

TAB C - Narrative

1. Needs, Objectives and Benefits of the BUTE – Florida Tech Partnership

Hungary faces serious threats to its environmental security. Issues arising from two recent incidents underscore its unique vulnerability and its potential central role in addressing international environmental problems. On January 30, 2000 the rupture of a dam at a non-ferrous metals extraction company discharged almost 100 thousand cubic meters of waste water with high concentrations of cyanide into the catchment area of the river Szamos in Romania. Polluted water reached the Tisza River in Hungary within a few days. Some 250 miles of rivers in Hungary and Yugoslavia were contaminated. Millions of fish were killed and water supplies were shut down. An estimated 30-40% of the flora and fauna of the upper Tisza region were feared destroyed. Although spring floods helped dilute contamination, Hungary has claimed damages of \$108 million. International issues also arose from an earlier incident on October 22-24, 1992, when Czechoslovakia blocked the natural riverbed of the Danube at Dunacsuny (Conovo) into an artificial canal running through Slovak territory, providing water to the 400 MW Gabčíkovo hydroelectric power station. The low volume of water in the natural Danube riverbed has raised numerous environmental issues. This precipitated the first international environmental lawsuit at the International Court of Justice in the Hague by Hungary. In 1997 the court ruled that the diversion of the Danube was illegal, yet numerous issues remain unresolved. The dispute continues, even as Slovakia discusses selling the power plant.

1a. Needs

Including waste, air, and water, it is estimated that for Hungary to fully comply with European Union (EU) standards could cost \$12-15 billion. For example, only 30% of Hungary's communal waste disposal centers satisfy EU norms and regulations. A 1999 survey of water

samples showed that only 44% of Hungary's tap water complied with both medical and non-medical standards. While the cyanide spill into the Tisza river sparked international attention, there are still 11 high-risk sites in Hungary, among them a landfill site with radioactive waste, several petroleum storage installations and a complex of reservoirs with industrial metal contamination. In addition, an underground nuclear waste site is urgently needed for wastes from Hungary's aging nuclear power plant at Paks. In short, Hungary's environmental issues and problems are multifaceted and massive. *They are of international consequence.*

BUTE is the largest institution of technological research and education in Hungary. The mission of the institution is to better prepare Hungarians for leadership roles in science and technology through education. It seeks to play a major role in addressing the environmental problems of the region and, indirectly, towards helping Hungary achieve a post-Cold War market economy. Recently, the Hungarian government has targeted substantial environmental improvement goals involving research programs, international relations, education, business and government policy. BUTE is expected to provide substantial leadership in these initiatives.

Florida Tech is the only private technological university in the southeastern US. Students from over 90 countries pursue degrees at the Melbourne, Florida campus. As a young but rapidly emerging technological university, Florida Tech is seeking ways to further globalize its research and education programs, i.e. to truly become 'world class.' This is being pursued through a number of international collaborations, some of which are outlined below. It is happening more informally through the development of courses with more globally relevant content throughout the university. It is also being pursued by a growing number of faculty who are establishing international research collaborations. The next step in this globalization process

will require strategically targeted faculty and student exchanges such as those supported by the proposed partnership with BUTE.

1b. Objectives

Initially, faculty and student communication and the dissemination of research and course materials between BUTE and Florida Tech will be enabled via a dedicated Internet web-site and e-mail list-server. This will facilitate the mutual objectives of creating permanent faculty and student exchange programs.

Objectives for the Budapest University of Technology and Economics include:

- Provide faculty development in environmental studies through *in situ* exposure to Florida's rich air, land and water environmental resources and, especially, to research programs that directly translate into potential solutions to central Europe's current environmental problems.
- Develop courses and materials to better prepare students for their role as responsible consumers and environmental advocates in a free market society.
- Provide administrative experience in identifying and developing academic areas related to environmental studies that are most relevant to BUTE's resources and Hungary's needs.

Objectives for the Florida Institute of Technology include:

- Broaden and strengthen Florida Tech's research activities in environmental studies by providing an opportunity for faculty to study unique environmental problems in Hungary and to develop new research projects with BUTE colleagues.
- Improve Florida Tech's already substantial environmental studies curriculum by sending select faculty to Hungary to gather material and establish collaborations that lead to the introduction of new and/or improved courses at both K-12 and university level.

- Use the interdisciplinary nature of environmental studies and the experience gained from working with BUTE to integrate our research and teaching effort as much as possible, and to form new collaborations with other institutions in central Europe.

1c. Mutual Benefits

The program will create a self-sustaining partnership between two similar technological institutions that will contribute to improved environmental conditions in central Europe and ensure increased globalization and democratic understanding for each institution. This will be achieved through a permanent faculty exchange program as well as via information exchange through the Internet. In addition, this program will lay groundwork for a student exchange program, the expansion of collaboration beyond the area of environmental studies, and partnering opportunities with other European institutions for both BUTE and Florida Tech.

2. Description of Participating Institutions

The Budapest University of Technology and Economics (BUTE) traces its history to the establishment of the *Institutum Geometricum* by Emperor Joseph II in 1782. It is one of the historic technical schools of Europe, and the first in Europe to award engineering degrees to students (land surveying, river control and road construction). Today the university consists of more than 110 departments and institutes within the structure of eight faculties: architecture, chemical engineering, civil engineering, electrical engineering and informatics, mechanical engineering, natural sciences, economic and social sciences, and transportation engineering. Degrees are offered through the Ph.D. BUTE graduates about 70% of Hungary's engineering degrees each year. Some 1100 lecturers, 400 researchers and other degree holders participate in education and research. Approximately 800 of the university's 12,000 students are from 45 countries. Many graduates have contributed to BUTE's international distinction. For example,

Theodor von Karman became known as the "father of aviation." Dennis Gabor received the Nobel prize for the invention of holography and George Olah won the Nobel prize for his research on technologies with applications in the oil industry.

BUTE has recently launched a new M.Sc. degree in Environmental Engineering (an international study course in English). The establishment of the Faculty of Economic and Social Sciences in 1998 included a Department of Environmental Economics and Law. The Faculty of Civil Engineering have numerous environmental projects. In the Faculty of Chemical Engineering environmental protection is included in both the specialties of chemical engineering and biological engineering. The Faculty of Mechanical Engineering specializes in Environmental Technology and Environmental Technology Management. Summaries of some of these projects can be found in Tab E. More information about BUTE and its research programs can be found at the web-site: <http://www.bme.hu>

Florida Tech was founded in 1958 as the US space program was established at the Kennedy Space Center. The university consists of six academic units: College of Engineering, College of Science and Liberal Arts, School of Aeronautics, School of Business, School of Psychology, and School of Extended Graduate Studies. The university is committed to the pursuit of excellence in teaching and research in the sciences, engineering, technology, management, and related disciplines, and to providing the challenges that motivate students to reach their full academic and professional potential. Over 4,200 students are enrolled, with more than 2,800 students on the Melbourne campus and 1,400 at Florida Tech's off-campus graduate centers at the Kennedy Space Center and elsewhere around the US. All of the off-campus students and approximately 900 on-campus students are enrolled in graduate programs. Florida Tech offers 145 degree programs in science, engineering, aviation, business, humanities,

psychology and communications. Doctoral degrees are offered in 20 disciplines, and more than 65 master's degree programs are offered. Because of the moderate size of the student body and the university's dedicated faculty and staff, a student at Florida Tech receives highly personalized attention. A recent \$50 million grant by the F. W. Olin Foundation funded several new state-of-the-art science and engineering buildings, substantially enhancing the programs they house.

Florida Tech faculty are pursuing a variety of research topics relevant to this proposal. In the engineering disciplines current projects include underground tank storage technology, use of waste materials, recycled materials, water quality, solid waste/hazardous waste management, storm water management and hydrologic modeling. Current relevant research in the sciences includes conservation biology, ecology, population ecology, biodiversity, habitat management and environmental chemistry. Other Florida Tech faculty study the history, psychology and economics of environmental issues. Information about all of Florida Tech's programs can be found at the web-site: <http://www.fit.edu/>

The Florida Tech faculty who have been invited to participate in this project have been carefully chosen for their expertise in both research and curriculum development in environmental studies. These projects will contribute directly not only to a strong partnership with BUTE but also to the search for solutions to some of the region's environmental problems. For example, the research conducted on "super iron" (Fe VI) conducted by Dr. Virender Sharma in the Department of Chemistry has strong potential to provide an environmentally friendly oxidant for the removal of cyanide in mine effluents. Another research project conducted by Dr. Mary Sohn, also in the Department of Chemistry, offers a cost-effective means for monitoring toxic metals in river water. Projects like these address some of Hungary's most urgent environmental needs in the aftermath of the recent Tisza river contamination incident.

Long-term solutions to Hungary's environmental problems require a new generation of well-trained environmental scientists, engineers and *educated laypersons from all disciplines*. The proposed partnership between BUTE and Florida Tech will help. For example, Dr. Thomas Marcinkowski in the Florida Tech Department of Science & Math Education plans to assess Hungary's current K-12 environmental education programs and to devise strategies targeted at improving teacher preparation and student learning. Another project led by Dr. John Windsor, Chair of the Environmental Sciences program, leads a team that proposes to help develop comprehensive 2- and 4-year undergraduate programs for BUTE that are based upon successful interdisciplinary environmental sciences courses already in place here at Florida Tech.

This project will include faculty in nearly every academic department at Florida Tech and, as the project develops, many departments at BUTE. At Florida Tech, the project will draw on the expertise of the College of Science & Liberal Arts faculty in the Departments of Biological Sciences, Chemistry, Humanities, Oceanography, Physics & Space Sciences, and Science Education. In the College of Engineering, faculty from the Departments of Chemical Engineering, Civil Engineering, and Marine & Environmental Engineering are eager to participate. In addition, our collaboration will involve faculty in the Florida Tech Schools of Psychology and Business.

At BUTE most participating faculty will initially be from the Department of Environmental Economics & Law and from the Department of Innovation Studies & History of Technology. These departments include vigorous research and curriculum activities in environmental education, environmental economics, resource management, energy & waste management, environmental policy, recreational use of resources and environmental law— all of which overlap strongly with the research and academic interests of Florida Tech. During the

course of the 3-year project it is our plan to expand the collaboration to involve other science and engineering faculty at BUTE, once the basic administrative infrastructure has been established.

BUTE faces two major challenges related to this proposal. The first is to provide leadership in Hungary's attempts to deal with urgent environmental problems. Second, BUTE will play an important role in helping Hungary to enter the EU in a way that preserves its environmental and economic interests, while forging international agreements that are essential to solving the environmental problems of the region. This proposal addresses both needs.

There is a very high degree of potential synergy among the interests of faculty at BUTE and Florida Tech. Not only are BUTE and Florida Tech faculty diverse in disciplinary interests, they are diverse in gender, race, age and ethnic background. Every effort will be made to preserve this diversity among participants in our collaboration. Both institutions are committed to international collaboration, involvement of under-represented groups, and public outreach.

3. Detailed Description of the Proposed Affiliation

The program will be initiated during the summer of 2001, with two four-week planning visits and two ten-week extended visits involving a total of four faculty. Two of these visitors will be the Site Directors. Each will visit their partner institution to finalize details concerning the participating departments and faculty, arrange for use of the necessary facilities and most appropriate activities for the faculty who will subsequently visit during the academic year. In addition to collaborating with the local colleagues most closely aligned with their own research interests, all four summer 2001 participants will help to define the communication needs for the project and to establish a dedicated Internet and e-mail list-server link. If necessary, the visitors to Florida Tech will receive training provided in regular courses offered by the department of

Computer Science at Florida Tech. The Internet site developed will eventually be used to deliver and receive course-work related to the projects conducted during the partnership.

During the 2001-2 academic year, two faculty will be exchanged each semester (one each way). We expect to continue this level of faculty exchange during the two subsequent academic years 2002-3 and 2003-4. However, the ratio of BUTE and Florida Tech participants and total number of visitors supported may be adjusted based upon faculty availability and actual expenses incurred during visits. All visitors will work closely with their faculty partners on research and/or curriculum development projects. Faculty not currently participating in exchanges will be working with colleagues that have similar interests at their partner institution. These activities will be facilitated by the project's e-mail list-server and Internet link.

At Florida Tech, each week a project seminar will be held which includes all participating visitors, local faculty, students and administrators. Topics for these seminars will include informational talks on the BUTE-Florida Tech communications system, individual environmental research and curriculum development projects, as well as more general talks on environmental issues in central Europe, science ethics, legal and economic issues and opportunities, public policy, environmental responsibility in a free market economy and other topics of mutual interest. Speakers from other institutions will be invited to speak at these seminars. Visiting BUTE faculty will have the opportunity to interact with environmentally relevant scientific and political action groups in the central Florida.

On a biweekly basis visiting BUTE faculty will meet with the Florida Tech Site Director to review the activities of the week, to discuss any issues or problems with which the participant may need assistance, and to assess progress towards meeting the goals of the program. Incremental changes in the program will be made based on this continuing feedback. In addition,

visiting faculty at Florida Tech will be offered the opportunity to attend up to 15 hours of lecture per week of courses related to environmental studies that are offered by departments participating in this project.

In the summers of 2002 and 2003 two faculty will be exchanged (one each way). The duration of faculty summer visits will normally be ten weeks. Also, during the summer of 2002 one of the visitors will be the BUTE Site Director, who will visit Florida Tech for several weeks. Likewise, in the summer of 2003 the Florida Tech Site Director will visit BUTE for several weeks. During these visits the Site Directors, working with the external evaluator, will assess the progress and additional needs of the program and prepare the annual CUAP reports.

The first summer visit to BUTE will be used to determine the best pairings between Florida Tech and BUTE faculty and to organize the schedule for each partner's visitation. Visiting faculty will typically stay for one academic semester or summer at the host institution. During these visits to BUTE, Florida Tech visiting faculty will gather materials, interview faculty, possibly attend classes, present guest lectures to and/or teach full classes in their areas of expertise. As at Florida Tech, there will be a weekly seminar covering topics related to the program. Visitors will work with BUTE faculty to identify its public outreach needs and to help expand its distance learning efforts. Visitors will meet biweekly with the BUTE Site Director.

BUTE and Florida Tech faculty will form work teams around similar research and curricular interests. Some will design course materials that may be used to deliver conventional or distance learning educational materials such as those proposed by Drs. Marcinkowski and Windsor. Most will engage in research projects, such as those proposed by Drs. Sharma and Sohn, which progressively include new faculty and seek separate support as they expand. These activities are listed in Section 7 and summarized in Tab E.

It is expected that participating faculty will use the materials developed in their projects to conduct in-service training for other interested faculty upon their return to their home institution and to incorporate these materials whenever possible into their respective curricula. Materials created for BUTE faculty and students will focus on training and including BUTE faculty and students in current environmental issues and research techniques as practiced in a democracy and a free market economy. Materials developed for Florida Tech faculty and students will focus on improving understanding of environmental issues and developing long-term collaborations with Hungary and other central European partners.

During 2003, the faculty from BUTE will begin work with the Florida Tech Office of International Student Affairs towards establishing a student exchange program. We anticipate that this program can begin by Fall 2004. At that time, students from Florida Tech may enroll in courses at BUTE and vice versa for up to one semester. Both schools will grant tuition waivers to their guests. Students will be housed on campus or provided home hospitality.

During the 2003-4 academic year support for exchanges will be continued at two faculty per semester (one each way). Partly this is necessary to stay within the CUAP budget guidelines. However we anticipate that new funds will have been secured for some projects by this time which may support additional visits. Collaborating with the external evaluator, both Site Directors will meet at BUTE and at Florida Tech during the summer of 2004 to assess the program and to draft a final report. At this time plans for a student exchange program and for continuation of the faculty exchanges beyond the period of CUAP support will be finalized.

4. Names and Qualifications of Designated Project Directors

Prof. Imre Hronszky, Head, BUTE Department of Innovation Studies and History of Technology— Dr. Hronszky received his Ph.D. degree in 1983. He is an internationally known

scholar of the philosophy of technology, as well as an expert on the history of science. He has published in professional journals both in Hungary and the United States in such areas as history of science, sustainable growth and environmental issues, and he has edited a widely regarded book "Introduction to Technology Assessment." His current research interests include technological assessment of environmental risk, epistemology, politics of public participation and their impact on environmental policy making. He is particularly interested in comparing and investigating the differences in assessment methods and environmental policy procedures between the US and central Europe. Prof. Hronszky is an extremely active administrator who has initiated numerous workshops and exchange experiences for scholars from all over the world. He will work closely with Mr. András Tokai, Councilor & Coordinator for the BUTE Rector's Office for International Affairs, to facilitate the exchange opportunities for the faculty of BUTE and Florida Tech. Dr. Hronszky and Mr. Tokai constitute the BUTE leadership team.

Dr. Gordon Nelson, Dean of the Florida Tech College of Science & Liberal Arts and Professor of Chemistry— Dr. Nelson received his doctoral degree in Chemistry from Yale University in 1970. In addition to his duties as Dean, he has maintained a strong teaching and research effort in polymer and flame retardant chemistry since coming to Florida Tech in 1989. As Dean, he leads over 120 faculty, adjuncts and staff and nearly 700 bachelors, masters and doctoral students in the Departments of Biological Sciences, Chemistry, Humanities & Communication, Mathematical Sciences, Physics & Space Sciences, Science & Mathematics Education, Language Institute, and Military Science. As a chemist with General Electric Co. and manager for Environmental Protection, Nelson traveled extensively. As President of the American Chemical Society, the largest scientific society in the world, Nelson made official visits to Sweden and Taiwan to organize and chair discussions at a number of leading

universities. In 1992 Nelson spent an extended visit at Lund University in the Department of Fire Safety Engineering supported by the Bicentennial Swedish-American Exchange Fund. He has visited or worked in 36 countries, and his experience in forming international partnerships will provide an essential component of our program. Nelson visited BUTE in the summer of 2000. It was during this visit that the idea for an exchange program between the two institutions was solidified. Dr. Nelson will work closely with Dr. Terry Oswalt, Associate Dean for Research at Florida Tech. Oswalt will help organize and coordinate the logistical and financial needs of the project and serve as the liaison with the US State Department College & University Affiliations Program office. Drs. Nelson and Oswalt constitute the Florida Tech leadership team.

5. Program Evaluation Plan

Our exchange program will be evaluated by several means.

- Each participant in the exchange will be required to submit an annual report on his or her subproject's progress. At the conclusion of each extended visit, participants will be required to prepare a report modeled after those required of Fulbright scholars.
- The project e-mail list-server will allow us to continuously monitor the progress of the project. Distant participants will be strongly encouraged to use the list-server to seek advice from the Site Directors, from one another, and to provide positive reinforcement of each other's efforts. We have found this approach to be highly successful in a six-university consortium that supports the largest summer internship program for astronomy students in the US (see the web-site at <http://astro.fit.edu/sara-reu/sara-reu.html> for details). In addition, the web-site for the exchange program will help keep track of participants and their progress in more detailed ways. For example, evaluation sheets will be available and archived on-line. The use of course materials offered through the project web-site will be monitored.

- During extended visits, faculty will meet on a biweekly basis with their host institution's Site Director of the Exchange Program. Their feedback will be solicited and they will be encouraged to discuss how what they are learning can be exported to their home institution's research and/or curriculum development effort. Evaluation forms will be developed and used to evaluate each seminar or workshop schedule as part of the exchange program.
- We will hire a consultant to evaluate how well our program achieves its stated goals. We have initiated discussions with Prof. Istvan Bogardi, at the University of Nebraska, and he has expressed an interest in serving in this capacity (see Tab E.). Bogardi is a Fulbright scholar who is currently on an extended visit in Hungary working with Dr. L. Somlyody, Department Head of Environmental Engineering at BUTE. His appointment extends through the spring semester of 2001. Should Prof. Bogardi be unable to serve at some point during our project, another equally qualified candidate will be sought, because we feel that this is an essential objective part of the program's assessment.

These materials will be compiled by the Site Directors of the program each year and incorporated into our annual reports to the CUAP office. More importantly, they will be used to improve each subsequent year's program activities and procedures. This information will be invaluable to our efforts to continue and to improve the program beyond the CUAP grant, as we expect to solicit new sources of support and new partnerships.

6. How the Program Builds Upon Past International Activities

6a. BUTE International Activities

BUTE is very similar to Florida Tech, both in its academic and research interests, and in its aspirations for an international presence. The BUTE faculty participating in this proposal have organized agreements with and/or participated in ongoing collaborations with a number of

institutions outside Hungary. A list of the most recent partnerships is given below; most involve research collaborations. More information about the BUTE departments and international activities are available at the URL: <http://www.bme.hu/en/organization/faculties/fess/index.html>

- *UNIVERSITY OF WESTERN SYDNEY* – (Australia) School of Engineering Ecology
- *UNIVERSITY OF BATH* – (England) School of Social Sciences
- *BRUNEL UNIVERSITY* – (England) West London, Physics Department
- *DE MONTFORT UNIVERSITY* – (England) Leicester, School of Engineering & Manufacture
- *UNIVERSITÉ DE PARIS* – (France) Pantheon-Sorbonne, UFR de Géographie
- *UNIVERSITAT DE VALENCIA* – (Spain) Departament d’Economia Aplicada II.
- *STOCKHOLM ENVIRONMENT INSTITUTE* – (Sweden) Tallinn
- *UNIVERSITÉ DE GENÈVE* – (Switzerland) Département Études en Gestion
- *COLORADO STATE UNIVERSITY*– (USA) Dept. of Economics, Dept. of Political Science
- *LAWRENCE BERKELEY LABORATORY* – (USA) University of California

6b. Florida Tech International Activities

This proposal reflects an ongoing effort by Florida Tech to build a strong international presence, primarily through university collaborations. Over the past decade, Florida Tech has formed international partnerships involving faculty and student exchanges with over a dozen institutions outside the US. A list of some recent partnerships is given below. The year each was established is given in parentheses. All are currently active programs.

- *MANSOURA UNIVERSITY, Mansoura, Egypt (1978)*. Mansoura faculty, administrators, M.S. and Ph.D. students, usually with USAID support, have made extended visits to Florida Tech. Some have completed their Ph.D. degrees at Florida Tech.

- *ÅBO AKADEMI, Turku, Finland (1989)*. Research collaboration between oceanography faculty and students at both universities.
- *CERAM EAI TECH, Sophia Antipolis, France (1990)* www.ceram.edu. This program's 250th exchange student enrolled at Florida Tech this year.
- *École Internationale des Sciences du Traitement de l'Information (EISTI), Cergy-Pontois, France (1986)* www.eisti.fr. Over 130 EISTI students have earned Florida Tech M.S. degrees.
- *École Nationale de l'Aviation Civile (ENAC), Toulouse, France (1997)* www.enac.fr ENAC is a leading French *grande école* for engineers in aviation/aeronautics. 17 students have come to Florida Tech, including five who are currently enrolled (Fall. 2000).
- *Ecole Nationale Supérieure d'Ingénieurs du Mans (ENSIM), Le Mans, France (1996)* www.univ-lemans.fr. ENSIM is an engineering school created by the Université du Maine in Le Mans, France, in 1995. The partnership with Florida Tech includes joint master's degree programs, exchanges of students and faculty, and collaborative research.
- *Ecole Supérieure des Sciences et Technologies de l'Ingénieur de Nancy (ESSTIN), Nancy, France (1988)*. ESSTIN undergraduate students first enrolled in Florida Tech in 1992; several ESSTIN graduates have come to Florida Tech for M.B.A. degrees.
- *BEDRIFTSØKONOMISK INSTITUTT, Oslo, Norway (2000)* www.bi.no The first five students are enrolled at Florida Tech for the Fall 2000 semester, with prospects for one or more faculty exchanges. Exchanges involve both undergraduate and graduate students.
- *UNIVERSIDAD SANTA MARIA DE LA ANTIGUA, Panama City, Panama (1996)* www.usma.ac.pa. The first USMA student enrolled at Florida Tech in January 1999.

7. Prior & Ongoing Interactions Between Florida Tech and BUTE

Phase One of this project began in August 1999 when Dr. Imre Paulovits, an alumnus of BUTE, visited Florida Tech where his son is currently enrolled in Electrical Engineering. Dr. Paulovits engaged several members of our administration in a discussion that ultimately led to formal correspondences between Dr. Andrew Revay, Vice President for Academic Affairs at Florida Tech and Dr. Györy Horvai, Vice Rector for Scientific, Research & International Affairs at BUTE. Coincidentally, BUTE faculty had contacted the US Information Service in Budapest and received materials on the pending 2000 CUAP opportunity for Hungary. Discussions between BUTE and Florida Tech continued through the 1999-2000 academic year.

Dr. Gordon Nelson, Dean of the College of Science & Liberal Arts, visited BUTE during the summer of 2000. This visit identified a number of promising areas of potential collaboration between the two universities. Follow-up discussions led to a Memorandum of Agreement between the two universities that was approved by both university administrations on October 16, 2000 (see Tab E.). This agreement identified eight areas of common interest; highest priority was given to environmental sciences. Shortly afterwards, Dr. Terry Oswalt, Associate Dean for Research at Florida Tech assumed responsibility for laying the foundation for the CUAP proposal by putting the diverse but related interests of participants into a cohesive program plan.

Phase Two will launch a formal faculty exchange program during the first year of CUAP support. The main activities from this point on are summarized in Table 1. A total of 12 faculty exchanges (6 in each direction) will be supported by the CUAP funding during the three academic years of the project; 10 summer visits (5 in each direction) will be supported (22 visits total). Table 2 lists the proposed projects in which BUTE and Florida Tech faculty will initially collaborate. Project summaries are provided in Tab E, along with the faculty resumes.

TABLE 1. Summary of BUTE – Florida Tech Partnership Activities

Year	Spring	Summer	Fall
2001	Pre-award planning Phase 1 completed	Phase 2 begins Program planning visits (2 persons each way, including Site Directors)	1 faculty to BUTE 1 faculty to Florida Tech
2002	1 faculty to BUTE 1 faculty to Florida Tech	1 faculty to BUTE BUTE Site Dir. to Florida External evaluation	1 faculty to BUTE 1 faculty to Florida Tech
2003	1 faculty to BUTE 1 faculty to Florida Tech	Phase 3 begins 1 faculty to Florida Tech Florida Site Dir. to BUTE External evaluation Student program planning	1 faculty to BUTE 1 faculty to Florida Tech New funding sought
2004	1 faculty to BUTE 1 faculty to Florida Tech New funding sought	Each Site Director visits External evaluation Final evaluation & report Student program finalized	Phase 4 begins Expansion of project areas New funds committed Student exchanges begin

Phase Three will develop both breadth and depth in the research and curriculum programs during the third year of CUAP support. A few exchanges beyond those supported by the CUAP budget may be supported from other funding sources. The groundwork will be laid for a permanent partnership program and student exchanges between BUTE and Florida Tech.

8. Plan for Continued Activity

Phase Four involves the continuation of the program on a permanent basis, its expansion beyond environmental studies to other disciplines (such as the physical sciences) and to other universities in central Europe. Beginning in the spring of 2004, BUTE and Florida Tech will finalize arrangements for permanent exchanges, and seek new funding from other agencies to supplement their own commitments. Also, by this time many of the individual projects will have succeeded in finding separate funding. An external evaluator will perform a final assessment of the program during the summer of 2004. Student exchanges will most likely begin in the fall of 2004. Each school plans to provide tuition waiver support for the student exchange. The actual number of students traveling in both directions will determine the long-term viability of this

TABLE 2. Proposed Faculty Projects

(See Tab E for summaries and resumes; new collaborators to be recruited during program.)

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- A. Brown & G. Nelson (Florida Tech); G. Keglevich, G. Marosi, & P. Anna (BUTE), *Green Chemistry and Plastics Additives*
- R. Cofer (Florida Tech); L. Vajta (BUTE); I. Paulovits (Oralogic, GmbH), *Remote Sensing Software for Environmental Monitoring in Hungary*
- I. Duedall (Florida Tech), *Online Environmental Education: Proposed Shared Experience Between BUTE and Florida Tech Students and Professors*
- M. Fule (BUTE), *Tradeable Permits as a Possible Regulatory Means in Mitigation of CO₂ Emission*
- W. Gabrenya (Florida Tech), *A Collaborative Research and Curriculum Project in European Environmental Industrial/Organizational Psychology*
- I. Hronszky (BUTE); T. Marcinkowski (Florida Tech), *“Risk Society” Approach in Environmental Policy Studies*
- V. Istvánovics, Z. Simonffy, M. Kertész, I. Hahn (BUTE), *Ecological Criteria for Sustainable Water Resources Management for the Great Hungarian Plains*
- T. Marcinkowski (Florida Tech), *Assessing the Needs of Environmental Education Programs for Hungarian K-12 Students*
- G. Maul (Florida Tech), *Evaluating Air and Water Quality, Waste Disposal, Environmental Infrastructure, and Sustained Economic Growth in Hungary*
- G. Marosi & G. Keglevich (BUTE); G. Nelson (Florida Tech), *Methods for Enhancing Flame Retardance and Recyclability of Plastics*
- A. Pandit (Florida Tech), *Watershed Pollution Modeling*
- G. Patterson & R. Taylor (Florida Tech), *Environmentalism in the US and Hungary: Historical Comparisons and Contrasts*
- C. Polson (Florida Tech), *Chemical Pollutants and Gene Mutation Rates*
- V. Sharma (Florida Tech), *Ferrate (VI): An Environmentally Friendly Oxidant for Removal of Contaminants in Aquatic Environments*
- M. Slotkin, K. Chambliss, & A. Cudmore (Florida Tech), *Conservation of Unique Natural Assets Via Nature-Based Ecotourism: A Business Study for Hungary*
- M. Sohn, (Florida Tech), *Development of a Sampling and Analysis Program to Monitor Toxic Metals in Tisza and Danube River Sediments*
- J. Szlavik (BUTE), *Evaluation of Natural Capital for Environmental Evaluation*
- J. Thomas (Florida Tech), *Aquatic Plants for Air and Water Pollution Control*
- J. Thomas (Florida Tech), *Control of Particulate Emissions from Diesel Engines*
- J. Windsor (Florida Tech), *Collaboration to Build a Strong Environmental Science Program within BUTE*
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initiative. Florida Tech has considerable experience in developing and maintaining such student exchange programs (see Tab C-6b).

9. Concluding Remarks

Hungary's proposed entry into the EU "Fifth Framework Program on Research, Technology Development & Demonstration" will provide potential access to \$16.2 billion specifically earmarked for "life sciences, information technology, sustainable growth, international controls on energy policy, environmental protection, small and medium-size enterprises and better use of human resources" (*Budapest Sun*, 8/12/99). *All these are areas in which Florida Tech and BUTE can collaborate.* We will aggressively pursue both US and EU funding sources to support the continuation of our partnership program.

In conclusion, we believe the case is strong for establishing a permanent partnership between BUTE and Florida Tech. We are eager to begin this endeavor with support from the USIA College and University Affiliations Program.