TEMPUS JEP_41107_2006

SYSTEM ON CHIP DESIGN

Minutes of the start up meeting in Southampton

November 21 – November 27, 2007.

TEMPUS JEP_41107_2006 *SYSTEM ON CHIP DESIGN*

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The meeting was moderated by Prof. V. Litovski

He first gave some introductory information related to the very project and to the participants. Some of the information is listed below.

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Participants to the project are

- ✓ Technical University of Madrid, Prof. *Octavio Nieto Taladriz Garcia*, Laboratory of Integrated Systems (LSI), Department of Electronic Engineering (DIE), School of Telecommunication Engineering (ETSIT),

- ✓ University of Southampton, Prof. *Mark Zwolinski*, Electronic Systems Design Group (ESD), School of Electronics and Computer Science (ECS),

- ✓ University SS Cyril and Methodius, Skopje, Prof. Aksenti Grnarov, Faculty of electrical engineering and information technologies, *Department:* Informatics and computer science,

- ✓ University of Niš, Prof. *Vančo Litovski*, LEDA, Elektronski Fakultet.

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Participants to the meeting are

- Technical University of Madrid, Prof. *Octavio Nieto Taladriz Garcia* and *Prof. Slobodan Bojanić*
- University of Southampton, Prof. *Mark Zwolinski*,
- University SS Cyril and Methodius, Prof. Aksenti Grnarov and *Lec. Dimitar Trajanov*
- University of Niš, Prof. *Vančo Litovski* and *Prof. Predrag Petković*

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SPECIFIC OBJECTIVES OF THE PROJECT:

Improve Electronic integrated circuit design (system on chip) curricula at masters level by

- **Updating/creating courses.**
- **Development of laboratory practices and introduction to project fabrication and testing.**
- **Teacher-student ratio improvement.**
- **Textbook publishing.**

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Then the following agenda was accepted:

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AGENDA:

Of the kick off meeting in Southampton

1. Presentation of the project
2. Start up activities in
   a. Curriculum development
   b. Laboratory restructuring
   c. Teacher's training
   d. Library inter-partner sharing
   e. Pilot student exchange
   f. Dissemination
   g. Sustainability
   h. Quality control and monitoring
   i. Project management
3. Presentation of the curriculum of University of Niš
4. Presentation of the curriculum of University SS C&M, Skopje
5. Visit to the laboratory facilities of the University of Southampton.
5. Arrangements for the next meeting

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The work proceeded trough presentation and discussion of the items given in the agenda:

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PRESENTATION OF THE PROJECT

Activities:

1. Curriculum development
2. Lab restructuring
3. Teachers training
4. Library, inter-partner sharing
5. Pilot student exchange
6. Sustainability
7. Dissemination
8. Quality control and monitoring
9. Management of the project

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PRESENTATION OF THE PROJECT

Table 9: Breakdown of the Tempus grant

In the table below applicants are asked to provide an overview of the indicative breakdown of the Tempus grant amongst the consortium members.

Name of the institution	Amount in €
University of Nis	184889
University of Skopje	62000
University of Southampton	18000
University of Madrid	34200
Total Tempus Grant (A)	€ 299089

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PRESENTATION OF THE PROJECT

PROJECT COSTS	TOTAL
A.1 Staff Costs	€ 89689
A.2 Travel costs, costs of stay and inst. costs	€ 80400
A.3 Equipment	€ 89000
A.4 Printing & publishing	€ 29000
A.5 Other costs	€ 3000
SUBTOTAL (A.1 – A.5)	**€ 291089**
A.6 Overheads (up to a flat rate of 7% of the subtotal A.1 – A.5)	€ 8000
A: Total Tempus grant (A.1 – A.6):	**€ 299089**
B: Amount to be co-financed by the consortium (constituting of a minimum of 5% of the eligible project costs)	€ 30000
GRAND TOTAL (A+B):	**€ 329089**

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PRESENTATION OF THE PROJECT

WORKPLAN for FIRST project year

Activities													
Ref. N° /Sub Ref. N°	Title	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
1.	*Curriculum development*	O											
1.1	Review of syllabi for all CAD courses at both regional member institutions		XX	XXXX	====	XX							
1.2	Make a working list of proposed courses and the course of study					XX							
1.3	Define syllabi for all (old and new) courses						XXXX	====	XXXX	XXX=	XX==	XXXX	
1.4	Develop new teaching materials											XXXX	XXXX
1.5	Publish developed teaching materials												
2.	*Lab restructuring*						O						
2.1	Existing laboratory facilities investigated						XXX	XX					
2.2	Purchase of new laboratory equipment							XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
2.3	Lab equipment installation and integration with existing equipment												XXXX
2.4	Training of the laboratory technicians												
2.5	Adaptation of labs to support all courses in 1.2												
3.	*Teacher's training*						O						
3.1	(Re)training of professors and lecturers from the partner countries						====	====	====	====			
3.2	Training of best students to be teaching assistants												
3.3	Training of new research/teaching assistants by last-year's research/teaching assistants												
4.	*Library, inter-partner sharing*		O										
4.1	Define a list of necessary books and periodicals		XXXX	XXXX									
4.2	Purchase library PCs, books and periodicals				XX								
5.	*Pilot student exchange*												
5.1	Students from PC partners spend 1 month at EU institutions												
6.	*Sustainability*	O											
6.1	Sustainability analyzing and actions planning	X											
7.	*Dissemination*	O											
7.1	Dissemination analyzing and actions planning	X											
8.	*Quality control and monitoring*	O											
8.1	Quality control and monitoring ensured	X			X		XX			X			X
9.	*Management of the project*	O											

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START UP ACTIVITIES

9. Project management

9.1 *Future activities planning*

• One week consortium member meetings will take place once a year at EU consortium members institutions (2×4 travels E-W + 2×2 travels W-W).

• One week consortium member meetings will take place once a year at PC consortium members institutions (2×4 travels W-E + 2×2 travels E-E).

• At the meetings each project participant institution will present its progress and discuss future activities (2×2×1 week EU project report preparation + 2×3×2 weeks PC project report preparation).

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START UP ACTIVITIES

9. Project management

9.2 *Progress reviewed*

• The progress reports will be prepared by each consortium member institution semi-annually, and presented at consortium members meeting.
• The progress reports will be discussed at the meeting.
• The Co-ordinating institution will compile all progress reports into yearly Consortium progress reports (1 professor, 2 × 2 weeks)
• The Consortium Progress report will be approved by the contractor university (1 professor, 2×1 week).
• The Final Progress report (at the end of the project) will be published and distributed to all Universities in PC and neighboring countries (publishing costs).
• One part time secretary/accountant at the Contracting Consortium member institution and 1 part time secretary/accountant at the Co-ordinating Consortium member institution will take care of all secretarial and accounting duties related to the project, visas, etc.

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START UP ACTIVITIES

8. Quality control and monitoring

- New course syllabi introduced
- New teaching materials (books, lab practical, web presentations, …) published
- Laboratory facilities installed
- Laboratory facilities intensively used in all courses
- Consortium meetings held on schedule
- Teachers (re) trained
- Students' work at EU Universities recognized
- Student satisfaction with revised courses and student exchange program

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START UP ACTIVITIES

7. Sustainability

• The procedure of acceptance of the list of courses by the Nis and Skopje university authorities will be started after completion of activity 1.3.
• In the month just before each mid-year consortium member meeting, detailed plans will be made on how to ensure sustainability of the project results. A report stating all actions will be prepared for the meeting .
• The report will be discussed at the meeting, and suggestions for improvement made.
• The final report will be prepared and included in final project report.
• During the last year of the project, the training and work of new teacher-assistants (activity 3.3) will be monitored, and improved to ensure the sustainability of the process.

START UP ACTIVITIES

6. Dissemination

• In the month just before the mid-year consortium member meeting, detailed plans will be made on how to ensure dissemination of the project results. A report stating all actions will be prepared for the meeting.
• The report will be discussed at the meeting, and suggestions for improvement made (see 9.1).
• The final report will be prepared and included in final project report.
• In the last month of the second year, the actions defined in the report will be started (talks at region conferences and symposia about project results; tutorials and/or summer schools will be held;).
• In the last month of the project, when all project outputs are available, the whole package of tangible outputs (syllabi, textbooks, lab manuals, library inventory, etc) will be distributed to all universities in the region (Serbia, Montenegro, Kosovo, BIH, and Macedonia).
• The results of the project in form of detailed information about all of the courses and the degree as a whole will be posted on the web cites of the local participating universities. The content of these websites will be updated at least once each semester, and will contain the general information about the departments, the faculty and the university it belongs to, student accommodation and administrative procedures necessary to register. The faculty page will have the list of all courses and their ECTS credits, syllabi, prerequisites, grading and teaching methods, in order to provide information to all interested students. Contents of all web pages will be in the local language, as well as in English.

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START UP ACTIVITIES

5. Pilot student exchange

10 students (over 2 semesters) spend one month each at participating EU universities. The participating students will be graduate students, or undergraduate students who have either completed or are very near completion of their coursework. These students will spend their month at a participating EU University doing their bachelors or masters work. In the last semester, participating students would be expected to do coursework, as a test of the proposition that a normal student exchange is possible between non-English speaking countries, and to test the introduced ETC system. The participating students will be chosen with four criteria in mind: 1. Efficiency of studies (GPA, number of passed exams per year), 2. Area of interest (so that each of the areas defined by curriculum from outcome 1 is covered), 3. Willingness to spend one month teaching at home department and to coach their successors (see activity 3.3), and 4.

START UP ACTIVITIES

4. Library inter-partner sharing

4.1 *Define a list of necessary books and periodicals*

- During the first consortium members' meeting, text-books, professional books and periodicals used at EU University partners institutions will be discussed, and their relevance for PC partner universities will be assessed (meeting inputs will be covered under activity 9.1)
- PC professors define lists of necessary books (activity at each respective regional university)
- PC professors define lists of necessary periodicals (activity at each respective regional university)

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START UP ACTIVITIES

4. Library inter-partner sharing

4.2 *Purchase library PCs, books and periodicals*

• Purchase one PC at each PC university for inter-departmental-library communication. (These PCs will enable staff and students of all PC participating universities to share library resources.)
• Purchase books
• Subscribe to periodicals for each project year (activity at each respective regional university)

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START UP ACTIVITIES

3. Teacher's training

3.1*(Re)training of professors and lecturers from the partner countries*

Each of participating PC professors spends a month at participating EU universities and studies teaching methods. Visits are spread through 1 ½ academic years, such that problems of continuing with normal teaching activities at PC universities are minimized.

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START UP ACTIVITIES

3. Teacher's training

3.2 *Training of best students*

• During their stay at EU Universities, students participating in the pilot exchange program (see activity 5.1) study teaching and research methods, guided by the PC professors (from activity 3.2) and EU professors.
• After the students return to their universities, they are trained by their professors to be teaching/research assistants during the next semester.
• The trained students assist teaching during the following semester.

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START UP ACTIVITIES

2. Lab restructuring

2.1 *Existing laboratory facilities investigated*

• Making a list of existing equipment in laboratory for students. All equipment (test equipment and computers) will be included.
• In accordance with student enrollment rates and available laboratory area, laboratory use (number of lab working hours per week) will be analyzed
• Report for second consortium members' meeting.

START UP ACTIVITIES

2. Lab restructuring

2.2 *Purchase of new laboratory equipment*

• In accordance with first syllabi revision (see activity 1.3), and the report from 2.1, plan for lab exercises will be established at second consortium members' meeting. Meeting inputs will be covered under activity 9.1.
• After second consortium members' meeting, UN and US staff will define necessary measurement and computer equipment for each course lab exercises.
• In accordance with expected number of students, available laboratory area, and limit imposed by funding, new lab equipment for System of chip design courses will be specified. Lab equipment will be unified for all courses and all student groups.
• Lab equipment and special lab working conditions for advanced SoCD courses will be defined
• Order and purchase of lab equipment (first phase)
• At the beginning of each project year, electronics components, prototype boards, IC and printing boards fabrication, and other material for current needs in laboratory will be specified and purchased/paid for.

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START UP ACTIVITIES

2. Lab restructuring

2.3 *Lab equipment installation and integration with existing equipment*

- Laboratory adaptation for new equipment installation
- Installation of new lab equipment
- Integration of new and existing lab equipment
- EU consortium members will inspect installation of new laboratory equipment during second and third consortium members' meeting in Nis

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START UP ACTIVITIES

2. Lab restructuring

2.4 *Training of the laboratory technicians*

- Training of the lab technicians to use new measurement equipment
- Training of the research/teaching assistants on new software

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START UP ACTIVITIES

2. Lab restructuring

2.5 *Adaptation of labs to support all courses in 1.2*

- For each course, laboratory equipment and necessary software will be adopted in two phases
- Reports will be prepared for the following consortium members' meeting after each phase
- EU consortium members will inspect suitability of new lab exercises for courses defined in 1.2 during third consortium members' meeting in Nis

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START UP ACTIVITIES

1. Curriculum development

1.1 *Review of syllabi for all EE courses at all regional member institutions*

• Representatives of all consortium members will meet (see 9.1.). After a short overview of existing syllabi at both regional universities, a detailed plan of activities will be generated.
• All professors of member departments at regional universities will review in detail the syllabi of all existing courses at their departments, as well as all of the courses at EU member universities. In five weeks, with intense inter-university communication and consultations (via e-mail, fax and local travel), a working list of proposed courses, with explanations (in Serbian, Macedonian and English), will be sent to EU member universities
• EU member professors review the material and give comments and suggestions of changes

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START UP ACTIVITIES

1. Curriculum development

1.2 *Make a list of proposed courses and the course of study*

- Regional universities' professors review the comments from 1.1
- A list of proposed courses (masters) and courses of study is defined, in Serbian, Macedonian and English.

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START UP ACTIVITIES

1. Curriculum development

1.3 *Define syllabi for all (old and new) courses*

• Starting from the list of courses from 1.2, and the material from 1.1, first outlines of syllabi for all courses will be made.
• First outlines of syllabi will be analyzed in detail by EU professors
• Representatives of all consortium members will meet (see 6.1.) A detailed plan of syllabi at all three regional universities will be discussed.
• In accordance with the conclusions of the meeting, detailed syllabi will be generated by PC Professors.
• Detailed syllabi will be revised periodically by the EU professors.

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START UP ACTIVITIES

1. Curriculum development

1.4 *Develop new teaching materials*

- Starting from the detailed syllabi from 1.3, 10 textbooks will be written (or revised, where existing).
- For each course, laboratory exercises will be devised, necessary software and manuals written.
- For each course, teaching presentations for courses will be prepared
- Notebook PC and projector will be purchased for UN and US

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START UP ACTIVITIES

1. Curriculum development

1.5 *Publish developed teaching materials*

- Textbooks and lab manuals will be prepared for printing,
- Textbooks and lab manuals will be published

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PRESENTATION OF THE CURRICULUM OF UNIVERSITY OF NIŠ

(Serbian version)

God	Sem	Predmet 0	Predmet 1	Predmet 2	Predmet 3	Predmet 4	Predmet 5
1	1		Linearna algebra	Elektrotehnika 1	Opšta fizika	Uvod u računarstvo	Društvo i održivi razvoj
	2		Matematička analiza	Elektrotehnika 2	Fizička elektronika	Algoritmi i programiranje	Poslovne komunikacije
2	3		Merenja u elektronici	Osnovi elektronike	Digitalna elektronika	Objektno programiranje	Signali i sistemi
	4		Simulacija i optimizacija elektronskih kola	Analogna elektronika	Osnovi telekomunikacija	OO tehnike projektovanja sistema	Digitalna obrada signala
3	5	Engleski 1	Programabilna elektronska kola	Osnovi mikro/nanoelektronike	Digitalna integrisana kola	Izborni 5.1	Izborni 5.2
	6		Izvori za napajanje	Projektovanje integrisanih kola	Mikroprocesorska tehnika	Izborni 6.1	Završni ispit

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PRESENTATION OF THE CURRICULUM OF UNIVERSITY OF NIŠ

(English version)

Year	Sem	Subject 0	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5
1	1		**Linear algebra**	**Electrotechnics 1**	**General Physics**	**Introduction to computer science**	**Society and social development**
	2		**Mathematical analysis**	**Electrotechnics 2**	**Physical electronics**	**Algorithms and programming**	**Buisiness communications**
2	3		**Measurements in electronics**	**Basic electronics**	**Digital electronics**	**Object programming**	**Signals and systems**
	4		**Simulation and optimization of electronic circuits**	**Analog electronics**	**Basic telecommunications**	**Techniques of system design**	**Digital signmal processing**
3	5	**English 1**	**Programmable electronics**	**Basics of micro/nano technologies**	**Digital integrated circuits**	**Under choice 5.1**	**Under choice 5.2**
	6		**Power supply**	**IC design**	**Microprocesors**	**Under choice 6.1**	**Final examen**

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PRESENTATION OF THE CURRICULUM OF UNIVERSITY OF NIŠ

Year	Sem	Subject 0	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5
4	7	**English 2**	**Design of RF systems**	**Design of Digital integrated circuits**	**Testing and dyagnosis of electronic circuits**	**Sustainable design of electronic circuits**	**Under choice 7.1** **Numerical mathematics**
	8		**Economics of sustainable production**	**Design of integrated circuits**	**VLSI design**	**Under choice 8.1**	**Under choice 8.2** **Modeling and simulation**
5	9		**Embedded systems**	**Mixed signal circuits**	**Under choice 9.1**	**Under choice 9.2**	**Under choice 9.3** **Modeling of electronic circuits and systems**
	10		**SoC design**	**Design of electronic equipment**	**Diploma work**		

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Year	Sem	Subject 0	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5
4	7	**English 2**	**Design of RF systems**	**Design of Digital integrated circuits**	**Testing and dyagnosis of electronic circuits**	Sustainable design of electronic circuits	Izborni 7.1 Numerička matematika
	8		**Ekonomija održive proizvodnje**	**Projektovanje analognih integrisanih kola**	**Projektovanje VLSI**	Izborni 8.1	Izborni 8.2 Modelovanje i simulacija
5	9		**Ugrađeni sistemi**	**Kola sa mešovitim signalima**	**Izborni 9.1**	Izborni 9.2	Izborni 9.3 Modelovanje EKIS
	10		**Projektovanje sistema na čipu**	**Projektovanje elektronskih uređaja**	**Diplomski ispit**		

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PRESENTATION OF THE CURRICULUM OF UNIVERSITY OF SKOPJE

ICE (Informatics and Computer Engineering) with first year (PART ONE)

Year	Sem	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8	Subject 9
1	1	Mathematics 1	Fundamentals of Electrical Engineering 1	Structured Programming	Physics 1	Foreign Language				
	2	Mathematics 2	Fundamentals of Electrical Engineering 2	Object Oriented Programming	Physics 2	Foreign Language				
2	3	Linear Transforms	Algorithms and Data Structures	Principles of Logic Design	Modeling and Simulation	Internet Programming	Formal Languages	Object-Oriented Systems	Electro-Optics	Systems Theory
	4	Discrete Mathematics (for ICE)	Computer Architectures	Computer Electronics 1	Computer Components and Peripheries	Communication Technologies	System Reliability	Visual Programming	Control Systems	Micro sensors and Measurement Systems
3	5	Probability and Statistics	Computer Networks	Databases	Computer Graphics	Network Operating Systems	Network Programming	Natural Language Processing	Introduction to Robotics	Machine Learning and Intelligence
	6	Digital Transmission of Information	Introduction to Microprocessors	Operating Systems	Wireless Computer Networks	Network Standards and Devices	Sensor Systems	Data Mining	Data Warehousing	E-Commerce and M-Commerce
4	7	Distributed Computer Systems	Artificial Intelligence	Web-Based Systems	ICT Project Management and CASE Methodology	Advanced Processor Architectures	Embedded Computer Systems	Network Software	Intelligent User Interfaces	Web Design
	8	WAN Networks	Information Systems	Public Mobile Networks	Computer Network Management	High Performance Computing	Geographic Information Systems	Virtual Reality	Mobile Information Systems	Distance Learning and Digital Libraries

PRESENTATION OF THE CURRICULUM OF UNIVERSITY OF SKOPJE

ICE (Informatics and Computer Engineering) with first year (PART TWO)

Year	Sem	Subject 10	Subject 11	Subject 12	Subject 13	Subject 14	Subject 15	Subject 16	Subject 17
1	1								
	2								
2	3								
	4	Fundamentals of Telecommunications	Management with Engineering Economy	Digital Signal Processing					
3	5	Software Engineering	Computerized Measurement Systems	Computer Electronics 2					
	6	Design of Embedded Computer Components	Pattern Recognition	Human Computer Interaction	Numerical Methods				
4	7	Programming Project	Special Effects and Video Game Programming	Visualization	Statistical Data Processing				
	8	Animation	Computer Security and Protection	Multimedia Systems	Intelligent Information Systems	Biocybernetics	Process Computers	Random Processes	Operational Researches

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ARRANGEMENTS FOR THE NEXT MEETING:

Meeting in NIŠ was agreed with the second week of may 2008 as a preliminary time frame.

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Concluding remarks:

1. An excell chart is to be prepared by prof. Litovski expressing the structure of funding in all detail.
2. A web site is to be crated within leda.elfak.ni.ac.yu under education.
3. In the period between meetings the curriculum for master level studies at both PC Universities will be further improved and syllabi will be proposed. These will then be reviewed by EU professors and final versions accommodated at the meeting of the consortium in May, 2008.
4. Since no money was still delivered by the TEMPUS no expenditures are suggested.