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1. Keynote talks

1.1 The global network: the key information resource

Presented by: P. Deutsch

1.2 The global network: a natural extension of the library

Presented by: I. Mowat

1.3 Network growth and network services

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Abstract

Perhaps 14,000,000 people use the global Matrix of computer networks, and several major global computer networks are growing exponentially, rapidly reaching new countries and new classes of users. This growth has spurred the recent development of networked information services. Different networks provide different services, so a brief classification of network services is nseful to motivate **discussion of network differences. Resource sharing, communication, and information services can** be distinguished, but the most important distinction practically is between interactive services and **asynchronous batch services such as mail and news.**

Four global networks carry most of the international network traffic. We compare these networks, FidoNet, UUCP, BITNET, and the Internet, plus USENET, which is a news service on top of the other four. For each, we list its major services, give its current size, and show maps with the relative proportions of hosts in each country, worldwide. For each of these networks, the United States has more hosts than the rest of the world combined, but that situation is changing rapidly. Australia, Canada, most of Europe, and Japan are heavily networked, and many other countries, from South Africa to Argentina to Antarctica, are networked now. The different networks reach **different regions, and this can be seen in the maps.**

These networks and others form the global Matrix of networks that exchange electronic mail. We illustrate graphically the relative sizes and interconnections of major networks in the Matrix. FidoNet and UUCP provide inexpensive access ·ta the Matrix, but provide basically only mail and news. BITNET and especially the Internet provide more and faster services. There is often a progression from the access networks to the Internet. Frequently, a country will have an Internet connection to the capital, and UUCP to the rest of the country, as in Argentina, India, and Russia.

Several sets of information exist on the growth of the networks. The Internet, for example, has been doubling in size every year since 1988, according to more than one metric. Growth of the Internet in Europe in 1991 was twice as fast as worldwide growth, but now appears to have slackened to match the global growth rate. A few years ago, T-1 (1.544Mbps) was fast for network links. In January 1991, only 10 T-3 (45Mbps) networks were configured for interoperation with the NSFNET backbone; in September 1992, 5920 T-3 networks were so configured, out of 6640 total. A European backbone (EBO NE) now exists, and plans are in progress for a faster one.

Projections of these growth rates into the future raise questions about the limits to such exponential growth (number of computers? number of people? network speed? information overload?). Large numbers of users and fast networks permit and require better network information services. Exactly what these services will be is not clear, although many of their ancestors are presented at this conference. But the relative importance of organized and accessible information is increasing along with the size and speed of the networks.

2. New Global Information Tools (1)

2.1 World-Wide Web: global hypertext coming true

Presented by: J.F. Groff
Authors: Tim Berners-Lee, Robert Cailliau & Jean-Francois Groff
Abstract
The World-Wide Web initiative aims at providing a seamless information space to users of disseminated data sources, both allowing for advanced new services and making optimal use of existing resources. We summarize the architecture of WWW's distributed hypertext and the status of different parts, we analyze its impact on Internet after a year, we discuss its links with other new information access tools and we examine future evolution paths for global hypertext and hypermedia.

2.2 Wide area information tools: results of the WAIS Internet experiment

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Dr. Ottavia Bassetti works as a consultant in the areas of publishing, communications and information systems design. She received her Laurea in Biology, summa cum laude, from the University of Milan, Italy in 1980.She was a Vannevar Bush Fellow in Science Journalism at the Massachusetts Institute of Technology for the academic year 1986/87. Her professional experiences include Managing Editor of the Italian edition of "Science Digest", Associate Editor of "Corriere Medico", Editor of "Medicina Illustrata". In 1987 she started Lucrezio Lab, a Milan-based communications laboratory and consulting group in corporate communications and she continues to serve as its Scientific Coordinator. She is currently Consultant for Thinking Machines Corporation (Cambridge, Massachusetts, USA) and Visiting Professor for Information Systems Design, Multimedia and Groupware at Theseus Institute (Sophia Antipolis, France) for the Master Program in Business Strategy,Innovation, Information Technology.
Abstract
WAIS (Wide Area Information Servers) is a client server software for information retrieval over wide area networks.It has been made available via FTP on the Internet since April 1990. Its distribution has been successful, with over 200 servers in use after one year and more than ten thousand users from various countries. We will report some results of its usage, applications and an overall description of the Internet experiment.

2.3 The Minnesota Internet Gopher

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Abstract

The Minnesota Internet Gopher is a simple client/server protocol to be used for building distributed information systems. Simplicity is really the keyword for gopher, a server can run on almost any machine (Unix, NeXT, VMS, Mac, VM-CMS, and MVS), and client software is available for all the most common operating systems (Mac-OS, MS-DOS, Unix, MVS, VM-CMS, VMS, NeXT, and row oriented vtlOO). The clients show the user a virtual information hierarchy, seen by the user as menus, in which the she/he can navigate by giving simple commands, or just by pointing an clicking. There are also search possibilities, because of the built-in WAIS search engine. Browsing normally in the end results in a number of documents which the user can read on the **screen, save or even mail to someone, without leaving gopher.**

Gopher was from the beginning designed to be a campus wide information system, and is still used as such at a lot of universities around the world, although it is its abilities on an international level that has given it most attention. Gopher is today used as an international knowledge system and distributed database, with good capabilities to link to different types of services on the Internet such as Archie, ftp-archives, WAIS, CSO telephone books, and normal telnet sessions. The root level server at the University of Minnesota, today knows of about a hundred servers all around the world, and that server is today handling about one transaction every 15 seconds, 24 hours a day. The server is a Macintosh fx running A/UX, and is still not heavily loaded, a simple proof of the advantages with a simple protocol.

It has been decided to use Minnesota Internet Gopher on SUNET for information purposes. One of the reasons for that is that you do not make any commitments for the future because you do not have to restructure, or format, the information in any special way before putting it up on the server. As keeping the information updated obviously is one of the critical tasks in running a system of distributed information servers, this is one very important point. The present SUNET information structure will be discussed as well as possible ways to improve that structure.

3. Beyond ASCII

3.1 Our on-line information has to include pictures too!

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Dr Anne Mumford is the Graphics Co-ordinator for the University Funding Council's Information Systems Committee in the UK and is based at Loughborough University. She is chair of the ISO group concerned with the development of the Computer Graphics Metafile Standard about which she has written widely and co-authored a book. She has represented the UK at international standards meetings concerned with Computer Graphics since 1985. She is also Editor for the new EWOS work on developing profiles for the CGM within the ODA Expert Group. Dr Mumford is Chair of the Eurographics UK Chapter.

Abstract

There is a vast amount of information available across "the network". Much of the information is of a form that has not previously been available until recently - email; mail lists; public domain software etc etc. Some of it is however information that has been traditionally available in paper form. Much of this has been housed within libraries as books, journals etc. We have come to expect that this information will contain pictures that can be browsed through in the same way as the written word. The amount of graphically displayed information will vary according to the nature of the material which may range from a dictionary to an atlas.

Increasingly we are hearing about the "virtual library" and are making tentative steps towards that being a reality. The use of on-line citation indexes is an example of such a move. Assuming

that our virtual library will house abstracts, articles and books and not just keywords and basic information we need to look beyond the storage of words The written word needs to be enhanced graphically if the information is to be presented in a concise and also human-friendly way to both **writer and reader.**

The inclusion of pictures within text being accessed on-line is not an easy task. There is a need to consider the requirements for access to pictures and whether this is access to complete

pictures positioned in a document, thus mimicking a book, or whether a more dynamic and selective browsing of a picture library is required.

This paper will examine the issues surrounding access to pictures contained in on-line information. It will consider the relevant file formats that exist and address the standards, both formal (CGM, Image Interchange Format) and de-facto (PostScript, TIFF etc), that exist and are emerging in this area. The link between these standards and the documentation standards, such as ODA and SGML, will also be discussed.

If we are to move to a time when documents, which include graphics and text, are readily available, easy to interpret, trivial to browse through and make selections from to include in other documents, then many issues need to be addressed.

The paper will conclude by looking at some of the implications of storing documents containing graphics and text on-line once we free ourselves from a paper-oriented and text-oriented mentality.

3.2 Internationalization of software applications: the world beyond ASCII

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Borka **J** erman-Blazic is involved in networking since 1984. She was Project Manager of the Yugoslav part of the EUREKA Project COSINE (1987-1992), member of the Coordination Committee of IXI, General Secretary of the Yugoslav Academic Network - YUNAC, 1990-1992, Project Development Officer of RARE (1991/1992), Chairmen of RARE Working Group on Character Sets (1992-), Head of the Departement for Computer Networks and Distributed Systems of Jozef Stefan Institute (1992-), Chairmen of the Yugoslav Standardization Committee for Character Set Coding and Data Representation (1984-1992), member of ISO/IEC JTCl SC2 (1984-1992), Chairmen of Slovenian JTCl body (1992-), Member of CEN/CENELEC Committee on Character Set Technology, author of 200 publications in the field of information technology.

Abstract

What is new in the area of Internationalization of SW Applications and the support of the national languages and cultural conventions within the network applications?

The paper, based on the recent agreement in the field and on the analysis of the current activities in many international groups working on the Internationalization Issues will give an overview of the expected benefits for the international users on the world-wide computer networks.

The paper will try to provide brief overview of the current user facilities in the recently developed network applications such as MIME, X.400 and X.500 regarding the support of the international character sets. The drawbacks of the currently applied solutions (i.e standardized character set codes for information interchanged) will be briefly presented.

Description of the main functionalities of the SW Applications deployed in order to support the required Internationalization items will be given. In addition, the paper will discuss the needs for additional services required on the networks for support of the national languages and cultural **conventions.**

4. The Electronic Library (1)

4.1 The Israeli universities network for libraries

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Abstract
The objective
To describe how the academic libraries are making use of the universities' network, ILAN, in Israel in order to create an open catalog of all the university libraries' databases. The description is based on the Libraries experience on using this network for communication between libraries; the creation of a Union Catalog, utilizh1g this network and the management of this Central Union Catalog.

Description
The Library Committee of the Council of Higher Education in Israel opted for an automated network serving the seven institutions of higher learning based on the ALEPH integrated online library system.
The system is presently implemented in the universities network on 25 VAX (digital) computers, of varying sizes and configurations, with a total of some 1000 online terminals connected.
A central computer in the network, installed in the Hebrew University in Jerusalem, is serving the academic network as the UNION CENTRAL CATALOG. The Union Catalog user interface is identical to the local library OPAC interface, thus enabling all users to use the same command language for data retrieval and inter library loan activities.
The transfer in the network between the local library to the central database is done in a transparent mode. That is, users are not aware of the switch between remote nodes. This switch is done internally in ALEPH as part of the OPAC functions.
In the network of the university libraries, any computer and catalogue can be accessed from any site, effectively opening country-wide access to all the library's catalogs. The system utilizes ILAN the Israeli academic network. As this network is connected to EARN and INTERNET, users from out of Israel have the same opportunity to access the University libraries' catalogs.

The access of each catalog is done within an online search sessions of ALEPH with no need to exit to the operating system in order to request routing to another computer.

4.2 The interlending activities of the French academic libraries

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Christine Deschamps is a librarian. She works for the Ministere de !'Education N ationale in Paris and is involved with the development of academic libraries automation and networking in France. From 1984 to 1987 she was Library Director at the University of Paris 7. She has been a member of the IFLA (International Federation of Library Association). Standing Committee for Interlending since 1988. She is currently President of the French focal point of the European Community Action Plan for Libraries.

Abstract
This paper describes interlending activities in French academic libraries. It considers interlending as a whole: using bibliographic tools for identification and location, as well as sending requests and lending documents. New technologies have led to new interlending projects that are **also explained; these include electronic document delivery and the recent developments induced** by a project called ION: Interlending OSI Network, which will allow the linking of three different

countries of the European Community for ILL messaging, using three "incompatible" computer systems, which will be connected thanks to the open systems standardization processes (OSI). The ION project is the fore-runner to the eventual goal of interlinking libraries in Europe for the electronic transfer and management of library material.
This project will establish a pilot service between selected libraries in the United Kingdom, The Netherlands and France for international interlibrary loan requests and is co-funded by the European Community DG XIII B and the ION Consortium participants LASER, Pica, and the Ministere de !'Education N ationale.

4.3 **The virtual library**

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Stephen **J.** Druck, B.A., Head of Personal Computing Group, Weizmann Institute of Science. Israeli representative to RARE CoA. PC networking consultant to Israeli industry.

Abstract
It's a worn cliche that not since Guttenberg has there been a revolution as important to libraries, and the use of written material in general, as the introduction of computers and computer networks. This is, if anything, an understatement because computers allow us, for the first time, to store documents according to the way that we think and computer networks allow us to retrieve them anywhere.
Actually the "virtual document" entered our lives years ago. Computers changed the way we write and the medium we write on. Computer networks have enabled these documents to be transferred so easily and quickly that the ideas recorded have become independent of their publication medium or even their actual location. Compu\er networking has created a "virtual library". Correspondingly, new methods of computer-based indexing and retrieval have been developed to use this virtual library.
What is going on in our libraries today?
1. Access to databases on computers from anywhere in the world - often through public X.25 networks but increasingly over the Internet.
2. Access to OPACS (On-line Public Access Catalogs) - mainly of academic institutions which built them primarily for their own communities. These are widely used mainly because of the convenience of access via the Internet.
3. Availability of databases on CD-ROM (compact disks). These may be mounted locally on stand-alone workstations but are more and more becoming a resource on LANs, serving one **group of users or even an entire institution.**
So far, mainly secondary information sources, the tools which enable the users to get to the actual (usually, paper) documents have gone magnetic or optical, but there is a tendency in the last 2-3 years to publish primary material directly in computer-readable form. Electronic journals and full-text databases are by no means rare.

There are still many nnso!ved problems on the road to the virtual library. Surprisingly most of these problems are not technical. Publishers are moving very slowly into electronic publishing because of difficulties in collecting falr revenues and in guarding their copyrights and intellectual properties.

5. Delivering Messaging to the Desktop (1)

5.1 MULBRI a state of the art PC based messaging system to interface research networks

Presented by: Daniel Pimienta & Didier Dupuy D'Angeac
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Daniel Pimienta was born in Sept. 1950 in Casablanca (Morroco). He learn applied mathematics and computer sciences (PHD) in Nice University (France). After some experiences in software houses, he joins IBM, in the La Gaude Laboratory in France. Within IBM, he occupies, during 12 years, various positions (system programer, architect, planner and strategic marketer) in relation with the development of advanced telecommunication systems. His main focus was on conceptual architecture for voice/ data integration systems, integrated administration, performance studies, worldwide videotex market, multi-media messaging systems and OSI conformance tests. He started at the end of a 2 years assignment in the USA a progressive transition toward Latin America and the cooperation world. First, conceiving and studying a telematic project in Dominican Republic as a Unesco consultant during a sabbatical period. Then, leaving IBM, in 1988, and joining an International Governmental Organization, Union Latina, as the manager for a regional project for the providing of a comprehensive and stable solution for Latin America and the Caribbean research networking (REDALC). He completes the first studies in 1988 and arises the interest of EEC and Unesco in 1989. As REDALC Project manager, he conducts, between 1990 and 1992, in-depth studies in the field, coordinates a team spread over various countries and maintain partnership with Unesco. He conceives specific solutions for networking in developing countries. He also applies the concepts in various specific actions: cordination of the REDALC listserv, coordinating the development of the MULBRI software, formalizing the REDALC methodology, participating in the launching of the Peruvian and Dominican networks, organizing activities in teaching networks to users. He has been a networking speaker and writer in several opportunities.
Didier Dupuy d' Angeac was born, January the 5th 1947, in Grenoble, France. He has worked 24 years for IBM, mainly in the La Gaude Research Laboratory (France) and spent few years abroad: Mid-Hudson Valley (NY /USA), Hursley Laboratory (Winchester/UK), and Raleigh Laboratory (NC/USA). During his career in IBM he has been involved in various fields such as: Communication Controller Architecture and Development, Line Switching Systems

Architecture, Communication Systems Architecture (SNA, OSI and TCP /IP). He conducted a joint study with the MASI Laboratory (PARIS VI University) on OSI Class 4 Transport performance and participated to activities on International Telecommunication standards and on the EEC RACE/SPECS Project. He leached SNA and Telecommunication within IBM and outside (Master in CERAM and CITCOM, Sophia Antipolis - France). He lives in Nice (France) where he is an Independent Consultant in Computing and Telecommunication, specialised in inter-operability between heterogeneous systems. Didier Dupuy D'Angeac is designer and developper of the MULBRI software.

Abstract
MU LB RI is a software prototype, from Union Latina, to provide a state of the art, PC based, multi-lingual, network transparent interface to research networks. There is currently two working versions with very similar windows style user interfaces.
1. A version for BITNET based on VM using SIMPC for communication is internally used by Union Latina, since 1989, as a groupware to link various international branches, and have been frequently enhanced from collected user's requirements.
2. A version for UUCP using UUPC have been set up in 1992. It uses a large amount of coding and experiences from the BITNET one and has been designed to be used on a national research

network basis. It is the current interface to the Dominican Republic network and have plan for enhancement and wide distribution, at least in Latin America.
The MULBRI experience shows the possibility to facilitate the use of networks to researchers and academics, and to open the tool to secretary and/or administrative skills. The key point is to provide a tool to access the networks, hiding the complexity, and naturally integrated in the information chain, which is more PC than main frame based. Another originality of the experience is the way the user's requirements are received and solved by downloading the program updates. Last but not least, MULBRI has proven its ability to solve part of the problems of the travelling user, mainly by it's archival capabilities. MULBRI is an open development conducted with the support of International Agencies and is targeting to fulfill the same type of need than have been dressed by the Unesco data base system ISIS: a free of charge standard to be offered for the Scientific and Technical information users. There is willingness to follow on the developments in various directions: languages covering, network functions, groupware functions, network environments, terminal environments and product overall quality. Union Latine is currently seeking funding and participation to keep on with the task.

5. DELIVERING MESSAGING TO THE DESKTOP (1)

5.2 Personal mailing: a low cost solution to network services

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Cesare Dieni and Alessandro Lanari are currently managing WolfNet, one of the biggest Fidonet nodes in Italy. The system has at the moment a 1.3G B storage and more than 200 conferences, some of them originated on Usenet and imported through a UUCP bridge with Internet. They are software developers and supporters for the RIN AF project. At the moment they are also working to start the first APC node in Italy and to expand the Fido FTSC standards to suit vertical user demand.
Stefano Giordano, graduated in Electronics Engineering, cum laude, at the University of Pisa in 1990. He is currently Dottorando di llicerca at the Department of Information Engineering working within the Radar, Signal Processing and Networks group at the Progetto Finalizzato Telecomunicazioni on broadband Metropolitan Area Networks. For his studies on DQDB MANs he received the annual italian PTT (SIP) award for Electronics Engineering at the University of Pisa. Currently his main area of interest includes B-ISDN and low entry network technology for developing countries. In this area he is currently interacting with the UNESCO IIP RINAF project.
Stefano Renzi, graduated in Economics at Bocconi University, Milan in 1972, is currently Assistant Professor of Computer Science at Bocconi University as well as System Manager of the Bocconi Computer Center, which he joined in 1984. Starting as VM System Programmer, he was appointed also responsible of all the Bocconi's national and international research and academic network connections and services. Currently his main area of interest includes LAN to WAN interconnections and computer mediated communication services.

Abstract
Several recent educational and research projects are based on the basic network services offered by famous wide spread networks such as Internet, Earn, Usenet, etc. The participants of these

projects belong to a wide community that sometimes has not a direct access to an academic or

research network. Nevertheless those networks provide e-mail gateways towards several public or private networks.
The real problem is to choose, among possible different solutions, those which, at the lower costs, allow people to stay in touch and to communicate with the academic and research community. For the great diffusion of PCs, Workstations and home computers the most interesting solutions are based on switched lines, modems and special software which can support a new concept of "Personal Mailing". Dial-up IP connections, UUCP networks, X.28 PAD access are well known examples of connections to WANs obtained using low cost equipments.
In this paper we analize the possibility offered by the Fidonet network which is quickly growing (4000 nodes in 1989, more than 15000 nodes in 1992). Among low cost networks connected to the Internet, Fidonet is extremely diffused because it is based on PCs. and small computers using various operating systems (Mac, MS/DOS, Amiga, Atari, OS/2). The networks is based on a store and forward mechanism similar to that used in UUCP networks.
Recent advance in Modem technology allows users to dial up at high speeds (ranging from 2400 to over than 19200 bps) on low quality voice lines thus reducing connections times.
The Fidonet network spans over more than 60 countries and more than 15000 nodes are, at present, officially listed in the Fidonet nodelist.
In the paper we will present the various aspects of this network ranging from a its hierarchical addressing scheme, its decentralized management and services supported based on e-mail and file transfer. Different configurations of each system, depending on specialized software tools, and comparison between common packages is also presented. Management issues and how to became a registered node will be covered.

5.3 The TRILLA, a multipurpose user agent interface for PC's in Hungary

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B. Hay took master degree in mathematics in 1977 at Budapest Eotvos Lorand University. Since that she is beeing employed at MTA SZTAKI as research assistant. She got the Ph.D. level at 1982 in mathematics.
T.F. Liska took master degree in economics and mathematics in 1972 at Budapest University of Economics. Since that he was dealing with econometric modelling, operation research and computing.
Abstract
The TRILLA is an integrated user interface to provide network services including E-mail, bulletinboard and file transfer.
In Hungary an E-mail server called ELLA is operating since 1988, which is connected to the West European (and American) networks. In 1990 an other (file-transfer and bulletinboard) server was put into operation called PETRA. These servers are permanently running on an IBM mainframe, and the users who normally work on PC's can reach the services thought the X25 network starting the adequate user agent (i.e. E-mail, bulletinboard or file transfer).
The TRILLA integrates the three user agents, using the former - and still working - servers.
The TRILLA provides a standard multi-windows user interface (based on Borland's Turbo Vision) following the standard convention used in MicroSoft Windows and Macintosh systems.

5.4 Bringing E-mail to the users

Presented by: Erik Huizer

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Author's profile: The author is working for SURFnet as a senior network development officer since 1988. The author has been chairman of the former RARE WG3 on Directory Services and User Information services and User Support. Currently the author is a member of the RARE Technical Committee and of the Internet Engineering and Steering Group (OSI Integration Area). Within SURFnet the author is a.o. projectmanager of the project that aims at getting the e-mail to the users.
A bstract
While networks seem to mature and more and more money gets invested into network infras tructures, the 1m1,jor pa.rt of the "u sers" who profit from these developments are Computer Scientist , Physicists and related computer literate people. The challenge that faces a service provider like SURFnet, the Dutch Academic and Research network, is to get E-mail (and other services) to the desktops of all the other researchers, that are not so familiar with computers.
This requires an effort that covers almost all aspects of networking. Amongst these SURFnet is focussing its efforts on:
- easy to use and well integrated Mail User Interfaces on the users desktop;
- Information services with useful information and easy to use search facilities;
- Support for User groups;
This paper deals with the first of these three aspects, and it will focus on the results of the SURFnet project that piloted various Mail User Interfaces on local area networks. The project aimed at connecting users on all kinds of Workstations (mainly PCs and Macintoshes) to the Wide Area Mailnetwork, independent of whatever E-mail protocol is used on the LAN. The project :finishes in September 1992. The results of the project will be presented, and conclusions will be discussed.
Utrecht, 8-6-1992.

6. Central and Eastern Europe

6.1 Modified ASTRA-databases at CS-nodes

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Author's profile: Previously the algebraic theory of semigroups and categories afterwards CDS/ISIS retrieval system and its implementation on IBM compatible main-frame computers; modification of CDS/ISIS batch procedures under VM/CMS particularly for the educational purposes; Czech diacritics and the sorting by standard computer program; distinctions of EC-software on IBM main-frames.
Abstract
To illustrate mail service and the access to the batch machine (in the IBM VM/CMS system) to students a procedure BDOTAZ that activates batch retrieval program to the ISIS database and then the mail procedure sending the result back was originally prepared. The return address was extracted from heading fields of mail in cooperation with the batch machine BATPROF EXECprocedure. The mentioned procedures may run on usual CMSBATCH-machine giving the simple way how to access the databases in CDS/ISIS/VS system from EARN-net and EUnet. Using the UNESCO CDS/ISIS database retrieval system (VSAM-version) the databases could be by OS/VS system built into VSAM-catalogue that is read-sharing by CMSBTACH-machine. In the first version the complete input file, required by the ISIS batch retrieval program, had to be sent in a letter. The second version required only two lines to be sent in a letter, the JOB-card and the line with a search formulation.
A few modification in ASTRAO XEDIT (that in addition enables to call a short ASTRABI EXEC) realize the sending of ASTRA FILE to the described CMSBATCH. As usually practised

in ASTRA the file is sent by the SENDFILE-procedure but before sending it has been modified to be similar for CMSBATCH as a mail-letter. The access to all other ASTRA databases is of course of unchanged way.
Only small changes have been done in the third version of BDOTAZ-procedure on batch machine. Number of documents and the retrieved terms are given back to the sender as RS CS-messages and the retrieved documents are sent back directly (without mailers). The both realized under particular conditions typical for ASTRA-exec in EARN /BITNET, for example address in form with

the AT. That version of BDOTAZ works on the batch machine ISISB AT CSEARN and BATCH AT CSPGEUll.
In the simple topology of EARN in Czechoslovakia (and usually during a weak transfer in the direction from CS-nodes to the CSEARN) such easily installed software works at CS-nodes presently very similarly to the original ASTRA databases. The unsubstantial CPU requirements of batch machine are *also* significant for information retrieval service due to the small efficienty of computers at CS-nodes.
Retrieved documents are implicitly sent in format prepared by database administrator (in ISIS print-format language). To illustrate the down-loading to the students as "ASTRA software and reports" ISISB AT CSEARN sends the whole document converted into ISO 2709 interchange format.
At present the CSEARN computer is also the Internet node EARN.CVUT.CS. In cooperation with the Computing Center of Czech Technical University the main algorithm of library search can be shown at that node on ISIS databases.

6.2 Database services in Hungary, supported by the IIF Program

Presented by: Beatrix Toth or Ferenc Springer
Authors: Beatrix Toth, Miklos Nagy & Ferenc Springer
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Authors' profile:
Miklos Nagy Having worked for the IIF Program, as the leader of IIFP Coordination Office, took a degree from the Technical University of Budapest as an electrical engineer.
Beatrix Toth and Ferenc Springer Both of them have responsibility for the realization of IIF program, especially for the central services. They are mathematicians, having degree from the Lorand Eotvos University.
Abstract
1. Introduction
The IIFP (Information Infrastructure Development Program) started in 1986. The main goal was to establish a computer network (X.25) and to provide many applications on it, like information and communication services.
The following services are provided:
- National and international e-mail service with connection to EUNET (ELLA)
- Bulletin board services (ELF)
- File transmission services (PETRA)
- Full screen access
- Database access
2. DATABASE service
By the end of 1991 about 100 databases and library catalogs were built by the support of IIF Program.
Databases
The program primarily aimed at establishing databases for Hungarian R&D community and for high level educational institutions: therefore most of databases contain scientific, technical and cultural information, and only a few include economic, financial or business data. Therefore, the language of most databases is Hungarian. But there are some English and German too.
Servicing hosts

The databases are operating on different hosts. About half of them are on an IBM 4381, belongs to the IIFP'community. The other half are settled 6 mainframes, and some smaller machines (Micro Vax, HP 1000, IBM AT /386).

Database management systems
Most of hosts use CDS/ISIS. Nowadays we have more and more problems and limitations with ISIS, and so the IIF Program have decided the exchange of ISIS on its central computer. Some other servicing host are doing the same step, they choose a better system.
Connection to international databases
Hungarian users can access both to public domain (e.g. ASTRA, some INTERNET library catalogs) and commercial database services (e.g. DIALOG, BRS, Data-Star, ESA-IRS, ORBIT), because our network is connected to international networks, and our databases can be accessed from abroad too.

6.3 Questions of network engineering and its relation to user services in Hungary

Presented by: Istvan Tetenyi
Author: Istvan Tetenyi
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Author's profile:
I. Tetenyi took master degree in Electronic Engineering in 1977 at Technical University Budapest. Since then he is employed at MTA SZTAKI as research assistant. He received Ph.D. level in 1986 in Computer Science. The author is active in designing computer network related applications, hardware/software components.
Abstract
Stability and radical changes are opposites. User services require stability but our backlog in Hungary in the area of network technology urge radical changes. Our *aim* is to reach both goals. Problems in running everyday services are more frequent due to different factors. Faults occur more often as the systems grow fast, network operators might not have enough insight the system they run, lack of co-ordination, experience, etc. The role of fault tolerance is emphasized and examples are shown.
The paper stresses the role of network engineering, the task which had to be practiced very carefully in order to provide a smooth transition from one stage to another.
Four stages of the transition, which includes the introduction of new services like NJE, IP, SMTP /X.25 in the last 18 months, is outlined.
The following areas of network engineering were identified:
- introduction of new services on the present X.25 network
- the limits of the popular ELLA e-mail system
- the selection of the mall services provided by UUCP, SMTP, NJE
- the harmonization of NEWS feed.
The results of engineering X.25, the ELLA electronic mail system, Earn services, mall, IP are shown. Most of the changes took place in the computer center of the Computer and Automation Institute, but its implications influenced the whole R&D community in Hungary.

6.4 On Networking in Baltic Countries

Presented by: Algirdas Pakstas
Authors: Algirdas Pakstas & Sonata Pakstiene
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Authors' profile:
Algirdas Pakstas *:* Software development for distributed computer control systems and realtime

systems, networking, protocols, formal methods, configuration management, compiler construction.
Sonata Pakstiene *:* Simulation of message passing in distributed real-time systems and networks, networking.
Abstract
This paper deals with ·networking in Baltic countries (Lithuania, Latvia and Estonia). Short geographical and historical review of this region is presented. Existing communication and networking infrastructures are described. Networking activity in Soviet period is reviewed (VNIIPAS terminal using, ACADEMNET experience, FIDOnet). Networking activity in Lithuania and Latvia during the last years is reviewed in more details (Internet-UUCP, EARN/BITNET, X.400). Available network mailing lists are presented. Some of network-based computer applications are shown. Current status and networking alternatives are discussed.

7. User Support Panel

7.1 User support: working together **in** Europe

Presented by: Jill Foster
Author: Jill Foster
Postal address: Computing Service - The University - Newcastle-upon-Tyne - NEl 7RU, UK
Author's profile:
Jill Foster has spent the last twelve years with the Development Group of the Computing Service, University of Newcastle: the first 10 years as a systems programmer in the Network Group and now as Manager of the NISP /Mailbase Service. She has been actively involved with JANET User Groups and in promoting the use of the network, particularly by non-traditional computer users. Part of NISP II involves encouraging and training selected user communities to use the network. To extend this activity, a NISP /ITTI project has just started which will collect and produce network training materials. From early 1988 Jill has been actively involved with (the European) RARE User Support and Information Services (USIS) Working Group. She chaired the RARE WG3 USIS group and now chairs the new RARE !SUS (Information Services and User Support) WG. Several of the COSINE projects resulted from the work of these groups. Liaison with others is a vital part of providing good user support. Jill represents RARE ISUS WG at IETF (Internet Engineering Task Force) meetings and is to co-chair joint RARE-IETF WGs in these areas.

7.2 Changing the user services paradigm: serving the global information technology user

Presented by: Carolynne J. Lambert
Author: Carolynne J. Lambert
Postal address: Cornell Information Technologies, 217 Garden Ave., 424 Computing & Communications Center, Cornell University, Ithaca, NY, USA 14853
Author's profile:
Carolynne J . Lambert is the Assistant Director for General Support Services at Cornell Information Technologies. In her role, Ms. Lambert is responsible for the development, management and assessment of a wide range of user service programs. Major areas of responsibility include: user consulting services; technology training and education programs; central systems registration, authentication, and accounting; network information center services; and research and development of new information discovery tools and techniques. In addition, she assumes a leadership role in a variety of policy and procedure workgroups that seek to address the role of information technologies and related services in a major research and education setting. Ms. Lambert is a member of the ACM and Educom and has actively participated in panels, presentations, and workshops on user service issues.
Abstract
One of the many goals of creating a global research and education network is the expansion of

the community the network serves. The advent of wide- and local-area networking technology has had a dramatic impact on both the demand for and nature of user support. As the technology is fully deployed and becomes accessible to an increasingly diverse set of people, a new paradigm for supporting the user population will be required. As user service providers we must recognize the need for such change and work to develop structures that make both the technology and the information useful to clients from all disciplines, at all levels of technological skill.
Most existing user support structures are based upon traditional models originally designed for reference librarians, information centers, help desks, or campus teachers and consultants. These conventional approaches are contingent upon physical proximity and direct access to resources such as classrooms, books, support personnel, and central timesharing systems. Now, with global networks accessible by a growing portion of the user population, we can no longer predicate successful service delivery on these established methods. We must consider how to support the global user with support requirements not specific to time or dependent upon a single location. The user who might well have asked for support from his or her campus yesterday is now requesting that support from across the state or perhaps even the globe. The support request is less likely to be "How do I use t his particular application?" but rather "Where can I find this particular piece of information?" or "How can I share this information with others on the network?"
In response to these changes, Cornell Information Technologies (CIT) is implementing a new service delivery model designed to meet the changing needs of the community by leveraging the technology. This model utilizes a broad range of information discovery tools and service techniques designed to reduce user dependence upon person-to-person, human-based support. We are testing new approaches to consulting, training, and publishing documentation that exploit technologies,

where access and usage are less constrained by time, location, and availability of human resources. This paper presents CIT's efforts in establishing a new model to support the global information technology user.

8. New Global Information Tools (2)

8.1 Hyper-G: a modern hypermedia information system

Presented by: Frank Kappe
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Postal address: Institute for Information Processing and Computer Supported New Media (IICM), Graz University of Technology, Schieszstattgasse 4a, A-8010 Graz, AUSTRIA
Speaker's profile: Having studied "technical mathematics" (computer science) at the Graz Technical University, took an MSc from that university in 1988, followed by an PhD in 1991. Area of research interest has shifted from interactive computer graphics (graphics editing, computer animation) to hypermedia. Now head of hypermedia group at the IICM, and in charge of the Hyper-G project. Also coordinating hypermedia activities with the Institute of Multi-Media Information Systems (IMMIS) of Joanneum Research.
Abstract
Hyper-G is the name of an ambitious hypermedia project currently being developed as a joint effort by a number of institutes of the IIG (Institutes for Information-Processing Graz) and the Computing and Information Services Center of the Graz University of Technology and the Austrian Computer Society.
Hyper-G combines concepts of hypermedia, information retrieval systems, and documentation systems with aspects of communication and collaboration, and computer supported teaching and learning. It forms the basis of a general-purpose, large-scale, multi-user University Information System. The system provides special support for distribution of information and processing, as well as integration of remote databases and similar tools (e.g. World-Wide Web, Gopher, WAIS).
The application areas currently investigated within our University Information System can be roughly divided into four areas:
Research: We would expect a university information system to give the individual scientist immediate

access to the results of other researchers. The system should offer easy-to-use access to publications, libraries and databases of interest. Also, research areas of the university should be documented to others.
Teaching: As teaching is one of the main responsibilities of a university, a dedicated university information system can be expected to support the processes of teaching, training and learning.

Administration: In this this category, the system should support access and maintenance of relevant legal documents, minutes of meetings, rules and regulations, student records, the library, room management, the organization of meetings, etc.
Communication: Within all of above areas, communication and collaboration of individuals or groups (e.g. between scientists, teachers and students, students and administration) should be supported in an organized way by the system.
As a modern hypermedia system, Hyper-G features multimedia document types, collections, guided tours, advanced searching capabilities, bidirectional links, automatic **link** maintenance and generation, multilingual documents, access rights, multiple user interface metaphors, and different user identification modes. A demonstration of the system will be given.

8.2 **The Archie Project**

Presented by: P. Deutsch
Abstract
The current version of archie is probably one of the most popular "proto-services" on the net. Although a simple idea, it provides a useful service and was the first of a crop of new services that have appeared in the past year or so.
We're now just about to put the follow-on to archie into beta test. This new version offers extensions and improvements to the original FTP database, and more importantly the ability to create and maintain other databases using a variety of techniques for data gathering and WAIS and FTP as access methods.
With this new release we hope service providers will begin offering a variety of automatically maintained databases to the Internet. Services we'd like to see immediately include dynamically maintained directories of email mailing lists, .on-line library catalogues, detailed explanations of archive contents, information on available publications, software, etc. Basically, with the new release we expect to be able to gather any distributed collection of information into a central database for searching by users. This would be appropriate whenever the cost of locating and searching the information providers themselves directly makes it infeasible for individual users to do so directly.
It is our belief that this new version of archie will be the prototype for a wide variety of information service providers in the next couple of years. The time has come for Internet information service providers to get organized and I believe that we have at least one model for how they can do so.

8.3 The Soft Pages Project - optimized document retrieval

Presented by: Thomas Johannsen
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Speaker's profile:
Thomas Johannsen received a Dipl.-Ing. degree (M.E.) in electrical engineering from Technical University of Dresden, Germany. His interests include local and wide area computer networks. As research assistant at TU Dresden he was involved with OSI-LANs. Currently, he is working at Tohoku University Sendai, Japan, on network management issues using the X.500

Directory.
With the growing of number and size of electronic archives for documents, programs and the like, the problem of finding and retrieving a specific file becomes more and more complex. While users basically are interested in getting a certain piece of information any how from anywhere, for network managers retrieval methods and ways are relevant. One concern is high network load. FTP causes up to 50 % of backbone traffic. This trunk route traffic (using rare bandwidth in most cases) can be reduced by making more use of copies of documents held at file servers near the user. For this purpose it is necessary to hold frequently asked files at local servers and to help users to find files there or at other sites that are near. The latter part is subject of this project.
The Soft Pages Project combines an Archie-like file look-up service with network configuration knowledge and thus gives a suggestion how to retrieve a document in a network traffic optimized manner. This is done by giving Internet (site to site) connections a cost index and then comparing alternatives by their cost index. Cost index is a parameter calculated from line properties (e.g. speed, average traffic, charge for usage) and can be weighted for policy reasons (e.g. giving international links a higher cost index than national). By this way we can evaluate file servers with respect to the properties of connections from the users site to those file server sites. If a document is stored at two or more sites, the site with the lowest cost index (which naturally will be the "nearest" in network terms) will be chosen for retrieval. The network configuration information necessary for line evaluation is stored with the X.500 Directory and therefore globally available.
Information about the contents of file servers is kept by Soft Pages in the Directory, as well. For each file server, names and attributes of its files are stored and updated periodically. This provides global access to Archie-like information for all registered file servers and, furthermore, opens the way to store document description together with the file name. Thus, document search is not restricted to file name matches but might be run for keywords as well. A Soft Pages User Agent basically interacts with the Directory for finding a pointer to the "best" copy of a file wanted by a user.
Tohoku University, AIC Systems Lab. and WIDE are working on the Soft Pages Project. A pilot consisting of two Directory System Agents (DSAs) is running at AIC Systems Lab. and can be

accessed from other participants. Work has been done to provide an X-Windows based Soft Pages User Agent. The Directory Information Base of this pilot holds entries for nearly all (connected) IP networks in Japan and provides file information for roughly 25 registered anonymous ftp sites from Japan.

9. Special Interest Communities (1)

9.1 The Telecommunity Project of the Electronic Peirce Consortium

Presented by:
Prof. Mary Keeler, Visiting Research Associate, Indiana University
Prof. Christian Kloesel, Peirce Edition Project, Indiana University
Dr. Michael Neuman, Center for Text & Technology, Georgetown University
Prof. Joseph Ransdell, Dept. of Philosophy, Texas Tech. University
Dr. Allen R.enear; Senjor Planning A_n(l.Jyi;;t, CIS; Brown lTniversity
Abstract
As networks give ever more access to archived material in electronic form we may come to consider this medium much more effective than the book for presenting and preserving an author's work. The manuscripts of Charles Sanders Peirce provide a case in point. Peirce, whose wideranging ideas have been the original source for nearly everything that is distinctly American in American philosophy, is increasingly regarded as a seminal figure by scholars in the humanities and sciences, and a new thirty-volume, selected chronological edition is being prepared by the Peirce Edition Project and Indiana University Press. Yet for several reasons the enormous corpus of Peirce's work calls for presentation in an electronic form: first, that because of idiosyncrasies of

Peirce's compositional method there is a vast quantity of unpublished material which will never be available in paper format, and second, that when the peculiarities of his compositional method are taken together with the disordered condition in which the manuscripts have been preserved, the result is a body of material that often cannot be efficiently ordered according to any scheme in which the text is physically bound to the paper page. Since such problems are easily solved electronically, the Electronic Peirce Consortium, in collaboration with the Peirce Edition Project, is at work on such an electronic version of Peirce's work.

One component of the EPC project consists of the primary material. Each MS page will be accessible in three forms: (1) as digitized text encoded with SGML in some extension of the TEI guidelines; (2) as bitmapped image of the original physical page; and (3) as catalogued in perhaps three dozen biographical and bibliographical database fields. A second component of the project is a model research environment, based on the forthcoming National Research and Education Network, that would include databases of secondary material, a variety of tools for textual analysis, and emerging network communication features. Peirce envisioned a community of inquirers dedicated to advancing toward consensus and yet aware that, because of ever better means of observation, new evidence would forever prevent them from reaching absolute truth. This is the vital, evolving mode of inquiry that we hope to capture in the electronic context.

We are committed to the open architecture and conformance standards of international information processing (such as SGML, Z39.50, SQL, or Unicode/IS010646) by our goals of flexibility, extensibility, and interoperability. Personal computer client software that interfaces with the network environment will support the graphical user interfaces (such as MS Windows, OS/2, Macintosh, or X-Windows) to give users access to the Telecommunity by means of any local system software they prefer, unconstrained by predetermined feature sets or special data formats, thereby promoting ease of use and supporting creative inquiry through open-ended possibilities for access, analysis, and communication.

The imminent development of NREN in the United States will bring with it the need to develop new facilities for communication, collaboration, and critical control that are largely unprecedented. At the request of the National Science Foundation's Studies in Science, Technology, and Society Program, the EPC organized an invitational symposium, held in Washington, D.C, in June 1992, where experts in network development, database and interface design, digital archiving methods, electronic information management, and user research met with creators and users of electronic resources to consider how current and planned projects can help shape the development of the new communication medium to support "telecommunities" for learning and research. The technological feasibility of supporting the coordinated work of such communities will depend on appropriate network development dictated by the requirements for the intellectual viability of groups of researchers and learners communicating by means of networked computer-based expression. Those **attending the synipoSium generally agreed- that the EPC₁s propOsed Project; tO-buiH:fart** exper1ri1ert~ ta.I telecommunity based on the Peirce corpus, could serve as incentive to others who might create similar support for collaborative inquiry in the humanities and so help shape the development of **network technology across the academic spectrum.**

9.2 The Genethon solution to managing large scale biological data flow: a networked approach

Presented by: Philippe Gesnouin, Patricia Rodriguez-Tome & Claude Scarpelli.
Authors: Philippe Gesnouin, Patricia Rodriguez-Tome & Claude Scarpelli
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Authors' profile:
Philippe Gesnouin : Data Acquisition Manager
Patricia Rodriguez-Tome : Data Manager
Claude Scarpelli : System Manager

Abstract
Decoding the human genome is one of the most exiting challenges of the 21st century. In this

perspective, Genethon has been created by the CEPH* and the .P:i..FM** in i990. 'l'l1is center has two main purposes:
- generate large scale and high quality data on the human genome.
- provide the scientific community with technological tools allowing the rapid identification of genes.

Several main lines have been developed in parallel in an attempt to build an integrated map of the human genome. For all these projects, we have had to face a need for automation at each step due to the huge amount of data. The rule has been to identify the essential tasks and integrate them in a continuous procedure.

Our equipment consists of about twenty .UNIX machines and fifty Macintoshes connected through a local network to the Internet world. More than 30 Gb are available through the network including 1 Gb of freeware sources. Users can access the computers with standard X terminals throughout the building. The data, images and sequences, are being produced by various types of devices controlled by Macintoshes, PC's or Sun Workstations. We use CAP (from Columbia University) to support the standard Apple protocols (Appletalk Filing Protocol, Printer Access Protocol), and TCP /IP to implement Telnet (NCSA), ftp (Hyper FTP) and mail (POP Mail). The PC's (MSDOS and OS2) are connected to the network using commercial software (Sun PC NFS and PC/TCP+ from FTP Software). The data are stored in the format best suited to the subsequent analysis, for exemple Unix file systems, relational databases, etc. Most of the analysis programs are non interactive and have very different execution times: some must be run 500 times but only take 2 seconds of cpu time, others need be run only once but will take up to 3 weeks of cpu time! Most machines are potential computing servers and some algorithms can be performed in a distributed fashion on multiple servers on a network. The data difficult to reproduce (too long or too expensive) are recorded on magneto-optical disks. In the end, the whole human genome map will be made public and freely accessible by various software like Wais, Gopher, mail server as part of an examplary international collaboration.

Genethon must actually be seen as one of the first units from a larger electronic community among which information will be exchanged in "real time" on an automatic basis.

9.3 CAOS/CAMM services, towards data sharing and distributed computing in a nation wide network for chemical research and education

Presented by: Jan H. Noordik
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Author's profile: X-ray Crystallographer, Computational Chemistry, Managing and Scientific Director of the CAOS/CAMM Center; The Dutch National Facility for Computer Assisted Chemistry, a facility for nation wide academic chemical research network services.

Abstract

In the last decade, computer tools (hardware, programs and databases) have become indispensable in ChemkaJ Rl>sea.rch .and Education. Basic needs for Chemical Research include large databases for reaction retrieval and synthesis planning, databases with 3D structural data, databases with protein- and nucleic acid sequence data, and their associated access- and retrieval software. Building on the developing communication and information infrastructure in The Nether lands (SURFnet; 64kb/s to 2Mb/s network) the CAOS/CAMM Center offers researchers at all Academic Institutions, access to a multi user, interactive, and integrated system of advanced computer assisted chemistry tools from a variety of end-user terminals, PC's or workstations.

All services are provided thru user friendly menu systems in a multi operating system environment, making use of local cpu power if possible. This setup avoids duplication of efforts in database implementation and maintenance, secures data integrity, and is very cost efficient. Moreover, this strategy can evolve with developing communication and information technology (X, client/server). Development and current operation of the CAOS/CAMM Center will be presented, with emphasis on menu development and shielding of the end user from specific computer system "features",

and examples of applications in both Research and Education will be shown.

lo

The Electronic Library (2)

Supporting a million users

Terry Morrow

thor: Terry Morrow

7 :Stal address: Bath University Computing Services (BIDS) - Claverton Down - BATH BA2

mgdom

'-l.thor's profile: The author has been working in the UK academic computing environment (:;ce 1976. He is currently Marketing and Training Manager for Bath Information & Data Services IDS), and in this role has published several articles and given a number of presentations at events '-lcb as the UK's JANET User Services Workshop at Kent University (10-11 Sept 1991), and the ore recent 3rd Joint European Networking Conference in Innsbruck. He is a grant holder under ':t' e UK's UFCISC (University Funding Council's Information Systems Committee) Informat ion l1 ech.nology Training Initiative with a remit to develop a set of t raining materials to support the lI>S ISi Data Service. Through his interests in computer graphics, he is also a member of the urographics Executive Board and Executive Committee, and a member of the Eurographics UK C:bapter Committee.

Abstract

In February 1991 a new UK bibliographic data service was launched. It is believed to be a world first - a national citation database service potentially available to tens of thousands of academics and hundreds of thousands of students, and free at the point of delivery. There are of the order of i million students, research workers and academic staff working in higher education or government research establishments in the UK, all of whom are potentially interested in and eligible to use this service.

The BIDS (Bath Information & Data Services) ISI Data Service provides access to citation data Upplied by the Institute for Scientific Information. The data, which is updated weekly, consists of formation about papers and other material that have appeared in around 7000 selected journals blished worldwide, and includes full details of any references that might have appeared at the of the article. The database also includes details of proceedings from about 4000 conferences tr. In all, the database contains details of around 12 million items.

his data has previously been accessed by academics from all disciplines using ISI's printed ations, or by using CD-ROM, or through one of the commercial data services such as Dialog, ar or DIMDI. Because of their pay-as-you-use charging mechanisms, the commercial services \lly accessed by librarians acting as intermediaries.

Access to the BIDS ISI service is provided directly to end-users via terminals connected to JANET (the UK's academic network), and JANET is also used to deliver search results back to the user via e-mail. Permission to use the service is granted by site license, and this license entitles any member of a subscribing institution (staff, postgraduate, undergraduate, research worker etc) to unlimited access. The service is growing rapidly in popularity, and at the time of writing there are around 7 ,500 accesses a week.

Being a networked service, it is freely available from outside the library and this wide area access together with the scale of use has raised new problems of how to deliver effective support and instruction. One-to-one advice by library, computer centre, or BIDS service staff is simply not practical for the vast majority of users.

This paper will describe the various strategies that were adopted to meet these problems,

including menu design, effective online help, and support hierarchies. It will show how collaboration was used both in .• the design of the service itself, and in the development of a pack of training support materials. This last project was underwritten by a centraily funded UK Initiative for Training in the use of Information Technology, and the paper will describe how the contributions of librarians were organised, and discuss the importance of this collaboration in designing appropriate and widely used materials.

[ISI and Institute for Scientific Information are registered trade marks]

10.2 Project PegUn - A great library on every scholar's desk

Presented by: Willem Scholten
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Author's profile: I have worked since August 1986 for the law school, implementing network services for its faculty and students. Currently I'm working on a project which will eventually bring the scholarly library resources to all researchers desk. This project is relying heavily on our current network infrastructure.

Abstract

Project Peg Un is an attempt to provide online access to the holdings of the Columbia Law library in textual and image form. It is a multi year project which is employing the latest techniques in text retrieval and hnage :retrieval.

The systems is based on the WAIS frontend as the retrieval station for the user while the backend search engine is formed by a Thinking Machines Super Computer, (CM2-32k) which is installed in the Columbia law library.

The system uses a search algorithm which allows for searching large quantities of 'none' perfect text and providing for a extremely high recall and precision. However the user never gets to see the 'none' perfect text indexes, but is returned the digitized image of the original item.

Research in this project is focusing on precision and recall of none perfect textual items. As well as adding tools to allow for receiving direct electronic downloads. Data received in electronic form, will conceivable be SGML marked and using the same search station, WAIS, typeset to the screen to recreate back the original page layout as intended by the author.

The test system currently contains our bibliographic holdings, a sample MedLine database covering 1 year, UN documents index (Courtesy of the UN Library system), digitized UN documents from the committee on Human Rights.

It is the intend that this system will be used to attack our large scale preservation problems (175,000 volumes are in need of preservation!), space problem, as well as make our library more accessible by scholars around the country or for that matter around the world. Of course one can not see this separated from the need to adapt to the changing way information is distributed by publishers and governments.

11. Delivering Messaging to the Desktop (2)

11.l The GUI Mail

Presented by: Gideon Hollander
Author: Client/Server Technology
Postal address: P.O.Box 43227 - Tel Aviv - ISRAEL 61430
Speaker's profile: Served in Israel Defense Force as an R&D manager of an Expert Systems and AI team. 2 years ago, established a start-up specializing in client/server technology. Developed a groundbreaking frontware which automatically converts IBM/3270 programs into Graphical User Interface (GUI) applications. "The GUI Mail" is a sample of an MS-Windows application which

front-ends the VM-MAIL.

Abstract

History

Electronic Mail (E-Mail) became part of our life routine. Usually we start our day with reading our mail on the terminals (or PC via emulation). The idea is not new, we have had the E-Mail products for a very long time. Before Personal Computers (PC) became part of our desks, IBM had created an E-Mail product which runs on IBM MF computers. This product was distributed freely all over the world's universities. The impact was unbelievable. Until today, millions of users are using this product. At the time the product was delivered, its user interface was the state of the art. But today, when GUI and SAA-CUA are standards, all of these ancient E-MAIL are complicated.

The first question raised is:

How do I improve the existing E-mail user interface ?

The answer is not simple. For small institutions, which have networked all their users, its better to buy one of the many E-Mail products for LAN. For the other institutions, which have E-Mail on their Main Frames, we offer the following solution: The GUI Mail.

The GUI Mail

The GUI Mail is a frontware. A frontware is an application which runs on the clients Personal Computer (PC) and "front-ends" an existing MF application (e.g.: IBM MF' E-Mail). The application on the PC displays a new graphical mail (under MS-Windows or OS /2), based on the MF

E-Mail, without host modification (no changes required on MF). Mall received on the MF will be displayed on the PC. The user will be able to use the PC features (e.g.: his favorite editor) for editing his mall. By using such SAA-CUA application, user interface becomes a lot easier and more friendly. Learning time reduces and cooperative processing becomes real. Users who still have the old MF terminals, will not be effected, they can use the old MF E-Mall as regular and in parallel. But, as soon as they'll be equipped with a PC, The GUI Mail will "front-end" their letters.

Environment

Today, The GUI Mail runs as a MS-Windows application and "front-ends" RiceMall for IBM VM. The application supports any EHLLAPI driver (e.g.: IRMA) in addltion to the VTlOO emulation via IBM' 7171 controller. Shortly, TelNet driver will be added (EtherNet). In the future Dec Mail and Sun Mail will be supported. These will make The GUI Mall to be the standard mall application for MF E-mail!

National Language Support

As a frontware application, the MF becomes a data server. The interface could be in different languages! For example: French users may use The GUI Mall and get all the headlines, messages etc. in French!!

Summary of benefits

* **Ease of use.**
*SAA-CUA compatible.
* No changes to host.
* Fast implementation.
* National language support.
* One application for several Maln Frames.

Support

The GUI Mail was developed by Client/Server Technology Inc., using "The GUI for 3270" in cooperation with the University of Tel-Aviv.

Client/Server Technology (CST) offers The GUI Mall for VM Mail free to the academic network community.

Demonstration

Description

CST wishes to demonstrate The GUI Mail for VM Mail in your terminal room. The demonstration will be a "live show" of the product running under MS-Windows.

Requirements
- PC 486 - 33Mhz
- MS-Windows installed.
- Communication card to VM (e.g.: DCA-IRMA) which supports HLLAPI under MS-Windows.
- Access to VM running RiceMall.

12. User Support

12.1 REPORTER - a generic event reporting system

Presented by: W. Scott Currie
Authors: W. Scott Currie & Tony Gibbons
Postal address: Edinburgh University Computing Services - Kings Buildings - Mayfield Road - Edinburgh EH9 3JZ - Scotland
Authors' profile:
W. Scott Currie is the Manager of the Network Services Division of Edinburgh University Computing Services. He has been involved in Local Area Networks for the pMt 10 years, writing two books on the subject and giving lectures and courses. He is also on serveral UK academic networking committees.
Tony Gibbons has for several years been manager of the Edinburgh Multi-Access System (EMAS) team at the Computing Services, EMAS being until recently the main central operating system at Edinburgh University .. He is now involved in systems and applications software development on Unix, including the REPORTER system.
Abstract
REPORTER is a system developed at Edinburgh University Computing Services for the recording of events plus any follow-up information on those events. Originally developed for operating system bug reports, this paper describes two of its more recent applications, COMREP which is a "trouble ticket" system used for network fault reports and NET JOBS which is a network installation job tracking system.
In addition to recording all the information pertinent to an event, e.g. a network fault, REPORTER will send the original report, and all subsequent comments on the report, to a specified list of e-mail recipients, thus ensuring that information is rapidly distributed to the fault investigation teams. The system interfaces to the "standard" UNIX /bin/mail interface, and categorises reports by subject and subheading. An "action by" field is also implemented, to indicate who is expected to perform the next action. Users of the system, who can be accredited at one of several access levels, can scan both current and old reports, looking for keywords in either the subject, subheading or "action by" fields, or multiple combinations thereof.
The paper concludes by examining futnre applications currently under consideration, including recording User Support queries and building up a repository of "folklore" for direct end-user access.

12.2 How to get support balanced

Presented by: Janneke Abbema & Xander Jansen
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Postal address: SURFnet bv - PO Box 19035 - 3501 DA Utrecht - The Netherlands
Authors' profile: The authors form the SURFnet Support Team. They work with SURFnet since 1991.
Pien Verhorst studied food-science at the Prof. Kohnstamm Academyin Amsterdam. After her graduationcshe was employed by an architect for three years. In the meantime she did a course in Videote:x. For about one year she has worked as a free-lance Videotex-editor for several employers. The case study described in this paper has been carried out by Pien Verhorst.
Xander Jansen studied psychology at Tilburg University with an emphasis on statistics and methodology. During his study he worked on various research projects on norm violation, youth development and organizational problems at schools. Recently he finished his study **with -_a p.aper on methodologii:.:a,l a,.spects -of intelligence testing.**
Janneke Abbema studied Household and Consumer Sciences at the Wageningen Agricultural

University. During her studies she did research on and a traineeship in the fields social housing, labour sociology and householdincomes.

Abstract

A network cannot exist without users. Therefore good user support is vital for the network.
Up to 1991 SURFnet had several ways to support the end-user. Users could receive publications of SURFnet: the Guide through SURFnet and the SURFnet Bulletin. The Guide through SURFnet contains information about how to use the network and for what purposes. The SURFnet Bulletin gives actual information on new features. Apart from this Network Guide and Bulletin, SURFnet gave demonstrations of "How to use SURFnet". SURFnet also trained support people of the affiliated institutes. These local support people were supposed to hand over this information to the end-user. Despite these activities, many end-users did not seem to use the network very often or did not even know abont its existence and possibilities. The information flow from SURFnet did not always reach the end-user, it seemed to be out of balance.
SURFnet decided to introduce a new kind of support: support at the users desktop; the Support Team was born. In 1991 SURFnet employed three staff members to form the SURF.net Support Team on a 4 year project basis. The Support Team supplies direct end-user support at the request of the institutes. It provides information about network possibilities and develops tailor-made courses, either in collaboration with local support groups or, if requested, for local support groups to pass on to the end-users. This kind of support is focused on the local facilities and on the special interests of the group. It should help end-users AND their local support to use the network to its fullest extent.
To get a good picture of a typical Support Team project a recent project is described. The case study describes the project with the Office of International Relations of the University of Nijmegen. This case study shows the various steps in a project. The first step is how to select a project. Several criteria are formulated in order to select the right groups. The most important

criterion is the spin-off effect of the project. After this selection a group has to be formed. In this phase of the project the cooperation of the local support people is of great importance. The next step is to write the actual course. In order to tailor a course to the customer it is made in consultation with the group. This to make sure that the important topics of their daily work are incorporated in the course. The final step is to ensure that the group will get local support when the Support Team has left the institution. It is also of great importance that the group members know where to go with their problems and questions. To signal possible problems in the future a good evaluation is required .
The most important aim of a project is to get people on their way and to keep them as global networkusers. The members of the Office of International Relations of the University of Nijmegen now use the network in their daily work to keep in touch with other Offices of International Relations of the Dutch Universities. They also use the network for international correspondence and conferences. The people in the presented project have become active members of the global network community. The tailor-made course and the guarantee of!ocal support afterwards provided a balanced support.

12.3 Taking Networking to a Wider Academic Community (NISP I User Support Activities)

Presented by: David Hartland
Author: David Hartland
Postal address: Networked Information Services Project - Computing Service - The University - Newcastle upon Tyne NEl 7RU - UK
Author's profile: Having worked for the Sports Council, as a Sports Development Officer, took a first degree in Politics and Economics at the University of Newcastle upon Tyne in 1987. This was followed by· an MSc in Computer Science at the same institution in 1990. Now employed as User Support Officer for the Networked Information Services Project.

Abstract
One of the main aims of NISP II (Networked Information Services Project) at Newcastle University is to target selected user groups __ and to_ train and encourage these group~ in the us~ of computer networks. The project commenced in July 1991 and is funded for three years by the Information Systems Committee for the UK Universities Funding Councils.
Each subject based group, from within the UK academic community, is encouraged to seek funding from an appropriate body to appoint a "group co-ordinator". NISP t.heu trains the coordinator, who is a specialist in their own field, in the use of the network and assists them in promoting a range of network services to their community. The co-ordinator then goes on to run workshops, for academics and researchers in their subject area, demonstrating many of the networkıs services. Examples of such services are:

* bulletin boards
* mailing lists
* on-line databases
* file transfer facilities

The co-ordinators also run subject specific mailing lists for their community, produce appropriate guides and documents, and identify sources of information relevant to their community. Staff from the NISP team are available to assist them in these tasks and help to monitor the groups' progress. Co-ordinators also liaise with service providers and with peer co-ordinators in other groups.
At present NISP is working with the Janet User Group for Libraries to provide network training to academic librarians and with the Economic and Social Research Council for the UK who are funding a co-ordinator's post for the social sciences. NISP are also in contact with an number of bodies, such as the Medical Research Conncil, with are view to eventually having 4-5 groups to work with.
Much of the communication and collaboration between academics and researchers in the future will undoubtedly be electronic. Developments around the corner will vastly increase the functionality of the network as a communication medium, with graphical images, audio and video transmission. NISP's user support role introduces groups of academics to networking who are "wide-eyed" at what is already available. The network gives academics and researchers the chance

to be more efficient, through the rapid dissemination and retrieval of information, through ease of discussion with colleagues and through the provision of new services to their desk top.
This paper describes how the door to the large number of services becoming available on computer networks may be opened for the wider academic community. In short, it shows how the opportunities accessible predominantly to computer scientists in the past may be made available to a wide range of disciplines.

13. Managing Network Information Services

13.1 User information system based on public domain tools

Presented by: Geza Turchanyi
Authors: Andras Arato, Eva Borbas, Janos Horvath, Nandor Horvath, Janos Nagy, Tamas Szakacs, Jozsef Tazlo, Geza Turchanyi, Balazs Ujfalussy & Terez Vaspori
Postal address: H-1525 Budapest, Hungary, p.o.b 49 - Fax: +36-1-1553376
Authors' profile:
Geza Turchanyi is a coordinator of the Internet-club of the Central Research Institute for Physics, Budapest, graduated as mathematician. He returned to Hungary in 1991 from CERN, where he was participating in the development of a Remote Procedure Call system. In CRIP he

found excellent new and old colleagues - _the other authors-, and they formed an internetclub.
He is member of the RIPE and the RARE user support working group and the Internet Society.
Nandor Horvath is the Hungarian Eunet backbone manager and he chairs the RIPE NIDUS working group. He is working for the Institute of Automation and Computing.
Andras Arato and Terez Vaspori are working in the Rehabilitation and Speech Technology Group of CRIP. They are developing talking computers and braille translators for blind people.
Eva Borbas and Jozsef Tazlo are network managers of the CRlP internal network.
Tamas Szakacs and Balazs Ujfalussy are young physicists and network coordinators of the Research Institute for Isotop Technics and the Research Institute for Solid State Physics, respectively.
Janos Horvath implemented the listserver and the WAIS.
Janos Nagy is interested in the porting of the World Wide Web under Unix SVr4.

Abstract
In autumn 1991 we formed an Internet-club to share the know-how of the Internet. This spring we started to investigate public domain information service tools in order to build a cooperative information service in the campus of the Central Research Institute for Physics, Budapest. The World Wide Web, Gopher, WAIS and a listserv were selected to start with. The talk will focus not only to the experiences gained at porting these programs, but to they impact of the user community. Other user groups joined already to the common work, and some special aspects of the information service tools - i.e their use by blind people - are under investigation too.

13.2 How to hook into the World Wide Web in a simple way

Presented by: Willem van Leeuwen
Author: Willem van Leeuwen
Postal address: NIKHEF - P.O. Box 41882 - 1009 DB Amsterdam - Netherlands
Author's **profile:** Educated as a high energy physicist the author is responsible for the computer user support at the Dutch National Institute for Nuclear Physics and High-Energy Physics (NIKHEF).
Abstract
Since November 1991 a WWW browser has been installed at NIKHEF to give easy access to XFIND, XNEWS and WHO at CERNVM and to SPIRES at SLACVM.
Since February 1992 the WWW daemon has been installed to enable keyword searches on local databases and to allow outside access to NIKHEF information.
WWW can be interfaced to existing information with simple unix shell scripts as will be demonstrated with examples.

13.3 Information delivery: a view from the U.S. Internet

Presented by: Ellen S. Hoffman
Authors: Ellen S. Hoffman
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Speaker's profile:
Ms. Hoffman is the Manager of Network Information Services for Merit Network, Inc. Merit provides information services for the University of Michigan, Merit's state-wide network, MichNet, and for the National Science Foundation Backbone Network (NSFNET). NIC services include training, documentation, consulting, on-line information delivery, and information tool development. In addition, Ms. Hoffman is a co-chair of the User Documentation Working Group of the Internet Engineering Task Force and a member of the User Services Committee of FARNET.
Abstract

Over the paest five years the U.S. progra1n for research and- education networkingj under the guidance of the U.S. National Science Foundation, has resulted in a high speed, production level infrastructure. With a stable networking .environment and many new users, new information tools have been developing at a rapid rate to help in processing and exchanging data. These tools are attempting to bring some oder to the massive quantities of data available on the Iternet.
This paper will discuss the overall development of information tools using data from surveys and statistics from the NSFNET project on application use. It will also explore some of the developing efforts, and user perspectives on the areas requiring further investigation.

14. New Global Information Tools (3)

14.1 An X.500 extension to provide a Database Information Service

Presented by: Giovanni Armanino
Authors: Giovanni Armanino, Antonio Blasco Bonito, Maurizio Martinelli, Giuseppe Alberto Romano & Giuliana Tamorri
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Authors' profile:
Giovanni Armanino graduated at University of Pisa in Science of Information.
Antonio Blasco Bonito responsible of the GARR Network Information Service and presently vice-chairman of RIPE organization.
Maurizio Martinelli graduated at University of Pisa in Science of Information
Giuseppe Alberto Romano expert in databases and networks at CNUCE, CNR's Institute.
Giuliana Tamorri graduated at University of Pisa in Science of Information, presently under contract by Digital Equipement Italia.
Abstract
The rapid growth of publicly accessible databases has increased the difficulty in knowing their existence, their contents and the way to access them. So it should be very useful to have the information about databases available online, and to have databases catalogued according to their contents. To support end users to retrieve such information, the access to such a catalog should be very powerful. On the other hand the maintanance of the information contained in the catalog could not be performed in a centralized site due to natural distribution of the information around the world.
The standard OSI X.500 is seem to be a good way to maintain a distributed catalog of online source of information. The paper describes the definition of a new object class, named "onlineDatabase", defined as subclass of the object class "onlinelnformationResource". Any database entry is mapped on the object class "onlineDatabase" and it must be provided and maintained by its producer. Using the object class "documentSeries" has been implemented a hierarchical subject index mapping the UNESCO thesaurus. This Thesaurus is used by UNESCO to index and retrieve

all document and publication processed through the computerized Documentation System of the UNESCO libraries. Any database's entry can be referred by more than one thesaurus entry. For any entry of the thesaurus it's possible to select any database dealing that argument.
A prototype implementation of the system is presented. The prototype is composed by a X.500 DSA, an end-user interface running on Unix system, and a catalogue of databases available through the ASTRA service. The end-user interface is able to retrieve the entry of the database of interest by accessing the subjects' subtree, or by directly selecting the database entry. Any database entry contains some information such as: the content, the logon and logoff procedures, the database's producers, distributors and contact persons, the network access, the source from which the database as been implemented, the cost-of-use, the database system which manages the database, where to find much more information.

14.2 The Ante-serveur, an intelligent interface to the documentary

world

Presented by: Mrs PEZERIL, Maggy, Head Librarian, Universities Libraries, Montpellier, France.
Authors: Maggy Pezril & Valerie Silva
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Speaker's profile: Head Librarian of the Universities Libraries of Montpellier (6 libraries), President of the SIBIL Network for automation of University libraries in France. Mrs.PEZERIL has University degrees in comparative literature and contemporary history, plus degree in librarianship. She is in the process of building the inter-academic Network for documentation in Montpellier and the Languedoc-Roussilion Region. She is co-pilot of the project Ante-Serveur with the LanguedocRoussillon Technology Center (MTR) and the CNUSC. The Ante-Serveur project has been financed by the State and the Region Languedoc-Roussillon. It is now in operating stage.
Mrs PEZERIL is also co-responsible for a project which is being proposed to the CEE (DG XIII) **to use the** . A. nte˜Serveur **fer the interconnection of several regions of Europe.**

Abstract
The Ante-Serveur is an answer to the problem of end-user access to electronic resources: databases, library catalogs and documentary products. It is a user-friendly interface which provides a1i users, whether knowledgeable or not, with the means of selecting just the right database or databases, of being connected automatically, of wording the query and processing resultant information with the support of intelligent tools.
Research strategy is based on relevant feed-back: after answering the initial query, the system offers guidance, by suggesting possible ·directions which enables the users to broaden or to narrow the research. The ante-server's architecture is based on automates exchanging messages and acting independently of each others. The central piece is a linguistic analyzer which transforms any natural language request into a boolean formula. The question is then sent to the different connected databases, using the specific command language of each server, by modules getting knowledge about each database.
Developed by a French company with a research agreement with the University of Caen, the Ante-serveur runs at CNUSC in Montpellier. It runs on UNIX Operating System and can be used through various kind of terminals (today: Minitel and Xll terminals).

15. Traditional Information Tools

15.1 An experimental distributed document preparation system in Hungary

Presented by: Laszlo Kovacs
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Laszlo Kovacs is member of scientific staff of the Informatics Research Laboratory of the Computer and Automation Institute of the Hungarian Academy of Sciences since 1991. Previously he was visiting associate professor in the University of Delaware and worked for the Computer Network Department of the previously mentioned institute for 10 years.
He has worked in the areas of computer network protocol design, formal description, verification and testing of protocols. He has also been involved in different development projects of software engineering. His cnrrent interests inclnde the application of the object-oriented principles and formal description techniques in the development of multi-media groupware applications.

Laszlo Kovacs is a member of the ACM, the John van Neumann Society for Computing Science, the Scientific Association for Measurements and Automation, the Scientific Association for Informatics. He is the president of HuNUG (Hungarian NeXT Users' Group).

Abstract

The paper summarizes the recent experiences learned from the design and implementation of a prototype distributed document preparation system.

Group communication is one of the key problems in CSCW. A model of distributed document is presented to provide a support for group communication. This communication technology allows users to edit electronic documents containing text, graphics and possible voice simultaneously assuming a LAN environment. The interaction between the users and the distributed system follows locally the well-known cut-copy-paste paradigm of traditional editing systems but this approach does not completely hide the patterns of communication of remote users.

The implementation of the system is based on a distributed text class in the NeXTstep environment. A new protocol has been developed to maintain the consistency of the distributed text objects during the editing sessions. Management of distributed text objects performed by remote Objective-C messaging transformed into MACH messaging is described as well.

15.2 MAILBASE: UK enhanced mailing list server

Presented by: Jill Foster

Author: Jill Foster

Postal address: Computing Service - The University - Newcastle-upon-Tyne - NEl 7RU, UK

Author's profile:

Jill Foster has spent the last twelve years with the Development Group of the Computing Service, University of Newcastle: the first 10 years as a systems programmer in the Network Group and now as Manager of the NISP /Mailbase Service. She has been actively involved with JANET User Groups and in promoting the use of the network, particularly by non-traditional computer users. Part of NISP II involves encouraging and training selected user communities to use the network. To extend this activity, a NISP /ITTI project has just started which will collect and produce network training materials. From early 1988 Jill has been actively involved with (the European) RARE User Support and Information Services (USIS) Working Group. She chaired the RARE WG3 USIS group and now chairs the new RARE !SUS **(Infor1nation Services and 'User ·sl1pport) VVG. Several of the c-OSiifE projects tesulted frorr1** the work of these groups. Liaison with others is a vital part of providing good user support. Jill represents RARE ISUS WG at IETF (Internet Engineering Task Force) meetings and is to co-chair joint RARE-IETF WGs in these areas.

Abstract

The Mailbase Enhanced Mailing List Server was developed by the NISP Project at Newcastle University with funding from the Information Systems Committee for UK Universities and Research Councils. In order to develop the functionality in line with user requirements, the prototype software was used to provide a test service for over 1000 users in the UK. As from February 1992, an improved version of the software has been used to provide a National Mailbase Service.

Use of this service is growing rapidly. There are currently 6000 users with between them over 12000 separate subscriptions to the 200 lists. Groups using Mailbase range in subject area from history to music to computational chemistry to libraries. One of the main aims of the project is to bring the use of electronic forms of communication to "non-traditional" network users. The NISP project is active in helping electronic communities form and develop.

Mailbase aims to provide groups with the ability to have focused discussions by the use of several discussion lists each for a separate narrow topic. For each group there is also a superlist which acts as the coordinating list for all these topics. A typical Mailbase group may have a number of lists which can, at the discretion of the List Owner, be "open" or "closed". List Owners may in fact allow varying degrees of public access to the information on their lists. Like LISTS ERV, the Mailbase software handles the routine administrative tasks associated with mailing lists.

This paper briefly describes the development and functionality of Mailbase and the experience of running such a service in the UK.
Mailbase also allows for on-line browsing of the publicly available information. A demonstration of this facility will also be given during the conference.

15.3 The E-mail service at U niversidade do Minho - a case study

Presented by: J.N.Ferreira
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Authors' profile:
J.N.Ferreira Graduated in 1991 in Systems and Informatics Engineering from the University of Minho, Portugal, having done his final year project as a trainee at SURFnet B.V. under the supervision of Dr E.Huizer. Since then he has been responsible for the e-mail services at the U niversidade do Minho.
A.Santos Graduated in Electrotechnical Engineering from the University of Oporto in 1980. In 1980 joined the University· of Minho, Portugal, as a member of staff of the Department of Informatics where he lectures and carries out research in computer networking. At the University's Computer Communications Centre he has contributed to the establishment and **operations of tile campus L1\.N and netvvork application servii:.:es, including· electronic** -m˜,il services. He is now in the final stage of his Ph.D. studies, in the area of Communication Protocols and Distributed Systems.
V.Freitas Graduated in Electrical and Telecommunications Engineerillg in 1972 and did his MSc and PhD at the University of Manchester, UK, in 1977 and 1980. He is an Associate Professor at the University of Minho where he lectures and coordinates research in computer communications. He has been appointed country representative in the RARE CoA since the establishment of the Association and is a member of the Board of Directors of the Portuguese Foundation for Scientific Computing (FCCN). He is presently the Director of the Portuguese national R&D network, the RCCN. .

Abstract
In this presentation we describe how, at Universidade do Minho, we approached the problem of providing a reliable e-mail service to a fast growing number of heterogeneous users.
The main problems that we faced, were:
- Using two mail protocols, SMTP and X.400, a reliable gateway between them is necessary. Which one is bi!tter?
- The management of an e-mail service requires a quick response time to problems. How to get things organized?
- The users of the e-mail service range, from those who know how to configure a sendmail.cf file themselves, to those who barely know what e-mail is about. How to provide the right interface to each one, avoiding as much as possible the use of the telnet-to-mail-host technique?
- How to keep the whole mail system flexible enough to be upgraded as the new standards become available?
- How to manage the cost of the service?
- The University of Minho spreads over two campuses, 25 Km apart, in two different cities, Braga and Guimaraes. This geographical dispersion makes the job more difficult. How to live with it?

16. The Electronic Library (3)

16.1 From virtual libraries to electronic Agoras: paradigms of scholarly communication redefined

Presented by: J. Wallmannsberger
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Abstract
In this paper recent developments in global electronic communication will be addressed from the point of view of scholars working in text-oriented disciplines. This is not meant to create new divisions in the philosophy of science, but merely focuses the attention on the global electronic **networks as textual mega-networks. Over and above the general value of onlinc services for scholars** in all scientific fields, electronically mediated communication is of particular interest to researchers engaged in text-based disciplines, since in this case electronic communication functions not only as a tool but also as an object of inquiry. This may at first seem surprising in an area such as online information processing, which has traditionally been dominated by "hard science" approaches. In this paper an attempt will be made to somewhat redress the balance and in particular to show the potential of global electronic communicatfon for the humanities scholar. The approach will be twofold: First, an assessment will be made of services and communication tools available to humanities scholars today. In the second part scenarios will be presented on how global electronic communication could be made more efficient and user-friendly. Here it will be pointed out that humanist projects, such as rhetorics or communication theory, appear to be directly relevant to the issues at hand.
The state-of-the-art report of electronic communication in the humanities will focus on the integration of OP A Cs (online public access catalogues), classical online services, networked CDROM databases and electronic mail and conferencing systems into the scholars personal working environment. An ongoing project of creating an "electronic agora" or marketplace of ideas at the University of Innsbruck will be presented.
The second and more programmatic part will address issues such as the creation of electronic mega-archives to make permanently available materials produced by electronic conferencing systems. Traditional database technologies are clearly not the appropriate tools for this purpose and hypertext-based systems will be discussed as an alternative.
Finally it will be argued that global electronic communication is in need of a new type of rhetorics which would function as a frame of reference for successful communicative action in this new areas. A tentative outline of an "electronic rhetorics" will be presented.

16.2 An automatic, E-mail library search service of a centralized documentation center in Turkey

Presented by: Prof.Dr. Faruk Arinc
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Authors' profile: All authors are staff members of the Computer Center at The Higher Educational Council of Turkey.
F .Arinc is a professor in the Middle East Technical University in Ankara, and head of the Center at HEC.
Mr. Aybas and Ms. Alp are computer engineers
Ms. Bozkurt is a programmer.
Abstract
The Computer Center of the Higher Educational Council (HEC) of Turkey has an E-Mail library service, called YOKDOK, operational since June 1992. HEC is one of the nodes of a country-wide WAN with EARN/BITNET access connecting over 20 universities and other research institutions in the country. The service is open to all users. It is not interactive but realized via file transfer.
The aim of the present paper is two folds: One is to present the available features of YOKDOK to all EARN /BITNET users. The second and probably more important is to discuss our experience and solutions to potential difficulties with those who have recently started or have planned to start similar projects.
Any user at any node in the country can send an E-Mail file of special format containing commands specific to the type of request. There are four types of requests which will soon be

increased to seven. These are: 1. Journals; 2. Theses; 3. Photocopy; 4. Dialog Search; 5. Journal Articles; 6. Conference Papers; 7. Books. Most of these types correspond to the data bases maintained in the computer at HEC.
Example request files on the different types and choices are presented and discussed together with the response files and/or error messages that the users receive.
During both the design and implementation stages, there have been several difficulties some of which we are still working on: For instance: How to handle Turkish characters which are not in the English language transferred to and from different host computers at the nodes; How to prepare short and simple yet complete and fool-proof user manuals; How to make the end users which are no computer experts correct their own mistakes by sending concise but comprehensive error messages; How to keep good statistical tract of all the requests received and responded automatically; How to make the users be aware of the changes in the program. These are some of the problematic areas discussed in the paper.

17. Special Interest Communities (2)

17.1 Support of molecular biologists

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Author's profile: After obtaining a Ph.D. in organic chemistry in Darmstadt/Germany 1986, R.D. intensified computer-related work during a Postdoc in Biophysics at the Biozentrum Basel. There, he launched the biocomputing facility in 1988, which started servicing swiss academia in 1990. Within the European Molecular Biology network (EMBnet), RD now maintains the swiss node, servicing 300+ users directly, and additionally supplying data, service, and teaching to more than 10 sites, reaching more than 10000 molecular biologists in total.
Abstract
The biological databases grow rapidly, and tools are being developed to keep the retrieval tools up-to-date. However, as many service providers.already talk about gigabyte networks and graphical user interfaces, much of the software used conforms to line-mode text terminals and connectivity is usually based on serial lines. Additionally,the user community is not or only little trained in using centralized computer facilities. With the advent of powerful UNIX Workstations which compete against the traditional VAX/VMS environment the problem of different operating systems is raised. In contrast to the earlier usage of computers by molecular biologists by specialists in charge of the maintenance locally, the users of today require to be serviced remotely, and need guidance on a variety of access paths (terminals and PCs).
The support of the molecular biology user community in Switzerland, therefore, focuses on three **inain aspects:**
1) Ease of use
A menu system can be used on either UNIX or VAX/VMS platform which mostly "hides" the operating system and provides on-line, context-sensitive help in order to navigate through the options of the software packages. This menu interface is based on a window-like look-and-fee] and requires only cursor keys on a VTlOO terminal and/or emulation in order to find the program desired (Demo possible if desired). It has been used for over 6 years in Basel, and the most recent version is available as supported version. Remote Job submission and remote processing has been implemented into the programs used, in order to use services on remote data servers. Such way, the

end user must not be familiar with networking in order to use network services. In addition, the Hierarchical Access System for Sequence Libraries in Europe (HASSLE) is about being released. This tool lets users work transparently with remote applications using the dedicated HASSLE protocol. This protocol was officially assigned to run on a particular port, so that interference with other services can be excluded.
User support is additionally provided with specifically tailored tutorials. Twice a year, handson

courses are offered to permit beginners to work on their own projects. After these one-week courses, individual support is carried on for a limited time via electronic or snail ma.ii in order to ensure that the learning is not "forgotten" and that the services are also used in routine work.

2) Minimalism **but continuity**

The development of many different options is tempting service providers to offer all tools simultaneously. However, quality of software and permanent support with respect to upgrades and added features cannot be attributed to all packages at the market. Despite the weakness of a few features, the approach to offer few but fully supported packages has been proven to be much more successful than strategies practiced at other places.

In addition to the benefit of a stable documentation (with updates on new features, but no changes in general layout and strategy) the continuity makes it possible to get local staff to teach their colleges. Not only knowledge but also success experience is essential to keep users in using **the service -thernselves rather than delegating work to** (~specialists".

3) Completeness **and** safety

Within the European Molecular Biology Network (EMBnet), data are provided on the most up-to-date basis achievable. Besides daily network connections to EMBL, updates are received from two places in the US. This way, a merge of the data received ensures to get correct, complete, and up-to-date data.

Currently, the merged data are redistributed to six other sites in Switzerland, and to three other sites in the world, which redistribute data further. Institutions who do not wish to keep their own software may obtain an own account ori the computers of Biocomputing Basel (Currently, two universities and three institutions). Instead of a single mainframe, several workstations are combined in a tight network in order to ensure the highest availability. By keeping two entirely redundant data disks prepared independently, data corruption can be excluded. Production work is separated from development, in order to make occasional drops in functionality of new products tested independent from the working area of the customers.

Summary:

The Molecular Biology community in Switzerland uses network services in order to obtain data, or search remote data sets, in a transparent way which does not require sophisticated network infrastructure but is based on solid, safe service.

17.2 Services provided by the UK Human Genome Mapping Project network to the human genetics scientific community

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Abstract

Recently, the UK Medical Research Council (MRC) has founded, as part of the UK Human

Genome Mapping Project, a Resource Centre (HGMP-RC) at the Clinical Research Centre (CRC), Harrow, Middlesex. The objectives of the HG MP-RC computing are to establish and make available a database of genes, genetic markers and map locations, and to develop new computing environments and methods for acquisition and analysis of such data. The paper gives an overview of on-line services provided by computing and networking facilities developed by the MRC to support this project. The facilities, a "client/server" network of servers, gateways and workstations from various manufacturers, are connected to a number of other computing facilities in various centres of genetics and molecular biology research excellence through national and international wide area networks. An outline of online computing services currently delivered by this system to the UK human genetics research community is provided. Database technology and architecture made available to the users common shareable data on the networks and interoperability provided on-line access to selected databases around the world. The databases currently accessed and distributed techniques employed to control data access and standard file access over local and wide area networks are discussed. The preferred method of presentation of the data after retrieval from a database would be the use of X graphical interface across the networks to provide the users with a high quality windows point and click interface. However, at present to browse a great number of databases text based information retrieval tools are being used. A good example of text retrieval is

the IRX software and the OMIM (Online Mendelian Inheritance in Man) data. Gopher and WAIS as related approaches are *also* used.

17.3 Human services networking: within and without the Internet

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Abstract
Since 1989 there has been a steady growth in human services computer networking, with an ever increasing number of new entries, each intending to provide a significant platform for communications and computer assisted problem solving. The environment has become fragmented with alternatives networks and topics, but is still sparse in terms of the total number of users. Consensus building is needed - and is currently being explored. And some initiatives have begun to approach the state of the art in internetworking terms.
Four major models have emerged. (1) The Human Services Internet provides "single subscription" access to Maternal and Child Health, Developmental Disabilities, Community Health, and Special Education networks operating on. the global corporate communications services of Sprint/GTE Educational Services, and reaches over 7,000 special health and education sites. (2) HandsNet, a private network operating on CONNECT, Inc., another business-oriented network service, is a "value added" network (1300 subscribers), that relies on the commercial DASnet to link with the world. (3) CUSSNet, begun in 1986, is a no-cost FIDONET conferences connecting about 70 local BBSs in about 7 countries. (4) HumanServe is a volunteer-supported global network set up on the non-profit computer services of the Institute for Global Communications, which links with APC (the Association for Progressive Communications) and USEnet. HumanServe links public conferences on ICC, FIDOnet feeds, and listserv internet feeds, to create an open access system.
Each of these models creates a special environment for human service workers, who do not

ordinarily have access to university-based or university-driven network models. This workshop will:
(1) Explore the recent history of human services networking,
(2) Demonstrate the distinct network models, and will, using the case of the human services,
(3) Explore the issues of fragmentation, ease of use, and cost,
(4) Examine futnre strategies of connectivity, professional sponsorship, and increased access, and
(5) Provide an opportunity for exploring the methods of seeking consensus among diverse network builders who are attempting to serve a common constituency.

17.4 Delivering a network information service for instruction and research over a regional network

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Don Carder ,js the Director of Academic Technology Support (ATS) at Cal State L.A.. The organization he directs has responsibility for the design, development, and technical and support services for all of the information systems and facilities used by six colleges of the University for instruction and research. In addition to the services provided to students and faculty at Cal State L.A., organization also provides an online archive and consulting services for social science students and faculty at 15 sister campuses of the CSU - the Social Science Data.base Archive (SSDBA). In addition to his administrative and management responsibilities, Mr. Carder has retai!led primary responsibility for the design oflarge systems, including the SSDBA .
. Janet Valade is the S11pervisor of the Network Information Services Group, a group within Academic Technology Support at California State University, Los Angeles. As part of her responsibilities, Ms. Valade is the Project Manager for the Social Science Database Archive (SSDBA).

Abstract
The California State University (CSU) is one of the largest universities in the world. There are over 17,000 faculty and 360,000 students. The twenty campuses of the CSU and the Office of the Chancellor are linked via CSUNet, a data communications network spanning the 1500 kilometers between the most northern and southern campuses. In the fall of 1991, the Los Angeles campus of the CSU offered its sister campuses an interactive network information service for social scientists - the Social Science Database Archive (SSDBA). The objective for the project was to construct a fully integrated research tool which would allow undergraduate students and faculty and graduate researchers to locate, access, and manipulate social science data. The system developed integrated large scale mass storage devices, field-oriented and text-oriented data management technologies, data manipulation tools, and "common user interface" technologies. The design goal was to reduce technical barriers and "EDP" delays to the point where the system did not prohibit the active engagement of the researcher's imagination with the research materials. Currently, the Archive contains data sets and codebooks for over 600 studies, as well as access to full text catalogs and reference tools for locating new studies. When the archive is fully instantiated, it will provide online access to the complete holdings of the ICPSR and several other research centers. This paper will discuss three issues related to the SSDBA: 1) design and development; 2) delivering state-of-the-art services in a widely distributed and heterogeneous environment; and 3) the new communications (people-to-people) services evolving out of academic communities' use of the SSDBA.

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