

INTERNATIONAL COLLABORATION DEVELOPMENT OF THE UNIVERSITIES FROM VYSEGRAD PACT COUNTRIES IN THE AREA OF STUDENT R&D COMPETITION.

Lubomir Smutny¹, Bogdan Sapinski² and Karol Kostur³

Abstract $\frac{3}{4}$ Paper deals with recapitulation of the present collaboration stage in the organizing of student R&D competitions at the partner universities from the Vysegrad pact countries (Czech Republic, Slovak Republic, Poland, Hungary) in the area of automation, control and applied computer science (informatics). Cardinal importance of intensive international contacts with students and young teachers for their professional and language level increasing were observed. Preparation and organization of mutual migratory ICCC conference are very important for personal and skilled contacts improving. Increasing quality of public students presentations, Internet information technologies for organization of special common actions support (database module Konfer). Preparation of united teaching materials for coordination of teaching programs, exchange of experience with special laboratory equipment and methodology of laboratory jobs with emphasis at the area of measurement and sensors, diagnostics, control, simulation of technological processes, program support of control systems, etc.

Index Terms $\frac{3}{4}$ Student competition, ICCC conference, Internet information technologies, Control.

INTRODUCTION

Political changes after year 1989 in the Czech, Slovak and Polish Republics opened possibilities for all universities to establish direct co-operation in science and education with universities and institutes all over the world. This fact of course, was limited economically, establishing of contacts between education institutions etc. We try to described the forms and mechanisms of a successful collaboration between three universities from the Visegrad pact countries: VSB-TU Ostrava (Czech Republic), MM TU Cracow (Poland) and TU Kosice (Slovakia).

First steps of collaboration were initiated in eighty years and continuing on early nineties, but only on the administration level. Now our contacts subsequently grew out to fruitful research activities, student exchange and competition, common R&D projects and international conferences sponsored also by different Czech, Poland and Slovak grant agencies.

THE FORMS AND MECHANISMS OF AN UNIVERSITIES COLLABORATION

Czech-Poland and Czech-Slovak cooperation has the form of bilateral and multilateral projects. The cooperative program and other forms of cooperation are now realized in several areas:

Area 1 involved in the participation of all universities in the organizing of student R&D competitions (in Czech with name "STOC") in the part of automation, control and applied computer science (informatics). Cardinal importance of intensive international contacts with students and young teachers for their professional and language level increasing were observed too. This year 2001 there were student R&D competitions at TU Kosice (2 student sessions, 28 students), MM TU Cracow (2 sessions, 35 students) and VSB-TU Ostrava (4 sessions from the 7 Czech, Slovak and Polish universities, 48 students) with very good level of student projects. These competitions were sponsored by firms and institutions from the automation, diagnostic, control systems and servo hydraulic area (<http://www.fs.vsb.cz/akce/2001/STOC2001/Welcome.htm>). Result of these activities are increasing quality of public students presentations and improving Internet information technologies for organization special common actions support.

Area 2 involved in mobility of research assistants and Ph.D. students between the three participating institutions. In the year 2000 and 2001 we organized short stay abroad for 10 Ph.D. students connected with presentation of their dissertation thesis on the Department meetings and with discussion about directions and results of their work. Very intensive exchange was especially between VSB-TU Ostrava and MM TU Cracow (these activities are sponsored by mobility grant AGH Cracow 249.640.001).

Area 3 is present by new common action, which was started at Slovakia – International Carpathian Control Conference 2000, on High Tatras (Podbanske), May 2000. These interesting mutual migratory conferences

1 Lubomir SMUTNY, VSB - Technical University of Ostrava, Faculty of ME, Ostrava, CZ 708 33, CZECH REPUBLIC, lubomir.smutny@vsb.cz

2 Bogdan SAPINSKI, MM University of Cracow, Faculty of MER, Cracow, POLAND, deep@agh.edu.pl

3 Karol KOSTUR, Technical University of Kosice, Faculty BERG, Kosice, SLOVAK REPUBLIC, kostur@tuke.sk

continuing this year on May 2001 at Krynica (Poland) also at East Tatra as a part of Carpathian Mountain Arch. The main goals of these every year repeated conferences are presentation of a new R&D projects and contributions from the area of automatic control, technical diagnostics, methods and tools of simulation and identification systems, SCADA/MMI program support, applied informatics, etc. Preparation and organization of mutual migratory ICCC conferences are very important for personal and skilled contacts improving (see Fig. 1 with view of the main page ICCC conference - <http://galaxy.uci.agh.edu.pl/~iccc/>) On May 2002 will be held the 3rd ICCC'2002 on Beskydy Mountains, Malenovice. All ICCC conferences had about 190 participants, especially important part were Ph.D. students. Conferences ICCC create important basis for young research and education workers and place for contact of participants from many universities, firms and institutions. From the 2002 year this one will be as an INEER action – workshop with new topic – engineering education on control and computer systems.



FIGURE. 1

VIEW OF THE MAIN PAGE WITH ICCC CONFERENCE WEB SIDE AS A NEW PLATFORM FOR COOPERATION

Area 4 The next part of cooperation are activities common with preparation of united teaching materials for coordination of teaching programs, exchange of experience with special laboratory equipment and methodology of laboratory jobs with emphasis at the area of measurement and sensors, diagnostics, control, simulation of technological processes, program support of control systems, etc.

INTERNET TECHNOLOGY SUPPORT FOR COOPERATION ACTIVITIES

Important tool for supporting of contacts between the cooperation universities and preparation of common actions

are special program modules. An example of this program is database module **Konfer**, which is working in Microsoft Access environment with effective internet connection.

On the Fig. 2 we can see the main menu of program module **Konfer**. The main goals of this program support are:

- Wide card-index file with personal information about participants of common activities (conferences ICCC, another university workshops, student participant on Student competitions, etc.)
- Direct Internet contact for application form sending and connection with organizers, Internet presentation of papers and participant lists.
- Creating of organization support for conference and seminary activities (specifications, accommodation, miscellaneous registers, etc.).
- E-mail correspondence with participants of action with multiple distribution of letters, notifications, ...

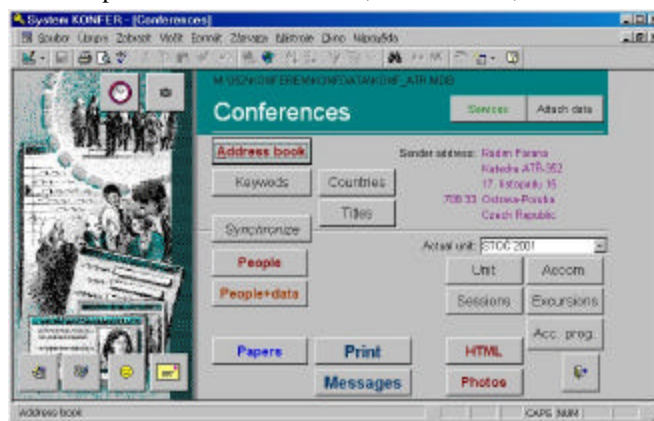


FIGURE. 2

MAIN MENU OF PROGRAM MODULE **KONFER** FOR ORGANIZING OF COMMON ACTIVITIES

On the Fig.3 we can see the example of screen for application form as a database record with basic personal data of participants.

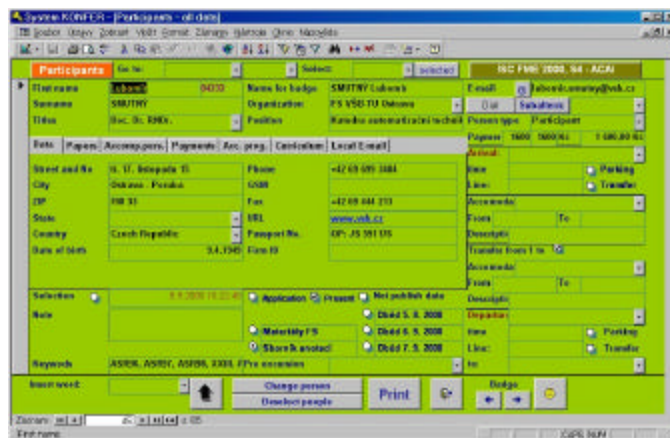


FIGURE. 3

APPLICATION FORM AS A DATABASE RECORD WITH BASIC PERSONAL DATA OF PARTICIPANTS

On the Fig. 4 we can see the example of screen for application form sending via internet by www page from the browser.

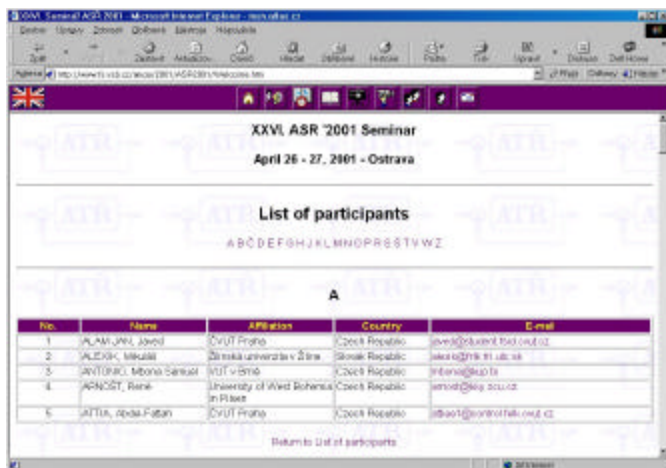


FIGURE. 4

APPLICATION FORM SENDING VIA INTERNET BY WWW PAGE FROM THE BROWSER

CONCLUSIONS

Collaboration between universities from the Vysegrad pact countries (Czech Republic, Slovak Republic, Poland, Hungary) is good example of new intensive contact forms, which will have on the time of input to the European Union great importance. Student R&D competitions and workshops for Ph.D. students in the area of automation, control and applied computer science (informatics) have a long tradition and increasing quality of public students presentations. Their international extension is a new form and prospers to positive motivation of students.

Mutual migratory ICCC conferences from the area of control and informatics are also very important for personal and skilled contacts. For organization of special common actions support we can improve the Internet information and database technologies (database program module *Konfer*).

The other trend and direction for intensive cooperation represent the preparation of united teaching materials for coordination of teaching programs, exchange of experience with special laboratory equipment and methodology of laboratory jobs with emphasis at the area of measurement and sensors, diagnostics, control, simulation of technological processes, program support of control systems, etc.

ACKNOWLEDGMENT

Activities presented on the contribution are supported by Grant Agency of Ministry Education (FR VS MSMT) F1/0255/2001 and by R&D project - MSM272300012.

REFERENCES

- [1] ANWAR, S., FAVIER, P. & RAVALITERA, G. An International Collaboration in Engineering Project Design and Curriculum Development: A Case Study. In *International Conference on Engineering Education ICEE'1999*. Ostrava (Czech Rep.). VSB-TUO, 1999, paper 123, 5 p. ISSN 1562-3580.
- [2] BAUER, V. Position and Role of the DAAD at the University and Engineering Education in Slovakia. In *International Conference on Engineering Education ICEE'1999*. Ostrava (Czech Rep.). VSB-TUO, 1999, paper 443, 6 p. ISSN 1562-3580.
- [3] FARANA, R. Developing the Web-Based Information System. Research Report. Carbondale (USA) : Southern Illinois University, 2000, 87 p. + 43 p. Appendixes.
- [4] FARANA, R., CLAUSEN, T., HICKS P., MEAD, J., ROUBICEK, V., RUIZ L. M. S., SCAVARDA, L., SCHUTZ, V., WEI C-H, YEN, M. & AUNG, W. Implementation of a Web-Based Directory and Data Repository for International Education and Research Cooperation. In *International Conference on Engineering Education ICEE'2000*. Taipei (Taiwan) : National Chiao Tung University, 2000, Paper WI9, 8 p.
- [5] GHANDAKLY, A. A. Collaborations in Engineering Education Made Possible by Multimedia Technology. In *International Conference on Engineering Education ICEE'1999*. Ostrava (Czech Rep.). VSB-TUO, 1999, paper 399, 5 p. ISSN 1562-3580.
- [6] LANDRYOVA, L. & FARANA, R. Improving Quality Assurance Operation with European Union Universities. In *International Conference on Engineering Education ICEE'2000*. Taipei (Taiwan) : National Chiao Tung University, 2000, Paper MC5-4, 6 p. ISSN 1562-3580
- [7] SMUTNY, L. & FARANA, R. Information Technologies for Engineering Education in the Web Environment of Internet. In *Proceedings International Conference on Engineering Education 1998*. Rio de Janeiro (Brazil): PUC, August 1998, Paper 133, 4 pp.
- [8] SMUTNÝ, L. & VITECEK, A. Accreditation of study branches pre-gradual and post-gradual studies on Mechanical Engineering faculties of Czech Republic. In *International Conference on Engineering Education ICEE'2000*. Taipei (Taiwan): National Chiao Tung University, 2000, Paper WA8-2, 7 p. ISSN 1562-3580.
- [9] SMUTNY, L. The Decisive Role of the Laboratory Experimental Stands with Computers for Quality Engineering Education. In *International Conference on Engineering Education ICEE'99* [CD-ROM]. Ostrava: VSB-TU Ostrava, August 1999, Paper 393, 8 pp., 373 MB. ISSN 1562-3580.
- [10] SMUTNY, L. Utilization of the Physical Models of Industrial Aggregates for Improvement in University Education Quality. In *International Conference on Engineering Education ICEE'2000*. Taipei (Taiwan) : National Chiao Tung University, 2000, Paper MD1-1, 7 p. ISSN 1562-3580