12**	Dur	**12**
Total Person month	**18,3**			Total KECU		**289,893** EU Contribution: 170,275	

Objectives:

1. State-of-the-art deliverable on telematics environment at an early stage in the project (3rd month of the project)

2. Control and adaptation of the technological facilities to build out the telematics environment in each school in view of fluent participation to different experimental sessions

3. Specification and description of the telematics environment for the schools based on the four pedagogical models, including the integration strategy to incorporate the pedagogical models in the telematics environment

4. Complete telematics infrastructure provided and made ready for experimentation

Work Description:

The following activities can be identified in this workpackage:

1. Investigation of user needs and interests on the use of telematics in a pedagogical environment (perception of needed functionality's, preferences for telematic instruments and specific user interfaces, ...).

2. In depth analysis of telematic learning environment that (1) positions the characteristics of this telematic environment in the state-of-the art and (2) accommodates users' needs and interests as well as research-based pedagogical requirements

3. Design of the telematics environment needed in the schools in synergy with the four pedagogical models (explicit guidance, implicit guidance, group work scenarios) as specified in WP3. Elaboration of an integration strategy to incorporate the pedagogical models in the telematics environment

4. Ensurance of technological infrastructure in secondary schools (build out of the technological infrastructure, technical assistance to the teaching staff during user training and accustomisation phase, ...)

5. Integration of the structured database, the technological environment and the pedagogical framework, into a totally functional learning environment

6. Considering upgrade facilities for the telematics environment in the schools to keep pace with ongoing evolution in technology and software, and performing this upgrade where appropriate.

Deliverables:

D2.1: State-of-the-art report on telematics environment

D2.2: Description and specification of the ParlEuNet telematics environment

Project Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	4 of 15

WP ID **3**	Workpackage title: *Pedagogical Framework Design*				Programme:	**TSER**	Task(s) **TSER1**
WP LEAD	**KUL**	Start	**1**	End	**12**	Dur	**12**
Total Person month	**8,1**			Total KECU		**111,125** **EU Contribution: 104,475**	

Objectives:

1. Research report describing in detail the four pedagogical models that will be used in the telematics environment (including theoretical background these models are based upon and concrete implementation guidelines)

2. Research strategy in terms of a detailed methodology of tasks to be performed, resulting in a training syllabus that describes the project, the use of the telematics environment and its tools, the assignments and tasks to be performed by the students and the rules to apply the four pedagogical models

3. Research strategy for each school how to apply the four pedagogical models in a telematics environment (document for each school).

Work Description:

1. Research and design of four pedagocical models (independent vs. guided mode, scaffolded vs. open access) and on how to use telematics to promote learning starting from the output of dedicated design tools such as ID-Expert, GAIDA, PowerSim, ...

2. Research on the framework and strategy within the schools on how to apply the four pedagogical models.

3. Development, try-out, and fine-tuning of different components of the telematic learning environment, aligning user friendliness requirements and experimentation and implementation of the telematics environment in accordance with the pedagogical requirements.

4. Discussion and try-out of project description with students and teachers, discussions on the practical considerations with each school and the elaboration of an action plan.

5. Development of a training syllabus. It gives a project description and describes (in detail) the use of the telematics environment and its tools, the assignments and tasks to be performed by the students and the rules to apply the four pedagogical models. Remark that the design of the training syllabus is part of WP5, while the development itself is part of the activities in this workpackage. The training syllabus will be used during the user training seminars of WP5.

Deliverables:

D3.1: Research report on the four pedagogical models

D3.2: Training syllabus

Project Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	5 of 15

WP ID **4**	Workpackage title: *Multimedia Database Processing and Population*					Programme:	**ESP**	Task(s) **ESP 3.4**
WP LEAD	**PEG**	Start		**1**	End	**12**	Dur	**12**
Total Person month	**6,7**				Total KECU		**195,196** **EU Contribution: 116,142**	

Objectives:

1. Populated, processed and structured ParlEuNet database

Work Description:

1. Analysis and selection of Parliament-related multimedia content for the database (either electronic or not) with assistance of Curriculum Developer

2. Processing, structuring and mapping of raw material onto the metadata types in alignment with the student-related tasks and the pedagogical models (for details on type of content and quantity of data, please refer to 7.2.1.2.2)

3. Translation of text metadata to the three working languages (English, French and German) of the ParlEuNet project where appropriate

4. Adaptation of database user interface in accordance with user language requirements (English, French and German)

5. Ensurance for database infrastructure and applications to keep pace with ongoing evolutions in technology and software development

Deliverables:

D4.1: Populated multimedia database

Project Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	6 of 15

WP ID **5**	Workpackage title: *User Training Design, Cognitive and Learning Process Research*				Programme:	**TSER**	Task(s) **TSER1**
WP LEAD	**KUL**	Start	**7**	End	**30**	Dur	**24**
Total Person month	**16**			Total KECU		**117,325** **EU Contribution: 104,525**	

Objectives:

1. Training syllabus based on the outcomes of genuine research and design endeavours

2. Report on research results of cognitive processes of students during collaboration in rich technological learning environment

3. Report on research results on the use made of support by students and cognitive processes stimulated by different support strategies in rich technological learning environments

Work Description:

Towards students as users:

1. Elaboration of observation instruments and qualitative data analysis instruments for all inter- and intragroup interactions (videoconferencing, co-operative learning, documents and other products)

2. Selection of cases for in-depth study and data-analysis of various prespecified interactions of students and teachers and of students with different components of the telematic learning environment

3. Collection and categorisation of observation results made during the trials and experimentation in WP6

4. Report writing on:

   - interaction with and use of communication and information tools

   - collaboration with other students within the own group (intergroup) and with groups in other schools (intra-school group)

   - use of project description booklet

   - documents and other products developed by the students during group work

   - interactions with teacher

   - relationship between learning activities, collaborative activities and learning outcomes

   - the impact of explicit and implicit guidance on cognitive and group processes and use of technology

5. Synthesis of findings and integration of results with results from workpackage 6 and 10, elaboration, discussion and revision of research report

Towards teachers as users:

1. Design of user training workshop (specification of objectives, elaboration of teachers' project (specification of guidelines for facilitators implementing student-centred-, problem-based and collaborative learning in rich technological environments), development of training strategies for both the educational and the technological aspects of the ParlEuNet project)

2. Analysis of users with respect to knowledge about and experience with student-centred-, problem-based and collaborative learning on the one hand and technological tools in view of increasing the probability of successful implementation of telematics in learning environments

3. The design of the training syllabus (containing project descriptions booklet, description of pedagogical models and specific teacher information) and of the hands-on-teacher seminars, is a result of project specific research activities. Remark that in this workpackage only the design of the training syllabus is done, the actual development is part of the activities of WP3.

4. On-line user assistance (e-mail forum and videoconferencing), analysis of feedback information, report writing, follow up user training and feedback seminar

Deliverables:

D5.1: Report of research results on the instructional design experiments

D5.2: Report of research results on cognitive processes

Project Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	8 of 15

WP ID **6**	Workpackage title: *Experimentation in Telematics Environment*				Programme:	**TAP-ET**	Task(s) **ET 1.8**
WP LEAD	**KUL**	Start	**10**	End	**24**	Dur	**15**
Total Person month	**22,1**			Total KECU		**273,124** **EU Contribution: 217,389**	

Objectives:

1. Implementation of the telematics and pedagogical framework involving collected observation results, such as log files, videorecordings, teachers and students comments, logistical classroom concerns, etc.

2. Report on the methodology used during the experimentation phase that also contains the results collected from observations (log files, videorecordings made during the experimentation sessions, teachers and students comments, logistical classroom concerns, etc). The observation results will be categorised for subsequent evaluation: the telematics framework will be evaluated in WP7, while evaluation research on the pedagogical framework will be done in WP5.

Work Description:

1. State of the art telematics framework (designed and implemented in WP2) in combination with the four pedagogical models (designed in WP3) is trialed in the school setting, involving a series of carefully monitored cross-national trials in the initial twelve pre-selected European pilot schools.

2. Attract and allow an additional selection of European pilot institutions, mainly schools, to make use of the available telematics environment in an expanding network that can liaise with other European Programmes such as Comenius. These additional institutions will be assisted in adopting the telematics environment, but will not be monitored within the research scope of this project.

Deliverables:

D6.1: Report on methodology used during experimentation phase

Project Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	9 of 15

WP ID **7**	Workpackage title: *Telematics Framework Evaluation and System Results Assessment*				Programme:	**TAP-ET**	Task(s) **ET 4.4**
WP LEAD	**MAA**	Start	**7**	End	**30**	Dur	**24**
Total Person month	**16,2**			Total KECU		**115,86** **EU Contribution: 103,06**	

Objectives:

1. Process-report on research and evaluation methodology and research and evaluation instruments

2. Evaluation report on the telematics environment as related to outcomes of the instructional design experiment in the ParlEuNet project

Work Description:

Activities in this workpackage aim at an in-depth analysis on (the use of) the telematics learning environment in relation to the outcomes of the instructional design experiments in the twelve schools (forty groups of students) of the first phase. The preparation of the studies as well as the report writing and the communication with users of this research is part of the workpackage as well. The activities in this workpackage are closely related to the learning process evaluation in workpackage 5.

1. Design, testing and validation of research instruments for:

   - assessing the contribution of the rich telematics learning environment to the (learning) quality of the projects realised by inter- and intra-school groups

   - measuring the use of technological tools: student characteristics such as knowledge, motivation and attitude towards the use of technological tools, prior to and after the experiences in the specific learning environments

   - assessing the use by students and teachers of different elements of the learning environment. This includes the design of and/or the selection of suitable post processing applications for log handling and interpretation, such as: automatic logging, the use of Internet history lists, tools for tracing students actions and behaviour, automated agenda, ...

2. Administration of research instruments prior to, during and after group work in the twelve schools (partners linked to the specific schools)

3. Analysis of (interaction and main) effects of (a) explicit guidance, (b) implicit guidance, (c) student characteristics for:

   - learning outcomes including the assessment of the quality of projects produced by the students

   - use of technological tools

   - knowledge of and attitude towards instructional components of the learning environment

   - use of collaboration strategies and distribution of roles

Deliverables:

D7.1: Evaluation report on telematics environment

Project Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	11 of 15

WP ID **8**	Workpackage title: *Project Dissemination and Exploitation*					Programme:	**TAP-ET**	Task(s) **ET 4.3**
WP LEAD	**PEG**	Start	**13**	End	**30**	Dur	**18**	
Total Person month	**13**			Total KECU		**260,5** **EU Contribution: 123,05**		

Objectives:

1. Production of an exploitation report on the sustenance of the ParlEuNet system as part of the final report; uses and commercialisation of data-base and its contents and telematic learning environment, self-financing models for schools

2. ParlEuNet WEB site on project information and status, links with other relevant websites

3. European dissemination seminar for educationalist, MEPs and policymakers

4. Seminars and workshops for teachers and parents in four Member countries

5. Production of a video on ParlEuNet

6. Publications of educational guidelines as emerging from the project for policymakers, researchers

7. Publication of a how-to-do booklet for schools

Work Description:

1. Disseminate educational methodology and guidelines to national and European institutions. This will be accomplished by:
   - Organising seminars and workshops in various participating countries (Germany, Italy, Spain and France) led by the Parents Association Baden-Württemberg; hook up to the European Parents' Association website.
   - Organising a European dissemination seminar at the European Parliament inviting MEPs, European level educationalists, and policymakers from Ministries of Education.
   - Publications of educational guidelines in educational and other interest journals.
   - Publishing a project booklet for schools in English, French and German on ParlEuNet and send it to interested schools. Advertise on web and through national organisations,

2. Promote visibility of project results, especially towards all national and European school networks such as COMENIUS, Parliament and Commission websites. This will be accomplished by:
   - The ParlEuNet website hyperlinking with educational websites
   - Creating a project video in English, French and German and distribute to interested schools
   - Considering publication of the ParlEuNet content materials (paper publications, CD-ROM, etc.) via the "Information on the European Parliament" Internet site

3. Drafting reports and discussion on outcomes of the research for:
   - educational research community
   - potential users (teachers, parents, principals)

Deliverables:

D8.1: National dissemination seminars and workshops

Project Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	13 of 15

WP ID **9**	Workpackage title: ***Structured Multimedia Database Design and Development***				Programme:	**ESP**	Task(s) **ESP 3.4**
WP LEAD	**JRC**	Start	**1**	End	**15**	Dur	**15**
Total Person month	**29,3**			Total KECU		**338,248** **EU Contribution: 173,134**	

Objectives:

1. Multimedia database requirements

2. Multimedia database design

3. Multimedia database platform

4. Log structure design

5. Application for information management

6. Application for information retrieval

Work Description:

1. Investigation on the structure of the multimedia database

2. Design of the multimedia database, as an extension to the results of a currently ongoing EduCase research project sponsored by Belgian authorities. Investigate the possibilities and feasibility of translating the database immediately into an OODB or ORDB. (For more details on response time, number of users and simultaneous data use, please refer to 7.2.1.2.2)

3. Adaptation of authoring tools and web pages generation facilities to extended database design

4. Assessment and analysis of the technical implications of transpose the EduCase generated web pages to the ParlEuNet database platform

5. Development of an information management application for database authors (content providers), which allows to insert individual information topics in the database and link them into structured information packages

6. Build in tracking, testing and help support, as an internal part of the database and with an additional interface to external users

7. Build in context sensitive presentation components based on the emerging Java technology

8. Design of a suitable log structure that emphasises the pedagogical requirements

9. Installation of the database infrastructure

10. Coupling to physical database infrastructure (setting up the website)

11. Making the database accessible through the Internet infrastructure

12. Development of an information retrieval application for database users (teachers, students), which allows to obtain information from the database, possibly according to the structure as linked in the information packages.

13. Convert the current 2D graphical interface of the EduCase Browser for demonstration purposes into a 3D environment, using a VRML-application.

14. Testing of the database infrastructure

15. Fine-tuning the structured database in view of the implementation of the embedded support and motivational needs

16. Controlling user-friendliness of different elements of the technological environment

Deliverables:

D9.1: Multimedia database platform

D9.2: Implementation report on the database

Project Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	15 of 15

WP ID **10**	Workpackage title: *Structured Multimedia Database Analysis and User Interface Validation*				Programme:	**ESP**	Task(s) **ESP 3.5**
WP LEAD	**MAA**	Start	**7**	End	**24**	Dur	**18**
Total Person month	**9,4**			Total KECU		**84,553** **EU Contribution: 53,724**	

Objectives:

1. A series of non-formal, formative, improvement-oriented evaluation reports with suggestions for better linking the database to user needs.

2. Information and structure of database tested and approved

Work Description:

In order to improve its educational quality, formative user tests will be combined with the development of the structured multimedia database.

The database will be developed in an iterative process, where in each cycle the information for one particular learning task is added to the database, structured, and set up according to the different pedagogical models.

Qualitative data concerning usability, user-friendliness and quality of content will be gathered in each cycle from (a reference group) of students and teachers.

1. Initial structuring of the information in the database, in accordance to learning tasks and roles performed by students in particular group work scenarios.

2. Conducting improvement-oriented user tests with a small sample of teachers and students, focusing on educational quality of content and structure as well as usability and user-friendliness of tools available in the database.

3. Yielding suggestions for improvement to partners responsible for implementing the database and partners responsible for populating the database.

4. Reporting on the content, structure and usability of the final, tested and approved database.

5. Evaluation of copyright and IPR issues for publication and commercialisation of database content including Internet charging systems

Deliverables:

D10.1: User feedback report on multimedia database

Part C: Project Resources and Deliverables

C.1 Work-Package List

Contract Number	Acronym	Sheet
MM 1022	ParlEuNet	1 of 2

Work-Package ID	Title	Programme	Tasks addressed	Lead Contractor ID	pms	Start Month	End Month	Deliv-erable IDs
WP1	*Project Management*	*TAP-ET*	*ET 1.8*	*PEG*	*11,6*	*1*	*30*	*D1.1* *D1.2*
WP2	*Telematics Framework Design and Implementation*	*TAP-ET*	*ET 1.8*	*TEL*	*18,3*	*1*	*12*	*D2.1* *D2.2*
WP3	*Pedagogical Framework Design*	*TSER*	*TSER 1*	*KUL*	*8,1*	*1*	*12*	*D3.1* *D3.2*
WP4	*Multimedia Database Processing and Population*	*ESP*	*ESP 3.4*	*PEG*	*6.7*	*1*	*12*	*D4.1*
WP5	*User Training Design, Cognitive and Learning Process Research*	*TSER*	*TSER 1*	*KUL*	*16.0*	*7*	*30*	*D5.1* *D5.2*
WP6	*Experimentation in Telematics Environment*	*TAP-ET*	*ET 1.8*	*KUL*	*22,1*	*10*	*24*	*D6.1*
WP7	*Telematics Framework Evaluation and System Results Assessment*	*TAP-ET*	*ET 4.4*	*MAA*	*16.2*	*7*	*30*	*D7.1*
WP8	*Project Dissemination and Exploitation*	*TAP-ET*	*ET 4.3*	*PEG*	*13*	*13*	*30*	*D8.1*

WP9	*Structured Multimedia Database Design and Development*	*ESP*	*ESP 3.4*	*JRC*	*29,3*	*1*	*15*	*D9.1* *D9.2*
WP10	*Structured Multimedia Database Analysis and User Interface Validation*	*ESP*	*ESP 3.5*	*MAA*	*9,4*	*7*	*24*	*D10.1*

C.2 Work-Package Resources

Remark: the 190,000 ECU assigned as "third party assistance" to the Pegasus Foundation in Workpackages 4 and 8 is to be used for processing, populating and, where necessary, translating the database content. For maximum cost-effectiveness, the Pegasus Foundation will employ various persons to define applicable content on the European Parliament for 15-17 year olds (this task includes searching the European Parliament's databases and other applicable public domain databases), transferring that content into an applicable format that can be processed by the database and making it available in each of the three project working languages. The handling of the Parliament content may include the hiring of technical staff to scan documents and photographs and make video clips available on the database. At the project's commencement, research will be conducted to determine the relevance of content in the European Parliament's database and the availability of these materials in multimedia format. Following this preliminary work, a number of European enterprises or competent individuals (European University researchers, curriculum developers, educational experts) will be sought to populate the database. Choice of individuals and/or enterprises will be made on the basis of the most cost-effective means. If content is outsourced to other organisations for cost-effectiveness, the Pegasus Foundation will pay these parties for their work.

With respect to the exploitation of the database, publishers will also be requested to make an additional investment in the production and development of content, which will also fulfil in part the necessary cost-sharing requirements of the Commission. In exchange for this investment, the publishing companies will receive certain rights to exploit parts of the database content, subject to an agreement between the ParlEuNet partners and the participating schools. Publishers from the United Kingdom, France and Germany will be sought since content will be available principally but not exclusively in French, English and German.

As concerns the 30,000 ECU attributed to University of Antwerp as "third party assistance", this sum will be used principally to assist in additional translation of database materials. As the University of Antwerp has special competence in linguistics and is able to produce translations at a competitive rate, the University will perform much of the translation of content. If content is outsourced to other organisations for cost-effectiveness, the University will pay these parties for their work.

C.3 Deliverables List

Contract Number	Acronym	Sheet
MM 1022	ParlEuNet	**1 of 3**

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Deliverable ID	Title	WP Work-package	Delivery date	Nature	Dis-semination Level	Type PD or X
D1.1	Project reports Periodic progress reports will be submitted demarcating milestones and deliverables in project timeline. An expanding list of users will be submitted.	1	periodically from 1 to 30	RE	PU	PD
D1.2	Final Report A Final Report on the project will be submitted, describing the overall evolution of the project, indicating its critical success factors and suggesting directions for further expansion of the initiative	1	30	RE	PU	PD
D2.1	State of the art report on telematics environment, including a review of the existing research in the field	2	3	RE	PU	PD
D2.2	Description and specification of the ParlEuNet telematics environment Document that contains the specification and description of the telematics environment for the schools based on the four pedagogical models, including the integration strategy to incorporate the pedagogical models in the telematics environment	2	9	SP	PU	PD
D3.1	Research report on the four pedagogical models This report contains a detailed description of the pedagogical models that will be used in the telematics environment that is designed, including the theoretical background these models are based upon.	3	12	SP	PU	PD
D3.2	Training syllabus for students, teachers (and parents). The training syllabus gives a project description and describes in detail the use of the telematics environment and its tools, the tasks and assignments to be performed by the students and the rules to apply the four pedagogical models.	3	12	RE	PU	PD
D4.1	Populated multimedia database The multimedia database is populated and	4	12	TO	PU	PD

	structured by the Content Provider with content on the European Parliament and is ready for use in the experimentation phase. The database content will be available in three languages: English, French and German					
D5.1	Report of research results on the instructional design experiment This report will be on how students make use of support in the different pedagogical models. The targeted group of this research report is mainly the Educational Research Community	5	30	RE	PU	PD
D5.2	Report of research results on cognitive processes of the students while working in the pedagogical models during the design experiment	5	30	RE	PU	PD
D6.1	Report on methodology used during the experimentation phase, containing the categorised observation results Results collected from observations in the classroom during the experimentation phase. These results contain log files, videorecordings made during the experimentation sessions, teachers and students comment, logistical classroom concerns, etc. The observation results will be categorised for subsequent evaluation of the project	6	24	OT	RP	PD
D7.1	Evaluation report on the telematics environment. Report describing the use of the telematics environment in relation to the outcomes of the instructional design experiment. The report will also handle the problems encountered during installation, how they where solved and what are possible future improvements	7	30	RE	PU	PD
D8.1	National dissemination seminars and workshops for teachers, parents, Members of Parliament and Policymakers. These seminars will be conducted by the Parents Association of at least three of the participating countries: Germany, France and Italy. A seminar will also be organised at the European Parliament. Purpose is to illustrate the ParlEuNet project (telematics environment, pedagogical models) and disseminate the evaluation results of the project in a European context for potential users and decision makers. A project video in English, French and German will be distributed.	8	30	OT	PU	PD
D9.1	Multimedia database platform	9	20	TO	RP	PD

	Handover of the database platform that fulfils all functional requirements for database authors (content providers, curriculum developers, ...) and database users (retrieval)					
D9.2	Implementation report on the database Description of the structure of the database; hardware and software; type and structure of content; quantity	9	20	RE	RP	PD
D10.1	User feedback on multimedia database Report describing the results of formative user tests with the ParlEuNet Multimedia database. Two user groups are distinguished: students and teachers. Results will focus on usability, user-friendliness and quality of content.	10	24	RE	PU	PD

C.4 Equipment List

Contract Number	Acronym	Sheet
MM 1022	ParlEuNet	**1 of 2**

Description	WP ID	Month of Purchase	Cost ECU	Depreciation period	% alloc. to project	Resp. contractor ID	Amount to be allowed ECU
Non-university partners							
Portable PC+SW	1	1	3500	3 year	100	C.1	1750
Color scanner	8	13	1200	3 year	100	C.1	600
Portable overhead projector	8	13	1400	3 year	100	A.1.1	1400
Database Server	9	2	12400	3 year	100	C.4	6200
PentiumPro Development PC &SW	9	2	5500	3 year	100	A.4.1	2750
Color scanner	9	2	1200	3 year	100	A.4.1	600
Please see note [1]	2	3	16900	3 year	100	C.8	8450
Please see note [2]	2	3	12900	3 year	100	C.7	6450
University partners							
Please see note [3]	6	6	13450	3 year	100	C.2	13450
Please see note [4]	6	6	6060	3 year	100	C.6	6060

[1] The equipment budget for partner C.8 in WP2 will account for:
- up to 4 pieces of video conference equipment at an average cost of 2000 ECU per piece
- up to 2 fully equipped multimedia pentium PCs at an average cost of 3500 ECU per piece
- up to 3 Ethernet-to-ISDN BRA routers at an average cost of 630 ECU per piece

[2] The equipment budget for partner C.7 in WP2 will account for:
- up to 2 pieces of video conference equipment at an average cost of 2000 ECU per piece
- up to 2 fully equipped multimedia pentium PCs at an average cost of 3500 ECU per piece
up to 3 Ethernet-to-ISDN BRA routers at an average cost of 630 ECU per piece

[3] The equipment budget for partner C.2 in WP6 will account for the acquisition of necessary equipment on behalf of 5 adopted schools. Depending on the equipment already available, provisions are made for:
- additional telephone equipment (30 ECU)
- additional fax equipment (500 ECU)
- loudspeakers (250 ECU)
- microphone (50 ECU)
- scanner (750 ECU)
- video camera (500 ECU)
- video recorder (250 ECU)
and 1 additional Pentium PC (1800 ECU)

Please see note [5]	6	6	2330	3 year	100	A.2.2	2330
Please see note [6]	6	6	8260	3 year	100	C.3	8260
Please see note [7]	6	6	7060	3 year	100	A.3.1	7060
						Total	67110

In principle, an average equipment budget of 3500 ECU is reserved for each school.

Universities will manage this budget on behalf of the schools that they adopted, taking into account the extent to which the schools have already been equipped upon entering the project.

This budget also entails some additional provision for future upgrades of the equipment in case new technologies come available within the project period.

A video camera and video recorder will register all experimentation sessions in the schools.

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[4] The equipment budget for partner C.6 in WP6 will account for the acquisition of necessary equipment on behalf of 2 adopted schools. . Depending on the equipment already available, provisions are made for:
- additional telephone equipment
- additional fax equipment
- loudspeakers
- microphone
- scanner
- video camera
- video recorder

and
- 2 CD-ROM drives (50 ECU per piece)
- 2 ISDN modems (200 ECU per piece)
- 1 large screen monitor (900 ECU)

[5] The equipment budget for partner A.2.2 in WP6 will account for the acquisition of necessary equipment on behalf of 1 adopted school. . Depending on the equipment already available, provisions are made for:
- additional telephone equipment
- additional fax equipment
- loudspeakers
- microphone
- scanner
- video camera
- video recorder

[6] The equipment budget for partner C.3 in WP6 will account for the acquisition of necessary equipment on behalf of 2 adopted schools. This will include:
- additional telephone equipment
- additional fax equipment
- loudspeakers
- microphone
- scanner
- video camera
- video recorder

and 2 additional Pentium PCs

[7] The equipment budget for partner A.3.1 in WP6 will account for the acquisition of necessary equipment on behalf of 2 adopted schools. Depending on the equipment already available, provisions are made for:
- additional telephone equipment
- additional fax equipment
- loudspeakers
- microphone
- scanner
- video camera
- video recorder

and upgrading HW for 2 adopted schools (1200 ECU)

C.5 Other Significant Specific Project Costs

Contract Number	Acronym	Sheet
MM 1022	ParlEuNet	**1 of 3**

Description	WP ID	Resp. contractor ID	Amount to be allowed ECU
Non-university partners			
Rent of conference rooms (& catering)	6	C.1	1500
Rent of conference rooms (& catering)	6	A.1.1	3000
Communication costs, covering: ♦ (inter)national telephone communication ♦ (inter)national fax communication ♦ Internet subscription and usage (email, browsing, database consultation, etc.) ♦ (inter)national multipoint video conferencing rent of an MCU	2	C.8	10000
Idem	2	C.7	10000
University partners			
For each of the schools, an average budget of 3600 ECU is reserved to cover the costs for : ♦ allowing school teachers and students of each of the 12 pilot schools to learn about the project ♦ a number of international travels for teachers and/or students to assist in workshops and training sessions ♦ acquisition of specific SW to be used in the telematics environment ♦ acquisition of training material and SW by the universities This budget is allocated to the universities that manage it on behalf of the schools that are adopted. This budget is partly allocated to WP3 and partly to WP6	3	C.2	12750
Idem	3	C.6	1500
Idem	3	A.2.2	2800
Idem	3	C.3	1960
Idem	3	A.3.1	4345
Idem	6	C.2	5250
Idem	6	A.2.1	5700

Idem	6	C.6	4400
Idem	6	C.3	1640
Idem	6	A.3.1	2855
For each of the schools, an average budget of 930 ECU is reserved to cover some project specific costs, such as: ♦ additional necessary cabling ♦ acquisition of necessary SW ♦ acquisition of books and journals ♦ local advertising ♦ renting or acquisition of project specific office material This budget is allocated to the universities that manage it on behalf of the schools that are adopted [8] [9].	3	C.2	2150
Idem	3	C.6	5700
Idem	3	A.2.2	800
Idem	3	C.3	2140
Idem	3	A.3.1	400
Total:			90320

Within the scope of this project, communication cost should not be an inhibiting factor for the

students to make use of the telematics environment. Therefore the communication costs are expected to be quite high, and a sufficient amount needs to be reserved for this.

There will be 10 sessions of 3 hours each for each of the 4 groups in each of the 12 schools.

The Internet subscription fee on average amounts to 100 ECU for 3 months. Each school requires at least to 12 months Internet connection for the project (initial training and experimentation). This amounts to:

100 ECU*4 periods*12 schools = 4800 ECU.

Internet usage is on local tariffs. This is on average 0.025 ECU per minute.

Assuming that during each session, the students are allowed to use the Internet for 1 hour, this can amount to:

60 minutes*10 sessions*4 groups*12 schools*0.025 ECU = 720 ECU.

The average cost for 1 min international communication is currently 0.5 ECU.

Assuming that during each session, the students are allowed up to 15 min of international telephone communication, this can amount to:

15 minutes*10 sessions*4 groups*12 ECU = 3600 ECU.

Assuming that during each session, the students are allowed to have (multipoint) video conferences for 1.5 hours, this can amount to:

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[8] Allocation to the partners is currently done on the basis of the expected costs as reported by the adopted schools. The allocated cost for partner A.2.1 is much higher than the others as it includes the organisation of a project workshop in one of the schools adopted by this partner.

[9] In total, for each of the schools, an average budget for equipment and other project specific costs of 3500+3600+930=8030 ECU is provided.

(90 minutes*10 sessions*4 groups*12 schools*0.5 ECU)*2 since it is ISDN = 43200 ECU.

Renting costs for an MCU that supports multipoint video conferences amount to 750 ECU for 3 months. The initial training, the experimentation and some of the workshop and management meetings, are expected to make use of (multipoint) video conferencing. Therefore, it is expected that an MCU will need to be rented for the complete project duration (30 months). The cost can amount to:

750 ECU*10 periods = 7500 ECU.

The total can therefore amount to approximately 60000 ECU. Half of these costs will be contributed by the industrial partners in this project.

Supporting Information – To Annex 1

Form S.1 Cost Summary per year in ECU

Project Ref.	Acronym	Date	Sheet
417	ParlEuNet	27/10/97	1 of 3

Year	1

Participants codes	Person-Month	1. Personnel Costs	2. Equipment Costs	3. Third Party Assistance (subcontractors)	4. Travel and Subsistance	5. Consumables and Computing	6. Other Significant Specific Project Cost	7. Overheads	8. Total Costs ECU	% of Contribution FC AC	Ecu %	EU Contribution ECU
C.1	9.47	75787	3500	95000	6540	3000	600	18947	203373	50	FC	101687
A.1.1	0.63	2976			600	2796	600	149	7121	100	AC	7121
Subtotal 1	10.10	78763	3500	95000	7140	5796	1200	19006	210494	52		108808
C.2	12.52	64669	13450		5724	1500	15950	12934	114227	100	AC	114227
A.2.2	2.34	13166	2330	30000	2990	1500	4480	1317	55782	100	AC	55782
Subtotal 2	14.86	77835	15780	30000	8714	3000	20430	14251	170009	100		170009
C.3	4.69	24240	8260		2544	1500	4428	4848	45820	100	AC	45820
A..3.1	5.97	30670	7060		3504	1500	5316	6134	54184	100	AC	54184
Subtotal 3	10.66	54910	15320		6048	3000	9744	10982	100004	100		100004
C.4	15.24	151088	12400		7440	3600		40794	215322	50	FC	107661
A.4.1	11.89	71360	6700		6240	7240		17840	109380	50	FC	54690
Subtotal 4	27.13	222448	19100		13680	10840		58634	324702	50		162351
C.6	1.87	9662	6060		2544	1500	8340	1932	30038	100	AC	30038
A..6.1										100	AC	
Subtotal 6	1.87	9662	6060		2544	1500	8340	1932	30038	100		30038
C.7	3.77	22714	12900		4800	2300	20000	22486	85200	50	FC	42600
Subtotal 7	3.77	22714	12900		4800	2300	20000	22486	85200	50		42600
C.8	1.27	7002	16900		4800	2000	20000	6932	57633	50	FC	28817
Subtotal 8	1.27	7002	16900		4800	2000	20000	6932	57633	50		28817
TOTAL	69.66	473334	89560	125000	47726	28436	79714	134313	978080	66		642627

Supporting Information – To Annex 1

Form S.1 Cost Summary per year in ECU

Project Ref.	Acronym	Date	Sheet
417	ParlEuNet	27/10/97	2 of 3

Year	2

Participants codes	Person-Month	1. Personnel Costs	2. Equipment Costs	3. Third Party Assistance (subcontractors)	4. Travel and Subsistance	5. Consumables and Computing	6. Other Significant Specific Project Cost	7. Overheads	8. Total Costs ECU	% of Contribution FC AC	Ecu %	EU Contribution ECU
C.1	14.51	116080	1200	63333	10420	21467	8482	29020	250002	50	FC	125001
A.1.1	2.32	11032	1400		2533	2704	2400	552	20621	100	AC	20621
Subtotal 1	16.83	127112	2600	63333	12953	24171	10882	29572	270623	54		145622
C.2	12.63	65272			4536		4200	13054	87063	100	AC	87063
A.2.2	1.39	7857			1101		3520	786	13264	100	AC	13264
Subtotal 2	14.02	73129			5637		7720	13840	100327	100		100327
C.3	5.18	26781			2016		1312	5356	35465	100	AC	35465
A..3.1	6.11	31416			3276		2284	6283	43259	100	AC	43259
Subtotal 3	11.29	58197			5292		3596	11639	78724	100		78724
C.4	4.36	43222			1260	506		11671	56658	50	FC	28329
A.4.1	2.91	17440			960	810		4360	23570	50	FC	11785
Subtotal 4	7.27	60662			2220	1316		16031	80228	50		40114
C.6	9.35	48295	1575		4664	250	5061	9659	69504	100	AC	69504
A..6.1	4.91	24550			1618			4910	31078	100	AC	31078
Subtotal 6	14.26	72845	1575		6282	250	5061	14569	100582	100		100582
C.7	- 0.52	- 3086			1149		12429	- 3054	7438	50	FC	3719
Subtotal 7	- 0.52	- 3086			1149		12429	- 3054	7438	50		3719
C.8	1.49	8261	350		412	300	10076	8177	27576	50	FC	13788
Subtotal 8	1.49	8261	350		412	300	10076	8177	27576	50		13788
TOTALS	64.64	397120	4525	63333	33945	26037	49764	90774	665498	72		482876

Supporting Information – To Annex 1

Form S.1 Cost Summary per year in ECU

Project Ref.	Acronym	Date	Sheet
417	ParlEuNet	27/10/97	3 of 3

Year	3

Participants codes	Person-Month	1. Personnel Costs	2. Equipment Costs	3. Third Party Assistance (subcontractors)	4. Travel and Subsistance	5. Consumables and Computing	6. Other Significant Specific Project Cost	7. Overheads	8. Total Costs ECU	% of Contribution FC AC	Ecu %	EU Contribution ECU
C.1	4.49	35893		31667	3290	9533		8973	89357	50	FC	44678
A.1.1	1.16	5516			1267			276	7058	100	AC	7058
Subtotal 1	5.65	41409		31667	4557	9533		9249	96415	54		51736
C.2	2.75	14208			540			2842	17590	100	AC	17590
A.2.2	0.38	2114			215			211	2540	100	AC	2540
Subtotal 2	3.13	16322			755			3053	20130	100		20130
C.3	1.63	8396			240			1679	10315	100	AC	10315
A..3.1	1.63	8355			390			1671	10416	100	AC	10416
Subtotal 3	3.25	16751			630			3350	20731	100		20731
C.4												
A.4.1												
Subtotal 4												
C.6	1.02	5253			240			1051	6543	100	AC	6543
A..6.1										100	AC	
Subtotal 6	1.02	5253			240			1051	6543	100		6543
C.7												
Subtotal 7												
C.8												
Subtotal 8												
TOTALS	13.05	79735		31667	6182	9533		16703	143819	69		99140

S.2 - Labour rates and Overheads

Contract Number	Acronym	Date	Sheet
MM 1022	**ParlEuNet**	**27/10/97**	**1 of 12**

Contractor Code	**C. 1**
Organisation Name:	**Pegasus Foundation**

National Currency:	BF	Conversion Rate:	40

Year	Name or Category	Rate Code	Hourly Rate (Nat. Curr.)	Hourly Overhead Rate (Nat. Curr.)	Person Hours	Yearly Direct Labour Costs (Nat. Curr.)	Yearly Overhead Cost (Nat. Curr.)	Yearly Direct Labour Cost (ECU)	Yearly Overhead Cost (ECU)
1	Manager		2105	526	1824	3840000	960000	96000	24000
2	"		2105	526	1824	3840000	960000	96000	24000
3	"		2105	526	1824	3840000	960000	96000	24000

Overhead recovery rate used (as percentage of direct labour cost)	**25%**

Person Year:	12	Person Months:	19	Person Day:	8
Number of Person Months		Number of Person Days		Number of Hours	

Year	Person-month (all categories)	Yearly Cost excluding Overheads (Nat. Curr)	Yearly Overhead Cost (Nat. Curr)	Yearly Cost excluding Overheads (ECU)	Yearly Overhead Cost (ECU)	Yearly Cost (ECU)
1	9.47	3031488	757872	75787	18947	94734
2	12.44	3980800	995200	99520	24880	124400
3	4.49	1435712	358928	35893	8973	44866
Tot	26.40	8448000	2112000	211200	52800	264000

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	2 of 12

Contractor Code	A. 1. 1
Organisation Name:	Parent Association Baden-Wurttemberg

National Currency:	DM	Conversion Rate:	1.96

Year	Name or Category	Rate Code	Hourly Rate (Nat. Curr.)	Hourly Overhead Rate (Nat. Curr.)	Person Hours	Yearly Direct Labour Costs (Nat. Curr.)	Yearly Overhead Cost (Nat. Curr.)	Yearly Direct Labour Cost (ECU)	Yearly Overhead Cost (ECU)
1	Coordinator		61	3	1824	112000	5600	57143	2857
2	"		61	3	1824	112000	5600	57143	2857
3	"		61	3	1824	112000	5600	57143	2857

Overhead recovery rate used (as percentage of direct labour cost)	5%

Person Year:	12	Person Months:	19	Person Day:	8
Number of Person Months		Number of Person Days		Number of Hours	

Year	Person-month (all categories)	Yearly Cost excluding Overheads (Nat. Curr)	Yearly Overhead Cost (Nat. Curr)	Yearly Cost excluding Overheads (ECU)	Yearly Overhead Cost (ECU)	Yearly Cost (ECU)
1	0.63	5833	292	2976	149	3125
2	2.32	21623	1081	11032	552	11584
3	1.16	10812	541	5516	276	5792
Tot	4.10	38268	1913	19524	976	20501

Contract Number	Acronym	Date	Sheet
MM 1022	**ParlEuNet**	**27/10/97**	**3 of 12**

Contractor Code	**C. 2**
Organisation Name:	**Katholieke Universiteit Leuven**

National Currency:	**BF**	Conversion Rate:	**40**

Year	Name or Category	Rate Code	Hourly Rate (Nat. Curr.)	Hourly Overhead Rate (Nat. Curr.)	Person Hours	Yearly Direct Labour Costs (Nat. Curr.)	Yearly Overhead Cost (Nat. Curr.)	Yearly Direct Labour Cost (ECU)	Yearly Overhead Cost (ECU)
1	Coordinator		1360	272	1824	2480000	496000	62000	12400
2	"		1360	272	1824	2480000	496000	62000	12400
3	"		1360	272	1824	2480000	496000	62000	12400

Overhead recovery rate used (as percentage of direct labour cost)	**20 %**

Person Year:	**12**	Person Months:	**19**	Person Day:	**8**
Number of Person Months		Number of Person Days		Number of Hours	

Year	Person-month (all categories)	Yearly Cost excluding Overheads (Nat. Curr)	Yearly Overhead Cost (Nat. Curr)	Yearly Cost excluding Overheads (ECU)	Yearly Overhead Cost (ECU)	Yearly Cost (ECU)
1	12.52	2586743	517349	64669	12934	77602
2	12.63	2610882	522176	65272	13054	78326
3	2.75	568333	113667	14208	2842	17050
Tot	27.90	5765959	1153192	144149	28830	172979

Contract Number	Acronym	Date	Sheet
MM 1022	**ParlEuNet**	**27/10/97**	**4 of 12**

Contractor Code	A. 2. 2
Organisation Name:	Universiteit Antwerpen - UIA

National Currency:	BF	Conversion Rate:	40

Year	Name or Category	Rate Code	Hourly Rate (Nat. Curr.)	Hourly Overhead Rate (Nat. Curr.)	Person Hours	Yearly Direct Labour Costs (Nat. Curr.)	Yearly Overhead Cost (Nat. Curr.)	Yearly Direct Labour Cost (ECU)	Yearly Overhead Cost (ECU)
1	Coordinator		1409	141	1920	2705455	270545	67636	6764
2	"		1409	141	1920	2705455	270545	67636	6764
3	"		1409	141	1920	2705455	270545	67636	6764

Overhead recovery rate used (as percentage of direct labour cost)	10 %

Person Year:	12	Person Months:	20	Person Day:	8
Number of Person Months		Number of Person Days		Number of Hours	

Year	Person-month (all categories)	Yearly Cost excluding Overheads (Nat. Curr)	Yearly Overhead Cost (Nat. Curr)	Yearly Cost excluding Overheads (ECU)	Yearly Overhead Cost (ECU)	Yearly Cost (ECU)
1	2.34	526639	52664	13166	1317	14483
2	1.39	314284	31428	7857	786	8643
3	0.38	84545	8455	2114	211	2325
Tot	4.10	925468	92547	23137	2314	25450

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	5 of 12

Supporting Information - To Annex 1

Contractor Code	C. 3
Organisation Name:	University of Barcelona

National Currency:	Peso	Conversion Rate:	166

Year	Name or Category	Rate Code	Hourly Rate (Nat. Curr.)	Hourly Overhead Rate (Nat. Curr.)	Person Hours	Yearly Direct Labour Costs (Nat. Curr.)	Yearly Overhead Cost (Nat. Curr.)	Yearly Direct Labour Cost (ECU)	Yearly Overhead Cost (ECU)
1	Coordinator		5360	1072	1920	10292000	2058400	62000	12400
2	"		5360	1072	1920	10292000	2058400	62000	12400
3	"		5360	1072	1920	10292000	2058400	62000	12400

Overhead recovery rate used (as percentage of direct labour cost)	20 %

Person Year:	12	Person Months:	20	Person Day:	8
Number of Person Months		Number of Person Days		Number of Hours	

Year	Person-month (all categories)	Yearly Cost excluding Overheads (Nat. Curr)	Yearly Overhead Cost (Nat. Curr)	Yearly Cost excluding Overheads (ECU)	Yearly Overhead Cost (ECU)	Yearly Cost (ECU)
1	4.69	4023829	804766	24240	4848	29088
2	5.18	4445715	889143	26781	5356	32138
3	1.63	1393708	278742	8396	1679	10075
Tot	11.50	9863252	1972650	59417	11883	71301

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	6 of 12

Contractor Code	A. 3. 1

Organisation Name:	Universiteit van Maastricht

National Currency:	NF	Conversion Rate:	2.21

Year	Name or Category	Rate Code	Hourly Rate (Nat. Curr.)	Hourly Overhead Rate (Nat. Curr.)	Person Hours	Yearly Direct Labour Costs (Nat. Curr.)	Yearly Overhead Cost (Nat. Curr.)	Yearly Direct Labour Cost (ECU)	Yearly Overhead Cost (ECU)
1	Coordinator		71	14	1920	136357	27271	61700	12340
2	"		71	14	1920	136357	27271	61700	12340
3	"		71	14	1920	136357	27271	61700	12340

Overhead recovery rate used (as percentage of direct labour cost)	20 %

Person Year:	12	Person Months:	20	Person Day:	8
Number of Person Months		Number of Person Days		Number of Hours	

Year	Person-month (all categories)	Yearly Cost excluding Overheads (Nat. Curr)	Yearly Overhead Cost (Nat. Curr)	Yearly Cost excluding Overheads (ECU)	Yearly Overhead Cost (ECU)	Yearly Cost (ECU)
1	5.97	67781	13556	30670	6134	36804
2	6.11	69428	13886	31416	6283	37699
3	1.63	18465	3693	8355	1671	10026
Tot	13.70	155674	31135	70441	14088	84529

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	7 of 12

Contractor Code	C. 4
Organisation Name:	DG JRC, ISIS/STA

National Currency:	ECU	Conversion Rate:	1

Year	Name or Category	Rate Code	Hourly Rate (Nat. Curr.)	Hourly Overhead Rate (Nat. Curr.)	Person Hours	Yearly Direct Labour Costs (Nat. Curr.)	Yearly Overhead Cost (Nat. Curr.)	Yearly Direct Labour Cost (ECU)	Yearly Overhead Cost (ECU)
1	Engineer		66	18	1800	118961	32119	118961	32119
2	"		66	18	1800	118961	32119	118961	32119
3	"		66	18	1800	118961	32119	118961	32119

Overhead recovery rate used (as percentage of direct labour cost)	27 %

Person Year:	12	Person Months:	20	Person Day:	7.5
Number of Person Months		Number of Person Days		Number of Hours	

Year	Person-month (all categories)	Yearly Cost excluding Overheads (Nat. Curr)	Yearly Overhead Cost (Nat. Curr)	Yearly Cost excluding Overheads (ECU)	Yearly Overhead Cost (ECU)	Yearly Cost (ECU)
1	15.24	151088	40794	151088	40794	191882
2	3.86	38266	10332	38266	10332	48597
3	0.00	0	0	0	0	0
Tot	19.10	189354	51125	189354	51125	240479

Contract Number	Acronym	Date	Sheet
MM 1022	**ParlEuNet**	**27/10/97**	**8 of 12**

Contractor Code	A. 4. 1
Organisation Name:	**Arboth Learning Technologies**

National Currency:	BF	Conversion Rate:	40

Year	Name or Category	Rate Code	Hourly Rate (Nat. Curr.)	Hourly Overhead Rate (Nat. Curr.)	Person Hours	Yearly Direct Labour Costs (Nat. Curr.)	Yearly Overhead Cost (Nat. Curr.)	Yearly Direct Labour Cost (ECU)	Yearly Overhead Cost (ECU)
1	Engineer		1039	260	1733	1800000	450000	72000	18000
2	"		1039	260	1733	1800000	450000	72000	18000
3	"		1039	260	1733	1800000	450000	72000	18000

Overhead recovery rate used (as percentage of direct labour cost)	25 %

Person Year:	12	Person Months:	19	Person Day:	7.6
Number of Person Months		Number of Person Days		Number of Hours	

Year	Person-month (all categories)	Yearly Cost excluding Overheads (Nat. Curr)	Yearly Overhead Cost (Nat. Curr)	Yearly Cost excluding Overheads (ECU)	Yearly Overhead Cost (ECU)	Yearly Cost (ECU)
1	11.89	2854416	713604	71360	17840	89201
2	2.91	697584	174396	17440	4360	21800
3	0.00	0	0	0	0	0
Tot	14.80	3552000	888000	88800	22200	111000

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	9 of 12

Contractor Code	C. 6
Organisation Name:	The Research Centre City College Norwich

National Currency:	British Pound	Conversion Rate:	0.69

Supporting Information - To Annex 1

Year	Name or Category	Rate Code	Hourly Rate (Nat. Curr.)	Hourly Overhead Rate (Nat. Curr.)	Person Hours	Yearly Direct Labour Costs (Nat. Curr.)	Yearly Overhead Cost (Nat. Curr.)	Yearly Direct Labour Cost (ECU)	Yearly Overhead Cost (ECU)
1	Coordinator		24	5	1800	42780	8556	62000	12400
2	"		24	5	1800	42780	8556	62000	12400
3	"		24	5	1800	42780	8556	62000	12400

Overhead recovery rate used (as percentage of direct labour cost)	20 %

Person Year:	12	Person Months:	20	Person Day:	7.5
Number of Person Months		Number of Person Days		Number of Hours	

Year	Person-month (all categories)	Yearly Cost excluding Overheads (Nat. Curr)	Yearly Overhead Cost (Nat. Curr)	Yearly Cost excluding Overheads (ECU)	Yearly Overhead Cost (ECU)	Yearly Cost (ECU)
1	1.87	6667	1333	9662	1932	11594
2	3.31	11812	2362	17119	3424	20543
3	1.02	3625	725	5253	1051	6304
Tot	6.20	22103	4421	32034	6407	38441

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	10 of 12

Contractor Code	C. 7
Organisation Name:	Telia AB

National Currency:	S. Krona	Conversion Rate:	8.5

Year	Name or Category	Rate Code	Hourly Rate (Nat. Curr.)	Hourly Overhead Rate (Nat. Curr.)	Person Hours	Yearly Direct Labour Costs (Nat. Curr.)	Yearly Overhead Cost (Nat. Curr.)	Yearly Direct Labour Cost (ECU)	Yearly Overhead Cost (ECU)
1	Engineer		337	334	1824	615075	608925	72362	71638
2	"		337	334	1824	615075	608925	72362	71638
3	"		337	334	1824	615075	608925	72362	71638

Overhead recovery rate used (as percentage of direct labour cost)	99 %

Person Year:	12	Person Months:	19	Person Day:	8
Number of Person Months		Number of Person Days		Number of Hours	

Year	Person-month (all categories)	Yearly Cost excluding Overheads (Nat. Curr)	Yearly Overhead Cost (Nat. Curr)	Yearly Cost excluding Overheads (ECU)	Yearly Overhead Cost (ECU)	Yearly Cost (ECU)
1	3.77	193065	191135	22714	22486	45200
2	0.83	42712	42285	5025	4975	10000
3	0.00	0	0	0	0	0
Tot	4.60	235777	233419	27738	27461	55200

Contract Number	Acronym	Date	Sheet
MM 1022	**ParlEuNet**	**27/10/97**	**11 of 12**

Contractor Code	C. 8
Organisation Name:	Eircom

National Currency:	Irish Pound	Conversion Rate:	0.69

Year	Name or Category	Rate Code	Hourly Rate (Nat. Curr.)	Hourly Overhead Rate (Nat. Curr.)	Person Hours	Yearly Direct Labour Costs (Nat. Curr.)	Yearly Overhead Cost (Nat. Curr.)	Yearly Direct Labour Cost (ECU)	Yearly Overhead Cost (ECU)
1	Engineer		29	28	1600	45769	45311	66332	65668
2	"		29	28	1600	45769	45311	66332	65668
3	"		29	28	1600	45769	45311	66332	65668

Overhead recovery rate used (as percentage of direct labour cost)	99 %

Person Year:	10	Person Months:	20	Person Day:	8
Number of Person Months		Number of Person Days		Number of Hours	

Year	Person-month (all categories)	Yearly Cost excluding Overheads (Nat. Curr)	Yearly Overhead Cost (Nat. Curr)	Yearly Cost excluding Overheads (ECU)	Yearly Overhead Cost (ECU)	Yearly Cost (ECU)
1	1.27	4831	4783	7002	6932	13934
2	0.33	1272	1259	1843	1824	3667
3	0.00	0	0	0	0	0
Tot	1.60	6103	6042	8845	8756	17601

Contract Number	Acronym	Date	Sheet
MM 1022	**ParlEuNet**	**27/10/97**	**12 of 12**

Contractor Code	X. 1
Organisation Name:	European Parliament

National Currency:	ECU	Conversion Rate:	1

Year	Name or Category	Rate Code	Hourly Rate (Nat. Curr.)	Hourly Overhead Rate (Nat. Curr.)	Person Hours	Yearly Direct Labour Costs (Nat. Curr.)	Yearly Overhead Cost (Nat. Curr.)	Yearly Direct Labour Cost (ECU)	Yearly Overhead Cost (ECU)
1	Coordinator		0	0	1824	0	0	0	0
2	"		0	0	1824	0	0	0	0
3	"		0	0	1824	0	0	0	0

Overhead recovery rate used (as percentage of direct labour cost)	%

Person Year:		Person Months:		Person Day:	
Number of Person Months		Number of Person Days		Number of Hours	

Year	Person-month (all categories)	Yearly Cost excluding Overheads (Nat. Curr)	Yearly Overhead Cost (Nat. Curr)	Yearly Cost excluding Overheads (ECU)	Yearly Overhead Cost (ECU)	Yearly Cost (ECU)
1	0.00	0	0	0	0	0
2	0.00	0	0	0	0	0
3	0.00	0	0	0	0	0
Tot	0.00	0	0	0	0	0

S.3 - Confidentiality and IPR Handling

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	1 of 1

All interested parties in the ParlEuNet consortium will abide by the specification concerning IPR management as described in the Commission's documentation guidelines. A meeting will take place between interested parties in Leuven on the 3 and 4 November where issues of intellectual property, rights and confidentiality will be discussed. Following the agreement between all parties, an internal management document concerning the IPR handling will be produced for submission to the Commission after the commencement of the project in January 1998.

S 4.1- Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	1 of 24

Participant code	PEG

Participating Organisation (legal entity)

Full legal name, legal status **Abbreviated name**	Pegasus Foundation c/o Parlement Européen
Registered Address	
Street Name and No.	Plateau du Kirchberg
Town/City	Luxemburg
Post Code / Cedex	L -2929
Region + Region Code	LUX
Country Code (ISO)	L
Number of employees **What is current turnover?**	**MECU**
Contractual role	Coordinator
Type of Organisation	INT
Keyword Codes	A2 B34 B.............

Parent Organisation (legal entity)

Full legal name, legal status of parent organisation	European Commission
Country Code (ISO)	BE

Form S.4.2. Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	2 of 24

Participant code | **PEG**

Department / Institute carrying out the Work

Full name	Pegasus Foundation c/o Parlement Européen
Sector / Activity Keywords	**B INT**
Address	
Street Name and No.	c/o European Parliament, 135, Rue Belliard (Eastman Building)
Town/City	Brussels
Post Code / Cedex	B-1047
Region	Bruxelles Cap. BE1
Country Code (ISO)	BE

Contact Person	
Title, Name, First Name	Eugenio Belloni
Telephone Number	+32 2 284 36 95
Fax Number	+32 2 284 90 09
E-mail	fpegase@europarl.eu.int

S 4.1- Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	3 of 24

Participant code	PAR

Participating Organisation (legal entity)

Full legal name, legal status **Abbreviated name**	Parent Association Baden-Württemberg
Registered Address	
Street Name and No.	Kurpfalzstasse 37
Town/City	Boxberg
Post Code / Cedex	97944
Region + Region Code	Stuttgart DE11
Country Code (ISO)	DE
Number of employees **What is current turnover?**	**What is highest % share of your company held by another legal** **MECU** **entity?**
Contractual role	Associate Contractor
Type of Organisation	INT
Keyword Codes	A3 B34 B............

Parent Organisation (legal entity)

Full legal name, legal status of parent organisation	
Country Code (ISO)	

Form S.4.2. Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	4 of 24

Participant code	PAR

Department / Institute carrying out the Work

Full name	Parent Association Baden-Württemberg
Sector / Activity Keywords	**B INT**
Address	
Street Name and No.	Kurpfalzstasse 37
Town/City	Boxberg
Post Code / Cedex	97944
Region	DE11
Country Code (ISO)	DE

Contact Person	
Title, Name, First Name **Telephone Number**	Heinisch Renate +49 079 30 85 51
Fax Number	+49 079 30 88 52
E-mail	Dr.renate.heinisc@t-online.de

S 4.1- Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	5 of 24

Participant code	KUL

Participating Organisation (legal entity)

Full legal name, legal status	Katholieke Universiteit Leuven
Abbreviated name	KUL
Registered Address	
Street Name and No.	
Town/City	Leuven
Post Code / Cedex	3000
Region + Region Code	Vlaams Brabant BE24
Country Code (ISO)	BE
Number of employees **What is current turnover?**	**MECU**
Contractual role	Contractor
Type of Organisation	EDU
Keyword Codes	A2 B18 B.............

Parent Organisation (legal entity)

Full legal name, legal status of parent organisation	
Country Code (ISO)	

Form S.4.2. Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	6 of 24

Participant code | **KUL**

Department / Institute carrying out the Work

Full name	Centre for Instructional Psychology and Technology
Sector / Activity Keywords	**B EDU**
Address	
Street Name and No.	Naamsestraat 98
Town/City	Leuven
Post Code / Cedex	3000
Region	BE24
Country Code (ISO)	BE

Contact Person		
Title, Name, First Name	Elen Jan	Lowyck Joost
Telephone Number	+32 16 32 65 49	+32 16 32 62 44
Fax Number	+32 16 32 65 42	+32 16 32 62 74
E-mail	jan.elen@duo.kuleuven.ac.be	joost.lowyck@ped.kuleuven.ac.be

S 4.1- Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	7 of 24

Participant code | **RES**

Participating Organisation (legal entity)

Full legal name, legal status **Abbreviated name**	City College Norwich
Registered Address	
Street Name and No.	Ipswich Road Norwich
Town/City	Norfolk
Post Code / Cedex	NR2 2LJ
Region + Region Code	East Anglia UK4
Country Code (ISO)	UK
Number of employees **What is current turnover?**	
Contractual role	Associate Contractor
Type of Organisation	EDU
Keyword Codes	A2 B18 B.............

Parent Organisation (legal entity)

Full legal name, legal status of parent organisation **Country Code (ISO)**	

Form S.4.2. Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	8 of 24

Participant code | **RES**

Department / Institute carrying out the Work

Full name	City College Norwich - The Research Centre
Sector / Activity Keywords	**B EDU**
Address	
Street Name and No.	Ipswich Road Norwich
Town/City	Norfolk
Post Code / Cedex	NR2 2LJ
Region	UK4
Country Code (ISO)	UK
Contact Person	
Title, Name, First Name	Fiddy Rob
Telephone Number	+44 1 603 77 30 60
Fax Number	+44 1 603 77 30 18
E-mail	rfiddy@ccn.ac.uk

S 4.1- Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	9 of 24

Participant code	ILU

Participating Organisation (legal entity)

Full legal name, legal status	Uppsala University / Department of Teacher Training
Abbreviated name	UPP
Registered Address	
Street Name and No.	Box 2136
Town/City	Uppsala
Post Code / Cedex	S- 750 02
Region + Region Code	
Country Code (ISO)	SE
Number of employees	500
What is current turnover?	**MECU**
Contractual role	Associate contractor
Type of Organisation	EDU
Keyword Codes	

Parent Organisation (legal entity)

Full legal name, legal status of parent organisation	
Country Code (ISO)	

Form S.4.2. Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	10 of 24

Participant code	ILU

Department / Institute carrying out the Work

Full name	Uppsalla University
Sector / Activity Keywords	EDU
Address	
Street Name and No.	Box 2136
Town/City	Uppsala
Post Code / Cedex	S- 75002
Region	
Country Code (ISO)	SE
Contact Person	Arne Lindquist
Title, Name, First Name Telephone Number	+ 46 18 471 2465
Fax Number	+ 46 18 471 2400
E-mail	arne.lindquist@ilu.uu.se

S 4.1- Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	11 of 24

Participant code	UIA

Participating Organisation (legal entity)

Full legal name, legal status	Universiteit Antwerpen - Universitaire Instelling Antwerpen
Abbreviated name	UIA-UA
Registered Address	
Street Name and No.	Universiteitsplein
Town/City	Antwerpen
Post Code / Cedex	2610
Region + Region Code	Antwerpen BE21
Country Code (ISO)	BE
Number of employees **What is current turnover?**	**MECU**
Contractual role	Contractor
Type of Organisation	EDU
Keyword Codes	A2 B18 B.............

Parent Organisation (legal entity)

Full legal name, legal status of parent organisation	
Country Code (ISO)	

Form S.4.2. Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	12 of 24

Participant code **UIA**

Department / Institute carrying out the Work

Full name	Universiteit Antwerpen - Universitaire Instelling Antwerpen Centrum voor Taal en Spraak-Initiatief Nederlands
Sector / Activity Keywords	**B EDU**
Address	
Street Name and No.	Universiteitsplein
Town/City	Antwerpen
Post Code / Cedex	2610
Region	BE21
Country Code (ISO)	BE
Contact Person	
Title, Name, First Name Telephone Number	Van de Poel Kris +32 3 827 48 44
Fax Number	+32 3 825 21 67
E-mail	vdpoel@uia.ua.ac.be

S 4.1- Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	13 of 24

Participant code	BAR

Participating Organisation (legal entity)

Full legal name, legal status	Universitat de Barcelona
Abbreviated name	
Registered Address	
Street Name and No.	
Town/City	Barcelona
Post Code / Cedex	08035
Region + Region Code	Barcelona ES51
Country Code (ISO)	ES
Number of employees	
What is current turnover?	**MECU**
Contractual role	Contractor
Type of Organisation	EDU
Keyword Codes	A2 B18 B.............

Parent Organisation (legal entity)

Full legal name, legal status of parent organisation	
Country Code (ISO)	

Form S.4.2. Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	14 of 24

Participant code   **BAR**

Department / Institute carrying out the Work

Full name	Universitat de Barcelona Campus de la Vall d'Hebron
Sector / Activity Keywords	**B EDU**
Address	
Street Name and No.	Passeig de la Vall d'Hebron 171
Town/City	Barcelona
Post Code / Cedex	08035
Region	ES51
Country Code (ISO)	ES
Contact Person	
Title, Name, First Name Telephone Number	Gros Begonia +34 3 403 50 29
Fax Number	+34 3 403 50 12
E-mail	bgros@d5.ub.es

S 4.1- Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	15 of 24

Participant code	MAA

Participating Organisation (legal entity)

Full legal name, legal status	University of Maastricht
Abbreviated name	
Registered Address	
Street Name and No.	PO Box 616, DRT10
Town/City	Maastricht
Post Code / Cedex	6200 MD
Region + Region Code	Limburg (NL) NL42
Country Code (ISO)	NL
Number of employees **What is current turnover?**	**MECU**
Contractual role	Associate Contractor
Type of Organisation	EDU
Keyword Codes	A2 B18 B.............

Parent Organisation (legal entity)

Full legal name, legal status of parent organisation	
Country Code (ISO)	

Form S.4.2. Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	16 of 24

Participant code	MAA

Department / Institute carrying out the Work

Full name	University of Maastricht Department of Cognitive Psychology
Sector / Activity Keywords	**B EDU**
Address	
Street Name and No.	PO Box 616, DRT 10
Town/City	Maastricht
Post Code / Cedex	6200 MD
Region	NL42
Country Code (ISO)	NL
Contact Person	
Title, Name, First Name Telephone Number	Wiers Reiner +31 43 388 19 335
Fax Number	+31 43 361 82 3r
E-mail	R.wiers@psychology.unimaas.nl

S 4.1- Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	17 of 24

Participant code | **JRC**

Participating Organisation (legal entity)

Full legal name, legal status	European Commission DG JRC, ISIS/STA
Abbreviated name	JRC
Registered Address	
Street Name and No.	Rue de la Loi, 200
Town/City	Brussels
Post Code / Cedex	1040
Region + Region Code	Bruxelles Cap. BE1
Country Code (ISO)	BE

Number of employees	
What is current turnover?	**MECU**
Contractual role	Contractor
Type of Organisation	ROR
Keyword Codes	A1 B9 B27

Parent Organisation (legal entity)

Full legal name, legal status of parent organisation	European Commission
Country Code (ISO)	BE

Form S.4.2. Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	18 of 24

Participant code **JRC**

Department / Institute carrying out the Work

Full name	European Commission DGJRC, ISIS/STA
Sector / Activity Keywords	**B ROR**
Address	
Street Name and No.	TP 270
Town/City	Ispra
Post Code / Cedex	21020
Region	IT12
Country Code (ISO)	IT

Contact Person		
Title, Name, First Name	Loekkemyhr Per Andreas	Best Clive
Telephone Number	+39 332 78 60 21	+39 332 78 50 44
Fax Number	+39 332 78 91 85	+39 332 78 91 85
E-mail	per.loekkemyhr@jrc.it	clive.best@jrc.it

S 4.1- Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	19 of 24

Participant code	ARB

Participating Organisation (legal entity)

Full legal name, legal status	Arboth NV
Abbreviated name	
Registered Address	
Street Name and No.	Neervelden 75
Town/City	Brasschaat
Post Code / Cedex	2930
Region + Region Code	Antwerpen BE21
Country Code (ISO)	BE
Number of employees	2
What is current turnover?	120 **kECU**
Contractual role	Associate Contractor
Type of Organisation	IND
Keyword Codes	A4 B5 B18

Parent Organisation (legal entity)

Full legal name, legal status of parent organisation	
Country Code (ISO)	

Form S.4.2. Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	20 of 24

Participant code **ARB**

Department / Institute carrying out the Work

Full name	Arboth NV
Sector / Activity Keywords	**B IND**
Address	
Street Name and No.	Neervelden 75
Town/City	Brasschaat
Post Code / Cedex	2930
Region	BE21
Country Code (ISO)	BE
Contact Person	
Title, Name, First Name **Telephone Number**	Alen Marc +32 3 226 06 01
Fax Number	+32 3 651 45 64
E-mail	m_alen@arboth.com

S 4.1- Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	21 of 26

Participant code	TEL

Participating Organisation (legal entity)

Full legal name, legal status	Telia AB
Abbreviated name	
Registered Address	
Street Name and No.	
Town/City	Farsta
Post Code / Cedex	12386
Region + Region Code	Stockholm SE01
Country Code (ISO)	SE

Number of employees	33000	**What is highest % share of your company held by another legal**
What is current turnover?	5000 **MECU**	**entity?** 100%
Contractual role	Contractor	
Type of Organisation	IND	
Keyword Codes	A1 B6 B8	

Parent Organisation (legal entity)

Full legal name, legal status of parent organisation	
Country Code (ISO)	

Form S.4.2. Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	22 of 24

Participant code	TEL

Department / Institute carrying out the Work

Full name	Telia PubliCom AB
Sector / Activity Keywords	**B IND**
Address	
Street Name and No.	Box 20038, 60
Town/City	Stockholm
Post Code / Cedex	S-104
Region	SE01
Country Code (ISO)	SE
Contact Person	
Title, Name, First Name **Telephone Number**	Torbjorn Nalle Ehn +46 18 19 1313
Fax Number	+46 18 15 4458
E-mail	torbjorn.n.ehn@telia.se

S 4.1- Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	23 of 24

Participant code	EIR

Participating Organisation (legal entity)

Full legal name, legal status **Abbreviated name**	Eircom
Registered Address	
Street Name and No.	St. Stephen's Green West
Town/City	Dublin
Post Code / Cedex	2
Region + Region Code	Dublin IE002
Country Code (ISO)	IE
Number of employees **What is current turnover?**	**MECU**
Contractual role	Contractor
Type of Organisation	IND
Keyword Codes	A1 B6 B7

Parent Organisation (legal entity)

Full legal name, legal status of parent organisation	
Country Code (ISO)	

Form S.4.2. Participants details

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	24 of 24

Participant code | **EIR**

Department / Institute carrying out the Work

Full name	Eircom
Sector / Activity Keywords	**B IND**
Address	
Street Name and No.	St. Stephen's Green West
Town/City	Dublin
Post Code / Cedex	2
Region	IE002
Country Code (ISO)	IE

Contact Person	
Title, Name, First Name	Sweeney John
Telephone Number	+353 1 701 55 13
Fax Number	+353 1 475 87 21
E-mail	jsweeney@telecom.ie

S.6 Validation Sites

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	1 of 2

Validation Sites for Verification

Institution/ Organisations	Number of users	Technology used	City/Town + Postal Code	Region .	Country ·
St-Norbertusinstituut	≥ 24	traditional tele-communication equipment (phone, fax) video conferencing on PC database access via WEB browser	Antwerp - B-2000	BE21	**BE**
Athénée Adolphe Max	≥ 24	idem	Brussels - B-1040	BE1	**BE**
Bishop's Stortford College	≥ 24	idem	Cambridge	UK4	**UK**
Canterbury High School	≥ 24	idem	Canterbury	UK57	**UK**
St-Andrews College	≥ 4	idem	Dublin	IE002	**IE**
Gymnasium Königin-Olga-Stift	≥ 24	idem	Stuttgart - D-70176	DE11	**DE**
Jeanne d'Arc College	≥ 24	idem	Maastricht	NL42	**NL**
Stella Maris College	≥ 24	idem	Meerssen (Maastricht)	NL42	**NL**
Institut Pere Barnils	≥ 24	idem	Barcelona - E-08540	ES51	**ES**
Katrinelunds skola	≥ 24	idem	Sundsvall - S-850 07	SE01	**SE**
Rudbecksskolan	≥ 24	idem	Örebro - S-701 35	SE01	**SE**
Vilunda Gymnasium	≥ 24	idem	Upplands väsby - S-104 21	SE01	**SE**
Parent Association Baden-Württemberg	≥ 10	idem	Boxberg - D-97944	DE11	**DE**
Union Régionale des Associations de Parents d'Elèves de l'Enseignement Libre (URAPEL)	≥ 10	idem	Lyon - F-69002	FR71	**FR**
Federacio d'Associacions de Pares I Mares d'Alumnes d'ensenyament secundari de Catalunya (FAPAES)	≥ 10	idem	Barcelona - E-08020	ES51	**ES**

AGE Lombardia - Associazione Italia Genitori	≥ 10	idem	Bergamo - I-24100	IT2	**IT**
A site at the European Parliament	≥ 4	idem (except database access)	Strasbourg F-6700	FR42	**FR**

The three schools indicated with (*) in the above table are not funded from the ParlEuNet project.

S.7 - Effort and Cost Summary for the self investment for Contractors using Additional Cost model and for Sponsoring Partners

Contract Number	Acronym	Date	Sheet
MM 1022	ParlEuNet	27/10/97	1 of 1

It is currently not possible to quantify the investment of the European Parliament in the ParlEuNet project. The European Parliament has agreed to allow access at no cost to its public domain databases that do not include confidential information on the Parliament. In addition, the video conferencing studio in Strasbourg will be made available to Members of Parliament to dialogue with European students. The use of their facility represents both overhead costs and personnel costs for the technical staff operating the site. In addition, Members of Parliament on a voluntary basis will give their own time to communicate with students.

Staff involved for AC model partners

A.1.1   Dr. Renate Heinisch

A.2.1   Prof. Rob Fiddy

A.2.2   Prof. Kris Van de Poel

A.3.1   Prof. Reiner Wiers

C.2   Prof. Jan Elen

         Prof. Joost Lowyck

C.3   Prof. Begoñia Gros