

# The Electronic Library Concept at the Jülich Research Center

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**ABSTRACT.** Electronic information resources are of increasing importance in modern library services, particularly in special libraries that are oriented towards science and technology. This study shows how the electronic library principle is implemented at the Central Library of the Jülich Research Center, one of the largest special libraries in Germany at one of the biggest research centers in Germany. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: [getinfo@haworthpressinc.com](mailto:getinfo@haworthpressinc.com)]*

**KEYWORDS.** German libraries, Jülich Research Center Central Library, scientific and technical libraries, special libraries-Germany

## ***THE JÜLICH RESEARCH CENTER IN THE CONTEXT OF THE GERMAN RESEARCH SYSTEM***

As a member of the Hermann von Helmholtz Association of National Research Centers (Hermann von Helmholtz-Gemeinschaft Deutscher Forschungszentren-HGF, named after the German scientist Hermann von Helmholtz, 1821-94), the Jülich Research Center (Forschungszentrum Jülich-FZJ) is one of the principal German research institutions, as are the universities and the institutes of the Max-Planck Society or the Fraunhofer Society.

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### *The Helmholtz Centers (HGF Centers)*

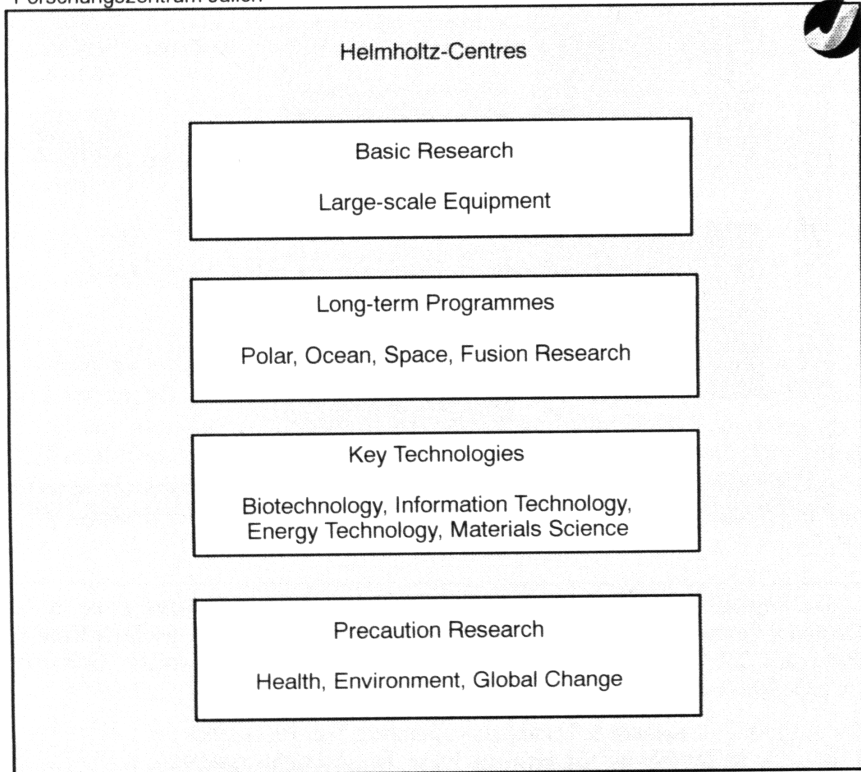
The 16 Helmholtz Centers are engaged in long-term, publicly funded, basic research projects that use large scale equipment, long-term programs (like polar, ocean, space and fusion research), key technologies (like biotechnology, information technology, energy technology and materials science) and "precaution research" (like health, environment and global change) (see Figure 1).

Although the centers are financed by the state (90% by the Federal government and 10% by the state in which they are situated), they determine their scientific research independently. The total budget is about 3.6 billion German Marks per year and the entire number of employees is about 23,000.<sup>1,2</sup>

Besides the Jülich Research Center, other important Helmholtz-Centers

FIGURE 1

Forschungszentrum Jülich



are the DLR (Deutsche Gesellschaft für Luft- und Raumfahrt) in Cologne, the Karlsruhe Research Center (Forschungszentrum Karlsruhe-FZK) and the DESY (Deutsches Elektronen-Synchrotron) in Hamburg.

### ***The Jülich Research Center (FZJ)***

The Jülich Research Center was founded in 1956. Situated on 2.2 square km, it has about 4,100 employees, of whom 1,100 are scientists, 480 post-graduate students, 250 graduate students and 300 apprentices. In addition, over 400 scientists from more than 30 countries visit each year. The 1996 budget was 540 million German Marks of which 450 million were institutional and 90 million were non-institutional. The Center was incorporated in 1990.

Cooperation with universities and polytechnics all over the world is a basic concept of the FZJ. This concept is stressed by the "Jülich model" which means that directors of the different research institutes at the FZJ are automatically appointed institute directors and university professors at a university in North-Rhine-Westphalia, thus keeping alive and even strengthening the contact with universities.

Another vital kind of cooperation exists between applied research and industry, exemplified by the large number of patents being applied for by FZJ researchers. In 1996, the Research Center set a record for a research institution of 85 patent applications with the German Patent Office and in 1997 the number exceeded 100.<sup>3</sup>

Research and development activities of the FZJ are concentrated on basic research and technical development in the following fields:

- Energy technology (energy conversion technology; exploration recovery of fossil fuels; safety research, reactor technology and nuclear waste management, nuclear fusion and plasma research)
- Structure of matter and materials research (nuclear physics, solid state research, surface and vacuum research)
- Information technology (basic research on information technology)
- Environmental precaution research (environmental research, system analysis)
- Life sciences (medical research and engineering, nuclear and radiochemistry, biotechnology, biological information systems, brain research)

The development of the research priorities shows, among other things, a trend from nuclear to non-nuclear energy research as well as the growing importance of information technology during the last ten years.

## **LITERATURE AND INFORMATION SUPPLY AT THE JÜLICH RESEARCH CENTER**

### ***The Central Library (Zentralbibliothek-ZB)***

As one of the central services and institutes at the FZJ, the Central Library is responsible for supplying literature and information to all scientists and employees, no matter where or at which institute of the FZJ they work. It is a special library that first and foremost serves the interests and information needs of the about 4,100 employees of the Research Center. Also, it is the center of the FZJ library system, which consists of approximately 50 institutional libraries. All central functions like cataloging, purchase of books and journals, barcoding, and networking are supplied by the Central Library. Apart from the internal customers there are another approximately 3,000 external customers who use the library regularly.

Since the library of the FZJ is a scientific/technical library there is a premium on up-to-date information. The customers, being used to new technologies, demand modern library technologies like OPAC and CD-ROM databases and are willing to use them not only in the library itself but also from their offices.

### ***Contents/Size/Structure of the Library***

In the whole library system (Central Library and institutional libraries) there are about 600,000 books/monographs, 280,000 scientific reports (mostly in microforms) and about 1,800 current journal titles.

The Central Library has three departments:

- *Acquisition/cataloging department* with acquisition and cataloging of monographs and journals for the whole library system,
- *User services department* with bibliographic services; production of the bibliography of publications by FZJ employees; reference/information and circulation services; stacks; copy services; interlibrary loan, collection administration and administration of transactions with exchange partners,
- Scientific information and documentation department with subject cataloging, subject specialists and online database searches.

The general library administration, the FZJ publications, the press monitor service, and the computing and networking department are staff positions and thus under direct control of the library director. There are about 45 employees working at the Central Library, most of them librarians and scientists; for the

most part, the staff at the institutional libraries have no special library training.

## *Services*

If the librarian at a special library wants to be a successful information specialist who is able to supply optimal service, he or she must always be aware of new technologies and information resources. Librarians at special libraries must constantly compare their services to new developments and state-of-the-art technology. They must also be prepared to continue their studies and devise new approaches to information management.

Librarianship is oriented towards technology. Since information technology changes rapidly, librarians and libraries have to change fast as well in order to get the most out of the vast resources information technology offers. Network OPACs and CD-ROM databases, electronic current contents services and electronic saving of internal materials nowadays are progressive services. Today most customers, especially contemporary ones and those with an academic education, demand these services. Customers know about technical progress in information technology from conventional media like newspapers, radio and TV as well as from electronic information like the Internet. They expect the library, especially if it is a scientific one, to keep up with technical progress. Furthermore they expect it to be able to communicate with them via the new media they are accustomed to, such as e-mail.<sup>4</sup> The electronic library concept at the FZJ is shown in Figure 2.

The concept of customer-oriented quality services as well as progressive and modern services is visible in the structure of the different groups within the user services department.

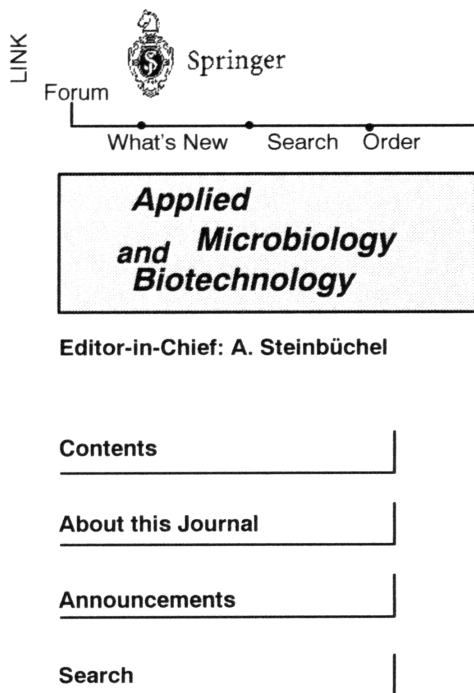
*Reading Room:* There are about 27,000 books and nearly 1,000 current journals as well as 10 years of bound volumes. Public OPAC terminals and PCs have access to more than 50 CD-ROM databases via the library LAN.

The librarians at the information desk and at the circulation desk are also equipped with OPAC terminals and PCs with access to the CD-ROM network, to online databases, and to the Internet, thus having not only a wealth of modern information equipment at their disposal, but also e-mail access, which is the commonly used method of communication for the scientists at the Research Center.

The books in the reading room are shelved in a classified sequence which reflects the main subjects of research in the Research Center.

*Stacks:* Most of the library's collection is housed in three stories of closed stacks. The User Services Department opened the first story of the stacks in summer 1997 in order to enlarge the library's free-access area, especially for journals, which are the most frequently used items in a scientific/technical library. The shelving system in the open stack area reflects that of the reading

FIGURE 2



room, combined with a color-coding system. This means that there will be a special color for each subject, and the shelves in the free-access area of the stacks will be painted accordingly. With the help of this system, orientation is made easier and the atmosphere in these formerly closed and grey stacks will be improved.

*Circulation Services:* These are equipped with an automated circulation system which is part of the integrated library system Horizon.

*CD-ROM and Diskette Database Products:* Those offered in the library are divided into two major groups:

- *General information* with books-in-print databases (like the American "Books in Print" and the German "Verzeichnis lieferbarer Bücher"), library catalogs such as the catalogs of university libraries in North-Rhine-Westphalia (HBZ), the catalog of the German Central Library for Science and Technology (TIB) and the journal database of German li-

braries (ZDB), the German National Bibliography (DNB), telephone directories, travel guides, train timetables, dictionaries (like Webster's on CD-ROM) and electronic journals and manuals.

- *Subject information* with subject-specific databases, containing mostly bibliographic information and abstracts (like INSPEC, SCISEARCH, LifeSciences, GeoRef, MathSci, Medline); current contents services (Current Contents on diskette: Life Sciences; Agriculture, Biology and Environmental Sciences; Physical, Chemical and Earth Sciences and Engineering, Computing and Technology); indices of important scientific manuals (like "Beilstein-Index" or "Ullmann-Index").

In addition, the library network provides access to an in-house database listing the complete bibliography of all publications by FZJ employees (a LARS database).

*Online Databases:* When information beyond that in the CD-ROM databases is needed, an online databases search service is available. Online searches are carried out by subject specialists more than 1,200 times a year. Our online specialists have access to more than 500 external online databases from hosts like STN, FIZ Technik, GBI, GENIOS, ESA and Knight Ridder, covering the major fields of science.

*Interlibrary Loan (ILL):* Documents that are not available in the library can be ordered by interlibrary loan. The Central Library makes use of the conventional ILL as well as quicker forms of document order and document delivery. Online ordering is possible via DBI-LINK and SUBITO, both services from the German Library Institute that contain several national catalog databases.

Fax ordering and delivery is used intensively for orders from the German Central Libraries, e.g., via TIB-Quick (a service of the German Central Library for Science and Technology in Hanover) or via the fax service of the ZB-Med (the German Central Library for Medicine in Cologne).

Other German libraries with special collections and tasks often support such systems as well, and the Central Library of the FZJ is always glad to be able to use them.

In addition to these services it is also possible to use the British Library document delivery service.

Despite the availability of high tech ILL, most of the ILL orders at the FZJ are still carried out on the conventional way. However, even this conventional ILL is automated by an in-house programmed tool that can combine data found in a CD-ROM database with ordering data. Thus orders can be printed out more easily and quickly.

*The World Wide Web (WWW):* Document delivery systems via the WWW are still being tested at the Central Library but will probably be used soon. It is a very important tool for both library public relations and scientific infor-

mation.<sup>5</sup> Through its web pages the library encourages users and non-users to pay more attention to its work and can supply scientific support for the work of the employees at the FZJ.

The Central Library web pages explain the different services, describe the databases, and list contact persons and their e-mail addresses.

There is also a search tool with which the user can search for bibliographic references of FZJ reports published after 1991.

Furthermore, the employees at the FZJ have access to scientific e-journals and current awareness services supplied by several publishing houses such as the American Institute of Physics, Editions de physique, and Springer. About 50 journals are available as full text, whereas the current awareness services offer no access to full text articles but only to subject search, contents, or abstracts (see Figure 3).

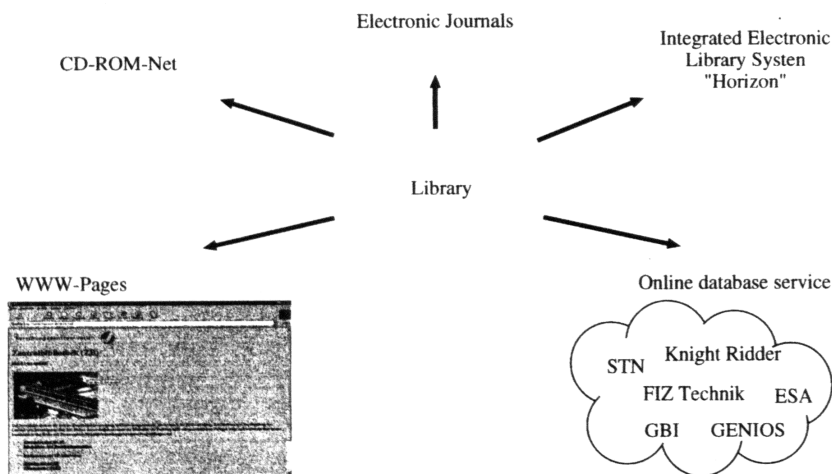
In the future it will also be possible to search the library OPAC via the Internet.

*Other Documentary Services:* The Central Library has the compilation of press reports on R&D-related subjects, a monthly list of recent acquisitions with news from the library as well as the database of publications by FZJ employees. The press reports and the list of recent acquisitions are also available outside of the Research Center.

Besides its library tasks, the Central Library is also the publishing house of

FIGURE 3

Electronic Library Concept of the Research Center Jülich





the FZJ. All scientific publication activities of the FZJ are carried out at the library. Parts of these publication activities are the production and distribution of the Jül-reports (reports of the FZJ) and of eight book series whose contents reflect the main fields of research at the FZJ.

Regular user training sessions are presented at the Library. These include everything from a general introduction to the library to online training for OPAC searching, searching bibliographic and subject databases, and finding relevant information on the Internet.<sup>6,7</sup>

### ***Technical Equipment***

*Horizon:* After having its first electronic library system for about ten years, the library is now introducing its new integrated electronic library system Horizon, a product of Amentech Library Services.

Horizon as installed in the Central Library comprises the following modules:

- OPAC
- Cataloging
- Journal administration
- Circulation
- Administration

The OPAC has a user-friendly Windows™-based interface, which replaced the original command-line interface. This is intended to increase our customers' acceptance of the new OPAC system.

Horizon works with a client-server architecture and uses SQL to retrieve information from the database. It is a realtime, multi-user system with online access. A schematic representation of Horizon can be seen in Figure 4.

The OPAC module can be used not only in the library itself but all over the FZJ via FZJnet, to which the library LAN is connected (see Figure 5).

*CD-ROM Databases:* Like the OPAC, CD-ROM databases can be accessed throughout the Research Center via TCP/IP or DECnet.<sup>8</sup> Use of the CD-ROM databases is nearly as high as usage in the reading room of the library, which shows how accustomed our customers are to this medium. (In 1996 the access rate of CD-ROM databases by users in the different FZJ institutes was 18,000, whereas there were 20,000 accesses in the reading room and 17,500 from library staff.)

For the presentation of our CD-ROM products we use the DOS™ version of the software "CD-Manager/5" from the company H+H in Göttingen, Germany, since most of the current databases have a DOS™ interface. In summer 1997 the Windows™-oriented CD-Manager 3.0 took the place of the older DOS™-version and where possible the databases were installed with a Windows™ interface.

FIGURE 4. The Horizon Model

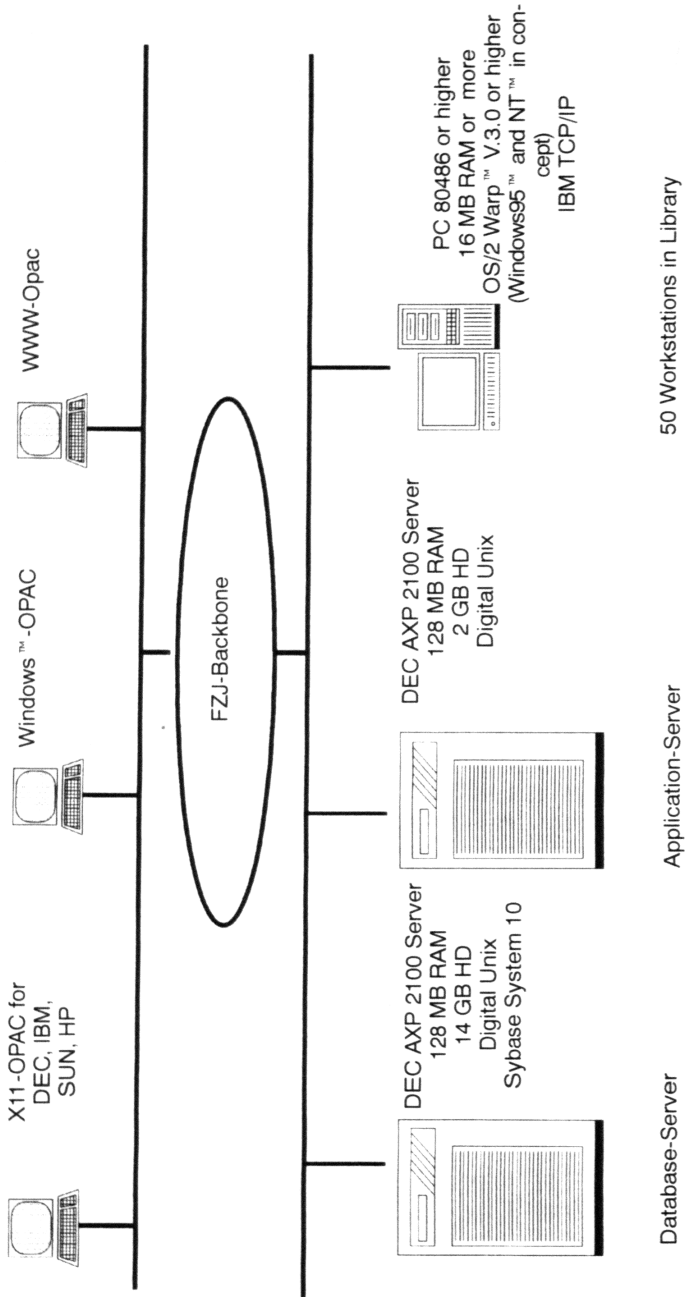
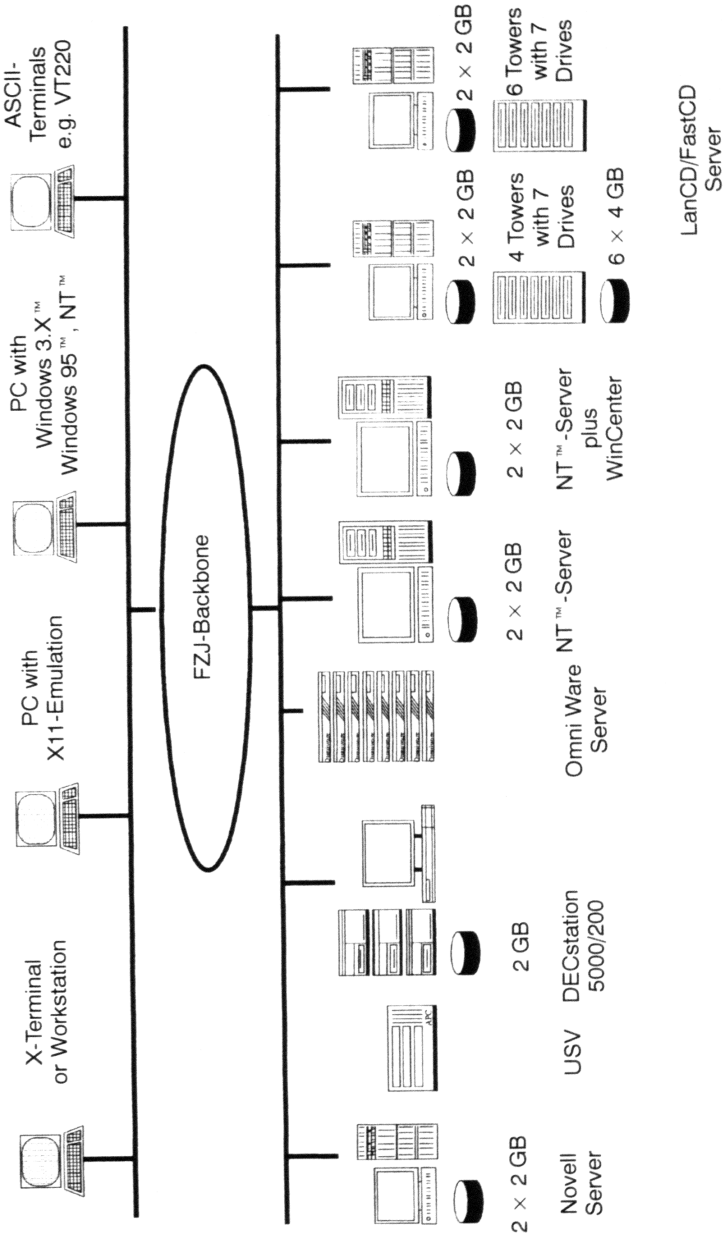


FIGURE 5. Installation Concept CD-ROM-Net



*Deutsches Wissenschaftsnetz (WIN) and the Internet:* Through the LAN and the FZJnet the library is connected to the Central Computer Lab of the Research Center. This enables access to WIN (the German scientific network) and the Internet from every PC inside the library.

### ***FUTURE TRENDS AND PERSPECTIVES***

With its goal of constantly improving its services and technical equipment, the Central Library does not intend to remain complacent about current success. Contact with other libraries and library organizations, as well as an active presence at meetings, conferences, and lectures are vital for understanding new approaches to information management and for broadening one's horizons.

With the introduction of WindowsNT™ as the new operating system and interface for the CD-Manager 3.0 in the first half of 1998, additional multi-function PCs are to be installed. With the help of these terminals and updated software, users will be able to access all electronic library services from the same terminal (OPAC, CD-ROMs, Internet). In conjunction with these developments there is a team responsible for the new structuring and optimization of the different CD-ROM routines in the Central Library.

New techniques for document delivery will also be introduced and the OPAC will be made accessible on the Internet.

There is a special emphasis on all kinds of user services and the increase in user services in the Central Library. In connection with the improvement of user services the library intends to modernize its cost management (with new statistical and cost analysis methods). There are plans to integrate new information management specialists and continue the steady professional development and education of staff. Different abilities and education of staff are important in order to make the most effective use of everyone and thereby offer continually improved services.

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