

UNIVERSITY OF NIŠ AS A SUPRAREGIONAL ACADEMIC EDUCATION CENTER FOR PRODUCT DEVELOPMENT IN SOUTH EAST EUROPE

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ABSTRACT

After times of escalation of the war in former Yugoslavia until 1999 stability in this region became an important factor and in consequence also academic education needed to be reconstructed. This topic has been focused by the DAAD program „Academic Reconstruction South East Europe”. The program is financed in the framework of the Stability Pact for South East Europe of the European Union. Based on this in 2005 a cooperation project between the University Karlsruhe (TH) and eight universities in South East Europe was founded. Within this project a strong network between the partner universities was built. To reconstruct and to improve the curricula of the partner universities a joint education module on product development based on the Karlsruhe Education Model for Product Development (KaLeP) was created and introduced. University Niš in Serbia was declared to be the center of the South East European partner universities. A supraregional center for product development was built up at University Niš named Machines Development and Construction Center (CERP). CERP is designed to fit the needs of a curriculum according KaLeP and it supports the integration of project work into academic education which leads to the development of key competencies of future development and design engineers. CERP is equipped with team workspaces for student teams to ensure a realistic working environment. Courses of the joint education module on product development based on KaLeP are held at CERP and students and professors from the partner universities travel to Niš to attend the courses at CERP. So CERP is giving students from supraregional universities in South East Europe the possibility to improve their academic education. In this paper the idea of CERP will be presented and the KaLeP-Curricula at CERP will be explained.

Keywords: engineering, education, south east Europe, reconstruction, internationalization, globalization, students, soft skills, professional skills, kalep, team work, project work

1 INTRODUCTION

The motivation for the effort put in the project presented in this paper is two-fold. On the one hand it is no novelty that today the companies demand for academic graduates with much more than only professional competence is increasing. Companies expect engineers e.g. to possess methodological skills, social competence and creativity. In the past academic education focused on teaching technical knowledge, but with changing business environments, engineers and graduates are faced with new work contents and contexts; working in multi-national teams is just one of them. The Karlsruhe Education Model for Product Development (KaLeP) focuses on more than just teaching technical knowledge. It aims on integration of project work into academic education in product development to support the development of key competencies [3].

On the other hand there are crisis regions seeking for stability and reconstruction after a war. South Eastern Europe is such a crisis region since the escalation of Kosovo War in 1999. To rebuild stability in all areas, including the area of academic education, the Stability Pact for

South Eastern Europe was founded. Reconstruction of academic education institutions in these crisis regions is a very important aspect. When rebuilding education systems attention should be paid to the aims of the reconstruction. It is not enough just to rebuild everything to obtain the former state of academic education again. It has to be taken into account that situations and expectations of students, graduates and demands of industry are changing. Hence it is appropriate to combine the approaches of both KaLeP and Academic Reconstruction in South East Europe.

2 KALEP - THE KARLSRUHE EDUCATION MODEL FOR PRODUCT DEVELOPMENT

A new approach in engineering design education, the Karlsruhe Education Model for Product Development (KaLeP) was introduced in 1999 [1, 2]. KaLeP combines different types of course settings in a consecutive sequence of classes on increasing levels, each level is oriented towards certain fields of product development-specific knowledge: Mechanical Design I/II/III (concerning systems), Methods of Product Development (concerning tools and methods) and Integrated Product Development (concerning processes). Both the courses Mechanical Design I/II/III and the course Methods of Product Development are mandatory for all students and are attended by several hundreds of students per year (currently 750). The structure of KaLeP is shown in figure 1 and its elements will be explained in the following [3].

Karlsruhe Education Model for Product Development KaLeP Elements			
	Systems	Methods	Processes
Degree program	Bachelor of Science	Master of Science	Master of Science
Course title	Mechanical Design I/II/III	Methods of Product Development - Design Process	Integrated Product Development
Setting	<ul style="list-style-type: none"> • lecture • tutorials • project work 	<ul style="list-style-type: none"> • lecture • tutorials 	<ul style="list-style-type: none"> • lecture • tutorials • project work
Key competencies: Level of acquisition	high	medium	very high
Course contents	<ul style="list-style-type: none"> • design engineering • team work • self organization • communication • idea transfer 	<ul style="list-style-type: none"> • methodological skills • creativity techniques • processes in product development • problem solving methods 	<ul style="list-style-type: none"> • team leading • team development • project management • presentation • moderation
Number of students per year	~750	~400	~40

Figure 1: Elements of the Karlsruhe Education Model for Product Development

Mechanical Design I/II/III:

Despite the large number of students in the Mechanical Design course and the adjunctive additional work in setting up the course, team oriented project work was introduced and proved to be a successful means to enable students not only to develop competence regarding

machine elements but also to learn how to work and cooperate in a design team. The course Mechanical Design I/II/III is part of the first two years of study for the duration of three semesters. It contains the elements lecture, tutorials and project work. The lecture focuses on theoretical contents of design engineering which will be implemented in the tutorials in example cases.

Mechanical Design I:

In Mechanical Design I the project work consist of a “Gearbox Assembly” and the focus is the analysis of technical systems. Student teams consisting of five students are set up and supervised team meetings with each team are held. For the project work each team receives a gear box and appropriate tools to work on the gear box. The tasks for the students start with a simple disassembling and assembling of the whole gear box. The relevant working surfaces for the function of the gear box are analyzed and described. Technical drawings and free hand drafts need to be prepared by the students.

Mechanical Design II:

In Mechanical Design II the student teams need to fulfill simple constructive tasks in the project work. Here the focus is the synthesis of technical systems. The tasks include the construction and the design of technical elements like bearings and complex angular gears

Mechanical Design III:

In Mechanical Design III in the project work new design teams consisting of five students are set up and all design teams need to fulfill a complex design task with project. Previous tasks have included a ball bearing assembling machine, legs for a humanoid robot and a carousel placed on a car trailer.

During the project work in all courses of Mechanical Design I/II/III the teams are coached continuously by faculty staff and experienced and trained student tutors. During these team meetings all students receive individual feedback regarding the individual performance and the team performance. The performance is assessed according to five fields of competence: professional, methodological and social competencies as well as potential of creativity and the ability of transferring ideas. These five fields of competence are shown in figure 2. Recent integral educational approaches [4] and publications [6] emphasize similar skills and competencies required by successfully working development and design engineers [3]. The student tutors are trained for their job in professional further education.

Methods of Product Development – Design Process:

The course Methods of Product Development – Design Process focuses on the methods and processes in Product Development and design processes. Contents are different essential phases within the design process, like clarification of the task, conceptual design and embodiment design. The main components of these phases and appropriate methods to handle the phases are discussed. Strategies for finding optimal designs are given and creativity techniques for the early conceptual design phase are presented. Then design rules for embodiment design and suitable quality assurance techniques for the early Product Development phases are discussed. Also different methods for problem solving are described in detail in the lecture. Thus the students gain an expanded knowledge about design processes.

Integrated Product Development:

The course Integrated Product Development is offered only to a small number of selected students due to the intense coaching in workshops and project work. Product development processes as well as tools and methods to manage these complex processes are discussed in this class. Similar to the course Mechanical Design, the course Integrated Product

Development consists of the three elements lecture, workshops and project work. In the project work design teams consisting of six students are set up and all design teams need to fulfill very complex development- and design-task for the duration of one semester. The task in the project work is an assignment of an industrial partner. This ensures realistic development problems and realistic decision scenarios. The project starts in early stages of Product Development, i.e. the identification of market trends and needs and the student teams need to define the market relevant development objectives in the beginning of the project. The development objectives need to be kept updated all the time. The project work is supported by coaching through skilled faculty staff and the team behavior is supervised and observed by psychologists.

KaLeP supports the integration of project work into academic education which leads to the development of key competencies of future development and design engineers. KaLeP is an education model for product development which also blends in to holistic approaches like the CDIO initiative [4].

Karlsruhe Education Model for Product Development KaLeP Fields of Competence		
1. Professional Comp.	2. Methodological Comp.	3. Social Competencies
<ul style="list-style-type: none"> ▪ mathematics ▪ technical mechanics ▪ machine elements ▪ IT ▪ foreign languages 	<ul style="list-style-type: none"> ▪ design methodology ▪ knowledge management ▪ FMEA ▪ QFD ▪ DOE and statistics ▪ CAD and CAE 	<ul style="list-style-type: none"> ▪ personal techniques of working ▪ communication and teamability ▪ visualization skills ▪ presentation skills ▪ leadership
4. Abilities in transferring Ideas		5. Potential of Creativity
<ul style="list-style-type: none"> ▪ customer orientation ▪ awareness of costs ▪ systematic approach of working ▪ ability of decision making 		<ul style="list-style-type: none"> ▪ creativity techniques ▪ courage for new solutions ▪ resolving safety thinking

Figure 2: Fields of Competence in the Karlsruhe Education Model for Product Development

3 STABILITY PACT FOR SOUTH EASTERN EUROPE

The Stability Pact for South Eastern Europe was launched in 1999. As the first comprehensive conflict prevention strategy of the international community it aimed at strengthening the efforts of the countries of South Eastern Europe in fostering peace, democracy, respect for human rights and economic prosperity. The Stability Pact provided a framework to stimulate regional co-operation and expedite integration into European and Euro-Atlantic structures. The Pact's secretariat, located in Brussels, was organized into three units each dealing with special issue areas. This is shown in the following table:

Table	Focus
Working Table I	Democratisation Human rights
Working Table II	Economic reconstruction Co-operation Development matters
Working Table III	Security issues

Table 1: Organization of the secretariat of the Stability Pact for South Eastern Europe

The role of the Pact changed over time. In the beginning it served mostly as a platform to channel funds for reconstruction and to coordinate donors' activities, focusing on the hardware of regional cooperation. Later it evolved into a forum where countries of the region and international actors could sit side by side on an equal basis to identify common problems and devise shared strategies to tackle them. The broad mandate and the strong international support for the Stability Pact allowed it to convince South Eastern European countries to engage in a wide and articulated regional cooperation program, which brought about both practical benefits and deeper political understanding. As substantial progress on the ground was achieved over the years and political, economic and social conditions improved throughout the region, the internationally led approach driving the Pact at the beginning started to become obsolete, and the need was felt for a more regionally owned framework to reflect the increased maturity of the region. This was the main motive in launching the transformation of the Stability Pact into its successor organisation, the Regional Cooperation Council. This new structure was designed around priorities defined by the region itself and was officially launched at the joint session of the final Stability Pact Regional Table and inaugural meeting of the Regional Cooperation Council in Sofia, on 27 February 2008 with the full commitment and support from South Eastern European countries, donor countries and other international actors, such as the European Commission. The Regional Cooperation Council inherited the mandate of the Stability Pact to oversee co-operation processes in South Eastern Europe and to support European and Euro-Atlantic integration of the region [7].

4 DAAD SPECIAL PROGRAM

"ACADEMIC RECONSTRUCTION SOUTH EAST EUROPE "

The German Academic Exchange Service (DAAD) program „Academic Reconstruction South East Europe” has been sponsored within the Stability Pact for South Eastern Europe since 1999. The program „Academic Reconstruction South East Europe” focuses on a fast and sustainable development and enhancement of the academic education in fields which are important for reconstruction of these areas. These fields encompass engineering, mathematics, computer science, agriculture and forestry, health care and welfare, law and economy as well as Europe- and Regional-Studies. Therefore a qualification of trained scientists for universities, economy and public administration is needed. Sponsorships of regional partnerships between universities, scientists and students and of dialogs to overcome ethnic and political borders are aspired. Finally it is intended to build up a German-South East European network of university cooperations. The program „Academic Reconstruction South East Europe” offers two different types of sponsorships [5]:

Project based university cooperations:

Several universities within South East Europe need to be involved in such kind of project. Regional academic networks should be built to bring together scientists, professors and students of different nations by their common professional interests. Participants should manage team projects together to achieve their common aims. Projects focusing on enhancement of education and research as well as on education of academic junior scientists are preferred to be sponsored. Activities within the cooperations include: development of modern and needs-based education models and curricula, development of expert conferences, symposia and intensive courses, advanced training of professors, scholarships for research stays in Germany or partner universities in the region, scholarships for academic staff at the partner universities, equipment with tangible means for reconstruction of libraries, laboratories and IT-infrastructure [5].

Scholarships:

The component of individual scholarships is following the suit of networking. At several universities throughout South East Europe students of different nations from South East Europe receive scholarships and then are studying together. Beside the professional interest and the educational goal the common experience made as foreign students is connecting the students. Studying together helps working again and tearing down prejudices. The regional setting of priorities is completed by scholarships for research and study stays at the German partner universities for students, graduates and scientists from South East Europe. These research and study stays enable access to technical literature and gain of important international professional and cultural experiences as well as academic research in modern laboratories with devices which are often not available at the home universities. Intensive professional networking of junior scientists and experienced scientists within research stays is making important contributions to the promotion of young scientists from South East Europe and hence is inuring to the benefit of improving the networks. Small alumni organizations inside the networks help keeping in touch with former participants working today in industry or administration which can also be useful for the networks itself [5].

5 UNIVERSITY NIŠ AS A CENTER FOR EDUCATION OF PRODUCT DEVELOPMENT IN SOUTH EAST EUROPE

The cooperation project between the Institute of Product Development at University Karlsruhe (TH) and eight universities in South East Europe was launched in 2005. Since then the project has been continually sponsored by the DAAD within the program „Academic Reconstruction South East Europe”. During the years new partner universities in South East Europe could be won for the project and by now eight universities in South East Europe join the project as university partners with the Institute of Product Development at University Karlsruhe (TH). The partner universities of the South East Europe network are listed in the following table:

Country	University	Department	Contact
Bulgaria	TU Sofia - Technical University Sofia	FDIBA – Department for German Engineering- and Business Studies	Prof. Dr.-Ing. Ilija Boyadjiev
Serbia	University Niš	Department for Mechanical Engineering, Chair for Machine Elements	Prof. Dr.-Ing. Vojislav Miltenovic
Serbia	University Belgrade	Department for Machine Elements and Design	Prof. Dr.-Ing. Miodrag Jankovic
Serbia	University Novi Sad	Faculty of Engineering	Prof. Dr.-Ing. Milosav Georgijevic
Republic of Macedonia	University "Sv. Kiril i Metodij" Skopje	Faculty of Mechanical Engineering	Prof. Dr. Tomislav Zlatanovski
Albania	Polytechnic University of Tirana	Faculty of Mechanical Engineering	Prof. as. Dr.-Ing. Andonaq Londo Lamani
Bosnia and Herzegovina	University Sarajevo	Faculty of Mechanical Engineering	Prof. Dr. Momir Sarenac
Montenegro	University Podgorica	Faculty of Mechanical Engineering	Prof. Dr.-Ing. Rados Bulatovic

Table 2: The partner universities of the South East Europe network

Joint education module based on Product Development KaLeP

The main objective in the beginning was the development and introduction of a joint education module on product development at the network of partner universities in South Eastern Europe based on KaLeP. The development work on this module was done bilingually in German and English. To strengthen the internationality of the partner universities within the network, the project also aimed to implement the teaching module in one of the two languages. In addition, the universities could autonomously translate the teaching module into their national language and integrate it into the regular degree program. Following the project start-up, a number of teaching modules have been developed and introduced at South Eastern European universities in Belgrade, Niš, Skopje und Sarajevo to fit the individual needs of the universities.

CERP – Machines development and construction center

Based on the results and experiences gained from the development and allocation of the joint education model for product development based on KaLeP in the partner universities in South Eastern Europe the new objective was the development of a supraregional center for product development to be based at the University in Niš in Serbia to be called CERP. The main objective of CERP is to offer courses from the joint education module on product development based on KaLeP at one specific location in South East Europe and to enable the students, staff, faculty and professors from the other partner universities of the network in South East Europe to take part in these classes held at CERP. Block courses are scheduled at CERP in Niš to fit the partner universities schedule and curricula, then both teachers and students from the partner universities can travel to Niš to give and to attend the courses.

For conducting the project work within the courses of the joint education module on product development based KaLeP CERP was equipped with team workspaces for the student teams. The team workspaces provide full equipment of IT-infrastructure and relevant software for the student's projects. Impressions of the team workspaces are captured in following figure.



Figure 1: Impressions of the newly equipped team workspaces at CERP

Introduction of KaLeP: Integrated Product Development at CERP

Building up CERP at the Department for Mechanical Engineering at University Niš under the direction of Prof. Dr.-Ing. Vojislav Miltenovic has been started in Fall 2006. Success of CERP could soon be achieved and monitored when the KaLeP course Integrated Product Development was offered and the industry-oriented work environment for the students project work was managed for the first time. Productive efficiency aroused during and after the experiences and results of the one-semester project work within the course Integrated Product Development. The course took place as follows in the first year: Two student teams from Serbia worked on an assignment of an industrial partner at CERP while simultaneously two student teams from Germany worked on the same development task at University Karlsruhe

(TH). Each team had access to fully equipped team workspaces and the project work was supported by coaching through skilled faculty staff both at CERP and University Karlsruhe (TH). Contact and communication possibilities needed to be established between CERP and University Karlsruhe (TH) to enable exchange of information between the Serbian and German teams as well as between the faculty staff. Progress of the project was controlled and supervised by regularly monthly telephone and video conferences. For important milestones of the project like the kick-off meeting in the beginning and other presentations taking place with the industrial partner and faculty staff both at CERP and University Karlsruhe (TH) of the project during the semester video conferences were set up. For the project close-out at the end of the semester and the final presentation with the industry partner the CERP student teams and the CERP faculty staff traveled to Germany to meet their partner student teams and faculty staff at University Karlsruhe (TH). The results of the project work totally fulfilled the requirements pointed out in the beginning of the semester. The developed products were presented and the functions were verified by functional prototypes. Even the general public in Serbia showed great interest in the Integrated Product Development project: The state-run television as well as several regional television stations and the print media reported on the project in detail.

First Generation of KaLeP-Curriculum at CERP

After the great experiences made during the first semester when Integrated Product Development was introduced at CERP an overall curriculum was set up to meet the joint education module on product development based on KaLeP and to fit the South East Europe network partner universities requirements and possibilities. The key courses regarding the product development education in this curriculum are shown in the following table:

First Generation of KaLeP-Curriculum at CERP			
Key courses regarding the product development education			
	Course	Professor	Schedule
1	Machine Elements I	Prof. Dr.-Ing. Vojislav Miltenovic	obligatory subject in the 3rd semester
2	Machine Elements II	Prof. Dr.-Ing. Vojislav Miltenovic	obligatory subject in the 5th semester
3	Construction Theory	Prof. Dr.-Ing. Vlastimir Djokic	obligatory subject in the 5th semester
4	Construction Methods	Dr.-Ing. Boban Andjelkovic	obligatory subject in the 5th semester
5	Virtual Engineering	Prof. Dr.-Ing. Dragan Milcic	obligatory subject in the 7th semester
6	Structural analysis of Mechanical Systems	Prof. Dr.-Ing. Dragan Milcic	obligatory subject in the 6th semester
7	Systems Modelling and Simulation	Dr.-Ing. Boban Andjelkovic	obligatory subject in the 7th semester
8	Product Development	Prof. Dr.-Ing. Vojislav Miltenovic	obligatory subject in the 8th semester
9	Methods of Product Developments	Prof. Dr.-Ing. Vojislav Miltenovic	elective subject in the 9th semester
10	Integrated Product Development	Prof. Dr.-Ing. Vojislav Miltenovic	elective subject in the 9th semester

Table 3: The key courses regarding the product development education

Second Generation of KaLeP-Curriculum at CERP

Due to the Bologna process CERP needed to face new challenges and hence implemented the Bologna declaration into its curriculum. The curriculum was built to present the education of product development on the level of a Master of Science degree. To achieve the degree of a Master of Science, five master modules have to be fulfilled by the participating students. One of the Master of Science degree modules is named “Mechanical constructions, development and engineering” and it focuses clearly on the education of product development. A maximum of 25 students from all over the university network will be admitted to participate in this module. In total the module stretches over a period of time of two years to cover four semesters of study. The module curriculum consists of five obligatory subjects, nine elective subjects, a company internship and a final master thesis. The courses of the curriculum of the module “Mechanical constructions, development and engineering” the students can choose from are shown in the following table:

Second Generation of KaLeP-Curriculum at CERP: Courses of the curriculum of the module “Mechanical constructions, development and engineering”			
	Course	Professor	Schedule
1	Computer Aided Product Development	Prof. Dr.-Ing. Dragan Milcic	obligatory subject
2	Systems Modelling and Simulation	Dr.-Ing. Boban Andjelkovic	elective subject
3	Structural analysis of Mechanical Systems	Prof. Dr.-Ing. Dragan Milcic	elective subject
4	Systems Quality	Dr.-Ing. Boban Andjelkovic	elective subject
5	Basics of Product Development	Prof. Dr.-Ing. Vojislav Miltenovic	elective subject
6	Methods of Product Developments	Prof. Dr.-Ing. Vojislav Miltenovic	elective subject
7	Integrated Product Development	Prof. Dr.-Ing. Vojislav Miltenovic	elective subject
8	Industrial Design	Prof. Dr.-Ing. Dragan Milcic	elective subject

Table 4: The courses of the curriculum of the module “Mechanical constructions, development and engineering”

The course Integrated Product Development at CERP

As in the early stages of CERP the course Integrated Product Development is still a very important component of the education in product development at CERP. By now the course Integrated Product Development is well-rehearsed at CERP and it established itself modeled on KaLeP. To show the function and the success of the course Integrated Product Development at CERP the project work of Integrated Product Development in the year 2008/2009 will be presented and explained in the following. In the winter semester 2008/2009 20 students are participating in the course Integrated Product Development including the project work. As it is intended by CERP the students come from partner universities all over the network in South East Europe: There are 14 students from University Niš in Serbia, 2 students from University Novi Sad in Serbia, 2 students from University Belgrade in Serbia, 1 student from University Sarajevo in Bosnia and Herzegovina and 1 student from University Podgorica in Montenegro, giving a total of 20 students from 6 different universities from 3 different countries. The students are split up into 4 student teams working on the development

task from the industry partner. In this year of Integrated Product Development there are two different industry partners, two student teams each are working on the development task of each industry partner. One of the industry partners is the firm AMIGA to be based in Kraljevo in Serbia. AMIGA is a modern company employing about 500 people and its development focuses on design, engineering and production of products like complete equipment for public lighting, steel grid structures and antenna masts for networks and power transmission lines, chairlifts and the construction of power transmission lines. The task for the student teams within the project work is the development of a new product for AMIGA which can be implemented into the company's portfolio and brought to market as soon as possible. The task includes the challenge to place a product on a market AMIGA is currently not operating on but to take action into respect of the technology capacities AMIGA is proficient in. The second industry partner is the firm PROFIT to be based in Niš in Serbia. PROFIT is working on the construction sector, with the main focus on techniques and products to store any kind of building and construction material. The task for the student teams within the project work is to develop an automated machine for processing of concrete reinforcement bars from input coils. The task includes the challenge to allow an investment limit of only 40.000 €. After approximately each month of project work there is milestone held with the student teams, the faculty staff and the industry partners. There the student teams present their results from the project and decisions about the further progress of the project have to be made. Impressions from a milestone presentation are captured in figure 2.



Figure 2: Impressions of a milestone presentation within the project work in the course Integrated Product Development

6 CONCLUSION

Future Plans

In the future CERP could be intensified in different ways which need to be discussed further. Obviously new universities could be involved. But before expanding CERP, the existing network between the partner universities in South East Europe and University Karlsruhe (TH) should be intensified. The number of courses held at CERP could be increased giving more students from the network the opportunity to participate in CERP courses. A more intense exchange of students and faculty staff between University Karlsruhe (TH) and CERP should be aspired. Faculty staff could be exchanged in both directions to hold block courses for product development and could even bring own students with them to the respective host university. Since KaLeP is implemented in the curriculum both at University Karlsruhe (TH) and at CERP, exchange programs for students could be realized. There could be exchange programs both for undergrad and for graduate students. Graduate students could be exchanged especially for participating in the course Integrated Product Development at the respective

host university. This way both University Karlsruhe (TH) and CERP could even better benefit from the joint project. To ensure sustainability of the project and CERP need to be covered by an assured financing. Therefore first capital resources and later on third-party funds from industry-projects should be considered. Finally support by the TEMPUS program under patronage of the DAAD could provide resources for intensifying and expanding CERP and the overall network between University Karlsruhe (TH) and its partner universities in South East Europe.

Summary

The network between the Institute of Product Development at University Karlsruhe (TH) and its eight partner universities in South East Europe sponsored by the DAAD within the program „Academic Reconstruction South East Europe” achieved its aims with complete success: A joint education module on product development based on KaLeP was developed and introduced at the universities in South East Europe. Based on this the Machines Development and Construction Center (CERP) was chosen to be funded at the University Niš in Serbia. With CERP it is possible to offer courses from the joint education module on product development based on the Karlsruhe Education Model for Product Development (KaLeP) at one specific location in South East Europe and to enable the students, staff, faculty and professors from the other partner universities of the network in South East Europe to take part in these classes held at CERP. CERP proved itself to be successful especially by conducting the course Integrated Product Development where great results could be achieved and monitored.

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