

# RESEARCH DATABASES. THE FINNISH UNIVERSITIES' RESEARCH DATABASE PROJECT

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**Abstract:** The research database project started in 1989 with the aim of creating a research register with a uniform data content to serve all the university-level institutions in Finland. The Ministry of Education is supporting and directing the project in order to ensure that the register will serve all the universities and prevent the overlapping of planning at the various universities.

The research database system should be a data system which enables reliable, accurate and up-to-date information on individual research projects to be found continually and quickly. Thus it will improve access to information concerning research planned and in progress in Finland, and facilitate its reporting. It will also complement the national and international scientific information services, prevent unnecessary overlapping research and be of use in the planning of scientific policy.

The research databases are formed in accordance with the special needs of each individual university, and each university will assume responsibility for the maintenance of its own database. The databases are required to possess a certain uniformity with respect to structural content; they must be checked and revised to conform with the EC directive concerning the content of research databases. Thus, information would be at the disposal of all those who need it in as flexible a manner as possible and later it would be possible to assemble all the databases into one national, centralized system if needed.

## Introduction

Bibliographical database have been in general use in the field of library and information services for approx. 20 years, in addition to which other types of database have been introduced, covering facts, research in progress, institutions, and expert advisors. Research project and expert databases account for approx. 80

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out of the 5000 listed in the first Directory of Online Databases of 1992. Data on research going back even to the late 1960's are available in some databases, but most cover the period from the late 1980's to the present day. The majority of the databases originate in Canada, the United States and Europe, although numerous corresponding databases also exist in Japan, for instance. Usually the databases cover only certain topics, and often only a narrow sub-field within them. Examples of large databases include 1) Current Research in Britain, which includes data on over 75,000 projects in progress at over 500 universities, polytechnics and private and public institutes, and 2) Japanese Government and Public Research in Progress, containing data on over 20,000 scientific and technical research projects at approx. 600 Japanese universities and public and private laboratories.

The aim of this paper is to present the plan for a research database for the Finnish universities. I will discuss in particular the general aims of the project and the information to be contained in the database, and finally provide a general review of the possible uses of databases and their advantages, especially in developing countries.

The need for records of research work carried out in Finland has been acknowledged since the mid-1970's, and two extensive proposals have been made (Committee Report 1976; Nyrhinen & Ylinen 1987), the latter of which formed the basis of a recommendation from the Ministry of Education as to the content of such a database (Letter from the Ministry of Education, 10.3.1989). It was nevertheless not until 1989 that the first practical steps in this direction were taken, when the Ministry of Education and the Universities of Helsinki and Oulu began to draw up a joint record of research taking place in university-level institutions throughout Finland. The aim was to create a system which would serve all the universities and comparable institutions and help to avoid duplicated planning work.

The report of the first working group and the first version of the database were completed in summer 1991, after which the report was circulated among the universities for their comments. Then, in spring 1992, the Ministry of Education appointed a new working group, of which the present author is a member, to monitor the project. The tasks of this group are 1) to monitor and coordinate the work of setting up research databases in the various universities and colleges, 2) to ensure that the databases concerned are comprehensive, up-to-date and properly maintained, 3) to attend to the problem of links with other databases, especially those in use in libraries, and 4) to extend the opportunities for using these research databases via Finnish and international data transmission networks.

## **Objectives**

The research database system should be such that it enables reliable, accurate and up-to-date information on individual research projects to be found quickly at any time and allows statistics to be compiled on them. Thus it should improve access to information concerning research planned and in progress in Finland and facilitate its reporting. It should also complement the national and international scientific information services, prevent unnecessary overlapping research and be of use in the planning of scientific policy.

The Ministry of Education sets out from the idea that each institution of higher education should set up its own database according to its particular needs, although a certain level of compatibility should be expected between them both, in data structure and in the technical solutions employed, so that the information on research can be made most readily available to those who need it. A sufficient level of conformity in content would also facilitate the construction of a joint database later, should such a decision be reached.

## **Content and functions of the research database**

When the informational content of the database was planned, the most significant user groups and their needs were taken into account. The Ministry of Education made recommendations as to the content of the database in 1989, but they must now be checked and revised to conform with the EC directive concerning the content of research databases published in 1991, since Finland is an European country and has applied for membership of the European Community.

**The recommendations of the EC directive refer to the following content:**

### **I Obligatory data**

#### **1. Administrative data**

- owner of the database (code and/or name)
- latest updating data
- completeness of the research data

#### **2. Identification of the research project**

- control number (identifies access to data)
- identifier of the research project (country code + registration code)
- original language of the research (language in which the information was originally provided: two-digit code ISO/DIS 639)
- Other languages (languages in which information can be obtained: two-digit code ISO/DIS 639)

3. Data connected with the content of the project
  - title in the original language
  - title in the other language(s)
  - abstract in the original language
  - abstract in the other language(s)
  - person responsible
  - other researchers
  - date of commencement
  - assumed date of termination
4. Data concerning the institution carrying out the research
  - name of research institution (official complete name in the original language; if several levels of organization, at least the lowest level at which the work is actually being carried out should be mentioned)
  - address of the institution (also country code)
  - telephone, telefax, telex, electronic mail
5. Data related to the classification of the investigation
  - free keywords
  - controlled keywords (the Research Thesaurus)
  - Common European Research Classification Scheme
6. Financial data
  - source of finance (name of organization and any code available for it)
  - amount of finance obtained (in the currency of the country and possibly in ECU's)
  - number of full-time researchers - man years

## II Optional data

- connections with other research projects (parent project)
- collaborators
- principal results (at the present stage, e.g. number of publications, patents and prototypes)
- special equipment used
- other relevant data

The University of Oulu has proposed the following additions, which are already taken into account in the university's own version:

- Academic degree of the researchers: should be a separate search criterion.
- Confidentiality: a classification should be given indicating what information about the research can be released.
- Expensive pieces of equipment used: details should be given of any items of equipment costing over FIM 100,000 which are required for the research.

- Register of experts: mention should be made of the names of experts consulted, the organizations which they represent, their field of expertise, their experience in years and their academic degrees.
- Classification (OECD, UNESCO, NLM, UDC etc.)
- Published works of the projects

Universities may include other information according to their own needs.

The principal functions of the software are guidance, database maintenance and data search. The aim of the data search function is to make the database as easy to use as possible, employing Help menus to enable entry data to be accessed. A search may be based on any of the above data or on the content of the abstract.

### **System environment**

The Oulu database is designed to operate in a microcomputer network, the proper functioning of which requires the database computer to have a class 80386 or 80486 processor, at least 8 Mb of main memory and at least 200 Mb of hard disc space.

A research database can be of either a relation or a text type. The flexibility of the transfer facilities should be taken into account when selecting the data management system to be used. Since there is no national register, it is essential that outsiders should be allowed access to local systems. This is achieved in Oulu by means of gateway computers which the person requiring information can contact in order to reach the actual database machine via the network.

### **Updating and maintenance**

Each university or college will make its own arrangements regarding the updating of the database and responsibility for its maintenance. In the case of the University of Oulu this task has been thought to the University Library at the present stage which at present is responsible for storing the data on the published works of staff members for the university's annual report. Primary updating can either be centralized in the library or dispersed among the departments in the form of temporary files to be incorporated in the library's database after checking and classification. No decision has yet been reached in Oulu on detailed updating procedures.

Plans exist in the University of Oulu whereby the library's information specialists would be responsible for classifying the research projects and perhaps to some extent for assigning the keywords.

### Further steps

The Universities of Helsinki and Oulu will continue to develop their databases and test them in practice during 1992, financed by the Ministry of Education. The aim in Oulu is also to combine the university's research and publication databases as soon as possible.

The universities, the Ministry of Education, the Central Statistical Office of Finland and the agencies financing research each collect very similar data from the researchers and departments at the various universities every year, which is very frustrating and annoying from the point of view of the researchers themselves. The working group engaged in planning the Finnish research register has the ambitious aim of coordinating this data acquisition with that carried out for the research register, and finally of attaining the ideal of a comprehensive university database, the sub-databases of which would include research-in-progress databases, a register of experts, a list of university publications and statistical data.

It was also proposed in the final report of 1991 that the individual databases should be combined into a national one. The Ministry of Education has for the moment backed down from its efforts to achieve a central database, but the question will certainly have to be reconsidered at some stage.

### Use and advantages of research databases

The comprehensive use of a research data base requires that it can be reached by means of a communication network and that the data are included at least in national database directories and preferably in international ones. The users of databases can be divided at least into the following groups: 1) political decision makers at the national and international levels and universities, 2) persons responsible for the research, e.g. research/project directors, 3) the researcher themselves, and 4) institutions applying and utilizing the research, e.g. trade and industry.

The database provides political decision makers with data on the quantity and comprehensiveness of the research being carried out in various fields for coordination and financing purposes. Information on research promotes the transfer of technical and scientific data at the national and international levels and enables people responsible for research to familiarize themselves with projects which may be useful for their work and to find researchers specialized in some particular subject. It can also prevent overlapping in research and planning. For a researcher, the register is a versatile source of potential innovations.

I cite the German article of Rolf Volmerig of 1991: "New information is produced daily at universities and research institutes, and innovative technical development is carried out at these. The results of this work provide significant opportunities to solve technical, ecological and economic problems. What is crucial is not the constantly accelerating pace of data production, but the rapid and efficient transfer of new scientific results into practice. "The rapid and efficient utilization of intellectual and economic resources to the maximum extent is vital for developing countries and especially valuable for their economy, so that rationally compiled and utilized research registers can play a significant role in building up the welfare of developing countries.

These research databases can also be expected to provide assistance to libraries and information services in their retrieval problems associated with this "grey area" in scientific knowledge.

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