Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) mbH

WINRE `94

5th Workshop on Information Management in Nuclear Safety, Radiation Protection, and Environmental Protection

GRS - 115

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WELCOMING

H.-P. Butz, H. Kunitz
Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) mbH, Köln

Ladies and Gentlemen,

On behalf of GRS I welcome you to the 5th Workshop on Information Management in Nuclear Safety, Radiation Protection and Environmental Protection. The Federal Minister for the Environment, Nature Conservation and Nuclear Safety (BMU) has once again sponsored this event. For some of you it has become a regular occasion to exchange your experience with your colleagues. Although we have achieved excellent results in recent years, documented in the various proceedings, I cannot be quite sure at this stage if BMU will finance this workshop again next year. The reason for this is that the federal budget is becoming tighter. Moreover, as you may know, there is a general election next Sunday and a lot depends on the new government. But now back to this year's workshop.

The scientific coordination has changed from Mr. Höpfner to Dr. Harald Kunitz whom I want to introduce to you now. Dr. Harald Kunitz is within GRS responsible for the scientific information service within the framework of our library mainly in the on-line field. He will now tell you more about the structure of this workshop.

Thank you, Dr. Butz.

Ladies and Gentlemen, dear colleagues, I want to express my gratitude to Mr. Höpfner, the initiator of WINRE.This year we are delighted to have guests from 16 countries, namely from Austria, Belorussia, Britain and Bulgaria, from the Czech Republic, Estonia and Germany, from Hungary, Kazakstan and Latvia, from Poland, Rumania and Russia, from the Slovak Republic, the Ukraine and from the United States of America.

The representatives from the various countries and organisations are going to introduce their respective activities, separated into six conference sessions, dealing with:

- Hosts/Producers
- Products/Services
- Quality managament for information services
- Information management in the nuclear field
- Environmental data bases and
- Media information

Our exchange of activities during the next few days should contribute to the promotion of the transfer of know-how between experts throughout the whole of Europe or, hopefully, worldwide.

SESSION I

Media Information

Chairman: St. Orti von Havranek

Database UMEDIA - Reports on Environmental Issues in the Mass Media and from Business Enterprises

A. Köhler
Institut der deutschen Wirtschaft, Köln

The Institut der deutschen Wirtschaft (Institute of German Private Enterprise, hereinafter referred to as IW-Köln) has become the largest private research organization in Germany for economic and social issues. It represents the private sector in Germany; its membership consists of 39 industrial and employers' associations, including all the large and important ones. The Institute is also supported by around 70 trade and regional associations, as well as by a large number of Germany's leading companies, covering approximately 80 per cent of the German private sector.

The Institute's research programme focuses on key issues in the interplay between the private sector and public policy. There are two distinct fields of research: education and the social sciences on the one hand, and economic and social policy on the other.

The IW-Köln does not only offer special services to its associated companies or associations. It also provides information to all those who want to profit from the services it offers. The IW-Köln is open to everybody.

During the last few years the IW-Köln has become a respectable producer of databases. They contain the latest information and meet the requirements of practice. The databases are provided by internal hosts and by others such as FIZ-TECHNIK or the GBI (Gesellschaft für Betriebswirtschaftliche Information).

For over 30 years the IW-Köln has been active in the domain of environmental policy and economics. Now we have established the research project ECONOMICS/ECOLOGY as a kind of sub-departement:

Forschungsstelle Ökonomie/Ökologie
im Institut der deutschen Wirtschaft, Köln
Gustav-Heinemann-Ufer 84 - 88
D-50968 Köln
Tel.: 0221-3708-295,
Telefax: 0221-3708-194,
E-Mail: GEOD:UMEDIA

The project also represents developments in the private sector where the environment is a concern as important as the economic aims. It comprises a documentation centre with an ex-

tensive compilation of specialized literature on environmental issues as well as general environmental literature ('gray' literature). The core of this documentation is our database UMEDIA.

The number of spezialized publications and general or 'gray' literature on environmental subjects produced by environmentalists, citizens' action groups, various societies, associations and business enterprises has increased precipitously and has therefore become difficult to survey. In addition, the environmental reports produced by companies have multiplied in recent years. This trend will surely continue once the EC rules on the so-called eco-audit have come into force. With our research project we are prepared for this challenge.

The database UMEDIA for articels and reports on environmental issues has existed since 1988 in our Economic and Social Affairs Department. It is primarily concerned with reports in the mass media. UMEDIA is a central element of our archive. In this database we store all articles and reports on environmental matters found in the printed mass media, i.e. popular publications with a wide circulation (excluding daily newspapers). In doing so, we cover an important portion of information and reports which would otherwise go unnoticed in Germany.

This work is very important because the articles on the environment published in the mass media have a considerable influence on public opinion and on policy-making. More precisely, the mass media do not only convey information, but they also influence people's opinions and create a political and public mood. This aspect has been analyzed by our Institute with the help of UMEDIA. The findings were published by my colleague Dr. Voss in a book entitled 'Die veröffentlichte Umweltpolitik' (Environmental Policy in the Press and Media).

This success with UMEDIA has encouraged us not only to continue this work, but to improve it and to offer UMEDIA as a public service. In addition to UMEDIA, we offer a value-added service in the form of a quarterly information bulletin called IW-UMWELT-SERVICE, which contains background information and the results of analytical work done over a period of three months.

In the following are some facts and figures on UMEDIA:

I. Contents

1. Print media

   Only printed mass media with a high circulation rate (no daily newspapers!)

   The following magazines and weekly papers are analyzed:
   Bild der Wissenschaft, Der Spiegel, Deutsches Allgemeines Sonntagsblatt, Die Woche, Die Zeit, Focus, Geo, Greenpeace-Magazin, Kosmos, Natur, Naturschutz heute, Natürlich, Öko-Test-Magazin, Rheinischer Merkur, Spektrum der Wissenschaft, Stern, Vital and Worldwatch.

The compilation of the articles and reports on the environment in the printed mass media with a wide circulation is worthwhile because these articles and reports are representative and meet the demands for a survey of the latest trends.

2. The press releases from the Federation of German Industries (BDI) on environmental problems (full text)

3. Reports on the environment by companies and associations, such as ecological balance sheets, information on environmental management, documentations, reports, environment information systems, etc.

4. The IW-UMWELT-SERVICE (full text)

II. Structure of files in the Database:

Full bibliography, including the source of the text, and abstracts (see annex 1)

The abstracts are a short version of the documents. When writing an abstract, particular care is taken to summarize only the most important facts of the article concerned, so that in most cases it will not be necessary to read the original.

The work with UMEDIA has shown that this database is also useful for a comprehensive investigation of all the facts relating to environmental problems. Tables, addresses, graphs and diagrams are indicated and described in detail and can be easily obtained from the publisher (see annex 2).

III. Descriptors and Thesaurus

UMEDIA is initially composed in the database language LARS. With the help of the Institute's host, it is possible to retrieve data with the MELOG language. Furthermore, UMEDIA can be contacted by the GBI host under the name of IWUM.

The investigation can be carried out by free descriptors. They consist of lexical terms and, where possible, also of similar terms and synonyms. Thus, the difficulty of building a manageable structured thesaurus for the term 'environment' can be avoided. Experience has shown that this procedure is acceptable and worth pursuing.

IV. Number of Documents so far covered: 12,000.

V. Updating of Data: monthly

VI. Trend Evaluation and IW-UMWELT-SERVICE:

We produce a quarterly analysis of trends in environmental discussions in the form of the IW-Umwelt-Service.

Trend analyses of the environmental articles and reports in the selected mass media are published as a quarterly value-added service based on the database documentation.

Apart from the analysis of individual environmental subjects, this service also contains a graphically designed barometer on environmental subjects. This barometer shows the percentage shares of the various subjects covered in the selected print media and by the Bonn Press Conference on Science (Bonner Wissenschafts-Pressekonferenz - WPK) (see annex 3).

The IW-UMWELT-SERVICE does not only report on the trends, but it also contains information about the relevant sources in business, science and politics. The IW-UMWELT-SERVICE appears as an information bulletin and can also be retrieved in full length from UMEDIA. Together with the IW-UMWELT-SERVICE, UMEDIA forms an environment information system that can be used in many ways and is open to the public. UMEDIA can be regarded as a supplement to the databases of the Federal Office for the Environment (Umweltbundesamt).

The documentation established by our department is structured in such a way that it can be used by anyone working for a company or association, in PR departments or with the press in general. Thus, the scientific world can also profit from our documentation of retrievable data. Other users are private individuals who want to obtain information about the contents and trends of articles and reports or about the achievements of corporate environmental activities, or who want to get an idea of what is going on in environmental discussions in society at large. However, time has shown that UMEDIA is primarily used by managers, politicians and research staff.

Annex 1

Referenz-Nr.: ZEI-93-034

Zeitschrift:	Die Zeit 93.02.19
Bezug:	Kommanditgesellschaft Zeitverlag; Gerd Bucerius GmbH & Co Pressehaus Speersort 1; 20095 Hamburg
Tel:	(040) 32 80 - 0; Fernschr: 216 24 17
Telefax:	(040) 32 71 11
Telegramm:	diezeit/Hamburg
Autor:	Keßler, Helga

Titel: **Ein Problem wird verfeuert**

Die "Technische Anleitung Siedlungsabfälle" (TA) stellt ein klares Votum für die Müllverbrennung dar. Das Umweltbundesamt (UBA) hat einen Bedarf von mindestens 40 neuen Anlagen errechnet; die Schätzungen der Länder liegen bei 70 Anlagen.

Die TA-Siedlungsabfall kostet die Länder nach Schätzungen der Bundesregierung zehn Milliarden Mark, nach Schätzungen der Länder 35 Milliarden. Eine Verbrennungsanlage, die jährlich 200.000 Tonnen Müll schluckt, kostet etwa 600 Millionen Mark. Moderne Müllverbrennungsanlagen werden die Grenzwerte für Luftschadstoffe wohl einhalten können.

Bemängelt wird jedoch, daß alternative Verfahren zur Abfallbehandlung durch die Vorgaben in der TA Siedlungsabfall keine Chance mehr haben. Müllverbrennungsanlagen können zudem keinen ernstzunehmenden Beitrag zur Energieversorgung leisten. Bezweifelt wird auch, ob Müllverbrennungsanlagen auch langfristig das beste Verfahren zur Abfallbehandlung darstellen.

Schaubilder:

Karte mit Müllverbrennungsanlagen in Deutschland

Referenz-Nr.: BIL-93-013

Zeitschrift: Datum: 1991
Bezug: BASF AG, ZOA/GS, 67056 Ludwigshafen, Tel. 0130-853035
Titel: Umweltbericht 1990: Denken Planen Handeln

Umweltbericht 1990

Vorliegender Bericht bietet einen Querschnitt der Umweltprobleme des Berichtsjahres 1990.

Kunststoffe werden in ihrer Bedeutung aus ökologischer und ökonomischer Sicht dargestellt. Die Wiederverwertung von Kunststoffen stand im Mittelpunkt der Umweltschutzbemühungen. In der Abteilung Kunststoffe und Umwelt ist ein Referat Ökobilanz eingerichtet worden.

Die Entwicklung eines Wasserbasislacks hilft, die Umwelt wesentlich zu entlasten.

In einem Interview nimmt der Leiter der Abteilung Entsorgung zur Frage "Droht der BASF ein Entsorgungskollaps?" Stellung. Insbesondere wird auf das Dioxinproblem und die Probleme der Mülldeponie, der Altlasten, des Müllexports, des Gewässerschutzes und der fehlenden Verbrennungsanlagen eingegangen.

Die BASF will möglichst chlorfrei gebleichtes Papier verwenden.

Leistungen und Wert der Werksbegrünung werden dargestellt.

Über die Vielfalt von Grenzwerten und deren Anwendung in der Praxis wird informiert.

Es wird ein mobiles Luftüberwachungssystem vorgestellt, das bei BASF Schwarzheide eingesetzt wird.

Der Beitrag "Offene Antworten auf kritische Fragen" schildert die Podiumsdiskussion mit "Chemiekritikern", als Auftakt zu einem offenen Dialog.

Neue Umweltschutzeinrichtungen der BASF werden vorgestellt: ein zweiter Verbrennungsofen zur Verbrennung von CKW wurde in Betrieb genommen.

BASF fördert den Anbau nachwachsender Rohstoffe (hier Öllein).

BASF verwendet bei der Herstellung von Styrodur ein neues umweltfreundliches Treibmittel (Ersatz des FCKW 12 durch teilhalogenisiertes HFCKW 142b).

Ein Wassersparprogramm wurde durchgeführt.

Mittels einer katalytischen Stickoxid-Entfernung werde 85 Prozent weniger Stickoxide aus dem BASF-Kohlekraftwerk emittiert.

Der Bericht enthält eine Umfangreiche Dokumentation zum Umweltschutz der BASF.

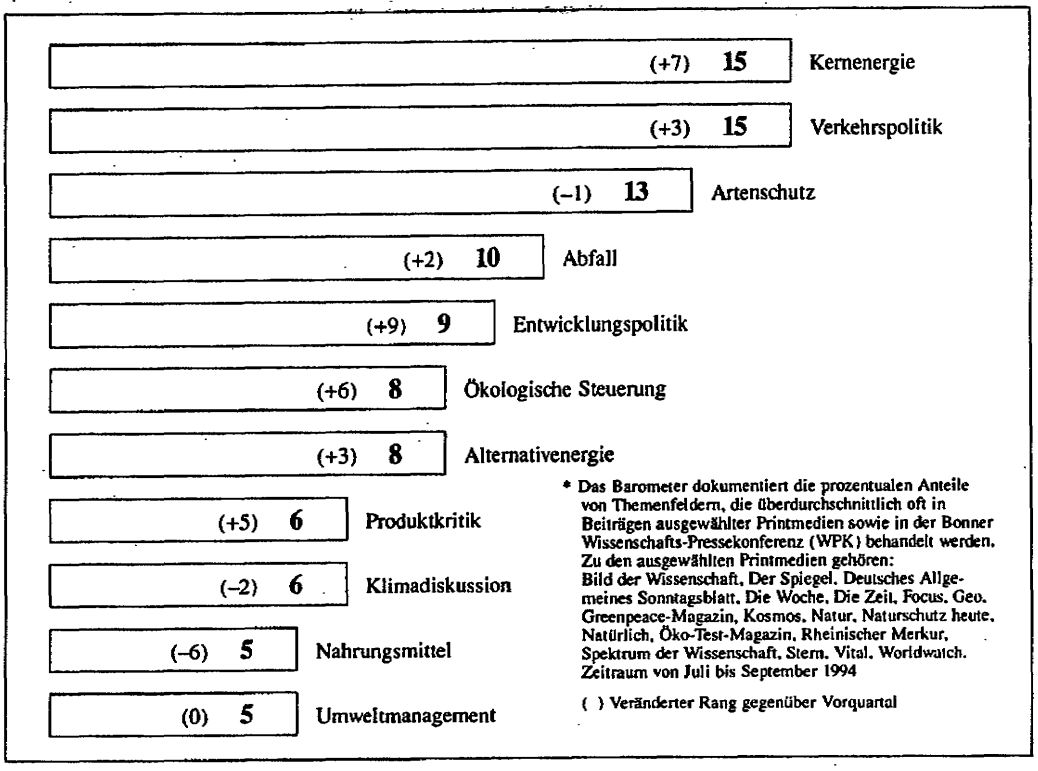
Schaubilder:

- BASF (1990): Schaubild mit Vergleich von Maßeinheiten (Seite 21),
- BASF (1990): Grafik: Zeitreihe (1980 - 1990):
  Entwicklung der Schmutzwassermenge pro Tag bei BASF (Seite 30),
- BASF (1990): Grafik: Vergleich 1980 und 1990:
- Produktspezifische Umweltbelastung (Seite 33),
- BASF (1990): Grafik: Zeitreihe (1980 - 1990):
  Entwicklung und Struktur der Netzdampferzeugung (Seite 33),
- BASF (1990): Grafik: Zeitreihe (1980 - 1990):
  Entwicklung der Rückstandsverbrennung der BASF (Seiet 34),
- BASF (1990): Grafik: Zeitreihe (1980 - 1990):
  Entwicklung und Struktur der gelagerten Rückstände auf der Deponie Flotzgrün (Seite 34),
- BASF (1990): Grafik: Zeitreihe (1980 - 1990):
  Entwicklung der Schmutzfracht (organische Stoffe/Tag), die in den Rhein von der BASF zusammen mit den Städten Ludwigshafen, Frankental und der Bobenheim-Roxheim als geklärtes Abwasser eingeleitet werden (Seite 35),
- BASF (1990): Grafik: Zeitreihe (Jan. - Dez.): Entwicklung der Verminderung des Ammoniumstickstoffs im Abwasser der BASF (Seite 35),
- BASF (1990): Grafik: Vergleich (1989/90):
  Störungen mit zusätzlicher Rheinbelastung (über die Kläranlage) (Seite 36),
- BASF (1990): Grafik: Vergleich (1989/90):
  Störungen im Kühlwassersystem der BASF (Seite 36),
- BASF (1990): Grafik: Zeitreihe (1980 - 1990):
  Entwicklung der Luftemissionen (BASF-Ludwigshafen) (Seite 37),
- BASF (1990): Grafik: Zeitreihe (1980 - 1990):
  Entwicklung der Emissionswerte im Raume Mannheim/Ludwigshafen (Stickstoffoxid, Feinstaub, Schwefeldioxid) (Seite 37),
- BASF (1990): Grafik: Zeitreihe (1980 - 1990):
  Entwicklung der Abnahme der BASF-Schallimmissionen (Seite 38),

- BASF (1990): Grafik: Zeitreihe (1980 - 1990):
  Entwicklung der Investitionen und Betriebskosten für den Umweltschutz (Seite 38),
- BASF (1990): Grafik:
  Die großen Umweltschutzprojekte der BASF (Kosten und Stand der Entwicklung) (Seite 39),
- BASF (1990): Grafik: Zeitreihe (1987 - 1990):
  Entwicklung der NOX-Minderung deutscher Kraftwerke durch Einsatz von BASF-DeNOX-Katalysatoren (Seite 39).

Annex 3

Themenbarometer * 3. Quartal 1994

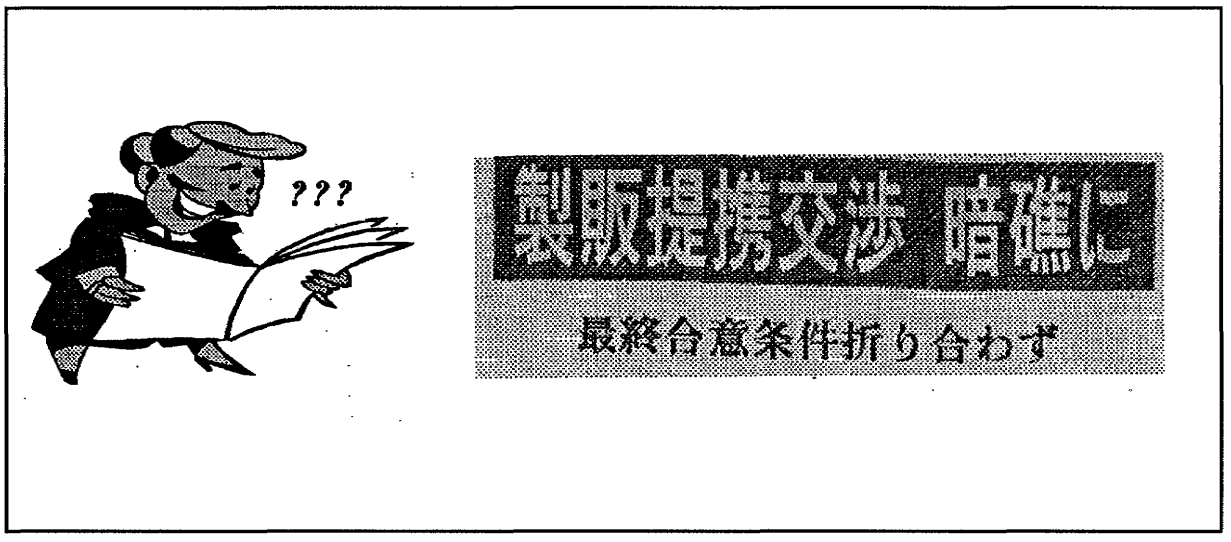


Easy Access to Japan Information from Japanese Newspapers

M. Klems
Datenbank-Informationsdienst, Bergisch-Gladbach

Welcome in the world of japanese information! Maybe you think it is today, in these modern times of telecommunication, easy to get japanese business and technology information. Try it and go to the next newspaper seller and buy a newspaper like "The Nikkei Financial Daily".

- the Newspaper is written in Japanese
- you dont speak the Japanese language
- you are not able to read the Newspapers from Japan!



The COMLINE News Service is montitoring a wide range of news on Japan's economy and major corporations. The news is edited into a compactly summarized and timely English language news service.

1. How does COMLINE News Service work?

- translates origin japanese newspaper articles into english articles
- all articles are coded for different categories
- customers get articles in their chosen category

2. The Advantages

- you dont have to translate japanese articles
- customers get deep information about japan business
- because of the time difference you get actual articles
- you dont have to organize incoming articles into categories
- you get the type of information that you need

The **COMLINE News Service** is providing the latest information on Japan's high-tech industries as economic data without delay in English. Keeping up-to-date on developments in your field and having timely access to information on your competitors is of great importance to ensure your company's future in today's fast changing business environment.

3. Features of the COMLINE News Service

- Daily, our editing staff is monitoring an then editing in English any news that might have an impact on the Japanese and foreign markets.
- The entire data is processed by native English speakers.

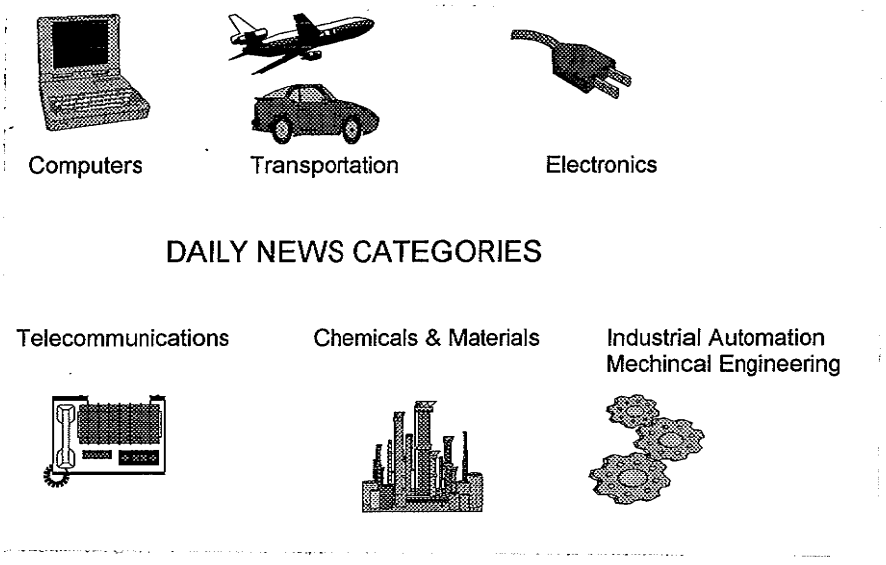
4. What can the COMLINE News Service offer you?

- No need to seek out articles of interest by one-by-one and pay often prohibitive translation fees.
- Instead of collecting data yourself, you reiceive processed value-added-information.
- You can conveniently monitor information put together from variety of sources such as newspapers, magazines, press releases etc. The indexing makes for easy follow-up research.
- Use articles not only to keep the non-Japanese management on top of issues affecting your business, but also if you need to report -back to your headquarters about the Japanese market.

5. COMLINE is providing the following three Kinds of Services:

■ **COMLINE Daily and Weekly News**

A news service on the latest developments in the Japanese economy and selected industries, on your desk daily by fax or weekly mail.



■ **COMLINE Industrial Reports**

A monthly news service on the latest developments in more narrowly defined industries and segments.

The following 21 categories are available as a monthly newsletter:	
Aerospace & Satelite Systems	Plastics & Fiber Technology
Automotive Industry	Telecommunications Services
Machine Tool Industry	Telecommunications Equipment
Factory Automation	Computer Hardware in Japan
Food Industry & Agricultural Issues	Energy-Related issues
Biotechnology	Microeletronics Technology
Environmental Technology	Image Processing Technology
New Materials	Opto-electronic Technology
Peripherals & Storage Media	Metallurgy
Software Developments	Pharmaceuticals & Medical Equipment
Ministry of international Trade and Industry & Ministry of Post and Telecommunication Monitor	Printed or on floppy disk

5. The Tokyo Financial Wire

Professionell editors monitor all the major economic and industrial newspapers in Japan from early morning on - every day. All important news is edited in English, and about 35 articles per day reach our clients by fax around 8 o'clock in the morning. The top management of most major financial institutions and securities companies is using the service.

Example: COMLINE-Article

Fuji Electric to Produce Discrete Semiconductors in Southeast Asia — **Title**

Fuji Electric Co., Ltd. <6504> has decided to undertake overseas production of discrete semiconductors and must now choose among sites in Singapore, Malaysia, Thailand, etc. for construction of a planned 5 billion yen factory. Assembly of mold transistors and other items could begin as early as the end of next year. The precise scale and other details of the factory have yet to be decided, but major efforts are to be madeto procure packages and other materials locally in order to hold down costs. Output is to be supplied to Japanese makers in ASEAN.

Ticker-Code

This will be the first time the company makes discrete semiconductors abroad, although it established Fuji Electric (Scotland) Ltd. 3 years ago in East Kilbride for local production of industrial equipment power transistor modules supplied to Europe. — **Text**

Contact: Tel: +81-3-3211-7111
Fax: +81-3-3215-8321 — **Adress**

Ref: Japan Industrial Journal, 09/28/94, p.8 — **Source**

7. SOURCE LIST

■ **Newspapers**

The Asahi Shimbun
The Nikkei Financial Daily
The Nikkei Sangyo Shimbun
The Dempa Shimbun
The Nihon Nogyo Shimbun
The Nihon Keizai Shimbun
Far Eastern Economic Review
The Nikkan Kogyo Shimbun
The Yakuji Nippo

The Japan Industrial Journal (The Nihon Kogyo Shimbun)
The Japan Chemical Daily (Kagaku Kogyo Nippo)

■ **Periodicals**

Japan M&A Reporter
M&A Japan
The Economist

■ **Specialized Association Journals**

Japan Cancer Association
Nephrology Association

■ **Government Publications & Reports**

Yuka Shoken Hokokusho (Annual Secruities Reports)
Kampo (Daily government newspaper)

■ **Journals of National Laboratories**

National Chemical Laboratory for Industry
Government Industrial Reserach Institute, Osaka
Government Industrial Research Institute, Nagoya
Government Industrial Research Institute, Kyushu
Government Industrial Research Institute, Shikoku
Government Industrial Research Institute, Tohoku
Government Industrial Development Laboratory, Hokaido
Electrotechnical Laboraty
National Aerospace Laboratory
National Research Institute for Metals
Institute of Physical and Chemical Research
National Space Development Agency of Japan
Japan Marine Science of Technology Center
Communication Research Laboratory

■ **Other References**

Press Releases
Direct Interviews
Conference Proceedings
Annual Reports to Shareholders

If you are interested in further information material or **14 day free trial service,** please contact our European sales agent (address below).

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Watching Eastern Europe through the Eyes of the Press: The International GRS Press Review

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Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) mbH, Köln

1. Introduction

With the fall of the Berlin Wall and the cessation of the Soviet Union a new field of intense activity opened up for GRS, and since that moment the topic of nuclear safety in the Central and East-European Countries (CEEC) and in the New Independent States (NIS) of the former Soviet Union has not ceased to be of interest.

In this context it is vital to know what is going on in those countries politically and economically as well as in the field of nuclear safety, which is one of the West's special concerns. Here, journalists are often the first to find out about current developments, and therefore it can be useful to follow the reports in the press. This is one of the reasons why GRS produces a daily press review.

2. The Advantages of a Press Review

Most people only manage to read one newspaper a day. Other people, like business managers and other decision-makers who need to know about up-to-date developments or public opinion, should read more in order to be well informed about what is going on in their specialist field. These people need a press review that comprises the selected articles from a representative range of daily and weekly newspapers.

One option for them is to turn to one of the newspaper-clippings services, but as those cannot really know exactly what their customers require they will probably provide them with a bundle of articles of which about half could have been ignored. For a press review to be really relevant to a particular company it needs to be produced in-house. The staff responsible for it will know best what is of most interest to their firm's management and can scan the papers through the eyes of the company.

Putting a daily press review together means that a balance must be struck between formal representation and meeting a certain deadline in order to be up to date. The GRS Press Review does just that: Every weekday morning at around 10:30 h it is distributed to the general managment, division heads, heads of department, and other interested staff. One copy is faxed directly to the Nuclear Safety Department at the Federal Ministry for the Environment

(BMU) in Bonn. In addition, officials at the Federal Ministry for Research and Technology, some national and international journalists as well as a few representatives from regional authorities and from industry complete the list of subscribers. The latter get their copies sent through the post and have it on their desks with a delay of only one day.

3. Producing the daily GRS Press Review

In the following, a typical morning of the GRS Press Review team is described. There are two staff members involved in the first stage.

Just after 7 o'clock the person in charge of the evaluation of newspaper articles collects the papers delivered to reception during the early hours as well as the latest news items faxed in by the German Press Agency "dpa". At 8 o'clock the national newspapers arriving through the post can be picked up. The papers are scanned for all sorts of articles concerning nuclear power, the nuclear-fuel cycle, reactor safety research, and other related topics. The articles are then cut out and glued on sheets carrying the GRS-logo - a very messy kind of work where soon the air will strongly smell of glue and and the person in charge ends up with blackened fingertips.

At GRS-IuD, in an office a couple of corridors away, another member of staff is fortunate to have a cleaner job. Here, the latest on-line technology is used to produce the second part of the GRS Press Review. It is provided by a search in the Reuters Textline database on Data-Star. Textline is produced by Reuters Ltd. London and contains reports of business and news events worldwide with special emphasis on both Eastern and Western Europe. It covers a variety of more than 250 newspapers and news services including 85 % of fulltext information, e.g. from Reuter News Service, BBC Monitoring Service, The Times, Le Monde, Agence Europe, Corriere Della Sera, and it is updated up to seven times a day. Articles from 17 languages are translated mainly into English but also into German and Italian.

Every morning an alert (previously SDI) is activated to retrieve specific news concerning safety aspects of nuclear power stations. In order to select the most recent articles, before starting the search itself we first "devide" the database into a piece of cake containing only news items that have been added since the day before. Thus up-to-date relevance is guaranteed and it also takes less session and connect time on the host to retrieve hits as it is not the whole database that is scanned but just a small part of it.

With the search strategy we make use of the subject indexing in Reuter Textline. The classification codes I15 and I1610109 cover Nuclear Fuel Production and Processing such as Nuclear Electricity Production. They are searched within the CC field which represents the Industry Code based on the UK Standard Industrial Classification with roughly 350 items. By

the use of this classification and the additional free text terms we make sure that all relevant articles for and about GRS are really found.

In the next step we exclude "Frankfurter Allgemeine Zeitung", "Handelsblatt", "Neue Zürcher Zeitung", "Süddeutsche Zeitung" and "Die Welt" by their source codes (SO) to avoid duplicates with the German newspapers that are evaluated manually.

One last step completes the search strategy. Here we try to filter out news items with military aspects of nuclear power in free text search. Although it takes quite a lot of time to explain this procedure as a whole we usually merely need a few minutes to execute it.

The number of hits retrieved is then downloaded in "medium" format delivering the application number (AN), title of the article (TI), source (SO), length (LE) and text (TX) of the documents, and is prepared for further refinement.

After disconnecting with the host the text stored in a simple ASCII file is loaded into an editor and the articles with little relevance to the safety of nuclear power stations like business and trade news are eliminated manually.

Also, duplicates within the number of hits that can result from different news services announcing the same information or by translations are checked and the appropriate documents - usually up to ten sheets of paper - remain.

Important to mention are the costs that Data-Star charges for Reuter Textline. They invoice session time (the time you are connected to the host), database time (the time you are working in the database) and any document you display on your screen (regardless of downloading) in addition to an annual fee of 80 SFr. To give an example, the annual charges are 16 SFr per hour on the host at a range of up to 60 hours commitment per year. These prices decrease with the increase of connect time per year. As to the database time in Reuter Textline you have to pay 2.02 SFr and every online full record is charged with 1.24 SFr on the basis of up to 60 hours annual connect time.

As soon as the relevant articles for the GRS Press Review are chosen they are loaded into our wordprocessing software with the GRS-logo style and printed out to be taken to the duplicating unit where at ten o'clock the two streams of the GRS Press Review flow together.

Here, the two parts are put together, photocopied, stapled and afterwards distributed to the recipients mentioned earlier. Finally, one copy is filed away and kept for future reference.

4. Further Processing of the on-line Reports

For those who do not even have enough time to read a daily press review GRS-IuD provides another service, sending out weekly summaries of the on-line reports specialising in certain topic areas, for example Nuclear Power and Nuclear Fuel Production and Processing in Eastern Europe.

For this purpose a slightly different search is again activated in Reuter Texline. Here the search strategy in the classification code looks like the one of the daily press review. It is then reduced to hits only concerning East-European countries with the label "EEURZ" in the country code field (CN). While "EEUR" stands for Eastern Europe, "Z" means that both articles dealing with East-European concerns as a whole and articles about every single country are retrieved.

The procedure of selection then follows the same pattern as described above. The only difference lies of course in the amount of documents sampled throughout one week; thus, in order to give a round outline of the situation and development in Eastern Europe, background reportings are taken into consideration to a higher extent.

This special summary is constantly evaluated and further processed by GRS to become a quarterly report giving a condensed survey of the events of the previous three months as they were reported by the press.

Not a lot of high-tec equipment is needed here. At GRS, the person in charge - who could be called the editor - simply sits down once a week and reads the English-language reports page by page, underlining the essential information and finally putting it back together in short German headlines. He or she will then type the item, complete with date and indication of the source, into a standard document stored on the word-processor. The document, which is structured in chapters dealing with the individual countries, is thus constantly updated until the end of the quarter when it is published in print. In the meantime, each provisional version of it can be sent to anyone interested at GRS or BMU via electronic mail, provided that they are connected to the network. In case the reader wants to refer back to the full text of the report he can order it from the editor who has a copy filed away for such purposes.

It is the editor's aim to present a survey of the developments in the East-European countries that is as representative as possible. The quarterly reports and the PC-version are to provide the reader with concise information about the trends, changes and developments going on. They are meant to help him putting the current situation into the right perspective and assessing individual activities from the background of the overall situation.

5. Outlook

With its approx. 550 staff GRS is a relatively small enterprise, and the way the daily press review is currently produced appears to be sufficient for a company of such a size. The actual amount of time required every day is about 3 $^1/_2$ hours, most of it involving only one member of staff. However, new technologies are just around the corner, and maybe in the not too distant future GRS will follow the path of larger companies who are already using computer software that enables them to process the newspaper articles with the help of scanners, PCs and laser printers and afterwards archive them electronically.

Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) mbH

W, 16.9.

Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) mbH

DIE ANDERE MEINUNG

Die Luft wird dicker werden!

Euphorische Ausstiegsdiskussionen können die Kernenergie nicht ersetzen

Von HORST NIGGEMEIER

Mit einem geradezu an Tollkühnheit erinnernden Wurf hat die niedersächsische Umweltministerin Griefahn angekündigt, ab 1996 die Kraftwerke, Obrigheim, Stade, Würgassen und die zwei Biblis-Blöcke A mit zusammen 4203 MW Leistung stillegen zu wollen. Der Ersatz von jährlich 30 Milliarden Kilowattstunden aus diesen Kernkraftwerken durch Strom aus Stein- oder Braunkohle würde die Atmosphäre Jahr für Jahr mit einer CO_2-Menge von etwa 30 Millionen Tonnen belasten.

Kernenergie bleibt also nach wie vor ein Thema. Inzwischen weiß jedoch die interessierte deutsche Öffentlichkeit: Eine auf den Ausstieg hin orientierte Kernenergiepolitik [...]

[...] nes demokratischen Rechtsstaates nicht mit den Handelsusancen eines orientalischen Basars vergleichbar sind. Behördenwillkür ist ohnehin von Übel, und sie wird auch durch ideologisch verbrämte Einfärbung nicht akzeptabler.

Eine sichere und kostengünstige Energieversorgung in einem Industriestaat sollte nicht zu einer politischen Spielwiese denaturiert werden. Auch in Deutschland dek- [...]

[...] mit 78 Prozent, Belgien 59 Prozent, Slowakei 54 Prozent, Ungarn und Slowenien je 43 Prozent und Schweden 42 Prozent.

Die deutschen Kernkraftwerke sind also auf internationaler Ebene keine energietechnische Besonderheit. So falsch sieht es der Veba-Chef Ulrich Hartmann also nicht, wenn er noch im Mai '94 in Düsseldorf erklärte: „Das politische Versprechen einer möglichst raschen kernenergiefreien Zukunft wäre selbst dann nicht erfüllbar, wenn man es in ein Gesetz fassen wollte." Daß übrigens bei einer vorzeitigen Abschaltung aller Kernkraftwerke für den Industriestandort Deutschland zusätzliche Kosten von mindestens 350 Milliarden Mark entstehen würden, findet kaum [...]

[...] forderungen rechtsstaatlich[...] Handelns genügten. Bei den g[...]richtlichen Auseinandersetzung[...] hat sich herausgestellt, daß Recht[...]sicherheit und Vertrauensschu[...] für die Kernkraftwerk-Betreib[...] eher die Ausnahme denn die Reg[...] sind. Rechtlich dubiose Verhind[...]rungseskapaden aus zuständig[...] Landesministerien, wie z. B. d[...] Joschka Fischer in Wiesbaden i[...] Falle der MOX-Brennelement[...] Anlage Hanau, sind dabei akte[...]

FAZ, 16.9.

Töpfer erteilt Griefahn atomrechtliche Weisung

BONN, 15. September (Reuter). Bundesumweltminister Töpfer (CDU) hat die niedersächsische Umweltministerin Griefahn (SPD) am Donnerstag angewiesen, die Genehmigung für den Weiterbau der Pilotkonditionierungsanlage (PKA) in Gorleben sofort vollziehen zu lassen. Er werde es nicht länger hinnehmen, daß das Land die Fertigstellung der Verarbeitungsanlage für hochradioaktiven Atommüll verzögere, sagte Töpfer in Bonn. Griefahn nannte die Weisung ein Wahlkampfmanöver. Bisher habe noch niemand gegen die zweite Teilerrichtungsgenehmigung für das Projekt geklagt, so daß ohnehin gebaut werden könne. Niedersachsen hatte den Sofortvollzug mit der Begründung verweigert, den Bürgern solle das Recht genommen werden, den Weiterbau der PKA gerichtlich überprüfen zu lassen. Töpfer verteidigte die Weisung mit dem Hinweis, die PKA sei für weitere technische Entwicklungen bei der Atommüllagerung notwendig.

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WAZ, 16.9.

Töpfer erzwingt Weiterbau in Gorleben

Monika Griefahn

Klaus Töpfer

BONN (ap) Bundesumweltminister Töpfer hat am Donnerstag in Bonn weitere Schritte zum Bau des Atomendlagers Gorleben erzwungen.

Wie das Umweltministerium mitteilte, gab Töpfer seiner niedersächsischen Amtskollegin Griefahn die „bundesaufsichtliche Weisung", bis zum 14. Oktober den sofortigen Vollzug der zweiten Teilerrichtungsgenehmigung für die „Pilotkonditionierungsanlage" anzuordnen.

Töpfer hielt Griefahn vor, den Bau der Anlage aus politischen Gründen bereits seit einem Jahr zu verzögern. „Die Fertigstellung der Anlage ist eine wichtige Voraussetzung für die technischen Entwicklungsschritte zur direkten Endlagerung", sagte der Bundesumweltminister in Bonn.

KR, 16.9.

Atomlager Gorleben

Töpfer erzwingt Weiterbau

Bonn. (dpa/ap) Umweltminister Klaus Töpfer (CDU) hat seine niedersächsische Amtskollegin Monika Griefahn (SPD) angewiesen, bis zum 14. Oktober den Sofortvollzug für den Weiterbau des Atomendlagers Gorleben anzuordnen. Für den Weiterbau fehlt eine Baugenehmigung. In dem geplanten Teil der Anlage soll die Verpackung von Atommüll erprobt werden.

Griefahn hat bislang den Sofortvollzug der Baugenehmigung abgelehnt, weil damit den Menschen in der Region das Recht genommen werde, die Baugenehmigung gerichtlich prüfen zu lassen. Im Falle einer Klage müßten die Bauarbeiten ruhen. Bei Sofortvollzug könnten die [...]

SZ, 16.9.

Umweltminister Fischer wird nicht in Regreß genommen

Wiesbaden (AP) – Der hessische Landtag hat es abgelehnt, Umweltminister Joschka Fischer (Bündnis 90/Die Grünen) für Schadenersatzforderungen der Atomindustrie persönlich haftbar zu machen. Den Antrag der CDU-Fraktion lehnte das Parlament mit der Stimmenmehrheit von SPD und Grünen ab. Derzeit sind mehrere Schadenersatzklagen der Firmen Siemens und RWE gegen das Land Hessen anhängig. Dabei beklagen die Unternehmen überwiegend angebliche Behinderungen beim Bau des Brennelementewerks in Hanau und des Atomkraftwerks Biblis A durch die Landesbehörden. Die Union warf Fischer vor, dem hessischen Steuerzahler eine „Erblast" von möglicherweise mehr als einer Milliarde Mark zu hinterlassen. Statt Schaden vom Land Hessen zu wenden, habe er durch seinen „ausstiegsorientierten Atomkurs enorme finanzielle Forderungen an das Land heraufbeschworen".

HB, 16.9.

Regreßforderung an Fischer abgelehnt

ap WIESBADEN. Der hessische Landtag hat es abgelehnt, Umweltminister Joschka Fischer für Schadenersatzforderungen der Atomindustrie persönlich haftbar zu machen. Einen entsprechenden Antrag der CDU-Fraktion lehnte das Parlament am Donnerstag mit der Stimmenmehrheit von SPD und Grünen ab. Die Union warf Fischer vor, dem hessischen Steuerzahler eine „Erblast" von möglicherweise über einer Milliarde DM zu hinterlassen.

VDI, 16.9.

Fragen nach den Atommüllmengen

[...]

Dipl.-Ing. Ernst Flöge, Gerlingen

Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) mbH

AN 409162968-DPX517 940917.

TI RUSSIA: Russia plans to build floating nuclear plants.
(REUTR) (REUTEE) (LBY).

SO Reuter-News-Service, REUTR; Reuter-News-Service-Ussr-And-East-Europe,
REUTEE; Reuter-General-News, LBY; 16/09/94.

LE 2,160 Characters, approximately 1 PC screen.

TX MOSCOW, Sept 16 (Reuter) - Russia plans to build four small floating nuclear power plants in the next few years to supply electricity to distant corners of Siberia, nuclear industry sources said on Friday. "This will save us the expense of shipping coal or oil at high costs to these remote areas," Georgy Kaurov, spokesman for the atomic energy ministry, said. "The economic advantages are fabulous," he added. The four stations, which Western experts believe will be the first of their kind, are to be equipped with two KLT-40 type reactors, already used on [...] submarines. Kaurov said the small-capacity plants [...] to another depending on each region's needs. [...] nuclear watchdog body Gosatomnadzor said the [...] one fixed point. "Before launching this project, the [...] has to submit plans to us for expertise," a Gosa[...] asked not to be identified, said. Another official, S[...] nuclear industry group Rosenergoatom, said the [...] five years, provided local authorities agreed a[...] available. "Once these two conditions are met, we[...] project," Yermakov said. He estimated the proj[...] roubles but declined to give a specific figure.

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Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) mbH

Presseschau
16.9.94
Kernenergie und Umwelt

Verwendete Abkürzungen:

Bundesanzeiger	BAZ	Handelsblatt	HB
Der Spiegel	SPIEGEL	Kölner Stadt-Anzeiger	STA
Der Tagesspiegel	TS	Kölnische Rundschau	KR
Die Tageszeitung	TAZ	Neue Zürcher Zeitung	NZZ
Die Welt	W	Süddeutsche Zeitung	SZ
Die Zeit	ZEIT	VDI-Nachrichten	VDI
Frankfurter Allgemeine Zeitung	FAZ	Westdeutsche Allgemeine Zeitung	WAZ
Frankfurter Rundschau	FR		

ZDF: Ukraine verlangt mehr Geld für Tschernobyl-Nachrüstung =

Mainz (dpa) - Gegenüber Europaabgeordneten und Wissenschaftlern hat die Leitung des ukrainischen Atomkraftwerks Tschernobyl nach einem ZDF-Bericht mehr Geld verlangt, um den Reaktor nachzurüsten. Die Stillegung komme dagegen nicht in Frage, sagte Generaldirektor Sergeij Paraschin dem ZDF-Wirtschaftsmagazin WISO. Der Beitrag wird am Donnerstag abend ausgestrahlt.

Das ZDF hatte die europäische Delegation in den vergangenen Tagen bei einem Besuch in der Ukraine begleitet und nach eigenen Angaben im Unglücksreaktor gefilmt. Dort sei die Situation nach wie vor dramatisch, berichtete der Sender. Durch das Dach dringe Wasser, das radioaktive Material sei nicht unter Kontrolle, strahlende Trümmer im Erdreich verseuchten das Grundwasser. Die im Juni angebotenen 200 Millionen Dollar Hilfe aus dem Westen reiche bei weitem nicht aus, um das zerstörte Kraftwerk abzusichern.

Generaldirektor Paraschin kritisierte nach ZDF-Angaben vor allem, daß der Westen die Ukraine als Bittsteller behandele. Das Kraftwerk brauche keine Geschenke, so Paraschin, sondern Kredite, um das Sicherheitsniveau zu verbessern.

dpa sh kh
151603 Sep 94

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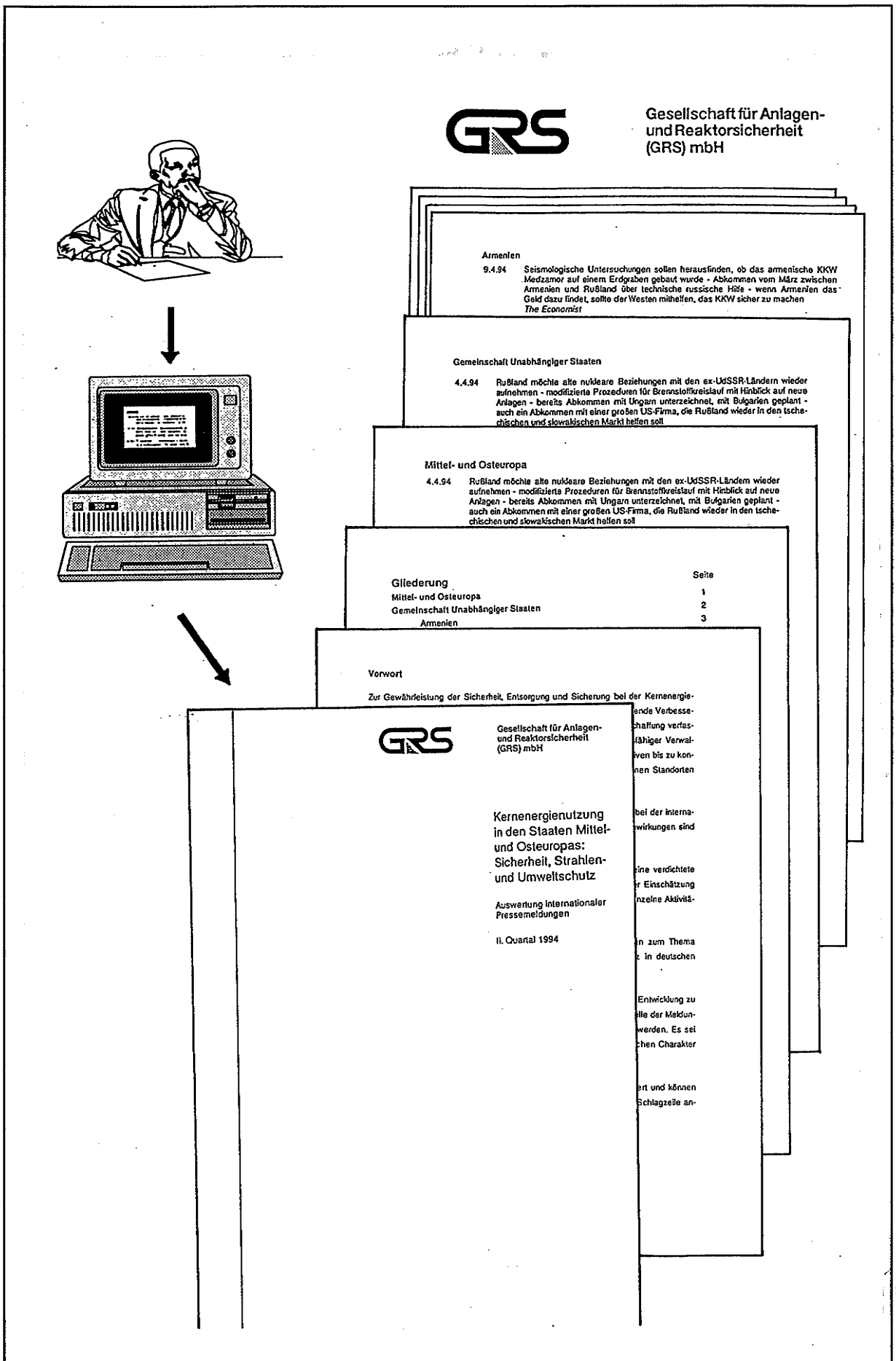
Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) mbH
Armenien
9.4.94 Seismologische Untersuchungen sollen herausfinden, ob das armenische KKW Medzamor auf einem Erdgraben gebaut wurde - Abkommen vom März zwischen Armenien und Rußland über technische russische Hilfe - wenn Armenien das Geld dazu findet, sollte der Westen mithelfen, das KKW sicher zu machen
The Economist
Gemeinschaft Unabhängiger Staaten
4.4.94 Rußland möchte alte nukleare Beziehungen mit den ex-UdSSR-Ländern wieder aufnehmen - modifizierte Prozeduren für Brennstoffkreislauf mit Hinblick auf neue Anlagen - bereits Abkommen mit Ungarn unterzeichnet, mit Bulgarien geplant - auch ein Abkommen mit einer großen US-Firma, die Rußland wieder in den tschechischen und slowakischen Markt helfen soll
Mittel- und Osteuropa
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Gliederung
Seite
Mittel- und Osteuropa 1
Gemeinschaft Unabhängiger Staaten 2
Armenien 3
Vorwort
Zur Gewährleistung der Sicherheit, Entsorgung und Sicherung bei der Kernenergie-
Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) mbH
Kernenergienutzung in den Staaten Mittel- und Osteuropas: Sicherheit, Strahlen- und Umweltschutz
Auswertung internationaler Pressemeldungen
II. Quartal 1994

Database Norms and Technical Rules

L. Hertel
Documentation Departement of the German Information Centre for Technical Rules within DIN, the German Institute for Standardization, Berlin

1. DITR Database - Information about Standards and Technical Rules

We maintain a bibliographical database of the most important collections of standards, other technical rules and even legal provisions and administrative regulations which contain technical specifications. Bibliographical database: that means that there are not the texts of the documents themselves which are stored, but the most important reference data of the standards and technical rules concerned. Nevertheless, at the end of my lecture I will tell you something about our efforts to create fulltext information products.

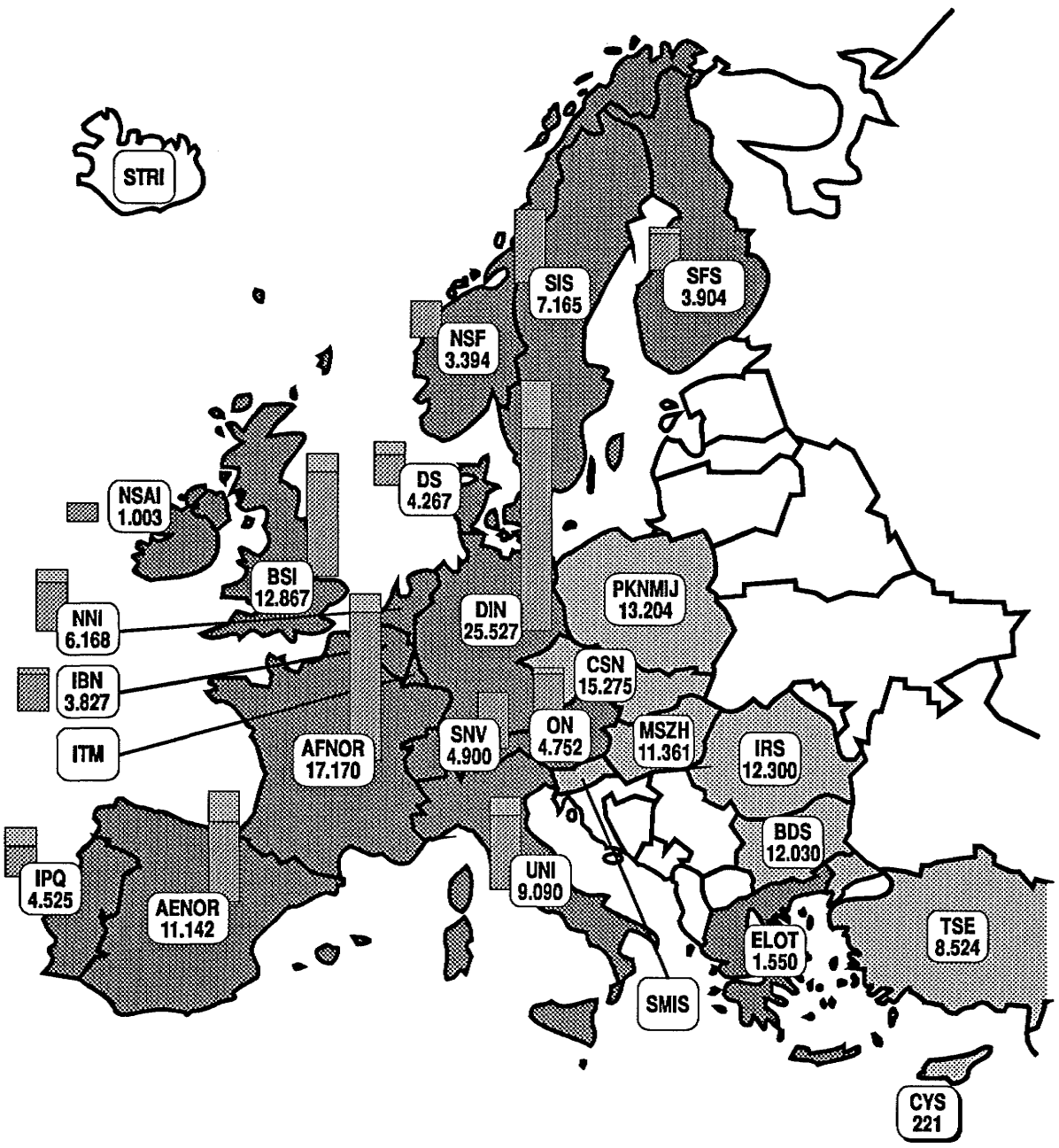
2. Europeanization of Standards and Standards Information

Now in short the main lines of the development of standards and standards information as a history of "Europeanization". In 1979, with support of the German Federal Government the German Information Centre for Technical Rules was set up within DIN. In 1981 it became GATT-enquiry point. In the agreement on the elimination of technical barriers to trade, the Federal Republic of Germany also undertook to maintain an enquiry point providing information on technical regulations and standards. This task has been officially entrusted to DITR. In 1989 DITR was appointed by the EC-Commission as one of its Centres for European Business information.

This is the only case in Europe that a standard information centre has been appointed as an EURO-Info-Centre. All activities in Europe - we occupied, as you see, the term "Europe" when we were talking about Western Europe - were fixed to the date 1993-01-01 as the realization of the internal European Market. The EC Council stressed several times its opinion that standardization represents an important contribution to the free trade in industrial goods. The way to reach a so called "common technical environment" was to set up a collection of European harmonized standards. But of course it was not possible to complete it until the deadline in 1993. Although there are already 4500 European Standards and Draft Standards available, there still exist more than 120.000 valid national standards in the member countries of CEN/CENELEC, the European Organization for Standards.

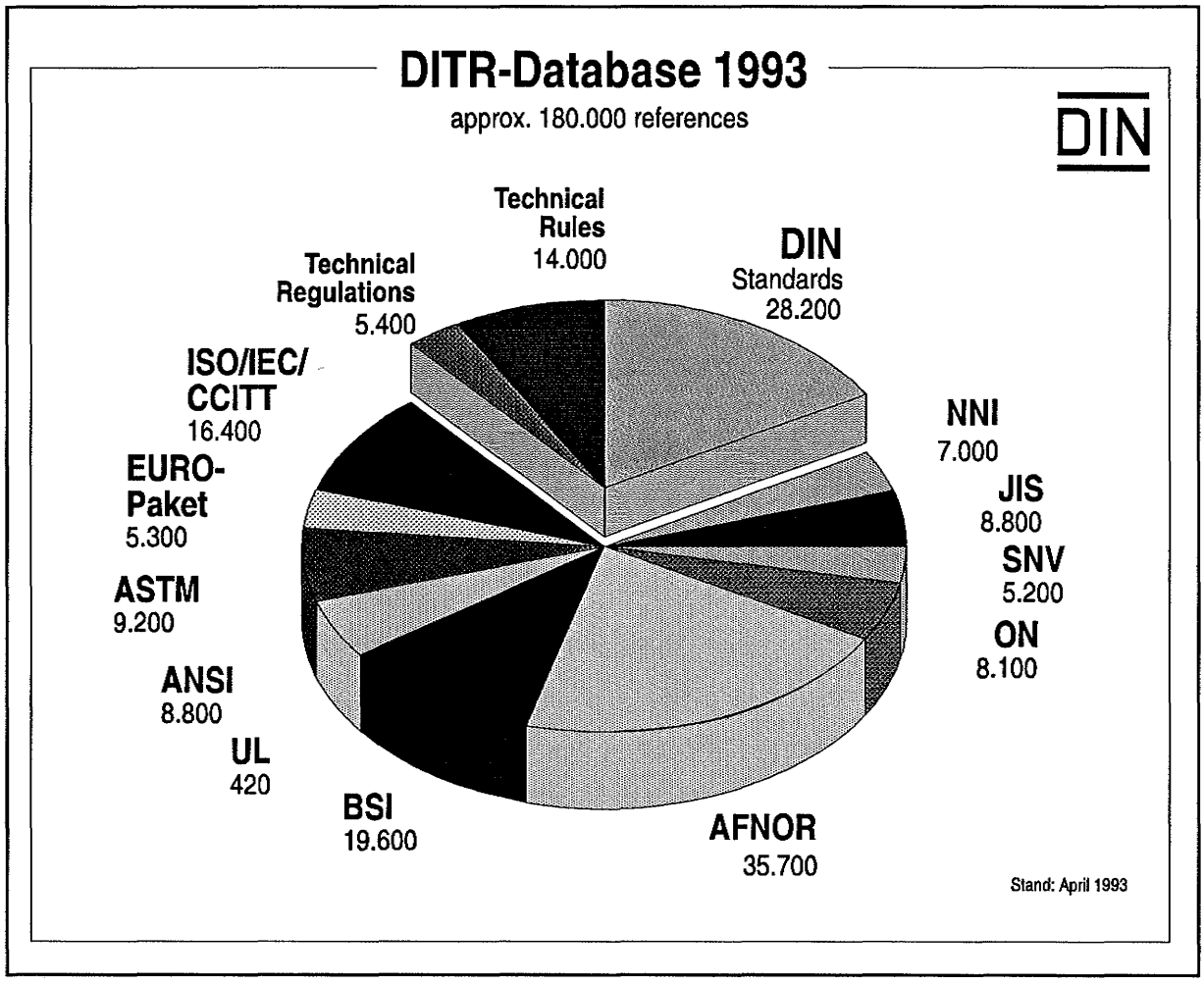
Normen und Normenentwürfe aller CEN/CENELEC-Länder

insgesamt ca. 120.000 Dokumente
darin ca. 4.500 EN/prEN-Normen



Thus, in the foreseeable future at least, different standards will still apply in many fields of technology in the member states in Europe. That means that there will be a great demand for information that permits comparisons to be made between the national standards collections existing within Europe.
Standardization in Europe is changing, and with it the needs of companies with respect to standards information.

DITR follows this development by forcing its efforts to an "Europeanization" of its information services.



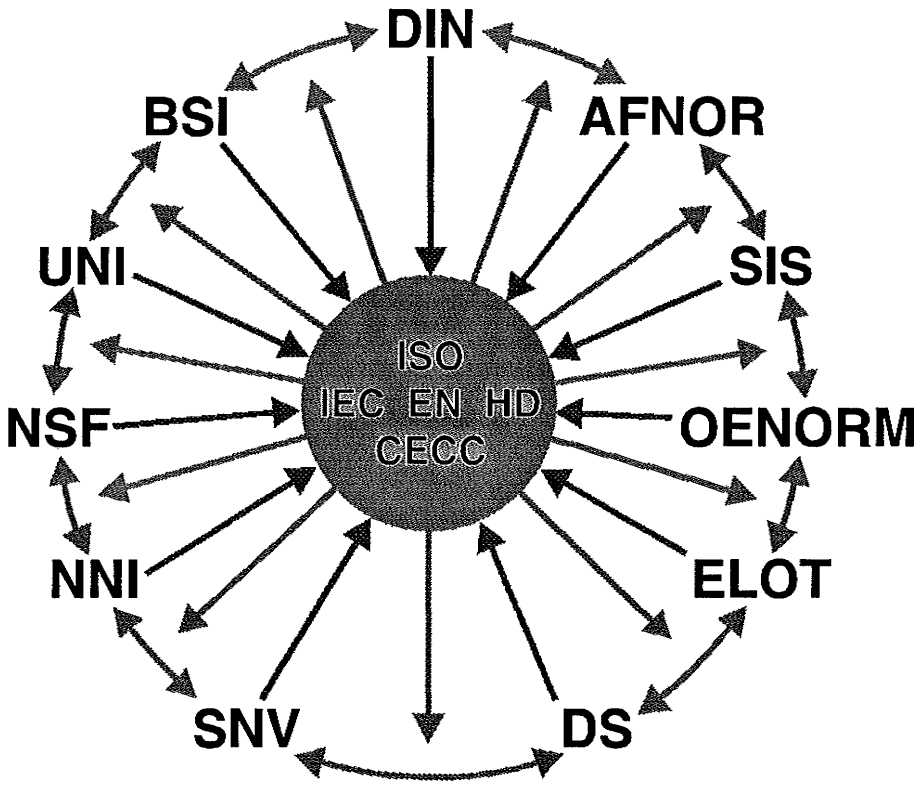
3. Content of DITR-Database

On this figure you see the development that happened with the DITR database. From the original database dealing only with the technical rules of Germany, an information system has been developed, that not only contents German but also European, international and even American and Japanese standards.

DITR Deutsches Informationszentrum für technische Regeln DIN

EURO-Konkordanz

Schlüssel zur Konkordanz sind internationale europäische Normen



4. Content of a DITR-Data Record

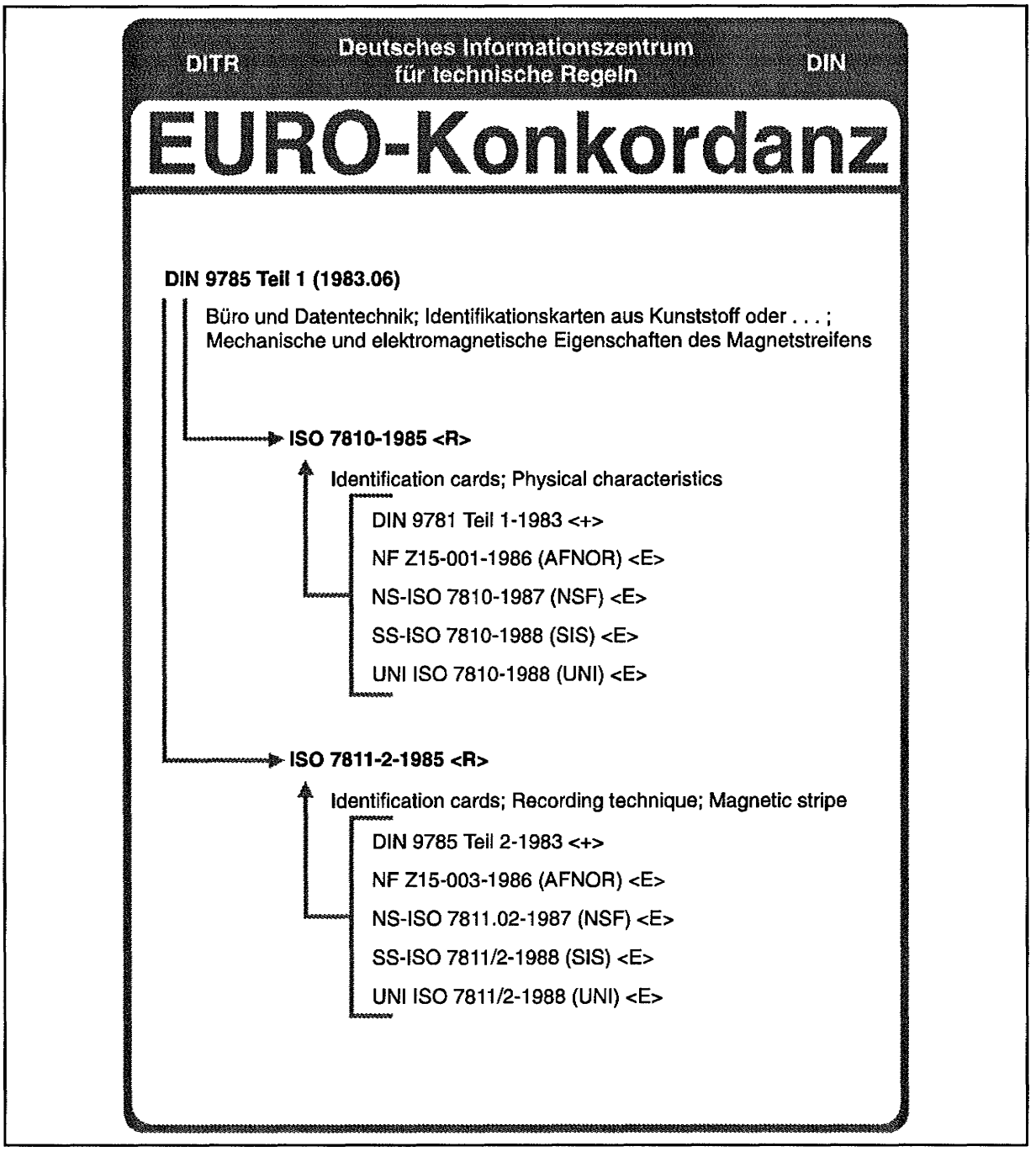
But, remember: it is a bibliographical database. For each document a so-called data record is prepared which contains up to 40 data fields:

The main fields are

- Document identifier (Document-Number)
- Status (ST; Draft; TR; RV -legal provision)
- Publication date
- Title
  - german/english/french
  - original/english (in future PERINORM)
- Objection deadline
- Replaces
- Date of withdrawal
- Replaced by
- Identical with
- Cross references
- Issuing body
- Author
- Amended by (Geändert durch)
- Supplemented by
- As amended by/on (Änderung von)
- Classification ICS
- Descriptors - english/german
- Abstracts - english/german
- and some other more I don't will mention now.

5. Cross-References: EURO-Concordances

As I mentioned already the harmonization of all existing collections of standards all over Europe will be neither possible nor wishable. Besides the different languages there are also different cultural, social and technical conditions in Europe which nobody should wish to be equalized.



Hence, there is a special demand for comparisons between the existing national standards in Europe. On behalf of the EC-Commission CEN has started to collect detailed information from the participating standardization bodies about the relations between national standards and international ISO/IEC standards.

CEN members are obliged to give information *which* of their standards are equivalent to which international standard. They also have to inform about the degree of equivalence according to a special ISO-system.

Using this data DITR compiled a Comparativ Index of national standards in Europe, the Euro-collections.

The figure illustrates the cross-reference principle of the EURO-collections DIN 9785-1 and ISO 7810 and ISO 7811-2. (Be careful in using foreign-language-titles-comparisons or reference only to ISO/IEC not i.e. DIN BSI ...).

6. Information Services of DITR

Now I would like to provide a general overview of the consultation and information services offered by DITR.

6.1 Printed services

- DIN Catalogue of Technical Rules, 3 parts:
  - national; international and selected other standards collections;
  - Translations annually
- Cumulative Supplement to the DIN Catalogue (monthly)
- gazette of new standards in the official DIN journal (monthly)
- EURO-Concordances / two volumes (the mentioned Euro collections)
- Basic-Index, the database vocabulary descriptors german/english

6.2 Electronic services

- Magnetic tapes
- Cartridges
- Disks

The data thus supplied from the DITR-database enable the user to create an individual in-house database of technical rules. Customer data can be integrated in the data from DITR in order to generate information systems for the special demand of the organization concerned.

6.3 CD-ROM PERINORM

This stores the bibliographical data

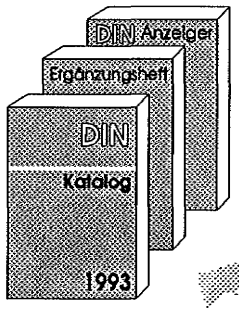
- of all valid standards and draft standards of D, UK, F, A, CH, NL, B
- of all European and international Standards, including ISO, IEC, CEN, CENELEC
- of all other technical rules, legal provisions and administrative regulations of technical relevance which are valid in Germany, including EC-Directives
- of selected American standards as ANSI, ASTM, UL, IEEE.

PERINORM is a trilingual database which the user can access optionally in English, French or German. It is updated monthly.

DIN

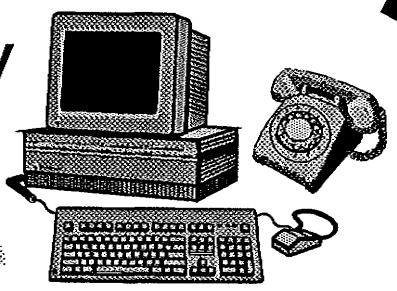
DITR

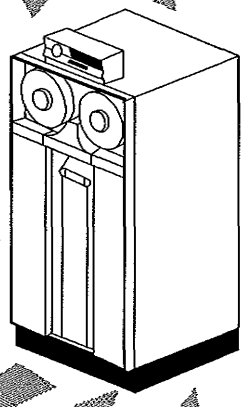
INFORMATION SERVICES

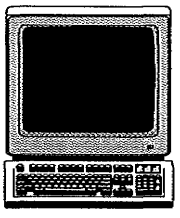


Printed Services

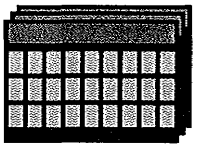
Enquiry Point



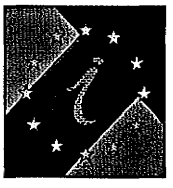




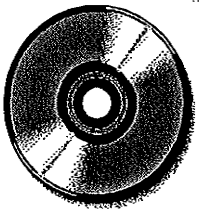
Online Access



Technical Legislation on Microfilm

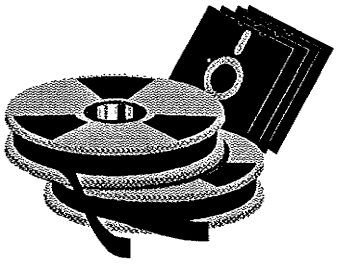


EURO-Info Centre



CD-ROM

PERINORM



Magnetic tape and Disk Services

Norm Manager

6.4 NormManager

It is an independent system for standards management which can be supplied with an interface to PERINORM

- to keep standards collections up-to-date
- to make shure that employers use the most recent edition of a document QM (Quality Management)
- to automate and control ordering

6.5 Fulltext Service Technical Legislation on Microfiche

It is a complete collection of the original texts of legal provisions and administrative regulations with technical relevance. There are the documents of the

- German Federal Government
- Lander within the Federal Republic
- Council and Commission of the European Community (ca. 950 EC-Directives)

The main subjects are:

- Construction: materials and buildings
- Civil engineering
- Environment and health protection, that includes
- Radiation protection
- Safety of machinery; occupational safety
- Energy engineering
- Handling and transport of dangerous goods
- Installations requiring supervision (in the sence of surveillance)
- Food technology

Now, Ladies and Gentlemen,

I hope I could give you some useful information about our database concerning information on standards and technical regulations all over Europe.

Thank you!

Umwelt und Umweltschutz - Problemlösungen durch Wirtschaftsdatenbanken

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1. Wirtschaftsdatenbanken

1.1 Presse

In den letzten Jahren ist die Anzahl der Meldungen, Kommentare und Reportagen zu den Bereichen "Umweltschutz" und "Umwelttechnik" in den Zeitungen stark gestiegen: Umwelt als Thema ist sowohl in wirtschaftlicher als auch in (gesellschafts)politischer und technologischer Hinsicht zu einem Schwerpunkt der Berichterstattung geworden. Dementsprechend ist es möglich, zu fast jedem Aspekt der Umweltproblematik Informationen in den deutschen Presse-Hinweis- und Presse-Volltextdatenbanken zu finden.

1.2 Unternehmen

Unternehmensinformationen findet man - außer in Zeitungen und Zeit-schriften - vor allem in Datenbanken, die Unternehmensprofile enthalten. Dies sind Adreßangaben, Informationen zur Tätigkeit des Unternehmens, zum Gründungsjahr und Handelsregistereintrag; häufig werden Namen aus dem Management aufgeführt, Angaben zu Eigentümern, Niederlassungen und Beteiligungen des Unternehmens sowie Umsatz-, Kapital- und Beschäftigtenzahlen.

Diese Profile werden durch Branchencodes ergänzt, die die gezielte Suche nach Unternehmen, die in einer bestimmten Branche tätig sind bzw. bestimmte Produkte produzieren - zum Beispiel in den Branchen Energietechnik, Entsorgung oder chemische Industrie - ermöglichen.

1.3 Märkte und Produkte

Während Zeitungen und Zeitschriften die aktuellsten Informationen zu den diversen Industriezweigen der Umwelttechnik bieten, findet man umfassendere Gesamtdarstellungen der Marktsituation zum Beispiel in Marktstudien und Marktberichten bzw. in Markt- und Produktdatenbanken. Neben Informationen zu Umsätzen, Verkaufszahlen und Struktur des Marktes enthalten diese auch Angaben zu den wichtigsten Unternehmen und Marken, zu Marketingstrategien und neuen Technologien sowie Prognosen zur weiteren Entwicklung des Marktes.

1.4 Wirtschaftswissen (Betriebswirtschaftslehre, Volkswirtschaftslehre, Soziologie, Psycholgie)

Wenn man sich mit der Umweltthematik auseinandersetzt, genügen "harte Fakten" - wie beispielsweise Informationen zu Unternehmen und Gesetzgebung - natürlich nicht, sondern diese Informationen müssen für die eigene Produktion, Marketingstrategie und Betriebsorganisation umgesetzt werden. Überlegungen hierzu, Lösungsvorschläge für Probleme, die sich in diesem Zusammenhang dem Management stellen sowie Fallbeispiele bieten vor allem in wirtschaftswissenschaftlichen und sozialwissenschaftlichen Zeitschriften erschienene Aufsätze.

Hinweise auf diese Artikel, häufig ergänzt durch eine kurze Zusammenfassung des Inhalts, findet man in bibliographischen Datenbanken. Die Zuordnung von eindeutigen Schlagworten zu diesen Aufsätzen ermöglicht eine gezielte Recherche nach der gewünschten Literatur.

2. Umweltthematik in der Presse

2.1 Frankfurter Allgemeine Zeitung (FAZ)

Volltext der Frankfurter Allgemeinen Zeitung, überregionale Ausgabe. Enthalten sind neben den Artikeln aus den Ressorts Politik, Wirtschaft, Sport und Feuilleton die Sonderseiten Technik und Motor, Natur und Wissenschaft, Reiseblatt, Kunstmarkt, Immobilienmarkt, Beruf und Chance.

- **Erschließung:** Unternehmensname, Personenname, Ländercode, SIC-Branchencode, FAZ-Facetten
  - Informationen zu neuen Produkten und Technologien können insbesondere in den Sonderseiten "Natur und Wissenschaft" bzw. "Technik und Motor" gefunden werden.
    z.B. Recherche nach im Teil Technik und Motor erschienen Artikeln zur Branche "Entsorgungsdienste" [technik.ko und s495$.sc].
  - Unternehmensinformationen sind v. a. im Ressort Wirtschaft enthalten.
    z.B. Recherche nach Meldungen zu Unternehmen, die in der Branche "Umwelttechnische Industrie" tätig sind [s9836.sc und co.in].
  - Brancheninformationen sind ebenfalls hauptsächlich im Ressort Wirtschaft enthalten.
    z.B. Recherche nach Artikeln zur Branche "Umwelttechnische Industrie" [s9836 und b.sc].
  - Informationen zur Gesetzgebung und zu politischen Entwicklungen findet man in den Ressorts Politik bzw. Wirtschaft
    z.B. Recherche nach Gesetzgebung, Skandalen und Prozessen in der Branche "Entsorgungsdienste" [s495$ with anschuldigungen.sc].

2.2 tageszeitung (TAZ)

Die tageszeitung, Berlin, tagesaktuell im Volltext. Informationen zu einzelnen Aspekten der Umweltproblematik können über Schlagworte selektiert werden.

- **Erschließung:** Unternehmensname, Personenname, Schlagworte
  z.B. Recherche nach Informationen zu Unternehmen, die im Bereich "Recycling" tätig sind [(recycling und wirtschaft).ct und co.in].
  z.B. Recherche nach Gesetzgebung und Prozessen im Bereich "Müll und Abfall" [(abfall und justiz).ct].

2.3 Wirtschaftspresseindex (FITT)

Bibliographische Hinweise zu Wirtschaftsinformationen in deutschsprachigen Zeitungen mit einer kurzen Zusammenfassung des Artikelinhaltes. Unter anderem werden das Handelsblatt, die Neue Zürcher Zeitung, die Wirtschaft und der Standard ausgewertet. Informationen zu einzelnen Aspekten der Umweltproblematik können über SIC-Code und Eventcode selektiert werden. Erschließung: Unternehmensname, Ländercode, SIC-Branchencode, Eventcode

- z.B. Recherche nach Artikeln zum Energieverbrauch in Deutschland [e47$.cs und c4wge.cn].

2.4 Globalbase (EBUS)

Zusammenfassungen von Presseberichten über wirtschaftlich interessante Themen aus internationalen Tageszeitungen und Zeitschriften.

- **Erschließung:** Unternehmensname, Produktmarke, Personenname, Ländercode, SIC-Branchencode, Eventcode
  z.B. Recherche zum Thema "Recycling in den Niederlanden" [recycling.ec und netherlands.cn].

2.5 Chemical Business Newsbase (CBNB)

Bibliographische Hinweise mit Kurzfassungen der Artikel zur chemischen Industrie. Es werden Zeitungen, Zeitschriften, Pressemeldungen, Marktstudien und Unternehmensberichte ausgewertet.

- **Erschließung:** Unternehmensname, Produktmarke, SIC-Branchencode, Schlagworte
  z.B. Recherche zur Abfallbeseitigung in der Mineralölindustrie [(waste und disposal).bt und petrochemical.br].

2.6 Umedia - Umweltberichterstattung (IWUM)

Bibliographische Hinweise mit Zusammenfassungen von Artikeln zum Thema "Umwelt".

- **Erschließung:** Schlagworte
  z.B. Recherche zum Thema "Solarenergie" [(solar$ und energie or alternativenergie).ct]

3. Informationen zu im Bereich Umweltschutz tätigen Unternehmen

3.1 Creditreform Unternehmen (CREFO)

Profile von im Handelsregister eingetragenen deutschen Unternehmen mit Angaben zu Geschäftszweck und Aktivitäten, Management, Umsatz und Beschäftigten.

- **Erschließung:** Systematik der Wirtschaftszweige
  z.B. Recherche nach Unternehmen im Raum Hamburg, die im Bereich "Abfallbeseitigung" tätig sind: [abfall.wz und hamburg.lo]

3.2 Umwelttechnik (UTECH)

Datenbankversion des Seibt-Bezugsquellennachweises für Umwelttechnik. Enthalten sind Adresse und Produkte von im Umweltschutz und in der Umwelttechnik tätigen Unternehmen.

- **Erschließung:** durch detaillierte Produktbezeichnungen
  z.B. Recherche nach Produzenten von Abfallpreßanlagen [abfallpress$]

3.3 Umweltschutz-Problemlösungen und Systemansätze (UMPLUS)

Inserate von Unternehmen, die in den Bereichen Umwelttechnik und Umwelt-schutz tätig sind, sei es als Produzent, als Ingenieurbüro, Entsorgungs-unternehmen oder als Unternehmensberater. Im Text werden das Unternehmen und seine Dienstleistungen bzw. Produkte vorgestellt.

- **Erschließung:** Schlagworte, Stoffkatalog
  z.B. Recherche nach Unternehmen, die sich mit der Sanierung von kontaminierten Böden beschäftigen [altlast$ und boden.uc]

4. Markt- und Produktinformationen zum Bereich Umweltschutz

4.1 Frost & Sullivan Market Reports (FSMR)

Marktstudien zu allen Bereichen der Industrie von Frost & Sullivan im Volltext. Die Datenbank umfaßt Marktprognosen und -analysen, die nach Produktkategorien, Ländermärkten und Endanwendern unterteilt sind.

- z.B. Recherche nach allen Marktstudien, die sich mit dem Bereich "Umwelt" beschäftigen [environ$.cc]

4.2 BfAI - Märkte im Ausland (BFAM)s

Volltexte aus den "Nachrichten für Außenhandel" der Bundesstelle für Außenhandelsinformation, Köln. Die Artikel enthalten detaillierte Analysen zu ausländischen Märkten sowie zur politischen und wirtschaft-lichen Entwicklung im Ausland. Zum Bereich Umweltschutz/Umwelttechnik können insbesondere Marktberichte und Informationen zur Gesetzgebung gefunden werden.

- **Erschließung:** Ländercode, SIC-Branchencode
  z.B. Recherche zum Markt "Abfallbeseitigung" in Frankreich [4953$.sc und frankreich.cn]

4.3 Deloitte & Touche Europe Services (DTES)

Informationen zu Gesetzgebung, wirtschaftlicher und politischer Entwicklung 1) in bestimmten osteuropäischen Ländern 2) innerhalb der EU. In den Volltextreports werden die EU-Politik, EU-Gesetzgebung, Industrie und Handel innerhalb der EU sowie Außenhandelsbeziehungen der EU behandelt.

Besonders interessant unter Umwelt-Gesichtspunkten sind der Industriereport "Biotechnology" sowie der Politikreport "Environment".

4.4 Markt- und Wirtschaftsinformationen (FAKT)

Vorwiegend statistische Markt- und Branchendaten aus allen Bereichen der Wirtschaft sowie zu Sozialstruktur, Gesellschaft und Infrastruktur. In Zeitungen, Zeitschriften und weiteren Quellen (v.a. deutschsprachig) veröffentlichte Tabellen und Grafiken werden als Tabellen und kurze Textzusammenfassungen in die Datenbank eingestellt. Dokumente, die insbesondere Zahlen zum Bereich "Umwelt" enthalten, können durch die Klassifikation "UR" selektiert werden.

- **Erschließung:** Ländercode, Sachgebietsklassifikation, Schlagworte,standardisierte Titel
  z.B. Recherche zum Thema "Abfall" in Deutschland [abfall$.ct und ur.cc und deutschland.cn]

4.5 KOBRA

Volltexte aus deutschen Branchenzeitschriften und Zeitschriften der Industrie- und Handelskammern. Die Datenbank enthält insbesondere alle Meldungen zu Unternehmen, Produkten, Personen, Veranstaltungen, gericht-lichen Entscheidungen sowie Meldungen über Branchen und Regionen. Unter anderem gehören die Zeitschriften "BioTec", "Umweltmagazin" und "Wasser, Luft und Boden" zu den Quellen, in denen über Unternehmen, Produkte und Entwicklungen in der Umwelt- und Entsorgungstechnik informieren.

- **Erschließung:** Unternehmensname, Personenname, Ländercode, SIC-Branchencode, Fachordnung Technik, Eventcode, Typ der Meldung
  z.B. Recherche nach Messen und Veranstaltungen im Bereich "Umweltschutz" [branche.ty und messen.ec"]

5. Wirtschaftswissen zum Bereich Umweltschutz

5.1 BLISS

Bibliographische Hinweise zu deutsch- und englischsprachigen Artikeln aus allen Bereichen der Betriebswirtschaft.

- **Erschließung:** Schlagworte
  z.B. Recherche nach Artikeln, die sich mit der Umweltthematik unter Marketingaspekten beschäftigen [(umwelt$ und marketing).ct]

5.2 ABI

Bibliographische Hinweise zu Artikeln aus überwiegend englischsprachigen Zeitschriften zu allen Bereichen der Betriebswirtschaft.

- **Erschließung:** Schlagworte, Klassifikation
  z.B. Recherche nach Informationen zur Umweltproblematik in der Europäischen Gemeinschaft (/Union) [(environment$ und ec).ct]

5.3 BEFO

Bibliographische Hinweise zu Artikeln, die über technische Aspekte der Betriebswirtschaft informieren.

- **Erschließung:** Schlagworte, Fachordnung Technik
  z.B. Recherche zum Thema "Alternative Energien" [(alternativ$ und energie$).ct,ut]

5.4 HWWA

Literaturhinweise zu Fachzeitschriften und Büchern aus den Bereichen Wirtschaftswissenschaften und Wirtschaftspraxis.

- **Erschließung:** Schlagworte
  z.B. Recherche nach Informationen über Umwelthaftung ["umwelthaftung$.ct]

5.5 ECONIS

Bibliographische Hinweise auf Literatur zu Wirtschaftswissenschaften und Volkswirtschaft, darunter viele Amtsdruckschriften.

- **Erschließung:** Schlagworte
  z.B. Recherche zur Umweltpolitik in den USA [(umweltpolitik und usa).ct]

5.6 LABOR

Literaturhinweise v.a. zu den Bereichen Arbeitswissenschaften, Beschäf-tigung, Ausbildung sowie Politik und Wirtschaft allgemein.

- **Erschließung:** Schlagworte, Klassifikation
  z.B. Recherche über das Thema "Gewerkschaften und ihre Haltung zu Umweltfragen" [(trade adj union and environment$).ct]

5.7 SOLIS

Literaturhinweise zu deutschsprachigen Fachzeitschriften aus allen sozialwissenschaftlichen Fachgebieten.

- **Erschließung:** Schlagworte, Klassifikation
  z.B. Recherche zu Weiterbildung im Umweltschutz [(umwelt$ und weiterbildung).ct]

5.8 PSYNDEX

Literaturhinweise zu allen Bereichen der Psychologie, Soziologie, Er-ziehungswissenschaften, Umweltgestaltung, Philosophie, Linguistik und Künstliche Intelligenz.

- **Erschließung:** Schlagworte, Klassifikation
  z.B. Recherche nach Informationen über die Haltung der Menschen gegenüber der Umweltproblematik [umwelteinstellungen.cc].

SESSION II

Experience and Problems in Environmental Databases and Related Fields

Chairman: H. Kunitz

The City and Regional Information System (CRIS) - Model Solution

P. Múdry, J. Šteffek, Z. Halmová
LandscapeEcology Centre, Banská Štiavnica, Slovak Republic

1. Purpose of Project

One of the marked failures of the totalitarian regime in the Central and Eastern Europe was the narrow departmental approach in the regions without informing and coordinating each other. The low level of activity organization in macro and meso point of view produced heavy economical and moral losses for the national economy. In the last 3-years a spontaneous input of computers and application technologies also for the purposes of information system creation began in Slovakia. The variability and incompatibility of hardware units with softwares has been typical especially for the state management sphere. A coherent approach with compatible hardware and software equipment has been applied only in the department of environment, in all its offices, for the work with territorial informations.

The present life characterized by a multitude of information demands from us to think with 5 - 10 years foresight. This kind of approach is inevitable especially in the creating of a city information system as a part of regional information system. The variability and the big volume of information is reflected in the big volume and variability of databases. Very interesting are the territories with a heavy antropogenic impact connected with larger natural resources, the ecologically most damaged regions of Slovakia.

Now there is the moment in development of Slovakia to shape the course of non effective and spontaneous development in regions. The way how the information system will operate, can be documented on a model region.

The working up of the study of the regional development of a model district represents the first systematic approach in which the economical aspect of development comes out from the ecological and environmental conditions of the landscape. The ecological conditions limit the economical activities but also give directions for effective utilization of natural resources. In this study the main goal is the harmony between ecology and economy what corresponds to the conditions of the sustainable development.

The information processed in the study about the landscape contamination will provide the basis for elaborating the Environmental Impact Assessment (EIA), what is the basic limit for business activities in the landscape.

At this time there is not in Slovakia any study which would allow the planning of the regional development in these new intentions.

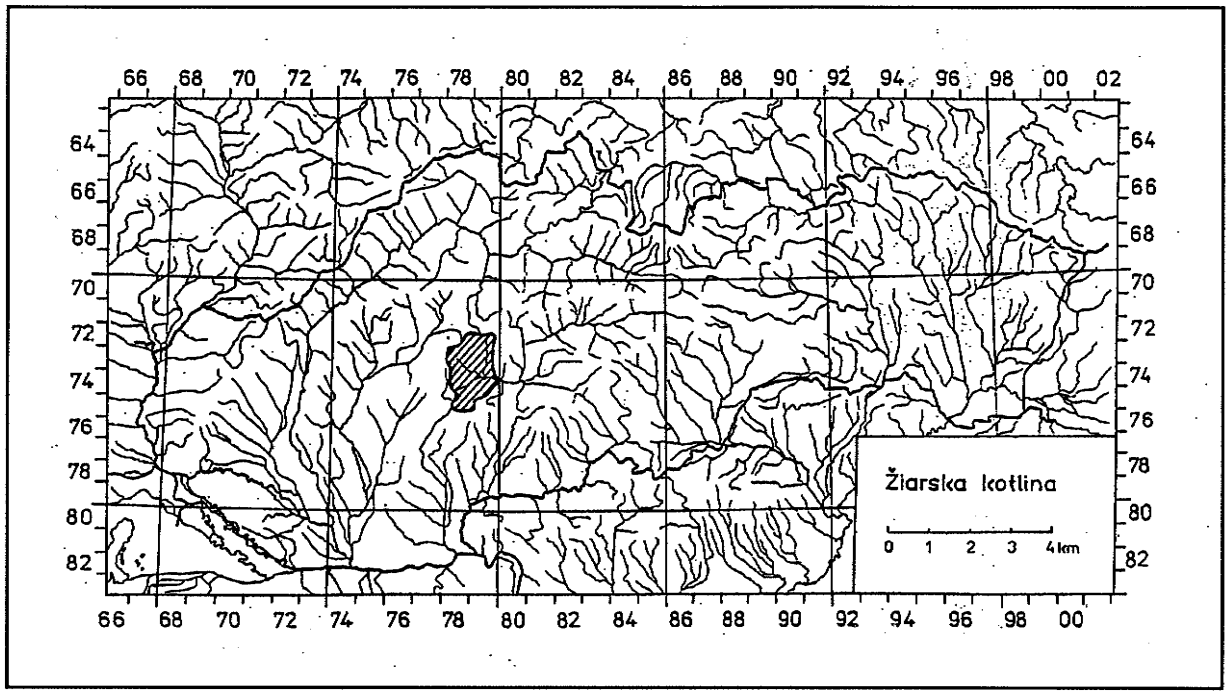


Fig. 1: Ziarska kotlina

2. Region Selection

On the basis of the mentioned facts was chosen as a model region the district of Ziar nad Hronom, including these microregions: Banská Štiavnica, Ziiarska Kotlina Hollow, Nová Bana, Zarnovica and Kremnica. These neighbouring microregions create one complex, which is a holder of a great number of problems. This requires to have a database of information about nature, socio-economic sphere, market and economical activities in the landscape, architecture and cultural monuments, tourism, etc.

The most varied from the information point of view seems to be the Banská Štiavnica microregion which is on the UNESCO list of the World Cultural and Natural Heritage. This aspect and the present socio-economical stress make the activization of Slovak and international aid. An important aid we see in model-system informatics and its establishment in the state and local management and in the new branch institutions (for example tourism). First precondition for the success of this project are the specialists active in this field. At present there is a map and text database regarding the state of the environment in digitalized form from this microregion. These databases have been included in the partial geographic information systems. The databases of the worked up information are the essential precondition for an effective realization of this project in a very short time.

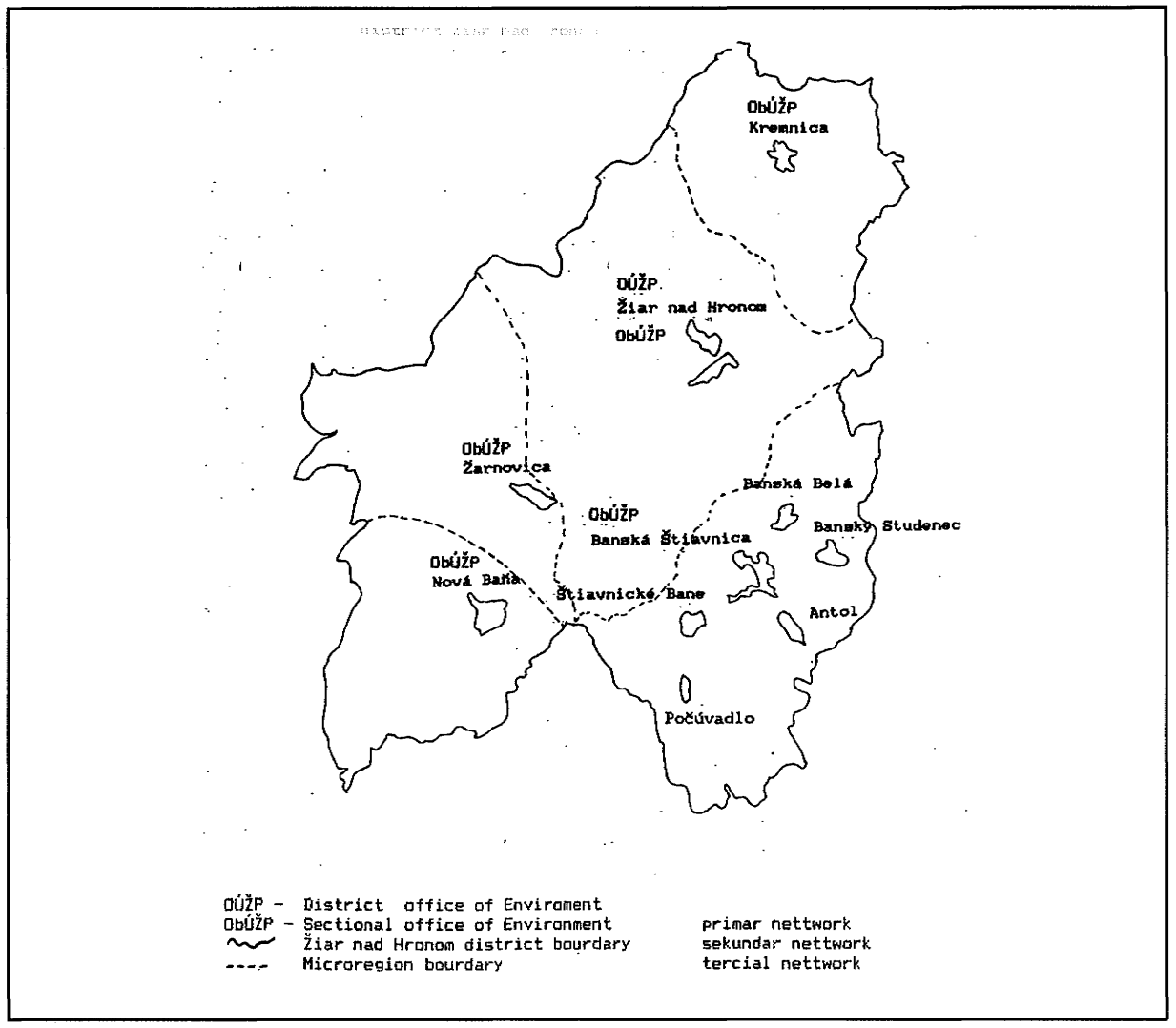


Fig. 2: Destrict Ziar nad Hronom: The city and regional information system (CRIS) - Model Solution

Regarding the creation of the model solution of CRIS it is important to distinguish individual information levels in the region. The entire programme of the creation of the city and regional information system is planned in four stages. Since we proposed the Banská Štiavnica micro-region, this project is the first part of them.

The primary network is created by the district offices managing the region as a whole and the sectional offices managing microregions. In the model region - Ziar nad Hronom, there are five sectional offices (Ziar nad Hronom, Kremnica, Nova Bana, Zarnovica, Banska Stiavnica).

The secondary network includes local agencies in microregional communities. As the model microregion, we chose the territory with a greatest number of problems - Banská Štiavnica, which governs the following local communities (Štiavnick Bané, Bansky Studenec, Antol, Banská Bela, Pocuvadlo).

Tertiary network is in the "Capital" of microregion, i.e. in Banská Štiavnica.

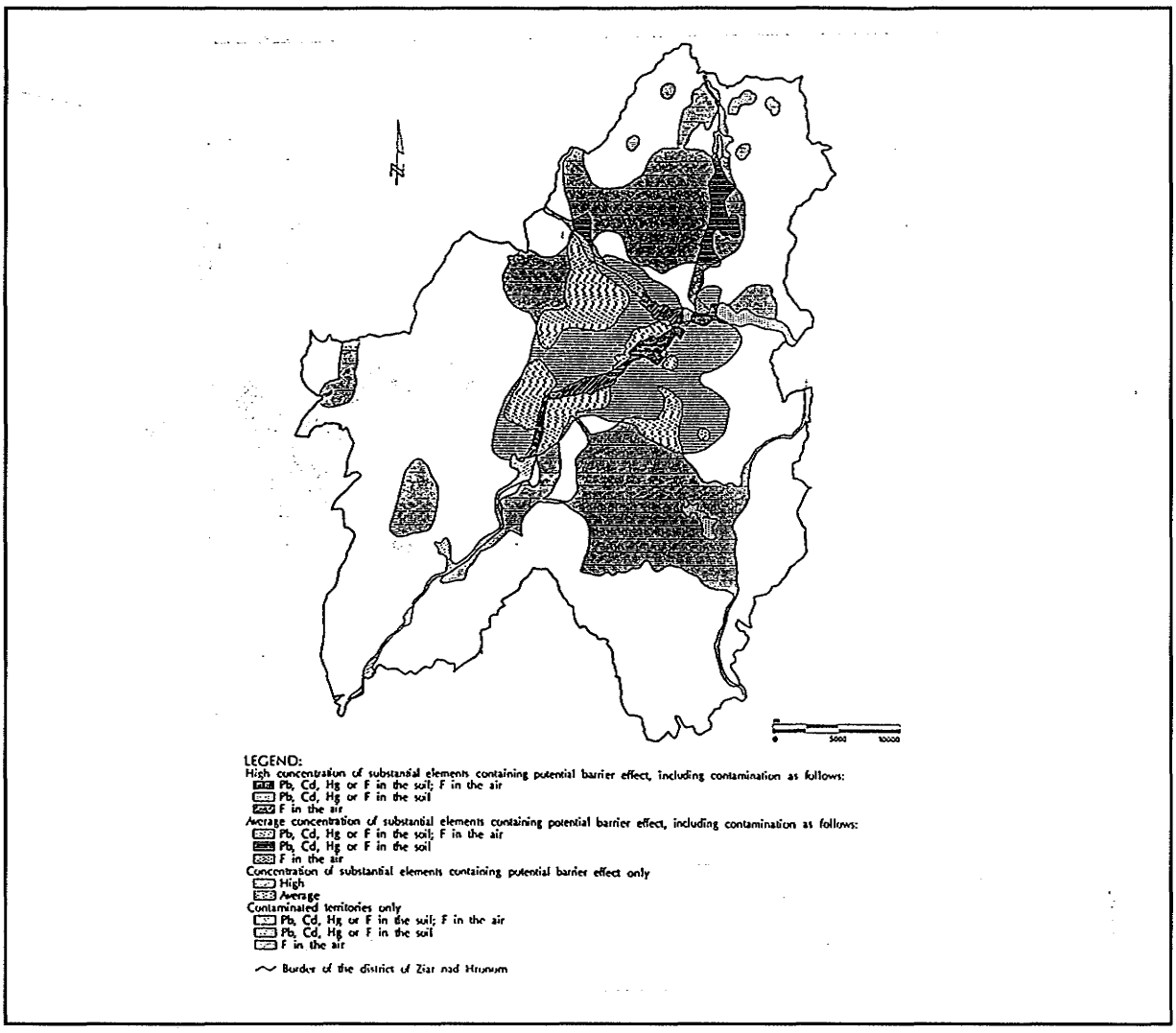


Fig. 3: District Ziar nad Hronom: The stress factors and ecological barriers

The terminal units belong to the state administration (Ministry of the Interior, Ministry of the Culture, Ministry of the Environment, Ministry of Economy - Forestry Section). Private organizations and other state producing organizations have a possibility to make connection with CRIS on this level, after realization this system. A part of this project is also training program for terminal specialists, as well as for the persons involved in the software and database unit.

Next stages of CRIS (regarding whole region) will be realized gradually in each microregion in the same proposed steps. These stages will need basicly less financial sources, because these will be made only on the level of terminal units.

In the town of Banská Štiavnica the information network will include: town council (local agency), sectional office (general state administration), sectional office of environment (specialized state administration), sectional office of work (Forestry Highschool, Chemistry Highschool, Grammar School, College of Natural Sciences, Centre of Ecological Knowledge, State Central Archive, Town Archive, National Mining Museum, Institute of State Monuments, Town police, Ecotrust-information system administrator and database unit).

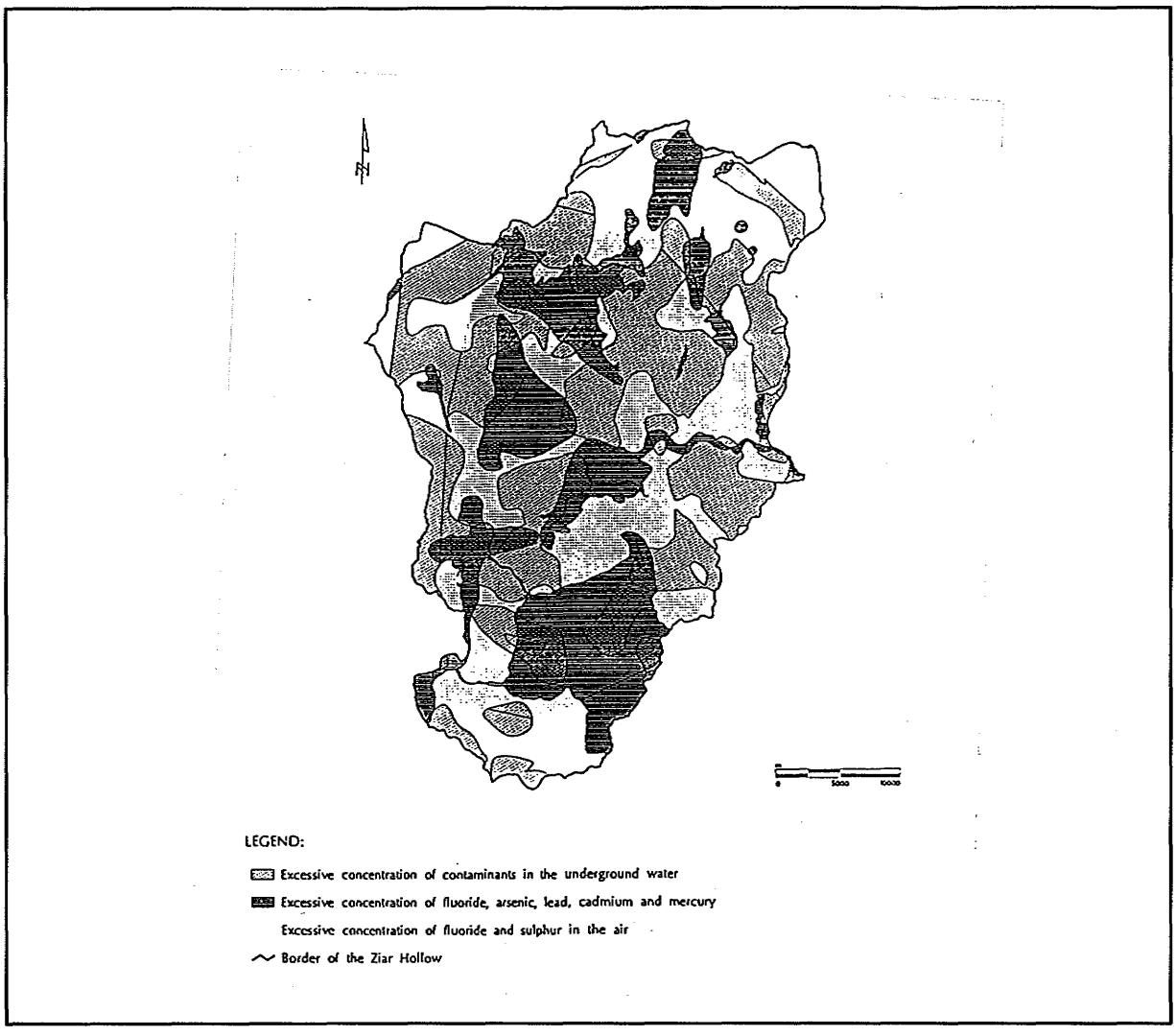


Fig. 4: District Ziar nad Hronom: The contamination of the abiotic components of the landscape

3. Solution

The information system will be created by database unit and by network of terminal units. The database unit will have server and equipment for processing the map and text databases, their archivation, graphic presentation, service and creation of new information. The proposed users will have terminal units with specific software. The basis of this information system will be the database, existing hardware and software equipment of the department of the environment with ARC INFO software. For the specialists of the terminal units, training courses at various levels will be organized, depending on the quality and quantity of the used databases.

The network will be created by 27 terminal units. At present, there are 6 in the town and section offices, 8 in the state management, 7 in schools, 5 in state organizations, 1 at the information system administrator, and 1 in the database unit. There are 28 terminal units together.

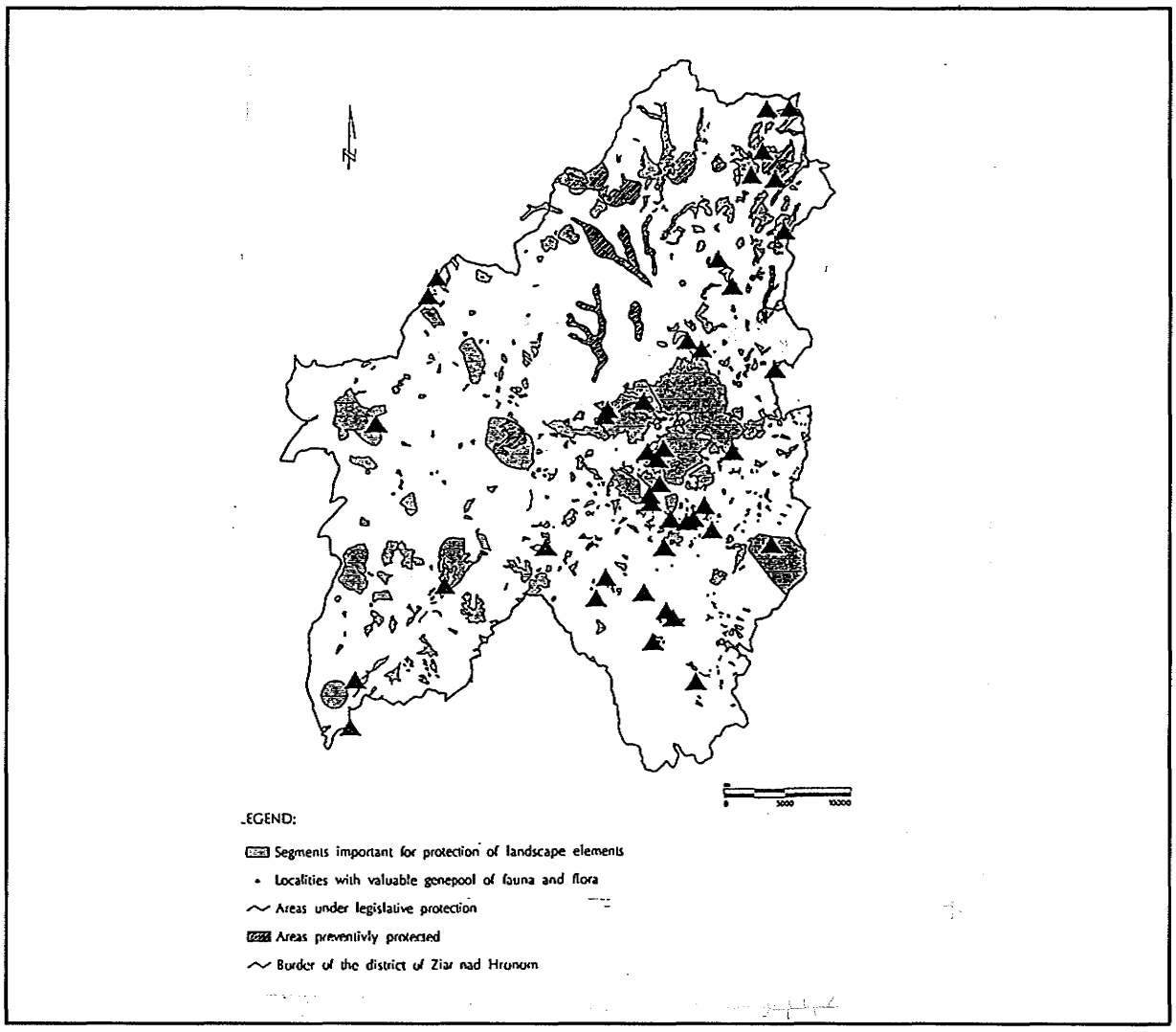


Fig. 5: District Ziar nad Hronom: Ecoclogically important segments of the landscape

The list of hardware for CRIS will include the following equipment: 2 workstation, 28 terminal units, 1 digitizer, 1 scanner, 1 plotter, 1 laser printer, 1 copier, 1 color scanner A3, 2 optic discs and mechanics, 1 communication system. The software will be on the ARC INFO product base.

4. Expected Results

This model solution is a very important tool for a succesful regional development of Slovakia. This will be the most important task of Slovak Governments and community in the next 10 - 20 years. The CRIS system will enable to decrease financies in the sphere of territorial planning design and will create the information base for harmony between ecology and economy in the region, for ist sustainable development. It will give possibility to establish a new approach to a regionalistic respecting ecological conditions of the landscape and thus the environmental limits for development of activities in region.

The CRIS creates conditions for employment of the intelligentsia, which is almost lacking in the social structure of this region. So, it will create new possibilities for our graduates of the high schools and universities.

A practical example of technical, hardware and software connection to CRIS will be created. It will also give a possibility to apply the results of model solution to other districts of Slovakia. Databases and their application will be the sources for wider utilization of computers in the process of regional development.

The introduction of informatics into the activities of the offices of state administration will discontinue the mistakes resulting from the narrow departmental approaches. The CRIS will enhance the quality of decision-making process and will enable to use for the economical development the natural and intelectual potential of the country.

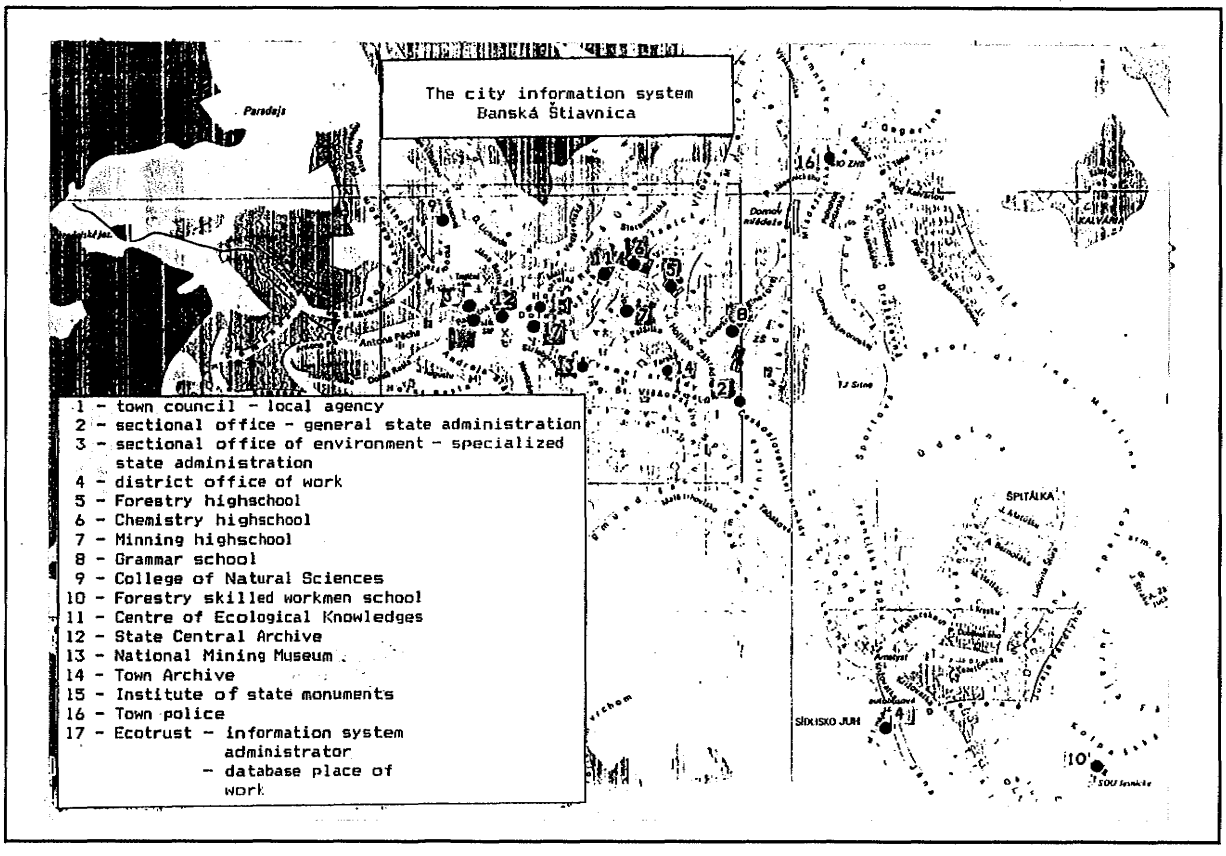


Fig. 6: The city information system Banská Štiavnica

Information Services in the Field of Environment offered by Romanian Governmental and Non-Governmental Organizations

D. Banciu
Institute for Information Services and Social Protection, Bucharest

1. Background

Before 1990 environmental issues weren't considered a problem in Romania.

This does not mean that in Romania there were no sources of pollution, no toxic waste or air, water, soil pollution above the accepted limits.

The bodies meant to ensure the documentation and supply information services covering various areas (energy, chemistry, agriculture, civil engineering etc.) processed data and provided information on environmental issues at random, since there was no constant concern in this respect.

Specialised research institutes carried out studies and measurements regarding environmental parameters, but their results were not meant for the public.

After the 1986 Chernobyl nuclear accident, the Information and Documentation Office within the National Council of Waters started to collect documents, to process and organise the information on air, water and soil protection, on the protection of ecosystems, as well as on waste management. Relevant information on environmental issues were stored (together with references on quantitative and qualitative water management) in a subject file structured according to UDC. At the same time, a data base was stored on a FELIX 256 - computer, data-management being ensured with the help of the MISTRAL – package (a French DBMS). Information reached the end-users through information bulletins.

After 1990, concern for the environment and the problems related to it was more and more manifest at all levels, starting with the governmental level down to the population at large.

The latter's attention was drawn on the one hand, by mass-media supplying information on the level of pollution in Romania, on the consequences of nuclear accidents, on the import of toxic waste etc., and, on the other, by the setting-up of specialised governmental bodies.

Thus, the Ministry of Water, Forestry and Environmental Protection was created.

The Ministry took over from the former National Council of Waters the Information and Documentation Office which has become the Environmental Information and Documentation Office.

At the same time, numerous NGOs were set up. Moreover, several research institutes, universities, production enterprises have included environmental programmes in their overall activity.

An analysis of the activities and concerns over the last five years reveals the following main directions:

- monitoring of soil pollution;
- monitoring of air and water quality and pollution level;
- research studies on the impact of various pollutants on the environment;
- research studies on the impact of economic-social activities on the environment;
- design projects for environmental protection equipment;
- manufacturing of environmental protection equipment and its installation in polluted areas;
- initiation of all sorts of activities and events for the restoration of the environmental equilibrium;
- initiation of activities meant to do away with polluting waste;
- environmental education of the population;
- training of specialists, including highly qualified ones;
- development and improvement of the information and
- documentation system at all levels (including experts, public at large, decision factors).

2. Information Services Development

The introduction of modern methods in data processing is an ever-present concern of the research institutes and the bodies specialised in information and documentation services. The main goal is the development of data bases, the on-line access of end-users to these data bases, as well as the networking to the international information system.

The main categories of information stored in the data bases are:

- information on substances and their components, their characteristics, damaging effects and prevention measures;
- general information on environmental issues in certain areas, e.g. The Danube Delta;
- information for reference purposes.

3. Information Activities developed by Governmental Organizations

The Governmental authority in the field is the Ministry of Water, Forestry and Environmental Protection, whose main goal is that of ensuring the coherent implementation of environmental protection.

The Ministry provides together with specialised institutions, the legal framework and promotes programmes for environmental restoration at national level. The law regarding the environment, for instance, has been passed through Parliament.

Special attention is paid to the proper information of the population on environmental issues.

Information services in this area are provided by the Office for Information and Documentation on the Environment.

Bibliographical data obtained after 1990 as a result of processing data from documents (books, articles, research, doctoral these, standards etc.) were stored on IBM – compatible PCs. For data management CDS/ISIS is used (85% of the PCs bibliography comes from abroad and only 15% from documents published in Romania).

The MEDA – database contains approximately 20.000 entries. Access to them is possible through key-words (descriptors) belonging to a controlled vocabulary. The latter consists of 1.800 terms which are updated on a yearly basis.

The end-users of the data-base are governmental organizations, NGOs, universities, research institutes, R&D - departments, businesses.

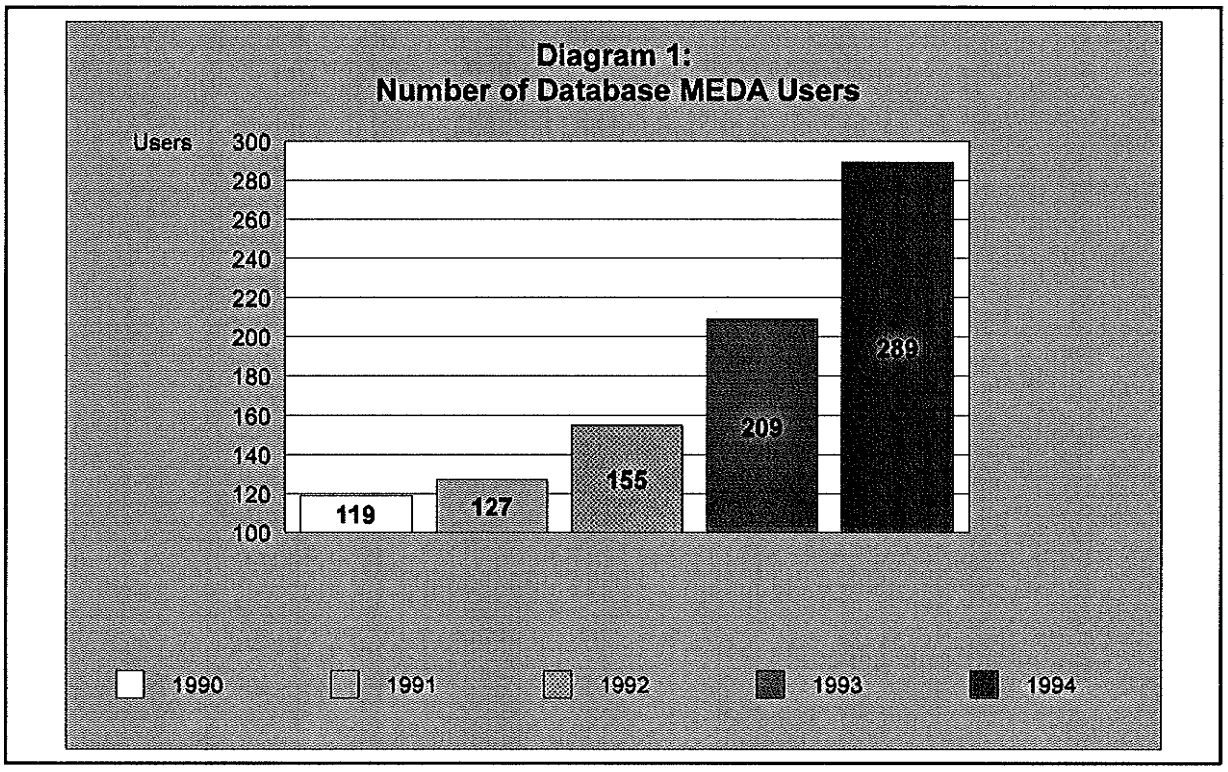
The end-users' main areas of interest are:

- environmental policies and strategies,
- sustainable development, unpolluting technologies,
- ecological monitoring, methods for fighting against the effects of pollution.

The number of data-base users has doubled over the last 5 years. Diagram 1 shows this evolution for the period 1990-1994. Subscribers to the data-base receive an information bulletin every term. This includes bibliographical information regarding the documentation received over this period of time. Upon request a copy of the document indicated in the bulletin can be obtained.

The Office for Information and Documentation on the Environment (OIDE) is connected to the system INFOTERA, communicating bibliographical data on environmental information sources existing in Romania.

These data are sent to the regional INFOTERA – centre in Viena, and are updated every year.



The OIDE also transmits the users' information requests to INFOTERA and then ensures the distribution of the answers to those interested.

The main objectives of the OIDE are the networking to external data-bases through INTERNET and the development of a specialised information network including research institutes belonging to the Ministry of Water, Forestry and Environmental Protection.

Besides OIDE, there are information and documentation centres in various fields (such as energy, chemistry etc.), that also contribute to the bibliographical information on environmental issues, in case this type of information is contained in the documents processed.

At the moment, one can notice the users' increased interest in environmental issues, irrespective of the users' field of activity. As a result of this, bodies providing information services try to supply as much bibliographic information as possible.

As for services offered by libraries, the Central University Library of Cluj (the Plant Physiology branch), for instance, has developed a special activity in this field. They get as many documents regarding the environment as they can and then process them so as to facilitate the readers' access to the information.

4. Information Activity developed by NGOs

After 1990 over 100 NGOs with environmental concerns have been set up.

From among these over 50 are active, carrying out the communication of information, organizing meetings and conferences (workshops), current activities of environment depollution (especially, youth organizations).

Unfortunately, the collaboration and cooperation of these institutions in the fulfilement of the above mentioned activies is not what it should be.

To improve this situation, at least to a certain extent, IUPPS* has included in its organization structure a department dealing with environmental assessment.

The main objective of this department is to identify general problems, to launch programmes and to support the fulfilment of- projects which require the cooperation and collaboration of various partners.

Environmental and environment protection issues, pollution and its effects on the environment and people, as well as preserving the quality of water, air and soil are concerns of institutions and organizations which, more often than not, have different areas of activity. These institutes have various higher authorities, with diverse budgets and sometimes even distinct objectives and interests. Therefore, the participation, cooperation and collaboration to carry out various environment protection programmes is not easy to achieve.

The institute aims at creating an adequate framework for the exchange of ideas. It intends to inform various organizations about issues of common interest, to develop and offer instruments of information which are not designed by the specialized bodies in the field.

In this context a study has been made on "Environmental issues in the highlight of government and NGOs".

The study allowed the identification of government and NGOs, their main interest, the level of their equipments and the degree of updating their information services.

Parallelism in tackling the same aspects as well as untackled problems have been noticed.

Consequently the institute decided to set up a data-base in the near future, containing laws regarding the environment, regulations standards existing both in Romania and in other countries as well. The data-base will be available on-line.

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* Institute for Information Services and Social Protection, Bucharest

A local office of the Regional Environmental Centre for Eastern Europe (REC), having its headquarters in Budapest, was opened in Bucharest. The local office published a monthly newsletter. The newsletter offers information on the developments of the environmental projects carried out by the Centre on projects submitted for financing as well as categories of relevant information. The newsletter is sent to the NGOs all over the country and to libraries.

Information activities are also developed within the framework of a project started in 1993 and called TIMCED (Training, Information and Mediation Centre for ECO - Development). The project was set up by two NGOs: People and Environment – Ploie ti and the Ecological Cooperation Group Bucharest. TIMCED publishes a quarterly newsletter which presents, besides aspects to be filed, opinions of specialists and NGOs as well as informative and educational materials. In 1994 the Centre published a catalogue of the books on environment existing in various libraries in the country.

5. Resources

The offices for information and documentation are organizations which ensure most of their financial resources from the services they offer their clients. As the demand for information services is not very large due, especially, to the clients' lack of financial funds, GOs are facing financial problems which have negative effects on the development of their activity. As a consequence the number of staff is relatively low and the technical equipment consists only of a couple of PCs, a printer, a CD-ROM drive and sometimes a copier.

The most widespread software is CDS/ISIS as well as a series of programmes.

Mention should be made of the fact that the Information and Documentation Office on the Environment bought the TINLIB package (produced by The British firm IME), modules of cataloguing (classifying) and OPAC, a programme package implemented at the National Library and the University Library in Craiova.

NGOs ensure their resources through grants (subventions) received, more often than not, from foreign organizations.

6. The Technical Infrastructure for Network Services in Romania

As I have already mentioned, at organizational level (governmental and NGOs) the most widespread equipments are PCs working stand-alone or in local area networks. To achieve the main objective of such systems, that is the communication and transmission of information, local networks should be integrated in national computer networks, thus ensuring their access to information.

Network services have been developed in Romania especially after 1990.

The first connection was made in December 1992 at the Research Institute for Informatics (ICI) and it represented a junction to EARN/BITNET (via Viena). At present network services (e-mail and access to data-base) are ensured through 6 EARN/BITNET nodes and approximately 40 INTERNET nodes. 120 institutes are connected to international networks and about 3.000 users utilize network services, which means a traffic of approximately 1GB/month.

The communities served are:

- R&D institutes
- higher Education Institutes
- libraries
- governmental institutions linked to academic and research activity.

As for connectivity to other countries, it is ensured by a full Internet connectivity to about 70 countries and an e-mail connectivity to about 145 countries.

The international lines are:

- Bucharest-Viena (link to EARN) ;
- Bucharest-Amterdam (link to EUROPANET) ;
- Bucharest-Düsseldorf (link to DFN).

The most important initiative in this field is the project of the Romanian National Computer Network for Research and Higher Education.

The project has been initiated and financed by the Ministry for Research and Technology and the Ministry of Education.

The aim of the project is to set up a technical and organizational infrastructure which should enable national and international e-mail services, facilitate the exchange of ideas and information among the research communities and the access to data-base.

The main role in this network will be played by the Research Institute for Informatics which is the operator of the national network of research and higher education. ICI simultaneously performs the role of international node and backbone node for Bucharest. Until the end of 1994 there will be 6 backbone nodes in Bucharest and other 6 nodes will come into being in the country.

During the first stage of the project backbone nodes will be placed in Bucharest, Cluj (University), Iasi (University) and Craiova. During the next stage nodes will be placed in other cities as well so that the computer network should cover the whole country.

As we can notice the building up of the technical support to ensure network services is a national concern and the results have already started to materialize.

Information organizations, either GO or NGO, have to find resource to benefit from these services without which we can no longer talk about a modern information system.

Present tendencies in the field of environmental information and documentation in Romania dead to the conclusion that this activity is being developed both as volume and as content.

GOs and NGOs are involved (consisting of young people, women, personalities), ever-increasing technical, material and financial resources are garanted, the information requirements of an ever large range of users are covered (from decision making authorities to the general public).

These aspects reveal an ever deeper focusing on environmental issues in Romania as part of a global problem with an impact on both the present and especially, the future of our planet.

Information Service for Ecological Problems

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1. Introduction

The problems of the information service for the organization responsible for environmental monitoring and handling of ecological disasters in Russia and other CIS countries has inspite of its resemblance to the corresponding services in West European countries some very specific characteristics. The difference is mostly in different spectrum of ecological problems. Very roughly there are two types of ecological damage. The first, it is permanently growing loud on environment due to increasing amounts of industrial and waist, chemical substances, gas, destroying of the ozone lairs, and many others. All environmental pollution of this kind have one thing in common and it is that the grade of pollution grows relatively slow and there is a hope to cope with this problems by improving standards and technologies and implementing strict national and international control. There is a hope that if we do not damage environment to much the nature will be able to sustain the load and natural purification mechanisms of the nature will do the major job.

Another type of environmental pollution and environmental damage are man made industrial catastrophes. By industrial catastrophes the load on the environment increases dramatically in a very short time and there is absolutely no hope that environment and the nature could sustain the damage. Very often this catastrophes lead to direct losses of human lives and there consequences could be removed or diminished only by specific human actions. Unfortunately the last few years have shown that this type of the environmental catastrophe prevail in Russia and other CIS countries.

2. Technogen and man made Catastrophes, their Reasons, Information on Disasters and their Consequences

During the last few years we have been the witness of a number man made environmental disasters. These catastrophes lead not only to the environmental pollution of the highest grade but also took numerous human lives.

The most known disaster of this kind was Chernobil catastrophe of the nuclear power plant. There were so much written and read about this event, that i do not think that any further in-

formation is needed. There were unfortunately a great number of other disasters and it shows some kind of tendency. There ate here some examples.

On 15.09.1088 in Ural region not far from the cite of Ufa more then 500 person have died, actually they have died in inferno. Another 500 have been hospitalized with severe burns. Significant part of the victims were children returning from holidays. The reason for this disaster was a leak from so called "product pipeline" transporting a kind of explosive mixture of gas and oil products. This so called "product" accumulated under the railway bridge over the valley. And when two trains simultaneously past this bridge the explosion occurred.

Investigations revealed that the leak existed already for many days and pressure in the pipeline was falling. Instead of finding the reason operators were pumping more and more of the "product". The result was forest fire, losses of human lives, both trains and bridge.

Almost exactly two months earlier in Arzamas by the railway station exploded one tank wagon. Result - 150 houses destroyed, 73 persons died, 230 wounded, 600 homeless.

In Sverdlovsk (Ekaterinburg) exploded a train loaded with explosives. Result - 5 dead and 1020 wounded.

In May 1990 in Ufa from one not correctly closed container Phenol was leaked into the river which is the only sours of the water supply for the city with half million population. For more then two weeks the city could not be supplied by water through the water pipelines, 400 person were hospitalized.

There are much more incidents and disasters recorded in the specialized data base. Only for the period from 1988 to 1993 there are registered 96 incidents connected with pipelines or railways.

The last few years there were numerous reports on incidents with storages of explosives. The most significant of them were in Armenia close to Erevan and in Vladivostok. This kind of disasters was absolutely unknown and unimaginable.

Let us look to these events more closely.

First of all it would be wrong to think that there no catastrophes in earlier days. It is just enough to recall the Chernobyl disaster. The government of the Soviet Union and even more the republican government of Ukrain was very reluctant to give any information on this event. The next day in Kiev there were mass sport competitions under the radioactive rain. Up to Chernobil disaster there was rule and "tradition" not to disturb population with the bad news on disasters and catastrophes. Till this time this information was keep secret and anyone who dare to spread this information risked to get into prison. It lead also to very low awareness of the public concerning all this matters. On the other side it should be also said that personal responsibility for mismanagement which resulted in environmental disasters and particularly in losses of human lives was very heavy.

It could be also seen, that the growing "technization" of the society requires serious attitude to one's work and careful and scrupulous adhere to the rule and technological discipline. From the middle of 80-th and till now we see gradually growing negligence to the rules and generally falling working morality

The situation become so bad that the Russian government established a specialized "Ministry for extraordinary situation". This days the Ministry in the best case can only react and some how handle various disasters and catastrophes, but is not able to undertake and impose any serious preventive measures. The major activity of this ministry now is maintain rescue teams, provide them with necessary equipment and transport means. But the Ministry started also another project which could play very important role for analysis and elaboration of preventive measures. It is collection of detailed information on all cases and creation of the data bank. It can be considered as one but very important element of the information infrastructure in this field. There are many other elements which could also play very important role.

Since middle of 50-th there are some institution collecting various seismological data, data on seismological dangerous areas and on consequences of the earthquakes. Since 1978 The Institute for Geophysics conducts Catalog of the earthquakes. The data bank contains information on earthquakes and seismological events. Since 1957 the World Center of the Russian Academy of Sciences collects data from 34 monitoring stations. Similar data banks are available in Asian new independent states - Kazakhstan, Tadjikistan, Uzbekistan and Kyrghizstan.

All these data banks are much more scientifically oriented then practically. It could be assumed that information in these data banks can be and should be used for evaluation of constructions in those areas. There are naturally standards and rules for construction in those areas, but as it was evident from earthquake in Armenia, in Spitak these standards are not quite applicable and even worse they are not applied.

Scientific side of the investigation, possible prediction and evaluation of the consequences of catastrophes of various types is relatively well developed. Probably in some cases even better then in many other countries, but there is no comprehensive and complete system to use these separate elements. It is known for example what can happen when a blast-furnace or chemical factory explode. These computer models are reasonably well developed but this knowledge is not reflected in official rules and standards. Unfortunately practically by the construction of all those potentially dangerous objects it was assumed that they are absolutely reliable and no precautions were taken for a case of catastrophe.

3. Gradually increasing Environmental Pollution

3.1 Soil Pollution and Soil Protection

There are three types of soil pollution. The first. Exploitation and impoverishment of the soil due to the wrong usage, what can result in bogging or salting. Second. Destroying of the soil due to the wrong usage of fertilizers and pesticides, what can result in its turn in high concentration of potentially dangerous chemicals in nitrates in vegetables and fruits. Third. Soil destruction by industry - acids, heavy metals and many, many others.

The information on condition of soil is collected by many specialized local institutions. The more or less complete picture of the soil conditions could be received in two major central institutions. They are State Scientific Research Institute for Soil Resources (Mytishchi, near Moscow) and Dokuchaev Institute for Soil Research - Moscow.

The first one runs 6 data banks. The data banks contain information on soil exploration and analysis, geobothanical research, agrachemical data, soil classification according to various categories of the usage and potential of the soil.

Dokuchaev-Institute conduct data banks with information on long term soil changes, its structure and characteristics.

Both of those central Institutions have also some very specific data banks. For example. Results of chemical, mechanical, microbiological analysis of soil in Cambodia or similar information on soil in Aral area and some other regions of the former Soviet Union. It is however is not clear that this data banks are also available in the regions itself.

Among the regional institutions maintaining the data banks of overregional importance are "Saransk Regional Center for Agricultural Resources" and "Kabardiono-Balkar Filial" of the company "Russian Agricultural Systems". Information on soil pollution by pesticides is collected by the "Institute for Experimental Meteorology" in Obninsk.

Another data bank on pesticides - "Pesticides in food-stuffs" is conducted by the "Ukrainian Scientific Medvedev-Institute for Ecology and Toxicology of the Chemical Substances"

Data banks on production and usage of the fertilizers is available in "Samoilov Scientific Research Institute for Plant-Growing " - Moscow.

A number of the data banks is produced by the specialized company "Agroecoinform". Among these data banks there is a data bank "Radiology". It contains referative information on radioactive pollution of soil and agrarian products.

The data bank on soil reclamation is conducted by the State Institute for Development of the Water Resources.

There are also specialized data banks on conditions of forest and forestry, as well as forest and wood resources. These data banks are available in the Central Bureau for Scientific-technical Information on Forestry.

3.2 Water Pollution and Water Ecology

Water resources are threatened not only by polluted sewage and chemicals of various sources, but also by gigantic construction projects, like dams, water reservoir, channels, changing directions of rivers and so on. Very often particularly in earlier days these projects were implemented without any ecological expertise. Typical consequences of such projects was decreasing of the auto purification capacity of water resources and as next step decreasing of fish resources and quality of drinking water. Some information on these and related problems as well as general information on water resources can be founded in the text-numerical data bank "Hydrology, Sea and Water Reservoirs" and in "State Water Cadastr" conducted by the State Hydrological Institute in Sank-Petersburg.

Information on water resources and water balance, usage of water for industrial and agricultural purposes can be found in 6 data banks of the State Institute for Water Resources in Moscow.

Two data banks containing results of the analysis on potentially toxic substances in sewage of cellulose and paper factories and information on negative influence of various substances on water quality and life capacity of Hydrobionts are conducted by the Institute for Ecological Toxicology (Baykalsk, Irkutskaya obl.). These institute is responsible for ecology of the Baykal lake. It is known as the world largest sweet water lake.

Ecological and industrial standards on concentration of harmful substances in drinking water and food-stuffs can be derived from the corresponding data banks of the State Institute for Nitrogen Industry (Moscow).

There are a few data banks specialized Sea and Ocean research, which also contain information on ecology of seas and ocean. Institute for Sea Research in Odessa runs the data bank "Oil pollution of Sea and Ocean".

The data bank "Black Sea", containing numerical characteristics on Black Sea is conducted by The Institute for Sea Physics of the Ukrainian Academy of Sciences in Sevastopol. As the other sources of information on sea and ocean can be mentioned the Institute for Pacific Ocean Research of the Russian Academy of Sciences (Vladivostok).

3.3 Air Pollution

The tolerated concentration values of the various substances in the air, water, these values in relation to the working places, mean values and short time concentrations are stored in the

data bank of the State Institute for Nitrogen Industry (Moscow). There are however no publically available data banks of the real measurements of the concentration.

Many bibliographic data banks contain information on publications related to the problems of air pollution, development and applications of various filters, catalisators and ecologically friendly technologies. There is however no specialized research or information institute for air and air pollution, but many institutions specialized on water and soil.

3.4 Ozone Air

There is no specialized data bank just for this particular problem. But the results of various measurements are collected at the Institute for Atmosphere Physics of the Russian Academy of Sciences. These measurements are not represented in a form of a data bank. The bibliographic references to the problem of air pollution can be found in many data banks on physics and in particular in the data bank "Scientific Research with the Help of Satellites" of the Russian Research Center for Space Documentation in Moscow.

The data bank "Ozone Conservating Technologies for Refrigerators" is conducted by the Scientific Research Institute for Refrigerating Machinery in Moscow.

Since 1994 in Russia is also available the international data bank "Ozone" developed in the framework of the United Nations Environmental Program.

4. International Cooperation

International cooperation in the field of scientific and technical information in general and in environmental protection traditionally played for former Soviet Union and plays now for Russia very important role. The Soviet Union participated practically in all United Nations information systems and namely

- International Register of Potentially Toxic Chemicals (IRPTC) and INFOTERRA
  (In the framework of the UN Environmental Program)
- INIS - International Nuclear Information System
  (In the framework of the International Atomic Energy Agency)
- AGRIS - Agrar Information System
  (In the framework of the International Food Organization)
- Man and Biosphere
  (In the framework of UNESCO)
- INTIB
  (In the framework of the UN Industrial Development Organization)

4.1 Cooperation with UNEP

Cooperation with this international organizations probably has the most importance in connection with environmental problems. It goes in two programs International Register of Potentially Toxic Chemicals and IFOTERRA

4.1.1 International Register for Potentially Toxic Chemicals

This register was established in 1976 as a specialized data bank it runs since 1980. It is estimated that yearly about 1000 new chemical substances comes to the market. It is also estimated that investigation of one new chemical substance concerning its environmental and health impact costs about 100.000 USD. It means that the information collected in the data bank is important not only for environmental protection, but also has direct economical importance. In order to make this information easier accessible in 1998 decision was taken to transfer this data bank to PC. The system CLIPPER was selected as among other software packages. At the time being this system consists of 17 files and contains information on Chemical substances and their influence on the environment, standards, laws, rules and so on. Russia takes part in this system as information provider and also as very active user. ICSTI has conducted a number of educational courses on this system in Russia, China as well in hew independent states Ukrain, Belaruss, Lithuane, Kazakhstan.

4.1.2 Infoterra

The Former Soviet Union was very active participant of the INFOTERRA. There were organized two conferences: The First International Conference on Environmental Education, 1977, Tbilisi, and First International Biosphere Reserve Congress, 1983, as well as Seminar on Non-Waste Technology, 1984, Tashkent. Cooperation of the COMECON countries with INFOTERRA was coordinated in the framework of INFORMOOS with the coordinating center in Bratislava - Center for Environment Protection.

After the disintegration of the Soviet Union cooperation with INFOTERRA significantly decreased. But recently there were a number of contacts took place.

4.2 The Databases of the Organizations of the UN-Family available in Russia

- ESCAP Environmental Information Dessimination Service (EIDS)
- Global Environmental Monitoring System (GEMS)
- Hydrological Information Referral Service (INFOHYDRO)
- Information Network on New and Renewable Energy
- Resources and Technologies for Asia and the Pacific (INNERTAP)
- INFOTERRA

- International Register of Potentially Toxic Chemicals (IRPTC)
- Man and Biosphere Information Service (MAB)
- Marine Environment Data Information Referral System (MEDI)
- Natural Resources, Science and Technology System
- News and Data
- Nuclear Fuel Cycle Information System (NFCIS)
- Pan American Network for Information and Documentation in Sanitary, Engineering and Environmental Sciences (REPIDISCA)
- Regional Remote Sensing Information Service (RIS)
- Regional Seas Program
- UNEP-Industry and Environmental Information System
- UNESCO Energy Information Program
- WHO Western Pacific Regional Center for Promotion of Environmental Planning and Applied Studies (PEPAS)
- INIS
- AGRIS
- Industrial and Technological Information Bank - INTIB

5. Conclusion

Availability and quality of the electronically based information services for environmental problems in Russia and NIS countries could be summarized in the fallowing table.

Availability and quality of the electronically based information services for environmental problems in Russia and NIS countries			
	good	satisfactory	poor
Laws		X	
Standards		X	
Statistics Pol			X
Statistics Dis	X		
Technologies			X
Models		X	
Bibliography	X		

Environmental Electronic Information Service in Latvia

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Environmental problems are in number of the main in Latvia today. Relatively developed industry, especially large number of chemical and pharmacological enterprises, extensive use of chemical compounds in agriculture, intensive traffic, lot of human waste products are the main but not only sources of pollution. They have a harmful, even destroying effect on the environment, therefore on human health and biological systems.

Many activities in fields related to environmental protection are taking place today in Latvia. Ecology, biology, medical researches, agricultural sciences, forest researches are included in list of priorities in Latvian research, approved by Latvian Council of Science. Researchers are implementing lot of projects in scientific institutes (Institutes of Biology, Microbiology, Fisheries Research, Forestry Research etc.) and universities (University of Latvia, Medical Academy, Agricultural University). Projects are granted by state budget and by several foundations (e.g. Soros) and international programs (e.g. Tempus) as well. International meetings are held on environmental problems, e.g. Workshop on Environmental Education in August, workshop on Electromagnetic Radiation in September, Conference "European Environmental Futures" in October. Training and retraining of specialists in environmental science and management is taking place in the University of Latvia.

Practical activities are going on in different fields: purification of waste water, reduction of atmospheric pollution, sorting and recovery of waste, protection of biota, public health. In 1993 the total expenditures of environmental projects were more than $ 30 millions, the main part of them at present is and in near future will be from state budget. The main activities are directed to water resources protection and atmosphere protection.

There is active international cooperation in solving of environmental problems. It is a natural process, because these problems cannot be limited by borders of states. Waste water fallen into the Gulf of Riga has an influence on the seashore of Sweden, atmospheric and water pollutants are coming to Latvia from neighbouring countries in one's turn. Therefore many activities are taking place exactly in connection with international environmental institutions and projects.

Medical statistic in Latvia is collecting according to recommendations of World Health Organization and European program Health 2000. Latvian Environmental Data Centre is taking part in the United Nations Environmental Program. Centre is the United Nations database system INFOTERRA National Focal Point. National Steering Committee of Consortium for Inter-

national Earth Science Information Network CIESIN is established in Latvia. Centre for Environmental Science and Management Studies of University of Latvia is a partner of the Baltic UNITWIN Programme on Environmental Studies.

Learning, analysis and use of previous experience are important stages of research and education, management and practical activities. Qualitative, i. e. full, precise and timely environmental information, universal availability to this information are the indispensable preconditions for environmentally oriented legislation and decision making, for analysis of problems and implementation of research and applied projects. We are looking on information supply for all these actions as on the multipurpose integrated information system, high demands to research, technologic, management and educational information are equal today. Environmental information service is developing at present in two complex trends.

Access to international information sources is very necessary for all mentioned activities. Scientific and technical information supply in Latvia is provided by several research libraries. They are in transition situation at present, modern information institutions are created instead of traditional book stocks, All stages of information ensuring will take place in research libraries – collection, qualitative processing, storage and, especially, effective search and users supplying with information. Environmental information is accessible in several libraries. Most comprehensive collection is in Latvian Academic Library. Collections of scientific libraries of University of Latvia, Agricultural University and Medical Academy, Patents and Technology Library and Scientific Medical Library cover corresponding fields. Specialized environmental libraries are the library of Centre for Environmental Science and Management Studies and the Green Library.

Today there is no doubt, that traditional printed documents and electronic information must be available for specialists as well. Electronic technologies have many advantages first of all for information searching and for references. We are sure, that at present it is impossible to find full information without computer searching. Therefore CD-ROM and on-line bibliographic and factographic databases are very substantial part of information support.

Our experience shows that the researchers and specialists are very interested in CD-ROM technology. Research libraries continue to expand this modern informative service by means of increasing the number of workstations and acquiring of new CD-ROM databases.

Extension of Internet network to Latvia is providing access to on-line catalogues and databases, reference and information services, possibility to use document delivery systems. Majority of research libraries are connected to Internet. Latvian Academic Library concluded the Licence Agreement on access to STN International on-line database system in 1993. The first year of operation shows increasing interest of our specialists to on-line service.

The best of bibliographic databases are completed with qualitative abstracts, written by authors of articles. Abstracts are assisting you to understand and to decide whether one needs

this article or not. In many cases it is possible to understand the full content of article. Therefore exactly databases with abstracts, e.g., Science Citation Index with Abstracts, Medline, ABI are the main source for information searching.

Printed documents or its hard copies are remaining the main ones for full text information. Usually specialists need information more than from one screen, they use simultaneously several pages, several articles and several journals, especially on their working places.

We have a plan to use bibliographic databases first of all for information search and corresponding electronic or printed full text document delivery system after that, if specialist really will need full text. At present, different document delivery systems are rapidly developing. Those systems give to users a possibility to receive necessary information by mail or fax. We will conclude the agreement with British Library Document Supply Centre in Boston Spa in nearest future and hope to conclude such agreement with Universitätsbibliothek Hannover und Technische Informationsbibliothek also.

Today the document delivery systems based on Internet is created. Joint project of AT&T and Springer Verlag Right Pages will deliver health, biological and environmental information first of all. Joint acquisition program JASON in university libraries of North Rhine-Westphalia includes electronic delivery of articles from scientific journals. Application of such systems is in our plans.

It means, that it is possible to reduce number of periodicals in libraries and to order only separate articles specialists really need. In such manner we will provide necessary articles from larger number of journals than we can subscribe for the same money. It is possible to subscribe most usually used journals only . We are sure that such strategy has good perspective in future.

It is necessary to have databases containing information about processes taking place in our country for an authentic information support. Such information are necessary to domestic specialists and to international community also. The first stage of creation of Latvian environmental databases is going on at present.

Off-line databases are created and information is accumulated in those databases. These databases are accessible in institution, that is the producer of corresponding database. There are many small data stores in different narrow fields besides that in scientific institutes and universities, in enterprises and governmental institutions, in personal computers of researchers. These files contain important and necessary information. Sometimes those information are utilized in unexpected field, e.g., data about feeding flights of birds are using for security of flights at Riga International Airport. It is possible to create new databases on the basis of these files.

The next step will be to reorganize those databases in on-line systems. Latvian Academic Network LANET, which is connected with Internet and X.25 research network WIN is impro-

ved, environmental institutions are connected to this network. We hope, that some of those databases will be accessible on-line for specialists from Latvia and other countries in 1995.

Latvian Academic Library as the main institution for scientific and technical information in our country is actively engaged in the creation of databases, especially those containing metainformation. One of such projects is the creation of directory Latvian Data Bases. Implementation of this project includes collecting of information on environmental databases also. Partly this job was done jointly with Gesellschaft für Mathematik und Datenverarbeitung and data will be included into second edition of catalogue "Der elektronische Fachinformationsmarkt in Osteuropa". Partly this is the latest information.

We are identified 43 off-line databases at present, containing information on environmental problems and related fields.

There are several institutions in Latvia, which are engaged in creation of environmental databases:

Environmental Databases in Latavia	
Source	**Number of Databases**
Latvian Environment Data Centre	24
Centre for Environmental Science and Management Studies	3
Latvian Hydrometeorological Agency	11
State Medical Statistics Bureau	1
Latvian Fisheries Research Institute	3
Latvian Forestry Research Institute	1
Database type	
factographic	40
bibliographic	2
full text	1

Most part of databases contain data from the nineties, only some of them cover the sixties, seventies and eighties also. One database contains hydrographic information on the Baltic Sea and the Gulf of Riga from 1911. The majority of factographic databases serve information in different forms, numerical and graphic, many of them calculate some statistical parameters - the average quantity, deviations, errors, etc.

The process of including of Latvian environmental information in worldwide database systems is started now. Statistical database system of WHO Regional Office for Europe is used for health statistics. Hydrometeorological data are included in database system of World Data Centre. Latvian Environment Data Centre will start data entry in United Nations database system INFOTERRA in nearest future. The creation of Database Nodes and Latvian National Catalog Node of network CIESIN is started. Those data will include among others demographic, health and environmental information first of all. Information, accumulated in databases, covers several main fields.

13 data hases contain information on **water resources and water pollution**. These data include:

- General statistical information on underground and surface water consumption for industrial and municipal needs, on customers of water, on waste water purification in industrial enterprises and municipalities.
- Data on surface water, rivers and lakes; geomorfometrical data, industrial activities in corresponding basin; physical and chemical analysis of water (concentration of oxygen, ammonium and nitrites, oil products, pesticides, heavy metals etc), hydrological information and biological indications.
  In lakes and rivers of Latvia the main pollutants are phenols, nitrates, heavy metals (manganese, nickel, copper, zinc, etc.), oil products, mineral fertilizers and pesticides. General situation is satisfactory, e.g. utilization of mineral fertilizers is increased at present twice. Latvian rivers are getting better although somewhere the maximally allowable concentration is exceeded. Hydrobiological pollution (different planktons etc.) is within the limits.
- Information on water pollution, results of biological and chemical analysis (phenols, oil products, heavy metals etc.) of waste water in different manifolds and purification systems; information about maximally allowable concentration of pollutants in industrial, drinking and surface water; information about purification systems.
  In connection with decreasing activities in production and improvement of industrial waste water purification systems, share of municipal waste water is rising. In 1993 approximately 65% of total amount were municipal waste waters. Waste water purification systems in Riga started operation in 1992. It is extremely important, since Riga is producing the main share of waste water in Latvia. To our regret in some cities of Latvia purification of waste water is a big problem today.
- Data on the Baltic Sea and the Gulf of Riga, oceanography data (temperature, salty, water level, currents), chemical composition and pollution (oxygen, chemical substances, among of heavy metals, etc.), hydrobiological data.
  The Gulf of Riga is the subject of an international environmental program, that is implemented together with Nordic countries in 1993-1997. Within the limits of this

program concentration and distribution of heavy metals, biochemical transformation process, exchange of pollutants between the Gulf and the Baltic Sea and the different processes resulted from this are investigated.

Quantity of waste water fallen in the Gulf of Riga reduced considerably – amount of nonpurified waste water in 1993 was only 15% of that in 1992. The main water pollution region is seashore of the Baltic Sea near Latvia, oil and chemical substance terminals are placed here. The main pollutants are phenols, nitrates, oil products.

11 databases contain information on **atmosphere and its pollution**. These data include:

- General meteorological data - temperature, humidity, strength and direction of wind, concentration of oxygen and ozone, chemical composition.
- Data on quantity of different pollutants (sulphur dioxide, nitrogen oxide, dust, etc), its concentration in atmosphere and precipitation, concentration in different cities and regions of country. Information on local pollution sources - coordinates of source, height and bore of chimney, temperature and speed of emission, emission of different pollutants. Statistical data and maximally allowable concentrations of pollutants.

  Emission of pollutants in atmosphere are decreasing from year to year, but it is sill too high. In 1993 the total emission from stationary sources (excluding this from traffic) was 87 000 tons of harmful suhstances, that means 33 kg per each inhabitant of our country. To this number we must add pollution from sources placed in foreign countries, first of all from Lithuania, because the prevailed wind direction in East Baltic region is south-west. Oil processing factory in Mazheikiai, cement plant in Akmene, industry in Shiauliai and Jonava give some contribution in general pollution of regions ylaced near Lithuanian border. The main pollutants are sulphur dioxide, carbon and nitrogen oxides, dust and formaldehyde. The worst situation is in Riga, Olaine, Ventspils, Daugavpils.
- Data on electromagnetic and nuclear radiation - disposition, class, activities and characterization of sources of radiation and radiants; utilizing isotopes, radioactive waste, their storage.

  These problems have a great actuality as well. Radioactive isotopes are used widely in industry, instrument-making and medicine. Some problems appear in connection with remains of special fuel after the Russian Army left our country. The Ignalina nuclear power plant in Lithuania is placed only several kilometers from the Latvian border, therefore a continuous control is necessary. It became more clear and important after disaster in Chernobil.

  Control and registration of electromagnetic radiation, its influence on different biological systems and organisms is important in connection with widespreading of radiotransmitters and radiochannels for telecommunications and especially with

activities of Russian superradar in Skrunda. There are no maximum allowable limits for impulse radiation today, therefore the last information is very interesting for research.

10 databases contain information on **registration and protection of biological systems, human ecology** and **public health information.** This information include:

- Data on registration and protection of plants, forests, forest reserves and secular trees, their location, species and characteristics. A special international project on registration of forests, their biology and ecology is starting at present. Therefore the data will be much more complete in future.
- Information on animals and birds, characteristics and location of nests, neighbouring locality. Games, their species and distribution in forestries.
- Primary ichthyological data on fishes in the Baltic Sea, data on zooplankton, species, quantity, hiological mass.
- Vital statistics - natality, mortality, life expectancy, resident population; mortality statistics - death rates and infant mortality hy causes,
- Public health; morbidity statistics - groups of diseases, main selected diseases and operations; number of physicians and paramedical personnel by speciality, hospitals and beds, population hospitalization and out-patient facilities hy diseases.

Statistical data are distributed by age and sex in different cities and regions of country. All average statistical data have became worse year by year since 1990. It is the result of total economic decrease. Morbidity, general and infant mortality are rising, natality and average life expectancy are reducing, natural increase is negative since 1991. Compared to information on biological systems with data mentioned above about water and atmosphere pollution gives some correlation between environmental conditions and life and development of different biological systems. Tree growth and morbidity of domestic animals, prevalence of diseases – cancer, tuberculosis, gastritis, diseases of respiratory system particularly depend of environmental situation in corresponding region.

9 databases contain general information on **environmental management and law,** on institutions and persons in environment. This information include:

- Information on environmental law, documents and projects, environmental control and accidents.
- Information on institutions, departments and individuals in environmeat protection, management and education, their fields of activities, full addresses, leadership, etc.

- Data on industrial enterprises in Latvia, their location, characteristic of business, environmental data – production of different pollutants and wastes, purification systems anà filters.
- Storage of waste, location and characteristic of garbage heaps. One of the main problems is recycling of waste. There is no such industry in Latvia at present, the work is in very beginning. There was unreal offers to cooperate with some companies, what included import of approximately 200.000 tons of garbage for processing every year.
- Information on laboratories and methods of analytical analysis, their loeation and tasks, fields and methods of analysis, equipment and staff.

The main immediate tasks for further development of environmental information support in Latvia are continuation and speeding-up of introduction of CD-ROM and on-line services, spreading of these services to all environmental institutions and research libraries. Therefore we must connect all institutions to Internet and develop level and possibilities of electronic services. Our researchers and specialists are very interested in DIALOG database system, OPAC catalogue, on-line document delivery systems, subscription on CD-ROM databases. We must update our existing databases regularly and create new ones on basis of existing information files. Using of some database management systems will make access to information more efficient and possible for other users also. The most important information must be transferred in on-line databases. We must include our environmental information in worldwide information systems as much as possible. The problem for implementation of this tasks is lack of computer hardware. Our research libraries and environmental institutions need PC AT-386 and AT-486 computers for different workstations (for staff and users), Pentium and UNIX computers for database and CD-ROM servers, CD-ROM drives, laser and matrix printers, communication and network equipment very much. We are very interested in qualitative and fast telecommunication channels. It is necessary to change radically our attitude to use of software and put into practice legal copies of software.

Process of modernization of the environmental information system and service is started at present. We are very interested in to prompt its development. Therefore wide international assistance and cooperation is very important for us in future.

Information Sources from Hungary

F. Tóth
Institute of International Technology (NETI), Budapest

Thank you for the invitation for WINRE'94. This event provides a unique opportunity to meet people of East-Europe working in the information business. I would like to have a speech on the information sources of Hungary.

1. Information Services provided by NETI, the Institute of International Technology

As being a market economy, the adoption of developed technologies and management practices in Hungary plays a vital role. The effective presentation of Hungarian technical and scientific skills is equally important.

The goal of NETI is to help potential partners in finding each other and starting cooperative projects that involve technology transfer and to collect and analyse information regarding international technology cooperation and distribute it among institutions of government and business.

- NETI operates a database of Hungarian technologies (research capacities, new ideas and inventions). Online service available.
- NETI provides information for the Hungarian Paks Nuclear Power Plant. NETI is also very active on the field of environmental protection related databases.
- NETI also initiates the exchange of experiences and knowledge of advanced technologies, know-hows and possibilities for joint activities. This way NETI organises technology-related conferences, seminars and workshops, arranges business trips, interviews and negotiations.

The Institute of International Technology assists foreign representative offices in their public relations activities, prepares feasibility studies, contracts, agreements and other legal documents.

Through its information service NETI provides market research and industrial survey, analysis and forecast on specific subjects.

Having very useful international contacts, NETI initiates international projects introducing modern manufacturing and design processes.

The main goal of NETI is the 2-way technology transfer between the developed countries and Hungary. East European science and engineering produce outstanding results in several areas such as math, software development, biotechnology, aerospace and even metallurgy. Such patents and know-how can serve as a good basis for licensing or joint ventures. NETI keeps record on Hungarian ideas awaiting foreign participation as well as research and development capacities available to foreign partners.

NETI is the institute of the Theodore Puskás Foundation. Personal experiences and excellent contacts with both government and business are the main resources of the Institute. Grouped into departments the work on projects of government relations, information services and technology transfer/business, respectively. In the Institute, Chinese, English, French, German and Russian languages are spoken.

2. HUNTECH Database

Following the sweeping political changes the intensive modernization of the Hungarian economy and industry began through international cooperation and technology transfer. Hungary has joined numerous schemes of international R&D collaboration and legally assured the integrity of foreign technologies and intellectual properties.

While the flow of technology from West to East is the generally expected process, Hungarian science and engineering also produce outstanding results in several areas. Our conception is that balanced and justified economic development requires two-way technology transfer and the international marketing of domestic achievements in the fields of technology. HUNTECH database is a product of this concept.

HUNTECH is a computerized database in English containing Hungarian R&D results and institutes which, according to their owners' evaluation, satisfy international demand, and serve as a basis for developing marketable, up-to-date products within reasonable time.

Available Hungarian research capacity registered in HUNTECH also provides an opportunity for interested parties to find Hungarian partners for long-term joint technology programmes.

The database HUNTECH has been developed jointly by the Institute of International Technology (NETI) and the National Committee for Technological Development (OMFB) so as to support Hungarian R&D institutions and scientists. While OMFB, as a co-author and co-owner financed the development of HUNTECH, it is NETI's task to provide the service and maintenance of the database.

In HUNTECH you can find nearly all important R&D results, industrial research institutes, development companies, the research institutes of the Hungarian Academy of Sciences as well as university research groups have supplied data and themes to HUNTECH.

Although the database also includes patented Hungarian ideas, the database is not identical with the patent register. HUNTECH also includes ideas, development results not (as yet) protected by patent.

The entries recorded in the database have been provided by their authors. Submitted materials are not evaluated or assessed from the professional point of view: they are either recorded or rejected, or may be returned to the applicant for correction. Professional and legal responsibility is entirely assumed by the applicants.

NETI in agreement with OMFB is developing the database by monitoring Hungarian research results and by daily contacts established with scientists. NETI keeps the Hungarian government organizations and those institutions interested in establishing technological and scientific international relations informed on HUNTECH. As co-owner of the database, OMFB also has an up-to-date version of HUNTECH.

Regarding the structure of HUNTECH, every Product and Result file includes the name and data (address, phone, fax, contact person) of the owner, a short information on the subject, the estimated research expenses for further development and the keywords. The Capacity files have similar data of the owners and they also contain data on facilities (number of staff, publications, command of languages, equipments, infrastructure and the research field of the institution).

You can search in HUNTECH by type of subject, keywords, fields of science by OECD code (planned), estimated research expenses and R&D organizations.

HUNTECH contains about 1200 records of new products, R&D results and accessible capacities. The database is in continuous development and updating, so it supplies up-to-date entries to inquirers.

Most Hungarian foreign missions (embassies, commercial offices) are supplied with information material on HUNTECH; their staff provide help to interested parties in contacting the Hungarian database operator.

The contents of the database is available to those interested in several ways. The simplest way is to contact NETI by mail (or fax) and ask for information in specified themes on R&D results and research and development capacities offered by the Hungarian parties. It is advisable to give two or three 'keywords' as well, this makes search in the database more effective. NETI reply by mail or by fax.

A more comfortable way is to contact directly NETI's service computer through modem or X.25 line. In doing so you can search directly in the database and extend or narrow the scope

of your search according to the findings. NETI charges only a reasonable fee for the services of HUNTECH.

The Institute of International Technology (NETI) is at your disposal and provides more detailed information if needed. If you want to contact your prospective Hungarian partner, NETI is ready to arrange appointments and provide further assistance.

The selected findings can, according to the user's requirements, either be printed and mailed by NETI, or called directly to the client's computer. From outside Hungary, the database is already available as one of GBI's online services (Gesellschaft für Betriebswirtschaftliche Informationen (Germany).

3. Activity of Online INFOCLUB/ Hungarian Infobrokers' Club

The Hungarian Infobrokers' Club, also known as Online INFOCLUB, was formed in the first half of 1992 as an affiliate of the Chamber of Hungarian Database Suppliers with the aim to gather online specialists and other representatives of the Hungarian information business.

Members meet once a month at varying locations (most frequently at NETI) to discuss topical issues, exchange information and become acquainted with the activities of the members.

Membership has exceeded 70 persons by now. The members include not only outstanding representatives of the information market and the related areas (e.g. Hungarian Chamber of Commerce, State Property Agency, Ministry of Industry and Trade, Hungarian News Agency etc.), but minor private enterprises as well.

No membership fee has to be paid yet. The technical conditions for the meetings are provided by the companies where the events are held. INFOCLUB's objective in the long run is to familiarize members with the activities of Hungarian information brokers, establish Hungarian terminology for the information profession with particular regard to the online field, elaborate ethical standards for ourselves and invite Hungarian and foreign information specialists and representatives of online hosts to present their activities and databases.

Some of the successful topics addressed so far at the meetings were search tips for retrieving business information from Data-Star Dialog, and database presentation by GBI (German Business Information, Munich).

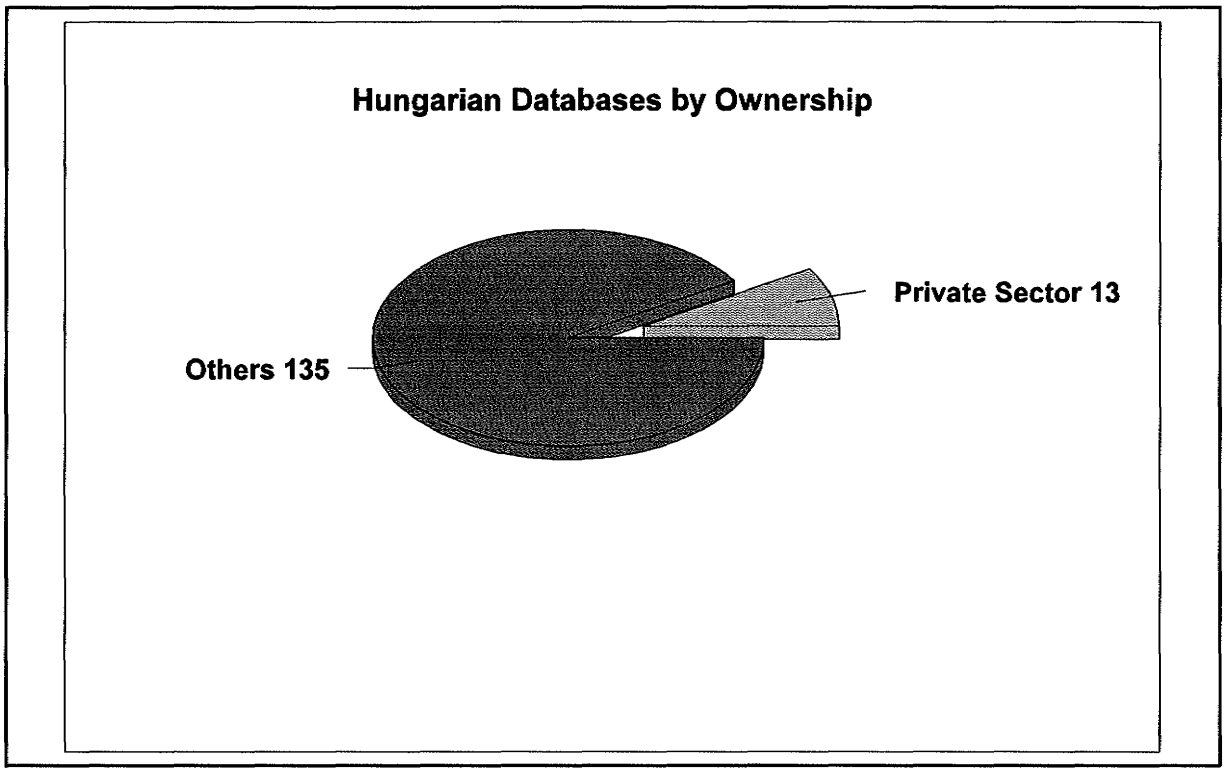
Hungarian company information databases, copyright issues, CD-ROM presentation, reports on the Online Meeting in London were on the agenda of the last meetings.

4. General Trends of Information Sources from Hungary.

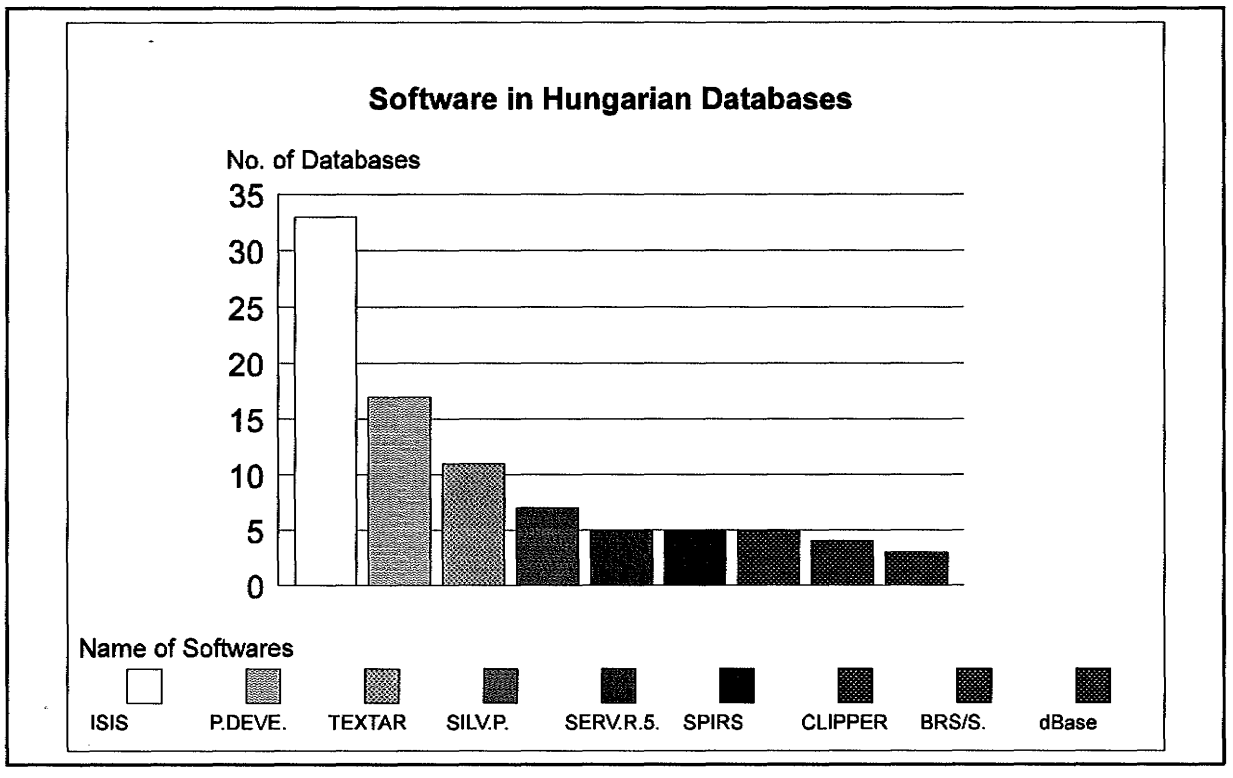
The distribution and use of information products have similar problems like in any other countries. The effects of the world-wide economic recession are working also in Hungary. Most of the companies do not like to pay for information, even if it would be useful for them.

Following the western trends in recession, there are still special difficulties in promotion and marketing in the East-European countries. As a result of lack of experience and money, there is no sufficient marketing even for very good quality databases and information services.

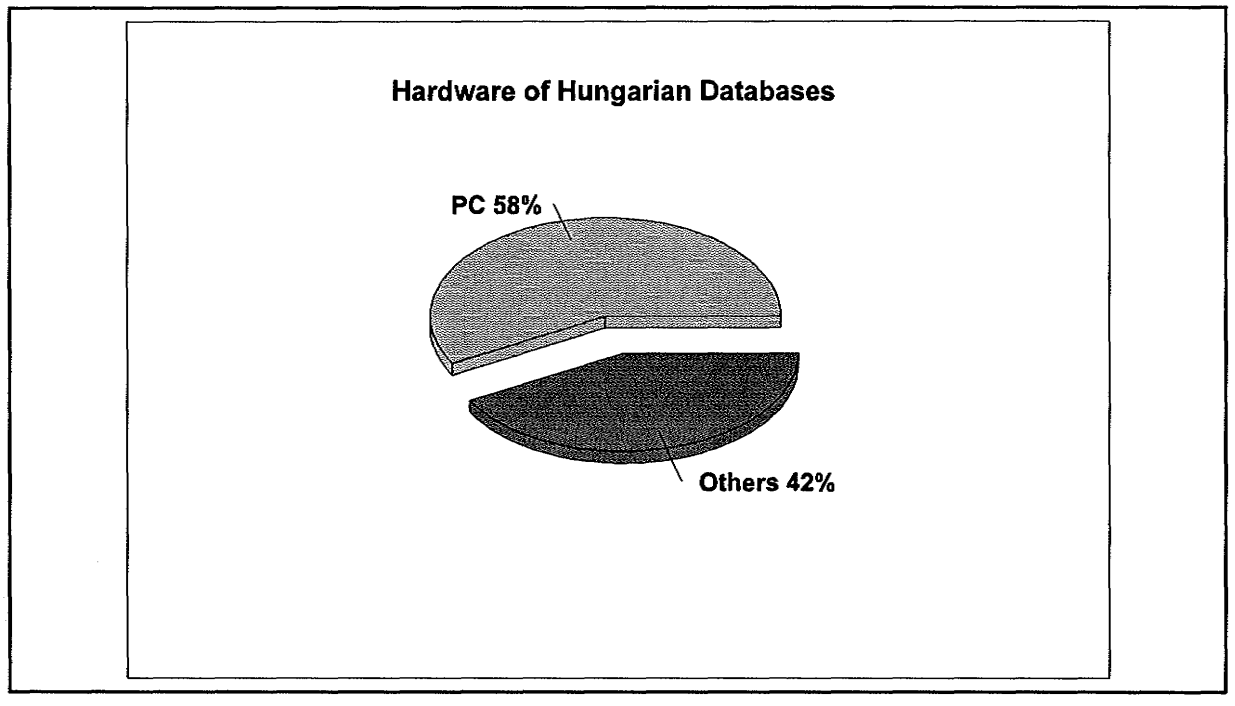
The Chamber of Hungarian Database Suppliers have made a survey of Hungarian databases. According to the last survey analized there were 148 databases available in Hungary.



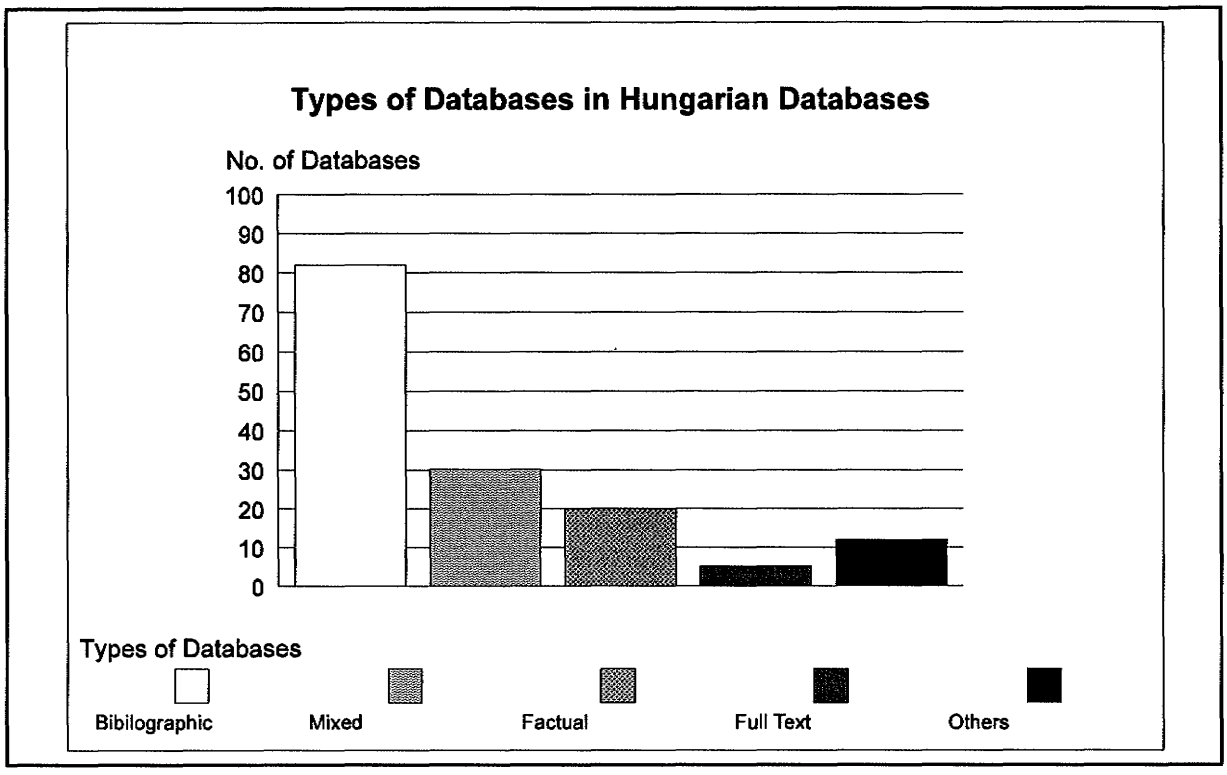
Only 13 database, 9% percentage of the 148 database are in the private sector by ownership. Private companies moving very slowly to this business, after a long period of "state monopoly".



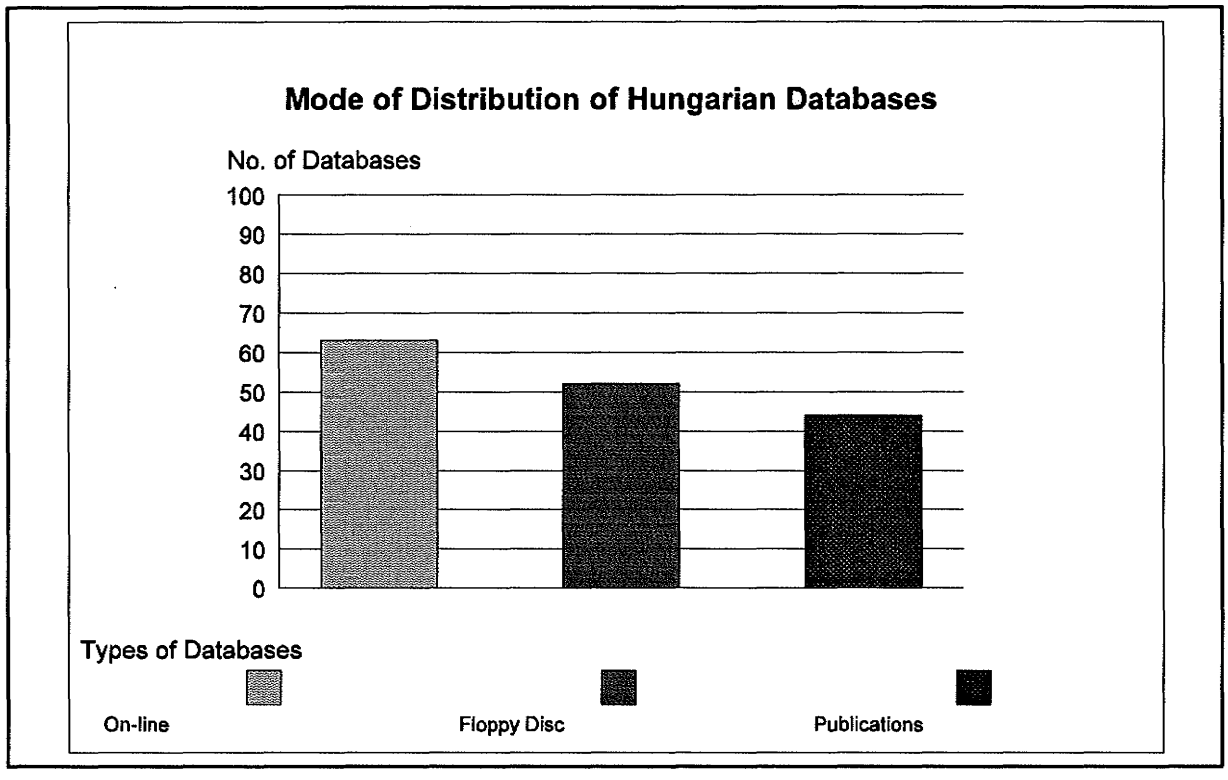
The leading software is still ISIS (supported by UNESCO) in Hungarian databases, 33 of the databases use this option and for 18 database the owners developed their own software. There are a full range of softwares used in Hungary from Clipper to dBase, but the famous Oracle was used only in 2 database.



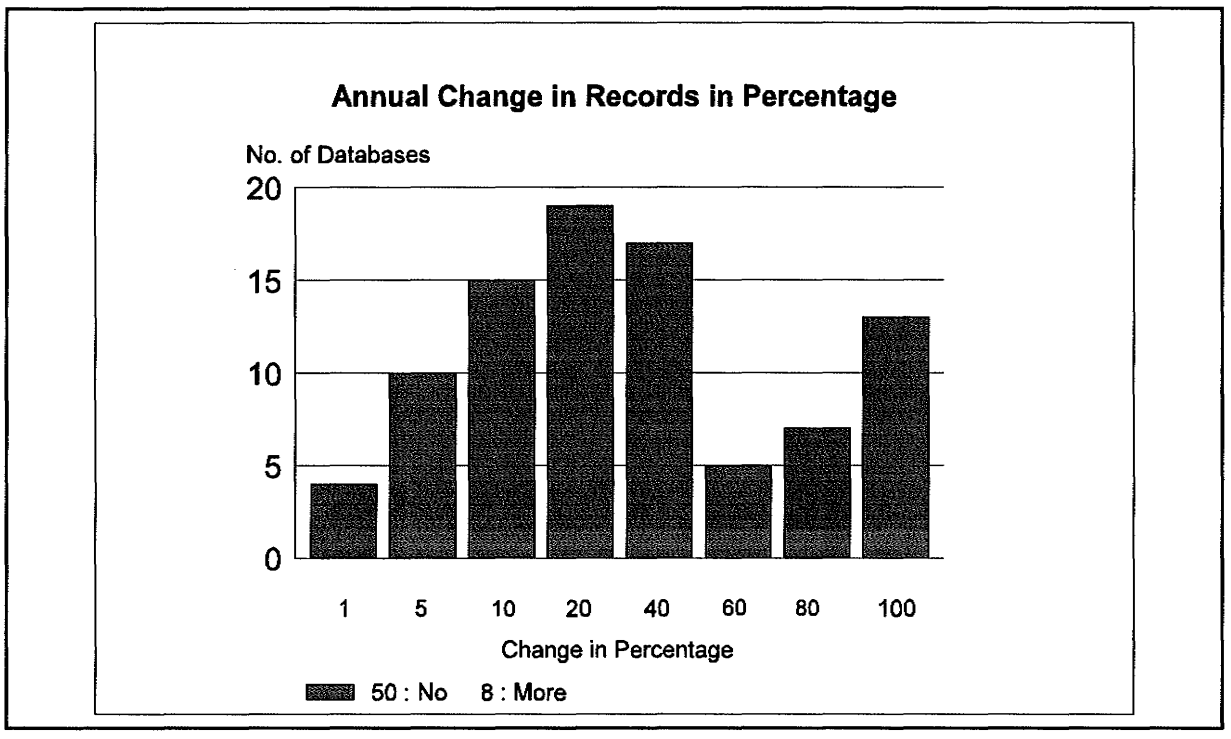
The majority, 58% of Hungarian databases is still run on PC. The most rapid change can be predicted in this field.



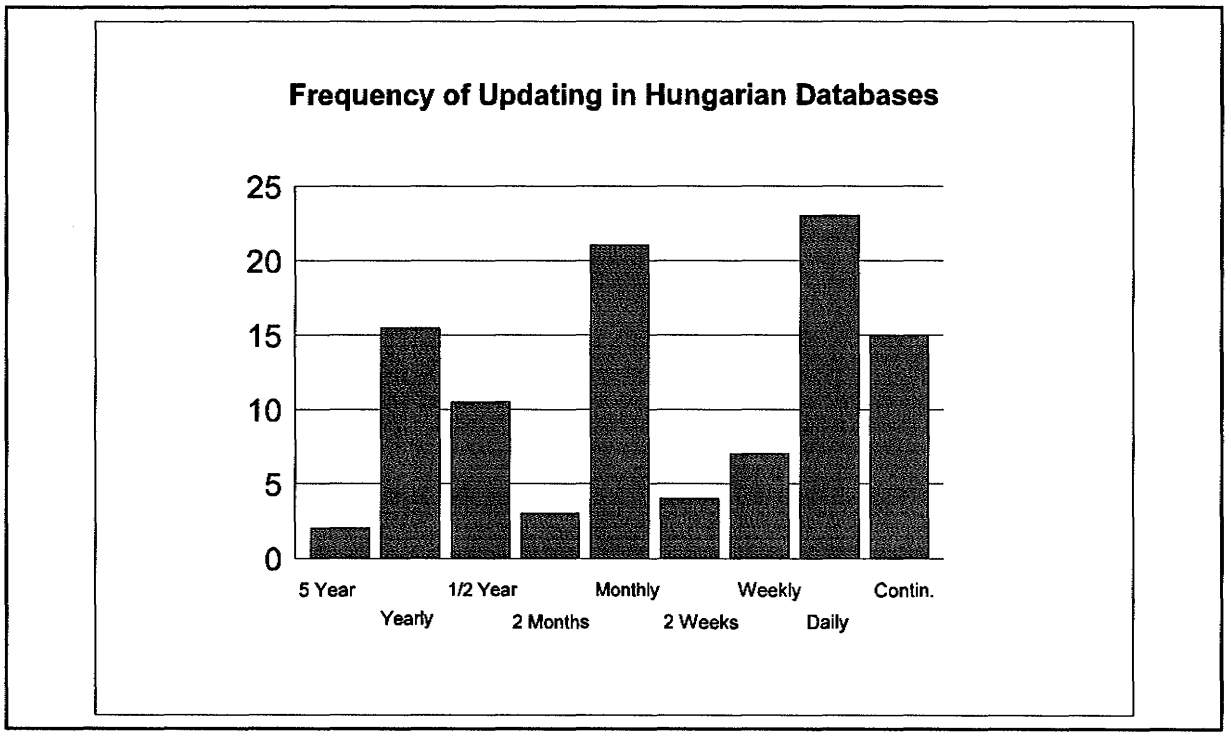
The overwhelming majority (82) of the Hungarian databases is bibliographic type. Mixed are 28, factual 20 and full text only 5 database.



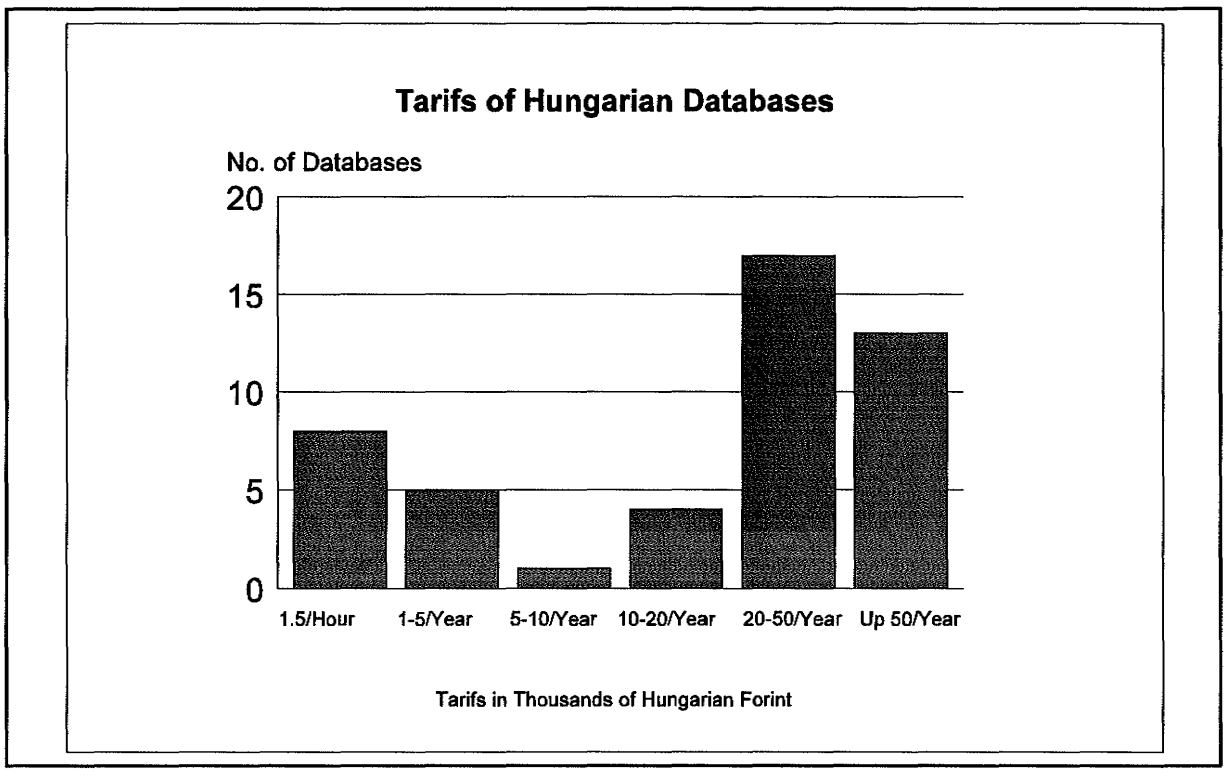
Online distribution already operates in case of 61 databases. Floppy disk is a popular mode of distribution in Hungary, but some CD-ROM distribution has just started in Hungary.



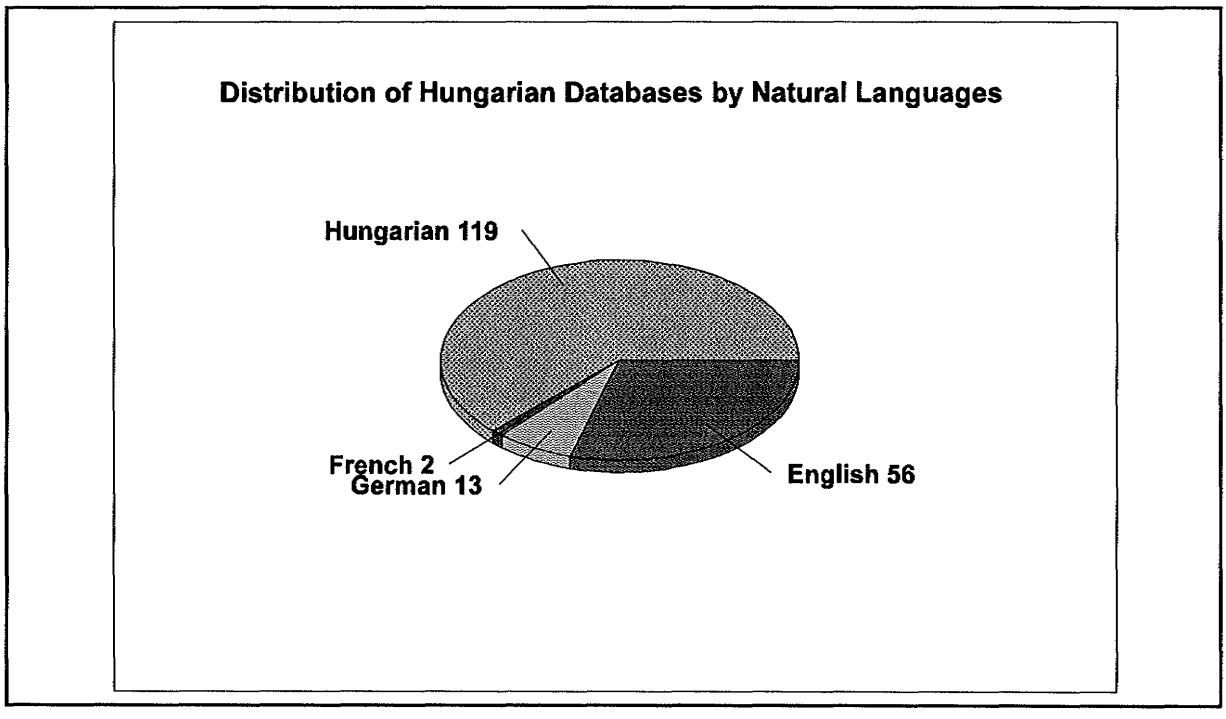
Analysing the annual change in records in percentage, a really wide variety provided by different databases. In most of databases there is a 20% annual change in records in percentage, there is no change in 50 database, and in the case of 8 database the annual change is more than 100%.



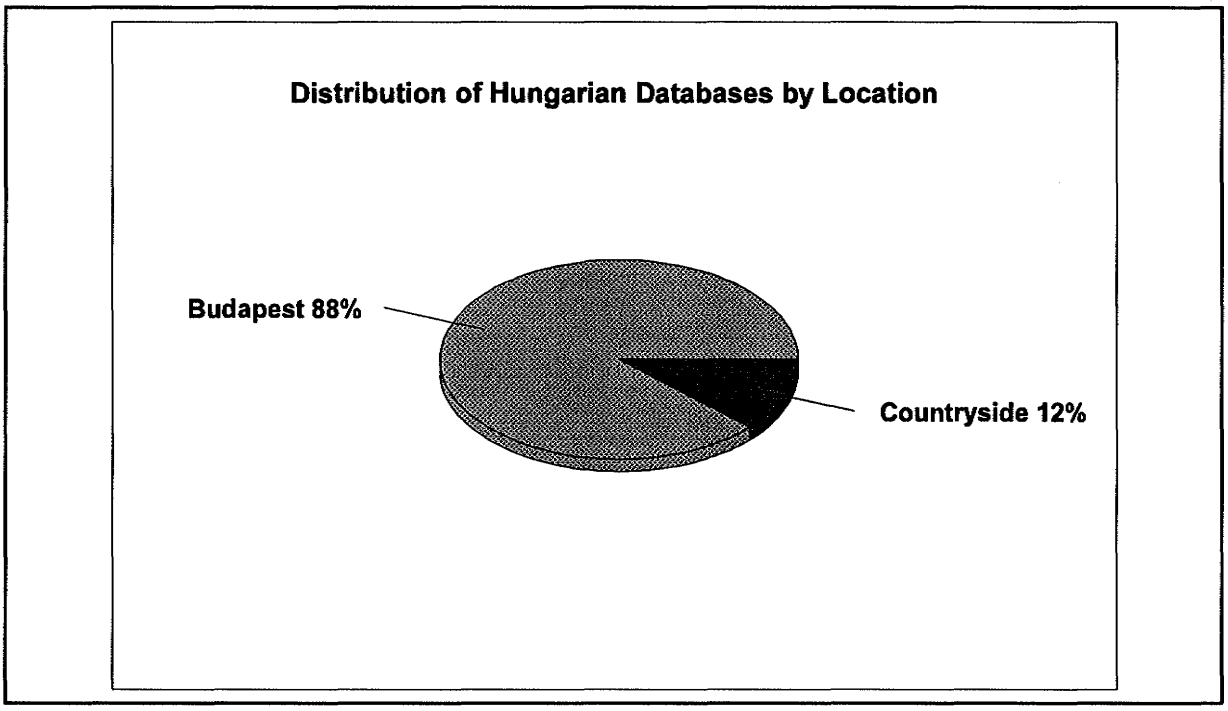
In the frequency of updating there is a wide range by several types of databases. 21 database has monthly and 22 database has daily update according to the survey. Yearly update is the third most popular frequency.



Survey of very different services and very different prices. It shows the wide range of tariffs from the database of 4 HUF/record, to 13 database, with more than 50.000 HUF/year subscription.



The majority of databases are in Hungarian, a smaller part of databases operates in English (56) or German (13) and French (2).



The Budapest oriented location of databases (88%) reflects the centralized Hungarian structure.

5. Demands for East-European Information in the West

Doing business in countries where state-owned property is just being privatized is far from being an easy task. Many new firms are emerging out the ruins of obsolete and monstrous industrial and agricultural organizations. Western investors can utilize the expertise and information accumulated of these databases to select and evaluate their partners. In this way information sources of Hungary can be the catalyst of East-European economic growth.

Information Services of NETI

The Institute of International Technology (NETI) provides a wide range of information services. NETI has global online access to international databases and carries out information searches and information brokerage for Hungarian and foreign users.

The Hungarian Online User Group was fromed in the second half of 1992 by the initiative of NETI. The infrastructure of the monthly club meetings is provides by NETI, the president of ONLINE INFOCLUB is the information manager of NETI.

NETI is the Hungarian respresentative of GBI (German Business Information, Munich), provides online and offline service of HUNTECH database of technologies also at NETI. NETI also works an building a database of environmental protection realted projects.

NETI is the Hungarian partner of the israeli information company named COSTI.

NETI cooperates with international professional organizations, played an important role in the organization of the international participants at DATA '93, the Hungarian international database conference and exhibition.

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NETI/OMFB - HUNTECH - Database

Title:	SIMULATION OF DIGITAL COMMUNICATION SYSTEMS	
Project Area:	computer aided design; telecommunication; system simulation	
Code:	8734 737299 506502	
Category:	Product	
Partner is needed for:	-	
Organization:	Name:	Technical University of Budapest, Department of Telecommunication and Telematics (BME Hiradastechnikai Tanszek)
	Adress:	H-1521 Budapest P.O.B. 91.
	Tel.:	36-1-1813-500
	Telex:	225931 muegy h
	Fax:	36-1-1665-824

Project Description:

The software package DLSIM (Digital Line SIMulation) has been developed for simulation of digital communication systems on IBM PC's. The program can be used to model, test and qualify the system in any stage of the development. Several design variants may be compared. It is easy to model any modification of the system elements and to analyse their effects. Completeness: The present version of the program makes it possible to simulate baseband PCM transmission links modelled by linear elements in noisy environment.

Contact Person(s):	Name:	Dr. GY. CSOPAKI
	Department:	Department of Telecommunication and Telematics
	Function:	associate professor
	Name:	Dr. E. HALASZ
	Department:	Department of Telecommunication and Telematics
	Function:	associate professor
	Name:	Dr. T. TRON
	Department:	Department of Telecommunication and Telematics
	Function:	associate professor

For further information please contact:

Institute of International Technology (NETI)
Tel.: (361) 153 - 0633
Fax: (361) 153 - 2320
Mailing adress: H-1450 Budapest , P.O.B. 20. Hungary

References: Hungarian Telecommunication Enterprise, bibliography

Additional Information:

Further development plans:
- simulation of optical fibre transmission,
- modelling of nonlinear devices,
- qualifying of switched systems,
- simulation of digital modulations,
- to install the program on workstation.

Application possibilities: The computer aided simulation and its results can widly be used in qualification of communication systems, especially in planing and development of the national telecommunication network.

SESSION III

Quality Management for Information Services

Chairman: H.-P. Butz

The First Steps of Information Management in Poland

W. Gogolek
Polish Press Agency and Technical University Radom, Random

Abstract

The development of Polish Information Industry is the result of a real need for domestic professional information and access to foreign databases. The paper shows the main conditions of the development: digital telecom (X.25, Internet), education, promotion. The main Polish information sources offer business data, e.g, firms like: EuroStart, Giga teleservice, the Polish Chamber of Commerce, TeleAdreson. The Information Processing Center offers data about Polish science: people, institutions, researches. The Polish Press Agency (PAP) is leading of modern source of information - mainly current and business news. CD-ROM technology becomes increasingly popular, but still there are few Polish products in this technology.

1. Introduction

The Polish literature classic "The Paraoh" by Boleslaw Prus is an excellent study of power. It shows the role of information used by the ancient Egyptian priest as an instrument of power execution and a tool used by them to keep power. For example, their perfect knoweledge of the nature of the Sun's eclipse eabled them to misinform the people and present themslves as the rulers of the Sun and skies.

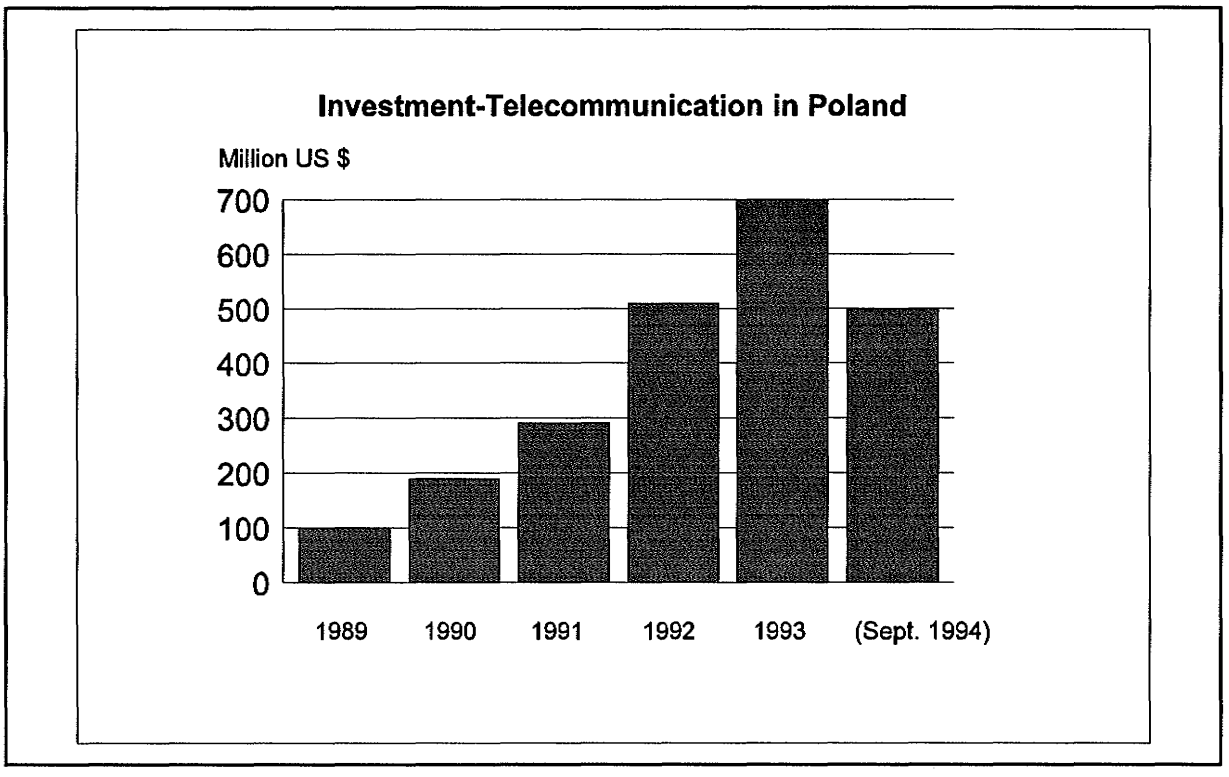
Today, fortunately for us, the monopoly for access to information is no longer such a powerful weapon. A tremendous quantity of information is easily accessible via modern global digital telecom. Competence in pocessing and using information is basic at all levels of decision making. It has a special meaning for Poland which thanks to changes of the political system opened its borders to the flow of goods, money and information.

The importance of domestic information inside Poland is growing mainly because of privatisation and free market.

Generally we can say that in Poland there is real need for professional information. It concerns the government, big and small firms, science and culture. In all cases we have in mind the need for modern information technology.

2. Conditions of Development

Besides of a real need for professional information, there are in Poland fulfilling other conditions of proficient development of Polish Information Industry (II). It especially concerns the development of digital telecom.



2.1 Digital Telecom [1]

A representative example of the state of digital telecom in Poland is an impressive progress of scientific computer network - NASK. The network is a range for recent solutions in this field and shows ways of constructive applications of them. Changes in the network are extremely fast. For example there is a rapid growth of traffic in the network. The reason for the growth lies in the friendly user interface of Gopher and WWW systems. It concerns especially students, even school children from high schools. The use of the systems is a very attractive way of education future users of professional sources of electronic information.

In Poland metropolitan networks are being created, one of them is WARMAN - Warsaw MAN. It will be finished in 1996.

NASK is the basic network in Poland. It offers gateways to X.25, Internet, EARN, DecNet for users in Poland.

At the moment Internet is the most popular service online. There are about 8.000 Internet hosts - mainly in scientific institutions. Over 90% expenses of NASK are covered by the Polish government.

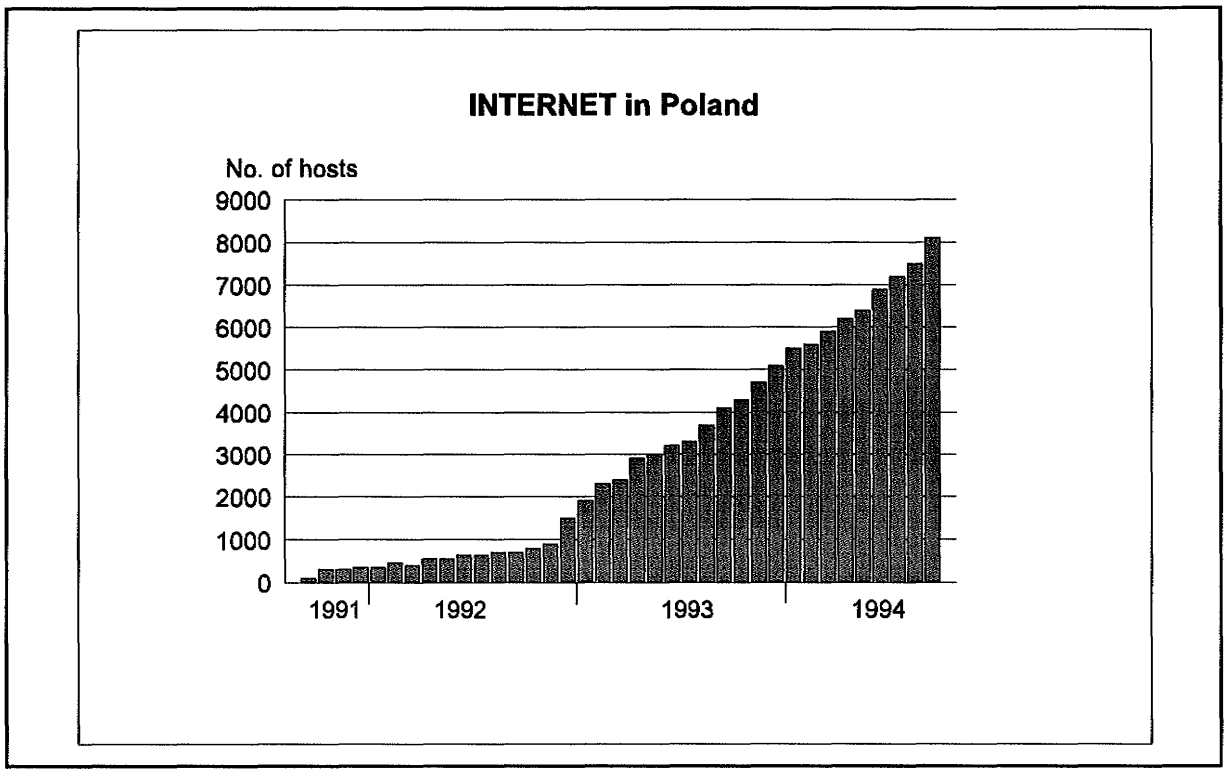


Fig.1: NASK works on Polish Telecommunication's lines. The network has its own international lines to Stockholm (2 Mbps), Vienna (128 Kbps) and 9,6 Kbps to Lvov and Moscow [2].

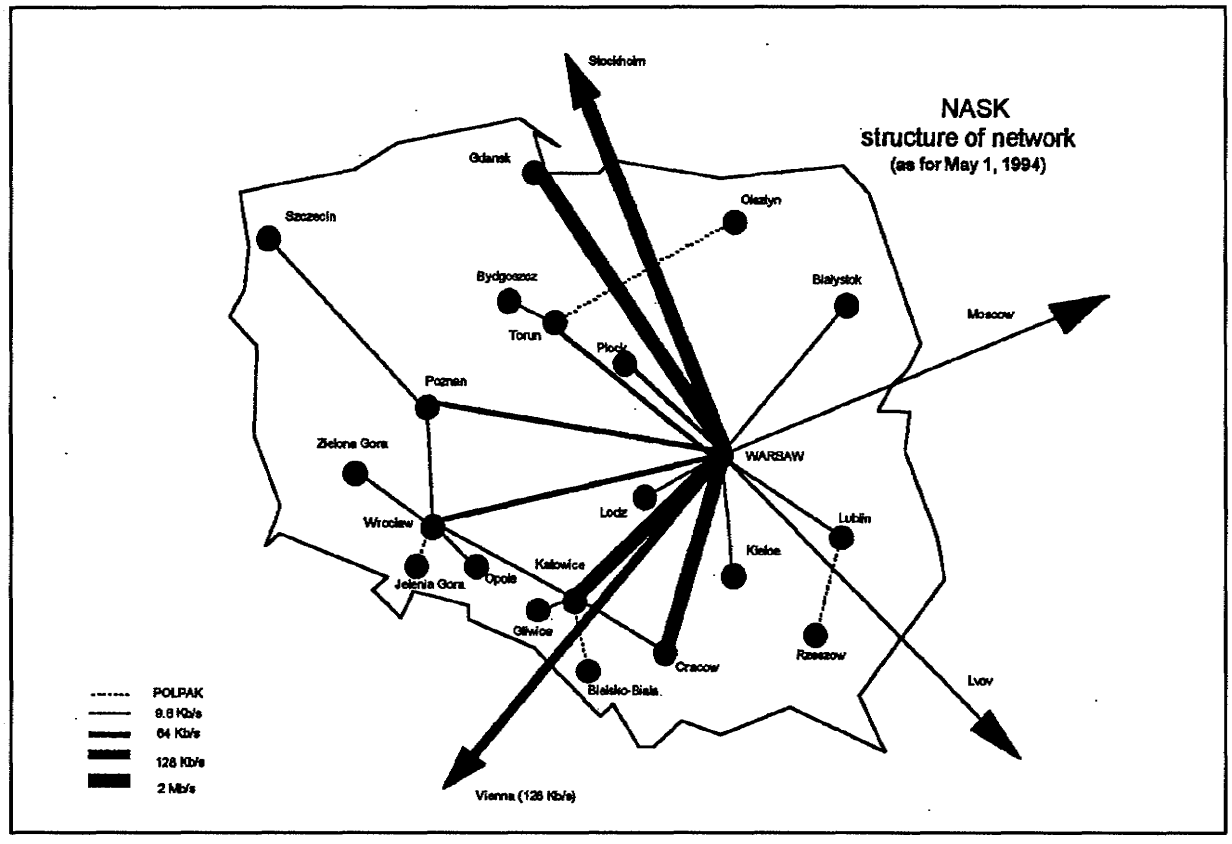


Fig. 2: NASK Structure of Network (as for May 1, 1984)

2.1.1 POLPAK

POLPAK network is the Packet Switching Public Data Network owned by Polish Telecommunication Ltd. Polpak offers very easy acces to the digital network, nearly from all places in Poland. Equipmment: 19 nodes of four kinds, 1 200 ports (totally in switches). Polpak ofers X.25 (64 000 bps), X.28 (64 000 bps), X.28 (14 400 bps, via PSTN), X.32 (14 400 bps), internode procedure XCM (ALCATEL X.75+) with speed 9 600 bps, X.75 direct links to Germany, France, UK (BT) and MCII. There are fascilities: pacet size: 64 - 1024 octets, window size: 1-7, flow control negotiation and othe standard solutions. (fax: +48-22-274477, tel. +48-2-6257454).

2.1.2 Commercial Internet in Poland [3]

Commercial Internet (IKP) in Poland was established in 1993 as a result of an agreement between NASK, TP S.A. and ATM. The basic group of users of IKP at that time were: the Polish Press Agency (PAP), Gazeta Wyborcza (the largest circulation Polish newspaper), the Warsaw Stock Exchange and other users. Recently, Polish banks and other financial institutions have been interested in IKP. Many international organizations are on internet as well, e.g.: the U.S. Peace Corps., AMOCO Poland, DELL. Each month IKP gains 10% more users, which is equal to world trends.

The aim of the constructors of IKP is to make a node which will make it possible for ordinary users in Poland to use all of Internet's potential and to establish a professional centre for collecting and distributing data. On the other hand IKP offers online services - information about: Warsaw Stock prices, materials from Polish Economic services (BOSS, PAP), a business database with over 700.000 records from TELEADRESON [4].

IKP organizes seminars about Internet and together with WIP (Polish Dialog's representant) seminars devoted to Dialog Information services.

Commercial Internet is offered via traditional telephone lines (Dial-up) and via leased lines. They also install connections to X25 (POLPAK, TELBANK, KOLPAK). For some users they offer satellite terminals - V-SAT.

2.1.3 The Banking Telecom Company [5]

Many Western investors are interested in Polish Telecom. One of the most spectacular offers for Polish users of digital telecom is the Banking Telecom Company (BTP) - Telbank digital network.

The Banking Telecom Company (BPT) "TELBANK" S.A. is a telecom operator, conducting its business on the basis of the license issued by the Minister of Telecommunications, granting the right to conduct business in the installation and use of telecommunications equipment, li-

nes and networks, as well as to provide services with the elements mentioned above on the territory of Poland.

The TELBANK network is a fully digital nationwide telecommunications network that uses various techniques. The network of the TELBANK-M long-distance digital channel was used to construct two basic switched networks:

- PABX network, called TELBANK-T, providing switched telephone communications and switched digital communications for data transmission,
- Packed Switched Data Network, called TELBANK-P,
- a satellite communications network, TELBANK-VSAT is operational now. This system will allow:
  - installation of terminals with network access, regardless of their location and the state of telecommunications infrastructure,
  - construction of virtual sub-networks (independent user groups),
  - formation of emergency bypass routes in case of failures of the terrestrial network elements.

TELBANK offers relatively inexpensive, independent digital connection via V-SAT in any place in Poland.

2.2 Education

The next, very important factor of Polish Information Industry development is education in the subject.

In Poland we can see only the first steps of the education. There are some attempts to merge the subject to teaching programs [6]. But there are some barriers - poor technical ground, lack of well prepared, in the subject of II, professors, lack of education materials (schoolbooks, tutorials). Constantly, less important, but still significant is a language barrier among our students and potential commercial users of World information sources.

2.3 Promotion

Promotion, as other forms of marketing, plays a major role in II development in Poland. We can notice a growing number of publications and books on the subject.

The most important role in the field of promotion is played by international meeting EuroInfo-Poland. It is annual conference and exhibition, like Online in London, devoted to Information Industry. This year it was held for the fourth time. Every year there are about 200 participants of the conference and 30-40 exhibitors.

A questionnarie held among participants of EuroInfo shows that people are most often looking for information about business and science from Poland and Western Europe.

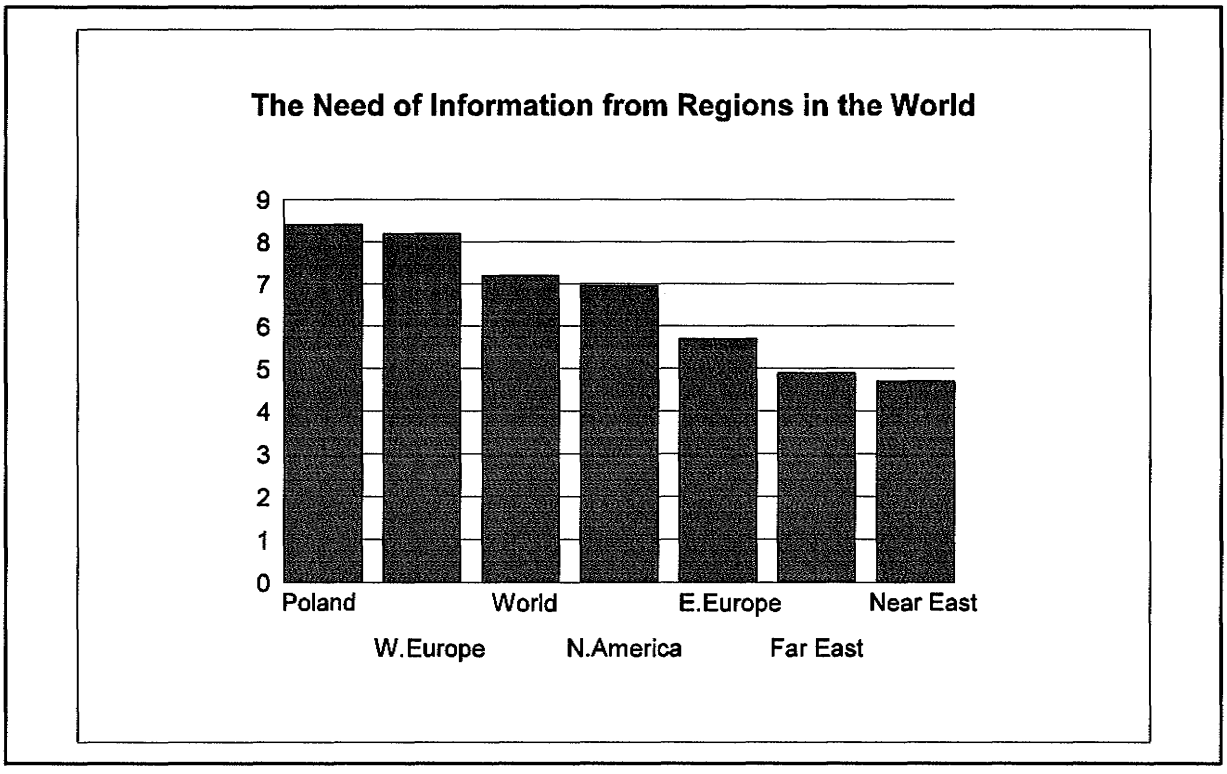


Fig. 3: The Need of Information from Regions in the World

3. Polish Offers [7]

The improved Polish telecom makes the creation of modern information sources much easier. The shape of our domestic offers is reflected in some of the firms which make up the Polish information industry.

Unfortunately only some of the services have an easy, modern access to databases.

3.1 EuroStart [8]

One of the most known and experienced Polish online services is Koliber (humming-bird). The service was established by the Polish firm EuroStart. Koliber offers five databases, which are searchable and displayable in Polish (PL), English (UK) and German (D).

- Kompass Poland, provided by Kompass Poland Ltd, offers a directory database - over 30.000 Polish companies, (PL),

- MTP Poznan International Fair, provided by the Poznan International Fair, offers information on over 11.000 Polish and foreign exhibitors (directory), which have participated in the events, (PL, UK, D),
- Telefax Poland, provided by CBS Service, Framax, contains a directory including about 35000 Polish companies, (PL, UK, D),
- BRE - Cooperation, provided by EuroStart, contains information about Polish and foreign offers for cooperation, received from the BRE Brussels, (PL, UK),
- First Contact, provided by DIALCOM, contains business information on Polish companies with their offers, (PL, UK, D).

Access to the Koliber is possible via Polish POLPAK X.25 Network DNIC is: 16111080 or via dial-up:+48-61-470831.

3.2 Institute for Economics of Chemical Industry [9]

Institute for Economics of Chemical Industry - Scientific and Industrial Information Centre is a broker of information and ofers unique data from Polish Industry. Databases of the Centre are avaiable offline.

The "ZAKLADY" databank encompasses information on 350 light industry plants (including cooperatives).

The data in this file is divided into two parts:

- information about the enterprise,
- information concerning the area of goods and raw materials exchange in cooperation with foreign companies.

The "PARTNER" information system contains data on about 400 industrial plants and research and development centers for industry grouped in 14 sectors encompassing 61 different branche of industry.

These enterprises have submitted to the Ministry of Industry and Trade more than 700 offers of cooperation with a foreign partner. The offers submitted by enterprises have been processed in cooperation with the Foreign Relations Department. The data contained in this file encompasses: description of the undertaking and a description of the enterprise submitting the offer.

VIDEOOFFERBANK copyright by Jan Czerwinski, system presents offers for economic cooperation of Polish enterprises with foreign countries, supplementing with a 4minutelong film the computer database in order to transfer the detail that can only be shown in an audiovisual form.

"TECHNOLOGICAL DATA DATABASE" contains information of over 1900 products being created in the process of chemical synthesis in 61 Polish plants. Basic data contained in the database are:

- data on the enterprise (name, address, phone, telex numbers),
- data on goods (name production capacity, physical and chemical properties,
- technologies of manufacture, appliance),
- data on raw materials (name, quotient of usage),

3.3 GIGA Teleservice [10]

GIGA-Teleservice is a computer, interactive information publishing system designed by the Business Foundation in cooperation with the TERAZ POLSKA Foundation and the Rzeczpospolita publishers. GIGA is composed of databases and thematic bulletins of a systematically extended and updated repertoire. At present (June'94), two bulletins are available:

- GIELDA - information from the Warsaw Stock Exchange and free of charge GIGA Training Base.
- Business Foundation Online Data Bank - a promotional database of Polish firms and enterprises.

Users of personal computers with modem and relevant software can contact the system by way of:

- public telephone service +48- 2- 6255955 (9600,8,N,I),
- via X.25 (under preparation)

GIGA offers the first Polish full stock exchange information service:

- results of quotation on the day of their official publication,
- a base of prices of the individual shares since their first quotation,
- the current announcements to the issuers,
- the current announcements to the issuers,of the Warsaw Stock Exchange Board (WGPW),
- the most up to date financial reports (statements) of issuers,
- it allows access to the announcements of issuers and the WGPW Board published after June 1, 1991,
- it allows for the presentation of financial statements from past periods.

3.4 Central Statistical Information Center [11]

Central Statistical Information Center (CSIC) is a department of the Central Statistical Office of Poland (GUS). CISC offers all publications which were published by GUS during the last three years. Experiences from this year show that CSIC is a very popular source of information about Poland especially for foreign customers (477 orders), private business (392), authorities and public administration (312), high schools (100), private persons (171).

This year GUS established online source of selected information via BBS which contains the Information Bulletin of the GUS [12]. It offers information about files stored in GUS, the principles of providing information facilities and ways of making requests for data, information REGON register (from official files, basic data about all Polish firms), classifications used by GUS and data which are supplied by GUS free of charge, e.g.: Preliminary Information - the basic economic indicators, Current Information - the Draft results and others.

3.5 Polish Chamber of Commerce [13]

The Business Information Department of Polish Chamber of Commerce (PCOC) renders services on domestic and foreign economic subjects. The Department offers:

- Business Information Network (OSIG). At the moment there are more than 400 000 records in the database regarding Polish enterprises,
- Catalogue of Offers, produced four times a year, includes offers of over 100 foreign firms seeking a partner in the Polish market,
- Polish-German Cooperation Exchange,
- Polish-Russian Information Network "Koop-Birza". It offers data and cover information on thousands of companies of former Soviet Republics,
- BC-NET and BRE Systems. These programs facilitate activity in the field of bringing together foreign partners and Polish enterprises,
- Business Information Service offers (against payment) preparation of a professional, up-to-date and reliable report on every Polish company,
- Information Network - about 100 terminals at Headquarters and in regional branches of the Polish Chamber of Commerce.

3.6 TeleAdreson Ltd. [14]

TeleAdreson is a Polish private company located in Gdansk. The company owns, maintains, updates and distributes a database containing information about all sorts of legal activity located in Poland, including: companies, stores, shops, offices, enterprises, schools, political parties, etc. Currently, the number of records exceeds 650,000.

The records are now accessible in any of the following ways:

- **A. On disk methods:**
  Full database (650,000 records) distributed on 3.5" floppies with DBMS control software (MSDOS) and manuals. The software allows for the installation of the database on an IBM PC compatible, and to search, print and modify records. The software is available in the Polish and German version.
  A selection of records from the main database, as:
  - plain ASCII file
  - dBASE file
  - TeleAdreson format file w/control software (as above)
- **B. ONLINE methods, networks (due to: December'94)**
  - GENIOSHandelsblatt (contact: Mr. Helmut Ebert, fax: +49 211 887 1520),
  - Datastar (solution in progress),
  - Internet (contact TeleAdreson),
  - X.25 (Eurostart, contact: Mr. Wojciech Kuciel, fax: + 48 61 475 488)

3.7 CD-ROM

Stratus - a private Polish company was established in 1990. Its main areas of activity are in professional PC technology, of which one is CD-ROM. Stratus is the leader of CD-ROM technology in Poland. It offers [15]:

- **CD-ROM distribution**
  Stratus is leader of Polish firms in handling CD-ROM technology (for which there is much enthusiasm). It started almost six years ago when CD-ROM was hardly known at all, and now has agreed distributorship with more than 30 major CD-ROM publishers including SilverPlatter, Dialog, UMI, CD Plus, the H.W.Wilson Company, KG Saur, Chadwyck Healey, Context, DSI, ISI, European Patent Office, and others. Without any exaggeration, it can be said that Stratus has created the CD-ROM market in Poland. Approximately more than 80 % of sales in the market go though Stratus.
- **CD-ROM integration**
  Stratus effect in CD-ROM distribution was partly due to the fact that it could offer complete solutions and full technical support. Stratus distributes EPO and UMI image workstations, as well as Meridian and Logicraft CD-ROM network solutions. At the present moment they can also offer the new ERL system from SilverPlatter.

- **CD-ROM publishing**
  Stratus is offering services to facilitate CD-ROM publishing. They have already published the first CD ROM title in Poland. It contained shareware and its main purpose was to show the Polish information providers that publishing on CD ROM is easy. The first professional CD ROM titles are being negotiated now.
- **Multimedia**
  The CD ROM department of Stratus distributes the multimedia titles for the academic market like those from SilverPlatter Education, but there is much more activity in this field in the company. They are the distributors for Creative Technology in Poland addressing the popular market and offer systems for broadcasting quality video and animation for professionals. Such systems can also be used for preparing material for multimedia CD ROM production.

To create and develop the information market Stratus organizes demonstrations, seminars and conferences covering the whole of Poland. For the last six years, almost every event on CD-ROM in Poland has been organized or coorganized by Stratus.

From this year, in cooperation with a private school, they are offering courses on accessing electronic information on both CD-ROM and online.

Stratus was also instrumental in starting the Informacja Profesjonalna (Professional information) the only Polish journal devoted entirely to information.

During Polish SOFTARG'94 fair was announced second Polish CD-ROM - the product of El-Pro and Radio Z. It contains, as Stratus, shareware and multimedia products. It is very important that all software is in Polish version.

3.8 Information Processing Center [16]

The Information Processing Center (IPC) is a specialized selfsupporting State agency, called into being by and affiliated the State Committee for Scientific Research, designated for gathering, collecting, processing and disseminating scientific and technical information. The information produced and maintained cover data related to scientific institutions, research establishments and universities, scientists and researchers as well as the research work and enterprises.

Presently, the Center maintains the following information systems and databases:

- SYNABA The Information System on Research and Development Works and Scientific Expertise.
  The SYNABA database contains bibliographic data and subject matter related to: opened and completed research projects; scientific expertise; research performed to acquire doctorates and doctor habilitatus academic degrees.

- The database "DOKTORATY I HABILITACJE" contains information on doctorates and doctor habilitatus academic degrees conferred by universities and research establishments. The database contains: personal data of those involved in carrying out scientific expertise; research performed to acquire doctorates and doctor habilitatus academic degrees.
- The Information System Polish Science is to collect and store information on: scientists and researchers, their titles and disciplines; universities, institutes and research centers of the Polish Academy of Sciences and other research and development units, scientific institutions and associations, scientific information centers. The databases of the system contains detailed information related to each research unit.
- The System of Referral Information i.e. the information system on the information sources. In the first stage of the realization of this system, in the database there are recorded the institutional sources of information such as: libraries, information centers and the computer databases accessible in Poland.

On the basis of these resources INFORMATION PROCESSING CENTER prepares and disseminates the following publications:

- The Polish research reports directory ScienceInformationBusiness.
- Statistical publications related to conferring doctorate and doctor habilitatus academic degrees by faculties and institutes of the universities, institutes of the Polish Academy of Sciences and other research establishments.
- The catalogue of work carried out to receive doctorates and doctor habilitatus academic degrees.
- Polish Science Directory, a publication containing descriptions of universities, research institutes of the Polish Academy of Sciences, other research establishments, libraries, archives, museums, scientific associations and institutions currently existing in Poland, as well as due information on academic degrees and titles, scientific disciplines practiced, specialties and home addresses of the research staff employed in these units.

IPC offers three ways of retriving information from their databases:

- in traditional way - hardcopy of full databases,
- reports with selected data on diskets or hardcopy,
- full databases on diskets.

3.9 Polish Press Agency [17]

The Polish Press Agency is the largest news agency in Poland. Nearly 80% of the political, economic, scientific, cultural and technical news from Poland and abroad published in the national media come from the PAP news service transmitted in the Polish language.

At the moment this service is issued by 156 receivers, including:

- 56 of the largest dailies,
- all Polish public radio and TV companies,
- 27 commercial radio and TV stations,
- 9 central offices,
- 5 economic units,
- 11 foreign mass media,
- 7 world news agencies and 13 national news agencies (in addition to this, PAP exchanges selected news with 24 agencies).

News composing the service (650 records per day on the average) is sent in the on-line system to 38 receivers via satellite (PAP has its own transmitting station) and to the remaining ones via permanent direct links (to several receivers in Warsaw the service is sent via radio modem). Additionally, PAP's news is sent to e-mail subscribers.

PAP also offers an English-language news service which includes a selection of various news items from the domestic and foreign parts of the Polish-language service. Among the receivers of this service there mainly are diplomatic missions, news agencies and foreign correspondents.

Within the next months PAP will launch a specialized business service, as well as its own data bases, to be attainable online via X.25 and dial-up connections. Besides, PAP distributes the following products:

- the Photo Department's products,
- bulletins:
  - "PAP Diary",
  - "Political Guide",
  - "Biographical Notes",
  - "Daily News",
  - "World Management".

3.10 WWW in Poland [18]

In September of 1993, the Department of Physics of Warsaw University set the first WWW server in Poland. As of May 1994, there are 12 institutes in Poland which had their own WWW servers. Polish achievements in "WWW case" seems to be very promising.

Warsaw University and the Academy of Mining and Metallurgy have several interesting bases which are available via WWW. The server of the Institute of Physics was accessed by 7875 computers across the world (until May 1994). The server is an embryo information source about Poland (geography, culture, economy and so on).

At the moment (September 1994), a database about Polish offline databases - BIS - is available via WWW. It is our first step to show overall Polish information potential, which is mainly available offline at this moment. BIS was made up of several Polish institutions: NASK, the Institute of Physics of Warsaw University, the Institute of Organization of Management Industry - ORGMASZ, the Polish Chamber of Commerce and WIP.

"Polish Home Page" from Department of Physics WWW server offers basic information about Poland, map of Polish Multimedia servers, Polish Network Resources (economy, Warsaw Stock Exchange and BIS). There are databases with history and culture information, e.g. Polish Electronic Journal collection including materials from the most popular Polish newspaper - Gazeta Wyborcza.

4. Conclusion

Thanks to the World progress of the Information Industry, Poland takes advantage of the opportunity to find a fast way of developing. It is beneficial both to owners of information sources and users in Poland and in other countries.

It is important, therefore, to conduct training in the field of II. Poland seems to be a very good market for all kinds of education efforts.

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[1] Naukowa i Akademicka Siec Komputerowa, Seminarium, Miedzeszyn, 09,1994.

[2] Czas w którym decyduje sie bardzo wiele, Komunikacja Polska, 1/09/1994.

[3] Information about IKP was received from Dariusz Wichniewicz from ATM Ltd. e-mail: DAREKW@ATM.COM.PL

[4] TELEADRESON is one of the largest Polish providers of databases of Polish firm directories. The base is accessible offline, via diskettes and in the nearest future via German information service Genios and via Polish commercial Internet host - IKP.

[5] Data about TELBANK were received from President of Telbank S.A. - Andrzej Cichy. Address: TELBANK, 04-051 Warsaw, ul. Poligonowa 3

[6] For example in Warsaw, Silesian and Technical Radom Universities.

[7] The part of this material is updated section of author's paper for Online'94 meeting in London "The first Polish steps towards the world information industry".

[8] EuroStart, ul. Nagorskiego 3, 60-408 Poznañ, Poland, tel. +48-61-475264, fax:+48-61-475448.

[9] Institute for Economics of Chemical Industry, Scientific and Industrial Information Centre, 00-926 Warsaw, ul. Wspolna 4, tel +48-2-6218818, fax +48-2293070.

[10] GIGA-Teleservice Sp. z o.o., Krucza 38/42, 00-512 Warsaw, Poland, tel.+48-2-661937(1-4), fax: +48-2-6219761, e-mail: business@sam.nask.com.pl.

[11] The information according CSIC were provided by Director of this department - Wieslaw Lagodzinski. Address of CSIC: Glowny Urzad Statystyczny, Departament Informacji, Al. Niepodleglosci 208, 00-925 Warsaw, Poland, tel/fax: +48-22-254289.

[12] The BBS is accessible between 2 p.m. and 9 a.m. and non-stop on Saturdays and Sundays). At the moment only via dial-up connection, tel.: +48-22-257387.

[13] Contact to the Business Information Department of Polish Chamber of Commerce: Janusz Bielicki, ul. Trebacka 4, 00-074 Warsaw, Poland, tel.:+48-22- 274088, fax: +48-22-274088.

[14] TeleAdreson Ltd. ul. Heweliusza 11/XVII p. 80890 Gdañsk, Poland tel/fax: (58) 313421

[15] The CD ROM division constitutes only a part of Stratus's activity. For more details contact the Director, Mr Franciszek Perz at the following address: Stratus, Szosa Poznanska 5, 62081 Przezmierowo, Poland, tel. + 48 61 142 773, fax: +48 61 142 294.

[16] Information Processing Centre, contact: Al. Niepodleglosci 188B, 00-950 Warsaw, skr. poczt. 355, tel +48-22-256178, fax: +48-22-253319, e-mail: wasiak@frodo.nask.org.pl

[17] Polish Press Agency, Al. Jerozolimskie, 00-950 Warsaw, tel. +48-2-6217509, fax: +48-2-6213439, e-mail: pap-zagr@ikp.atm.com.pl

[18] This part of paper has been written using data from: dr Jacek Gajewski, Grupa WWW, Instytut Fizyki Doswiadczalnej UWul. Hoza 69, 00681 Warszawa, E-mail: gajewski@hozavx.fuw.edu.pl

SwetScan: A Contribution to Information Management

G. Waters
Swets & Zeitlinger GmbH, Frankfurt

Electronic Publishing on- and off-line is in everybody's mouths at the moment. In the off-line field the number of CD-ROM databases has boomed from 817 in 1990 to 3,597 in 1993 (43 % of these CD-ROM's contained full text) [1]. A further 450 databases are supplied on magnetic tape and 559 on diskette [2] . In the on-line field some 5,300 on-line databases are in use - 94 % of the information relates to finance.

The fact remains that print medium and especially the periodical article continues to be the single most popular method of acquiring information. In fact, about 95 % of all information is distributed in print form and we expect this medium to maintain this popularity well into the next century. More than 230 bn USD are spent on books, newspapers and periodicals worldwide [3]. The most important storage and retrieval centre for information in this form has always been the library. Information is an expensive resource and libraries are the treasure houses representing on a national scale an investment amounting to billions of Dollars.

The problem when using information in print form is how to find and dig up all that gold. Clearly ease of searching and fast retrieval is one of the key advantages related to information published in electronic form. The print medium coupled with the advantages of electronic current awareness services which rapidly provide information on journal contents of a one solution to this problem, especially if coupled with document delivery. And this is where SwetScan comes in.

SwetScan was developed in cooperation with PICA which operates the Dutch Union Catalogue. Pica analysed its inter-library journal lending data with a view to introducing document delivery (the RapDoc project). An analysis indicated that 85 % of the 350,000 inter-library loans were requests for articles from just 6,000 journals. Swets was approached to provide table of contents information.

The Reasons for this were threefold:

- Swets is recognized for considerable technical know-how in the library field and there is a long history of cooperation between the company and the Dutch libraries.
- Swets receives and checks in for its customers some 40,000 periodical titles for customers taking advantage of its consolidated delivery service **FAST.**

- Swets chose scanning of the contents pages rather than re-keying as a fast and efficient method for processing the contents pages.

Since its introduction in 1992 the number of periodical titles scanned for the SwetScan database has risen to almost 14,000 and covers periodicals from over 2,000 publishers.

Each month some 10,000 contents pages are scanned and data relating to 2.5 mill. article titles are added to the database each year. Files include the full periodical, an article title, authors name, page number, volume issue and the date of publication. Information is available on-line through DataSwets which allows customers to directly access the Swets database and off-line on magnetic tape, diskette, or paper. Libraries are increasingly taking advantage of Internet FTP for daily updates to include SwetScan data into their local database programmes. Using DataSwets, which I will demonstrate in a moment, searches for article titles can be carried out on article key words, authors name or periodical and combinations of all 3.

Among the advantages the service offers are the high quality of the data thanks to the scanning process:

- flexibility and the selection of the titles to be subscribed to by the library
- availability of the service on- and off-line,
- ease of searching
- the assurance of very up to date information thanks to the FAST service
- and accessibility via Internet.

At the same time prices have dropped dramatically for this product. Access to the full SwetScan file costs just DM 7,466.00 per year or DM 0.53 per title per year, and retrospective searching over the full period since scanning began in 1992 is included in this price.

Since the beginning of 1994 SwetScan has been enhanced by the document delivery service **SwetDoc.**

This service which is accessed through DataSwets offers the advantage of convenient document ordering on the basis of data found in the SwetScan database. It is not, however, necessary to be a SwetScan customer in order to take advantage of SwetDoc and vice versa.

The price per article regardless of the length of the document ordered through SwetDoc and including postage is DM 17.50. In addition there is a fee of DM 5.60 on average for copyright plus VAT where this is applicable. For fax delivery of documents an additional charge of DM 14.20 is made. Users of SwetDoc can take advantage of document delivery from some 55,000 periodicals held at the British Library Document Supply Centre at Boston SPA.

We feel that these two services especially when combined are a valuable contribution to information management both at the level of the library or the individual researcher.

Thank for your attention!

Annex

[1] source: tfpl Publishing 1993

[2] source: Infotech 1992

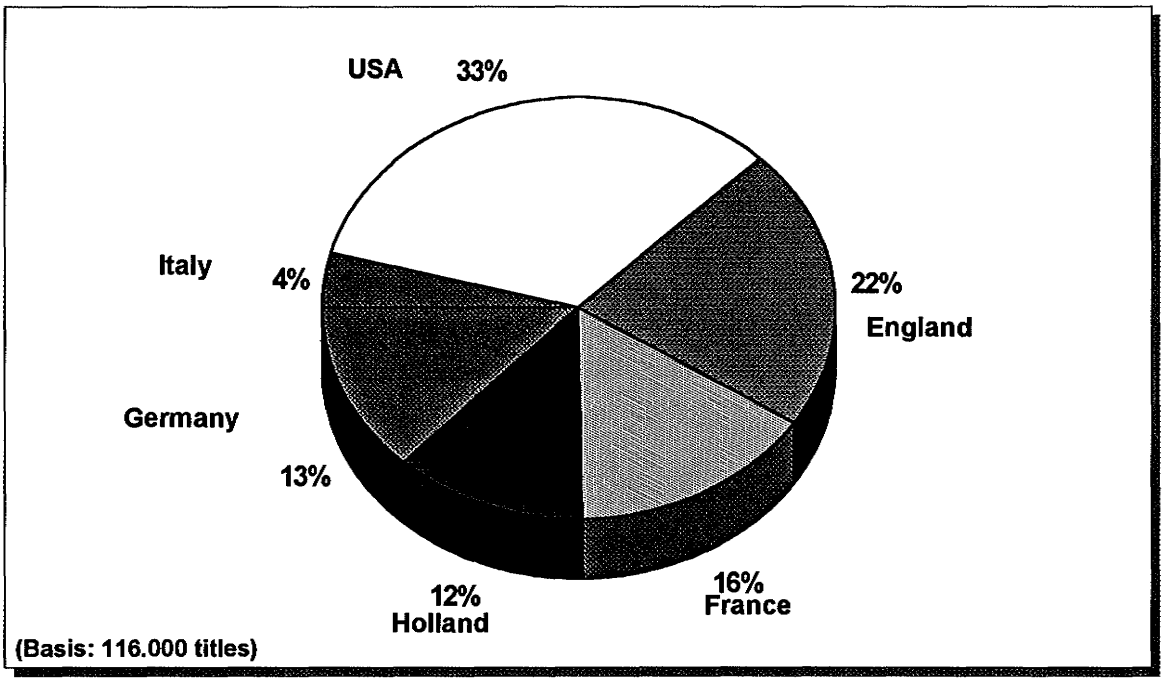
[3] source: Infotech 1992

You can count on SWETSCAN ! S

periodicals scanned per year:	14.000
articles scanned per month:	187.000
tables of contents (pages) scanned per month:	9.500
number of issues per year and periodical on average:	9
number of articles per issue on average:	18
number of articles scanned per year:	appr. 2.500.000

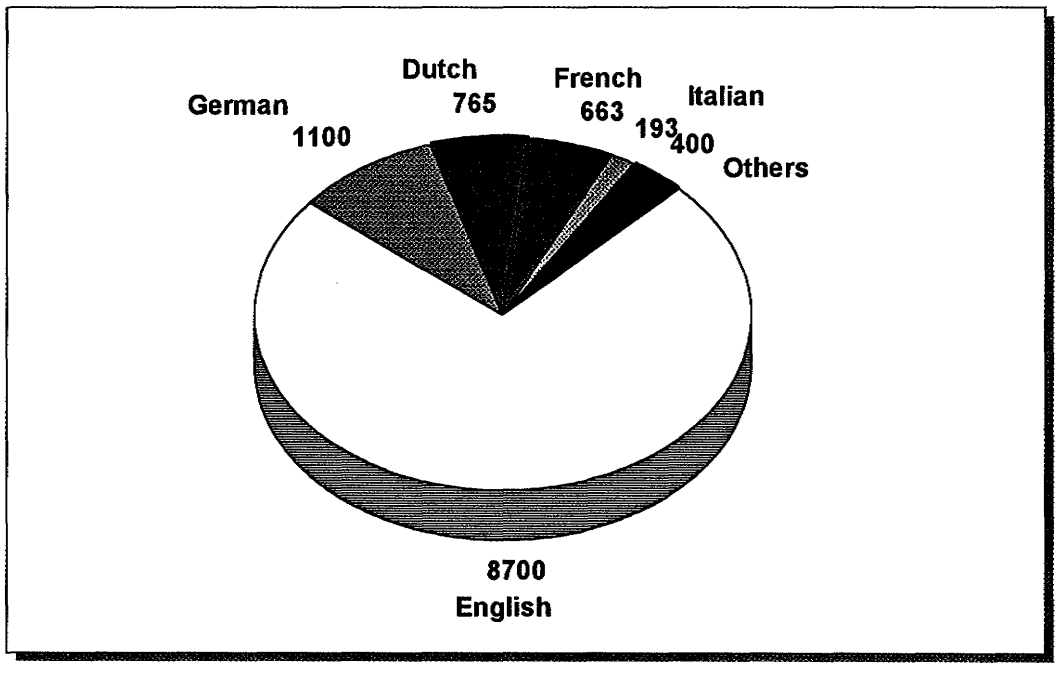
Swets Database - The big seven - important publishing countries- titles per country

S



SWETSCAN - Titles by publication language

S



SWETSCAN S

* Table of Contents Service

SWETSCAN

+

* Full-Text Document Delivery

SWETDOC

combine the advantages of:

* Electronic Publishing

+

* Print Media

SWETSCAN - Files

S

* customer´s name and number

* order number

* periodical title

* article title

* author´s name

* page number

* ISSN

* volume, issue, date

* unique identifier

SWETSCAN - Advantages

S

* up-to-date

* available on- and offline

* tailored to library´s needs

* high quality

* easy to search

* complete file (14.000 titles at the moment)
  or
* selection by subject area

* available on academic networks

SWETDOC

S

Supply of complete articles

- augments SWETSCAN

Comprehensive choice of articles

- from 50.000

scientific periodicals

Supplied by British Library

Document Supply Centre - and others

Ordering through DATASWETS

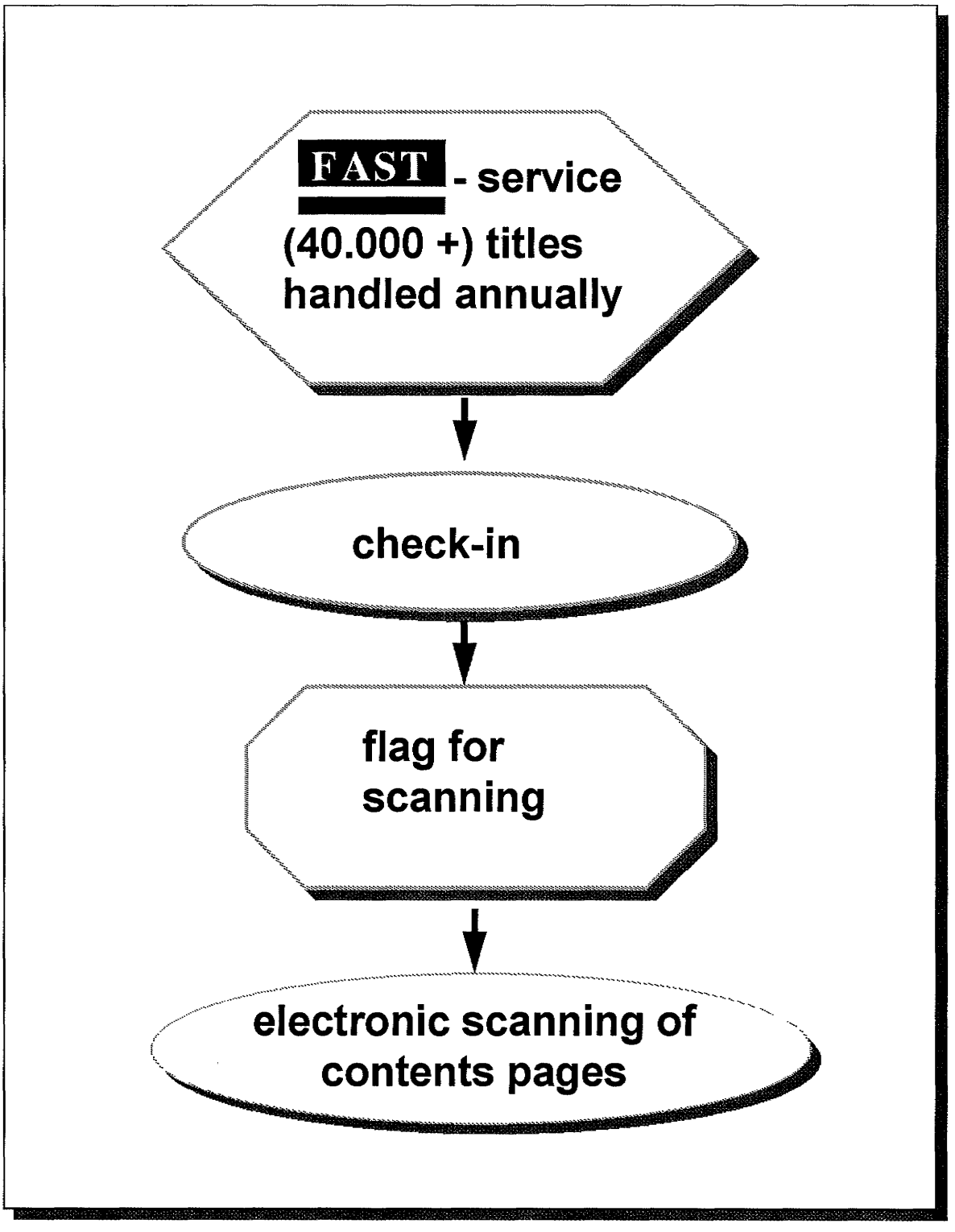
Prompt delivery

within 24 to 48 hours

by Fax

SWETSCAN - The Basis

S



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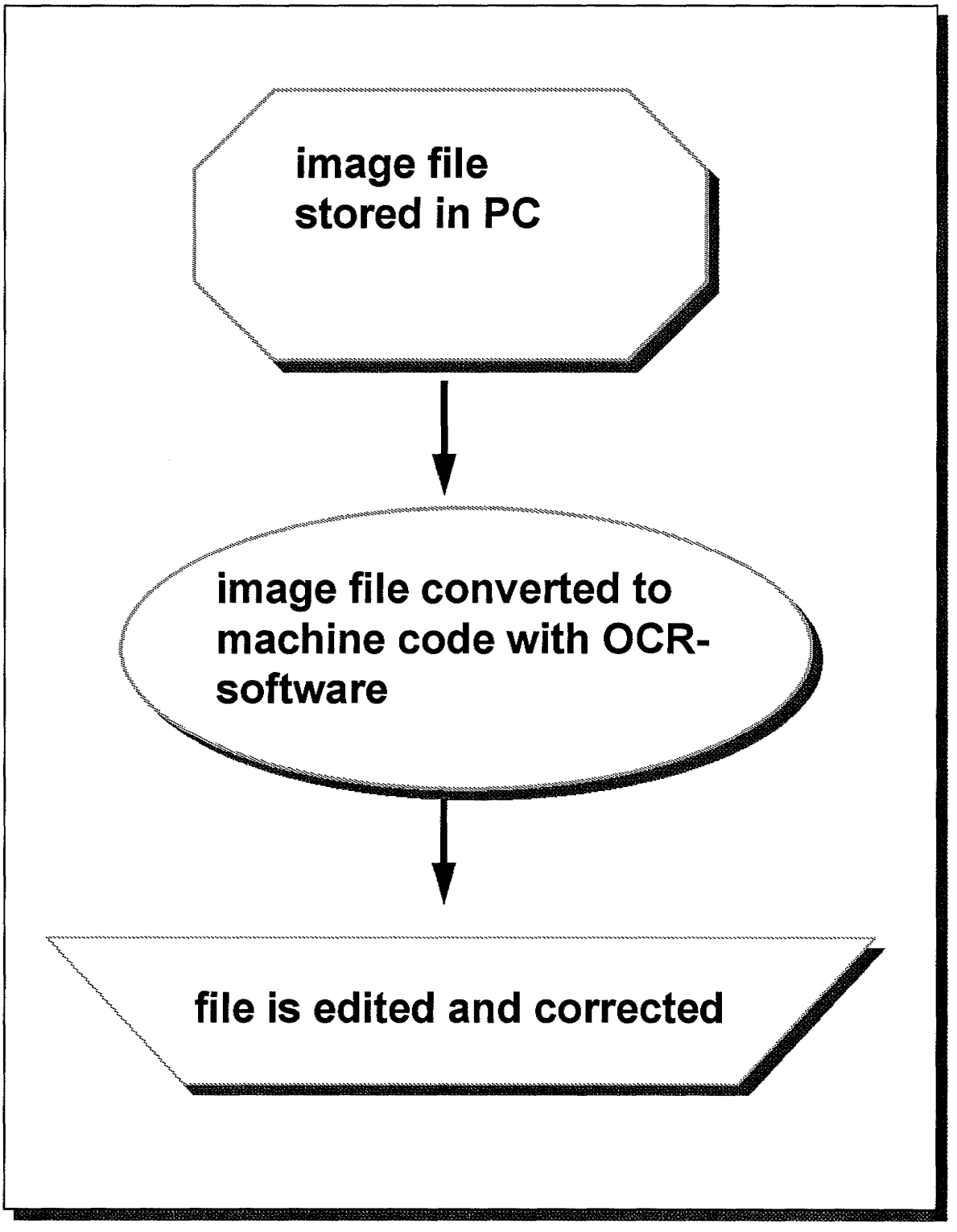

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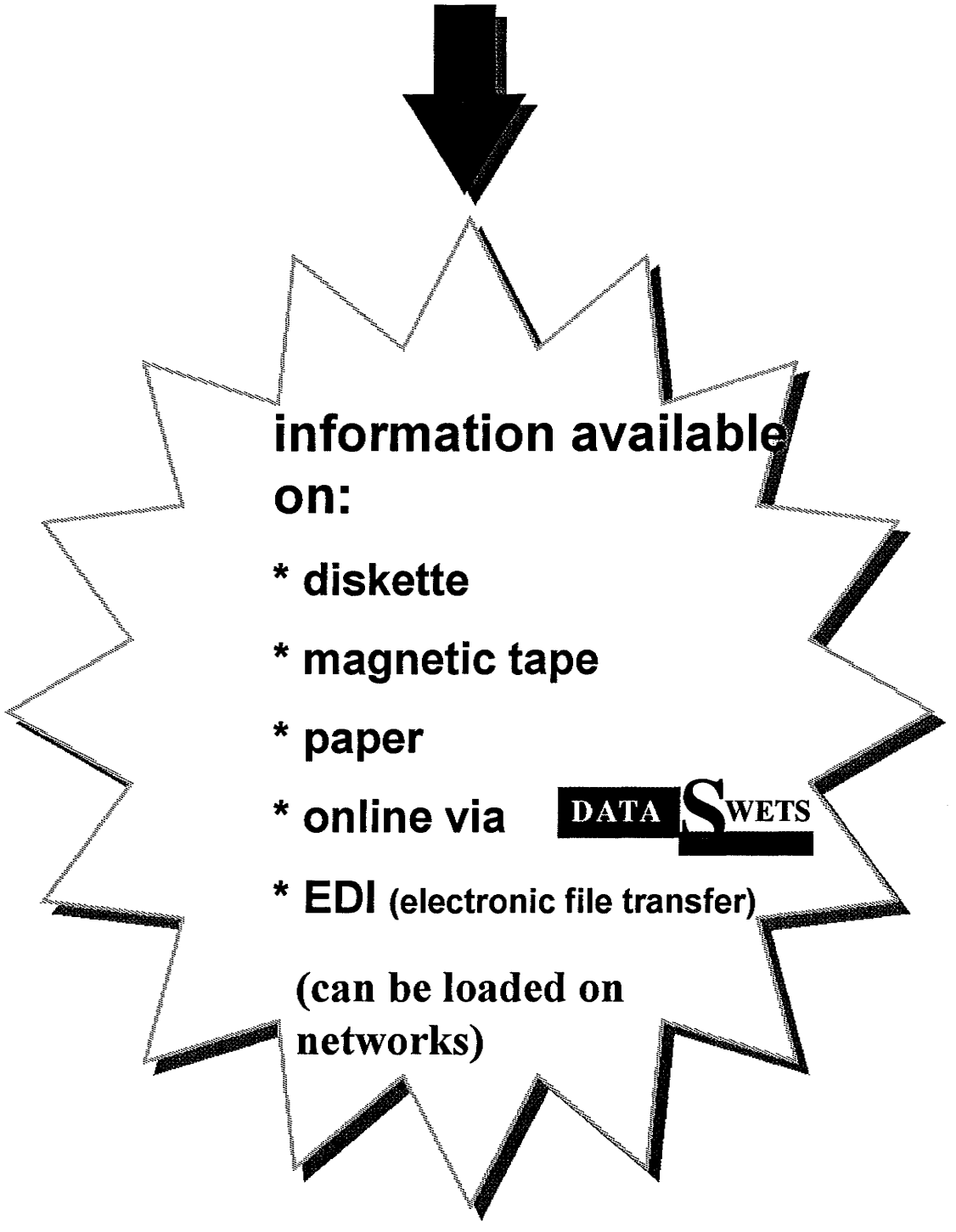
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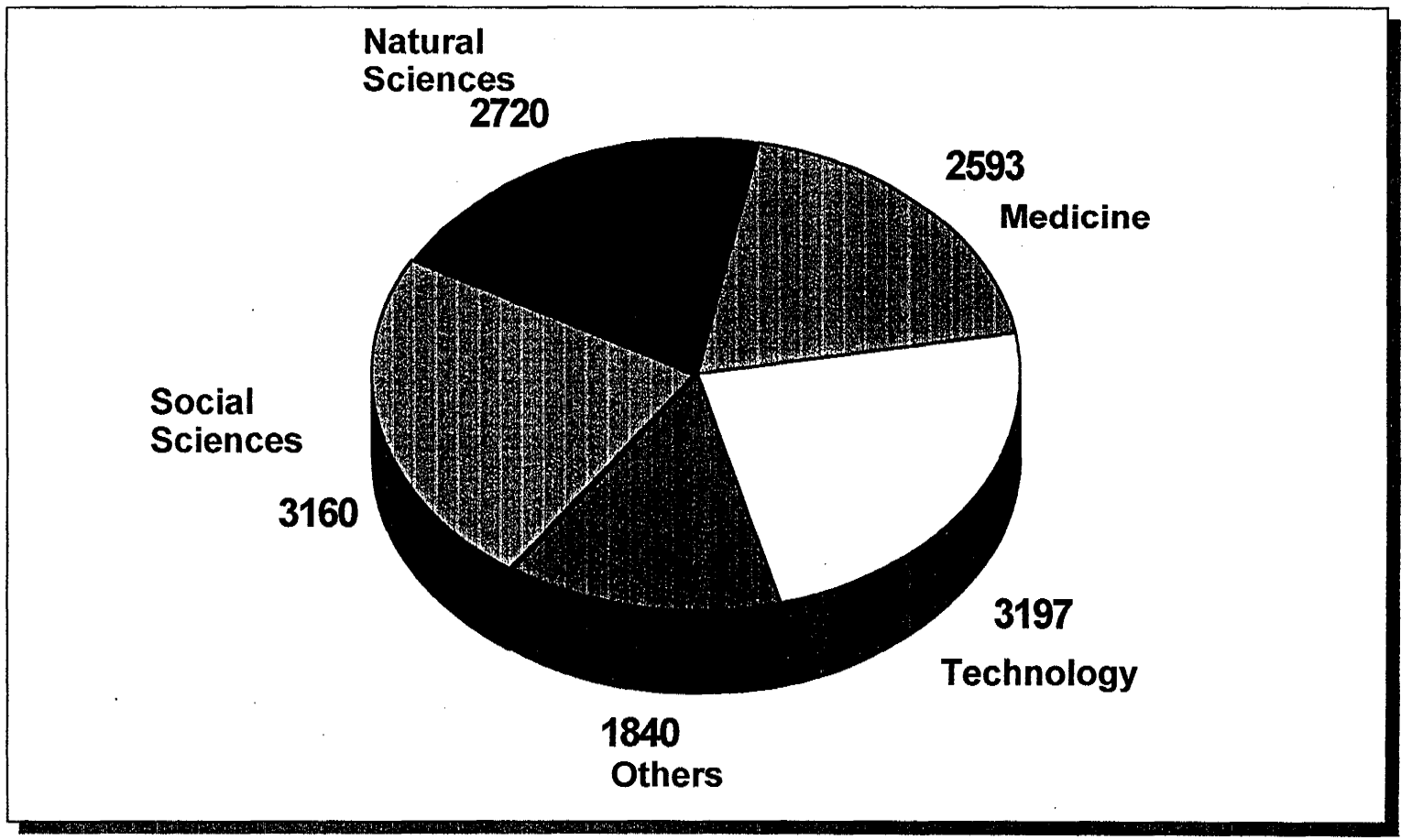
(As of May 1994: Subject to change)

SWETSCAN - Titles by subject area



Electronic Journals on the Internet

E. Lapp
Jülich Research Center - Central Library, Jülich

1. What is an Electronic Journal?

The electronic journal is any serial produced, published and distributed via an electronic medium.

Strictly speaking, the term electronic journal should only cover journals and newsletters in electronic form. In reality there is a rather blurred line separating such journals from electronic discussion groups or computer conferences. (Computer conferences on the Internet are increasingly vital channels of scholarly communication.)

During the last few years, a small group of pioneering people has been distributing electronic journals and newsletters on the Internet. They often used software designed to support computer conferences. These electronic journals are sent to subscribers via e-mail messages or file transfer. Most of these journals are free of charge and there are no licence agreements.

These journals typically have several people on the editorial board. Many journals are refereed. They often mirror print journals, i. e. they are simple electronic versions of printed format, containing editorials, scholarly articles, columns, reviews. Issues can contain a single article or multiple articles. However, the potential of huge files and rapid transmission allows to include complete data sets and simulation software codes, creating new formats as well.

Bill Kownacki, science reference librarian at Virginia Polytechnic Institute and State Library points out that:"The new unit of information is the electronic document or compuscript, and it will increasingly lose its resemblance to the journal article. Over time it will incorporate features of the electronic medium such as hypertext links, interactive capabilities, multimedia. It will be as long or as short as it needs to be. Its natural home will be the database."

It is possible that a significant nonprofit journal publication system will emerge from the efforts of the network-based electronic journal publishers. Given the grim realities of the current serials pricing crisis librarians should have a professional interest in trying to make this vision a reality (Bailey 1992,32).
Publishing houses like Springer and Elsevier understand that electronic journals are becoming an increasingly important form of scholarly publication and they already started putting vast amounts of journals online.

I should mention Springer's J.UCS project (Journal of Universal Computer Science), which aims at putting the scientific publications of the computer science community on one gigantic electronic platform.

Beginning in 1995 the refereed publications will be accessible for universities at a fee of $ 100 per user. The server software will be Hyper G, a further development of WWW.
A similar electronic super journal in the field of materials sciences will be the TULIP project (The University Licensing Program) of Elsevier. 43 core journals will be accessible by the participating universities, among which are Cornell, MIT, the nine campuses of the University of California. The host server of Engineering Information, Westbury, N.Y. will handle the subscriptions.

2. Advantages of Network-based Electronic Journals

2.1 Why Scientists like Electronic Journals

The introduction of a new technology always involves changing user behavior. There need to be some significant benefits to encourage users to change. Some of these benefits are:

- speed of publication / dissemination
  The most appropriate journal for electronic publishing is one that is in a dynamic scientific or technical area with constant change and high demand by readers to see the latest developments as soon as possible.
- instant access to the full text of an article the scientist needs
- the possibility to publish longer articles
- the possibility to include experimental data
- the possibility to automatically link to related documents

2.2 Why Librarians see Advantages in Electronic Journals

Since campuses are increasingly prepared to disseminate information electronically, from the library's perspective electronic journals are attractive because they solve problems of limited shelf space, lost and missing issues, accessibility, journal cost. Librarians should view an electronic journal as favorably as they now regard electronic bibliographic indexes.

3. Problems related to network-based Electronic Journals

However, there are still problems related to electronic journals:

1. Existing tools for creating, distributing, utilizing network-based electronic journals are in an early stage of development and they lack many desirable technical capabilities.

2. Electronic journals are mainly the work of a few dedicated volunteer editors, not well staffed institutionalized electronic presses. This lack of institutional structure and support has a variety of problems associated with it.

3. Electronic journals are often distributed as ASCII text files. This distribution strategy enables users to manipulate files easily, and it minimizes data transmission overhead, but it significantly limits the kind of information that can be represented. (Color, foreign characters, illustrations, mathematical notations are a problem, and these can be important in science information.)

4. Although electronic journal files are currently being archived at specific network nodes, there is no guarantee that computer centers will preserve these files, especially when no institutional commitment has been made to do so.

5. There is the issue of acceptance of electronic journals.
   Will committees accept publication of an article in an electronic journal as being equivalent to publication in a print journal? Will the majority of scholars want to publish in journals that are neither indexed in conventional sources nor collected by libraries?

4. What should Libraries do about Electronic Journals?

Libraries are beginning to integrate electronic journals into their collections or at least to provide access to electronic journals through the campus network.

They are reevaluating their ideas of ownership and access. Libraries must determine the level of service they want to give to items that are available on campus through the campus network, though not actually owned or housed locally.

How should the electronic journals be accessed on campus?

A collaboration between the library and the computer center must take place to investigate different storage and access options (full text electronic server technologies).

What kind of information should be available?

The library needs to know how to find out about electronic journals. The major source is the "Directory of electronic journals, newsletters and academic dicussion lists". It is produced both in print and electronic form. print: 3rd ed. - Washington, DC: ARL, 1993

> electronically the directory is available in ASCII from:
> listserv@uottawa
> To get the directory you put the following message in the main body of the text:
> get ejournal1 directry
> get ejournal2 directry.

In its first part the directory gives the NLM recommended formats for bibliographic citation from electronic journals, a bibliography of current articles related to electronic journal publications and publishing and a list of Internet guides (printed and files).

The second part of the directory was compiled by Michael Strangelove and lists electronic journals and newsletters.

The third part by Diane Kovacs lists academic dicussion lists and interest groups.

People can subscribe to these and also participate in the discussion. There is no scientific question that cannot be discussed in these groups. Most of the discussions are moderated. (Beginners are requested to check the FAQs first = frequently asked questions).

I worked myself through M. Strangelove's list of electronic journals and identified the following of interest to our customers:

- EJOURNAL
- Online Journal of Current Clinical Trials
- PSYCHOLOQUY
- Scientist
- ChE Electronic Newsletter
- Material Science in Israel Newsletter
- Wind Energy Weekly

I would like to give you an example of how the **University of California at Santa Cruz** organised access to electronic journals:

5. Conclusion

Even as these electronic information sources continue to multiply, they still represent the wild frontier of information. Librarians can play an important role in determining the future of network-based electronic journals.

We can build printed and computer-based tools that help our users to identify and access network-based electronic journals. We can identify and provide local access to electronic journals relevant to our users.

Local access can be provided through cataloging, setting up in the system, integrating into our reference services. We are only beginning this task.

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EJOURNAL

Implications of electronic documents and networks and the theory and praxis surrounding the creation, transmission, storage, interpretation, alteration and replication of electronic text. Scope includes broader social, psychological, literary, economic and pedagogical implications of computer-mediated networks.

ISSN:	1054-1953
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telnet scilibx.ucsc.edu - logs you into the university gopher.
The following menue appears:
1. About UCSC InfoSlug
2. The Academic Divisions
3. The Campus
4. The Classroom
5. The Community
6. The Computer Center
7. The Library

Selecting 7 on this list leads to another menue:
1. About Library Services and Collections
2. Check Circulation Status of Books
3. Electronic Books and other Texts
4. Electronic Journals
5. ....

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Contact:	Dr. Michael Wolff Coordinator for the Exact Sciences National Council for Research and Development wolff@ilncrd

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tgray@igc.apc.org
Contact:Tom Gray, tgray@igc.apc.org

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The editorial package is presented to readers in five distinctive sections: News, Opinions, Research, Tools & Technology, and Professional.

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Development of the National System of Scientific and Technical Information: Problems and Search

B. Kembaev
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After the disintegration of the USSR system of Scientific-Technical Information (STI) and transforming of All-Union centers of STI into All-Russia ones, Kazakhstan was left without channels of getting information, according to which the completion of funds of patent, normative technical papers, industrial catalogues, reports about scientific-technical, experimental designer works, thesises, foreign scientific-technical literature, translations and other legislative and normative basis of informational acitvities was realised.

In these conditions, and taking into account the situation on the informational product and service market where together with governmental organizations commercial ones will function, we need detailed analysis of scientific-informational activities condition and production of fundamental directions of National System of STI (NSSTI) development. The immense part in realization the task on creation the system of NSSTI and the market of informational and services, as well as in economically developed countries should be given to Governmental organizations. National System of STI in these countries consists of the governmental authorities, social organizations, institutions, firms, commercial and state enterprises, involved in production and in distribution of informational product and service. The difference in formation of NSSTI is contained in more or less degree of centralization of informational activities management.

The organization and development of Governmental System of STI in our Republic is in charge of the Ministry of Science and New Technologies. In the Project of Scientific Technical Policy of the Republic of Kazakhstan, worked out by the Ministry, organization of functioning system of scientific-technical information is determined as one of the main parts of integrated State scientific technical policy.

The basis for creation NSSTI should serve Republican System of STI (RSSTI) with already formed hierachy, with its vertical and horizontal links, with its methodology of organization of scientific-informational activities. Earlier RSSTI was a component of All-Union System. Its head organization, the Kazakh Scientific-Research Institute of Scientific-Technical Information, and interbranch territorial centers solved two groups of tasks:

- First, using the stream of information from the upper level of the system, realized more deep analytical processing of information in the interest of Republic, ensuring its utilization.
- Second, organized the uprising stream of documentary information from enterprises, institutions about the results of their professional acitivities.

There were 3,5 thousand persons in the Republican System of STI, uncluding 1,1 thousand persons in territorial centers of STI, 0,6 thousand in sectoral republican and head offices of STI, 1,9 thousand in STI offices of enterprises and institutions.

The informational basis of SSSTI consisted of 64 million of documentations, concentrated in territorial, sectorial offices of STI, enterprises and institutions, and 5,6 million descriptions of informational documentations in automated databases.

The economical crises in the country reflected the sphere of scientific-informational acitvities. The number of organs of STI and workers in the existing informational subdividsions was reduced (correspondingly in two and five times), the number of scientific libraries reduced from 326 to 287, the number of libraries workers from 896 to 694.

At present negative trends of SSSTI of USSR disintegration still continue, the gap of informational links become deeper, some organs and services of STI are deprived of their fiscal maintenance and disappear, the coming of scientific-technical literature in Kazakhstan suspends.

These factors sharply reduce informational provision specialists of Kazahkstan engaged in the field of research development and production. Besides it is neccessary to mention, that the system of SSSTI formes on the territory of the USSR had huge shortcomings, the main is the fact that producers of informational product and services were often removed from the final consume by the chain of mediators. The system guaranteed automatic payment for informational product regardless of the quality. But for these interior shortcomings of the system, there are also external unfavourable factors and conditions.

One of these factors is the absence of solvency demand for information. The basis of business information in the organ of STI turned out to be weak, and the workers could not appreciate changes in the informational situation. As a result, the number of users of informational product and services is sharply reduced.

The analysis of demand structure for informational product and services in the scientific-technical direction and also insufficiency their users market shows extreme difficulties of appearence in future and insufficient scale the traditional for STI market information product and services, including KazgosINTI. The development of republican system on the principles of managerial independence is also doubtful.

All these facts show the necessity of search by the organs of STI production of new kinds of products and service. At the same time it is extremly important to take measures on eliminating uncontrolled processes of disintegration of national system of STI and forming within the framework of it the State System of STI (SSSTI), provided with governmental support according to the main directions of the activities.

Governmental support of SSSTI of the Republic of Kazakhstan is being realized within the framework of established by the government of the republic of a goal-oriented scientific-technical program "The development of the State System of Scientific-Technical Information of the Republic of Kazakhstan" the basis of which is the conception of SSSTI RK, approved by the board of the Ministry of Science, Executors of the program - 31 organizations centers of scientific-technical information and libraries of the republic. The aim of the program is the creation of preconditions for national system of scientific-technical information of the republic of Kazakhstan formation, that should solve the main task-creation of informational environment in republic, providing socially neccessary informational level for specialists.

Creation of optimal informational environmentals specialists presumes the provision of fast search possibility and access to the information in need, wherever it is, getting information in a suitable form.

The aim of the program is achieved by realisation of seven subaims

- programs of systematical decision,
- creation of national scientific-technical informational resources,
- introduction of advanced technologies of informational service of specialists of national economy of the republic,
- the development of organizational structure of SSSTI,
- improvement of library acitivities,
- training and further training of staff and
- publishing informational materials.

SESSION IV

Products/Services

Chairman: R. H. Meyer

The Kinked East Information

Z. Vanek
Demonstration Centre for Information Technologies, Prague

1. Background on Situation

People are constantly affected by many parallel flows of messages that are communicated to achieve positive or negative goals - not just impart information. Each source producing messages uses loaded phrases derived from its background. If the user of messages uses the same background as source he understands the semantics well. If the user takes different background his outcome could be wrong.

Looking East-West transboarder information flow it seems a paradox:

- The West people use their background and intuitive phrasing - recognition and permanently complain to absent proved East business and social information because they feel false outcomes.
- The East people intuitive recognise East phrasing and do not need any additional flow of information, but they are not able to specify their way to finite results.

The first consequention of this paradox is that Eastem information producer feels a few domestic market opportunities for "west-phrases oriented information flow" and do not produce it without guaranteed takers covering costs. Resulting these many East-information projects had been started but only a few produce a common-used information because the leading assessment roles keep limited East market not West.

The second consequention concerns false outcome if backgrounds intuitive phrasing is different by source and user. As a simple proof of this I use the results of second wave (first wave had had learning wave) of Czech privatisation coupon method. The coupon funds supported with computers, balance and profit/loss sheet of privatised companies and with all statistical and research data spent not occasionally more coupons per share then individual investors used mainly newspapers, TV and broadcast. The table 1 compares by each privatised company how many coupons spent individuals ("person from street") and fund's specialists per share and who bought cheaper.

Table 1				
Cumulative Score after round		2	3	4
No. of offered companies	861	846	787	727
Better results individuals	0	237	294	345
Better results funds	0	147	243	371
Not comparable (no rate changes, no interests etc.)	861	462	250	11
No. of sold out (fully privatised)	15	59	60	59

Source: Ambro Ludek: Druhá vlna po ctvrtém kole (Second wave after fourth round). EKONOM, No. 39 (September 29, 1994), p. 33-35

According my view those results are caused mainly due to personnel situation in fund's analytic departments where the leading position keep professionals with west education or West trained East persons where training cleared the East sense for dialectic East phrasing.

Summarise above mentioned facts I have to formulate four main problems concerning East-West and West-East information exchange:

- There are a differences between East and West rules for collecting, phrasing, indexing on the source side and for retrieving and analysing the information streams on the user side.
- The East-West dividing line is not on the border but in the mind.
- The West training switches the East mind into the West group. No training exists to switch West mind into East sense.
- Receiving false information outcomes the West people always complain to the bad quality or missing of East information. The East people do not understand why the costs of moving the East information more understandable to West people should bear East alone, respective why the West experts are not able to extend their analytic sense on piece of East mind.

2. Alternative Solutions

If anybody with "west-phrasing bone" wants to achieve information describing East realities, he has to choose among three possible solutions:

- Use the specialised West information sources offering West view on East facts (typically magazines produced by The Wall Street Journal, Handelsblatt, Financial

Times or reports like Deutsche Bank Research Reports, FAZ Landesdienst etc.). In this case he is limited by the West journalist view filter.

- Buy the West-phrased East messages but due to limited market he should pay substantially more than for analogue west information (see enclosure).
- Use cheap East-phrased messages and implement extended analysis rules and then discover required information.

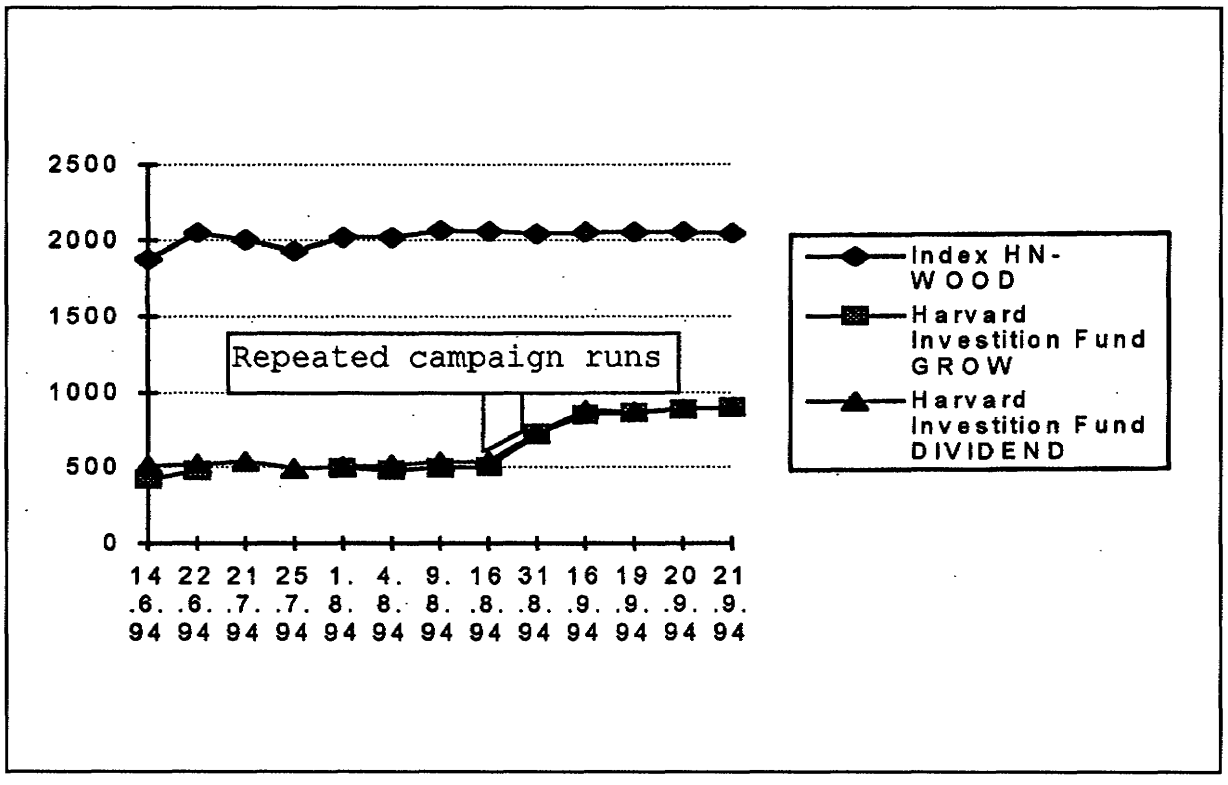
The thread which I want to pick up is the extended semantic basis of concurrent analysis of negative and positive signals from East messages stream (the definition of negative aspects will be given later). I shall begin by explaining how I came to see my vision of better work with existing data, not merely a permanent call for better input data. Extension of the repertoire of relations among entities into negative concept could bring analysis rules near to the standard East background based on communist history. Then I shall talk about my efforts or find basic constructions for dialectic concurrency. This is the work which led to deal with East negative signals as a tool shaping the meaning of messages. At that point I shall briefly discuss the extent to which these constructions may be understood mathematically, in he way that sequential analysis may be understood in terms of functions. Finally, I shall outline steps required for implementation; it gives prominence to the existing East information sources, which has hitherto been treated as a second-class citizen by attitude of West information specialist.

3. Vision of the Possible Solution

As one of the possible solution of refinement of database schema suitable for analyse of East-phrased data source I try to introduce the method called "concurrent analysis of negative and positive information flows (CANPIF)". CANPIF split available information like cat from Alice's Adventures in Wonderland and Through the Looking-Glass into two main groups located in front of and behind the mirror. In front of mirror are messages with positive information like company directories, advertisernent, and similar messages from state agency and media news. Behind the mirror are negative messages like relation to former communist regime, relation to current leading political establishment, privatisation loop back, media profile, shifted East meaning of common used words like "law", "profi ", "turnover", "property" or recognized negative phrases like "Old structures". The decision which messages contain negative signals and due this appearance it belong behind the mirror is derived from glass function: we consider as a negative message this message which contains at least one aspect able to shift the meaning of another message, respective message without this feature we consider as a positive message. The cat classifying messages use simple constrained background derived from newspaper headlines starting in fifties. The cat assumes ihat each information source is fuliy qualified and uses not only the words but that form, phrasing, locating and timing of each message has power to shift or reverse "first-meaning" of another positive message. Some ex-

amples of distilled experience of this meaning-shift effect show Table 2. Another special meaning has a repeating of events No. 2 and 3 (so-called struggle with old structures). If it is being appear repeatedly after break longer then 2 months it means that first attack had been unsuccessful and the whole message reverses its meaning into high appreciation of existing state.

The nice example of "repeating effect" is Harvard Capital and Consulting funds (HCC funds controls former national property in value exceeded 1 mrd. DM). What happened on the spring 1994. Chairmen of this group Mr. Kozeny had been accused before court due to corrupt practices. In the same time it had been announced that the executive HCC managers ar.e mostly former higher officials of communist secret service. On August 15, 1994 the newspapers "Czech Daily" and "Non-conshorshiped Red Cow)" (a leading newspapers according to occurrence of negative messages) restarted a negative campaign asking "why nothing happened with HCC". It invokes a reverse meaning proved by stock exchange rate of HCC funds. The graph shows the complex stock exchange indicator and HCC funds ratio increased after campaign on about 80%.



Source: Hospodarske noviny (Group Handelsblatt), daily Stock exchange and RM reports

Table 2			
No.	Original Message	Events	New Meaning
1	Message about meeting, conference, speech	Missing some important facts (who, where, when, what)	Signal that here happened something scandalising or unpleasant for officials. After 3-5 days it is discovered by interview with second-class actor or by reader's letter.
2	Message about concrete personnel situation signed by reader	Using special phrases derived from former communist jargon	If the message contains concrete name of any company, it means, somebody checks the situation.
3	Message about concrete company signed by known journalist or current or former state official	Using special phrases derived from former communist jargon	Somebody wants to have a more assets of his company, usually foreign subject. The rank of state official terminates the rank of foreign party having interest.
4	Any message.	Announcing some facts which are according law secret.	It is usually only a foam from struggle of powerful persons. Without supplementary information it is impossible to say who is sniper and who is a prey.
5	Message describing any success of company A.	Message point out the non-standard Czech business ethics (for example settlement of invoices in time)	Company A has serious troubles with its suppliers or it is ruled by foreigner owner or both alternatives.
6	Message describing an ideal response from any office.	If there are any concrete facts that it really happened and it is signed by known person or journalist.	Very strong signal. Some discreditation has been discovered.
7	In the same time (usually on the same page) 2 different messages with the identical denominator	Mess A: Executive Board yesterday afternoon decided .. Mess B: Mr. M, member of Executive Board yesterday afternoon owened a sport club.	It means group represented by Mr. M lost its power, respective Mr. M or the whole group met with troubles.

These examples of cat rules make a complementary claim, and it is this: Information scientists, as all scientists, seek a common framework in which to link and to organise many level of exploitation, more over, this common framework must be semantic, since our examples are typically based on examples using mixture of formalisms. This also illustrates another consequence of the inheritance of objects in real life. The standard MIS curricula seemed to start life as

clones or imitators of the MBA curricula. Consequently, they inherited the glaring defects of the MBA object, namely: "Study management to perfect management," became "Study processes to perfect processes." What is missing in both curricula are the courses on: "Study the discipline to perfect the discipline," and "What are the major disciplines, what are they trying o accomplish, and how." Then, "How can high-quality supporting information services enhance those professional and revenue-supporting purposes?" First comes the primary discipline with its ensuing and funded strategic purposes, then come the supporting technologies. I will go one step further: our uncanny ability to guess forthcoming East movements is based on measurements we continually make with our selection of information sources and analytic tools. We just don't write these measurements down. Perhaps CANPIF is the level of pain users and managers feel when derived outcomes have run wild. CANPIF should extend our intuitive measurements, not replace them. And by extending them, we may be able to predict the level of pain before we actually feel it. So where do we find the semantic ingredients for CANPIF, or how can we distill them? It is an ambitious goal because concurrency is ubiquitous. I believe that the right ideas to explain CANPIF will only come from a dialectic between models from logic and mathematics and a proper distillation of a practical experience. I conduct a piece of the dialectic.

4. CANPIF Model

I try to reconcile the antithesis-for it does seem to be one-between two things: on the one hand, the purity and simplicity exemplified by the calculus of functions and, on the other hand, some very concrete ideas about concurrency and interaction. It arose when I was trying to extend the Scott-Strachey approach to programming-language semantics, which deals beautifully with the most sophisticated sequential languages, to handle concurrent languages as well. In that approach a sequential program, assuming no intermediate input/output, is perfectly represented by a function from memories to memories. (I use the term "memory" to mean a memory state, containing in original approach values for all the program variables and in CANPIF value of all ranked topics.) But Dana Scott developed a theory of domains-partially ordered sets of a special nature-which provides meaning for the calculus, the prime functional calculus. So in the applied Scott-Strachey approach, the meaning lies in the domain given by the equation

Message Meanings = Memories ⇒ Memories.

Everything works well with this domain, and the reason is: that to every syntactic construction in any sequential language, there corresponds an abstract operation which builds the meaning of a composite message from the meanings of its component messages. That is, the semantics is compositional an essential property. Now, one of the things that concurrency introduces is nondeterminism. (Of course you can also have nondeterminism without concurrency, but in my opinion it is concurrency which inflicts nondeterminism on you.) Plotkin dealt with

nondeterminism by means of his power- domain construction, a tour de force of domain theory. It provides, for any suitable domain D, the powerdomain P(D) whose elements are subsets of 0. So with nondeterminism in mind we can redefine the meanings of messages as

Message Meanings = Memories ⇒ P (Memories)

This semantics is perfectly compositional for the kind of nondeterministic language that you get by adding "don't care" branching to a sequential language. But concurrency has a shock in store; the compositionality is lost if you can combine positive and negative messages to run in parallel, because they can interfere with one another. To be precise, there are messages [P.pos.1] and [P.pos.2] which seems to describe the same situation but behave differently when each runs in parallel with a third negative message Q. A simple example is this:

Message [P.pos.1] : x : = 1 ; x : = x + 1
Message [P.sub.2] : x : = 2

In the absence of interference, [P.sub.1] and [P.sub.1] both transform the initial memory by replacing the value of x by 2, so they have the same meaning. But if you take the negative message

Message Q : x : = 3

and run it in parallel with [P.sub.1] and [P.sub.2] in turn:

Message [R.sub.1] : [P.sub.1] par Q
Message [R.sub.2] : [P.sub.2] par Q

then the messages [R.sub.1] and [R.sub.2] have different meaning. (Even if an assignment statement is executed indivisibly, [R.sub.1] can end up with x equal to 2, 3, or 4, while [R.sub.2] can only end up with x equal to 2 or 3.). So a compositional semantics must be more refined; it has to take account of the way that positive/negative messages interact via the memory. Figure 1 shows the shared-memory model.

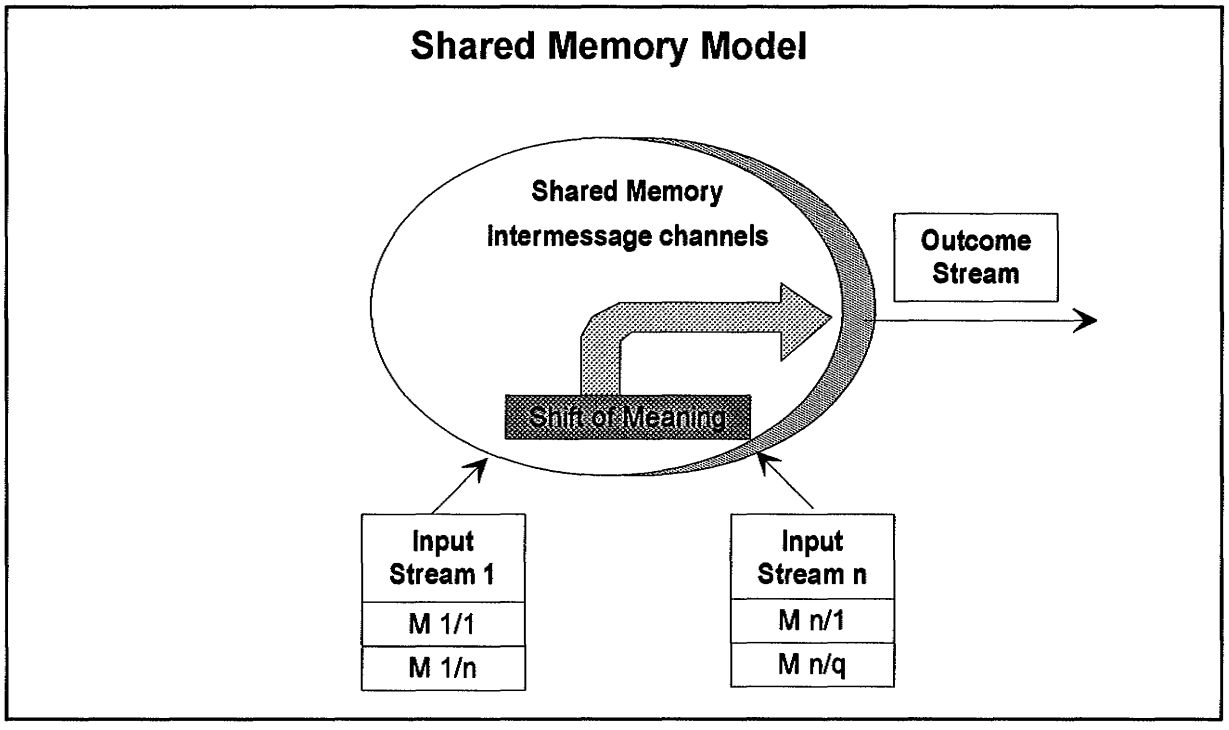


Fig. 1: Shared Memory Model

It just represents the positiveinegative interaction among message's components. To remove the positive/negative distinction, we shall elevate M to the status of a process; then we shall regard message aspects (variables) x, y, ... as the names of channels ofinteraction between message and memory, as shown in Figure 2.

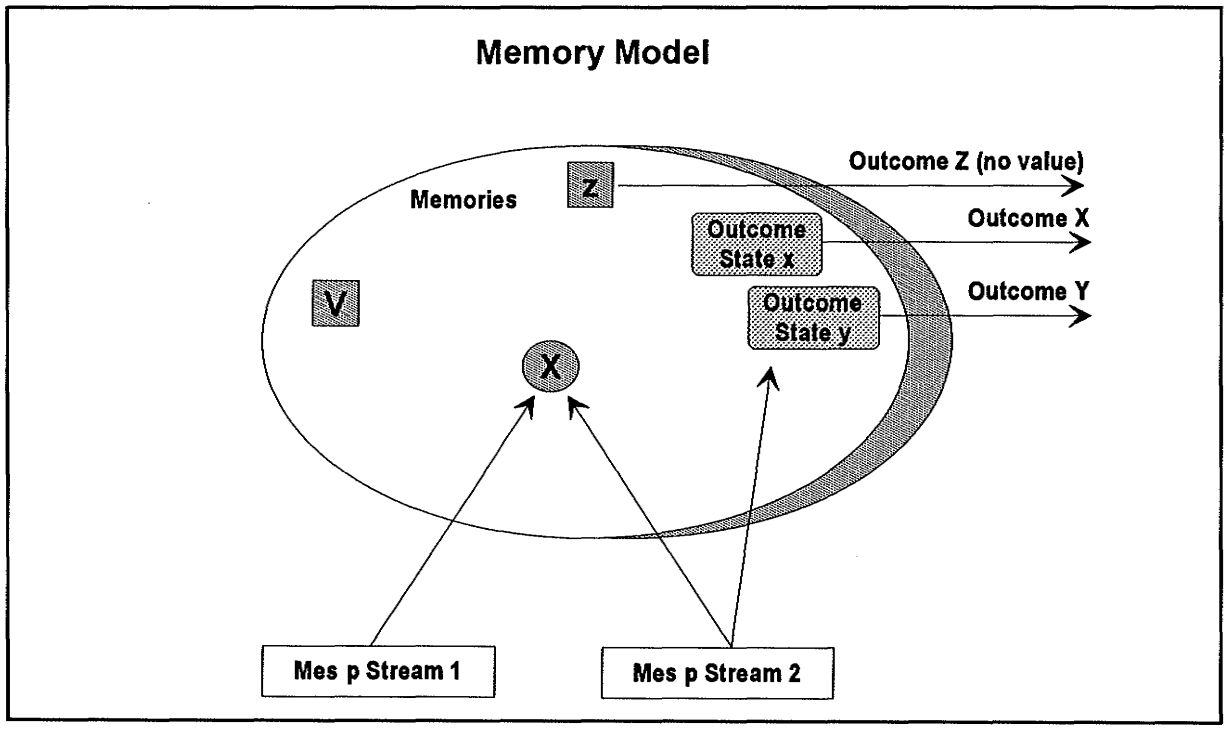


Fig. 2: Memory Model

Now, thinking more generally, let us use memories to illustrate the idea that messages of any kind can be composed to make larger ones. In the sequential world one can maintain the convenient fiction that a memory is monolithic; but this is quite unrealistic in CANPIF, because different parts of memory may be accessed simultaneously. So we go one step further, as shown in Figure 3, and regard each cell of memory as a process, X say, linked to one or more messages (themselves pro esses) by an appropriately named channel.

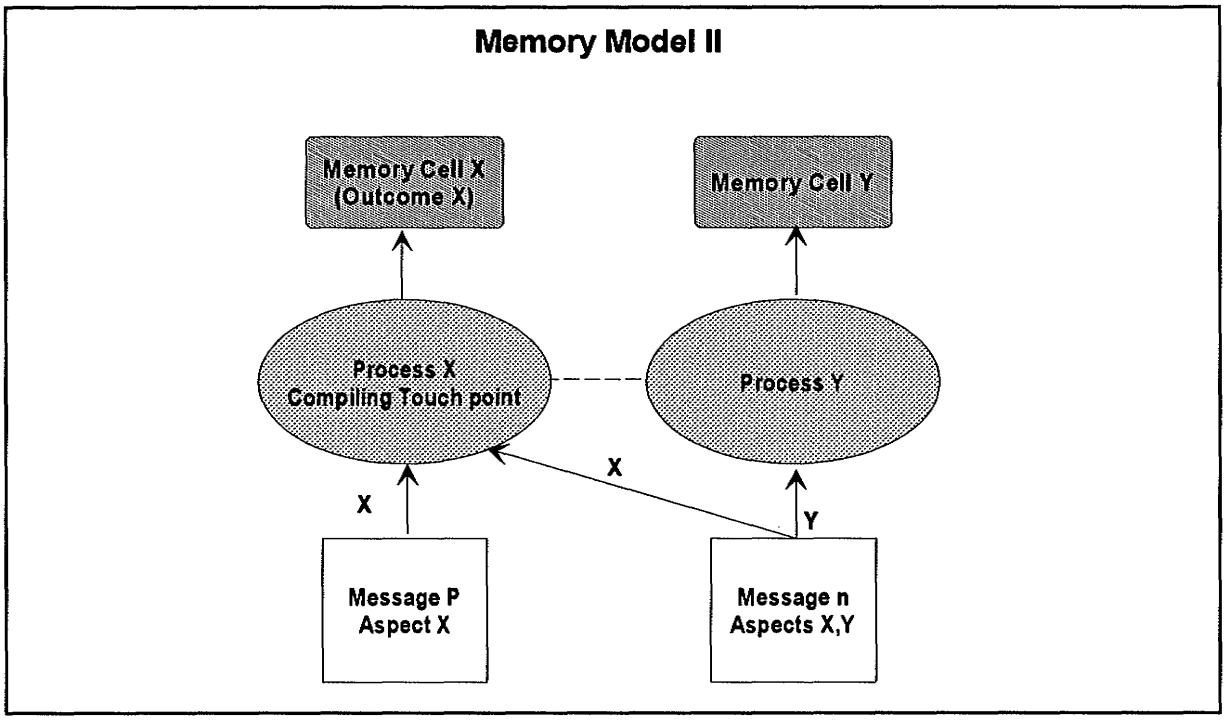


Fig. 3: Memory Model II

Software engineers may well resist this homogeneous treatment and firmly adhere to the shared-memory model; it is importan for them, because it admits a methodology which can help in writing correct programs. Theoreticians may reply hat to tolerate two kinds of entity in a basic model, where one kind will do, is scientif c anathema; they may also point out that the positiveinegative distinction of the shared-memory model does not easily accommodate hybrids, such as a database which reorganises itself while you are not using it. Pragmatists point out the time factor.

As a solution suppose that processes are intermediary between the messages and a remote memory. We suppose only the negative messages could interact with other messages, respective with memory. Figure 3 shows it by pointed out the primary touching point (recognition of negative aspect) and then compiling with appropriate value of positive message. Then the form of the expression is independent of the nature of each incoming message.

Memory: Message[N]! Process[N]

In the objectives we assumed that each source is fully qualified. Then we can assume hat the process depends on source rules and the final expression:

Memory: Message [N/S]! Process[S].

when the condition S applied it to the information source S and then reduces the number of processes.

5. Implementation

Firstly we describe profile of each known source, usually in the table form. The profile examples of selected Czech sources are enclosed. Then we add to our existing sources the sources with higher probability of occurrence of nega ive messages. As the last step we establish a self-leaming system how each process[S] influent through the memory channel to positive messages. Figure 4 shows the finally system:

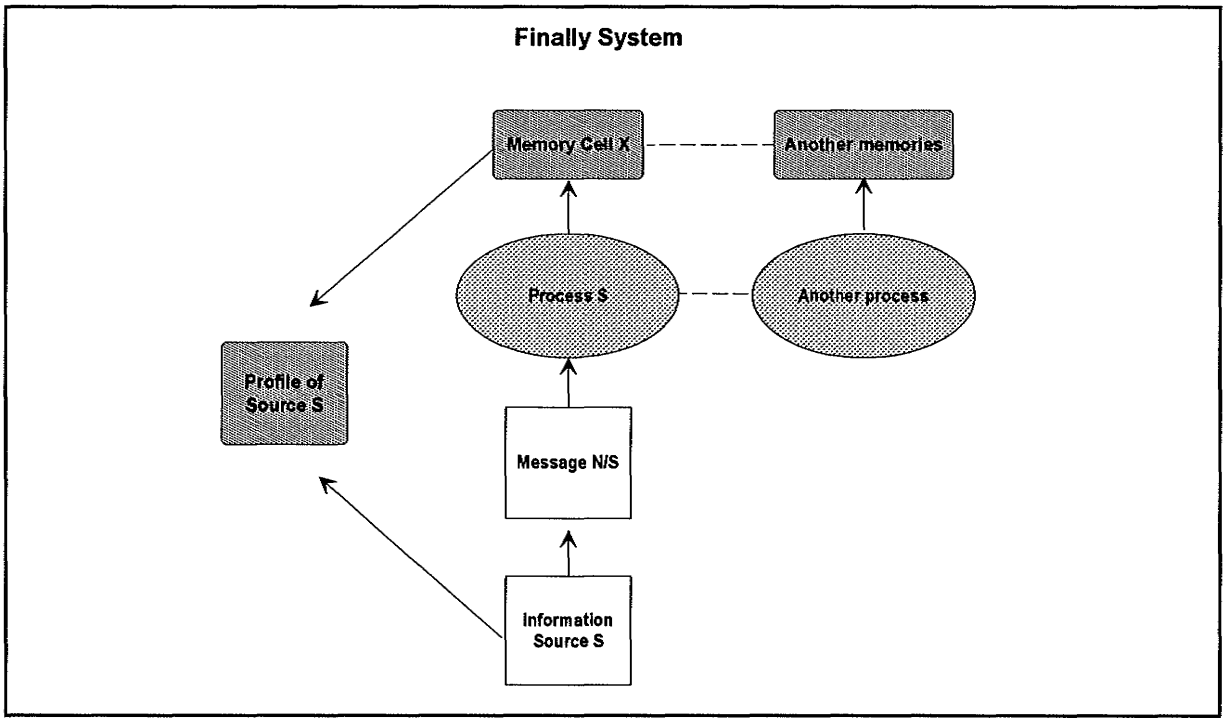


Fig. 4: Finally System

This model is independent of contents of observed data. It could be used for more complex outcomes from environmental data and from business data as well because there are often negative messages interacting with bulk of positive da a. I shall be happy if the elementary ideas I have described make a small step in that direction.

Enclosure List of West-phrased Information Sources from Czech Republic					
Business Name	Ruler	Language	Periodicity	Medium	Comments
The Fleet Sheet	E.S.Best (American living 5 years in Prague)	Engl.	workdaily	fax	1 page contains selected facts from Czech press. Best source of all important facts.
The Prague Post	The Prague Post company	Engl.	weekly	a) Paper b) Database GENIOS	Oriented to American in Prague.
Prognosis	Prognosis Company	Engl.	weekly	Paper	Similar to the Prague Post, more culture, less business.
CTK News	CTK (Czech News Agency) is controlled by the special Parliament committee.	Engl., Germ. Czech	daily	a) Satellite and computer Network b) Paper c) Retrospective Database d) Reuters Database	Mainly politics and society. The business messages included in APA Qst-database. More important source for another Czech press. West-phrased politics, East-phrased social and economical news.
The Wall Street Journal - Central European Economic Review	Dow Jones & Company, Inc	Engl.	? (biweekly)	Paper	
OB Exchange Bulletin	Czech Trade bank. Ruled by the Czech Government	Engl.	monthly	Paper	For inverstors.
Deutsche Bank Research Report	Deutsche Bank	Engl. Germ.	? (monthly)	Paper	For inverstors.
PlanEcon Report	PlanEcon Company	Engl.	quarterly	Paper	For inverstors.
Prager Zeitung	Prager Zeitung GmbH	Germ.	weekly	Paper	Like Prognosis

Enclosure List of West-phrased Information Sources from Czech Republic					
Business Name	Ruler	Language	Periodicity	Medium	Comments
Handelsblatt	Handelsblatt Verlag	Germ.	workdaily	a) Paper b) Database GENIOS	Often cited in Czech Media.
Wirtschafts-report	Roland Berger & Partner	Germ.	quarterly	Paper	For investors
Rudé právo (Red law)	Rude pravo Ltd (former leading communist paper)	Czech	daily	Paper	Most printing. Each published message is proved. Cover former communist now in industry.
Mladá fronta dnes (Young Front-line Today)	Hersant (F)	Czech	daily	Paper	Second according printing.
Lidové no-viny (Pally paper)	Ringier (CH)	Czech	daily	Paper	Former dissident paper. Good commentary, a few facts.
Cesky denik (Czech Daily)	?	Czech	daily	Paper	Connected to Home office archive. Most important source of negative messages.
Necensurov ané noviny Rudá kráva (Non-cen-sorshiped Red Cow)	?	Czech	weekly	a) Paper b) selected lists avail-able on floppy disc	Connected to Home office archive. Publish list of former communists' agents, list of selected former Secret Police Officers, publish secret documents related to today's establishment. Only negative messages.
Hospodaisk é noviny (Economy paper)	Handelsblatt	Czech	dailly	Paper	Leading economical paper. Publish all governmental announces, law, etc.
Obchodni vestnik (Trade bulletin)	Handelsblatt	Czech	weekly	a) paper b) floppy disc	Publish business regisration records. Publish oft (not all) formalised annual company reports.

Enclosure List of West-phrased Information Sources from Czech Republic					
Business Name	Ruler	Language	Periodicity	Medium	Comments
INFORMKA-TALOG	Informkatalog Ltd.	Czech Engl. Germ. Franc.	yearly	a) Catalogue b) on disc c) database GENIOS, GBI, NIS, EOTEL	Connected to Chamber of Commerce. In fact leading company directory with data prepared according ISO 9000.
Albertina Business Database	Albertina Icome Ltd.	Czech	daily	database on EOTEL, VIDEOTEX	Leading on-line source
NEFI	NEFI Ltd (former partner of Informkatalog)	Czech	biweekly	database on EOTEL, Videotext	Records about company delaying with payment
EDB	European Database Ltd	Czech	non-stop service	Inquiry per phone No. 185	Records on service companies
SCP	Centre of Stock Exchange	Czech		Inquiry in service centre, answer on paper or on floppy disc	All annual reports of companies on Prague Stock Exchange
CREDITREF ORM/CR	Creditreform	Germ.		Database and services Credireform	Forms analogue to forms used in Germany. Recorded data equivalent to Czech standards.
EZOP	EZOP Ltd	Czech	daily	Database host EZOP, Videotext	Qffer, searches, prices on agriculture products.
METEO	METEO Ltd. (Semi-state company)	Figures	daily	a) paid BBS b) in some region per computer voice	Meteorological and environmental data.

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The Informationsystem ISAL of the State North Rhine Westphalia

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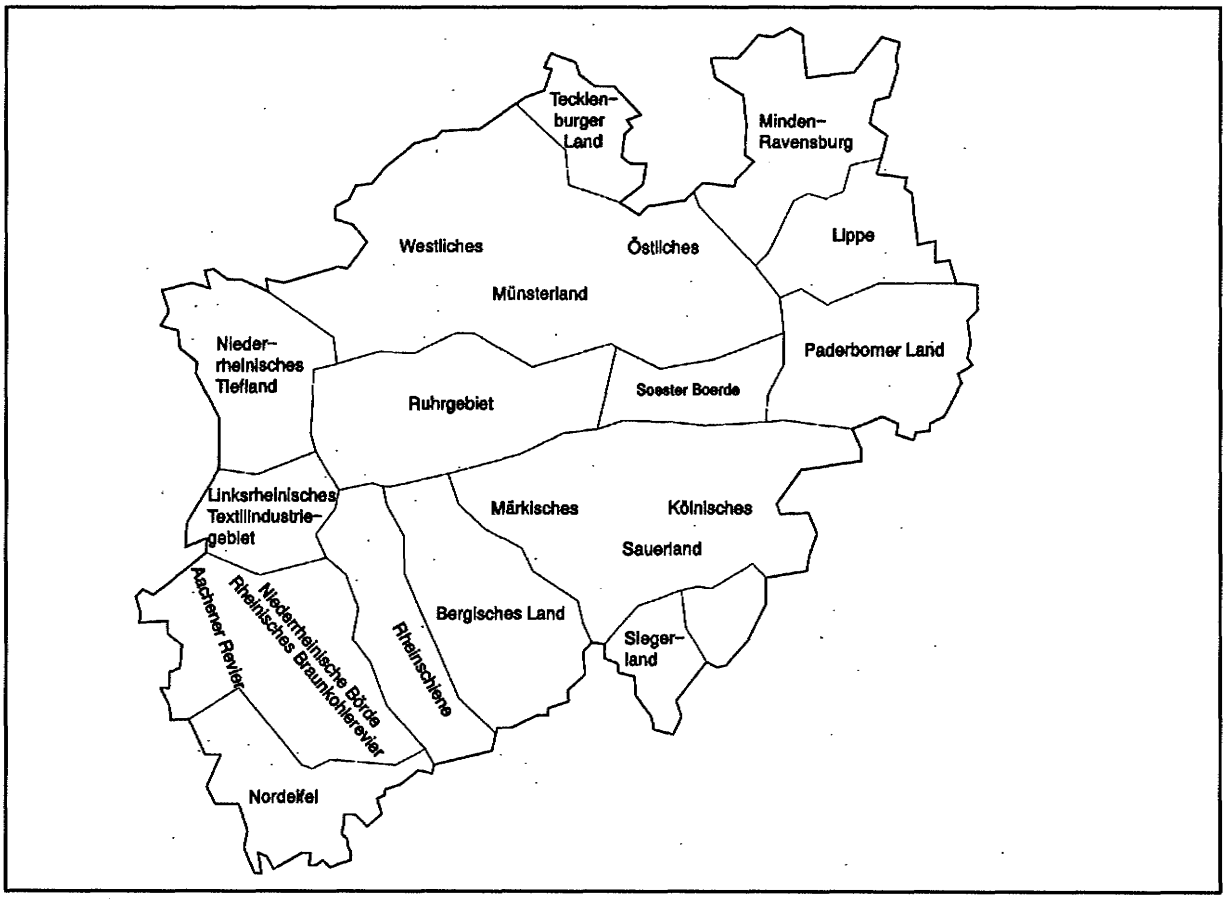
1. Introduction

The State North Rhine Westphalia has a long industrial and mining history. Because of the economic development the state has undergone some radical structural changes in the last few years. There are a great number of confirmed contaminated sites and those that are suspected to be contaminated. These changes have also caused areas to be abandoned and therefore unproductive. These have to be revitalized in a grand scale. As a result of this, there are many problems to solve in the sphere of contaminated sites.

The primordial concerns of the State of North Rhine Westphalia are detection and decontamination of these sites to defend any danger against human health an environment and to revitalize old mining and industrial sites.



The initative for the systematical investigation and decontamination of contaminated sites was first taken by the State government of North Rhine Westphalia in 1979. Since then the state has passed a great amount of additional measures to combine them to an extended approach in the concept of site decontamination.

The main subject of this state concept is to give support to the districts and municipalities that are responsible for the changes of use and carrying out of measures for some single cases. The state government will help the districts and municipalities by giving financial support, elaborating generally accepted guidelines and to issue legal instruments. In March 1980 for example an administrative direction concerning the detection of contaminated sites was issued. This measure created the basis for a methodical procedure to prevent further damage to human health.

2. Detection of Areas which are Suspected to be Contaminated

Preliminary works and conditions for a systematical detection and decontamination of contaminated sites

- systematical identification on sites which are suspected to be contaminated
- collection of investigated information in maps, registers and files
- completion of maps, registers and files by information collected during ongoing works.

In North Rhine Westphalia governmental investigations of contaminated sites which were legalized by the "State Waste Act" issued in 1988 (LAbfG) started in 1980. Investigations and completion of the register are performed by the counties and larger cities and in special cases by the State Superior Mining Office. Files and maps concerning contaminated sites are also collected and completed by the Regional State Agency for the Environment (StUÄ).

In North Rhine Westphalia the registers, files, and maps of sites that are suspected to be contaminated are used as the main bases and sources of information by the authorities in case of hazards as well as for planning and building approvals.

The authoritative investigation can be broken down into the following:

- classification of certain groups or single cases of former dumping or industrial sites and areas which are suspected to be conatminated
- investigation of position and extension of the suspected areas (using data and conducting of local inspections) and
- collection, processing and documentation of further available and important imformation.

Approximately 21.000 suspected areas were investigated up to December 31, 1993. The great bulk of data which result from investigation and ongoing acitivities can only be handled by using special computer programs. The "Informationsystem Altlasten NRW (ISAL)" was developed for the documentation of these data and for the management of single cases.

3. Informationsystem Altlasten (ISAL)

The "Informationsystem Altlasten" was amplified on the basis of some feasibiltiy study to check the usage of electronic data processing in the field of contaminated sites. This feasibiltity study was on behalf of the State Ministry for Environment, Area Planning and Agriculture of North Rhine Westphalia.

The informationsystem should

- support directly the Regional State Environment Agency officials
- provide cross-cut and detail evaluation locally and regionally
- offer a homogenous information structure for the treatment and management of suspected contaminated sites.

After a pilot phase at the State Environmental Authorities (StUÄ) the ISAL- informationsystem was installed at all State Environment Authorities in 1989. They use this information system mainly for the completion of files regarding suspected areas. The State Ministry of Environment, Area Planning and Agriculture, the State Environment Agency (LUA) and the district governments have a certain access to this information system. The system can also be used for running a register of suspected contaminated sites by local authorities.

The informationsystem ISAL is connected to a risk evaluation system (ISAL-Bewertungsverfahren). Both systems can be used as a working instrument for the tasks mentioned below:

- Detection of suspected contaminated sites
- Preliminary evaluation using ISAL
- Collection of information concerning
- Risk assessment
- Decontamination of the site
- Protecting or limiting measures
- Regular monitoring
- Prioritizing.

The ISAL data base gives a structure to the collected information about the case on hand and the specific measures pertaining to it. The data base is an open information system that sup-

ports the user in making his decisions. The main focus of the structure and content of the data base ISAL is the assessment of particular cases of suspected contaminated sites.

Furthermore the data base offers a survey of the state situation concerning the investigation criteria used in the different investigations conducted. Information and evaluation documents could not be easily retrieved in the past in short a time.

There is also a port provided to plot the collected ISAL-information in topographical maps. The ISAL data base will be gradually extended and completed by other modules for the computer-aided work on the assessment of particular cases. One of the modules is the so-called ISAl-risk evaluation system that gives the officals the possibility to set priorities on such cases. The ISAL-risk evaluation system passed the practical pilot phase it is now used as an important instrument in governmental projects.

Technical Description of the ISAL-Informationsystem			
User	State Environment Agency (LUA)	12 State Environmental Authorities (StUÄ)	
Application consists of	ISAL-UNIX-Version: data base running under UNIX operating system (network)	ISAL-UNIX-Version: data base running under UNIX operating system (network)	ISAL-PC-Version: collection and assessment system for a certain number of sites (approx. 1000)
Required Software/ Hardware	ISAL-UNIX-Version	ISAL-UNIX-Version	ISAL-PC-Version
Data Base	INGRES	INGRES	dBase
Language	INGRES-4GL	INGRES-4GL	Pascal
Operating system	UNIX	UNIX	MS-DOS
RAM	64 MB	64 MB	640 KB
Available HD Space	300 MB	300 MB	8 MB
Graphic Adapter	ASCII-Terminal or PC-Terminal Emulation	ASCII-Terminal or PC-Terminal Emulation	Hercules-, EGA- or VGA-Adapter
Printer	ASCII	ASCII	ASCII

3.1 ISAL- Investigation Document/Basic Data

The ISAL-investigation document was amplified together with the ISAL data base. This document contains all important information about a contaminated site. The investigation document is used for constitutive data, facts and basic findings about a particular suspected site. It

was not designed to collect all possible data, facts and findings, e.g. maps, expertise or results of analyses because of its restricted capacity.

Reg.-Nr.: |_|_| |_|_|_|_|_| |_|_|_|_|

ISAL-Erfassungsbogen/Stammdaten – Version 1.2 **Hk-4 Ausbreitung**

4.3.3 Besondere Hinweise – OBERFLÄCHENGEWÄSSER

⇨ 4.3.3.1 Wie weit ist das nächstgelegene Oberflächengewässer von der AA/AS entfernt? |_|_|_|_| m

4.3.3.2 Es handelt sich um
1 |_| ein stehendes Gewässer
2 |_| ein offenes Fließgewässer
3 |_| ein verrohrtes Fließgewässer
4 |_| Quellen

4.4 Ausbreitung – LUFT

4.4.1 Beobachtungen und Gefährdungen – LUFT

⇨ 4.4.1.1 Hat eine Beprobung und Analyse der Bodenluft stattgefunden?
1 |_| nein 2 |_| ja

4.4.1.2 Falls eine Beprobung stattgefunden hat, hat die Analyse der Bodenluft Hinweise auf eine Beeinträchtigung ergeben?

⇨ 4.4.1.2.1 1 |_| nein 2 |_| ja 3 |_| unbekannt

wenn ja:

4.4.1.2.2 Nähere Angaben bei:
|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|

45

The detailed information of the ISAL - investigation document is separated into 4 main cirteria:

- **1st. Main criterion: Common description**
  Apart from the common description of place or site it gives you also information on the legal situation and other background information about it.
- **2nd. Main criterion: Substances**
  This criterion contains the different species of waste, toxic or other dangerous substances that may be found in the subsoil and other vital information concerning the waste or the toxic substances, e.g. it's origin or source of production etc.
- **3rd. Main criterion: Usage of the specific area**
  Former and present use of the site.
- **4th. Main criterion: Spread of toxic substances**
  In this main criterion the spread of toxic or dangerous substances and their consquent effects may be determined in the four specific media
  - subsoil
  - groundwater

- surface water
- air

These can be subdivided into

- observations and endangering
- saftey measures
- special information.

Adding to this ivestigative document the environmental authorities have a special offical document/dossier about every single case.

4. ISAL-Risk Evaluation System

4.1 Necessity for Finding out Priorities

The counties and larger cities have to handle a great number of former industrial sites that are suspected to be contaminated. In general, those authorities do not have sufficient personnel, financial resources and the technical equipment to act on any contingencies. In spite of these restrictions, however, it is imperative for them to make priority lists in definite periodic intervals for best results.

The authorities have to compare the single cases taking as basis the seriousness of danger and the necessity of actions. Then they will decide which cases are more urgent than the rest. This comparative risk evaluation is their most important duty to deal with because the fincial support is dependent on the urgency of the case.

Formalized evaluation systems are suitable and useful as tools for the comparative risk evaluation. That is why the ISAL- risk evaluation system was formulated for the State of North Rhine Westphalia.

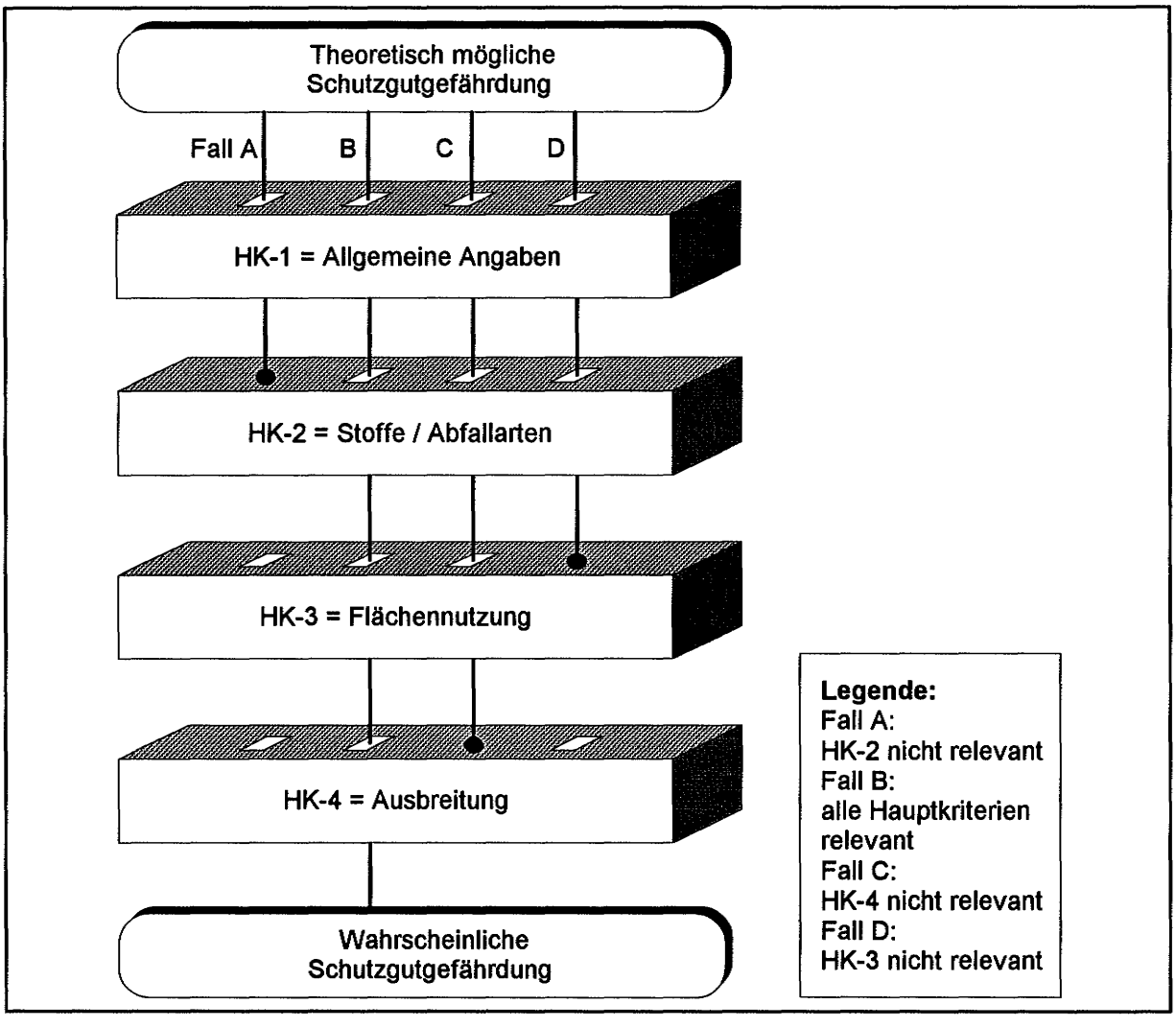
4.2 Basis and Structure of the ISAL-Risk Evaluation System

The data necessary to find out priorities are marked by an -; in the ISAL- investigation document. Those basic questions can be answered even if the information level about a single site is low. At the same time there are enough data to work out a comparative risk assessment. In the "State Regulations for Priority Lists" issued by the state promoting program every community has to give answers to all the basic questions if they will report a contaminated site to the priority list.

The ISAL-risk evaluation system consists of a mathematical connection of numbers that are derived from the assessment of the basic questions. In this way, the dangerous substance inventory of a suspected site, the size of the site and other similar common components as well as the possibilities of dissemination of harmful substances and its subsequent effects on the areas of concern are considered.

Main areas of concern

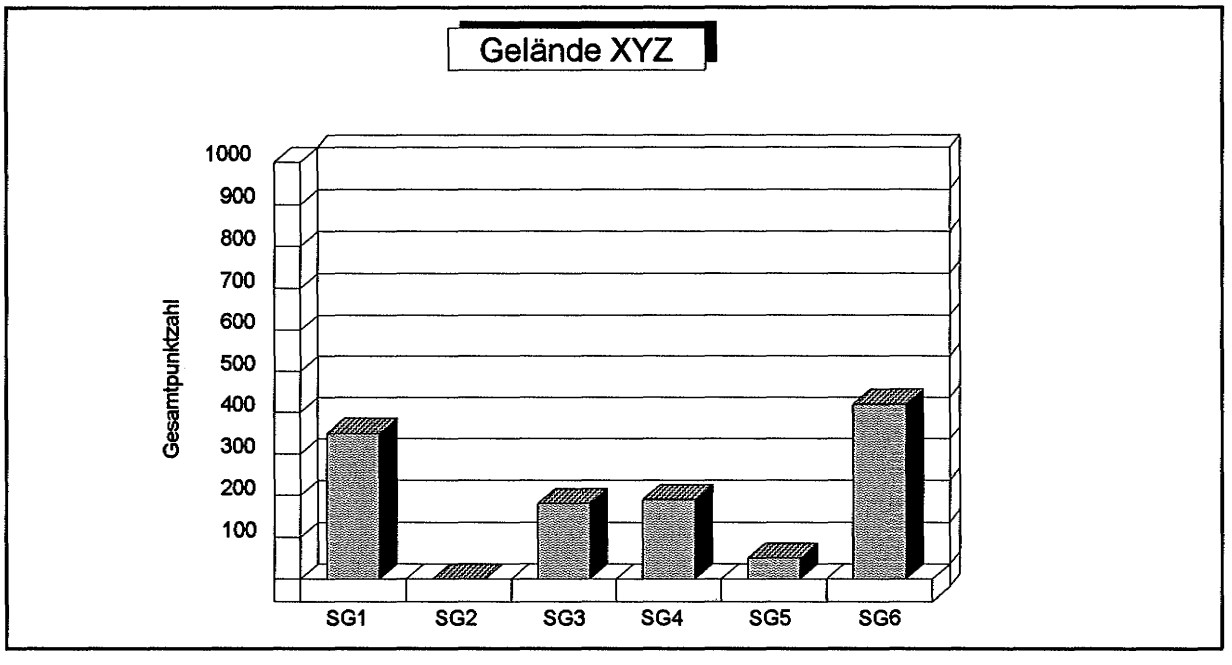
1. human live and health
2. drinking water or mineral springs
3. usage of soil on real estates (e.g. houses with back yards)
4. public water supply
5. agriculture or horticultural use and
6. other areas of concern, e.g. monuments or buildings which are to be protected



The following considerations are

- There are theoretical hazards that are checked by interrogating the subcriteria that fall under the main cirteria 1 to 4 to find out their possibility and probability for those areas of concern. If there is no assured knowledge about the site a possible endangering factor (1 or 2 points) is assumed.
- A theoretical hazard of an area of concern is probable only if
  - harmful substances or other contaminations are detected on the suspected site. Former investigations on the disposed waste or how the site was formaly used will led to the conclusion that risks are present (1st and 2nd main criterion).
  - there is a continual use of the suspected site or other surrounding areas that endanger the a.m. six areas of concern (3rd main cirterion).
  - a dissemination of dangerous substances to the areas of concern (4th main criterion).

All conditions have to be fullfilled to assume an endangering as probable. Addition and multiplication are the mathematical ways of this risk evaluation system. Besides there are regulatory factors for the subcriteria that put them into significant relation. A maximum of 1000 points can be reached for all areas of concern. The result of the ISAL risk evaluation system is an endangering profile consiting of six single evaluations for each area of concern.



The urgency of the case depends on whether there is a cocnrete or theoretical danger. The "State Regulations for Priority Lists" is the determining factor for the series of site grades. The ISAL-risk evaluation system value corresponds to a wide political consent in North Rhine Westphalia.

After a community has fixed its priority list using the ISAL-risk evaluation system for a certain number of sites within her governmental district the results of other communities are then compared. In the next step, a common priority list of all evaluated sites is fixed by the district government. Afterwards this priority list is given to the Ministry for Environment, Area Planning and Agriculture that decides to whom the financial aiding program would be supplied.

The ISAL- risk evaluation system is also a decisive tool for the North Rhine Westphalian communities. They can use it for finding out the urgency of risk assessments, decontamination invstigations, decontamination and monitoring measures for confirmed and unconfirmed contaminated sites.

The state government has bought the licence for a PC-version that is provided free of costs to the districts and municipalities. The PC-version is not only to be used for classification of a certain site number (approx. 1000) but also for risk evaluations by the ISAL-risk evaluation system.

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Document Delivery – The Future Available Now

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CD-ROMs, Online Services, Magnetic Tape, Microform, Article Reprints, and hard copy present a dizzying selection of reference materials. Choosing a delivery method can often be more difficult than selecting the reference itself.

Few products have had as significant an impact on information delivery as have UMI full-image systems such as IEEE/IEE Periodicals Ondisc. Being able to locate and retrieve exact article images at a computer workstation is exactly what today's researcher wants.

Before we look at UMI's image databases in detail, I'd like to give you some background information about UMI, about how our thinking about information provision has evolved and developed over the years.

UMI was founded over 50 years ago and by 1975 had become the largest microfilm publisher in the world. We serve customers in over 150 countries worldwide including every type of library – academic, corporate, public and research libraries. UNI has five main publishing programmes:

- Doctoral Dissertations
- Serials in Microform
- Books On Demand
- Research Collections
- Electronic Publishing - CD-ROM.

1. Doctoral Dissertations

We can now provide over 1 million North American doctoral dissertations – PhD theses – covering all subjects. Most of these dissertations come from North America but increasingly we are receiving them from universities all over the world to include in our programme. We can reproduce these as paper copies or in microform.

2. Serials in Microform

Another major area of publishing covers periodicals and newspapers in microform. We film every year some 20,000 different journals, including such titles as the Economist, Time and Newsweek Magazines, Wall St. Journal and the IEEE journals.

In most cases we have filmed these from the very first issue so that we can supply the complete backfile.

Microfilm still provides the cheapest means of buying and storing retrospective information and back runs of journals, and we believe it will continue to play an important role in the provision of information in libraries.

3. Books of Demand

UMI is the world's largest on-demand printer of out-of-print books. We can provide more than 150,000 titles including rare and valuable literary works, scholarly studies and technical research spanning more than 500 years. Most of the titles are acquired through agreements with over 500 prestigious trade book publishers, University presses and learned societies throughout the world.

4. Research Collections

More than 125 Research Collections provide essential resources for academic and professional research. All collections are authoritatively selected, easily accessible and supported by professional bibliographic aids and indexes.

UMI have also been forerunners in the introduction of new technology, in particular, databases on CD-ROM, which is the focus of today's talk.

5. CD-ROMs

UMI provides 3 kinds of database on CD-ROM. The first type is the ASCII ABSTRACTING AND INDEXING type of database. This contains indexing and abstracts for articles from periodicals. All the information contained in such a format is fully searchable, so you can carry out ordinary key word searches, or you can search by company name for example, or by geographic place, or by journal etc.

This group of databases includes some well-known ones such as dissertation abstracts (which indexes and abstracts those 1 million theses I've just mentioned), and ABI-Inform the business and management database.

- **INSPEC**

  The first database that I wish to discuss in some detail is an index and abstract database, too, and it's called INSPEC Ondisc.

  Since it first went online, INSPEC has become the most important source of information for researchers in the fields of Physics, Engineering and Electronics, Computers/Computer Science and Information Technology. Inspec is part of the publishing division of the British Institute of Electrical Engineers (IEE).

  First computerised in 1969, INSPEC grew out of the 'Science Abstracts' service which has been published continually since 1898. In 1965 the database has split into two separate subsets, and in 1967 into three subsets: Physics, Electronics and Computing.The CD-ROM version of the database dates from 1989.

  - 4500 journals from all over the world specialising in Physics, Electronics or Computing;
  - More than 1000 conference proceedings, of which over 500 are abstracts from IEEE and IEE proceedings;
  - An impressive 250.000 abstracts are added annually;
  - On average abstracts consist of 150 word summaries in Eniglish in order to maintain consistency throughout the database;
  - Current subscriptions to the CD-ROM version are made up of the current year (Sept. 1994 – August 1995) plus a 3 year rolling file;
  - Backfiles are available from 1989;
  - The database is available either as a complete collection or split into 2 subsets;
  - Subscribers to the printed edition qualify for a substantial discount over 50 %.

- **ASCII FULL TEXT**

  The second type of database is called ASCII FULL TEXT. ASCII full text databases are databases which contain complete journal articles. This information has been keyed in so you can carry out a search for information throughout the entire journal article. We cover the major US newspapers such as the NEW YORK Times, Washington Post, Wall Street Journal and USA Today. However, such databases do not contain any pictures, graphs or diagrams, which brings us to the 3rd group of databases that UMI are involved in, which is the provision of FULL TEXT IMAGE DATABASES.

- **Full Text Image Databases**

  Image databases contain scanned images of periodicals. We take a periodical such as the Economist for example and scan every issue of it from cover to cover. This means that you have a complete reproduction of the actual periodical itself.

  The way the system works is that you carry out a search on the ASCII abstracting and indexing CD-ROM, locate articles of interest and then bring the article itself, just as it appeared in the original journal, up onto the screen in front of you. You can then either read the article on the screen or print it out for later use.

  In order to run these image databases, you do require specific hardware. UMI currently has four image databases.

- **BUSINESS PERIODICALS ONDISC,**

  contains scanned images from approximately 510 of the journals abstracted and indexed by ABI/Inform.

- **GENERAL PERIODICALS ONDISC**

  contains complete scanned images from approximately 350 general periodicals. The abstracting and indexing is provided by Periodical Abstracts Ondisc.

- **THE SOCIAL SCIENCES INDEX/FULL TEXT**

  combines indexing from the HW Wilson company together with our image technology, and scans some 215 titles.

- **IEEE/IEE**

  The other image database – there are variations of BPO and GPO, differing according to the content – is the IEEE/IEE Periodicals Ondisc database, or IPO. This contains images of the full-text from the publications of the Institute of Electrical and Electronic Engineering (IEEE) and the Institution of Electrical Engineers (IEE).

  The index disc is a subset of the INSPEC database and contains records with abstracts and indexing corresponding to the full image of the documents available on the image disc.

  Two basic approaches to searching and retrieving are offered:

  - Type terms in the Search Entry window or select frorn list of terms in the Indexes (various indexes are available including subjects, title, author, ISSN/ISBN, coden and chemical indexes).
  - Search the Periodical Directory and select a particular publication by date, volume or issue number and then view the images.

  THESAURUS – Each record is indexed using descriptors from the INSPEC Thesaurus. This vocabulary provides a powerful search aid and can be used to find related words and phrases, to broaden or narrow searches and to view the hierarchy of thesaurus terms.

- Cover-to-cover content as available, giving access to advertisements, table of contents pages, letters to the editor, etc., which would not be covered by ASCII full-text databases.
- Coverage to the publications of both societies is total : actual page images from the journals, conference proceedings, standards and colloquium digests of these respe'cted organisations. There are over 1600 titles in full image, with more being added with every update.
- Coverage starts from 1988 onwards, and the current subscription starts from 1990. The years 1988 and 1989 are available as backfile years.
- Both index and abstract and full image parts of the database are updated monthly. Each month a subscriber would receive 1 index disc, cumulatively updated, and several image discs, which would be added to the collection.
- Substantial discounts are available to print subscribers of the journals, wich an even greater saving available to subscribers of both the journals and the conference proceedings.
- Finally, I would like to summarise the advantages of a system such as IPO.
- Ease of use. Foolproof software makes little training necessary.
- Monthly, cumulative updates ensure that you have the most up-to-date information.
- Cost effectiveness. With IPO you are effectively subscribing to 1600 different sources of information, of considerably less than the cost for paper subscriptions to all this information.
- IPO saves space. Where paper subscriptions would fill shelf upon shelf, the IPO database is stored in the space that a normal workstation takes up.
- IPO saves time. Offering immediate access to information that would otherwise only be available through interlibrary loans or somewhere else in the library, inevitably meaning that the librarian will have to become involved. IPO saves librarians' time too!

I notice that a visit to the America Haus in Cologne is planned for this evening: you may like to know that these UNI image systems are installed in many America Hauser throughout Germany. Thank you for your time and attention.

Online Patent Information on STN

H. Koch
Scientific Consulting, Köln

1. A Vital Source for Business Planning

In a time of rapid technological developments business decisions on research, development, and marketing of new products require a reliable source of information on technology, international markets, and competitor's activities.

Patent information which comprises data on technological, legal, and business aspects has become one of the most important sources of information for business planning.

From an economic point of view, information gained from patent literature is usually of particular interest, because patent applications are generally submitted if the inventor or assignee expects to profit from the product or process. It is, therefore, understandable that information on developments which are to be patented is not published in journals. This is one reason why a good deal of technology information worldwide available can only be found in patent literature.

2. Online Databases - Modern Tools for Information Retrieval

Due to shorter product innovation cycles, companies have to make use of time-saving and cost-effective information tools and efficient planning systems.

Before and during product development it is imperative to gain a prompt overview of the knowledge relevant to the specific task. Thus it has become a necessity to use up-to-date information.

In high-technology areas conventional information tools for continuously monitoring technological trends and analysing competitors are no longer effective. The planning and development of innovations require an information network which optimally meets a company's need for external and internal information.

Patent databases are an excellent tool for extracting patent information which cannot be carried out at a reasonable price with conventional methods. To gain an edge over the competition, you need patent databases which contain

- bibliographic data

- abstracts and/or claims
- legal status data
- graphical data

and provide valuable information for

- prior art searches
- novelty searches
- competitor analysis
- market analysis
- identifying technological trends
- searches for potential cooperation partners and licensors.

Advantages of using online databases are

- time efficiency
- cost effectiveness
- comprehensiveness
- current awareness
- information easily accessible from work place
- complete coverage on an international level.

3. Patent Databases on STN International

STN International, the Scientific & Technical Information Network which is run cooperatively by the American Chemical Society, FIZ Karlsruhe, and the Japanese Information Center of Science and Technology, offers a comprehensive array of patent databases as part of a whole range of scientific and technical databases, containing bibliographic and factual data as well as patent information.

In total, STN International offers more than 170 databases with more than 120 million citations and 15 million chemical structures, including 23 million patent documents, 8 million patent families, and 28 million legal status data. With the release of Derwent's World Patent Index on STN in December 1993, all major patent databases are now available on the host.

STN offers convenient search functions, including chemical structure search, multiple number formats for search, display, and select. Unique features of the Messenger retrieval language enable multifile searching and convenient file crossover searching to obtain a complete set of patent information. Furthermore, commands for statistical analysis of retrieved data and enhanced graphics capabilities are given.

Also, STN International provides software products ranging from a frontend communication program (STN Express) to a powerful online retrieval system (Messenger) and a document management system for the analysis of retrieved data (STN Personal File System). All are specifically designed to assure an efficient and user friendly retrieval of the information of interest.

Graphical representations, such as chemical structures, drawings, and schemes, which constitute clear information in a condensed way, can be displayed online, printed, downloaded, and stored.

Patent databases provide mainly three kinds of information:

4. Legal Aspects

Information on legal aspects concerns for example the application and publication dates, the year in which a patent was granted, inventor and applicant names, priority information, patent family information, legal status data, etc. This information is of main interest for the patent searcher or the patent attorney because information retrieval by means of online databases can be carried out much faster and more cost-effectively as compared manual searches. Moreover, there are patent databases such as INPADOC and World Patents Index which contain patent information from 57 or 32 patent offices worldwide, respectively. Thus the patent specialist can carry out comprehensive searches at an acceptable price.

5. Technology Information (Prior Art)

State-of-the-art searches are possible because many patent databases contain not only information on legal aspects but also on the content and application of inventions, i.e. abstracts, claims, subject indexing, or the International Patent Classifications (IPC) are included.

Only about 5 to 10% of the information found in the patent literature is published elsewhere and even then, it can take up to 5 years after the patent has been filed. However, 85 to 90% of the technological knowledge published all over the world is available in patent literature. That is why patent databases are an indispensable source of information, for example in carrying out searches relating to recent developments in technology.

Technology information generated from patent databases is of particular interest to industrial R & D departments. Moreover, these databases constitute a rich information potential for business consultants.

6. Systematic/Statistical Patent Analysis

Systematic patent analysis is another useful feature of patent databases. Such analyses can be used for important strategic tasks within a company for competitor analyses, of for the examination of the patenting behaviour of companies in a specific production/technology field. Moreover, the systematic patent analysis can be employed for early recognition of technological trends and is particularly interesting for marketing experts, product planners, business planners, managers etc.

Online Patent Information STN® International

A World of Patent Information

Comprehensive
Database
Services

Powerful
Software Tools

Customer Support

FIZ Karlsruhe July 1994

International Patent Databases

WPIDS, WPINDEX

- Derwent-Assigned Titles and Abstracts
- Chemical and Electrical Indexing
- Basic Patent-Concept
- Patent Families incl. non-convention Equivalents
- Standardised Patent Assignee Codes
- Techn. and Chem. Drawings

International Patent Databases

INPADOC, INPAMONITOR

- Complete Bibliographic and Family Information from 57 Patent Issuing Organisation
- Legal Status Information from 15 Patent Issuing Organisations
- Standards for Patent Assignees and Inventors

International Patent Databases

INPADOC, INPAMONITOR

- CA and WPI Abstract Numbers
- Flexible Display Formats for Patent Families
- Comprehensive Current Awareness Services (SDIs)

International Patent Databases

WPIDS/WPINDEX	Derwent Information
CA, CAPREVIEWS	Chemical Abstracts Service
APIPAT	American Petroleum Institute
INPADOC, INPAMONITOR	European Patent Office / FIZ Karlsruhe
MARPAT	Chemical Abstracts Service

National / Regional Patent Databases

IFIPAT, IFICDB, IFIUDB, IFIRXA, IFIREF	IFI/Plenum Data Corporation
PATDPA, PATDD	German Patent Office / FIZ Karlsruhe
PATOSDE, PATOSEP, PATOSWO	Wila / Bertelsmann InformationsService

Derwent World Patents Index

Sources: Patent Documents (Basics) and Equivalents from 31 Patent Issuing Organisations

Subject Fields:

Pharmacy	since 1963
Agrochemicals	since 1965
Plastics and Polymers	since 1966
Other Chemistry	since 1970
Engineering	since 1974

Online Patent Information STN® International

Search and Display:

Bibliographic Data
Index Data
Title Enhancements,
Derwent Abstracts
Manual Codes (WPIDS)
In-Depth Chemical Indexing
(WPIDS)
Patent Graphics

Datenbestand:

6.3 Mio. Patentfamilies (Basics)
12 Mio. Documents
1.4 Mio. Patent Graphics
Weekly Updating

FIZ Karlsruhe July 1994

World Patents Index on STN

- Search all Patents Numbers in Derwent and STN Format
  -> Automated Format Conversion
- SET PATENT Command
  -> SET PAT DER -> SET PAT STN
- Flexible Display and Print Formats
  -> Custom Display -> Predefined Formats
- Powerful SELECT Capabilities
- Patent Graphics

World Patents Index on STN

- Implied Proximity Operators
- Left Truncation and SLART in the Basic Index
- Polymer Indexing Thesaurus Online
- Flexible IPC Searching
- Super Search Fields

  -> /APPS -> /PCS

  -> /PATS -> /IPC

WPI Images on STN

- CCITT Group 4 Images
  TIFF 6.0 Format
- Transmission and Downloading of Images
  with 75 dpi, 150 dpi, 300 dpi
  supported by STN EXPRESS
- Integrated Offline Prints
  of Text and Images with 300 dpi

STN Terminal Emulation

File Edit Online Query Results Preferences Help

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L5   ANSWER 1 OF 1  COPYRIGHT 1994 DERWENT INFORMATION LTD

AN   89-023902 [03]   WPIDS
DNN  N89-018311
TI   Transmission controller for motor vehicle - determines load,
     quantity of remaining oil in each transmission clutch, and speed
     change path.
DC   Q64 X22
IN   ASAYAMA, Y; OKURA, Y; SATO, T; TSUBOTA, M
PA   (KOMS) KOMATSU SEISAKUSHO KK
CYC  13
PI   WO 8810380  A  881229
        RW: AT BE CH DE FR
         W: AU SU US
     AU 8819559  A  890119
     EP 372073   A  900613
        R: DE FR GB
     AU 9177088  A  910808
     US 5113720  A  920519
     EP 538243   A2 930421
        R: DE FR GB
     US 5209141  A  930511
     EP 372073   B1 940209
        R: DE FR GB
ADT  WO 8810380 A WO 88-JP6
     5113720 A WO 88-JP631
     93-200012 880624; US 5
     92-842061 920226; EP 3
     880624
FDT  US 5113720 A Based on
     US 5209141 A Div ex US
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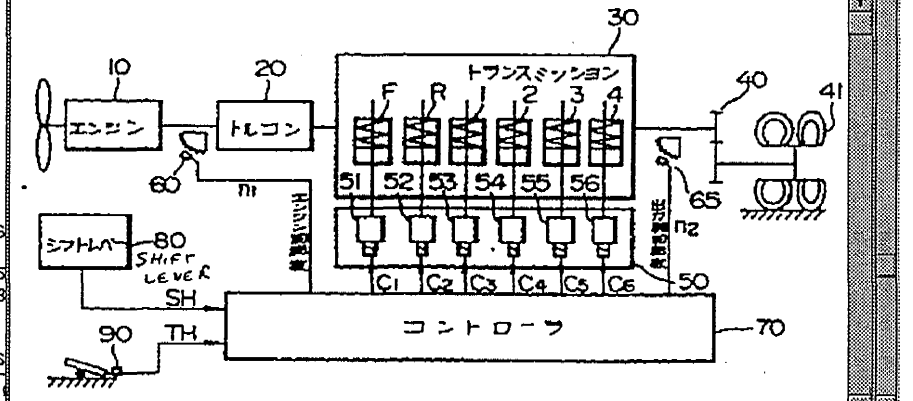
☒ Hold ☐ Print

Tiff File Display

File View Mode



STN Terminal Emulation

File Edit Online Query Results Preferences Help

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L5   ANSWER 1 OF 1  COPYRIGHT 1994 DERWENT INFORMATION LTD

AN   89-023902 [03]   WPIDS
DNN  N89-018311
TI   Transmission controller for motor vehicle - determines load,
     quantity of remaining oil in each transmission clutch, and speed
     change path.
DC   Q64 X22
IN   ASAYAMA, Y; OKURA, Y; SATO, T; TSUBOTA, M
PA   (KOMS) KOMATSU SEISAKUSHO KK
CYC  13
PI   WO 8810380  A  881229 (8903)* JA   64 pp
        RW: AT BE CH DE FR GB IT LU NL SE
         W: AU SU US
     AU 8819559  A  890119 (8924)
     EP 372073   A  900613 (9024)
         R: DE FR GB
     AU 9177088  A  910808 (9139)
     US 5113720  A  920519 (9223)       31 pp    F16H061-
     EP 538243   A2 930421 (9316)  EN   25 pp    F16H061-
         R: DE FR GB
     US 5209141  A  930511 (9320)       32 pp    F16H061-
     EP 372073   B1 940209 (9406)  EN   18 pp    F16H061-08
         R: DE FR GB
ADT  WO 8810380 A WO 88-JP631 880624; EP 372073 A EP 88-906034 880624; US
     5113720 A WO 88-JP631 880624, US 89-449926 891220; EP 538243 A2 EP
     93-200012 880624; US 5209141 A Div ex US 89-449926 891220, US
     92-842061 920226; EP 372073 B1 EP 88-906034 880624, WO 88-JP631
     880624
FDT  US 5113720 A Based on WO 8810380; EP 538243 A2 Related to EP 372073;
     US 5209141 A Div ex US 5113720; EP 372073 B1 Based on WO 8810380
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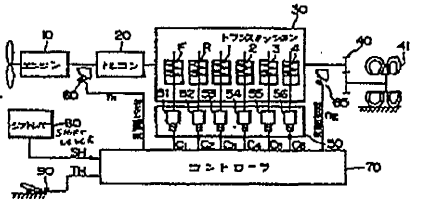
Tiff File Display

File View Mode



☒ Hold ☐ Print Transcript: apr14b.trn

International Patent Databases

CA, CAPREVIEWS

- Chemical Structure Search in Registry
- Chemical Indexing
- CAS Registry Numbers
- Enhanced Title and Abstracts
- In-Depth Indexing

International Patent Databases

APIPAT

- Indexing, Controlled Terms
- Linked Terms
- CAS Registry Numbers
- Patent Family Information

MARPAT

- Markush Structure Search

Nat./Reg. Patent Databases

PATDPA, PATDD

- Complete and Actual German Patent Information
- Abstracts since 1981, PASSAT Indexing
- Update of Records
- Cited Patents and Non-Patents Literature
- Legal Status Information
- Address Information
- Technical and Chemical Drawings

Nat./Reg. Patent Databases

IFIPAT, IFIUDB, IFICDB, IFIREF, IFIRXA

- Complete and actual US Patents
- Title Enhancements, Abstracts
- All Claims
- Uniterms and Chemical Indexing
- CA Abstract and Registry Numbers
- Address Information of Inventors

Nat./Reg. Patent Databases

PATOSDE

- Complete and Actual German Patent Information
- Main Claim
- Cited Patents and Non-Patents Literature
- Address Information

Nat./Reg. Patent Databases

PATOSEP

- Complete and Actual Patent Information of EPO
- Main Claims since 1990/92
- Abstracts (coming soon)
- Titles in English, German, French
- Address Information
- Legal Status Information

PATOSWO

- Complete and Actual PCT Applications
- Abstracts

InfoManager - A Tool for Processing large Database Enquiries

K. Bolst
ExperTeam, Oberhausen

InfoManager

Reasons

- Worldwide about 6000 databases available
- New software by ExperTeam saves time and money

Customer

- Chamber of Trade and Commerce, Dortmund
- Cooperation for Information Processes uses InfoManager
- Access to 3000 commercial databases by 60 host suppliers
- Emphasis on technology, trade and patents

Old System

- Previous system on a PRIME-Minicomputer
- with 5000 lines of FORTRAN
- 5000 lines of CPL (Command Processing Language)
- POWER+, a Relational Database Management System (RDBMS)
- Developed in the early eighties

InfoManager

New System - Requirements

- PC-Network
- DOS not Windows!
- Dbase compatible database (Clipper)
- Language: C
- Word processor: Microsoft Word
- DATEX-P
- Kernel: INFOLOG by IuK

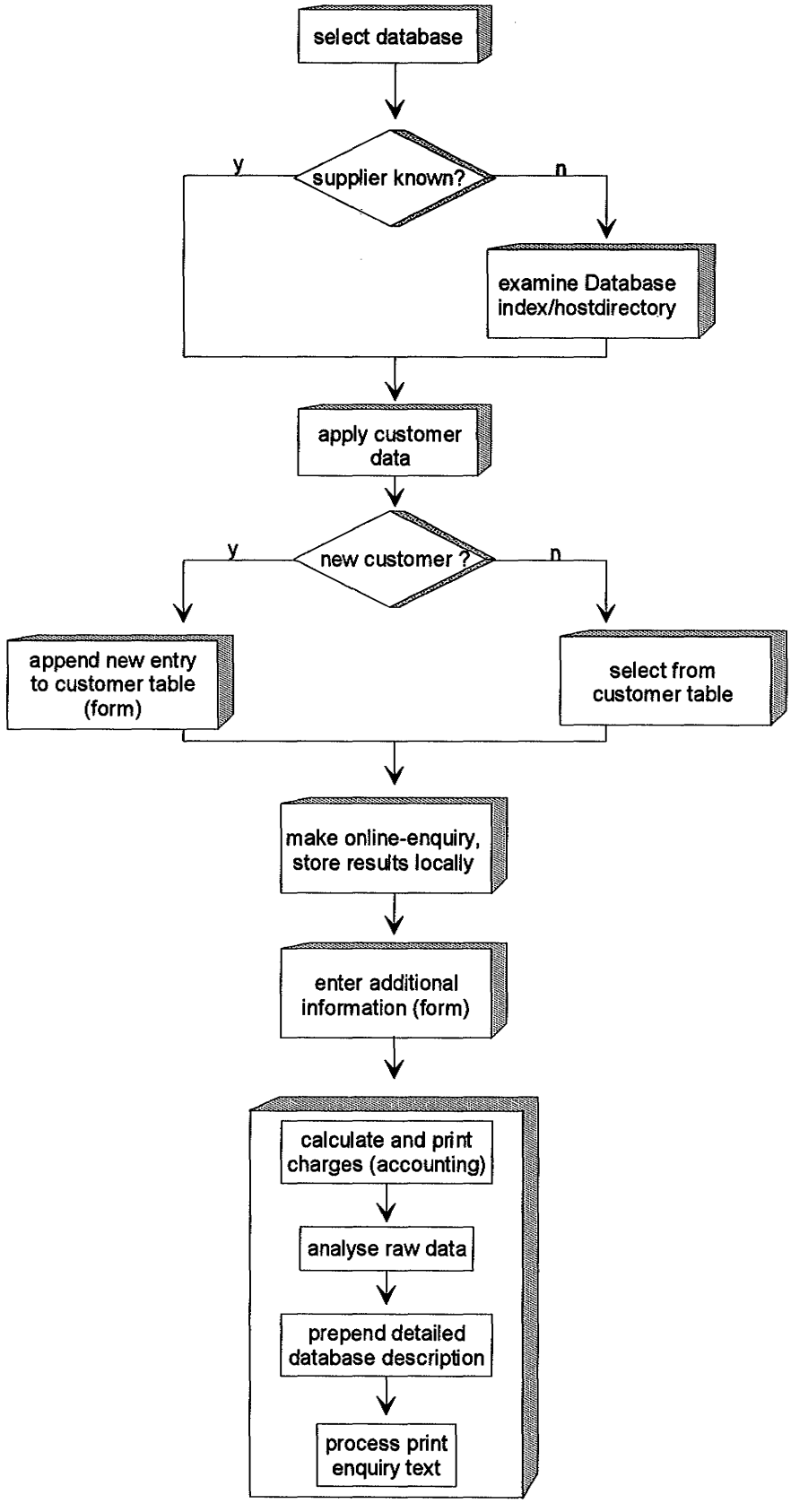
Functionality

- Collection of raw text by downloading from different hosts
- Processing of selected information
- Charging of customer
- Print of complete enquiry as a book
- Administration of customers
- Administration of host lists
- Administration of database lists

Advantages

- Easy to use
- Menu-driven
- Quick processing of information (2 hours vs. 8 hours when done manually)
- Open for new hosts and databases (drivers can be added by user)
- Sale by ExpertTeam, Oberhausen
- Customisation by ExperTeam

InfoManager



The Information Superhighway - An American Perspective

A. Kuperman
Amerika Haus - Business Information Center, Köln

Anyone who has been to the Frankfurt Book Fair could not miss the evidence of the electronic age. Multimedia CD Roms proliferate with tests, photos, sound, moving images. In multimedia CD Rom encyclopedies produced by commercial publishers, a user might select an article on Beethoven, and in addition to seeing the text on screen can call up a section of a Beethoven symphony played through the computers speakers. Or maybe call up a video clip of a conductor leading an orchestra during a Beethoven rehearsal. A single CD-Rom disc contain so much information that it should be possible to create one that contains parallel texts in five or six languages. These hypertexts or expanded, are an attractive feature of many interactive, multimedia texts. A recent article in Technology and Business Monthly noted that publishers are more and more interested in the interactive multimedia capabilities of CD-Roms and software retailers believe that 50% of their sales will be from CD-Rom programs next year. A single CD-Rom can store 250.000 pages of texts and hold animation, full motion video, graphics and sound. What is very important and interesting is that recent studies indicate that people remember 70% of information they interact with, as opposed to only 20% of what they read.

The real back bone of the information superhighway is INTERNET. It represents a new concept of global information access and community. The cluster of technologies will have a revolutionizing effect exceeding probably the effects of any other in history such as the invention of the printing press, steam engine. It is difficult at this stage to see exactly the nature and extent of the impact on our societies: These global high capacity networks will change the way we communicate with one another, the way we work together, and even the way we perceive the world.

One fact is certain: to meet the needs of an open and democratic society, the data highway has to be ubiquitous, affordable, easy to use, secure, multipurpose, information rich and open.

Telephone companies are well suited in their communications architectures and standards to meet future needs. Most phone systems were designed for point-to point communications and they have evolved into the worlds largest switched distributed network, capable of handling millions of phone calls simultaneously, tracking each one and billing customers for precise usage. Riding on the shoulders of the phone system is INTERNET - this remarkable worldwide computer cooperative, a government-subsidized experiment in an electronic information community and controlled chaos. Internet doesnt own the highways it passes through

and nobody owns internet, but it is growing by more than 150.000 users per month. The simplest picture for this information super highway is to see the wires and cables as the technological foundation, and Internet as its culture and language. Several companies are working to improve the arcane interface of Internet so that its resources are more easily accessible to individuals and businesses.

In the current administration in Washington the US has a strong voice supporting the information super highway in the person of the Vice President Gore. The administration supports current legislation to ease regulations on cable and phone companies. Ever since 1934 when the Communications Act legislated universal service, this principle of universal access to information has been sacred. The new challenge is how to make that a reality in this huge information infrastructure. Cross-subsidzing the costs for poor, rural information customers is one idea being discussed.

There are policy-changes underway in Washington that may allow telecommunication competetion to turn into a free-for-all. The result could be fierce price competition and an explosion of service options.

I thought Id just mention a few legislative landmark cases. In 1984 a Supreme Court decision broke up AT&T and allowed for the creation of 7 regional bell operating companies (RBOCs). Local telephone companies could not manufacture equipment, provide long distance service, deliver video or own content. But in 1991 an appeal to the court lifted restrictions on the RBOCs to provide info. services, allowing them to own news, spots and weather and other date services distributed over their phone lines.

In 1991 Vice President Gores bill authorized the creation of the National Research and Education Network (NREN) and funded research on high speed networking hardware and software. In 1993 the House passed the National Information Infrastructure Act. It provides for a coordinated federal program to develop and disseminate application for high performance networking and high speed networking in education, libraries, health care and the provision of government information.

Also in 1993 that National Communication Competition and Information Infrasturcture Act was introduced. This would permit telephone companies to deliver video, open local telecommunications market to competition, provide for open platform and ensure universal service.

Another bill, The Antitrust Reform Act would phase out limitations put on RBOCs. It would let the Attorney Gerneral and the FCC grant RBOCs the right to offer interstate and interexchange services, manufacture equipment, offer burgler alarm services and own partial interest in electronic publishing ventures.

The Clinten Administration proposed in Sept. 1993 froming the IITF- Information Infrastructure Task Force. It is composed of federal officials and US Adivisory Council memebers composed of 25 public and private sector appointees. Its goal is to promote private sector investment;

reform communications regulations; ensure universal service; promote applications in education, health care, manufacturing and government information; promote standards for seamless networking; ensure security and reliability; protect intellectual property rights; and improve management of the frequency spectrum.

On Jan 11, 1994 Vice President Gore adressed the nation on this issue. The Administration gave its support to the Antitrust Reform Act. Three principles emphasized by Gore were paramount:

- private investment,
- fair competition and
- open access.

The administration will support other National Information Infrastructure measures, including networking research, applications development and electronic delivery of government services.

There are also federally funded pilot projects.

- Vista NET (No. Carolina) tries to examine medical uses for networking and medical imaging
- AURORA- (IBM, MIT, etc.) tries to explore the implications of hooking up data firebase to a desktop workstation and studies the differences between switching schemes.
- NECTAR - (Pittsburgh Supercomputing Center and Bell Atlantic), Links gigabit LANs to supercomputers
- MAGIC - (Lawrence Berkely Laboratory,, Army Supercomputing Center, etc.) Uses a military terrain visualization to study real time interactive data exchange among diverse, geographically distributed networking devices
- CASA - (Los Alamos, Cattech etc.) - Tries to synchronize distributed simulations running on supercomputers hundred of miles apart
- BLANCA - (Lawrence Berkely Laboratory, Pacific Bell, etc.) - Studies how voice, data and video flow in networks.
- But industry is also involved in funding pilot projects.
- National Information Infrastructure Tested (AT&T, universities) - Creates real world demonstration projects. Example is "Earth Data Sciences" distributed environmentall data over disparate systems in a collaborative multimedia framework.
- SMART VALLEY (Hewlett Packard, 3 M, Silicon Graphics) - Promote development of data superhighway by supporting applications development.
- XIWT - Cross Industry Working Team - 4 working groups - examine main issues in bringing gigabit technology to homes and business desktops.

As we know cable and telephone companies are racing ahead of judges, legislatures and regulators. This is why it is hard to see the shape of the new highways. But like the transcontinental railroads and interstate highways, data highways will profoundly alter society and us. Enormous opportunities will be unleased for provides and consumers of information. Vice President Gore said "Better communication has almost always led to greater freedom and economic growth".

SESSION V

Hosts/Producers

Chairman: L. Weil

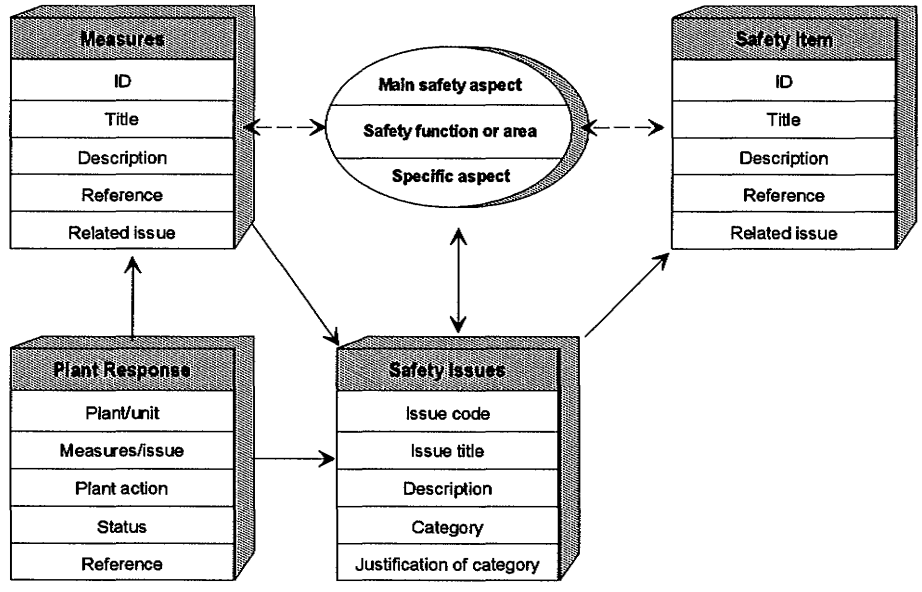
IAEA Databases on Safety Issues and Plant Status for Central and Eastern European NPPs

L. Czibolya
International Atomic Energy Agency, Wien

Content

- Main principles of the database development for safety issues of WWER and RBMK reactors
- Sources of information
- Structure and general description
- IAEA contribution to the G-24 Project Data Bank
- Analysis of gaps and overlaps in assistance projects
- Plans for further development
- Database on WWER-440/VV-230 type reactors (an example)

Structure and General Discription



Main Principles of the Database Development

Objective

- support the Extrabugetary Program implementation
- use in preparation of missions and meetings
- provide technical information for the Member States and other international organizations (e.g. G-24 NUSAC)

Reliability of Information

- only verified and reviewed inputs (final versions of the reports of meetings and missions)
- compliation of interim documents involving international group of experts

Transparency

- free distribution of information
- input of the database from IAEA publications (TECDOCs and working materials) and not restricetd reports

Update from the Member States

- up-to-date information on plant status from the countries
- clear distinction between the information reviewed by the Agency and given by the countries

Sources of Information

Database on V-230 Reactors

- Ranking of Safety Issues for WWER-440 Model 230 Nuclear Power Plant (February 1992) TECDOC-640
- Compilation of Safety Upgrading Recommendations and Plant Programs Concerning the WWER-440/230 NNPs
- Reports on Follow-up Safety Review Missions
- Bohunice V-1 Major Safety Upgrading (Report of a Consultants Meeting in Piestany 12-16 July 1993)
- Report of a Consultants Meeting on Safety Impact of Upgrading Measures (Sept. 1994).

Database of V-213 Reactors

- Compilation of Safety Enhancement and Backfitting Measures at the WWER-440/213 type reactors
- Report on Consultants Meeting on Backfittings and Safety Enhancement Measures in NPPs with WWER-440/213 Reactors (Vienna, 11-15 April 1994)
- Review of Proposed Upgrading Measures for the Mohovce NPP (April, 1994)
- Safety Review Mission to Bohunice V-2 NPP (Sept. 1994)
- Safety Issues and Priority Measures for V-213 NPPs (Oct. 1994)
- GRS Report on Greifswald-5

Database on WWER-1000

- Safety Aspects of WWER-1000 Reactors (Proceedings of a Consultants Meeting, Vienna 1-5 June 1992)'
- Analysis of WWER-1000 Safety Enhancement Measures
- Safety Review Mission to Zaporozhe NPP (July 1994)
- Report of a Consultans Meeting on Safety Issues and Priority Measures for the WWER-1000 Reactors (Oct. 1994)

Database on RBMK Reactors

- Working Material of the Technical Committee Meeting on RBMK Reactor Safety (Vienna, April 1992)
- Safety Assessment of Proposed Improvements to RBMK NPPs - TECDOC-694
- Safety Assessment of Design Solutions and Proposed Developments to Smolensk Unit 3 RBMK NPP - TECDOC-722
- Working Material: Report on Consultants Meeting on Prioritization of Safety Improvemants of RBMK NPPs (Sept. 1993)
- Topical Report on "Pressure Tube Integrity and Potential for Failure Propagation" (Jan. 1994)

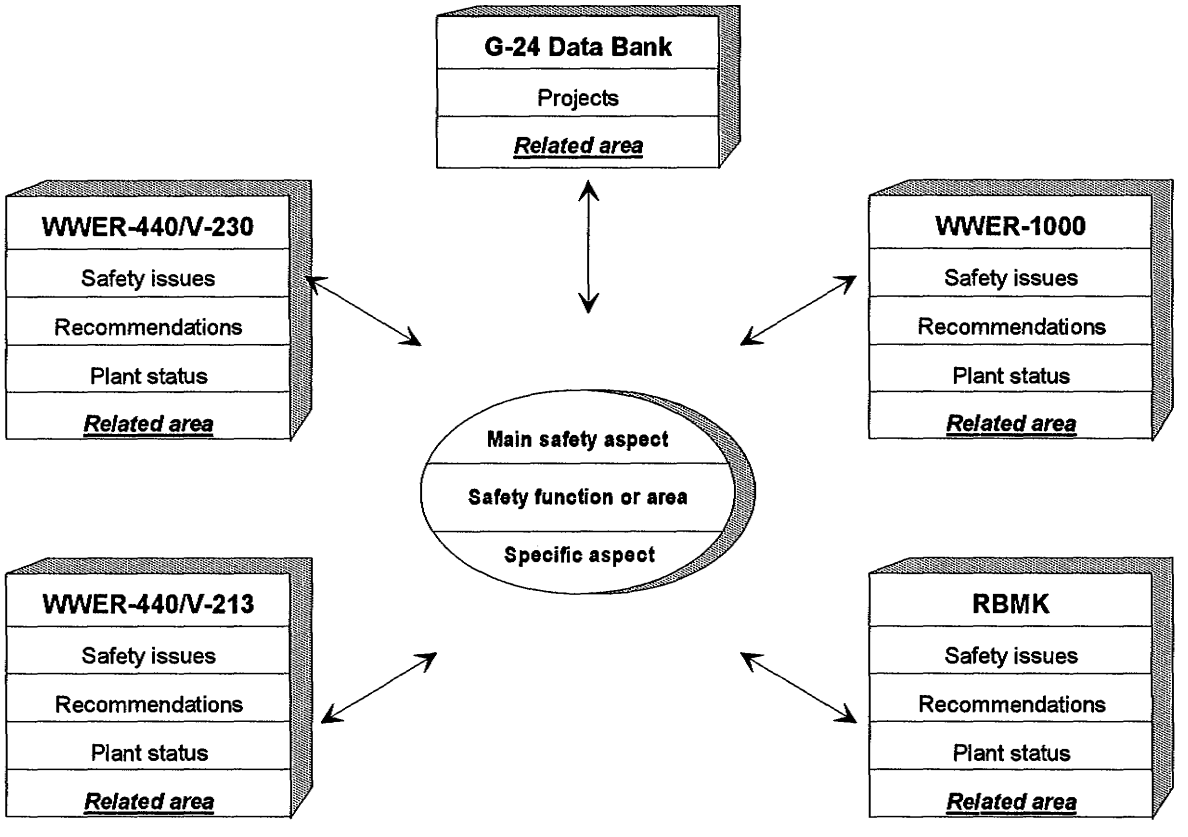
Plans for further Development

- Continously input results of the Extrabudetary Program
- Develop a format to input the findings and recommendations of topical reports
- Add all recommendations from the ASSET missions
- Set up a procedure of data collection on plant response to the safety issues for the V-230 reactors (Questionaire...)
- Incorporate plant specific data on upgrading measures for RBMK reactors (Russian contribution)
- Data exchange with the GRS on WWER-1000 reactors
- Develop a user friendly screen interface
- Distribution of the databases
- Quality control of the G-24 Data Bank
- Joint analysis of the G-24 Data Bank and IAEA databases for gaps and overlaps

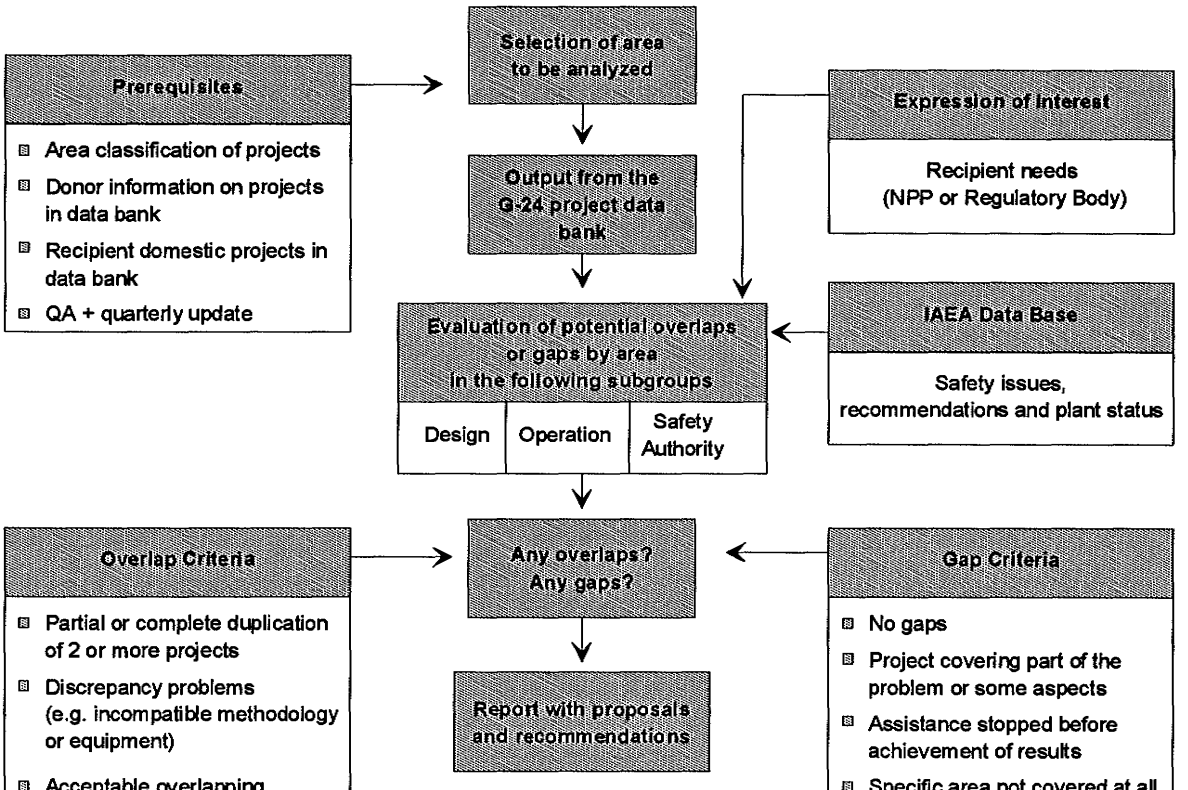
IAEA Contribution to the G-24 Project Data Bank

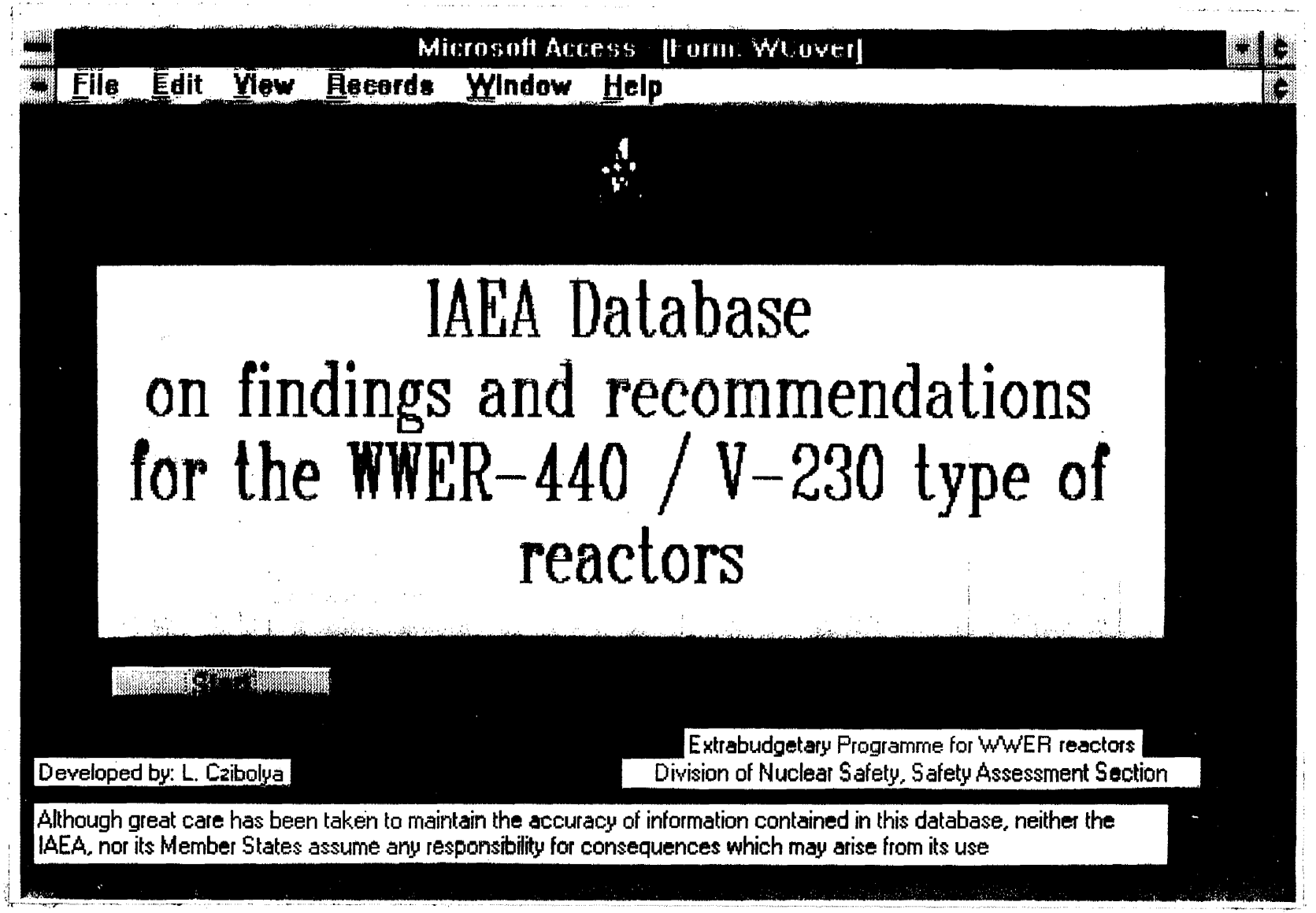
- Participation in elaboration of the structure and content of the data bank
- Joint development of the data collection forms and software requirements
- Data on IAEA nuclear safety assistance programs
- Ensuring the link between the G-24 Data Bank and the Agency's database
- Data collection from recipient countries
- Procedure to identify gaps and overlaps in assistance programs
- Methodology of quality control
- Testing the methodology with the IAEA entries

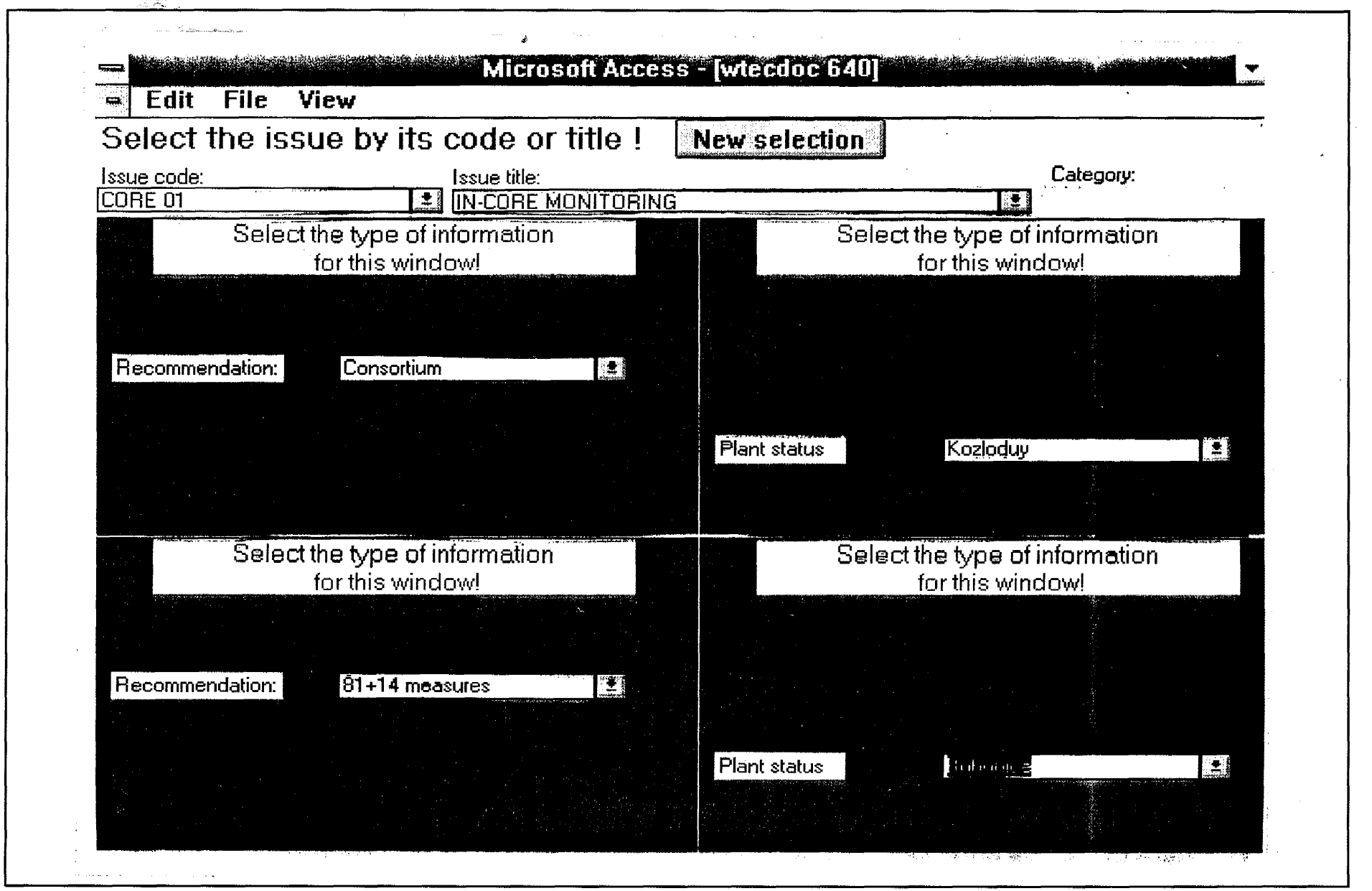
Link between the G-24 Project Data Bank and the IAEA Databases



Methodology to evaluate Potential Overlaps and Gaps in Assistance Projects




Microsoft Access [Form: WCover]
File Edit View Records Window Help
IAEA Database
on findings and recommendations
for the WWER-440 / V-230 type of
reactors
Extrabudgetary Programme for WWER reactors
Developed by: L. Czibolya
Division of Nuclear Safety, Safety Assessment Section
Although great care has been taken to maintain the accuracy of information contained in this database, neither the IAEA, nor its Member States assume any responsibility for consequences which may arise from its use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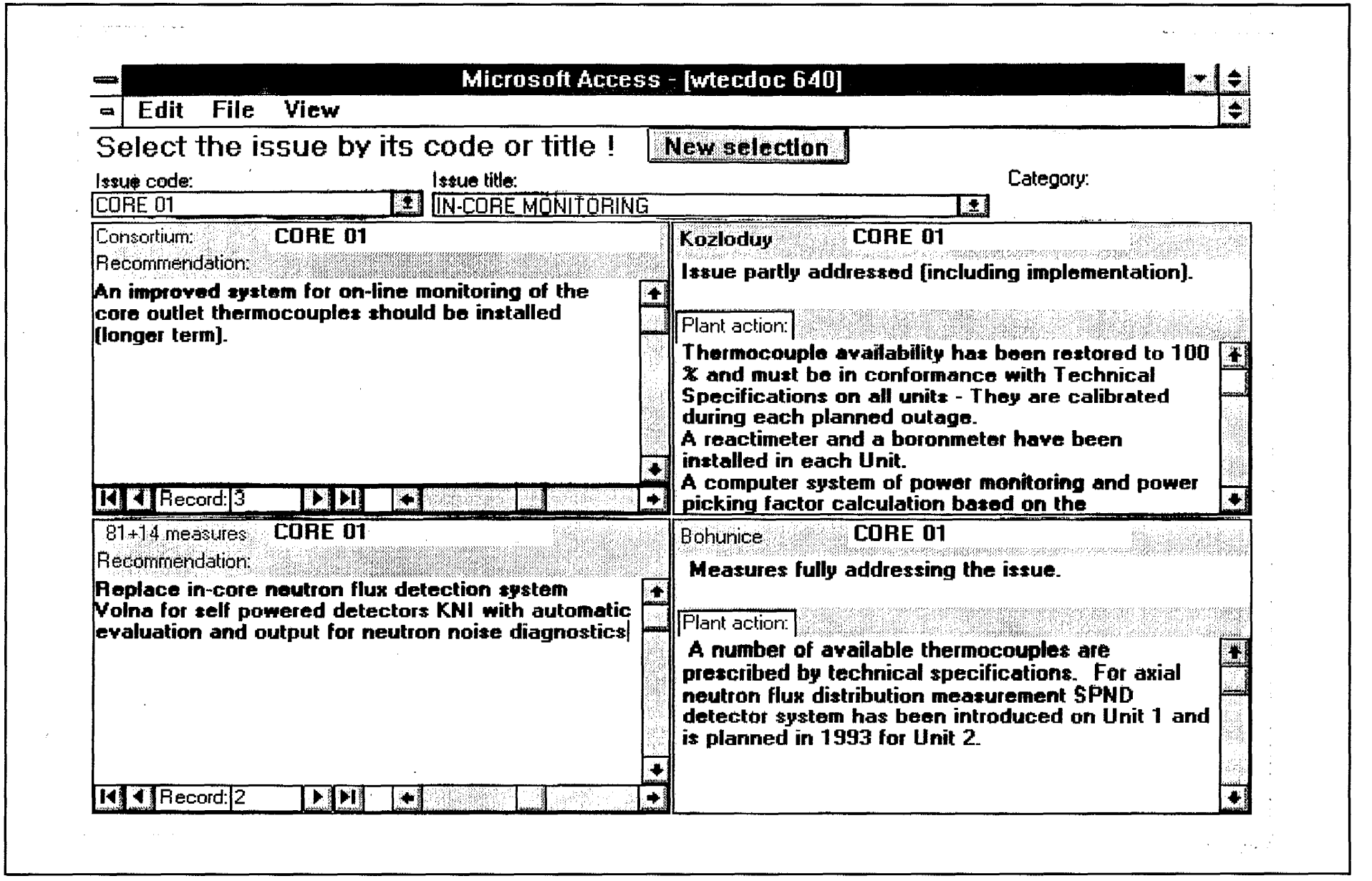
Edit File View
Select the issue by its code or title !
New selection
Issue code:
CORE 01
Issue title:
IN-CORE MONITORING
Category:
Select the type of information for this window!
Recommendation:
Consortium
Select the type of information for this window!
Plant status
Kozloduy
Select the type of information for this window!
Recommendation:
81+14 measures
Select the type of information for this window!
Plant status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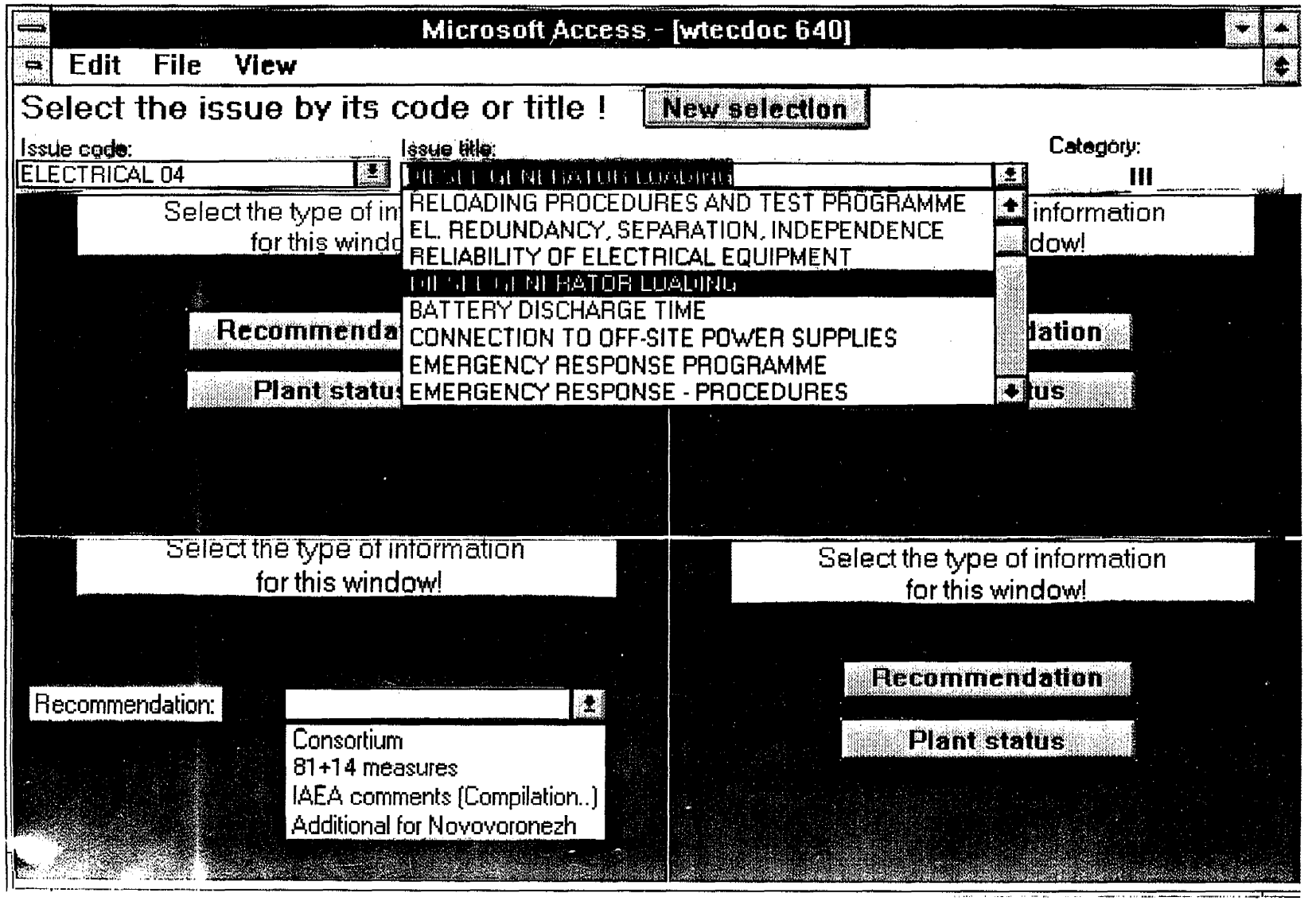
New selection
Issue code:
CORE 01
Issue title:
IN-CORE MONITORING
Category:
Consortium: CORE 01
Recommendation:
An improved system for on-line monitoring of the core outlet thermocouples should be installed (longer term).
Record: 3
Kozloduy CORE 01
Issue partly addressed (including implementation).
Plant action:
Thermocouple availability has been restored to 100 % and must be in conformance with Technical Specifications on all units - They are calibrated during each planned outage.
A reactimeter and a boronmeter have been installed in each Unit.
A computer system of power monitoring and power picking factor calculation based on the
81+14 measures CORE 01
Recommendation:
Replace in-core neutron flux detection system Volna for self powered detectors KNI with automatic evaluation and output for neutron noise diagnostics
Record: 2
Bohunice CORE 01
Measures fully addressing the issue.
Plant action:
A number of available thermocouples are prescribed by technical specifications. For axial neutron flux distribution measurement SPND detector system has been introduced on Unit 1 and is planned in 1993 for Unit 2.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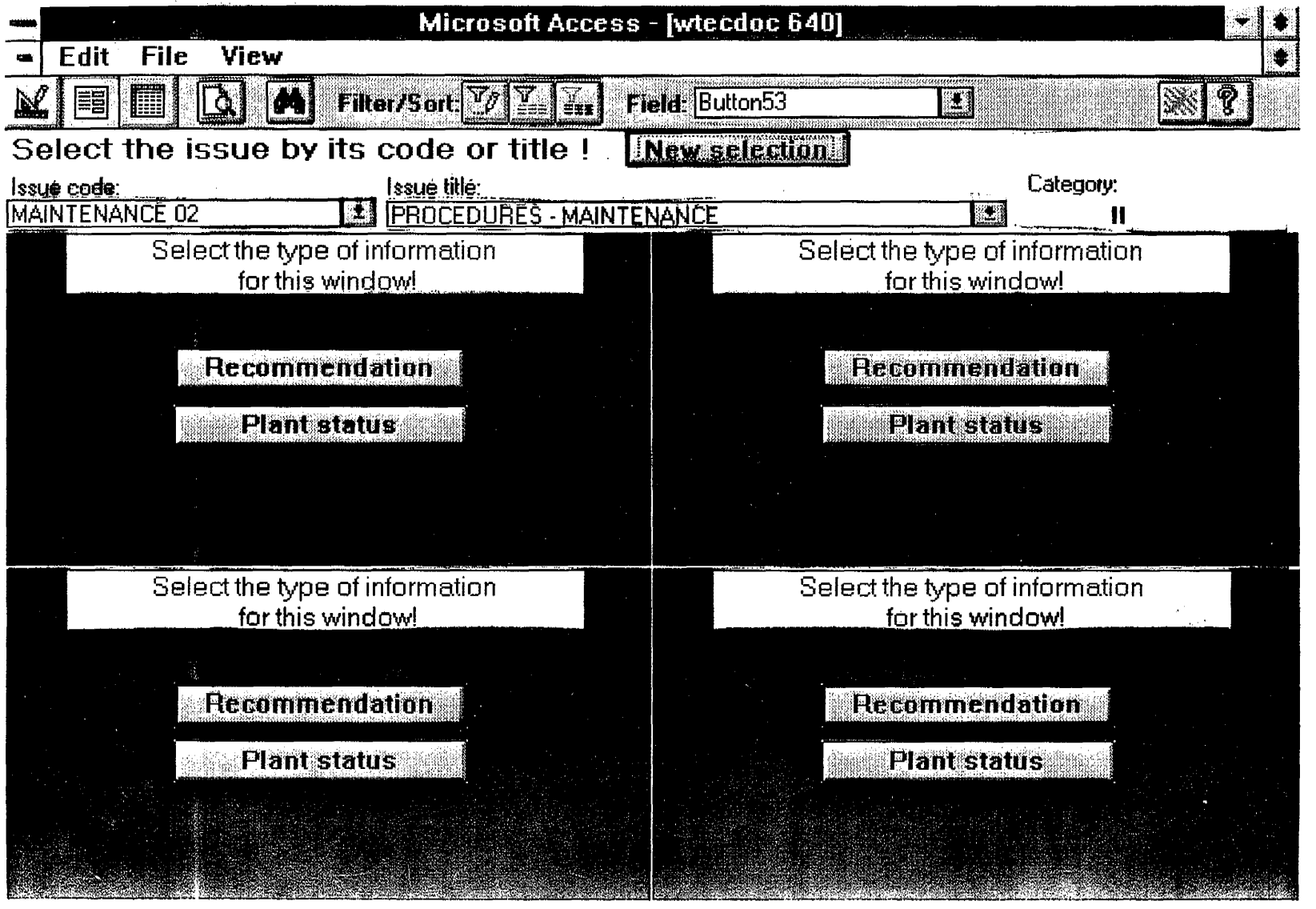
Issue code:
ELECTRICAL 04
Issue title:
RELOADING PROCEDURES AND TEST PROGRAMME
EL. REDUNDANCY, SEPARATION, INDEPENDENCE
RELIABILITY OF ELECTRICAL EQUIPMENT
BATTERY DISCHARGE TIME
CONNECTION TO OFF-SITE POWER SUPPLIES
EMERGENCY RESPONSE PROGRAMME
EMERGENCY RESPONSE - PROCEDURES
Category:
III
Select the type of information for this window!
Recommendation:
Consortium
81+14 measures
IAEA comments (Compilation..)
Additional for Novovoronezh
Recommendation
Plant status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MAINTENANCE 02
Issue title:
PROCEDURES - MAINTENANCE
Category:
II
Select the type of information for this window!
Recommendation
Plant status
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Recommendation
Plant status
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Recommendation
Plant status
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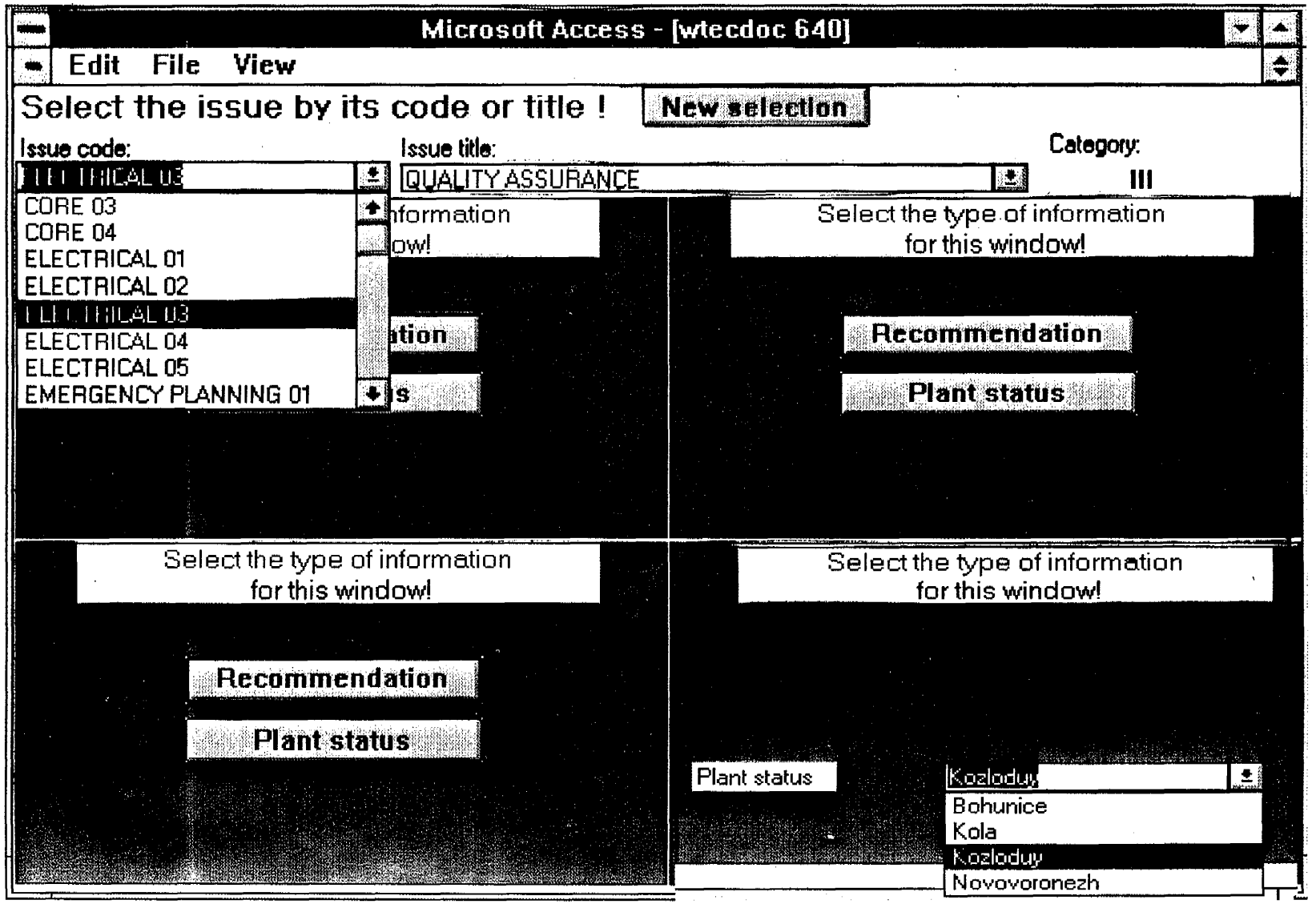
Recommendation
Plant status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Issue code:
Issue title:
Category:
QUALITY ASSURANCE
III
CORE 03
CORE 04
ELECTRICAL 01
ELECTRICAL 02
ELECTRICAL 03
ELECTRICAL 04
ELECTRICAL 05
EMERGENCY PLANNING 01
Select the type of information for this window!
Recommendation
Plant status
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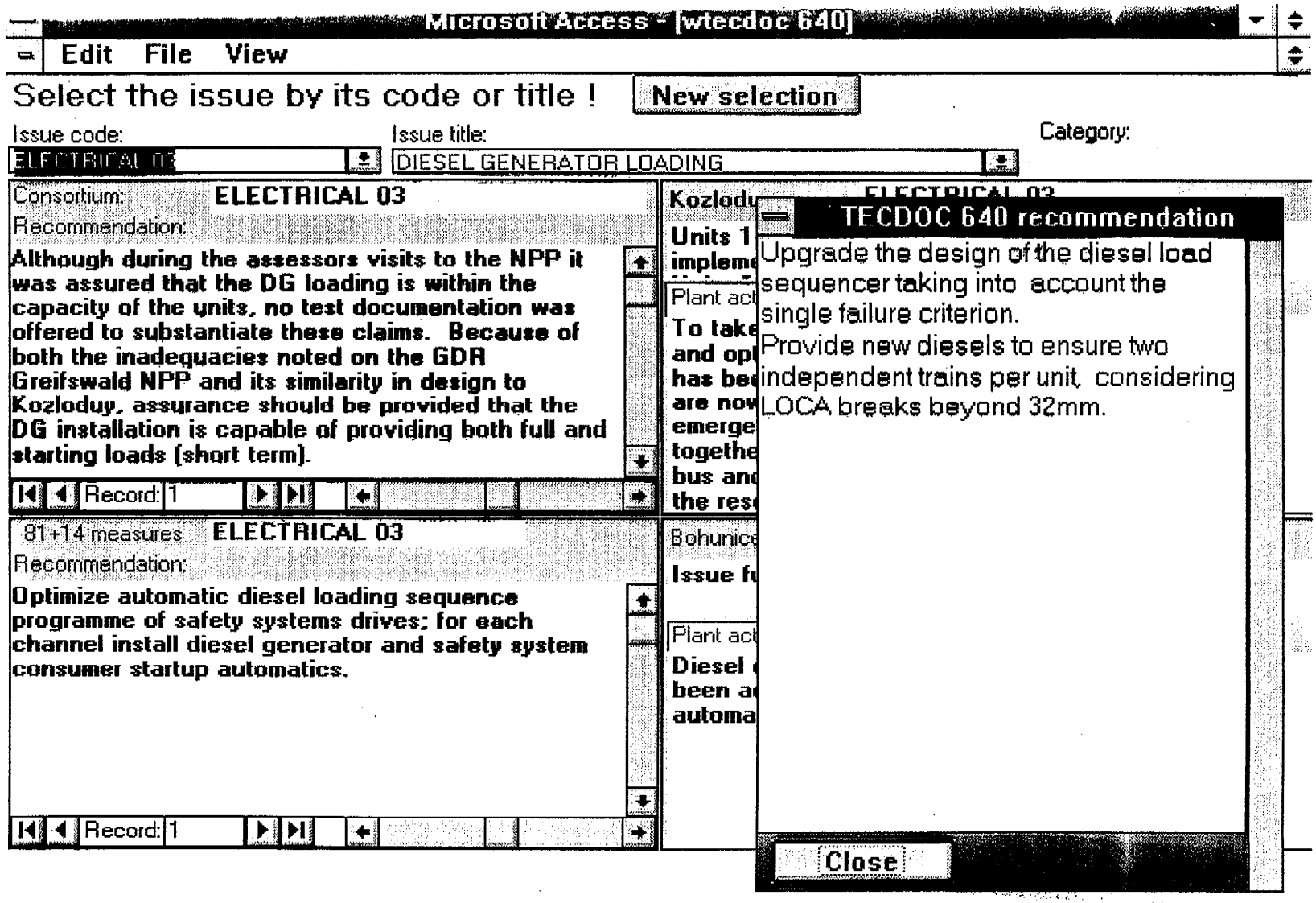
Recommendation
Plant status
Select the type of information for this window!
Plant status
Kozloduy
Bohunice
Kola
Kozloduy
Novovoronezh


Microsoft Access - [wtecdoc 640]
Edit File View
Select the issue by its code or title !
New selection
Issue code:
Issue title:
DIESEL GENERATOR LOADING
Category:
Consortium: ELECTRICAL 03
Recommendation:
Although during the assessors visits to the NPP it was assured that the DG loading is within the capacity of the units, no test documentation was offered to substantiate these claims. Because of both the inadequacies noted on the GDR Greifswald NPP and its similarity in design to Kozloduy, assurance should be provided that the DG installation is capable of providing both full and starting loads (short term).
Record: 1
81+14 measures ELECTRICAL 03
Recommendation:
Optimize automatic diesel loading sequence programme of safety systems drives; for each channel install diesel generator and safety system consumer startup automatics.
Record: 1
TECDOC 640 recommendation
Upgrade the design of the diesel load sequencer taking into account the single failure criterion.
Provide new diesels to ensure two independent trains per unit, considering LOCA breaks beyond 32mm.
Close

Cooperation between Public, Hosts, Database Producers and Private Information Brokers

B. Dobrev
Bulgarian Information Industry Association, Sofia

General Consideration

- Information is a commodity which has a value.
- Value can be added to the primary information through:
  - Accessibility;
  - Agglomeration;
  - Structuring, storing and using software for retrieval;
  - Re-utilisation;
  - Know-how for using the information.
- The information market includes:
  - Information Producers;
  - Information Providers;
  - Information users.
- Information is provided as:
  - Info products;
  - Info services.
- There is the same market for the public and private sector.
- The private firms need information from the public producers for:
  - It's own development;
  - Creating new info-products and services;
- The public sector needs some of the products and services, provided by the private sector;
- Therefore COOPERATION is required based on mutual interests, not excluding a loyal competition based on common rules and principles.

Public Hosts and DB Producers provide

- Primary legal information
- Statistical databases
- Standards
- Patent information
- Science and technical information
- State - owned company profiles
- Taxes and customs information
- Public databases

Private Information Producers provides

- Company profiles
- Stock-exchange information
- Sociological information
- Market information

Private Information Brokers provides

- Information products based on information obtained from the public producers
- Information services for SME (market surveys, analysis, evaluations)

Some Cooperation Principles

- "Government should recognise the current economic significance of the information sector and enhances the opportunities for future growth and takes its interests into account in policy formation." - Report "Marketing a Business of Information ", made by the Information Technology Advisory Panel to the DM, UK, 1983.
- The private sector is an information marketing concern who will add value to information and sell it to end - user.
- Information brokers provide the links between information Producers and the End - Users.
- Government institutions should not aim to compete with the private sector and should not offer information services in any form on a not commercial basis where a similar but commercial service is provided by the private sector.
- The private sector has to observe Government rules on information protection & security and copy right.
- The Government should negotiate with state owned and private companies on a non exclusive basis.

Cooperation between the Public and Private Sector of the Information Industry could consist of

- Information processed and handled by public administration to be resold to the private sector for re-use in the same context.
- Information collected by the public administration to be processed by the private sector with prior re-use within the public administration.
- Information collected by the public administration for one purpose to be resold to the private sector for different purposes.
- The private sector may collect and process information for public administration purposes.
- Information collected and processed by tbe private sector to be resold to the public administration.
- Joint development of information products and data bases by the public and private sector.
- Joint activities in training of personnel.
- Joint development of the international links with foreign information producers.

The Cooperation between the Public and Private Sector should be established taking into account the following Points

- Arrangements for payments
- Terms for frequency of delivery
- Technical issues
- Ownership of physical property
- Marketing responsibilities
- Provision of support to end-user
- Protection against withdrawl of information because of different reasons
- Maintenance of the information
- Information protection and copyright

Conclusions

- The Information Market could be developed only with the common efforts of the public private sector.
- Government has to promote the cooperation between the public and private sector.
- Cooperation and competition between the public and private sector of the information industry will accelerate the transition to the market-oriented economy!

INIS - The International Nuclear Information System

K. Bürk
International Atomic Energy Agency, Vienna

1. What is INIS?

INIS is the world's leading information system on the peaceful uses of nuclear energy. The acronym INIS stands for International Nuclear Information System. It is operated by the International Atomic Energy Agency (IAEA) in collaboration with its Member States and co-operating international organizations.

What is INIS?

International Nuclear Information System

A database of

- 1.6 million references
- 1.4 in electronic form
- growing by 90.000 references per year

2. What does INIS?

INIS provides a comprehensive information announcement service for literature in nuclear science and technology. To do this, INIS processes most of the world's scientific and technical literature that falls within its subject scope. Its subject scope, mirroring the activities of the IAEA, includes information on every aspect of the peaceful uses of nuclear science and technology. The **fields covered** are as follows:

- **Nuclear Engineering and Technology**
  - Fission Reactors and Nuclear Power Plants
  - All Aspects of Nuclear Engineering and Instrumentation
  - Isotope Production and Applications

- Radioactive Waste Management
- Nuclear Safety
- Safeguards and Non-proliferation

■ **Sciences Relevant to Nuclear Research and Application**

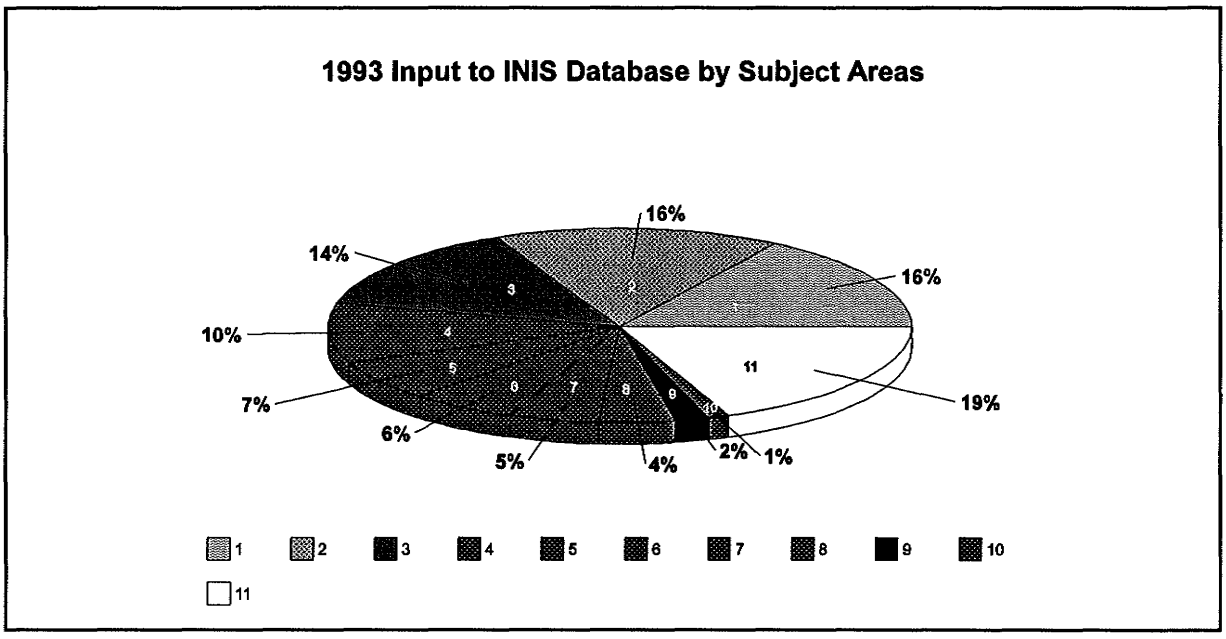
- Physics: Elementary Particles and Fields, Nuclear Physics, Atomic and Molecular Physics, Plasma Physics and Fusion, Physics of Condensed Matter, General Physics
- Chemistry: Chemical and Isotopic Analysis, Inorganic, Organic and Physical Chemistry, Radiochemistry and Nuclear Chemistry, Radiation Chemistry, Fission Fuels, Materials such as Metals and Alloys, Ceramics and Cermets
- Environmental and Life Sciences: Effects of Radiation and Radioisotopes in Biology, Applied Life Sciences, Health, Radiation Protection and Environment, Radiology and Nuclear Medicine
- Earth Sciences Relevant to Nuclear Activities

■ **Other Aspects of Nuclear Energy:**
Economics and Sociology, Legal Aspects, Nuclear Documentation, Mathematical Methods and Computer Codes

■ **Economic and Environmental Aspects of Non-nuclear Energy Sources (since 1992)**

3. What does INIS contain?

The database includes bibliographic references to journal articles, technical reports, conference papers, books, patents, laws and regulations, other published material.



1 Nuclear Engineering and Technology
2 Nuclear Materials and Chemistry
3 Fusion, condensed Matter Atomic and Molecular Physics
4 Life and Evironmental Sciences
5 Elementary Particles and general Physics
6 Nuclear Physics
7 Econimic, Legal, Social and misc. aspects
8 Nuclear aspects of Earth Sciences
9. Radioactive Waste
10 Isotopes and Radiation Applications
11 Safeguards

3.1 INIS Members

Membership in INIS is open to states who are members of the IAEA, to United Nations organizations and to other subject-oriented international or intergovernmental organizations. Since 1969 there has been a standing invitation to join INIS directed to all potential members by the Director General of the IAEA. As of 1994, the current INIS membership comprises 88 Member States and 17 international organizations.

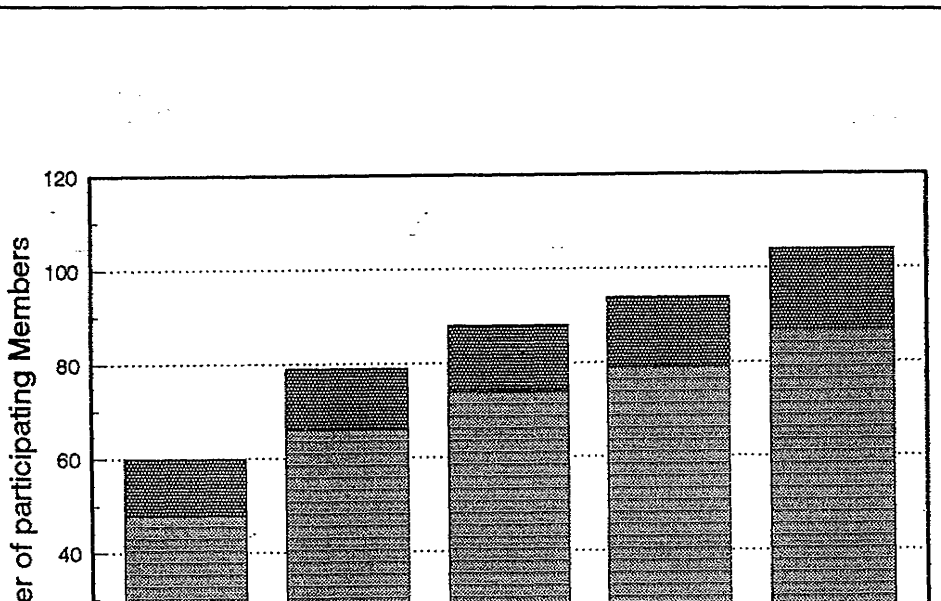
To join INIS, a formal request is to be made by the appropriate authority to the Director General of the IAEA, expressing the wish to participate in INIS and undertaking to supply input regularly to the System. Every INIS Member is represented in the System by a Liaison Officer officially appointed by the national authority, or the Executive Head in the case of an international organization.

The Secretariat function of the System is vested in the INIS Section, Division of Scientific and Technical Information of the IAEA.

The INIS Liaison Officers play a key role: they are responsible for organizing the collection of information and the preparation of input from their country or international organization. They are also responsible for the dissemination of INIS products through their information services and for encouraging their utilization.

INIS MEMBER STATES

Original Members (1969, 1970) Joined after 1970



The INIS Liaison Officers provide the INIS Secretariat with advice on matters relating to the administration, operation, and development of INIS. Regular communication takes place by correspondence and through the annual Consultative Meetings of the INIS Liaison Officers. An important contributing factor to the success of INIS has been the spirit of mutual understanding and co-operation that has developed among individual Liaison Offices, the Liaison Officers as a group, and the INIS staff at the IAEA.

3.2 INIS Philosophy

The basis of INIS is international co-operation. It is the first international information system in which both the collection of input and the dissemination of output to users are decentralized. Only the data processing and output production are centralized in the INIS Secretariat. This decentralized approach to input and output was selected because it results in the most comprehensive coverage of the nuclear literature, the most effective method of handling information in different languages, and the most satisfactory services for users of the information. The success of the INIS philosophy is demonstrated by more than 1,600,000 items in the INIS file; annual growth averaging 90,000 items; a collection of scientific reports, brochures, dissertations, patents, etc. in microfiche form exceeding 250,000 documents (more than 330,000 microfiche); the worldwide use of **INIS Atomindex**, the printed abstract journal for the literature of nuclear science and technology.

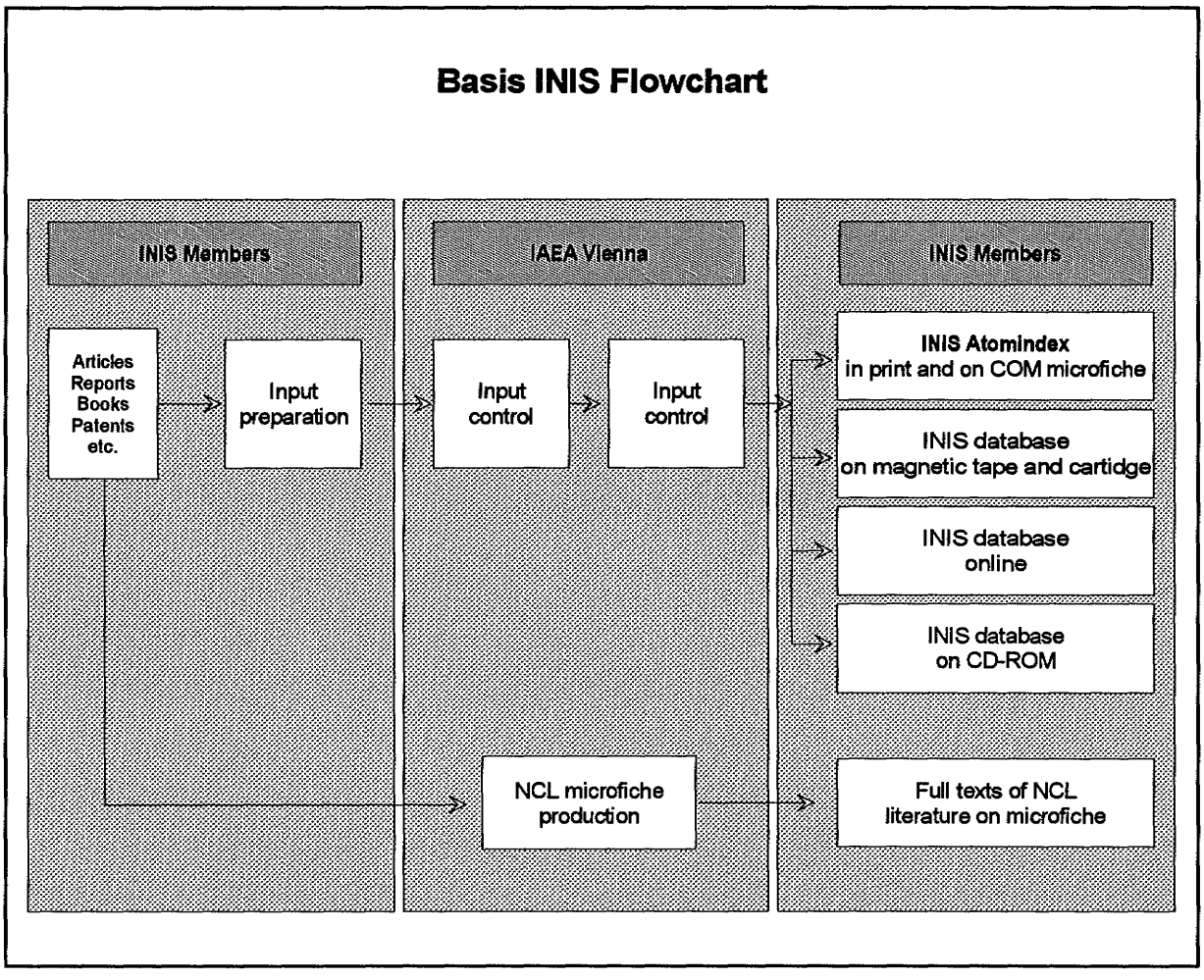
4. How INIS operates

In line with the decentralization philosophy, INIS Members are responsible for:

- collecting descriptions of the nuclear literature produced within their borders or organizational confines, both that which is readily available through normal commercial channels as well as that not available through such channels;
- preparing the associated input in accordance with INIS guidelines and submitting it to the IAEA;
- providing INIS information services and products to users within their borders or organizational confines.

Besides its responsibilities as an INIS Member, the IAEA, through its INIS Secretariat, collects the input submitted by other INIS Members, provides quality control and produces the output products.

In a system such as INIS, for which the input is prepared by information workers in many countries and with varied backgrounds and traditions in bibliography, it is obviously essential to operate using precise standards and rules in order to assure the consistency of the resulting

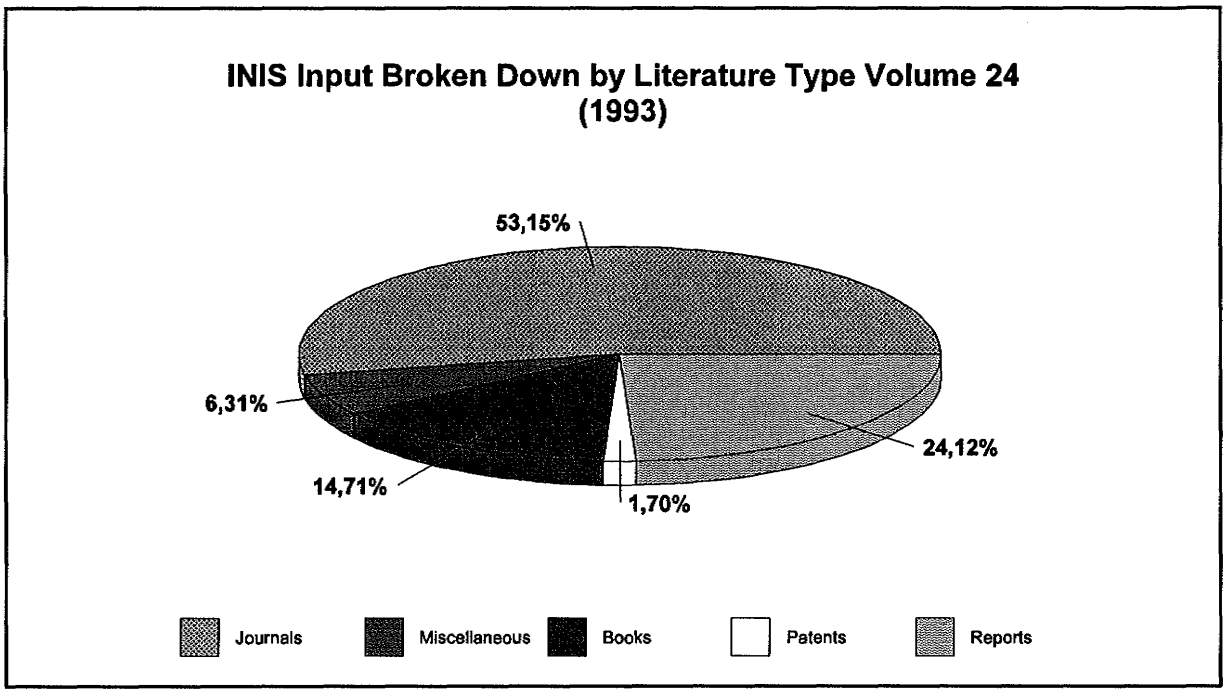


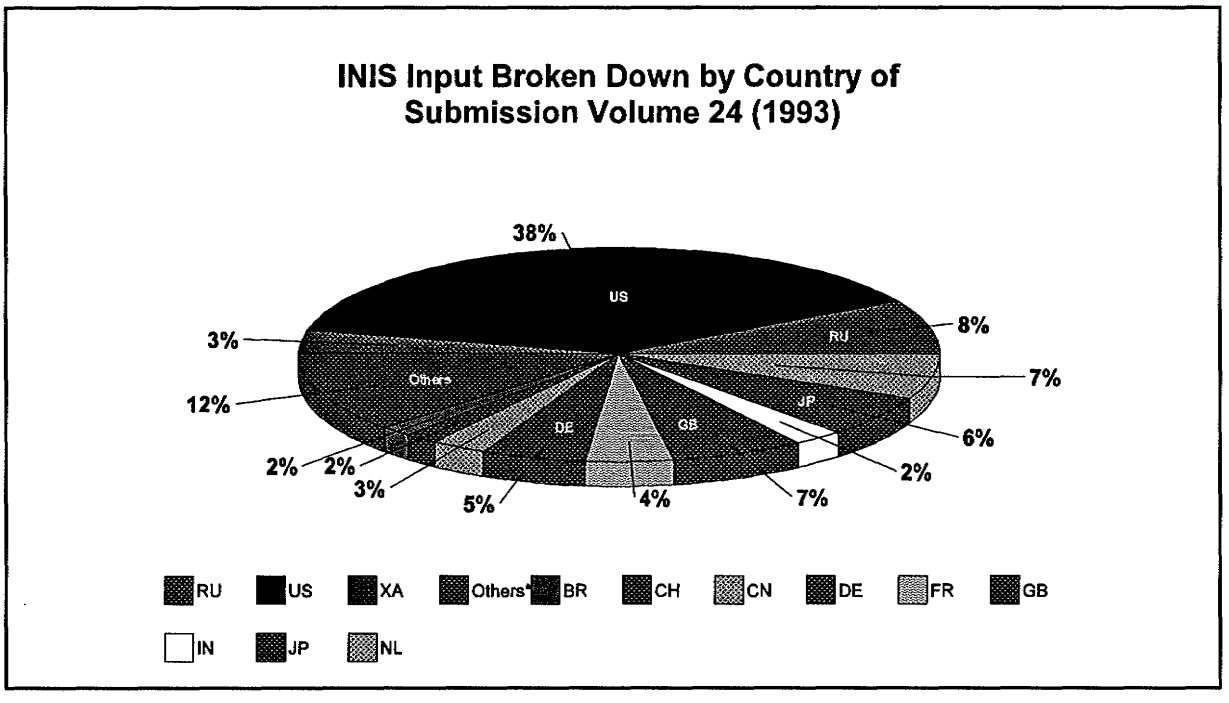
information files. Therefore, a series of manuals has been prepared known as the **INIS Reference Series**. These cover all aspects of the System and are reviewed regularly as improvements and alterations are made to the System.

INIS follows international standards as much as possible and implements new standards from the International Organization for Standardization (ISO) as they become available.

It is very important for the quality of INIS output products to ensure a common understanding of the INIS standards and rules by the staff of all inputting centres of INIS Members. For this reason, the **INIS Training Programme** plays a significant role in INIS activity. All aspects of INIS operations are thoroughly considered in the seminars and workshops organized by the IAEA for INIS Members, including selection criteria, abstracting, descriptive cataloguing, indexing and retrieval. The seminars are aimed at assisting INIS Members in training personnel newly involved in input preparation and utilization of output products. The workshops provide a forum for discussion of specific matters by experienced staff members of long established INIS centres.

Through the IAEA programme of technical co-operation, the INIS Secretariat provides assistance to developing countries participating in INIS in their establishment and operation of information systems on nuclear energy.





5. INIS Output Products and Services

Within their national boundaries (or organizational confines, if an international body), INIS Members may use and disseminate information contained in and derived from all output products and services furnished by the INIS Secretariat. This is an exclusive right which remains with the Liaison Officers but may be delegated to the INIS Secretariat.

Therefore, INIS services available to end users of INIS may vary from country to country. The end users of INIS should contact their national Liaison Officer (see the appendix) for detailed

information about INIS services available in their country. They will also find useful information in the series of informal fact sheets produced by the INIS Secretariat of the IAEA. The following are products and services of the INIS Secretariat available to INIS Members.

- **INIS Atomindex,**
  a semi-monthly abstracts journal published from May 1970 to the present, in print and on COM microfiche, available to the publish worldwide on subscription or by ad-hoc order;
- **INIS magnetic tape/cartridge service,**
  available to INIS Liaison Officers or a third party designated by them, for providing output services within their boundaries;
- **INIS online service,**
  with records from 1970/1976 to the present, available to INIS Members on subscription and offering connect time for remote interactive searching of INIS records; automatic execution of search profiles prepared and stored by the user (SDI) service); online ordering of INIS microfiche; mailing of offline prints.

  INIS is available on the following online hosts: BELINDIS, Belgium; CISTI-CAN/OLE, Canada; DIALOG, USA; IAEA, Austria; ICSTI, USSR; JOIS, Japan; STN International.
- **INIS database on CD-ROM,**
  a set of compact discs containing INIS records from January 1976 to the present, searchable via PC and CD-ROM player available to INIS Members on subscription.
- **INIS microfiche service,**
  whereby the full texts of the non-conventional literature cited in INIS, such as reports, patents and theses, are microfiched by the INIS Clearinghouse and made available to the public worldwide on subscription or by ad-hoc order.

Where is INIS?

on the following online hosts

- BELINDIS, Belgium
- CISTI-CAN/OLE, Canada
- DIALOG, USA
- IAEA, Austria
- ICSTI, USSR
- JOIS, Japan
- STN International

Integration into Europe through Information Services and Networks

U. Agur
Estonian Informatics Fund, Tallinn

The assumption presented in the title of the paper may sound trivial to this audience. In all industrial countries the concept of global networkbased informatization has been accepted and is being materialized actively. Still, the questions when, where and why? always should be asked, as answers to these questions help to understand the background and philosophy of the movement better.

Why has the concept of the information society, for quite a long time something resembling a futuristic slogan, suddenly (or rather, step by step) turned into a directive for action? And why has networking gained such an important, one might say overwhelming position? Three basic factors could be listed.

First, the computer and communications equipment industry has been growing at a fast pace for several decades and today is successfully competing with such traditional economic leaders as the oil and automotive industries. Nowadays the IT industry is able to support every conceivable effort including global processes involving the whole world.

Secondly, the information processing and communications technology has reached an astonishingly high level. The marketdriven technological progress has been continuous and seems to approach no limits. New types of semiconductor devices and structures, fibreoptic communication facilities, new kinds of equipment for manmachine interaction all this has been reaching new levels of perfection. Let me bring just one example: in the beginning of the 70s, it was generally thought that the semiconductor technology as well as the magnetic data recording technology are approaching their physical limits; twenty years later we are in possession of memory chips with capacities a thousand times higher, also magnetic disk devices having a physical volume even tens of thousands times less than a quarter of a century ago. Similar evidence could be presented in the fields of communication channels capacity, information processing performance, etc. Thus, the technological prerequisites for a qualitative leap are present.

In the third place, a demand for information and communication services is growing steadily due to the advancing integration of the world. The words of McLuhan about "the world as a global village" have to be taken literally today; they have turned into technological reality. Growing international trade volume, development of regional and global organizations like the European Union and GATT, etc create a growing demand for information and networking services.

These factors and numerous others are causing the rapid expansion of information technology and networks in practically every kind of economic and social activities everywhere. Yet why is this issue of special importance for my country, Estonia as well as other countries of Central Europe who regained their de facto independence recently? These countries represented a distinctive group inside the socalled socialist camp, having a relatively highly developed communications infrastructure, partially due to their smaller territory. Estonia had the highest density of telephone installations among the Soviet republics. After we regained our independence, development of the communications infrastructure was given a mighty boost. An important factor has been our closeness to the Nordic countries, particularly to Finland and Sweden. The Estonian communication network today is going through a process of reconstruction based on Finnish and Swedish investments; the technological expertise of such worldwide renowned corporations as Ericsson and Nokia is of substantial importance. Today, fibreoptical trunk lines are being installed all over Estonia, the process of digitalization of the telephone system is continuing rapidly. Packetswitched data networks already exist and are being used by the business and scientific communities. The progress of mobile communications has been astounding the mobile telephone density in Estonia is the highest in Central Europe.

These developments are important in various aspects. They support the business and scientific activities, they also play an important role in government operations. A modern real estate information system is being designed by Siemens Nixdorf, similar activities take place in the customs, taxation and other areas.

Integration into the network of international economic relations is of crucial importance for our economy. Yet politically even more important is an integration into the political and administrative structures of Europe. We are already members of the Council of Europe, we are close to concluding an association agreement with the European Union and our goal is to become full members of the Union in a not so distant future. Networks are one of the means to this end.

It is well known that strategic programs for the development of the information infrastructure and the movement towards the information society are being created in most industrial countries, also by the European Union. Recently the Estonian Informatics Council made the decision to introduce a similar program for Estonia. The program is called "Estonia's way to the information society" and at this time it is being discussed in the public; later on the program shall be presented to the Government and Parliament. One of the central concepts of the strategic program is the endeavour to approach the European information and networking structures. Our information technology standards have to be strictly on the basis of international standards; our ITrelated legislation is based on internationally accepted rulings and European Union regulations. This process could be called "legal networking".

The process of physical networking continues on several levels. Inside the country, we are developing our communication infrastructure, at the same time installing links to international networks. Today we have satellite, cable and microwave connections to Finland and Sweden, new fibreoptic cables are being submerged. Thus, the prerequisites for international networking operations are already present. The Estonian packetswitched data network has connections to dozens of countries. Efforts are being made to introduce EDItechnology for customs and international trade operations. We hope to get involved in the European Union telematics programs the socalled "European Nervous System" program, the environment monitoring network ENVIRONET, transport telematics programs and others.

The most important and lively development in the networking movement is connected with the growth of Internet. About five years ago, scientists from universities and academic institutes started to establish direct links to Internet nodes in Stockholm and Helsinki. During the past years, enthusiasm has been overwhelming. As the internal communications infrastructure keep evolving, more than 800 computers are already connected to the Internet facilities. According to official Internet statistics, the user density in Estonia is several times higher than in other Central European countries. Scientists and computer fans have investigated all resources offered and have become massive users. The national educational network EENet is expanding fast; it has connections to other Baltic countries through a separate backbone link. Special attention is being paid to educational institutions. Today, more than 70 public schools have access to Internet, a hundred more are in the process of establishing the connections needed; this is more than a half of the overall number of public schools. The goal is to offer access to Internet for all public schools in a year or two.

It is more difficult to talk about progress considering the content of the information infrastructure the databases. The enthusiasm for Internet has been kept up mainly by the availability of a incredible wealth of information accessible inside the Internet world. Creation of original databases is not so easy to accomplish and needs a great amount of resources. During the Soviet period, there existed a relatively well financed infrastructure for scientific and technical information. Nevertheless, the development of original databases in the smaller republics went on with great difficulties. Today, resources are even more limited and more attention is being payed to practical value and effectivity. A recent survey showed that Estonia possesses only about 3040 publicly accessable data sets today that could be called databases, yet mostly used offline because of the lack of modern hosts.

As the development of the information infrastructure continues, new hosts are being installed; one of them is the Tallinn center of the international consortia CIESIN. In developing the databases, we have to take into account the fact that Estonia is one of the smallest countries in Europe. We have to be extremely considerate about the feasibility of the activities. Practically, we have to put to the forefront the integration aspects, e.g. databases presenting interest for the international business, government or scientific community. Business databases and directories are the most popular kind of databases in Estonia. The National Library as

well as some other libraries have developed bibliographic databases; here the specific information about Estonian history and culture is of some value for the international community. Our libraries and archives possess book stocks and document collections of great historic value; they represent a part of our cultural heritage that is of interest to foreign researchers.

One of the basic goals mentioned in our informatics development program is to support the sovereignty of the country and the cultural identity of the nation. The problem of cultural identity preservation is critical for a small nation like the Estonians with a native population of less than one million. Our country is situated in a peculiar position between two powerful sources of political and cultural influence from the one side, Russia with its historically rooted ambitions, from the other side the Western cultural sphere with its Englishlanguage mass media information stream. In this situation it is extremely important for us to maintain our native languagebased cultural and linguistic values. Yet it is clear that to be more closely integrated to the western world, we have to act not only as information consumers, but also as suppliers. So we have to show enough elasticity to be able to organize a bidirectional flow of information. This process has already begun. Some of the business as well as scientific databases are Englishlanguage based. There are specific areas of considerable interest for the European community, e.g. information about the environmental situation and natural resources. As at the present time our financial and technological means are insufficient to solve these tasks fast enough, international support is badly needed.

Networks for communication and information services are crucial for developing our economy and preserving our independence. So, for Estonia the movement toward informatization of the society may turn out to be even more urgent than for the industrially developed nations. We hope that Europe understands our message: these efforts are also essential in the interests of European security and cultural diversity.

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Status Report on Nuclear Power - Information from STN Databases

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Abstract

The worldwide future of nuclear power as seen about 25 years ago is presented based on a literature search in the INIS database. The role of nuclear power today, after TMI and Chernobyl, in energy supplies and in combating the greenhouse effect is evaluated by literature searches in STN databases (e.g. INIS, ETDE, COMPENDEX, CA, ULIDAT, INSPEC). An evaluation is given of the different information contents of bibliographic databases such as INIS and pure information databases such as NLDB.

Eisenhowers "Atoms for Peace" was the beginning of the peaceful use of nuclear energy and nuclear power. At that time the first nuclear information system of the USA, "Nuclear Science Abstracts" (NSA), containing keywords and abstracts was published monthly and distributed throughout the western world. In 1956 there was the beginning of the cooperation of NSA with the ZAED (Zentralstelle für Atomenergie-Dokumentation) at the Gmelin-Institute Frankfurt. Both centers exchanged documents in the field of nuclear energy, and the ZAED documented reports and conference papers monthly in its series "Reports" and "Conferences". This cooperation ended with the creation of INIS - both countries delivered their national publications separately to INIS from 1969.

At that date let me begin with the future of nuclear power based on a literature search in the INIS database.

Results: Electric utilities would soon be ordering 30 to 40 nuclear power plants every year. It was expected that by the year 2000 the worlds installed nuclear capacity would be more than 2000 GW(e) or about 2000 nuclear power plants. By the mid-1990s or even earlier, fast breeder reactors would be in large-scale commercial operation. Nuclear merchant ships would cross the ocean, and nuclear power desalination would turn the deserts into green farmland. Small nuclear power plants of 50-100 MW(e) would penetrate the markets of countries like Uganda. Small heating reactors of about 6 MW (PWR) for district heating were planned for Paris.

And now - whats the reality in 1994? Let me review the facts based on searches in STN databases (e.g. INIS, EDTE, COMPENDEX, NLDB).

In short: It is now expected that by the turn of the century the worlds nuclear capacity will be less than one fifth of the capacity foreseen in the 1960s (about 340-400 GW(e) instead of

2000 GW(e)) Instead of the forty or more developing countries that were expected to install nuclear power the number has stuck at nine or ten since the mid-1970s (Argentina, Brazil, Cuba, Mexico, South Africa, India, Iran, Pakistan, South Korea, Taiwan). And the nuclear programs of Argentina, Brazil and Mexico are in the doldrums. Cubas has come to a dead stop, and over the years India and Pakistan have drastically cut back their plans. It is only in the dynamic economies of East Asia that nuclear power is still very much a growth industry. Japan is operating more than 44 nuclear power plants and building three, Taiwan six and two, Chinas first plant started operating recently and apparently a further five are under construction or on order, and Indonesia is planning an ambitious program of ten nuclear power stations. I stress that in Japan and France, where plant construction times are four to six years (as compared to Germanys ten years), nuclear power remains on economicaly competitive source of electricity in the opinion of both the EDF and the Japanese private utilities.

Nuclear power could play on important role in combating the greenhouse (CO_2) effect. A recent study by an OECD group of economists warns against the ecological consequences of abandoning nuclear power (Sweden, Germany) and refers to its potential as a means of reducing CO_2 emissions.

What role nuclear power will in fact play thus depends upon whether governments, utilities and the general public are sufficiently far-sighted and environmentally sensitive, whether they make plans on a long-term basis like the Japanese, or on a short-term basis like many Western European companies and bureaucrats. Typical of such "short-termism" is the "dash for gas" by British electricity producers who claim in their advertising campaigns that natural gas is a "clean" source of energy and are silent about the facts that burning gas also produces substantial amounts of CO_2 and that escaping gas (methane) has 25-times as much greenhouse effect as the amount of coal burnt to produce the same quantum of energy.

An evaluation of the information contents between bibliographic databases with abstracts and pure information databases with abstracts such as NLDB (Newsletters Database) is shown taking as example "Gorleben", the planned German final depository for high-level radioactive wastes and spent fuel elements,

Concerning the actual information content of this topic - you may decide for yourselves!

SESSION VI

Information Management in Nuclear Safety and Radiation Protection

Chairman: K. Bürk

Database Systems Established and Planned in the Nuclear Safety Department of the BfS

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Abstract

The key duty of the Department of Nuclear Safety of the Federal Office for Radiation Protection is to execute administrative tasks in the field of safety and security of nuclear facilities, and to support by technical and scientific advice the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. In order to carry out its various activities, the Nuclear Safety Department has established several database systems. As examples, the database system of materials used in nuclear installations and the databases on abnormal occurrences are described in detail. Moreover, the nuclear fuels information system, which was under consideration in order to provide in short time and in a sufficiently exact way an actual information on type and amount of nuclear fuels available in the Federal Republic of Germany, will be discussed. Although this information system will not be established in Germany in the near future, such a system might be of interest abroad, in particular in the Eastern European Countries.

1. Introduction

The objective and main duty of the Department of Nuclear Safety which is part of the Federal Office for Radiation Protection (Bundesamt für Strahlenschutz, BfS) is to execute federal administrative tasks in the field of safety and security of nuclear facilities and to support by technical and scientific advice the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, BMU), which is the competent supreme federal authority for all aspects of nuclear safety on national, bilateral and multinational levels.

The results elaborated by the Department of Nuclear Safety are integrated into the development of national regulations and guidelines and can be used by the BMU in his supervision on the enforcement of the Atomic Energy Act. The Department of Nuclear Safety is engaged in the aspects of licensing and operation of nuclear power plants, research reactors and nuclear fuels cycle facilities. In order to provide scientific advice to the BMU with regard to special problems, the department initiates and attends research projects in the field of nuclear

safety. The aim is to determine the actual state of knowledge and to adapt, continue and develop the high safety level of dynamic precaution, which was obtained in Germany, to the state of the art in science and technology. The Department of Nuclear Safety plans, coordinates, attends and assists in studies, investigations and projects in the field of nuclear safety within the scope of the regulatory research projects of the BMU.

The main topics of the investigation programme cover:

- evaluation of operational experience and the improvement of operational safety,
- preservation and improvement of the current safety standard, taking into account the technical development,
- improvement of precautionary measures against damage; risk minimization.

A major objective of the Department of Nuclear Safety is to record and evaluate the results obtained from scientific research and adapt them for application in practice. The results are laid down in technical and status reports.

Furthermore, the Department of Nuclear Safety supports the BMU in the international co-operation in the field of nuclear safety. One important point is the co-operation in working groups and committees of international organizations, such as IAEA, OECD/NEA and CEC, another one is the communication on a bilateral level with existing commissions and committees, within the scope of co-operation agreements for mutual exchange of information in the nuclear safety field.

A main area of activity of the Department of Nuclear Safety in supporting the BMU as the federal supervisor is to observe the licensing- and plant status of nuclear reactors and nuclear fuels cycle facilities. An essential prerequisite for this task is the registration and documentation of refitting and backfitting measures. In order to evaluate operational experience of nuclear facilities, the Department of Nuclear Safety in its Incident Registration Centre analyzes and assesses "events requiring notification", which is the official term in Germany for abnormal occurrences. With respect to the improvement of basic safety requirements, the Department of Nuclear Safety develops safety standards with respect to measures and technical procedures relating to the decommissioning of nuclear facilities, and provides answers to questions about the security of nuclear facilities and the shipment of nuclear fuels.

Moreover, the Department of Nuclear Safety is engaged in problems relating to nuclear facilities in the new Federal States, especially in Soviet type nuclear reactors. In this context, the basic safety requirements for the planned decommissioning of the shut-down nuclear units of Rheinsberg and Greifswald are of specific importance. The assessment and estimation of the safety-related status and operation of the Soviet type pressurized water reactors WWER-440 and WWER-1000 in operation in the Middle- and East European states and in the independent states of the former Soviet Union is also of major international interest.

In order to carry out its different activities, the Nuclear Safety Department makes use of database systems. Examples of implemented and planned database systems are described in the following in more detail.

2. Database System of Relevant Material

In the Federal Republic of Germany, nuclear power plants are in operation since more than twenty years, the latest generation (PWR of "Konvoi"-type) about six years. As in other technical disciplines, the development of science and technology in the material field is an ongoing process. Hence, various different materials for comparable components have been used in nuclear power plants according to the respective state of science and technology.

In particular in older nuclear power plants, ageing effects due to irradiation or other operational impacts have to be investigated and evaluated. For example, comprehensive discussions took part in 1993/1994 on the question of crack initiation and crack increase of pipings made of austenitic steel. Faults like these had been detected during in-service inspections at some nuclear power plants of the BWR type.

Due to the fact that the documentation of the vendors and utilities concerning material data differs with respect to content and depth, with a decreasing amount of recorded and easyly available data in the case of older nuclear power plants, a database system of materials used is necessary and helpful. Such a database system will have to correlate the materials used and the respective components in the nuclear power plants.

The first approach for a concept of such a database system has to take into account some important boundary conditions:

- the database system must be compatible with the total information management concept of the BfS,
- at a final stage the database system should be enlarged to a information system; this has already to be taken into account during the developing phase of a concept,
- the information contained in the system should be comprehensive, but restricted to informations required for the tasks of the BfS,
- a "user-friendly" surface is necessary in order to ensure the use of the database system, in particular in those cases where the information is needed within a very short time period.

The concept of the material database system of BfS is described in more detail in [1].

As indicated above, the first step has been the search, which data and data structures concerning materials used in nuclear installations already exist in different German institutions.

This search has resulted in the fact that indeed a variety of different databases has been established or is planned. However, only some databases provide those informations which could form the basis of a nuclear technology database system. In other cases, the content is of lower importance, but the database structures give hints for the establishment of the intended BfS database system.

The database TECDO-online, as described in Mr. Höpfner's paper [2] contains, among others, data of safety reviews, systems descriptions and training data, emergency manuals, operational expertises, quick-look reports, computer codes, technical reports, German regulations in full text including images. In our view TECDO-online is helpful to collect information and to evaluate and screen relevant documents. Special requests are necessary to select relevant material data. An access to TECDO-online by BfS has been established at the end of 1993.

The materials database of IMA Dresden (Institut für Materialforschung und Anwendungstechnik) contains information about nearly 1500 steels, ferrous and nonferrous metals, subdivided in material groups [3]. Technological and physical parameters are stored together with the description of the material and its chemical composition.

The material application, especially the correlation between nuclear power plants, systems, components, structures, locations, materials and material parameters as well as changes of these parameters are of central importance. Because the existing database system of IMA does not cover all necessary information and options and not all the relevant metals (e.g. the material required in the KTA standards), the IMA database system is extended in such a way that new materials can be added and the component-specific use of material be described.

3. Databases BEVOR and VIBS

Since 1975, operators of facilities in the Federal Republic of Germany are required to report all safety-related events occurring in their plants to the competent supervisory authorities of the federal states. The Federal States transfer these data to the BMU, BfS and GRS. The data are stored in the databases BEVOR (nuclear power plants) and VIBS (facilities of the nuclear fuels cycle).

These databases were established by the Company for Plant and Reactor Safety (Gesellschaft für Anlagen- und Reaktorsicherheit, GRS) in the late 1970th on behalf by the responsible federal supervisory authority at the time, the Federal Ministry for the Interior. Both databases were taken over in 1993 by BfS. Since spring 1994, the databases are being further developed by BfS with the aim of providing a more user-oriented system and on-line access to all institutions and public authorities participating in the supervision of nuclar facilities.

Currently, BEVOR contains more than 4000 data records (events) and VIBS more than 2000. Annually, about 250 events are reported from nuclear power plants and about 50 from nuclear fuels cycle installations. Alle events are coded by specific describtors so that any given initial criteria search is possible (plant-related search, plant-exceeding system- and component-related search, full text search, statistical evaluations, etc.).

The databases will be operated at BfS using a special database server (multiprocessing system) and the ORACLE system. The connection of external users to the databases installed at BfS in Salzgitter is possible via datex-P and via telephone-modem.

The software should be ready for use by the end of 1994 when the databases are intended be put into operation on BfS-hardware. Data base access on the federal level is planned to be operable as of 1 January, 1995.

4. Nuclear Fuels Information System

On behalf of BMU, the BfS planned to establish a nuclear fuels information system as a precondition for the physical protection of this material. Details on the objective of this system, its envisaged mode of operation and results from a test-scale operation are outlined.

4.1 Objective of the Nuclear Fuels Information System

The objective of the nuclear fuels information system (NFIS) was to inform in time and sufficiently precise the supervising authorities of the Federal States and BMU on type and amount of nuclear fuels available in the Federal Republic of Germany as well as on movements of significant quantities of nuclear fuels between nuclear facilities. This was especially meant to improve the knowledge and prerequisites for measures in the field of physical protection and for early detection of any cases of loss, theft, or unauthorized use or removal of nuclear fuels.

The NFIS was intended to keep this survey up-to-date and to cut down the time for notifying the supervising authorities about shipments and receipts of nuclear fuels to a few days, so that the information on the inventories of the nuclear facilities would be available nearly in real-time.

Finally it should be noticed that the NFIS was planned as a closed system only in cases of transports within Germany, as the NFIS does not get any information from foreign shippers or receivers.

4.2 Planned Operation of the NFIS

The NFIS was planned to be centrally operated by BfS. Starting with the book inventories reported by the nuclear facilities, it is going to register receipts and shipments of nuclear fuels. Measurements by BfS to determine the amount of nuclear fuels within the nuclear facilities are not intended. As far as the accuracy of accountancy data is concerned, the NFIS relies on the stated amounts which are gained by means of the safeguard system of EURATOM.

The input data used consist of basically the same information that is collected for EURATOM-safeguard purposes. In addition to the EURATOM-safeguards, receipts and shipments of nuclear fuels in a certain nuclear facility are going to be registered within one working day. This will be achieved by notifications from the nuclear facilities to BfS, which will have to be sent via the Federal States' supervising authorities at the latest at 4 p.m. on the day following the date of the inventory change.

Transports of nuclear fuels are also registered by notifications of the transport companies, which are already sent to BfS 48 hours prior to the transport.

Inventory changes in nuclear facilities which are not due to receipts or shipments of nuclear fuels are going to be registered by use of the monthly inventory change reports (ICR) submitted by the nuclear facility to EURATOM at the end of each month. BfS shall receive copies of these reports via the Federal States' supervising authorities. The ICR contain information about shipper/receiver differences, nuclear transmutations (i.e. mainly uranium loss and plutonium production), measured discards, corrections of booking entries etc. and about the book inventory at the end of each month. Booking entries which do not lead to an inventory change are discarded. The material balance reports (MBR) are used in the same way to account for book inventory adjustments due to physical inventory taking.

The information contained in the transport and inventory change notifications are going to be stored directly in a database system. In case of transports between nuclear facilities within Germany, the two notifications of shipper and receiver are compared automatically with respect to information contents and the time their registration. Any differences or delays in submission are reported immediately to the Federal States' supervising authorities and BMU. It was planned that these institutions also receive a summary report of the data collected within one week. In addition, queries of the database with respect to certain nuclear facilities or certain categories of nuclear fuels are possible.

The relevant information contained in reports to EURATOM (ICR and MBR) is not directly available, because it is transmitted to EURATOM in a form that is not readable by the database system of the NFIS. Therefore, the reports have to be converted to gather the relevant data. Since many facilities transmit ICR and MBR to EURATOM in a computer readable form, the conversion can be carried out automatically.

4.3 Results from a Test-scale Operation of the NFIS

From November 1st, 1991 to October 31st, 1992, a test-scale operation of the NFIS was carried out. Two nuclear facilities, a nuclear power plant and a fuel element fabrication plant participated in it. They transmitted to BfS notifications about shipments and receipts of nuclear fuels and copies of ICRs and MBRs. The notifications were transmitted via facsimile transmission, ICR and MBR were sent on computer discs. A PC-based system was used for data storage and for tests of the planned data processing.

From the experiences gained during the test-scale operation, the concept for a full-scale operation was developed.

4.4 Decision to cancel the Operation of the NFIS

The last step was the discussion about the final concept with BMU and, in particular, with the supervising authorities of the Federal States. These discussions resulted in the decision to cancel the operation of the NFIS for the time being. One important aspect was the fact that - due to the political changes in Europe - it was much more easier to get nuclear material from , e.g., eastern countries than to try to remove material from the facilities in Germany.

In general, such a nuclear fuels information system could be a helpful instrument to provide necessary informations on the amount of material in the facilities and the material flow.

5. Use of External Databases

Access to external database and information systems is of vital importance to the BfS.

In case of the Nuclear Safety Department, the following external data and information bases are mainly used:

- STN (Fachinformationszentrum Karlsruhe (Special Information Centre Karlsruhe)),
- NEA database,
- EC database system ECHO,
- MAGNUC information system within the French "Minitel"-service,
- NucNet informations.

Via the Fachinformationszentrum Karlsruhe information can be retrieved from more than 150 databases on all aspects of research in exact science and technology, as well as identification data of material. From this data bank system, the data bank INIS with information on nuclear technology is predominantly used.

The Nuclear Energy Agency of the OECD offers a database system from which computer codes and data on nuclear research can be retrieved.

Via the EC-host service ECHO about 20 databases will be accessible. The access has been established. Of particular current interest is the CORDIS database which is containing information on the R+D projects of EC.

The Magnuc information system is mainly used to get information on abnormal occurrences in French nuclear installations - usually events with level 1 or larger on the INES scale - and on more detailed data concerning activity release during normal operation of facilities belonging to the nuclear fuels cycle.

NucNet is a rapid fax-based nuclear news service operated by the European Nuclear Society. NucNet information is produced and distributed in various categories, e.g. news and background information. Its main aim is to present the essential facts and major developments. The most important news, which should be read by everyone, is given the category "A", while less important news is labelled category "B". The main message is contained in the headline and the lead text. The Nuclear Safety Department gets directly the NucNet information and spreads it within the BfS and to the BMU.

6. Conclusions

The activities of the Nuclear Safety Department, especially with respect to the support given to the Federal Ministry of the Environment, Nature Conservation and Nuclear Safety, require the use of a variety of database systems.

The establishment of a BfS database system on materials used in nuclear installations (mainly nuclear power plants) is planned in order to fulfill the different tasks of the BfS, e.g., in the area of incident evaluation with respect to materials questions, the evaluation of material ageing or life time extension of components/systems and the initiations of research programmes, for example concerning test- and surveillance techniques in order to get information on material behaviour changes at the earliest stage. Such investigations support the increase of safety margins.

A first approach for the concept of such a BfS database system exists, where informations on type of nuclear power plant, systems, components, location of the respective component within the plant, and used materials are collected and correlated. Due to the intended modular structure, selected information should be collected for already existing nuclear power plants; in case of future reactor projects it seems to be worthwhile to store all available relevant informations.

Available data on reportable events are registered in the databases BEVOR (German nuclear power plants) and VIBS (nuclear fuels cycle centres). In BEVOR about 250 abnormal occurrences are registered per year, and about 50 per year in VIBS. These databases have been established by GRS. Since 1994, both databases are kept and further developed by BfS under its own responsibility and on its own hardware and software systems.

The task of the planned German nuclear fuels information system was to inform the supervising authorities of the Federal States according to Atomic Energy Act as well as the Federal Ministry for the Environment, Nature Protection and Nuclear Safety in time and in a sufficiently exact way on type and amount of the security relevant nuclear fuels available in the Federal Republic of Germany and on movements of these nuclear fuels between the single nuclear plants or other facilities in which nuclear fuels are handled. This was supposed to improve expecially the knowledge and prerequisites for warding off a danger and for measures taken in case nuclear fuels deficiencies are assumed or stated. Although the test phase has been successful, this system will not be established in the near future.

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Front-End-Tools for Optimizing large Scale Input into TECDO-online

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1. Introduction

***TECDO*-online** is developed at GRS by the order of the Federal Minister for the Environment, Nature Conservation and Nuclear Safety (BMU). ***TECDO*-online** (Technical Documentation of Plant-Specific Information) is the modern plant-information system of GRS which transports the needed information to the expert's PC-workplace as full texts, illustrations, blueprints and tables.

2. Categories

There are e.g. the following typical kinds of media or documents that have been included in ***TECDO*-online**:

- **Data collections**
  in the form of Quicklook Reports, Safety-analysis reports, descriptions of systems and functions, technical drawings (blueprints), training documents, operating manuals, crisis and emergency documents, expert operating assessments, licensing decisions, results of Periodic Safety Analyses, GRS working results, other technical reports, final reports of national and international R&D projects, rules and guidelines, technical dictionaries, lists of terms, plant-identification systems, data banks used.
- **Plant documentation**
  In the processing of technical documents concerning nuclear power plants it is mainly the reactor plants used in Western countries that are dealt with. The plants of German vendors are treated in particularly great detail. The following information is of special importance for the evaluation of operating experience:
  - structure and configuration of buildings
  - structure and data of the primary and secondary circuits
  - instrumentation and control systems and electric power supply

- structure, tasks and functions of the safety systems, e.g.
- shutdown, emergency cooling and residual-heat removal, emergency power supply, containment
- structure, tasks and functions of important components
- design requirements for accident control (underlying accident spectrum, framework conditions, etc.)
- plant and systems behaviour under normal conditions, during incidents and accidents
- experience with regard to the operation of components, systems and plants
- general technical information if required for a short-notice assessment of any disturbances
- administrative and technical regulations as regards emergency protection.

■ **Technical drawings**

The central drawings archive which has been established at GRS as one of the most important engineering-related information sources now contains more than 25 000 large-scale technical drawings (blueprints). These drawings were put on microfilm, and in a parallel effort their bibliographical data were processed on computer and are now retrievable through ***TECDO*-online**. Also, methods are used which enable the scanning of the microfilm card and the inclusion of the data output in ***TECDO*-online** as an image.

■ **Codes and Standards**

The retrievable full-text documentation of codes and standards presently comprises selected codes and standards from the Reactor Safety Manual, standards of the German Nuclear Engineering Committee KTA, the "Code of Federal Regulations, Part 10, Energy", and the Regulatory Guides of the US Nuclear Regulatory Commission

■ **Safeguarding of know-how**

GRS-reports and GRS-A-reports (contractual working reports) published after 1st January 1992 have been included with full texts and images.

■ **Background information**

General information concerning several plants or other background information, related external data banks as well as reference manuals and dictionaries are collected.

3. System Management

- The hardware and software of ***TECDO*-online** are arranged in an advanced client/server architecture, which is made available on a MS-Windows surface familiar to the PC user. The relational data-bank-management system (RDBMS) ORACLE with SQL-TextRetrieval, which works according to SQL-(Structured Query Language) standards, is used as data-bank-management system for the processing of full texts. As a so-called open system with the appropriate tools (e.g. SQL-forms) it allows the programming of special user guidance and surfaces as in-house development, e.g. simplified retrieval processes for the occasional user via function keys, structured retrieval via tables of contents, and menu-guided full-text retrieval.
- **Image processing**
  The FastFind Image Management System made by the U-Ware company has been introduced; GRS managed for the first time to include it in the ORACLE environment. ***TECDO*-online** thus contains modern image-processing applications, e.g. quick scrolling in extensive documents that are stored page by page as images, zoom functions (i.e enlargements of image sections), navigation in large-scale drawings up to a size of A0.

4. Handling of Data

- **User guidance**User-friendliness was a priority in the development of ***TECDO*-online** in order realise easy handling of the system even for the occasional user. Surfaces are designed under the condition that they are self-explanatory and can be used without an instruction manual. The following retrieval strategies have been realised:
  - Content-guided retrieval (retrieval via the tables of contents, depending on the various types of documents), full-text retrieval, retrieval via keywords and "direct access" (so-called electronic reference library).
    The above-mentioned retrieval approaches are introduced in self-explanatory menus. The system is open to user requests as long as they concern the addition of certain documents, the creation of differenciated retrieval and processing options, and the programming of special surfaces and input layouts. To simplify user guidance further, a model has been developed which allows the entire retrieval process to be carried out by using just a few function-keys.
- **Quick-scroll system**Since FastFind allows for the quick scrolling between provided images on the PC, extensive documents that so far were only available in printed version can now be processed as image files. This way, ***TECDO*-online**

provides e.g. the operating manuals which often have several thousand pages. After retrieval, the user is led from the manual's table of contents to the desired chapter, whose text and illustrations are stored page by page in facsimile. Since ***TECDO*-online** image processing uses the so-called TIFF format, it is ensured that images can later also be added to electronic text recognition should the need arise.

- **newsWORKS**

After the experience gathered during the development and prototype phases of ***TECDO*-online** it became obvious that due to a lack of time and for financial reasons it would not be possible to take on all documents as full-text documents. It was therefore decided to follow the same path that was already being used for image documents (drawings and tables) also for the largest part of text documents: the storing of facsimiles in Tiff-format. Only the content tables were to be processed with the help of Kurzweil OCR methods and made available for full-text retrieval. This has the advantage of enabling the quick archiving even of those documents whose content-related processing can only be performed with difficulty, either because older printed documents are of such a poor quality that the OCR method cannot be applied to them without problems or because the documents are printed in Cyrillic letters and can only be retrieved as full-text translations.Where so far it has been indispensible to fall back on external service personnel to cope with the large number of documents it is planned for the future to process the largest part of the material in-house. To fulfil this task it became necessary to conceive the registration and processing of the documents as effectively and as clearly as possible. With CCS **newsWORKS** a tool was chosen which is designed to meet the required criteria.**newsWORKS** was originally conceived as a press archive system for the quick processing of a large number of documents. It enables the comfortable and versatile handling of the electronic facsimile that was created from the paper document at the beginning of the work process.

We capture the paper documents with a Fujitsu-A3 3095E scanner. It is connected to a Kofax interface that enables us to scan an A4 page with a resolution of 400 dpi in less than 5 seconds. The image data is compressed without delay by the Kofax board to comply with the rules of CCITT convention Motorola TIFF Group 4. This means that the original amount of about 1.6 Megabytes per page is compressed to 25 to 300 Kilobytes, depending on the content of the page. We always capture the whole page without cutting and pasting, a feature that is very helpful in case you only need parts of the source document for archiving purposes. The documents to be archived are usually collected in cardboard files that are divided into chapters. The first page of each chapter is given an identification in line with GRS practices, with the file name consisting of the three elements document/chapter/page (e.g. /IBAAD/001S001). During archiving, the final element, which consists of three digits, is automatically increased by 1 for each page. Thus one obtaines without any further effort a filing system which is structured in directories and where the archived pages are ordered and filed

away in chapters. An index entry is made for each document, which can also be made automatically with the help of an integrated OCR method if the original document is suited.

The system's central element is **newsFLOW**, a process-control device which enables an overview even of complex and far-reaching processes and which puts us in a position wher we can distribute the work process over several workplaces. **newsFLOW** decides which further steps a document has to go through. From here, documents are provided for OCR treatment. OCR treatment is currently carried out with the available K5200 **Kurzweil** systems but is intended in future to be performed by an automatic OCR server based on the **Kurzweil** OCR/ICR. For the correction of the OCR data a correction server has been prepared which, based on the lincuistically working PRIMUS correction software, first performs an automatic correction of the text and then solves the remaining open cases that could not be automatically dealt with in dialogue with the user. In connection with the usually rather complicated correction process it is interesting that the intensive integration of the individual elements under **newsWORKS** makes it possible to keep image and ASCII data in close combination. If, for example, during the usual process of automatic text recognition and correction the question arises whether within a string there is the combination OI or O1 and if this question cannot be resolved through previous knowledge nor through examination of the context, then there is no other way than looking up the original page in the paper document in order to obtain the answer by looking at the actual lettering. **newsWORKS**, on the other hand, knows the connection between image and text and, in the case of a doubtful text item, is able to call up the corresponding section of the TIFF image so that the user in dialogue with the correction programme can decide immediately - much faster and more directly than if he had to resort to a pile of paper for his orientation.

After the correction has been completed, further index information may be added before the document is passed on for export to the data bank. Before it is included in the data bank, all image files are modified. The resolution is reduced to 240 dpi and the index entry created at registration is written into the TIFF header so that even one single image file contains enough information to be clearly identifiable. All following users are shown the index information from the TIFF header as additional information during the retrieval of image data.

newsWORKS integrates externally produced data in the work process so that they are available for processing after having been taken on from a MOD drive, for example.

A Review of Works on Chernobyl Unit-4 Post-Accidental Diagnostical Investigations

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1. Introduction

The tragic events which took place on April 26, 1986 at Chernobyl unit-4 and, first of all the strong radiation injury of firemen and NPP duty staff connected with unknowledge of real radiation conditions had forced men to retreat from the accidental unit to estimate the situation. The absence of special means to estimate the radiation situation promptly in the case of such scale accident may be explained quite simply by the beyond design nature of the accident.

It is necessary to note that this task demands very complicated equipment and high-educated personel to be solved. It was needed, at the first stage of the accident mitigation (AM), to determine:

- the destroyed reactor condition and process parameters
- the radiation situation around the accidental unit and its dynamism.

The answers on these questions permitted to make decisions on the methods of the work from the one hand and on the possibility to use these methods without staff exposure quota violation on the other hand. The specialists from the Kurchatov Institute have concentrated their efforts on the solution of the first-direction-task, trying to solve partly the second-direction-tasks too. The using of the distance-measuring-methods in combination with calculational- and experimental-calculational-methods was preferable since the first days.

However, the absence of the good means for distance-dosimetry and thermometry and the very low quality of the robot-techniques for diagnostic goals and the decision maker's lack of experience under such conditions at the begining of mitigation did not permit to solve promptly the main diagnostic tasks. A long time there were no answers to keyquestions:

- If the chain reaction continues?
- What location and what state of aggregation the fuel is in?

In this report the main dosimetry methods are shortly decribed. These methods were used at the first stage of AM and are illustrated by the basic results. The practical using of the traditional dosimetry methods was complicated by the existing group of factors which had limited the using of known methods and means. The scientists were confronted with simultaneous exist-

ence of high radiation levels, temperatures, agressive mediums and the absence of access, because of the reason of various wrong conclusions.

For example, in the first days after the accident the measurements were given by the north-western corner of the unit-4 (by Pikalov V.K. and Legasov V.A.).which were performed by type "KPAH" radiometer. On this basis the wrong conclusion was made about the presence of neutron flux and consequently about the chain reaction continuation. But later the specialists established the absence of chain reaction by observation of short life isotopes (I 131) and by some other indications.

However, the measurements by KPAH radiometer were repeated several times and the consequences supported the opinion (and the rumors) of the neutron fluxes and chain reaction continuation. The question was closed only at June 26, 1986 by a special gamma-ray experiment, which had connected the radiometer readings and gamma-ray background. (The notes on the question of neutron measurements in the NPP territory).

Before the beginning of June 1986 the first diagnostic survey was performed. The perspective directions of work and the possibilities to use a broad nomenclature of dosimetry means were determined. Since June 9, 1986 the dosimetry means began to develop according to coordinated programs and were completed with the preparation of the demands for the regular control system and the development at the "Shatjer" control system. System "Shatjer" (Tent), consisting of 4 digital processors C-4 type connected to central control processor, was put into operation in March 1987. In this system the regular communications were foreseen and partially fulfilled to computers in Kiev (Ukr.A.Sc.) and Moscow (Kurchatov Institute) by means of telephone cables. This communications have delivered operative information either for request and cycle manner.

2. The Thermometric Probes

During the period from May 7, 1986 till May 14, 1986 the attempt was performed to measure the temperature on the surface on the unit-4 core embankment material. For this purpose three thermometric cable-type converters (TC) KTXAC-u-1, 5 x 220.000, DOCT 238847-79 were made (diam. 1.5 m, l = 220m). These TCs were made with the following DOCT violations:

- The length of the TC 220 m instead of 100 m maximum
- The isolation resistance more than 1×10^{12} om instead of 5×10^{8} om
- To provide the operative connection, the exit end junction was made jointly with electrical connector.

It was supposed to perform three temperature measurements during each flight:

- 100 m above the reactor building
- 50 m above the reactor building
- on the surface of the crater.

For this goal the steel rope with uniformly distributed load (lead billets 25 x 41 kg) was connected to the helicopter. The detector was fixed to the rope by sliding loops and connected to the measuring equipment, established on board of the helicopter. The measuring equipment was developed, made and tested in the Kurchatov Institute (department 0-32, laboratory KCPI |).

The measuring equipment consisted of:

- MDM-structure amplifier of voltage with high input resistance and rather good temperature stability of working parameters specially developed for this purpose
- voltmeter V-4313 was used as a registrar
- power supply of this equipment was realized due to autonomous source on the alkaline batteries 3KHK-10.

The correction of the helicopter and load location in the air was made by two helicopter crews by the means of a board-to board radio. The radio communication was provided between the crews, the leader of the flights and the operator who recorded the sensors signal.

Three flights were made:

- first practice-flight - May 8, 1986
- second and
- third operational flights - May 9 and 10, 1986.

The first flight allowed to choose and to work out the detector lowering technique to the last detail, to optimize the coordination between the crews and the operators actions, when they have been back in the air. The difficulties of the performance for such a type of work are determined by following factors:

- The intricacy of helicopter manoeuvring at the plant site (immediately by unit-4 building the stack 150 m hight is situated).
- The restricted time of work, due to the penetrating irradiation.
- The complexity to hit the target with the load (the load had oscillations with the amplitude up to 80 m and the diameter of the crater was approximately 15 m).

During the second flight it was ascertained that the temperature on the levels 100 and 50 m from the level of the building roof was not more than +30° C (The compensation of the cold thermocouple soldered joint temperature was not performed and the temperature on board was + 30° C).

The measurements of the crater surface temperature were unsuccessful, because of the detector damage as a result of the impact with the building frame. During the third flight it was succeeded to insert the detector into the crater. The maximum value of the measured signal was about 280° C. However, during the measurement the detector was broken as a result of clinging to the details of the building. It was the characteristic time of the measuring channel. Due to the damage the load was bombed to the building.

During the further work the temperature measurements remained important, because they determined the possibility of various technical means for the performing of work. Besides that, during a long time there were attempts to determine the loactions of the fuel congeries by the temperature measurement based on decay heat. But there have been very few exact data obtained by these methods. The distance methods at thermometry (thermovisors) did not work in the radiation fields with the dose rate about of hundreds r/h. An example of the thermovisor test is shown on TV "Diagnostics...".

3. The Dosimetric Survey on the Destroyed Unit

The dosimetric survey (DS) is a traditional method of the source characteristics and distribution determination. This method was used from the first hours after the accident and gave vast information about the decision making. All groups, shift or fire-brigade, who had to solve any task on AM, began work with DS.

The specialists from the Kurchatov Institute used the methods of DS to solve the task about the distribution of the high radioactive materials inside the destroyed unit. It was done with the purpose of determining the directions of the accident development, and the purpose of preparing the initial data to find the means for mitigation and confining the radioactive mass.

This work was prepared at the first stage together with E.O. Adamov, V.D. Pismenny, I.S. Krasheninnikov and was realized within several steps by a group, formed of personnel of the Kurchatov Institute Radiation Service. The basic criterium for the determination of the possibility to perform the work was the individual dose limit of 25 rem, which was permitted at this stage of work. Taking into account the deficiency of knowledge about the radiation characteristics troughout surveyed area, it was decided to use several dosimeters for the control of individual radiation burden. The upper level was restricted by 17-20 rem and internal exposure was controlled by CIW facility just on arrival of the personnel to Moskow.

Beside the portable devices of EO-5, JER, "KIRJACH" types of the chains, cords, bars with integrating dosimeters RKE, IJS, EJ etc., were used. Simultanously with the standard measurements, the samples were gathered, the smears were made, and being used by the individual shielding means were collected to be processed at laboratory conditions. The data,

obtained with dosimetry means and traced on distroyed unit storey-to-storey plan, were systematized. All components were divided into four categories:

- up to 1 r.h. - green
- from 1 r.h. up to 10 r.h. - yellow
- from 10 r.h. up to 100 r.h. - red
- greater than 100 r.h. - brown
- particular points - black.

Such processing resulted in the successful solving of some problems. First of all the regions with high radioactivity were determined. Probably there were fuel contained materials (FCM) in these regions and they had to be investigated to get fuel balance and to determine the potential of the nuclear and radiation danger. These data, together with other ones were used to create the models of fuel fragment distribution and to perform calculational investigations. Beside that, the results of the dosimetric survey inside the destroyed unit gave the possibilities for systematic investigations and determined the main conditions and means for the protection of specialists and the several design decisions in the Sarcophagus. The work transformed the object from unaccessible edifice primary planned as a limitservice one, to serious research object with a vast field of the scientific work inside the unit. Besides that, the work on dosimetric survey revealed the dosimetry device deficiencies and gave material for eleboration of technical specifications for the perspective ones.

4. Pipe Drivings

The experience of work with the in-core detectors proposed the idea to use non-destroyed pipelines for delivering the detectors to the most interesting and important places. Such methods were considered to be very effective, because the promises in the bottom part of the reactor building and under the reactor were in a satisfied condition. Beside that, the isolated concrete corridors and the system of the reinforced leaktight compartments permitted to reach to the destroyed reactor, until only the distance of the heavy-concrete separating wall. Good knowledge of the geometry of the pipe drivings permitted to get an understanding of space distribution of the parameters measured. In May and June 1986 the dewatered pipelines of CPS ccoling system were used for diagnostics (as potentially the most clean). It was considered convenient, to use the suction header of the CPS which goes around the perimeter of the bottom part of OP (core support floor) opposite the lower outlet communications in the compartment 305, and pressure CPS header, which is located vertically in the wall along the L axis of the reactor vault. The first measurements were performed by high temperature DPZ-type detectors and then the series of measurements by passport detectors of X-type, TLD, gamma-chambers, gamma-ray counters etc., were performed as well by various organizations under general coordination and with participation of the specialists of the Kurchatov-Institute. The results obtained, gave the information about the high radioactive sources (fuel) and their distribution in the measuring points.

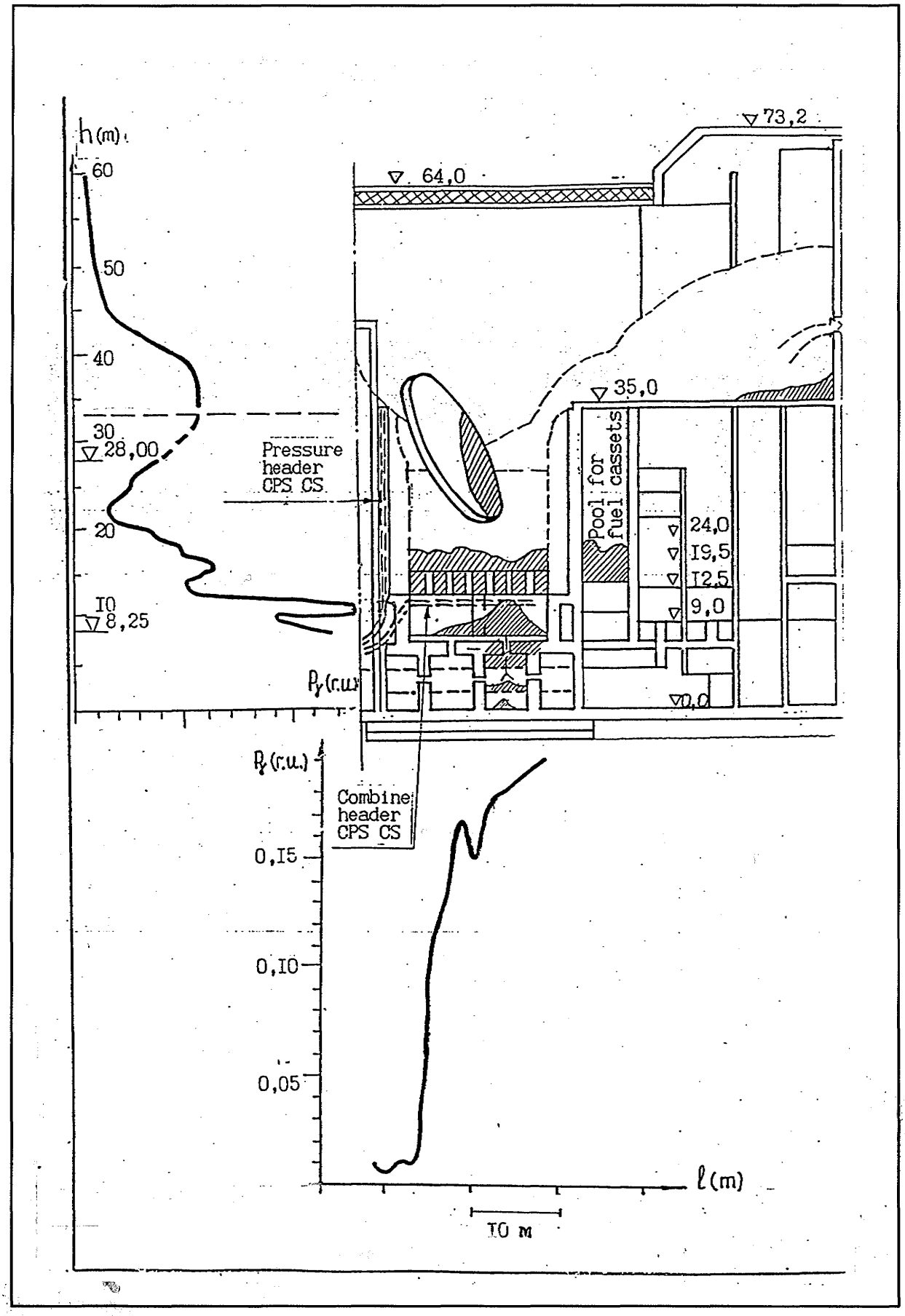

Fig. 1: Variant of Fuel Location at middle 1987

An example of the distribution obtained is given in fig. 1. During the following investigations the data obtained was confirmed, but, their interpretation was changed significantly, because the OP scheme was considered as being lowered, approximately 4 m below its normal position. It is expressed well by the distribution, which was obtained in the CPS pressure header (fig. 1 - vertical) that location of the CPS suction header is not well determined till present time, because of the large amount of the fresh concrete, which had penetrated into the space under the reactor. The significant difficulty during the diagnostic work with the using of pipelines was the absence of automatical or mechnanical means to move the detector.

5. "Needle"

This program was realized at the request of E.P. Velikhov (Kurchatov Institute) together with the Scientific Center (SC) of the Ministry of Defence and send for analysis to the specialists of the Kurchatov Institute. "Needle" is a diagnostic device in shape of a long bar (approximately 18 m) which is supplied with thermodetectors and a detector of gamma-ray dose rate in the upper part unit. The detector has a broad measurement-interval (up to 2 x 10^5 r/h). The bar was lowered from the helicopter to the region of the reactor vault. During the lowering of the bar by the specialists of SC the continous registration of the gamma-ray exposure rate was performed. As a result of the measurements and the analysis followed on June 28, 1986 it was stated that gamma-ray-exposure rate was monotonically increasing with the approaching to the reactor vault. When the location of the detector in the horizontal direction was changing, the effect of collimation was observed. This effect was expressed in the sharp changing of the detector readings (fig. 2).

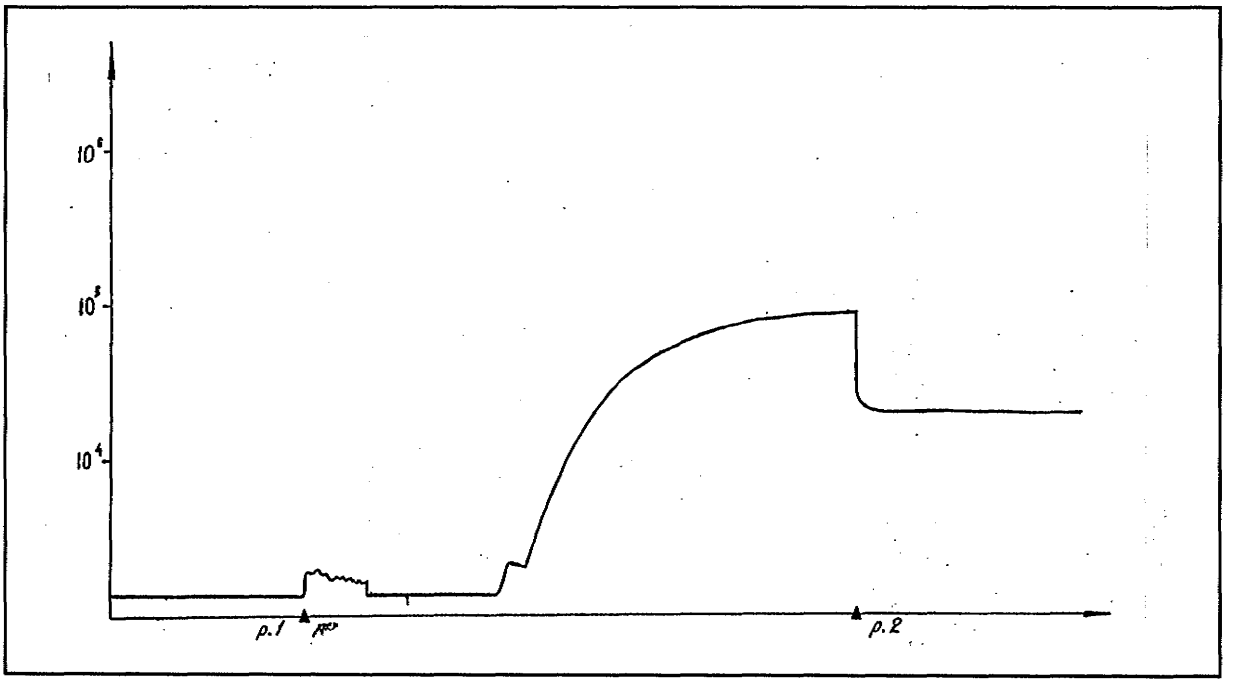

Fig. 2: The Behaviour of "Needle"-Systems Detector Readings during the Installing into the Ruins

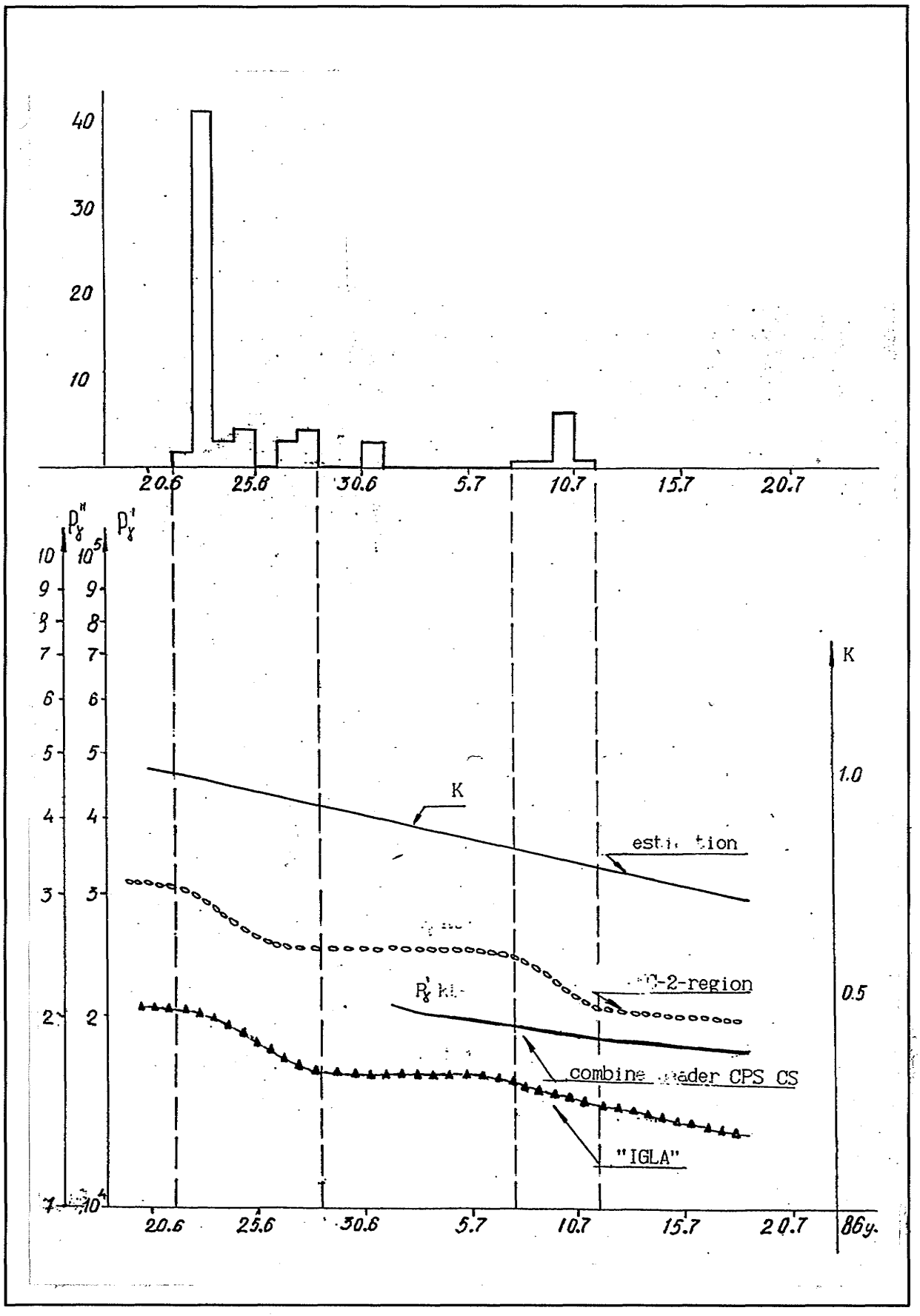

Fig. 3: Atmosphere Precipitation falling and changing of Detector Readings at the different Places of Chernobyl NPP Unit-4

From the moment of the "Needle" facility installation till the moment of the connection line destriction, the changing of the gamma-ray exposure rate was observed in the nearest vincinity over the reactor vault. As a result of these observations, a monotone process of the exposure rate decreasing was fixed. It was approximately in conformity with calculational reaults on the RBMK burnt fuel activity falloff. Beside that, when the readings of this detector were compared to other detector's readings and to the precipitations falling out during the observation, it was found that the decontamination by sprinkler-irrigation is very effective (fig. 3). It was the base for the decision to use the decontamination solutions for destroyed unit irrigation from the helicopters ["The report on the question of the character of the acitivity changing observed by facility "Alloy" in the vincinity of the unit-4" 21.07.86].

6. "Tack"

From the first days of the accident the air-estimation of the radiation situation was effective and operational. Now it was possible to formulate, together with the Ministry of Defence, the diagnostic program "Tack".

The main goal of this program was to measure the distributions of the exposure doses with IMD-31 device by helicopters. It was interesting to know the exposure rate dynamics during the Sarcophagus construction.

Other sources of information including "Needle" and "Buoys" were out of work during the ceiling construction because of the cable lines damage. The program was performed from August till December, 1986. The flight height was 200 m, the speed - 50 km/h. The main flights were perfomed on the central tacks from north to south and from west to east. The reproducibility of the results of the measurements were transduced to the level of 1 m above the ground. Since first measurements the anomalies in the exposure rate distributions in the western direction were determined. These anomalies showed the existance of the high-radiation sources in this direction (possible consequence of the release). This circumstance and experience was taken into account later in the differentiation of their influence on OPY-750. The program of flights was expanded and joined with the ground measurements. The results obtained, had permitted to determine the direction of work on ODS-750 (OPY) decontamination. An example of results is given in fig. 4 and 5. The work according to this program and the attempt to decrease the burden the automatic flight means for the radiation survey under hard conditions. But this idea was not realized because of the absence of customers. [Act of dose rate measurements along the ODS-750 and ODS-330 air-survey and ground-survey results.]

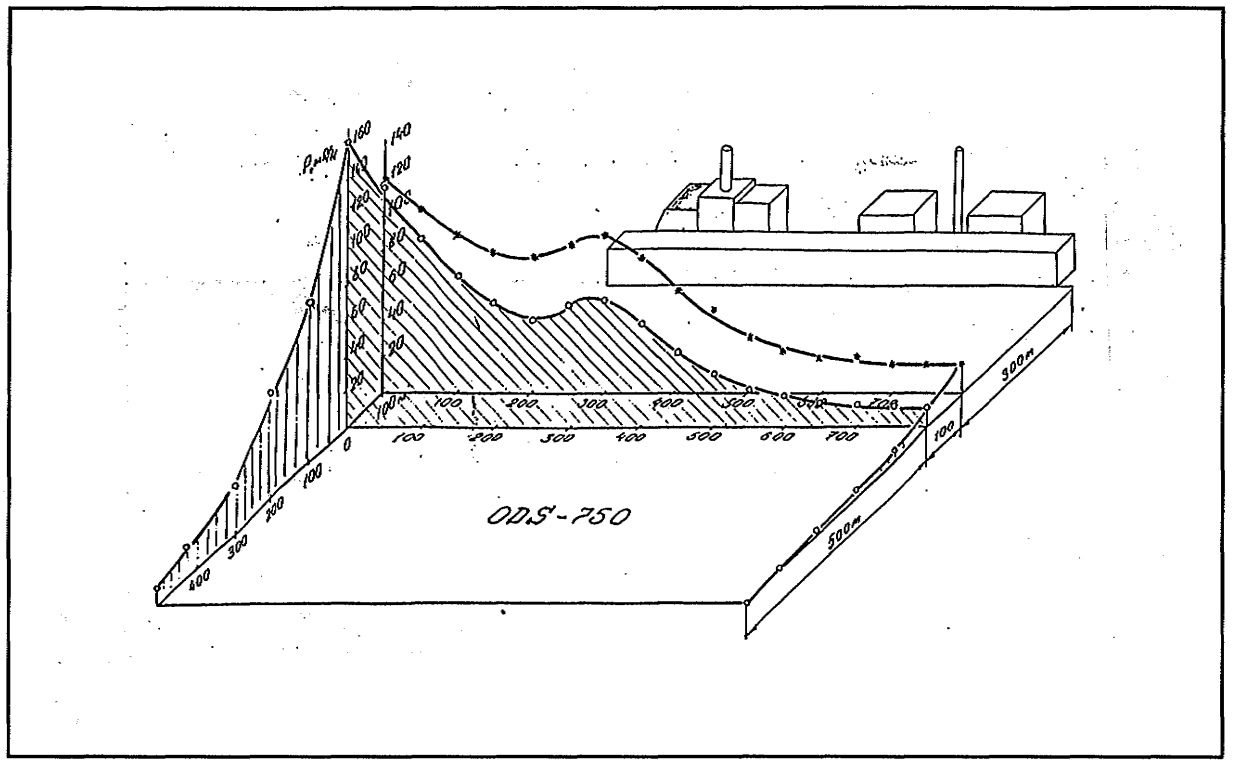

Fig. 4: The Integral Value of Dose Rate along the ODS-750 Perimeter (Ground-Survey Results, H = 1 m)

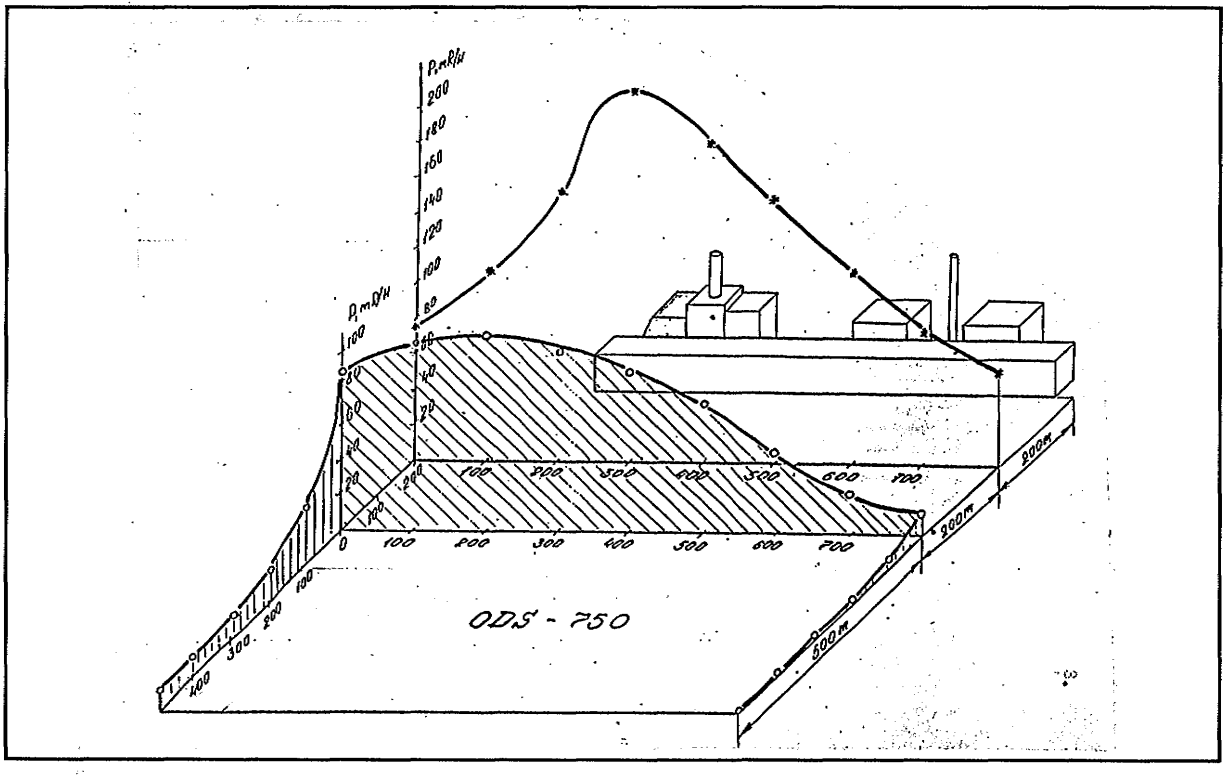

Fig. 5: The Integral Value of Dose Rate along the ODS-750 Perimeter (Air-Survey Results, extrapolated to 1 m over Ground Level))

7. "Chain"

The program of design and implementation of this system was realized by the "Needle"-author group and given to the specialists of the Kurchatov Insitute, to carry out the investigations. The system consists of 8 gamma-ray exposures rate detectors connected into common chain and allocated uniform along it. The system was installed into stack of Chernobyl NPP units 3 and 4, using helicopters. The recording system was placed in surviving premise of Chernobyl NPP unit-4.

"Chain"-system had worked stabley from the installation till the beginning of actions on concreting sites "M", "H", "K", when the assemblies were completed and the object was put in service under regular control system.

An example of exposure rate along the stack and its changing during the process of works are shown in fig. 6 and 7. The observations at the dynamics allowed to estimate the efficiency on roof (site "M") purifictation operation under the stack. The experience of deals with height-distributed chambers was used by the specialists of the Kurchatov Insitute to design the analogous means for controlling immediately over ruins. The installation of such means were performed into through-roof drivings, foreseen specially after the object had been blocked.

8. "Sheets" and "Cords"

The diagnostic dosimetry methods with integrating dosimeter (I JC, RKE, EJ, KJO) employment were used widely at the accidental unit with purposes of radiation field and source distribution determination.

The essence of the method consists of the integrating dosimeter arrangement or hanging with cords in geometry known for time given, followed by laboratory processing and determination of dose absorbed during measurement. At Chernobyl NPP these methods were used by employment of long and expanding bars, Karpon chains, and polyethylene sheets. An example polyethylene sheet with EOR-3 (pitch im) is shown on fig.6.

By this method the detailed survey of "M"-site contamination was performed before and after purification (fig. 7). The quantitative estimation of purification results was made, the low efficiency of bitumencoated surface purification was shown and recommendations on "M"-site concreting were given. The existance of new non-contaminated ceiling over the accidental unit had allowed to carry out the measurements of space gamma-radiation field distributions to reveal the places with the strongest sources and of model in mathematical terms the object as a source evoking the radiation situation at Chernobyl NPP: As a development of this work the new based gamma-field distribution measurement method was arisen - the method of continous-duty dosimetrical cordes (JEX). This method uses the electronic paramagnetic resonance phenomenon and allows to have distributions with practically any given degree of the discreteness. The method itself and the main results obtained, are described in the original work.

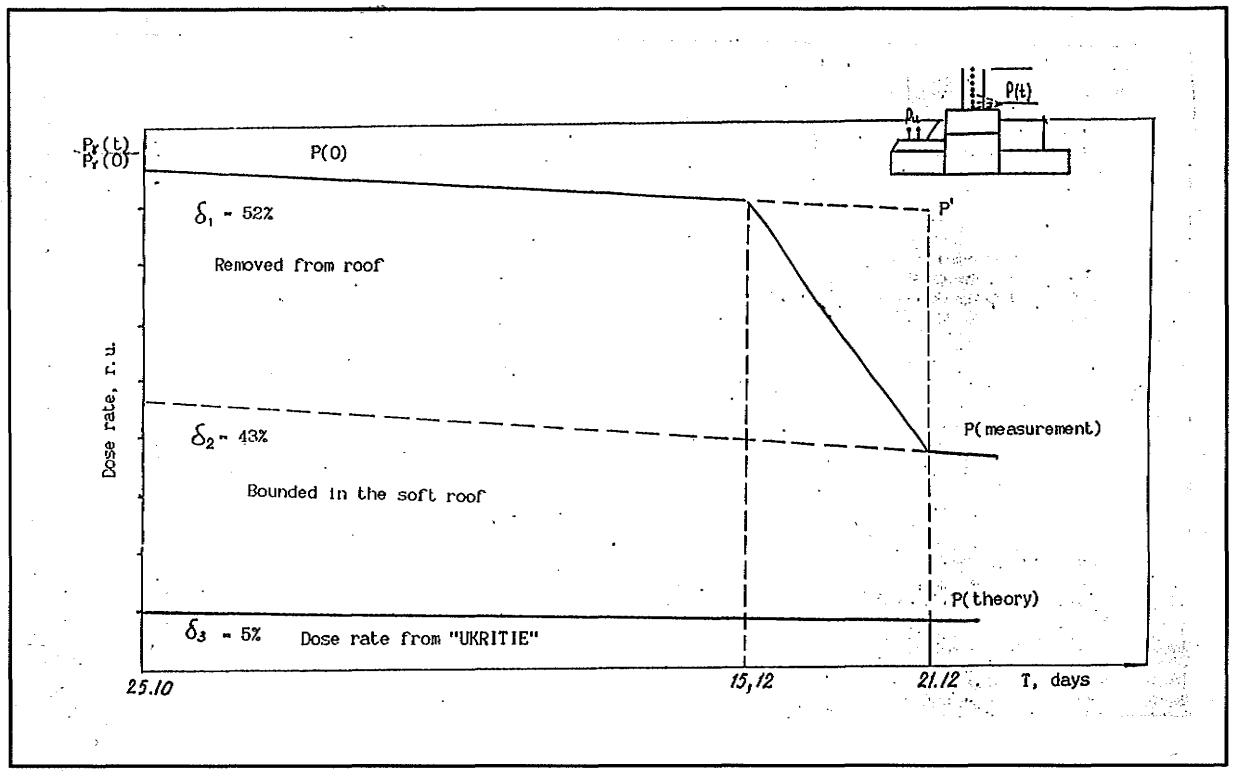

Fig. 6: Change of Dose Rate on the "M"-site near the Stack (21.12.1986)

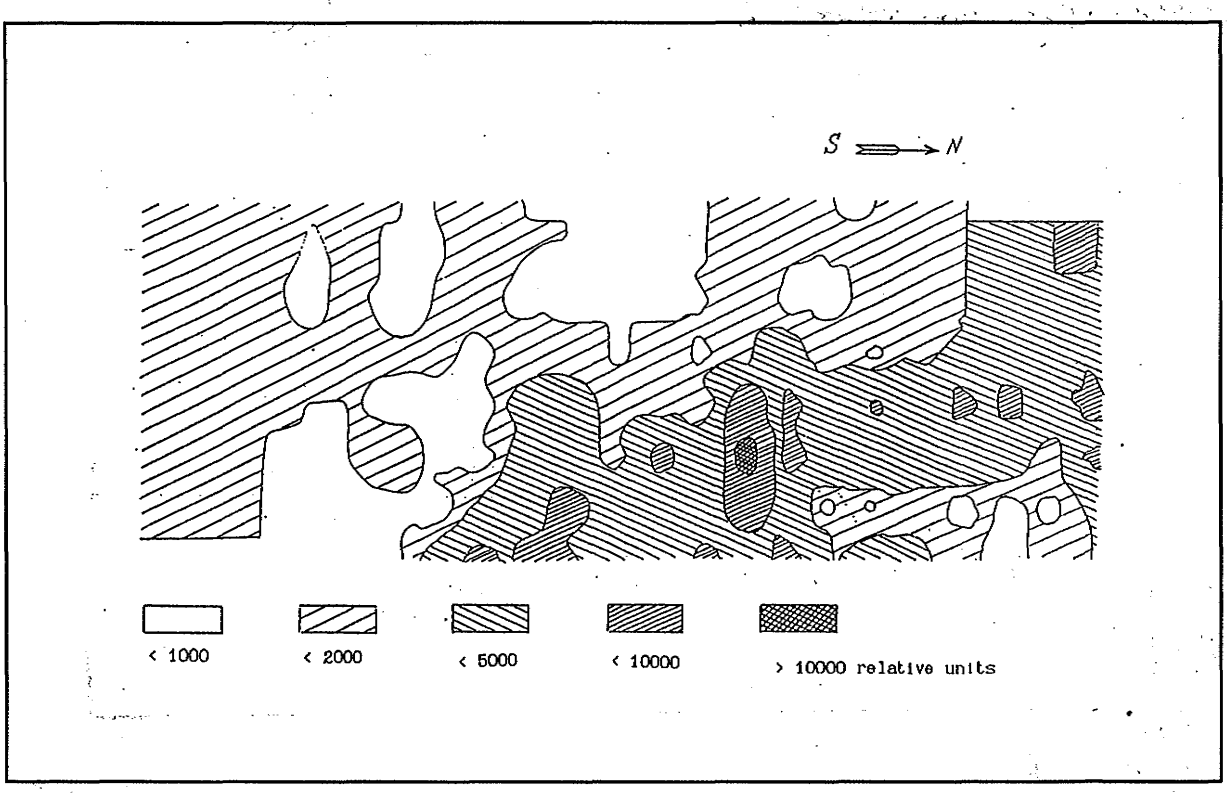

Fig. 7: Distribution of the Radiation Sources on the "M"-zone Roof (before cleaning)

9. "Buyee" and "Gamma-visor" - The using of the remote radiometry methods during the work on accident mitigation at Chernobyl NPP

In June 1986 the Academican S.T. Beljaev formulated the problem on complex investigations of thermal and radiation characteristics of the destroyed reactor. The task was realised mainly by the specialists of the DGNP- Kurchatov Insitute under the technical guidance of V.G. Volkov. Using the previous results, the system "Buoy" was developed, which permitted to measure the

- temperatures and air flow speed,
- exposure rates,
- conductive thermal fluxes,
- surface temperatures and
- humidity of the air

with the help of the detector assemblies. These assemblies were placed upon the accidental unit central hall embankment. Originally it was made by helicopters, then by the crane installed for the construction of the Sarcophagus. The registration of the parameters mentioned above was performed automatically. The devices were located in undestroyed compartments of unit-3 and unit-4 and connected to the detector assemblies by cable lines. To choose the points for the buoy installation, the attempt was made to get the qualitative picture of the thermal and radiation fields in the reactor embankment. Unfortunately the using and radiation fields in the reactor did not besot in any success beause od distrubances due to high radiation background. To visualize the non-uniform radiation fields a special device named "gamma-visor" was developed and employed within a short time. Later the gamma-visor was used for the search of the seperate high radioactive fragments inside the destroyed unit.

At the following stages of AM tasks were arisen to

- estimate the contribution of various sources (including Compton effect) and radiation situation.
- choose the optimal order of decontamination work priority,
- forcast the decontamination measure effiency and to control it.

To solve these tasks the collimated radiometry methods were developed and introduced (at first integral and later spectrosensitive ones) and various collimated radiometers were designed. All of them were provided with equipment and software to carry out the measurements and data processing automatically.

Due to these methods the radiation field distribution were obtained throughout the turbine hall, unit-4 premises, reactor vault. The estimation of contributions of the primary and secondary radiation sources to dose situation at Chernobyl NPP site was made, and the efficiency

various decontamination measures was estimated. The interesting feature of these methods is the possibility to locate the radiation sources during the measurments in ruines and complicate building elements. Later these autonomous power supply devices were made to estimate the contamination and decontamination work efficiency in Polesye villages inside Cs-spot zone. The more detailed discription of gamma-visor and collimated dosimetry methods was given by V.G. Volkov, L.M. Urutskoev and A.V. Chesnokov. Results of Program "Buyee" Buoys and "Gamma-Visor" were analyzied and published earlier.

10. Conclusion

As a result of dosimetric measurements at the first stage of MA the new perspective methods and designs appeared. These are calculational methods in field of radiation transport, locations and distinction of sources; the experimental methods of remote dosimetry based on collimated dosimeters ans gamma-visors; the space-continous dosimetric cord methods, etc. These methods and means have been described in original reports and are not included in this summarizing chapter. Besides, some new ideas and conceptions, the use of dosimetry methods at the first stages of MA gave a series of proposals and notices on traditional dosimetry mean improvement. In the process of prospectorswork technical requirements were arisen on the emergency dosimeter, robottechnique for accidental condition an so on. These works result in significant experience, whose practical usage depend on availability of means and customers and also on nuclear and radiation technology development in the whole.

Public Information Center of Atomic Energy - Russia

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Public Information Center of Atomic Energy, Moscow

Analysis of nuclear power plant development world-wide, especially after the major accident at Chernobyl NPP in 1986, demonstrates definitely that any, even the most necessary and useful technical or administrative decision may be rejected if public opinion about it is formulated negatively.

In 1992 the Government of Russia created the Interdepartmental Coordinating Council for Information and Public Relations of Atomic Energy (IC-IPR). Its activities are devoted to the elaboration of common police on public information on the problems of atomic power utilization in the national economy. At present the problems of atomic power can't be solved without broad social acceptance. The Council is formed by representatives of concerned ministries and public organizations. Its executive body is the Public Information Center on Atomic Energy (PICAE).

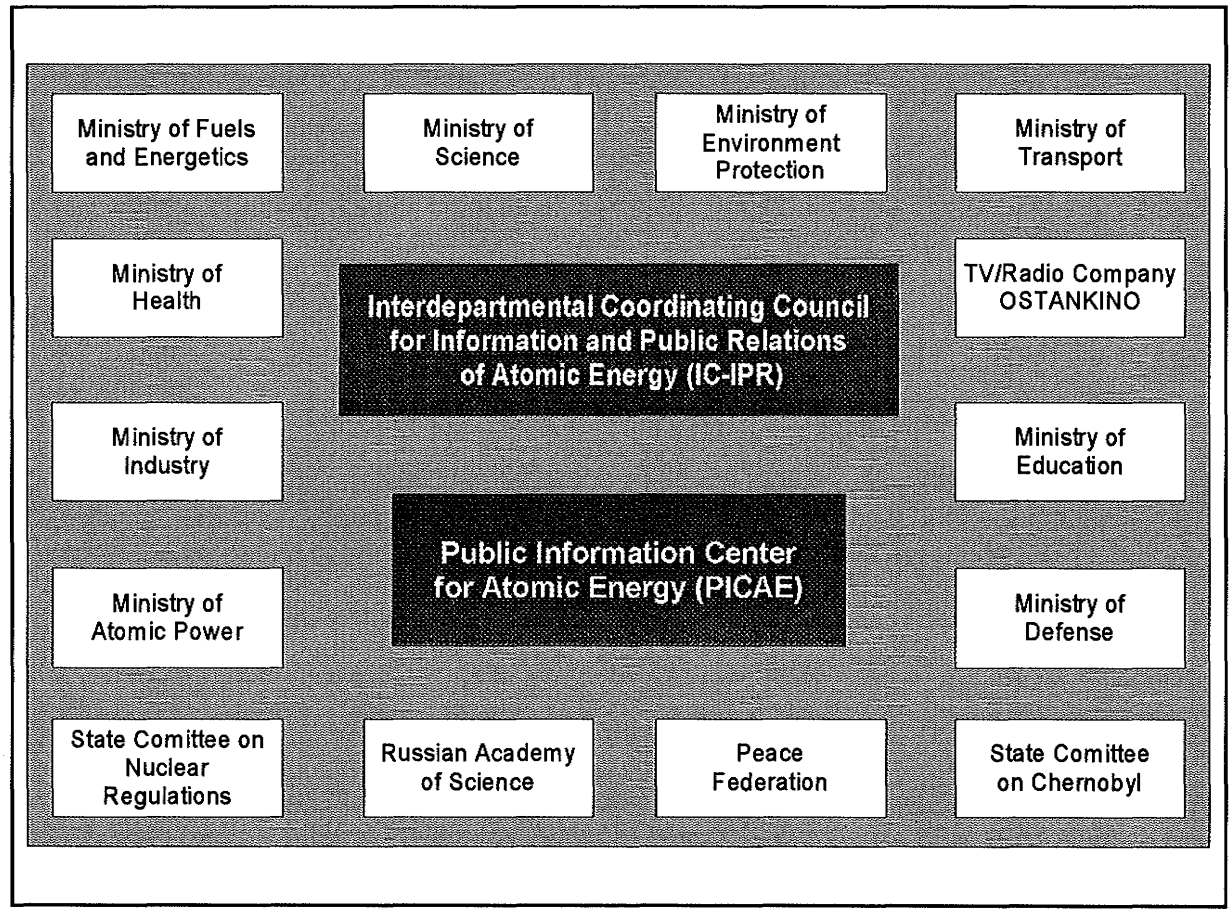

Fig.1: Structure of the Interdepartemental Coordinating Council for Information and Public Relations of Atomic Energy

Activities of Public Information Center of Atomic Energy:

- Systematic scientifical, methodological and organizational assurance of Russian National Information System on nuclear power utilization.
- Provision of public and mass-media with the objective of full and timely information.
- Publication and dissimination of popular scientific literature, production and demonstration of films, lecturing, round-table discussions, seminars, conferences, etc.
- Social research and monitoring of public opinion.
- Public relations at nuclear military plant sites and nuclear weapon test sites.
- Provision of decision-making persons with information on economics, energetics, industry, science, defense.
- Permanent contacts with ecoclogical organizations and political parties and their information.
- Vast international contacts with information and public relations organizations and specialists.

Information Activities of PICAE

- Publications:
  - Monthly PICAE BULLETIN in nuclear energy problems in Russia and abroad.
  - Weekly digests of Russian national and local mass-media (Press, Chernobyl, Defense, NucNet)
- Popular science books and brochures
- Acquisition and dissimination of information to public houses, newspapers, radio, TV-production and demonstration of videofilms.
- Nuclear Energy and Public Opinion
- Second ALL-Russian Public Opinion Investigation

From the very beginning of its existance PICAE paid serious attention to collaboration with countries having vast and long experience on public relations in nuclear fields.

PICAE staff-members realize that international collaboration is an important part of the work and are trying to do their best to promote such activities.

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