A part of the EU research program

ACTS:

A Part of the EU Research Program

In this paper, we will review the overall scope and objectives of the ACTS program within the 4th Framework Program of the EU and describe, the technology domains addressed. Further, we will mention, the type of results achieved and present the program's working methods. We will pay particular attention to the importance of Switzerland's participation in ACTS. Finally, we will examine what can be expected from the 5th FP, which is due to start in 1999, where new priorities are being set and new management methods for the program will be adopted.

The Advanced Communication Technologies and Services (ACTS) program of the EU is an important and essential instrument for jointly mastering the rapid development of the

HANS K. PFYFFER, BERN/TÄGERTSCHI

technologies that will be used in the near in selected areas for advanced networks, services and applications. Close collaboration in the pre-commercial phase between partners from academia, industry, network and service providers, and potential users of the results, allows a pooling of scarce resources (human and financial), a rapid build-up of expertise and skills, and provides the basis for new products and services, setting timely European and world standards. As a result Europe's competitive edge increases at the eve of the Information Age, and the introduction of end-to-end compatible services in a competitive environment is assisted. An essential network of relationships between highly competent specialists in many pertinent fields has also evolved. This article provides an overview of the objectives and position of the ACTS program and includes some reflections on Swiss participation in this program.

ACTS in the 4th RTD Framework Program of the EU

The Framework Programs (FP) for Research and Technical Development (RTD) of the European Union are aimed at supporting research in scientific and technological developments in Europe, with the ultimate objective of increasing the com-

petitiveness of the various sectors in Europe, and thereby benefiting European society and economy. The first such program was initiated in 1984; the 4th FP is now in progress and will end in 1999. Preparations have been going on at various levels for initiating the 5th FP due to start early in 1999.

Areas covered in the 4th FP range from nuclear science and technologies, to biotechnology, agriculture and fisheries, environment and climate, transportation, through telematic applications (TAP), information technologies (ESPRIT) and Advanced Communication Technologies and Services (ACTS). Related topics laying the foundation for the work in ACTS were addressed in the 2nd and 3rd FP's as part of Research and Development of Advanced Communications in Europe (RACE) project.

The total funding outlay of the EU for all activities in the 4th FP amounts to more than 13.1 billion ECU. The three areas oriented toward Information and Communication Technologies (ICT), (TAP, ESPRIT and ACTS) received funding of over 3.6 billion ECU; ACTS was funded by the EU with 671 million ECU, which covered about 50% of the project costs on average. It is therefore important to note that the non-governmental project partners contribute significantly to the costs of the project work as well.

The ACTS program is managed by the ACTS Management Committee (AMC), whose members are representatives from all EU member states and the European Economic Area (EEA) states. Swiss participation in program management committees is normally not possible, since Switzerland declined to join the EEA in a 1992 referendum. However, exceptional

arrangements allow a Swiss representative to attend the meetings of the AMC without voting rights and decision powers.

The Objectives and Areas of ACTS

On July 27th 1994 the European Council adopted the ACTS program with the objective «*to develop advanced communication systems and services for economic development and social cohesion in Europe, taking account of the rapid evolution in technologies, the changing regulatory situation and opportunities for development of advanced trans-European networks and services...*».

In contrast to the RACE program, which was heavily oriented toward technology, in ACTS a strong emphasis was placed on applications, and demonstrations in order to generate greater awareness among the general public and specifically to create links to end-users.

The ACTS program is organized in six areas (-domains), each of which addresses specific issues that, in their totality are significant to achieving the overall objectives.

The technology-oriented domains address the following areas:

Domain 1: Interactive Digital Multimedia Services: Technologies and applications for multimedia services

Domain 2: Photonic Technologies: Component and network technologies for optical networks

Domain 3: High Speed Networking: ATM and related technologies for high speed networks

Domain 4: Mobility and Personal Communications: Service, system and network issues for mobile communications including multimedia capabilities

Domain 5: Service engineering, Security and Communications Management: Technologies enabling effective, secure and managed networks and services in a multi-vendor environment

Domain 6: This domain is directed at so-called "horizontal" actions, focussing on consensus development, developing strategic visions, social and economic analyses and the dissemination of results.

Three calls for the submission of project proposals were issued in September 1994; September 1995; and the last with a deadline in September 1997. In all three calls a significant over-subscription took place, resulting in the need to carry out a very thorough and careful selection process conducted under the supervision of the EU Commission staff and supported by a team of independent experts from all over Europe as well as a few specialists from overseas.

Under the ACTS program well over 240 projects were or are being conducted; 156 are funded under the first and second calls, and over 80 from the third and final call.

The average size of the projects between six and seven million ECU (total cost, partially funded by the EU); the average number of participants is eleven.

Important results of the ACTS projects are used as input for the development of standards, contributions for new products, services and methods, for scientific publications, and for important technological expertise to improve the technological position of the companies and organizations involved.

Important elements in the working method in the ACTS program are:

– The establishment of so-called chains linking related projects: The purpose of these chains is to coordinate some of the project activities, and in particular to address the production of tangible results (often in the form of "Guidelines") or the dissemination of results at conferences, symposiums, etc.
– The setting-up of a number of test sites for various projects to conduct experiments on new applications or new technologies, and to demonstrate the results of the projects to potential end-"users".
– The constituting of National Hosts, which are not directly financed by the ACTS program, but serve as platforms to support and interconnect experiments throughout Europe.
– The annual technical auditing of all projects, to assess the progress and recommend any modifications when and

where necessary, and report findings to the Management Committee.
– The annual external monitoring of the ACTS program, requested by a Council Decision, and carried out by six independent, external experts to assess the achievements and the progress of the program as a whole towards meeting the objectives.

Swiss Participation in ACTS Projects

Although Switzerland is not yet a member of the EU, it is possible for Swiss organizations to participate in ACTS projects, provided there are at least two partners from an EU country in such a project. As a rule, the main contractor of a project has to be based in an EU country. There is an important exception in the case of the EXPERT platform in Basel, which since its inception has been led by a Swiss organization, the Association Swiss PTT-Ascom (ASPA) set up in 1991.

In lieu of EU money funding the work in the projects, the Swiss government has made available equivalent funding for Swiss partners in ACTS projects through the Swiss Federal Office for Education and Science (Bundesamt für Bildung und Wissenschaft, BBW).

There are about 30 Swiss organizations, institutions and industries participating in projects of the ACTS program; these are institutes from the federal institutes of technology (ETH's), from the telecommunications industry, network operators and/or service providers, private research institutes, and a number of SME's. Swiss participate in 61 projects: Multimedia-domain (18), Photonics (10), High Speed Networking (17), Mobile (6), Services and Security (7), and Horizontal Actions (3).

Achievements

The ACTS Central Office of the EU Commission has issued a questionnaire to all companies and institutions participating in the ACTS projects and has compiled data on the results and achievements. By January 1997, at the halfway point of th 4th FP and when many projects were still in the start-up phase, some meaningful results already had been achieved.

There were 117 significant contributions to European and world standards; 41 patent application had been filed, 175 experiments and 159 public demonstration been carried out. A number of projects

Hans Karl Pfyffer *was born 1931 in Switzerland. He studied at the Federal Institute of Technology (ETH (ETH) inZurich and received his diploma in electrical engineering in 1955 (Dipl. Ing. ETH). In 1964, he was named development engineer for the first transistorized telecommunication equipment and team leader at GEC Coventry (England). In the middle of 1964, he started to work for the Swiss PTT (later Swiss Telecom PTT) in Bern, and held several positions in the R&D Laboratories, culminating in 1992 with his appointment as Director of R&D. Beginning in 1965, he was an active force in the international standardization (CCITT) and often held important posts including the chairs of SG.XVIII (Digital Networks and ISDN) and of the 1996 ITU World Telecommunications Standardization Conference in Geneva. For many years, he has promoted and supported national and international R&D activities in telecommunication (EURESCOM) and, joint research within UNISOURCE. He was the co-initiator of ACTRIS (Joint research between Swiss Telecom and Swiss telecommunication industries) and played a leading role at several international conferences (e.g. International Symposium on Interworking 1992, 1994 and 1996 and 1998, ECOC 1993 in Montreux, and the Zurich Seminar on Digital Communications 1986). He has been the Swiss intermediary to RACE/ACTSprogram management since 1992 and initiator of the Swiss National Host. Since his retirement from Swiss Telecom PTT on July 31, 1996, he has been active in various activities in his field associated with national and international R&D programs in telecommunications as a consultant for Swisscom, Swiss National R&D programs (SPP ICS), and for Telscom.*

enabled new product and service developments to be carried out, while others lead to improvements in products and services. Many results are of a "soft" nature in that the expertise and technology of leading edge enterprises were significantly improved, and a network of relationships across Europe and throughout the academic community, industry and network- and service providers evolved.

Importance for Switzerland

Although Switzerland has decided not to take part in the EU and EEA participation in European program is of utmost importance despite significant restrictions that must be observed. Switzerland has no say in the preparations and the management of the programs, the approval of the projects, may not lead projects, and receives no EU funding for work done in projects.

Nevertheless the cooperation at the scientific and engineering level is excellent, and there are doubtless significant gains achieved through participation in specific projects both in terms of contributions submitted as a result of Swiss work as well as participation in the results obtained jointly with other partners.

Prospects for the 5th FP of the EU

For some time now, preparations have been underway within the EU, both through work undertaken at the Commission level in Brussels and by consultation with the individual member countries of the EU, towards defining and approving a 5th Framework Program (5th FP). Final approval by the Council of Ministers and the Parliament was granted on December 22, 1998. A total of 14.96 billion euro allocated for the 5th FP.

There are going to be some significant changes compared to the 4th FP.

The main areas in the 5th FP will cover the areas of:
– Quality of Life, Management of Living Resources
– User-friendly Information Society
– Competitive and Sustainable Growth
– Energy, Environment and Sustainable Development

Some additional activities are also planned that address the role of community research, participation of Smell's, nuclear research activities and the activities by the Joint Research Center.

The program for Information Society Technologies (IST), which is of particular interest in light of the present articles, is expected to cover the following key actions:
– Systems and Services for the Citizen: 646 million euro
– New methods of Work and Electronic Commerce: 547 million euro
– Multimedia Content and Tools: 564 million euro
– Essential Technologies and Infrastructures:1363 billion euro

Additional financial resources within the IST program were allocated to RTD activities on Generic Nature and the Support for Research Infrastructure, bringing the total finances for the IST program to 3.6 billion euro, which is equivalent to the 3.6 billion ECU's allocated to ACTS, TAP and ESPRIT for the 4th FP. First calls for the submission of project proposals were announced for January 1999.

It is to be noted that the IST program will be managed as one program, and not as three separate programs (ACTS, ESPRIT and TAP) as had been the case up to now. This will have far-reaching implications on the organizational structure of the Commission services.

Requests have been submitted from various quarters to streamline the processes in program and project management. It must be emphasized, however, that the complexity of many projects in an essentially competitive environment, and the amount of public money involved in addition to money contributed by the partners in projects, requires strict budgetary controls and judicious evaluation of achieved results. This is noeasy task, and the effort contributed by the Commission staff of the ACTS program is very appropriate and essential.

Some of the work done under the ACTS program is likely to find a continuation in the IST program, in particular the sub-area "Essential Technologies and Infrastructures," but also in "Multimedia Content and Tools."

More specific issues likely to be addressed under "Essential Technologies and Infrastructure" will be: Information processing, communication and network technologies, engineering and technology for software, systems and services, mobile and personal communications and systems, multi-sensory interfaces, visualization and simulation technologies, peripherals, sub-systems, and microsystems.

Conclusions

The EU Framework Programs for RTD are an important instrument to strengthen the competitive edge of European industry and academia in the field. It will be important to integrate more closely end-users and consumers in the various projects, as well as those who are an integral part of the value chain. Their needs and their opinions must be taken into account more effectively than in the past.

The involvement of Swiss partners in the projects is essential for various reasons and yields tangible and intangible results to the progress of the projects is valuable, and the expertise gained through cooperation is important. The ratio of accepted project proposals with Swiss participation to the overall number of rejections is very good and reflects favorably on the competence and the quality of the work contributed to the projects.

It must be clear, however, that special constraints remain and must be observed as a consequence of Switzerland's non-membership in EU and her rejection of membership in the EEA.

Nevertheless, there is at least one outstanding project where political issues did not overshadow the scientific, technical and managerial skills and competencies: the EXPERT project with its highly successful platform in Basel has become a pivotal point within Europe and overseas for many projects. Every effort must be made to ensure successful participation in the 5th FP. `4`

Zusammenfassung

ACTS: Ein Teil des EU-Forschungsprogramms

Gesamtumfang und -ziele des ACTS-Programms innerhalb des vierten Rahmenprogramms der EU werden überprüft, die behandelten Technologiegebiete werden beschrieben, die Art der erzielten Ergebnisse wird erwähnt, und die Arbeitsverfahren des Programms werden beschrieben. Besondere Aufmerksamkeit wird der Bedeutung der Schweizer Beteiligung an ACTS geschenkt. Ein Ausblick wird vorgestellt auf das fünfte Rahmenprogramm, das 1999 beginnen soll, wo neue Prioritäten gesetzt werden und neue Programm-Management-Verfahren angewandt werden.

SIEMENS

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