

UNDP/RER/87/020
Terminal Report

EUROPE

**(Albania, Austria, Bulgaria,
Czechoslovakia, Hungary, Italy,
Malta, Poland, Turkey, Yugoslavia.)**

Scientific and Technical Information Network (INTERNET)

**Project Findings
and
Recommendations**

Serial No. FMR/CII/PGI/92/242(UNDP)

**United Nations Educational,
Scientific and
Cultural Organization**

**United Nations
Development
Programme**

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E U R O P E

SCIENTIFIC AND TECHNICAL INFORMATION
NETWORK (INTERNET)

Project Findings and Recommendations

Report prepared for the Governments
of Albania, Austria, Bulgaria,
Czechoslovakia, Hungary, Italy,
Malta, Poland, Turkey and Yugoslavia,
by the United Nations Educational,
Scientific and Cultural Organization
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Programme (UNDP)

United Nations Educational,
Scientific and Cultural
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UNDP/RER/87/020
Terminal Report
FMR/CII/PGI/92/242 (UNDP)
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The terminal report covers the period from 1987 to the end of 1991 i.e. the period prior to the political changes that have taken place in former Yugoslavia and Czechoslovakia. Therefore, references to these countries should be regarded in a historical context.

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(ii)

Summary

Total Government Contribution: \$ 4 967 225

Total UNDP Contribution: \$ 597 500

Objectives (intended and achieved)

The development objective of the project is to contribute to the co-operation between governments and institutions of the European region by increasing the exchange of scientific, technical and economic information among them, with a view to supporting problem-solving and decision-making in specific areas of high priority. The two immediate objectives of the project are (i) to develop an information system in these priority areas and to ensure access to these information systems for all participating countries and (ii) to create a methodological framework and information infrastructure for INTERNET activities.

Outputs sought and produced

- a) A pilot version of a decision support system on water resources (factual and bibliographic databases);
- b) A pilot version of an information system for the support of decision-making for flood prediction and protection;
- c) An information system on waste management including the use of microcomputers for analysis and monitoring;
- d) Computer-based methodologies and supporting databases for efficient management of small and medium-sized enterprises;
- e) An INTERNET Information System on technology transfer;
- f) A large-scale economic decision-making system using modern computer-aided decision support tools for decision-makers
- g) A survey of existing information on marine pollution in the Mediterranean and Black Sea;
- h) A series of documents providing specifications regarding international standards, recommendations and guidelines complemented by the evaluation of the informatics experiments implemented in the framework of the project;
- i) Communications-based services and know-how, in particular data network services with recommendations on hardware and software tools for connecting end systems to the data network.

Findings and Recommendations

Europe is facing a new integration process, and the need for co-operation, exchange and usage of scientific, technical and economic information is required. The INTERNET project has provided participating countries with experimental access to information sources and usage of computer-aided decision-making

tools. These information tools will now be used by the decision-makers (institutions and researchers in member countries). The introduction of modern communication technologies was a basic strategy of the INTERNET project to improve communication between the partners for data exchange and information utilization, as well as to reach a better efficiency for the co-operating centres in their work. It must be emphasized that the strategy of project RER/87/020 was a user-oriented, problem-solving approach rather than an attempt to immediately start building a large-scale functional regional information system. INTERNET is thus a coordinated ensemble of pilot projects designed to promote development and share experience in information access and use. It is recommended that INTERNET should be provided with strengthened support at the national and international levels in order to achieve sustainability and self-sufficiency.

Lessons Learned

One should note that the attainment of project output results shows that the project approach is valid, despite the difficult and evolving situation which the project had to face. INTERNET needs to retain its identity as a distinct project with the priority goal of establishing the operational network infrastructure for management and exchange of scientific, technical and economic information based upon a common, generally accepted methodological framework for computer communications, distributed databases and information-handling and decision-support tools. The development of applications in priority areas should continue as a component of the project, but these should be streamlined by ensuring that they achieve the active participation and support of the largest possible number of countries; that they complement other regional projects concerning these areas.

Terminal report

I. INTRODUCTION

INTERNET, aims and content

1. In the first stage INTERNET was to be a regional, interlinked system of computerized information sources for the exchange and processing of scientific and technical information and for solving development problems and taking decisions in specific areas of high priority.

2. The project provides methods, applications of norms and standards, as well as software tools which would be of use to other regional projects including the establishment and strengthening of networks.

3. INTERNET is therefore a co-ordinated ensemble of pilot projects designed to promote development and share experience in information access and use.

4. INTERNET is structured as a network of co-operating institutions which combine their expertise and information in selected fields. They harmonize data input and share collections of data and interlink capacities through the use of telecommunication techniques, resulting in mainframe- and micro-computer-networks.

5. The intention of the Participating Countries in INTERNET is to enlarge the project into an inter-regional co-operation, with a view to implementing the principles of the UNDP Outreach Programme by transmitting the experience and know-how obtained by European countries to developing countries facing similar problems and looking for solutions in similar fields.

6. Thus in the final stage INTERNET shall be a project for the North-South and South-South inter-regional exchange of scientific and technical information and of technological experience.

INTERNET Participating Countries

7. Since INTERNET is a regional project, all the participating countries belong to Europe. The founding countries include:

- Austria
- Bulgaria
- Hungary
- Yugoslavia

8. Six new Member States have joined the project since 1988. These are:

- Albania
- Czechoslovakia
- Italy
- Malta
- Poland
- Turkey

INTERNET Participating Organizations

9. In addition to UNESCO and UNDP three international organizations have offered co-operation in INTERNET activities:

- the European Space Agency (ESA)
- the United Nations Industrial Development Organization (UNIDO), and
- the World Bank.

10. This co-operation involves linking INTERNET activities with other projects in scientific and technological information, as well as the transfer of INTERNET results in information methodology and tools, for the support of other projects executed by these organizations. Joint efforts for "outreach" activities were also defined as a priority.

Project co-ordination

11. Appropriate co-ordination mechanisms have already been established. These are:

a) A Steering Committee, which initiated the present project during meetings in Budapest (1985) and Belgrade (1986).

Each institution participating in the INTERNET project (both co-ordinating and co-operating ones) may take part in the meetings of the INTERNET Steering Committee. These institutions form the Implementing Agencies of INTERNET. Concerning the Executing and Financing Agencies, see d) below.

b) An INTERNET Technical Secretariat has been established in Vienna at the Wirtschafts- und Sozialwissenschaftliches Rechenzentrum (WSR). The tasks of this technical support were defined at the Steering Committee meeting, in particular for harmonizing and integrating INTERNET activities, monitoring their progress, and serving as a central clearing house for INTERNET documentation. The INTERNET Technical Secretariat offers to the project the following technical support:

- harmonization and integration of the contributions of the INTERNET participating Organizations, expressed by

the National Co-ordinators, for the preparation of the project workplans;

- monitoring the progress of INTERNET inter-related activities;
- serving as a central clearinghouse (depository) of the documents resulting from project activities;
- preparation, in co-operation with the project partners, of the yearly Project Performance Evaluation Report (PPER) to be submitted to UNESCO and UNDP;
- offering assistance in electronic information exchange.

c) National Co-ordinators

The list of National Co-ordinators is given in Annex E.

d) Executing and Financing Agencies

The Executing Agency was UNESCO, responsible for the execution of the project programme (Personnel, Sub-contracts, Training, Equipment), as approved by the INTERNET Steering Committee and following the requests expressed by the National Co-ordinators;

The Financing Agency was UNDP, responsible for the approval of the project budget and the evaluation of the project outputs and objectives.

INTERNET budget

12. For the realization of the INTERNET budget, UNDP provided US \$ 597.500. Each of the member countries provided a national contribution in kind (see below)

		\$
Austria	Total	350.000
Bulgaria	Total	194.295
Czechoslovakia	Total	290.000
Hungary	Total	1 472.000
Malta	Total	200.000
Poland	Total	427.000
Turkey	Total	269.000
Yugoslavia	Total	268.550

II. INTERNET OBJECTIVES

Development objective

13. The development objective of the project is to contribute to co-operation between governments and institutions of the European region by increasing the exchange of scientific, technical and economic information among them, with a view to supporting problem-solving and decision-making in specific areas of high priority. The project is designed to contribute to the economic development of the European region by implementing a self-sustained information storage and retrieval network of co-operating institutions, using appropriate harmonized or common computerized storage and processing methods and telecommunication technologies.

14. The immediate objectives of the project are the following:

Immediate objective 1 (Information systems in priority areas)

- to integrate existing information and to fill the information gaps for the development of information systems in selected priority areas: urban drainage and ground water management, seismic risks, flood prediction and protection, hazardous waste management, enterprise efficiency management, technology transfer and economic decision-making;
- to ensure access to these information systems for all participating countries; to develop expertise for the use of information methods and techniques in solving developmental problems;
- to test the approaches and models in solving these problems by mixed teams of researchers, information specialists and users;
- to set examples of efficient information support for decision-making which can also be offered to other areas and/or regions.

Immediate objective 2 (Methodological framework and information infrastructure)

- to provide a methodological framework and informatics infrastructure for INTERNET activities, in particular defining common methods, providing software support for information processing, providing tools and methods for accessing computerized information resources, implementing a message handling system for INTERNET purposes, speeding up the introduction of international packet switched data network services and promoting the use of the above by the means of training of specialists and users.

III. INTERNET REGIONAL SUBNETWORKS - OUTPUTS

15. The outputs and their results are listed below. For the co-ordinating centres and the co-operating centres see Annex F.

Output 1.1 Urban drainage

A pilot version of decision support system backed by selected sets of data from factual and bibliographic databases, accompanied by selected educational software packages, for the demonstration of and training on improvements in engineering practice in design, and ground water management to meet the need for better cost/efficiency and environmental protection.

Results

16. The following databases have been developed:

- UDBB, an Urban Drainage Bibliographic Database with CDS/ISIS software. Participating countries provide input in this Yugoslavia project (more than 2.000 bibliographic references).
- UDM, an Urban Drainage Modelling database, has been initiated by Yugoslavia. It includes topological, statistical and construction data in relation to each other concerning the urban drainage network.
- A seismological database has been developed by Hungary, as well as a:
 - . geothermic database,
 - . gravitational database.
- INSDANUBE is a database, which gathers information on water resources, especially for the Danube river.

17. The following software systems have been implemented:

- DSS system, which is able to work out programs and models for the design of urban drainage networks, has been developed by Yugoslavia.
- A Planning and Management System, which checks and controls the maintenance in Urban Drainage, has been set up by Hungary.
- A computerized training system has been developed by Yugoslavia in relation to the EEC Comett project. Its aim is to design and manage an urban drainage system.
- RAINSTAT is a software package, which helps in statistically analysing rainfall - rainoff records.

- BEMUS is a software for design and verification of urban storm drainage networks. It has been used for training purposes.
- HYPOCAT is a software used for educational purposes. It gives a sensitivity analysis of urban storm drainage models.

Training

18. Training sessions took place in Malta as well as in Palermo (Italy). Yugoslavia also organized user oriented courses in Dubrovnik.

Others

19. The UDT'91 Conference, organized by Yugoslavia in Dubrovnik, was an international conference on New Technologies.

20. Italy, Poland, Yugoslavia, Austria, Bulgaria, Hungary and Malta have set up experimental catchments and co-ordinate their information data.

Output 1.2 Seismic Risks

This output was supposed to establish an information system for seismic risks and in particular a seismic pilot database involving the following interconnected data:

- seismic source data,
- earthquake data,
- strong motion data,
- earthquake damage data,
- methods for seismic risk assessment.

These databases would have provided support for seismic risk estimation and management regarding both pre-earthquake and post-earthquake activities.

Results

21. However, according to the decision of the INTERNET Steering Committee this sub-project was cancelled.

Output 1.3 Flood Protection and Prediction

A pilot version of an information system to support decision-making for flood prediction and protection. Development of an appropriate system for processing and exchanging relevant information complemented by global studies on natural/technological hazards.

Results

22. A methodology for the bibliographic database design, creation, updating and exchange has been completely defined; and

the features of the UNESCO Common Communication Format (CCF) were analysed in detail.

Databases

23. A bibliographic as well as a meteorological database were developed, and are available on-line.

Software systems

24. FLOMEX, a Flood Management Expert System for flood protection has been developed in Hungary. It is used to collect information from the watershed and to evaluate the situation. It is an integrated software package run on IBM PC AT/XT micro computer systems.

25. An Information System for Flood Control has been designed by Yugoslavia to improve information on flood protection and prediction.

26. The software "Monitoring of the river valley polder flooding" was set up and presented by the Polish Delegation during the INTERNET Days '91, exhibition held in Prague, Czechoslovakia in December 1991.

Training

27. Through the joint efforts of two training centres, YUWAT (Water Information Centre) and IRTCUD (International Research and Training Centre on Urban Drainage), both located in Belgrade, the infrastructure for a long-term training programme was established. These centres have been used for holding training courses during the life of the project.

28. A teaching package complete with appropriate documentation is now being finalized in English and is available to member institutions. This system can naturally be used for practical, operational purposes on the basis of bilateral arrangements between partner institutions in charge of flood prediction and control, crisis management and evaluation of actions undertaken in crisis conditions.

Output 1.4 Waste Management

An information system on waste management, oriented towards:

- *the use of micro-computer software to help associated countries launch local and/or national information systems. These will cover special (hazardous) waste production sources, on-site storage and transportation guidelines, as well as pollution caused by hazardous waste;*
- *development of an information system on special (hazardous) waste processing, to help associated countries*

establish a waste management economy. This will include: the transfer and further development of selected cost-efficient waste processing technologies and technologies for purifying water and air; identifying technologies for waste reduction, and in particular, the introduction of clean technologies. This information system will consist of modules on clean and waste processing technologies, analytical procedures, waste processing technologies, waste processing equipment, regulations/legislation, economic implications, experts in the sector, and training opportunities.

- design, implementation, and optimization of a model for efficient information support in introducing cost efficient technology, with incineration of hazardous waste in cement kilns as an example. The model will be developed by mixed teams of researchers, information specialists, technologists and economists, and will include direct involvement of governmental institutions. The model will also serve as an example of information transformation into knowledge for solving developmental problems.

Results

Databases

29. Yugoslavia developed a database on chemical waste for pollution control. It is regularly updated, and used in pollution control, as well as for research and development purposes.

30. National databases on legislation and regulations for chemical waste and waste waters, hazardous chemicals, low-waste technologies, and companies processing hazardous wastes have been set up and are operational.

31. DCHE, Hazardous Chemicals Database, covering safety and toxicological characteristics and information required for the transportation, storage and utilization of hazardous chemicals. It was implemented by Hungary.

32. ECONINFO, a bibliographic database of the Economic University of Budapest (Hungary) covers the economic aspects of environment protection.

Software systems

33. WMIS, the Waste Management Information System, contains bibliographic information for waste generation, storage, collection transportation, processing, disposal and control. A large number of primary documents, with special emphasis on technical papers, have been collected. This system is accessible on-line via the national host at the University of Maribor (Yugoslavia).

34. A knowledge-based system and expert system for quick response to hazardous water pollution has been implemented by Yugoslavia.

35. ES/TECH is an expert system containing information about alternative technologies and waste processing, developed by the CSFR.

36. IS RERO, a computer-assisted Register of Waste Recycling, has been developed in the Czechoslovak Federal Republic. It includes information about the firms producing and processing hazardous wastes, and about low-waste technologies. An annotated bibliography and a list of problems (already solved or not) is also included in RERO.

Training

37. An International Workshop on Waste Management was conducted on 21 - 23 October 1991 in Istanbul. A programme prepared by UNESCO using CDS/ISIS was presented and adapted for special applications in the pulp and paper industry.

Output 1.5 Efficient Management on the Small and Medium Enterprise Level

Computer based methodologies and supporting database for efficient management of small and medium enterprises. This will lead to an increase in the effectiveness of resource usage (raw materials, energy, labour consumption, etc.), as well as to a decrease of the generation of hazardous wastes. Studies provide the main results for the application of efficient management methodologies in selected enterprises in particular countries.

Results

Databases

38. The Small Enterprises Bibliographical Database produced by Yugoslavia called ICLSCDS covers books and articles on small firm management published in developed countries.

39. A Strategic Management Database, also developed by Yugoslavia, contains bibliographical information on books and articles on strategic planning and strategic management published in developed countries.

40. The POISK database was set up in Bulgaria by INFORMA and is a problem-oriented information Search Catalogue which can be used to discover new methods and computer systems.

41. The KMC database is a database with references of Hungarian companies and covering characteristics of general interest.

42. SMIDO, developed by Turkey, is a database for personal computers. It includes data concerning the production depart-

ments, capacities, legal status, energy consumption, trade branches, and export products of small and medium sized industrial enterprises in Turkey. Access to this database is possible through the Turkish PTT's packet switched network for on-line use in English.

43. CAPP is implemented by the University of Tirana, Albania. This database for personal computers includes different kinds of production oriented data. The primary emphasis is on technological data.

Software systems

44. SPSP is a Strategic Planning Support Program, implemented and used in the framework of ICLSCDS, Yugoslavia. It provides tools for giving a clear organized view of present and future environments, and helps managers to position each business in accordance with the maturity of the industry and the competitive position of the enterprises.

45. SMSP is a Strategic Management Support Program, implemented and used in the framework of ICLSCDS, Yugoslavia. It is much broader but less detailed than SPSP. It can be applied without intensive "theoretical preparation" of the end-users.

46. SCF is a Modelling Production and Distribution Sector Program used within ICLSCDS, Yugoslavia. It provides capability of achieving higher efficiency in resource usage, including the use of energy, raw materials and human resources, through computer simulation of production and distribution of final products.

47. RA is a Financial Ratio Analysis for ICLSCDS, Yugoslavia. It quickly provides an overview of where an enterprise stands with respect to profitability, liquidity, leverage and activity.

48. BEA is a Break-Even Analysis (ICLSDC, Yugoslavia). It can help managers when they undertake:

- a sensitivity analysis of a project
- or if they look at alternative scenarios.

49. CONDOR is a Group Decision Support Tool developed by Hungary. It helps in the co-ordination of the decision-related activities of individuals participating in the preparation of a decision which may have different points of view, priorities, etc.

50. BISER is a software package for expert estimates and information exchange developed by Bulgaria. The programme BISER applies an information technology to define the value of the "quality" of one object, compared with an analogous group.

51. SEMAFOR, a software package for expert estimates and information exchange developed by Bulgaria was developed to support consulting work in medium/small enterprises. It is a

Small Enterprise Management Analysis of Factors, Objectives and Results.

52. SMG, Strategic Management Game developed by Bulgaria, is a software package for manager training. It has been adapted in Bulgaria and tested at a medium-size enterprise in that country.

53. ANASTAZ, Evaluation of Variants and Modelling Structural Changes of Systems developed by Czechoslovakia, enables managers to improve the quality of decision making processes when analysing the current situation and proposed changes in production systems.

Training

54. Training workshops and seminars were organized by SMIDO, Turkey, for managers from small enterprises in order to help them to use the databases and computer-aided methodology more efficiently in enterprises management.

55. Seminars took place in Bulgaria, Czechoslovakia and Yugoslavia.

Output 1.6 Technology Transfer

An information system on technology transfer oriented towards:

- *helping associated countries launch their national and/or sectoral information systems on selected technologies, in particular those related to priority fields of INTERNET;*
- *the development of a regional database for technologies offered for exchange, in particular among associated countries;*
- *the development of methods and techniques for structuring industrial information, which support evaluation of various technologies and facilitate their transfer.*

Results

Methodology and studies

56. A study on the extent of available technologies and information on databases BIOSIS, INSPEC-B and COMPENDEX has been carried out by Bulgaria. The information in the abstracts, concerning the problems of environmental protection, the development of technologies and application of ideas and principles of pollution prevention, pretreatment and pollution control mainly takes the form of articles.

57. Work on a Technology Inventory has been carried out by the Ministry of Industry and Trade, Bulgaria, and submitted to member countries.

58. A Databases Directory containing information on clean technologies has been established at INFORMA (Bulgaria) and is under constant development and modification by receiving requests from participating countries. The Directory includes all available data for world-wide information sources on clean technologies.

Databases

59. SIFT is a Reference Information Fund of Technologies. It contains a description of technologies such as:

- Main uses of technology
- Technical data
- Economic data
- Status of technology development
- Licensor's name
- Licensor's country
- List of implementation results

This Database is accessible in the Information Centre for Technology Transfer INFORMA (Bulgaria).

60. Turkey has developed a Company Database on Food and Textile Industries; and implemented a Chamber of Union database.

61. The TECHNOLOGIES database, established by INORGA (Czechoslovakia) contains information records, concerning Czechoslovak production technologies, especially in the field of machinery production.

Software systems

62. INORGA (CSFR) demonstrated and offered its decision support system ANASTAZ, which is capable of evaluating and selecting building technologies and evaluating their impact on the environment.

63. Hungary has been co-operating with UNIDO with a view to upgrading UNIDO's INTIB Technology Supply Database System, which is now available to all participating countries

Output 1.7 Large-scale Economic Decision-Making

Large-scale economic decision-making using modern computer aided decision support tools for decision-makers with a view to improving the efficiency and effectiveness of economic decision-making, which is a key concern of every region, government and large enterprise.

Results

Methodology

64. Communication between the INTERNET member countries has been improved, in order to use on-line economic information more

effectively. National economic data is also provided on diskettes to reduce communication costs or in case communication means are lacking.

65. Each member country has introduced its national available database in the English language both on-line and off-line.

66. Concepts for storing information on large enterprises in a database have been developed, according to international standards and nomenclature.

67. Experts introduced their applications of appropriate mathematical and statistical methods on decision-making; these methods are used in each participating country according to the national priorities in various economic fields.

Databases

68. Austria has implemented many databases which are available to all member countries:

- Austrian Macro-Economic Database on-line,
- Eastern European Macro-Economic Database on-line,
- Foreign Trade Austria on-line,
- Main Economic Indicators of OECD on-line,
- National Accounts of OECD on-line,
- Economic Outlook of OECD on-line
- Energy Balance of OECD on-line,
- Basic Energy Statistics of OECD on-line,
- Labour Force Statistics of OECD on-line,
- Industrial Structure Statistics of OECD on-line
- Oil and Gas Statistics of OECD on-line,
- International Financial Statistics of IMF on-line,
- Direction of Trade of IMF on-line
- Balance of Payments of IMF on-line
- World Debt Tables of World Bank on-line,
- World Trade Statistics SITC rev1 of UN on-line,
- World Trade Statistics SITC Rev2 of UN on-line.

69. Hungary has developed bibliographic databases like ECONINFO, which covers foreign trade and international finances, (Economics University of Budapest), as well as statistical databases like:

- RES, a database on main indicators concerning the Hungarian economy.
- SITC, on Hungarian foreign trade on-line,
- Hungarian Agricultural Products on-line,
- Foreign Trade and International Finance on-line,
- EAST, a statistical database on the economy of East European Countries.

70. Poland has set up a Polish Macro-Economic Database on-line, as has Bulgaria (Foreign Trade of Bulgaria) and Albania (Albanian Economic Database).

Software systems

71. Austria has put the following softwares at the member countries' disposal:

- Time Series Processor (WZRP),
- Stochastic Simulation System (STS),
- Multi-objective Optimization System (IAO).

72. The FORECASTER software package developed by Bulgaria allows the setting up of a multitude of forecasting variants intended for supporting the activities of decision-makers in short-, medium- and long-term perspective. The Market Survey Expert System, a Bulgarian software, aims at the provision of adaptive management of the firm by a complex study of the market.

73. Turkey has also implemented a software package on Feasibility Preparation and Evaluation.

Training

74. Bulgaria, Czechoslovakia Hungary and Yugoslavia have organized training seminars on database utilization.

Output 1.8 Marine Pollution

It was decided to undertake a survey of existing information on marine pollution in the Mediterranean. The scope of the survey was extended to include the Black Sea and to meet the broader interest of INTERNET member countries.

Results

75. The Director of the Euro-Med Centre of the Foundation for International Studies in Malta drew up a draft questionnaire and sent it to 16 agencies in 11 countries as a pilot exercise. The compilation and evaluation of completed forms will be finalized and summarized in a Final Report during 1992.

Output 2.1 Methods and Standards

A series of documents providing specifications regarding international standards, recommendations and guidelines commonly accepted for co-operation, complemented by the evaluation of informatics experiments were implemented in the framework of the project.

Results

Standards

76. For data communication and information exchange the countries participating in INTERNET agreed on different standards to be followed:

- the physical structure of data exchange ISO 2709, used by CDS/ISIS,
- the Common Communication Format (CCF) of UNESCO,
- the ISO Standard for full text databases SMGL,
- the relevant ISO standards to the INTERNET project.

Guidelines

77. Model agreements for databases usage were elaborated, and software products and information services were provided.

78. Means to analyse, synthesize and repackage information have been developed in order to provide "value-added" information services, so that research workers can get acquainted with the State-of-the-art without spending considerable time on the identification, acquisition and reading of primary information sources.

79. Methods for identification and efficient support of information systems and services have been developed in co-operation with UNESCO's regular programme.

Output 2.2 Information Processing Software

Software tools for advanced information processing technologies recommended for use by the systems and services envisaged in connection with Objective 1 of the project (improved versions of the micro and mainframe version of CDS/ISIS software; interfaces for coupling different levels and stages of information processing; software for knowledge-based systems).

Results

Databases

80. The micro and mainframe versions of CDS/ISIS have been extended and offered to the members of INTERNET. They now dispose of the following fields:

- languages, (for sorting and displaying accented and double letter characters according to national filing rules),
- print support,
- library management (including thesaurus, acquisition, import from other databases, cataloguing, loans management periodical management, inquiry and current awareness services),
- data import by downloading CD-ROM files in micro-ISIS based retrieval systems,
- coding and decoding facilities of the contents of specific fields,
- a version allowing on-line database definition or modification and updating,
- additional menu for display format, for database selection, to enable data entry and to guide search.

81. Czechoslovakia, Hungary and Poland have co-operated on these projects.

Software

82. Information processing softwares have been improved in the following fields:

- project management database structure and implementation,
- introduction and evaluation on knowledge processing software,
- introduction to multi-media (hypergraphic) technologies and possible applications

Output 2.3 Networking

Communication based services and know-how, in particular an experimental harmonized data communication system based on regular or experimental public data network services and international standards, with recommendations on hardware and software tools for connecting end systems to the data network, and use of operational electronic mail and/or teleconferencing systems as well as a project management database.

Results

Software

83. Hungary implemented, demonstrated and distributed:

- a menu/driven interface developed for telecommunication-based access to INTERNET databases and services,
- an electronic mail service ELLA, offered to INTERNET - participants with free of charge mailboxes in Budapest,
- file transfer capabilities,
- full-screen 3270 emulation.

Communication

84. Austria and Hungary are offering to all INTERNET participating countries a test period of electronic mail.

85. Also the academic network EARN/BITNET is available now to several Eastern European countries.

86. At the present time the X-25 communication mode between most INTERNET partner countries is operational.

IV. CONCLUSION AND RECOMMENDATIONS

87. With respect to the development and immediate objectives of the INTERNET project, the participating countries have made significant progress in establishing databases, in the fields of

priority specified in the project document, in providing pilot access to these databases on-line for users in the other countries, and putting at the disposal of participants an appropriate means for the exchange of messages and data, in electronic form.

88. High-level decision support tools have been made available. All of these elements are in an advanced stage of development, ready to use, but the project period was relatively short and the international financial resources insufficient to reach the operational stage earlier.

89. Six new member countries joined the project during this period of implementation, the progress achieved in these countries is proportional to the duration of their participation. The enlargement of the number of member countries has enriched the project activities, strengthened co-operation, and helped to provide good results.

90. The target beneficiaries are decision-makers and research workers. Decision-makers will benefit as the various sub-systems become operational. Specialists involved in the development of the information, informatics and telecommunication infrastructure have particularly benefitted because they are able to save considerable time, financial and other resources by making use of common software, data, and structures. Furthermore, researchers have already benefitted from the system through the use of electronic mail system.

91. INTERNET has produced extremely valuable spin-offs by promoting not only communication among Central and Eastern European countries but by stimulating and serving as a means of co-operation between East and West Europe at a very critical and decisive period of time in their history.

92. Because Europe is facing a new integration process, the need for co-operation, exchange and usage of scientific, technical and economic information in an existing network is mandatory. It is therefore recommended that UNESCO/UNDP take account of this changing situation and continue to assist INTERNET through support to the International Association which has been set up in Vienna, Austria to continue project activities. Additional funding sources should also be sought, for example the CEC.

93. In the future the sub-projects might be limited to three major topics: Economic development, Environment, and Information Infrastructure and Methodology in conformity with UNDP priority areas.

94. In the present pilot project phase the co-operating members have provided experimental access to scientific, technical and economic information sources and use of computer aided decision-making tools. The next phase of activities should be operational and the information and tools fully utilized by the decision-makers.

95. The national PTTs should be incorporated more into the project, especially in those countries where the telecommunication facilities are still underdeveloped. The introduction of modern communication technologies is a basic strategy of the INTERNET project to improve information flow and data exchange between the partners, as well as information utilization, to reach a greater level of efficiency for the co-operating institutions in their work.

APPENDIX A

List of UNESCO Consultants

<u>Name of Consultant</u>	<u>Country of Origin</u>	<u>Field of Specialization</u>	<u>Duration of Contract From To</u>
Andrew HUGHES-HALLETT	United Kingdom	Creation of a conceptual expert system framework for strategic planning and management in small/medium/large-scale enterprise	11/89 - 1/90
Andrew HUGHES-HALLETT	United Kingdom	Preparation of a study to provide assessment of issues and problems in general areas of strategic planning and management.	11/89 - 1/90
Slobodan SIMONOVIC	Canada	Lecturer at the International Training Course on contemporary methods in analysis and design of urban storm drainage systems.	6/89
David RAITT	Germany	Participation in the Steering Committee Meeting	11/87
Lothar FUCHS	Germany	Lecturer at the International Training Course on contemporary methods in analysis and design of urban storm drainage systems	6/89

Messrs M.D. REVITT, L. FUCHS, W. BAUWENS, J. NIEMCZYNOWICZ, S. CHAPRA, M. IVETIC, C. MAKSIMOVIC and Mrs. M. SICEVIC
Lecturers at the IRTCUD Training Seminar, Dubrovnik, June 1990

APPENDIX B

National Project Personnel

Post No.	Post Title	Name and Gender of incumbent	Full/Part time	Assumed duty (date) Sched./Actual
<u>Albania</u>				
1.	Nat. Co-ord.	Mr. Nesho	P/T	5.90/5.90
2.	Nat. Subco-ord.	Ms. Agolli	"	" "
3.	Expert	Mr. Mandia	"	" "
4.	"	Mr. Konjari	"	5.91/5.91
5.	"	Mr. Kalaja	"	" "
6.	"	Mr. Marku	"	" "
7.	"	Ms. Nati	"	3.90/5.90
8.	Co-operation	Mr. Xhelepi	"	" "
9.	"	Mr. Cobani	"	" "
10.	"	Mr. Shiko	"	5.91/5.91
11.	"	Mr. Dodi	"	6.91/8.91
12.	"	Mr. Konda	"	8.91/8.91
<u>Austria</u>				
1.	Nat. Co-ord.	Mr. Schläger	P/T	
2.	Administration Co-operation	Mr. Wang	"	
3.	Administration	Mr. Stöckelle	"	
4.	"	Mrs. Eibl	"	
5.	"	Mrs. Rath	"	
6.	Co-operation	Mr. Glinsner	"	
7.	"	Mr. Schleicher	"	
8.	"	Mr. Richtig	"	
9.	"	Mr. Luptacik	"	
10.	"	Mr. Böhm	"	
11.	"	Mr. Walder	"	
12.	"	Mr. Stering	"	
<u>Bulgaria</u>				
1.	Nat. Co-ord.	Mr. Marinov	P/T	12.91/12.91
2.	Resp. Secretary	Mr. Boytchev	"	" "
3.	Interpreter	Mrs. Dimova	"	" "
4.	Tech. Secretary	Mrs. Boteva	"	12.90/8.90
5.	"	Mrs. Maneva	"	8.90/11.90
6.	"	Mrs. Evstatieva	"	8.90/12.91
7.	Subproject Manager	Mrs. Hlebarov	"	12.91/12.91
8.	Expert	Mr. Lazarov	"	" "
9.	"	Mrs. Stoyanova	"	" "
10.	"	Mrs. Kaloyanova	"	" "
11.	"	Dr. (Mr.) Voynikov	"	" "
12.	"	Mr. Angelov	"	" "

13."	Mrs. Panchevska	"	"	"
14.Tech. Assist.	Ms. Dichovska	"	"	"
15.Expert	Mrs. Georcheva	"	"	"
16."	Mrs. Popova	"	"	"
17."	Mr. Georgiev	"	"	"
18."	Mr. Roumchev	"	"	"
19."	Mrs. Paskaleva	"	"	"
20.Expert	Mr. Ranguelov	"	"	"
21.Subproj. Man.	Mr. Arsov	"	"	"
22.Expert	Mr. Dimov	"	"	"
23."	Mrs. Panova	"	"	"
24.Subproj. Man.	Mr. Marinov	"	"	"
25."	Mr. Roussev	"	"	"
26.Expert	Mrs. Arnaudova	"	12.91/3.90	
27."	Mrs. Dinova	"	"	
28.Subproj. Man.	Mr. Hristov	"	"	"
29.Expert	Mr. Kokalanov	"	12.90/"	
30."	Mr. Sharff	"	"	"
31."	Mr. Kurtev	"	"	"
32.Subproj. Man.	Mr. Draganov	"	"	"
33."	Mr. Denchev	"	-/12.91	
34.Expert	Mrs. Dimitrova	"	12.89/12.89	
35."	Mrs. Ikonomova	"	12.91/10.90	
36."	Mrs. Mihailova	"	-/12.91	
37.Subproj. Man.	Mr. Alexandrov	"	"	"
38.Expert	Mr. Parvanov	"	"	"
39.Expert	Mr. Minchev	"	"/5.90	
40."	Mrs. Seliminska	"	-/12.91	
41."	Mr. Petrov	"	-/"	

Remarks:

1. Post No. 1 - 16 are from the Central Institute for Scientific and Technical Information, Sofia.
2. Post No. 17 - 19 are from the Central Laboratory for Seismic Mechanics and Seismic Engineering, Sofia.
3. Post No. 20 is from the Geophysical Institute, Sofia.
4. Post No. 21 - 27 are from the University of Architecture, Civil Engineering and Geodezy, Sofia.
5. Post No. 25 - 27 are from the Scientific and Information Centre of the Ministry of Environment, Sofia.
6. Post No. 28 - 36 are from the Information Centre for Technology Transfer "INFORMA", Sofia.
7. Post No. 37 - 41 are from the Industry Development Institute, Sofia.

CSFR

1. Nat. Co-ord.	Mr. Kesner	P/T
2. Research	Camsky	"
3. "	Frolik	"
4. "	Suk	"
5. "	Chladek	"
6. "	Cidlinsky	"
7. "	Firbas	"

8. "	Ruzicka	"
9. "	Docolomansky	"
10."	Lehocka	"
11."	Blahova	"
12."	Hanousek	"
13."	Zeman	"
14."	Liska	"
15."	Dvorakova	"
16."	Schenk	"
17."	Wieczorek	"
18."	Sebkova	"

Malta

Administration:	Mr. Prof. S. Busettil	P/T
	Mr. Prof. P.S. Inglott	"
	Mr. Ray C. Zammit	"
Research:	Mr. J.B. Woods	"
	Mr. T. Caruana	"
	Mr. A. Pace	"
	Ms. A. Spiteri	"
	Mr. Ph. Grech	"
	Mr. A. Micalieff	"

Poland

1. Nat. Co-ord.	Mr. Nowicki	P/T	1/1/91
2. Deputy Nat. Co-ord.	Mr. R. Faber	"	"
3. Programmer	Mr. J. Dobosz	"	1/3/91
4. "	Mr. M. Ostrowski	"	"
5. "	Mr. W. Struk	"	"
6. Subject area co-ord.	Mr. J. Jablonski	"	1/1/91
7. Systems analyst	Ms. B. Gromkowske	F/T	"
8. Programmer	Ms. A. Zyta	"	"
9. Adviser	Mr. P. Blaszczyk	P/T	"
10. Subject area co-ord.	Mr. Filipkowski	"	"
11. Senior adviser	Mr. M. Gromiec	"	"
12. Systems analyst	Mr. T. Branicki	F/T	"
13. Programmer	Ms. I. Jezierska	P/T	"
14. Secretary	Ms. D. Paszko	F/T	"
15. Systems analyst	Mr. Prybylinski	"	1/3/91

Turkey

1. Nat. co-ord.	Mr. Gülec	P/T
2. Research	Mr. Ergünay	"
3. "	Mr. Eroglu	"
4. "	Mr. Acar	"
5. "	Mr. Tekeli	"

- | | | |
|------|------------------|---|
| 6. " | Mr. Yerlikayalar | " |
| 7. " | Mr. Karapars | " |
| 8. " | Mr. Güney | |

Yugoslavia

- | | |
|-----------------------------|-----------------|
| 1. Nat. co-ord.
Research | Mrs. Kornhauser |
| 2. Co-ord. Research | Mr. Maksimovic |
| 3. Research | Mrs. Sicevic |
| 4. Research | Mr. Milenkovic |
| 5. Co-ord. Research | Mr. Petkovski |
| 6. Co-ord. Research | Mr. Milutinovic |
| 7. Research | Mr. Milenkovic |
| 8. Research | Mrs. Olbina |

Since all the tasks are interdisciplinary, they demand involvement of a large number of researchers with different professional backgrounds, with an average of 4-B-researchers per output group.

Appendix C

Fellowships and Study Tours

Year 1990			ALBANIA
No. ST	Participants	Place of Study	Dates
ST/1/90	KYCYKU/AGOLLI QESTERI/GOKUTAJ	IM90 Conf. Budapest	23-27.04.90
ST/3/90	QAFOKU/XHELEPI KROI	IRTCUD, Dubrovnik	25-29.06.90
ST/4/90	ZOTO	Novi Sad	17-19.09.90
ST/5/90	KALAJA QUESTERI HYAMET/MYFTIU	Novi Sad, Yugoslavia " " " "	19-21.09.90 " "
ST/6/90	KRISTO/RUSI/NATI HAKANI	Sofia, Bulgarie	11-13.06.90
ST/7/90	ZABZUNI	Prague, CSR	6-10.11.90
=====			
Year 1991			
No. ST	Participants	Place of Study	Dates
ST/8/91	ALLMUCA/KOTA/ QIRINXHI/FURXHI	CINTI, Sofia	15-19.04.91
ST/9/91	IMAMI/KONJARI TURKU/SHIKO	Novi Sad	3-6.06.91
ST/10/91	XHELEPI/STRAZIMIZI GODO/PARRUCA	IRTCUD, Dubrovnik	17-21.06.91
ST/12/91	KALAJA/QESTERI MARKU	Ankara	28-29.05.91
ST/13/91	NESHO/SHAPLLO	INIST/Unesco Paris	17-21.06.91
ST/14/91	NESHO/MANDIA/CELA	Wien	23-24.09.91
ST/15/91	HAKANI/KONOA/MARA/ NATI	Wien	26-27.09.91
ST/16/91	KONANI/IMAMI	Prague	9-11.12.91

BULGARIA

Year 1988

No. ST	Participants	Place of Study	Dates
ST/1/88	BOYTCHEV/LAZAROV/ STOIANOVA	Budapest, Hongrie	31.08-2.09.88
ST/2/88	BOYTCHEV	CNRS, Paris	3.10.88
ST/3/88	TRICKOV	Radio Austria/WSR Wien	12-16.12.88
	UGARSCHINSKY	" " " "	12-16.12.88
	LAZAROV	" " " "	12-16.12.88
ST/5/88	MALAMIN	Pergamon/London + Inspec	5-9.12.88
	STOIANOV	" " " "	5-9.12.88

Year 1989

No. ST	Participants	Place of Study	Dates
ST/4/89	HLEBAROV	Data Star/Bern + NU/Gen.	16-20.01.89
	DODJEVSKI	Data Star/Bern + NU/Gen.	"
	ANGELOV	Data Star/Bern + NU Gen.	"
ST/5/89	DRAGANOV	INTIB Wien	13-17.04.89
	STOIANOVA	"	"
	ROUSSEV	"	"
	IKONOMOVA	"	"
ST/6/89	ALEXANDROV	WSR Wien	20-21.04.89
ST/7/89	BOYTCHEV/BAEV/ UGARCHINSKI	Internet Paris	5-8.06.89
ST/8/89	VOINIKOV	IAEA Wien	2-6.10.89
ST/9/89	MARKOVA	W.G. Budapest	18-19.09.89
ST/10/89	RANGELOV/ROUMCHEV	Mtg seismic, Skopje	17.11.89
ST/11/89	ARSOV/MARINOV	Sztaki, Budapest	4-5.12.89
ST/12/89	ROUSEV	Mtg hasard. Ljubljana	22-23.11.89

Year 1990

No. ST	Participants	Place of Study	Dates
ST/13/90	GEORGUIEV	Londres	23-24.04.90
ST/15/90	PETKOV	Infobase Frankfurt	14-17.06.90
ST/16/90	DIMOV	IRTCUD Dubrovnik	25-29.06.90
ST/17/90	PANOVA	" "	28-29.06.90
	PAPAZCHEVA/MINCHEV	" "	25-29.06.90
ST/18/90	HRISTOV	Prague	22-25.10.90
ST/19/90	HRISTOV	Novi Sad	19-21.09.90
ST/20/90	BOYCHEV	WSR, Wien	17-19.09.90
	LAZAROV	" "	"
	HLEBAROV	IAEA, Wien	17-20.09.90
ST/21/90	DENCHEV	Ecotec 90, Birmingham	2-4.10.90
	IKONOMOVA	" "	"
ST/22/90	BOYCHEV	Ljubljana	18-19.10.90
ST/28/90	FOTEV	Unesco, Paris	5-9.10.90
ST/29/90	PARVANOV	Hagen Univ., FRG	17-21.12.90
	JOTOV	" "	"
	PETROV	" "	"

Year 1991

No. ST	Participants	Place of Study	Dates
ST/30/91	TRIFONOV	Praha	24-26.04.91
ST/31/91	HRISTOV	Novi Sad	3-7.06.91
ST/32/91	DIMOV/ARSOV	IRTCUD/UDT'91 Dubrovnik	10-21.06.91
ST/33/91	DENCHEV/IKONOMOVA	Ankara	28-29.05.91
ST/34/91	BOYTCHEV/STOYANOVA	Wien	23-27.09.91
	TZVETKOV/PARANOV	Wien	26-27.09.91
ST/35/91	ROUSSEV/DIMOVA	Istanbul	21-23.10.91
ST/36/91	BOYTCHEV	Budapest	14.10.91
ST/37/91	UGARCHINSKY/ GRIGOROVA	Techmart'91 Beijing, Chine	1-6.12.91
ST/38/91	ARSOV/HRISTOZOV/ IKONOMOVA/TRIFONOV	Prague, CSR	9-11.12.91
ST/39/91	HLEBAROV/ANGELOV VOINIKOV	Budapest	2-4.12.91
ST/40/91	DENCHEV	Ankara, Turquie	16-18.12.91

HUNGARY

Year 1987

No. ST	Participants	Place of Study	Dates
ST/1/87	INZELT	Info. Studies, USA	29.11-5.12.87
ST/2/87	KIRALY	Techn. Univ. Berlin	7-11.12.87
ST/3/87	JAKAB	F.E.P. Karlsruhe	7-11.12.87

Year 1988

No. ST	Participants	Place of Study	Dates
ST/4/88	BAKONYI/CSABA	9th Int. Conf. Computer Comm. Tel Aviv/Israël	31.10-4.11.88
ST/5/88	VARADY	Helsinki Univ. Techn.	21-28.06.88
ST/6/88	VASARHELYI/TARNOI/ SINGER/SZOLLOS-NAGY	Beograd/Yugoslavie	15-17.06.88
ST/7/88	BARTHA/ BAKONYI	Autriche	27-29.06.88
ST/8/88	INZELT	IFAC Workshop, Bruges	28-30.09.88
ST/9/88	KIRALY	Online mtg, London	06-08.12.88

Year 1989

No. ST	Participants	Place of Study	Dates
ST/10/89	DEMETROVICS	MFDBS 89 Conf. Kuwait	6-9.02.89
ST/11/89	HUBA	IAEA Wien	27.02-1.03.89
ST/12/89	BAJDIK	DECUS Symp. München	4-6.04.899
ST/13/89	BAKONYI CSABA	RARE COA Trieste " "	8-12.05.89
ST/14/89	CSABA	INTIB Wien/UNIDO	13-17.04.89
ST/15/89	BODO HERNADI	EUUG Conf. Bruxelles " "	3-7.04.89
ST/16/89	PENZESNE BITAI	SICOB / Paris	17-21.04.89
ST/17/89	FEKECS KAZAR	WSR / Wien " "	20-21.04.89 "
ST/18/89	HANNAK REMZSO	6th IEEE Workshop/Roma "	4-6.10.89 "
ST/19/89	KOVACS	Enschede/Netherlands	6-9.06.89
ST/20/89	ERCSENYI	ISMM Zurich	26-28.06.89
ST/21/89	BAKONYI	Dubrovnik	6-9.06.89
ST/22/89	VASARHELYI	Internet, Paris	5-8.06.89
ST/23/89	SZANTAI MARJANEK	WSR Wien " "	26-28.99.89 "

Year 1990

No. ST	Participants	Place of Study	Dates
	TOTH	Austria	17-20.04.90
	SZIROS	"	"
ST/24/90	BAKONYI CSABA	RARE Network, Irlande	14-17.05.90
ST/25/90	TOTH	CDS/ISIS Paris	19-23.05.90
ST/26/90	SZABO	Rare Network	15-17.05.90
ST/27/90	HLATKI	Barcelone	22-28.08.90
ST/28/90	MAJTENYI	Vienne/Salzburg	24-28.9.90
ST/29/90	MAROS RAPCSAK LASZLO	Vienne " "	28-31.08.90 " "
ST/30/90	BAKONYI CSABA VASARHELYI	Vienne Vienne "	17-20.09.90 " "
ST/31/90	TOTH VASARHELYI	München/Darmstadt "	14-16.08.90 "
ST/32/90	VASARHELYI	WSR, Wien	19.10.90
ST/33/90	KIRALY TOTH	Online meetg, London "	11-13.12.90 "

Year 1991

No. ST	Participants	Place of Study	Dates
ST/34/91	DEMETROVICS/RONAYI	Rostock	6-9.05.91
ST/35/91	BAKONYI/ CSABA	INET 91 Copenhagen " "	18-20.06.91 "
ST/37/91	VASARHELYI	Ankara	27-29.05.91
ST/38/91	VASARHELYI TOTH/KIRALY/TOTH NAGY	Wien Wien	23-25.09.91 23-24.09.91
ST/39/91	MAJTENYI/KOLTAI	Wien	26-27.09.91
ST/43/91	NAGY/TOTH/BAJCZA TOTH/BAKONYI /MAJTENYI	Prague	11-13.12.91

M A L T A

Year 1990

No. ST	Participants	Place of Study	Dates
ST/1/90	CARUANA	Wien / Budapest	17-20.09.90
	PACE	Wien/Austria	17-20.09.90
ST/2/90	DEKETELAERE	Yougosl. "Turquie	8-26.10.90
	SPITERI	" "	8-26.10.90
ST/3/90	CARUANA	Londres, UK	1-10.11.90
	ZAMMIT	" "	" "

Year 1991

No. ST	Participants	Place of Study	Dates
ST/4/90	GRECH	IRTCUD, Dubrovnik	17-21.06.91
ST/5/91	WOODS	WSR/Wien	23-24.09.91
ST/6/91	SPITERI	Delft, Pays-Bas	10.9-18.10.91
ST/7/91	ZAMMIT	Ispra/Italie	30.9-4.10.91
ST/10/91	WOODS	Grenade, Espagne	25-29.11.91

POLAND

Year 1990

No. ST	Participants	Place of Study	Dates
ST/1/90	GROMIEC	Suède	11-23.06.90
	FILIPKOVSKI	" "	" "
ST/2/90	ZYLA	IRTCUD Dubrovnik	25-29.06.90
	BRANICKI	" "	" "
	JEZIERCKA	" "	" "
ST/3/90	FABER	WSR, Wien	17-19.09.90

Year 1991

No. ST	Participants	Place of Study	Dates
ST/4/91	PRZYBYLINSKI	Prague	24-26.04.91
ST/5/91	ZYLA	IRTCUD, Dubrovnik	10-21.06.91
ST/6/91	DOBOSZ	Wien	23-24.09.91
	PRZYBYLINSKI	Wien	26-27.09.91
ST/7/91	FILIPKOVSKI/STRUK/ OSTROVSKI/PRZYBYLINSKI	Prague, CSR	9-11.12.91

CZECHOSLOVAKIA

Year 1990

No. ST	Participants	Place of Study	Dates
ST/1/90			

Year 1991

No. ST	Participants	Place of Study	Dates
ST/2/91	KESNER	Paris	6-7.05.91
ST/3/91	NATHER/CIGANKOVA	Ankara	28-29.05.91
ST/4/91	BASCH/NATHER	Novi Sad	3-7.06.91
ST/5/91	NETERDA/STREJC/ LEFNEROVA	Wien	23-24.06.91
ST/6/91	KESNER/ BASCH LEFNEROVA	Wien Wien Wien	23-27.09.91 25-27.09.91 23-24.09.91
ST/7/91	SKALA/BUCHA/BICOVSKY	Istanbul	21-23.10.91
ST/8/91	BASCH/KESNER	Budapest, Hongrie	14.10.91
ST/9/91	STREJC/SPACEK	Wien	18-19.11.91

TURKEY

Year 1990

No. ST	Participants	Place of Study	Dates
ST/1/90	YERLIKAYA	Mtg Sofia	11-12.06.90
ST/3/90	KARAPARS	Wien	17-19.09.90

Year 1991

No. ST	Participants	Place of Study	Dates
ST/4/91	ASLAN/MADENCAN/ HARRISSON	Informa, Sofia	4-7.02.91
ST/5/91	KARAMAN/GULEC/ACAR ANKARA/YERLIKAYA/	WSR/Wien + Budapest	6-10.05.91
ST/6/91	ALACAKLIOGLU/UREYEN	Ankara	28-29.06.91
ST/7/91	YERLIKAYAR	Wien	26-27.9.91
ST/8/91	GULEC	Istanbul	21-23.10.91

YUGOSLAVIA

Year 1988

No. ST	Participants	Place of Study	Dates
ST/1/88	PETROVSKI/PETKOVSKI	Internet, Paris	..26-30.09.88

Year 1989

No. ST	Participants	Place of Study	Dates
ST/2/89	PETKOVSKI	WSR Wien	20-21.04.89
ST/3/89	Training Course	Dubrovnik	6-9.06.89
ST/4/89	PETKOVSKI	Internet Paris	5-9.06.89
ST/5/89	PETKOVSKI	IFAC Sympos. Edinburgh	June 1989
ST/6/89	KARDOS VRTACNIK	Online Mtg, London " "	11-14.12.89 "
ST/7/89	PETKOVSKI	ITU/ILO Geneva	23.11-9.12.89

Year 1990

No. ST	Participants	Place of Study	Dates
ST/. /90	OLBINA	SCM Malta	March 1990
ST/7/90	TOMANOVIC/TODOVIC PETROVIC/RANCIC ANDJELIC	IRTCUD Dubrovnik " "	25-29.6.90
ST/8/90	MILENKOVIC	WSR Wien	17-19.09.90
ST/9/90	OLBINA	Inorga, Prague	7-9.11.90
ST/10/90	SIMOVA	Vax, Nova Gorika	12-16.11.90

Year 1991

No. ST	Participants	Place of Study	Dates
ST/11/91	KORNHAUSER/OLBINA MAKSIMOVIC/PETKOVSKI	SCM Rome	19-21.02.91
ST/12/91	PETKOVSKI	Harvard Univ., E.-Unis	Aug. 91
ST/13/91	SICEVIC	Bratislava	13-16.05.91
ST/14/91	MILENKOVIC	Wien	23-27.09.91
ST/16/91	MILENKOVIC/OLBINA	Prague, CSR	9-11.12.91

Appendix D

List of Major Items of Equipment Provided

Albania

4 computers
4 computers
1 printer

Bulgaria

1 computer
1 printer
1 personal computer
2 IBM computers
1 software
1 HP Laserjet III printer

Hungary

1 software

Poland

1 Canon Fax 250
1 HP laser printer
1 Amstrad DP 1360 printer
1 ST4096 96MB hard disk
1 Hitachi CD-ROM
1 Rank Xerox 1025 photocopying machine

Czechoslovakia

software
software
Toshiba 1600 computer

Turkey

1 computer
1 printer
1 computer
1 Epson printer

Yugoslavia

1 software
1 computer
software
software
software
1 computer
DT-500 (centrale d'acquisition)
CD-ROM software

Appendix E

National Co-ordinators

Albania

Mr. A. Nesho
Director of CSTID
The Centre of Scientific and
Technical Information and Documentation
Tirana

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Fax: (355) 423-4142

Austria

Mr. H. Schläger
National Project Co-ordinator
Austrian Federal Ministry of Science
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Minoritenplatz 5
1014 Vienna

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Fax: (0222) 531-20/2216
Telex: 111 157 BMWF-A

National Focal Point is the
Computing Centre for Economics
and Social Sciences (WSR)
Wollzeile 1-3
1011 Vienna

Tel.: (0222) 515-19-0
Fax: (0222) 513-42-58
Telex: 75311588 WSR-A

Bulgaria

Mr. Z. Marinov
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52-a, Bd. Nasser
1040 Sofia

Tel.: (35-92) 719-191,
718-946
Fax: (35-92) 710-157
Telex: 22 404 ZINTI BG

CSFR

Mr. Michal Basch
Institute of Industrial Management
Automation (INORGA)
Letenska 17
118000 Prague

Tel.:
Fax: (00422) 533-741

Hungary

Mr. P. Bakonyi
National Project Co-ordinator
Computer & Automation Institute of the
Hungarian Academy of Sciences
(MTA/SZTAKI)
XI Kende utca 13-17
1502 Budapest

Tel.: (36-11) 665-644
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Italy

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Istituto di studi sulla ricerca e
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Via C. de Lollis 12
00185 Rome

Tel.: (04-06) 44-52-351
Telex: 610-076 CNR RMI

Malta

Ray Cachia Zammit
Private Secretary to the Parliamentary
Secretary for the Environment
Ministry of Education and the Interior
Floriana

Tel.: (00356) 247-538
Fax: (00356) 243-759

Poland

Mr. Dr. Zbigniew Nowicki
Institute for Scientific, Technical
and Economic Information
Ul. Jasna 14/16
00-041 Warsaw

Tel.: (48-22) 264-073
264-075
Fax: (48-22) 264-075
Telex: 813716 cint pl

Turkey

Dr. Kemal Gülec
State Planning Organization/
Science & Technology Sector

Tel.: (4) 230-8638
Fax: (4) 231-9368

Yugoslavia

Prof. Aleksandra Kornhauser
National Project Co-ordinator
International Centre for Chemical
Studies (ICCS)
Vegova 4
61001 Ljubljana

Tel.: (38-61) 214-326,
214-374
Fax: (38-61) 226-170
Telex: 31572 CHEMIN YU

Appendix F

List of Co-ordinating Centres and Co-operating Centres
(per output)

Output 1.1 Urban Drainage

Co-ordinating centre

University of Belgrade
Faculty of Civil Engineering
Institute for Hydraulics
73, Bulevar Revolucije
11000 Belgrade
Yugoslavia

Prof. Cedo Maksimovic
Tel.: (38 11) 32 91 90
Fax: (38 11) 32 02 37
Telex: 11 909 etfbdg

Co-operating centres

Participating country		Institution
Albania	AL	Laboratory for Hydraulic Research, Tirana
Austria	AU	Technical University, Graz
Bulgaria	BG	Higher Institute of Architecture, Civil Engineering and Geódesy, Sofia
Czechoslovakia	CS	Technical University, Prague
Hungary	H	VITUKI Institute, Budapest
Italy	I	University of Palermo, Palermo
Malta	ML	Council for Science and Technology, and University of Valletta, Valletta
Poland	PL	Institute for Environmental Protection, Warsaw
Turkey	TR	Technical University, Istanbul
Yugoslavia	YU	IRTCUD - International Research and Training Centre on Urban Drainage, and Institute "Jaroslav Cerni", Belgrade

Output 1.2 Seismic Risks

Co-ordinating centre

Institute for Earthquake and Engineering Seismology
73, Salvador Allende Street
P.O .B. 101
91000 Skopje
Yugoslavia

Prof. Zoran Milutinovic
Tel.: (38-91) 227-122
 227-474
Fax: (38-91) 222-224
Telex: 513 87 IZIIS YU

Co-operating centres

Seismological Center
Tirana, Albania
Eduard Sulstarova, Director
Tel.: 282-74

Technical University of Graz
Institute for Hydromechanics,
Hydraulics and Hydrology
Mandellgasse 9/1
8010 Graz, Austria
Univ. Prof. Dipl. Ing. Dr. Heinz Bergmann
Univ. Ass. Dipl. Ing. Guido Richtig
Tel.: (0316) 70 61 62 60

Central Institute for Meteorology and Geodynamics
P.O.B. 342
Hohe Warte 38
1191 Vienna, Austria
Univ. Prof. Dr. Peter Steinhauser, Director
Univ. Doz. Dr. Fritz Neuwirth, Vice-Director
Tel.: (0222) 36 44 53-0

Bulgarian Academy of Sciences - Central Laboratory of
Seismic Mechanics and Seismic Engineering
"Acad. G. Bonchev" Str., Block 3
1113 Sofia, Bulgaria
Mr. D. Nenov Director
Tel.: (35-92) 71 31 33 41
Mrs. Christina Boncheva
Tel.: (35-92) 71 31 33 18

Bulgarian Academy of Sciences -
Institute of Geophysics "Acad. G. Bonchev" Str., Block 3
1113 Sofia, Bulgaria

Prof. L. Christoskov, Director

Tel.: (35-92) 44-33-47

Telex: 22 632

University of Architecture and Civil Engineering (VIAS)
Faculty of Hydrotechnics
1, boul. Christo Smirnenski
1421 Sofia, Bulgaria

Prof. Nikola Ignatiev

Tel.: (35-92) 633 21

Fax: (35 92) 65 68 63

Geophysical Institute of Czechoslovak Academy of Sciences
Bocni IIa

141 31 Prague 4 - Sporilov, CFSR

Mr. V. Schenk, Head of research

Output 1.3 Flood Protection and Prediction

Co-ordination centre

Scientific Research Institute for Water Management (VITUKI)

Mr. P. Bakonyi

Kvassay Jenó Utca 1

1095 Budapest, Hungary

Tel.: (36-11) 1142-245

Co-operating institutions

Central Institute for Meteorology and Geodynamics

P.O.B. 342

Hohe Warte 38

1191 Vienna, Austria

Univ. Prof. Dr. Peter Steinhauser, Director

Univ. Doz. Dr. Fritz Neuwirth, Vice-Director

Tel.: (0222) 36 44 53-0

Hydrographical Central Bureau

Federal Ministry of Agriculture and Forestry

Marxergasse 2

1030 Vienna, Austria

Mr. Dipl. Ing, Dr. Franz Wiederstein, Head

Mr. Dipl. Ing, Jürgen Spörg

Tel.: (0222) 7500/6930

Higher Institute of Architecture and Civil Engineering (VIAS)
Faculty of Hydrotechnics
Hydraulics and Hydrology Department
1, blvd. "Christo Smirnenski"
1421 Sofia, Bulgaria
Tel.: (35-92) 63321

VUV Water Research Institute
Hybernska 38
11000 Prague 1, CSFR
I. Hanousek
V. Zeman
Tel.: (00422)23666496, 2357368, 2327051

Institute of Meteorology and Water Management
Ul. Podlesna 61
01 673 Warsaw, Poland
Dr. Marcin Herbst, Deputy Director
Dr. Andrzej Filipkowski
Tel.: (48 22) 34 16 51
Telex: 81 43 31

Institute for Waterworks "Jaroslav Cerni"
Podnozje Avala bb.
11000 Belgrade, Yugoslavia
Mirjana Sicevic
Tel.: (38-11) 649-451, 649-266
Fax: (38-11) 649-335

Output 1.4 Waste Management

Co-ordinating centre

Faculty of Science and Technology
International Centre for Chemical Studies
Vegova 4
P.O.B. 18/1
61001 Ljubljana, Slovenia
Prof. Aleksandra Kornhauser
Tel.: (38-61) 214-374, 214-326
Fax: (38-61) 226-170

Co-operating institutions

Research Institute of Hygiene and Epidemiology (IKHE)
Tirana, Albania
Mr. Queramudin Kodra, Director
Tel.: 335-53

Austrian Research Centre Seibersdorf GmbH
Hauptabteilung Umweltplanung
2444 Seibersdorf, Austria
Dr. Peter Tuschl
Tel.: (02254) 80 21 62
Fax: (02254) 80 21 18

Scientific Implementation and Information Centre of the
Environmental Protection Committee
Council of Ministers
7, Industrialna Street
1202 Sofia, Bulgaria
Prof. Ivan Atanassov, General Director

Slovak Hydrometeorological Institute Bratislava
Jeseniova 17
833 15 Bratislava, CSFR
Mr. M. Ruzicka, DP Manager
Mr. J. Docolomansky
Mr. E. Lehocka
Tel.: (00427) 46 336

Water Research Institute (VUV)
Hybernska 38
11000 Prague 1, CSFR
Mr. I. Hanousek
Mr. V. Zeman
Tel.: (00422) 23 66 64

**Output 1.5 Efficient Management on the Small and Medium
Enterprise Level**

Co-ordinating centre

University of Novi Sad
Centre for Large-Scale Control and Decision Systems
Veljka Vlahovica 3
21 000 Novi Sad, Yugoslavia
Prof. Djordija Petkovski, Director of Centre
Tel.: (38-21) 59-930
Fax: (38-21) 55-144

Co-operating centres

Computing Centre for Economics and Social Sciences (WSR)
P.O.B. 622
Wollzeile 1-3
1011 Vienna, Austria
Prof. Dr. Roland Stöckelle, Director
Dr. Erich Wang
Tel.: (0222) 525 19
Fax: (0222) 513 42 58
Telex: 75311588

Federal Chamber of Commerce
Wiedner Hauptstrasse 63
1040 Vienna, Austria
Ing. Franz Heuschmidt
Tel.: (0222) 501 05/4712
Fax: (0222) 505 70 07
Telex: 11 18 71 BUKA A

Bulgarian Industrial Economic Association
134, "Rakovski" Str.
1000 Sofia, Bulgaria
Mr. Rashko Rashkov
Tel.: (35-92) 88 25 01

Information Center for Technology Transfer "INFORMA"
55-A, "Chapaev" Str.
1579 Sofia, Bulgaria
Mr. Bogdan Ugarchinsky, Gen. Director
Tel.: (35-92) 71 71 56
Telex: 23178

VUV Water Research Institute
Hybernska 38
110 00 Prague 1, CSFR
Mr. I. Hanousek
Mr. V. Zeman
Tel.: (00422) 23 666 496
23 573 68
23 270 51

INORGA - Branch Office Ostrava
Specialized Computer-Aided Information and
Management Systems Development
Mlynska 1
729 48 Ostrava, CSFR
Mr. V. Suk
Tel.: (069) 232 482-3
Telex: 052647

INORGA - Section 500 Industrial Computer-Aided Systems
Development
Gorkeho nam. 36
110 00 Prague 1, CSFR
Mr. J. Frolik, General Director
Tel.: (00422) 225 108

UTRIN - Institute for Technical Development and Information
U. Sovovych mlynu 9
113 56 Prague 1
Mr. Z. Liska, Head of Department
Mr. D. Dvorakova
Tel.: (00422) 530 807
534 071
Telex: 122 725 utri c

Output 1.6 Technology Transfer

Co-ordinating centre

Central Institute for Scientific and Technical
Information (CINTI)
Boul. Nasser 52-A
1040 Sofia, Bulgaria
Mr. Zhoro Marinov, Gen. Director
Tel.: (35-92) 71 91 91
Mr. Boycho Boychev, Head of the
International Department
Tel.: (35-92) 71 60 71
Telex: 22404 ZINTI BG

Co-operating centres

Technical University Vienna
University Extension Centre
FoDok-Austria (Research Documentation Austria)
Gusshausstrasse 28
1040 Vienna, Austria
Dipl. Ing. Manfred Horvat, Head
Dipl. Ing. Walter Niedermayer
Tel.: (0222) 588-01/4030, 4031
Fax: (0222) 505 49 61
Telex: 131 000 TVFAW A

Information Center for Technology Transfer "INFORMA"
55-a "Chapaev" Street
1579 Sofia, Bulgaria

Mr. Bogdan Ugarchinsky, Gen. Director
Dr. St. Denchev
Dr. St. Dimitrova
Tel.: (35-92) 71 71 56
Telex: 23 178

INORGA - Branch Office Ostrava
Specialized Computer-Aided Information and
Management Systems Development

Mlynska 1

729 48 Ostrava, CSFR

Mr. V. Suk, Deputy Director
Tel.: (069) 232 482-3
Telex: 052647

UTRIN - Institute for Technical Development and Information
U. Sovovych mlynu 9

113 56 Prague 1, CSFR

Mr. Z. Liska, Head of Department
Mr. D. Dvorakova
Tel.: (00422) 530 807
534 071
Telex: 122 725 utri c

INORGA/UNIDO National Technical Consultancy and
Training Centre - NTCTC

Narodni 35

110 00 Prague 1, CSFR

Mr. S. Chladek, Chief of NTCTC
Tel.: (00422) 222 024
221 421
Fax: (00422) 267 105
Telex: 121 712

Computer and Automation Institute of the
Hungarian Academy of Sciences (MTA/SZTAKI)

IX Kende utca 13-17,

P.O.B. 63

1502 Budapest, Hungary

Mr. J. Lörincz
Tel.: (36-11) 159-464

Institute of Environmental Protection

Ul. Krucza 5/11

00 548 Warsaw, Poland

Dr. Jozef Jablonski, Scientific Secretary
Tel.: (48 22) 29 92 54
Telex: 81 64 19, 81 75 90
Fax: (48 22) 29 52 63

Output 1.7 Large-Scale Economic Decision-Making

Co-ordinating centre

Computing Centre for Economics and Social Sciences
Wollzeile 1-3
P.O.B. 622
1011 Vienna, Austria
Prof. Dr. Roland Stöckelle, Director
Dr. Erich Wang
Tel.: (0222) 515 19
Fax: (0222) 513 42 58

Co-operating centres

Directorate of Economics Informatics (DIE)
Tirana, Albania
Mr. Kutjim Brovina
Tel.: 248 58

Technical University Vienna
Institute of Econometrics,
Operations Research and System Theory
Argentinierstrasse 8/119
1040 Vienna, Austria
Univ. Doz. Dr. Bernhard Böhm
Univ. Doz. Dr. Mikulas Luptacik
Tel.: (0222) 58801 44 36

University Graz
Institute for Economic Theory and Policy
Strassoldogasse 10
8010 Graz, Austria
Univ. Prof. Dr. Stefan Schleicher
Tel.: (0316) 380 34 40
Fax: (0316) 382 130

Bulgarian Academy of Sciences - Institute of Economics
3, Aksakov St.
1000 Sofia, Bulgaria
Prof. Alexander Dimitrov
Tel.: (35 92) 88 21 08

Industry Development Institute (IDI)
12a, boul. Ho-Chi-Minh
P.O. Box 1128
1040 Sofia, Bulgaria

Mr. Tz. Tzvetkov, General Director
Mr. Alexander Alexandrov, Director
Tel.: (35 92) 79 00 04
Fax: (35 92) 79 91 34
Telex: 220 19

Higher School of Economics Karl Marx
Dept. "Theory of Management and Economic System Modelling"
Students' Settlement "Christo Botev"
1000 Sofia, Bulgaria

Mr. Evangeli Andronov
Tel.: (35 92) 62 92 98

Centre for Foreign Trade and Conjuncture of
the International Markets
3a, Complex Chervena Zvezda 165 Str.
Sofia, Bulgaria

Mr. Grudy Zhelev, Director
Tel.: (35 92) 71 481
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110 15 Prague, CSFR

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Institute for Information Technics and Methodology
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V Budapest, Hungary

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Hungarian Planning Office
Long Range Planning Division
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1370 Budapest, Hungary

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Etibank General Management
Planning and Co-ordinating Department
Atatürk Bulvari 61
Kizilay
Ankara, Turkey
Mr. Cevdet Yerlikayalar
Tel.: (90 4) 13 44 400
Fax: (90 4) 13 37 095

University of Novi Sad
Centre for Large-Scale Control and Decision Systems
Veljka Vlahovica 3
21 000 Novi Sad, Yugoslavia
Prof. Djordija Petkovski, Director
Tel.: (38 21) 59 930
Fax: (38 21) 55 144

Output 1.8 Marine Pollution

Co-ordinating centre

Euro-Med Centre Foundation for International Studies
St. Paul Street
Valletta, Malta
Mr. Anton Micallef, Director
Tel.: (356) 22 40 67

Output 2.1 Methods and Standards

Co-ordinating Centre

Hungarian Academy of Sciences - Computer and Automation
Institute (MTA/SZTAKI)
Victor Hugo u. 18-22
1132 Budapest, Hungary
Mr. Peter Bakonyi, Director
Tel.: (361) 20 34 99
14 97 987
Fax: (361) 29 78 66

Co-operating centres

Technical University Vienna
Centre for Scientific Data Communication
Gusshausstrasse 25/020
1040 Vienna, Austria

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Fax: (0222) 505 48 00
Telex: 32 22 467 tuw a

Central Institute for Scientific and Technical Information
52-a, G.a. Nasser St.
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Mr. Zhoro Marinov, Director
Mr. Boycho Boytchev, Head of International Department
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INORGA - Branch Office Ostrava
Specialized Computer-Aided Information and
Management Systems Development
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Telex: 052 647

Institute for Technical Development and Information (UTRIN)
9, u. Sovovych Mlynu
113 56 Prague 1, CSFR

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Mr. Joseph Woods
Consultant Malta Council for Science and Technology
West str. 112
Valletta, Malta

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Output 2.2 Information Processing Software

Co-ordinating centre

Hungarian Academy of Sciences - Computer and Automation
Institute (MTA/SZTAKI)
Victor Hugo u. 18-22
1132 Budapest, Hungary
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Mr. Pal Vasarhelyi
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Central Institute for Scientific and Technical Information
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Sofia 1040 Bulgaria
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Scientific Research Institute for Water Management
(VITUKI)
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Valletta, Malta
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Fax: (356) 22 11 77

Institute for Scientific, Technical and Economic Information
(ISTEI)
Ul. Jasna 14-16
00 041 Warsaw, Poland
Dr. Zbigniew Nowicki, Deputy Director
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Fax: (48 22) 26 40 75

Scientific and Technical Research Council of Turkey (TUBITAK)
Atatürk Bulvari 217
Kizilay
Ankara, Turkey
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Tel.: (90 4) 16 73 657
Fax: (90 4) 11 75 002

Institute for Waterworks "Jaroslav Cerni"
Podnozje Aala bb.
11 000 Belgrade, Yugoslavia
Mrs. Mirjana Sicevic
Tel.: (38 11) 64 94 51
Fax: (38 11) 64 93 35

University of Ljubljana
International Center for Chemical Studies (ICCS)
Vegova 4
P.O.B. 18/1
61 001 Ljubljana, Slovenia
Prof. Aleksandra Kornhauser
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Fax: (38 61) 22 61 70
Telex: 31 572 chemin yu

VINCA Institute
Department for Informatics
P.O.B. 522
11 000 Belgrade, Yugoslavia
Mr. Dalibor Milenkovic
Tel.: (38 11) 45 82 22
Fax: (38 11) 44 40 195

Output 2.3 Networking

Co-ordinating centre

Hungarian Academy of Sciences - Computer and Automation
Institute (MTA/SZTAKI)
Victor Hugo u. 18-22
1132 Budapest, Hungary
Mr. Peter Bakonyi, Director
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Co-operating centres

Computing Centre for Economics and Social Sciences (WSR)
P.O.B 622
Wollzeile 1-3
1011 Vienna, Austria
Prof. Dr. Roland Stöckelle, Director
Dr. Erich Wang
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Fax: (0222) 513 42 58
Telex: 75 311 588

Radio Austria AG
Wiedner Hauptstrasse 73
P.O.B. 60
1040 Vienna, Austria
Dir. Dkfm. Franz Schuller
Tel.: (0222) 501 45
Fax: (0222) 501 45 261

Technical University Vienna
Centre for Scientific Data Communication
Gusshausstrasse 25/020
1040 Vienna, Austria
Dr. Manfred Paul, Director
Tel.: (0222) 588 01 36 05
Fax: (0222) 505 48 00

Association "Communications"
Telegraph, Telephone and Data Communications Division
4, Gurko Str.
1000 Sofia, Bulgaria
Mr. Stoyko Stoyko, General Director
Mr. Svilen Ivanchev, Director BULPAC
Tel.: (35 92) 71 31 33 18

Central Institute for Scientific and Technical Information
(CINTI)

52-a, G.A. Nasser St.
Sofia 1040 Bulgaria

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Tel.: (35 92) 71 92 03

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INORGA - Section 400
Research/Development of Large-Scale Computer-Aided
Management Systems

Na Frantisku 32
110 15 Prague 1 CSFR

Mr. B. Camsky, Deputy Director

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INORGA - Branch Office OSTRAVA
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Management Systems Development

Mlynska 1
729 48 Ostrava, CSFR

Mr. V. Suk, Deputy Director

Tel.: (069) 23 24 823

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Slovak Hydrometeorological Institute Bratislava
Jeseniova 17

833 15 Bratislava, CSFR

Mr. M. Rizicka, DP Manager

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Telemalta Corporation
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St. Georges Street
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Scientific and Technical Research Council of Turkey (TUBITAK)

Atatürk Bulvarı 217

Kızılay

Ankara, Turkey

Mr. Rezzan Karapars

Tel.: (90 4) 16 73 657

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