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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

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Joint UNIDO/IAS* Workshop
on Modern Information Technology Applications and Networks

Moscow and Issyk-Kul, 4-15 September 1991

REPORT**

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* Institute for Automated Systems.
** This document has not been edited.

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CONTENTS

1. RECOMMENDATIONS

1.1 The participants considered extremely important the idea of establishing an "International Information Centre", proposed during INFO-91 international seminar. During the INFO-91 the Soviet delegates strongly proposed the establishment of such a centre in the vicinity of Issyk-Kul taking into account the geographical location of the Republic of Kyrghyzstan and its territorial proximity to many developing countries of Asia. In this regard, the participants in the workshop recommended that UNIDO should explore possibilities of carrying out a feasibility study together with other governments and international agencies.

1.2 The UNIDO/INTIB should continue to set up a mechanism for collection and exchange of delivery of appropriate and relevant information to the SMIEs.

1.3 UNIDO should establish linkages with the Business Co-operation Network (BC-Net) in order to access information on new technologies and wider markets for SMIE products.

1.4 UNIDO should continue undertaking a study to identify available information resources and compile a directory of public and commercial data bases and CD-ROM data bases which would meet the needs of end-users in developing countries covering such areas as industry, science, technology, business, economics, law and other fields of UNIDO activities. This information should be periodically updated and disseminated through newsletters, bulletins and other media.

1.5 To provide standardization of databases and information technology UNIDO should coordinate this work with the ISO Information Committee.

1.6 UNIDO/INTIB should conduct periodical training programmes on the use of INTIB databases and network operations for countries which are not currently connected to the INTIB network in order to encourage Member States to utilize the network.

1.7 The workshop participants should be put on the mailing list of the INTIBNET newsletter and receive the publication on a regular basis to be kept up-to-date on the information dealing with the network activities.

1.8 UNIDO should continue to hold regular meetings and workshops in the field of information technologies. Such events should also be held in developing countries, such as India, etc. which have a developed information infrastructure and where the information networks perform efficiently.

1.9 Since a number of countries intend to access and exchange technological information through INTIB, participants proposed that provision should be made for restructuring the data format. In this regard, INTIB may consult other information format and should provide information on product offers and product requests.

1.10 The participants proposed that sufficient time should be allocated for the practical sessions with each software demonstrated by various agencies.

1.11 UNIDO should provide some of the software packages, such as MINIMAX text retrieval system developed by IAS on a subsidized rate to the participants.

1.12 UNIDO should develop a multilingual industrial thesaurus as far as possible.

1.13 UNIDO/INTIB should explore the possibilities of introducing industrial information research in their activities.

1.14 In co-operation with national focal points and regional agencies UNIDO should consider the possibility of developing a standard software package in various areas, such as technology and business opportunities, raw materials, training, experts roster, etc. with a view to making this data available to major database hosts.

1.15 Member States should take appropriate measures to establish physical data communication networks to enable them to get connected to external information sources such as UNIDO/INTIB, ITU, ICC, etc. which include electronic mail, teleconferencing, databases, etc.

1.16 Each participant, after returning home, should send detailed information project proposals to INTIB in order to examine the viability of developing a regional information project to strengthen information centres of developing countries.

2. INTRODUCTION

Background Information

2.1 Modern society is growing in a more complex way and its components need more and more information to function. Business, government, research and education all need to know more to fulfil their purposes in an environment that is continuously being reshaped by new forces. The business environment itself is not just more complex, but also more competitive. Newer and more specific markets, the government presence, and competition at home and abroad have all increased the importance of such information fuelled activities as planning and marketing.

2.2 No organization contains enough knowledge to make decisions in the face of all these forces. The question arises if it is practical to develop expertise to meet these needs, which are continuously changing. Organizations of all sizes face an ever-growing information shortage.

2.3 This phenomenon forced policy makers at the national level to reconsider existing information policies, usually restricted to scientific and technological information and to expand the scope of such policies to cover the whole spectrum of information activities.

2.4 The rapid development of the knowledge-based industry, where information, combined with new technology, such as electronics, computers and telecommunications, constitutes an essential component, creates new requirements, and substantially expands the information market. Increasing competition for domestic and foreign markets, the globalization of markets, and the pressure to develop new or improved products and services for increasingly sophisticated users, have greatly stimulated the demand for information. In order to meet those demands UNIDO has developed a computerized system for technology and industrial information. UNIDO's Industrial and Technological Information Bank (INTIB) makes available its information files to INTIB network members including more than sixty agencies in the developing countries. Practical operation of the network system has proved fruitful in on-line access to remote data bases and use of personal computers in technology and industrial services.

2.5 Now it is universally recognized that an increase in the use of technological and industrial information in INTIB and UNIDO's outside sources for industrial development of the developing countries is possible only if these countries can overcome the lack of trained manpower to maintain effectively microcomputer systems as well as to operate telecommunications networks. One of the most significant needs identified by INTIB in recent time is for training and education in selected industrial information centers in the establishment of a basic telecommunications configuration. This would include concepts of data communications, Public Packet Switching Data Networks, telecommunications software utilization, and general capabilities and services of the various network providers.

2.6 At the latest count, there were over 4000 data bases available for on-line searching throughout the world. Information specialists who have a personal computer, for example, would like to access data bases in their day to day work. The data bases are complex and the commands necessary to get at the information are difficult to use. Information specialists who have the inclination to enter too deeply into the "information world" through on-line access to data bases lack training in translating clients' information needs into the commands necessary to retrieve the information needed from a range of databases.

3. ORGANIZATION

3.1 The workshop was jointly organized by the United Nations Industrial Development Organization (UNIDO) and the Institute for Automated Systems (IAS), Moscow.

3.2 The participants in the workshop also attended the plenary session of the International Scientific Seminar "National STI Networks and Systems: State-of-the-Art and Development Prospects - INFO 91 -" organized by All Union Institute of Scientific and Technical Information (VINITI), Kirghiz Research Institute of Scientific and Technical Information and Techno-Economic Studies (KirghizNIITI) and UNIDO.

3.3 The programme of the workshop emphasized the practical applications of information technology; the INFO-91 seminar focused on the future development of information technology in science, industrial and technological fields. Both events were mutually complementary and supplementary.

3.4 The workshop was attended by 11 participants from 10 countries, one UNIDO consultant and two representatives from UNIDO.

Annex I contains the programme of the workshop. Annex II contains a list of participants.

4. OPENING SESSION

4.1 The opening session was held at the Institute of Automated Systems (IAS), 2a Nezhdanova street, Moscow. Prof. O.L. Smirnov, Director of IAS, welcomed the participants. He thanked the efforts of UNIDO for organizing an international workshop in IAS. He presented a brief review of the IAS, namely USSR networks, human resources development, research and office automation. He highlighted the importance of networking in industrial development and, therefore, invited collaboration from developing countries. He wished the workshop every success and welcomed any requests from the participants to get acquainted with the IAS activities.

4.2 Dr. Y. Savostitsky, Deputy Director of IAS, reviewed the recommendations of the previous workshop held at IAS, Moscow, from 14-25 May 1990. He noted that teleinformatics services are the main component of IAS activities in the area of science and technology which mainly depends on national support and international co-operation.

4.3 The Representative of the Industrial and Technological Information Section of UNIDO welcomed the participants and described the objective of the workshop. The need of linking national and international networks for information exchange in various disciplines such as industry, science and technology, business and market was emphasized. The representative thanked

the host organization - IAS - for the excellent facilities and for their efforts in organizing this Workshop.

Election of Officers

4.4 The workshop was invited to elect a chairman and rapporteur. Mr. Tata C. Syarif, Head, PUSDATA, Jakarta, Indonesia proposed the nomination and the workshop unanimously elected:

- Chairman: Mr. Rodolfo Zamalloa Lopez, Director-General, ITINTEC, Lima, Peru

- Rapporteur: Mrs. V. Sharma, Principal Systems Analyst, National Informatics Centre, Planning Commission, New Delhi, India.

5. OBJECTIVES OF THE WORKSHOP

5.1 The main objective of the workshop was to facilitate the participating institutions in the establishment of on- and off-line linkages with UNIDO, commercial data bases and networks. The workshop was also aimed at establishing co-operative projects between information centres in the developing countries.

5.2 The purpose of the seminar - INFO 91 - was to generalize the experimental and theoretical studies of Soviet and foreign scientists on information support of scientific and technical progress, introduction of promising information technologies, enhancement of efficiency and quality of information service and the development of international exchange of scientific and technical information.

5.3 The main topics covered by the workshop were:

- o UNIDO/INTIB data bases
- o Demonstration of modern packet switching hardware/software tools under production in USSR
- o On-line and off-line access to data bases
- o Electronic mail and teleconferencing systems
- o Computer-aided training tools
- o Optical character recognition systems
- o Information processes, systems and networks
- o Automation of information and library processes
- o Databases and databanks
- o Telecommunication methods and means of accessing data banks
- o Regional and national information computer networks in developing countries: State-of-the-Art, Software and Hardware

- o Creation and use of information resources
- o International market of scientific and technical information
- o Demonstration on study topics

6. WORKING SESSIONS

6.1 Scientists and specialists from the USSR delivered lectures on the state-of-art of the USSR network and automated systems in various disciplines, such as office automation, database management, computer/video conferencing and bibliographic data base search.

6.2 Special visits of the participants were conducted to some of the important organizations involved in the development of information technology. Some of the programmes of IAS include automation of developments, distribution and installation of computer systems, data transmission, automation of management procedures, etc. The information resources of IASNET include a number of databases/ data banks such as those maintained by VINITI, INION, POISK, etc.

6.3 The programme also included a visit to the All-Union Institute for Scientific and Technical Information (VINITI) which was set up in 1952 as a major information centre of the Soviet Union. Prof. Boloshin presented a brief review of various activities of VINITI involved in acquisition, processing, storage and dissemination of information. The Institute annually handles a vast flow of documents in natural and technical sciences coming from 130 countries in 66 languages. On their basis VINITI issues reference and information publications, conducts fundamental research and develops specialized state-of-the-art information handling equipment. VINITI provides data on magnetic tape, information sources, microfiches, does research, conducts information interchange by using remote access facilities, etc. Demonstrations at VINITI included addresses/inquiry databases for SASSTI's resources, computer-aided dictionary on S+T databases for English/Russian and Russian/English.

6.4 The International Centre for Scientific and Technical Information (ICSTI) founded in 1969 under the provision of an intergovernmental agreement, pools efforts of a number of countries in developing national information industries and mutual information co-operation. ICSTI hosts 11 on-line databases covering major sectors of science, technology and economy. Also available are off-line information services, retro-search, selective dissemination of information, current awareness services, etc. The Centre has long term experiences in the development of software and documentation and information system design. On-line search in selected databases was demonstrated to the participants, and discussions were held on text search methods.

6.5 The participants also visited the Library for Natural Sciences of USSR Academy of Sciences and attended a demonstration

on some of the software packages, such as "DISKAT", the catalogue for a centralized library system, the "SOCHI" system for serving readers, the "SOI-S" system for handling periodicals.

6.6 The INFO-91 seminar held at Issyk-Kul at Kyrghyzstan provided a forum to the workshop participants to share experiences and views in the field of information technologies with seminar participants representing various republics of the USSR, namely the Ukraine, Byelorussia, Armenia, etc.

6.7 The workshop programme at INFO-91 included demonstration on the use of a computer-aided training system, the SCAN-MAN package developed on principles of optical character recognition, computer teleconferencing, a window editor package and IAS E-mail system. A presentation and a demonstration were held by a UNIDO consultant on the GE E-mail system. The UNIDO representative provided training on UNIDO/INTIB databases. The participants in the workshop presented country papers. VINITI has issued in time for the Workshop and INFO-91 a programme of the events and a collection of abstracts of papers in English and Russian. Annex III contains the abstracts of the participants country papers.

7. ADOPTION OF THE REPORT

7.1 After detailed discussions, the workshop adopted the Report and its recommendations were also endorsed by INFO-91 participants. The workshop participants made a strong recommendation to UNIDO and the Member States for early implementation of the activities suggested at the workshop.

8. ACKNOWLEDGEMENTS

8.1 The participants of the workshop expressed their deep appreciation for the efforts made by IAS and UNIDO for the organization of the workshop. Deep sense of gratitude was expressed to the organizers of INFO-91, i.e. VINITI, IAS, other host agencies and UNIDO for organizing the seminar at Isyk-Kul. They also offered special thanks to IAS and KirghizNIITI for providing excellent host facilities. Participants also thanked Dr. Mark S. Fradkin, Senior Research Associate of VINITI and Dr. Boris Semyonov, Assistant Head of Laboratory of IAS for providing excellent interpretation during the entire course of workshop.

9. CLOSING SESSION

9.1 UNIDO representatives thanked the participants for attending the workshop and INFO-91, stating that their recommendations have provided useful inputs to the forthcoming UNIDO/INTIB programmes for several years to come. Dr. C.S. Sidikov, Director of KirghizNIINTI distributed certificates to the participants at the end of the workshop.

Annex I

WORKSHOP PROGRAMME

September 4, 1991 - Participants arrival

September 5, 1991

10.30-11.30	- Opening ceremony Election of Chairman and Rapporteur	
11.30-12.15	- Lecture on state-of-the art of USSR computer networks	O.L.Smirnov IAS
12.15-13.00	- Lecture on teleconferencing systems	V.A.Serdjuk
14.30-15.30	- Demonstration of technological DB accessable by Soviet users	E.Muratava
15.30-16.30	- Lecture on UNIDO/INTIB databases	UNIDO staff
16.30-17.15	- Discussion	

September 6, 1991

15.00-15.30	- Demonstration of programm packet TELEMAN for businessmen	K.A.Antipov
15.45-16.45	- Intelligent Data Retrieval System MINIMAX	A.Mikhajlov
17.00-17.30	- Discussion	

September 9, 1991

10.00-11.30	- Automation of information library processes: presentation of library for nature sciences	A.G.Zakharov
11.45-12.15	- Development and implementation of packet switching facilities: lecture and demonstration	M.A.Boldyrev
12.15-13.15	- Computer teleconferencing systems: demonstration and training	V.A.Serdiuk
15.00-17.30	- Access to databases of East European Information Systems for Science and Technology Information: presentation of the International Center for Science and Technology Information	A. Moshu Y.Gornostav ICSTI

September 11,1991

10.00-13.00	- INFO'91 Plenary session	
15.00-16.00	- Training on use of programme packet for office automation	E.Backanova
16.00-17.15	- Training on use of computer aided training system	V.A.Serdiuk
17.15-18.00	- Principles of Optical Character Recognition and Demonstration of SCAN-MAN package	S.Marchenko

September 12, 1991

10.00-11.15	- Demonstration and training on computer teleconference system	V.A.Serdiuk
11.15-12.20	- Development of text processing system: Demonstration of "Window Editor" package	S.Marchenko
14.30-15.30	- Training on IAS E-mail system	S.Marchenko
15.30-16.30	- Training on GE E-mail system	E.Haberbush UNIDO consultant
16.30-18.00	- Training on UNIDO/INTIB Data Bases	UNIDO staff

September 13, 1991

9.30-12.30	- Workshop participants' country paper presentations	
14.30-17.30	- Discussion and preparation of workshop's report	

September 14, 1991

14.00-15.00	- Adoption of report	

September 15, 1991

10.00-12,30	- INFO'91 round table Closing ceremony: workshop certificates distirbution	

LIST OF PARTICIPANTS

CHINA, P.R.

Mr. Wang Lianhai
Director
National Bureau in China
Institute of Scientific and Technical
Information (ISTIC)
No. 15, Fu Xing Road
P.O. Box 3811
Beijing - 10038
Telex: 20079 istic cn
Telefax: 8014025
Telephone: 8014046
Cable: 3725 Beijing

INDIA

Mrs. Vandana Sharma
Principal Systems Analyst
National Informatics Centre (NIC)
Planning Commission
A-Block, Lodi Road
Kendriya Karyalaya Parisar
New Delhi - 100 003
Telex: 3161274 NICS IN
Telefax: 91-11-362489
Telephone: 362359

INDONESIA

Mr. Tata Chinta Syarif
Director
Data Processing and Information (PUSDATA)
Ministry of Industry
Jl. Gatot Subroto Kav 42-43
Jakarta
Telex: 62475 depind ia
Telefax: 512194

IRAN

Mr. S.B. Dast Sarry
Ministry of Construction and
Training
Organization of Shealat Informaticn
Centre
43 Zafar St.
Tehran
Telex: 214203 KVIA
Telefax: 655104
Tel: 4275215

	Mr. H.H. Alast Senior Data Communication and Technical Adviser for Ministry of Industry No.2 Bierjan Allay, Northaban St. Karimkhan Zand Ave., Tehran 15279 Fax: 0098 (21) 832942 Tlx: 213399 SFTHIR Tel: 0098 (21) 4401177
MALAYSIA	Mr. M. Shukri M. Yunus EDP Manager Majlis Amanah Rakyat (MARA) (Datapower Sdn. Bhd.) Tkt. 6 Medan Mara Jln. Raja Laut 50609 Kuala Lumpur Telex: MARA MA 30316 Telefax: 03-2915828 Telephone: 03-2926540 Cable: MARAMAL
NEPAL	Mr. Pramod bir Tuladhar Chief System Analyst National Computer Center Singha Durbar Kathmandu Telex: 2306 UNDP NP
PERU	Mr. Rodolfo Zamalloa Lopez Director-General Instituto de Investigacion Tecnologica Industrial y de Normas Tecnicas (INTINTEC) Prolong Av. Guardia Cicil. Esq. Av. Canada Cdra. 15 San Borja (Lima 41) Telex: ITINTEC 20496 PE Telefax: 711617
ROMANIA	Mr. Stan Constantin-Stefan Chief of Computer Center of INID National Institute for Information and Documentation Str. George Enescu 27-29 Bucharest, Sector 1 Telex: 11247 INID R Tel: 134010

THAILAND	Mr. Teerapong Rodprasert Transport Technical Officer Office of Permanent Secretary Ministry of Transport and Communications Bangkok 10100 Telex: 82315 ESCAP TH
TURKEY	Mrs. Hanife Sayin Specialist Investment Projects Evaluation Dept. Turkish Prime Ministry Undersecretary of State Planning Organization Necatibey Caddesi No: 110 Bakanliklar, Ankara Telex: 42110 DPT TR Telefax: 99-4-2310467 Telephone: 99-4-2308720/6413
UNIDO CONSULTANT	Mr. E. Haberbusch Telecommunications Expert General Electric Ges.m.b.H. 1040 Vienna Austria Telex: 61282 SG Telefax: 5057022 Telephone: 5059711
UNIDO	Mrs. J. Ralston Informatics Expert UNIDO Industrial & Technological Information Section P.O. Box 300 A-1400 Vienna Austria Telex: 135612 Telefax: 2307584 Telephone: 21131/3700

Annex III

COUNTRY PAPER ABSTRACTS

Majlis Amanah Rakyat (MARA)
by Mr. M.S. Yunus, Malaysia

The paper presents the process of development of MARA information system and information network. To date we have 52 centers both nationwide and internationally connected to air host via MAYPAC NETWORK. We also have Electronic mailing using Xenix system.

Information Access by Small and Medium Scale Enterprises
by Mr. Tata Syarif, Indonesia

This paper discuses alternatives for small and medium scale enterprises to access sources of information. It highlights on how to role those alternatives for a data communication from and among the enterprises which are spread out in the numerous region/islands, and on how to access the sources of information available.

The Transport Management Information System (TMIS): The Ministry of Transport and Communications
by Mr. Teerapong Rodprasert, Thailand

The TMIS was first established in the Ministry of Transport and Communications, in 1973. The simple terms of the TMIS is a system that receives data from various transport and other agencies, that processes this data in ways that are useful for transport planning purpose, and that outputs information developed from the processed data ready for use by transport planners, policy-makers and decision-makers in the Ministry, departments and state enterprises.

ITINTEC ACTION PLAN FOR 1991
by Mr. R.Z. Lopez, Peru

ITINTEC action plans are:
1) To stimulate the technical information, after identification, classification and organization of the technical information users in order to carry out the corresponding promotion through the entrepreneurial allocations.

2) To strength the National Industrial Information Network through the acquisition of hardware and software, documentary sources, agreements with industrial enterprises and institutions.

3) To interconnect information networks and databases from abroad.

4) To publish technical documents through regular editions including technologies of free availability, industrial comments, among others.

Status of Regional and National Computerised Information Network in India
by Mrs. V. Sharma, India

The decade 1955-64 was an introducing phase for computers in India. To meet the growing demand thereafter and promotion of technology, the Government formulated clear guidelines and evaluated application of computers in various sectors of economy. Computer networks which offer economies of scale in hardware, software and manpower resources have been increasingly employed both by private and government organizations. The forthcoming five year plan also includes ambitious program for introduction and enhancement of these networks. The case of network established by National Informatics Centre, NICNET, which is the largest computer network in the country spanning government at the centre, secretariats of 32 states and 440 districts, is cited as prime example. The NIC at present is an organization structured around 1500 computers specialists providing full fledged Management Information System (MIS) and computerisation services to various Ministries/Departments and associated organizations. A scenario of state-of-the-art, computer communications based informatics and future trends are envisioned.

SMALL-AND MEDIUM-SCALE ENTERPRISES TECHNOLOGY INFORMATION EXCHANGE NETWORK: THE INTIB EXPERIMENT IN ASIA, EUROPE AND THE PACIFIC
The Secretariat of UNIDO

The paper covers the Industrial and Technological Information Bank (INTIB) experiment on the establishment of small- and medium-scale enterprises technology information exchange network in Asia, Europe and the Pacific to promote business cooperation. It focuses on a voluntary cooperative programme among selected small- and medium-scale enterprises service institutes, in Belgium, Germany, India, Malaysia, Philippines, Republic of Korea, Sweden, Turkey and the United Kingdom to share industrial and technological information that would help satisfy the ever increasing and changing information needs of small- and medium-scale enterprises. Describes network products and services and network management methodology.

COMPUTER-BASED INFORMATION PROCESSING SYSTEMS APPLIED AT THE NATIONAL INSTITUTE FOR INFORMATION AND DOCUMENTATION
By St.Stan.O.Stanescu, Romania

The paper presents the main directions in using computer-based information techniques at the National Institute for Information and Documentation, Bucharest (INID).

The main topics discussed in the paper are:
-implementation of the 'PRODOC' SDI system based on a computerised database;

-presentation of a software package aimed at achieving retrospective search on the 'PRODOC' database;
-experience with micro CDS/ISIS software in realisation of bibliographic and other information database.

One of the problems encountered in our activity (as presented in detail in the paper) is the heterogeneity of the computer hardware equipment used -mainly micro- and minisystems. This required development of specialized conversion techniques and software. Finally, the paper presents the main problems of connecting the institute to the future national package computation network (ROMPACK) in 1992, as well as its intended connection to some international databases.

TECHNICAL INFORMATION SERVICES FOR SMALL- AND MEDIUM-SCALE ENTERPRISES
By Wang Lianhai, China

In accordance with China's economic reform and open-door policy, the Institute of Scientific and Technical Information of China (ISTIC) has taken the following measures in recent years to meet the needs of technical information for small- and medium-scale enterprises:
-the establishment of a national bureau of the technological information promotion system (TIPS) with the support of UNDP;
-the hall of national technical information release opened to the public;
-a special TV programme "Spark science and technology" carried out by satellites;
-a SPARK information pilot system to be established;
-various technical exhibitions and technical extension meetings organized;
-database of China's appropriate technology achievements installed.

ISTIC as the national information center has been playing a leading role in providing technical information to small- and medium-scale enterprises in China.

INFORMATION SYSTEM IN NEPAL
By Pramod bir Tuladhar, Nepal

Information is power. Information technology is the outcome of computer technology and communication technology. Database system is a computer based record keeping system whose overall purpose is to record and maintain information. Increasing importance of the telecommunication system as a means of transmitting information. At attempt is made to show the importance of libraries in National Development System as a sub system. Library as a service system, the importance of bibliography is given in short.

TELECOMMUNICATION METHODS TO ACCESS INTIB FROM NATIONAL FOCAL POINTS

By H.H.Alast, Iran

Information technology could be implemented with integrating telecommunication and computer with digitalization of existing public and private networks on basis of ISDN (Integrated Services Digital network) plans. In other words, all kind of information such as voice, data, text, fax, and image could be reached to end users (for example in this case from UNIDO/INTIB to national focal points simply by VSAT and PC/DT/WS/FAX/TLX). Through one line, one code and one network however, one of the major concerns to access INTIB and National Focal Points is VSAT network and hub-station in UNIDO/INTIB as a star network topology (each national focal points will be as a Node for INTIB/UNIDO without using public telecommunication network such as PSTN,PSDN or any PTT line).

In this paper Govt. of the Islamic Republic of Iran, one of the INTIB National Focal Point would like to recommend a case study for INTIB Network for setting up a VSAT star network. For this network each member country of UNIDO will be a National Focal Point (as a remote node) through the INTIB with vast industrial information database having hub-station. as an Industrial Information Global Network Services.

Main point of advantages of INTIB VSAT Network will be compared economically and technically with existing telecommunication methods. However, this paper is showing some parameters analysis such as CCITT/ISO protocols. And some of the problems that will occur and the information technology in the INTIB network, and proposes some simple strategies to solve the complex problem of industrial data bases using above INTIB VSAT network.

DEVELOPMENTS IN INFORMATION TECHNOLOGY

By Hanife Sayin, Turkey

The Paper covers the areas such as:
-Developments in hardware and operating systems
-Developments in user's programs
-International standardization
-Networking
-Functional standards
-The Turkish research community.