

Views on
Data Management

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In principle the view of data management today from outside the US is not so much different from that in the US. The same concerns do exist, but the weight placed on different aspects of data management frequently depends on whether data processing already is a major force in a country or whether it is still not that widely used. In the latter countries research and development efforts usually are more concerned with the realization and use of systems in the near future and long range aims only play an inferior role.

Looking at the different areas of data management we briefly can summarize:

- (1) Implementation of Database Systems - As in the US the orientation has shifted from DBMS's on large machines to those on mini and micro computers. The relational model has raised wide attention but some logic-based systems have also been built.
- (2) Communication Systems - Because of the monopoly the state has in communication systems in most non-US countries, more emphasis on selecting single country wide systems and standardizing these can be found there. The ISO Open Systems Interconnection proposals have seen much European involvement and a large number of investigations and implementations are currently under way. In general formal specification and verification of protocols play an important role in these projects.
- (3) Distributed Data Management Systems - Three large projects, all oriented towards widely distributed computer networks, have running prototypes. Nixdorf A.G. has announced one of these as a product. The interest in such systems is still very high and probably outpaces the U.S. However there is still not enough emphasis on high speed local networks where, as I feel, different DDBMS architectures have not yet been sufficiently evaluated for product development. Similarly to the US the integration problems of existing centralized databases into a single distributed one have not yet been solved.
- (4) Generalized Data Management Systems - As in the US, the efforts to integrate systems into user workbenches here led to an urgent need for integrated generalized database systems which are able to handle through common strategies all types of data, e.g. formatted, text, picture, voice etc., and the operations for their manipulation. Specialized single data type systems exist, e.g. for CAD/CAM, but generalized storage and manipulation strategies have not been worked out.
- (5) Semantic Data Models, Information Systems - Most early research on semantic (information oriented) data models originated in Europe where already in 1974 an IFIP TC2 working conference was totally oriented to such work. This strong emphasis on providing information for the DBA and the user on what is in the database still exists. Relational theory, dependency analysis and other syntax (data structure) oriented investigations have found little interest in non-US countries. Recently the research and development efforts have been oriented towards techniques for defining/representing whole information systems. In 1982 an IFIP TC8 working conference represented 14 different such techniques where only two originated from the US.

- (6) Knowledge Based Systems - Interest in databases for user-friendly (smalltalk-derived) dialogue systems and for expert systems has grown rapidly. So far research and development is oriented towards the single user workbench approach fancied by such systems, but distributed and generalized data management systems will be needed in the future and should get more attention.
- (7) Organizational and Social Concerns - Organizational aspects of generalized distributed data management and information systems are investigated in many non-US countries. With the availability of distributed systems the sometimes very unfortunate trend for centralized management and decision making can be reversed again. Centralization has led to impersonal, inflexible, bureaucratic organizations which frequently have lost touch with the market and the customer. Personal and social implications of introducing computerized workplaces have been taken much more seriously outside the US. Labor laws have already been created which try to protect the employee from unnecessary hardship without sacrificing possible productivity gains. The influence the total information integration will have on private citizens is also of much concern, but privacy laws, as in the US, still lack many necessary provisions, especially for limiting perfectionisms in order to insure at least some personal liberty and privacy.