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IASI Project - A Technology Transfer Model for Industry-University Partnership

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Abstract

The objective of the Iasi Project is to restructure and extend the educational and training capacities of the Iasi Polytechnic Institute to facilitate economic regeneration within the Iasi Region (North-East Romania). The goals of the Iasi Project conform to the TEMPUS (Trans-European Mobility Scheme for Universities Studies) priorities.

Elements critical to university-industry partnership in Romania, in a European context start-up are discussed. These address especially: the composition of management, the planning process, and funding alternatives.

Keywords: University-Industry Partnership, Transfer of Technology and Training, Computer-Aided Learning, Distance Learning, Management and Environmental Education.

1 Introduction

The Iasi region of Romania is in the north-eastern part of the country bordering the Republic of Moldova, characterized by a mixed economy of agriculture and heavy industry. The town of Iasi has a population of half a million inhabitants and is situated six hundred kilometres from Bucharest. It is a cultural as well as an industrial centre and was, for a brief period in the recent history, the capital of the country.

The principal source of higher education and training is the Polytechnic Institute of Iasi (hereafter referred to as Iasi Polytechnic) which has fourteen thousand full-time students who study subjects in the traditional technology divisions. Two universities within the region, at Bacau and Suceava, are more recent additions to the higher education scene and were initiated from within Iasi Polytechnic. The region is therefore well served by an educational network which can act as an effective springboard for change.

The project has arisen from a local collaboration between Government, Higher Education and Industry, from which has emerged the "Iasi Consortium for Transfer of Technology and Training" (ICTTT). This body, with initial

representation by Iasi Polytechnic, the Prefecture of the Iasi county, the Iasi Chamber of Commerce and Industry, and FORTUS S.A., a heavy engineering company, has now been recognised by the Romanian government and exists as an organisation which may enter into partnerships with other national and international agencies. The Iasi Project will be the first example of such international collaboration, in this case with the University of Sussex at Brighton, UK.

2 Objectives

The Romanian economy requires a considerable development of its capacity to operate within a capital market environment. The Iasi Project intervenes by creating a platform of self-development, training and technology transfer, upon which investment and industrial development can be achieved, according to regional aspirations.

The Project is based on the fundamental principle that all developmental activities and outcomes will be Romanian owned except where joint ventures in the educational or business arenas can be created. The intention behind this policy is that confidence on the Romanian side in project developments may be secured and maintained, and that the process of development, because Romanian participate fully in design, has the continuing effect of maximising the effects of the creative process and securing commitment to the objectives. It is important therefore that those involved on the EC side are sensitive to cultural and historical differences, respect the basis from which change is being made and gain rewards from the process rather than anticipate preconceived outcomes. In short, the role of EC/EFTA collaborators in this project is to support a process of self-development by questioning, proposing and negotiating. Professor Belousov's work at Iasi Polytechnic on creativity and innovation will therefore be of important relevance to the project.

It is agreed that one or two key economic sectors requiring development and inward investment should be identified, and that activities within the project should be principally focussed upon those sectors. Although there is clearly a spectrum of development, from awareness raising through training to business decision making, it is convenient to regard the project as consisting of two principal elements, educational and business, which interact throughout the implementation period.

The objective, therefore, of the Iasi Project is to achieve, by facilitated self-development, improved industrial capacity through investment and joint ventures, based on a platform of improved training, high-level technological education and operational understanding of the market economy.

3 Regional Needs and Aspirations

ICTTT has identified the food and agriculture industries as being in prime need of assistance within the terms of this project and, in due time, resources permitting, this will be extended to include textiles.

It is intended that all industry, education and training that relates to the chosen sectors will be eligible for participation in the project. Without preempting the results of the planning processes (to be discussed later), it is evident that as in other parts of the former communist bloc, the Iasi economy has suffered from overly centralised control and the lack of a management culture which comprehends the market-based economy. The needs appear to be at least as urgent in relation to the development of human potential as they are for technological updating and investment.

With regard to environmental matters, it has been agreed with ICTTT that environmental education will be related specifically to technological development only; there is no generalised intention, within this project, to improve environmental conditions, however important that may be.

4 Project Processes

The preliminary phase of the project will be to install the necessary administrative infrastructure in Romania. Within the Iasi region, communications are poor and the Romanian co-ordinator will require assistance, space, office systems, communications and transport. The educational and industrial elements of the project will develop in overlapped sequences of four principal processes:

- a) **Fact Finding.** A programme of meeting and visiting, involving key participants in the project with the intention of fact finding, making professional acquaintances, developing mutual confidence, understanding cultural and historical implications for the project and improving the mutual understanding of the different contexts in which the partners work.
- b) **Audit.** This phase will be conducted in Romania by joint teams with Romanian and EC membership. The intention is to ensure, consistent with project policy, that outcomes are owned on the Romanian side. This phase will identify the strengths, weaknesses and potential of elements identified by the management team to whom the teams report. The audits will be of both technology and management.
- c) **Planning.** Using the results of each audit, the management team will evolve an action plan. The outcome of this process will be a series of subsidiary implementation projects.
- d) **Implementation.** The results of audit and the brief

prepared by the management team will be used by implementation teams to achieve change and steer resources.

e) **Reporting and evaluation.** Reports by implementation teams on the outcomes of their work will be evaluated by the management team.

5 The Generation of the Iasi Project

Initial meetings and visits supported by nondedicated funding have created the basis for the project outline, policy and principles stated above. Dedicated funding will need to be obtained from a variety of sources to match the scope of the project and to meet the requirements of timing, planning logic and the objectives of the funding organizations. The first application for funds was to TEMPUS to support the university based elements of the programme. Should that bid be successful, monies will not become available until September 1992, but in the meantime it is hoped that the results of a Know How Fund (UK, Foreign and Commonwealth Office) application will allow the creation of the necessary administrative infrastructure to support the complete programme, overlapping that part of it which is included within the TEMPUS bid. Other sources of funding of which PHARE is a possibility.

As the project proceeds, and towards the end of Year 2000 when active industrial participation becomes more important, further funding will be sought from European, national and private sources. At that stage, it will be timely to awaken the interested investors considering joint ventures in Romania on the strength of the communications network, training platform and collective know-how which the project by then will have generated. It is considered that an important element of the project will be the production of a regular newsletter (journal), Iasi Polytechnic Magazine (review essays about engineering, business and management education) which will serve, in the initial stages, to attract the interest of those whose commitment and skills are relevant to the objectives of the project and thus widen the project network, and later as a marketing tool to secure the commitment of investors in industry.

6 Iasi/TEMPUS Project

Objective

The objective of the Iasi/TEMPUS Project is, within the context of the Iasi Project, to restructure and extend the educational and training capacities of Iasi Polytechnic to facilitate economic regeneration within the region, with primary reference to the food and ancillary industry.

Aims

The Iasi/TEMPUS Project will function within the self-development methodology of the Iasi Project of which it forms part. The focusing of these developments on the food and ancillary sectors will prioritise resource allocation, but implementation projects will be of general application in other sectors.

The project will be carried out within a joint collaboration between EC/EFTA universities on the one hand and Iasi Polytechnic on the other, co-ordinated by the University of 'Sussex at Brighton, UK. Industrial collaboration is assisted through the mechanism of ICTTT on the Romanian side and the COMETT UETP network on the EC side. In the first year of the project, the project management and administrative will be set in place, and by a combination of visits, meetings and consultancy, the participants will become orientated to their tasks. Within the first year, three implementation teams will have been set up and some progress will have been made in organisational change, curriculum development and purchasing decision. Plans for the retraining of teachers and instructors will also have been completed. The second year of the project will continue with audit and implementation, but with higher levels of involvement with industry and with significant purchasing decisions being taken, with the intention of improving the education and training infrastructure of Iasi Polytechnic, specifically in the areas of learning technology and multi-media archives. Towards the end of the second year the benefits of the improved curricula and infrastructure should begin to be manifested in industrially relevant training and this will be assisted by the inauguration of a functioning technology transfer centre based at the Polytechnic. In year three, the principal thrust of the project will be to build up volumes of training in a structure that is sufficiently flexible to meet the needs of industrial developments. The training requirements will have been identified by ICTTT following a training needs audit of members and associated companies in the area.

The principal features of "Iasi/TEMPUS" are:

- (a) self-development methodology;
- (b) focus on specific developmental sectors;
- (c) programme based on "Project Iasi" model;
- (d) introduction of management and environmental education;
- (e) updated technological education and training.

Outcomes of the three-year programme

- 1 Updated curricula development and learning styles.
- 2 Teachers/instructors retrained.
- 3 Learning technology and distance learning capacity.

- 4 Computer-Aided Learning Laboratory and multi-media library.
- 5 Local availability of language training.
- 6 Industrially based Diploma projects.
- 7 Management and environmental education.
- 8 Retraining and continuing education programmes leading EUR.ING. (European Engineer) within the context of a postgraduate school.
- 9 Transnational (European) postgraduate education for Romanian engineers.
- 10 A technology transfer centre based at Iasi Polytechnic.
- 11 Education-initiated schemes to generate income.
- 12 Conferences, workshops and seminars for industry.

Management structure

The project management team will be responsible for overseeing the general direction of the project, reviewing strategy and defining policy. In Romania and in the UK, there will be executive teams.

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This major World Conference on Engineering Education, held in Portsmouth, UK (20-25 September, 1992), is the third in the series. It follows the World Conference on Education in Applied Engineering and Engineering Technology held in Cologne, in the Federal Republic of Germany, in April 1984, and the World Conference on Engineering Education for Advancing Technology, held in Sydney, Australia, in February 1989. It was organised by the University of Portsmouth in partnership with the University of Surrey, on behalf of the International Liaison Group for Engineering Education, combined with the Annual Conference of the Société Européenne pour la Formation des Ingénieurs (SEFI).

These volumes represent the edited versions of most of the papers presented at the conference. They have been collected into theme areas covering a very wide spectrum of interests in engineering education. These include international issues, quality aspects, courses and teaching issues, widening access and provision, academic-industrial links, and subject specific topics such as environmental engineering, computers in teaching, projects, design and manufacture.

The main theme of the conference was that of Engineering Education for the 21st Century, and the enthusiasm with which this theme has been grasped is very encouraging. The response to the call for papers was overwhelming, and it is evident from the papers published in these volumes that the subject of Engineering Education is now well established as a subject area in its own right.

There are many who have assisted with the preparation of the conference and the publication of these papers. Whilst it might be invidious to mention individuals, I would like to thank especially all those members of the Organising Committee who have contributed in any way, but in particular the Conference Secretariat and Executive who have handled most of the administration so effectively; the Academic Conveners who largely put the programme together; and the Publisher, Computational Mechanics, for their care and attention in ensuring the highest quality of these books. I should also like to express my appreciation to the International Liaison Group for recommending that this Conference take place in Portsmouth in 1992. Finally, I wish to express my personal appreciation, as well as that of the Organising Committee, to the University of Portsmouth for its support and encouragement throughout the planning and delivery of this event, and also to all those who have given support or assisted in any way in sponsoring the conference. The quality of papers presented, the innovation and experiences shared will, I hope, make the Conference and these proceedings a milestone in the history of Engineering Education.

Terry Duggan
 Conference Chairman