Panel Session: DATABASE APPLICATIONS IN DEVELOPING COUNTRIES

Chairperson: Yolanda Fernández-Villaseñor

Centro de Estadística y Cálculo, Colegio de Postgraduados, México

Y. Fernández-Villaseñor. Professor-Investigator, Colegio de Postgraduados, México.

Data base applications in developing countries face the natural difficulties as elsewhere, magnified by several well-known factors such as scarcity of human resources, poor dissemination of state of the art knowledge, imported vs. domestic solutions, and many others inherent to all of the dynamic computer technology.

The panelists, with diverse db experiences in different sectors of a developing country, described particular applications or situations with which they are heavily involved, and pointed out how they perceive the scenario. Following the presentations a global discussion attempted to shed more light on the problems and on how they could (or should) be confronted.

Manuel F. Díaz, José L. Robles. (Teleinformatía de México, S.A.)

An overview of Mexican DP users was presented, as well as the actual level of sophistication and trends in the use of advanced software technology. The data base approach as a means for solving dp problems in the described environment and as a tool to increase systems development productivity was emphasized. Several installed systems for different applications were briefly described. More detail was given on a system for a large government agency: description, implementation, usage, user reaction. The general attitude of the non-technical customer executive to the db approach was commented and an evaluation of the results to date was presented.

Ronald0 Klein, Jacques Levin. (MPAS-DATAPREV, Brazil).

DATAPREV is the Social Security and Welfare Data Processing Company subordinated to the ministry of Welfare and Social Security (MPAS) in Brazil. Since the establishment in 1977 of the National System of Social Security and Welfare, SINPAS, it became evident that there was a lack of tools to enable the efficient storage and retrieval of the social security and welfare information. There were no tools available for indicating the trends, distortions and behaviour of SINPAS Agencies. Access to the appropriate data permits the control and management of the administrative, financial and other resources of this governmental sector. SIS, Social Information System, was discussed at the macro design level. SIS consists of a set of data bases and of methods for data condensations for internal control, strategic planning and external reporting. Due to the great complexity of the system and the enormous amount of data manipulation, SIS is divided in five major areas. These areas were defined in order to permit the modular development of the application computer programs and are described as: -Basic data collection area, -Management data area, -Information retrieval, -Control area, -Modelling area. The difficulties in using data base concepts for the OS was caused by the large volume and risks involved. To attend administrative and audit purposes it became convenient to create an information system coupled with the OS. The creation of new data levels permits the use of special tools as described below.

The files created in the basic data collection area comprehend the most important data in SINPAS. These files permit the obtention of easier tabulations and basic descriptive statistics calculations. The management data area is concerned with the construction of the aggregated data base, with a dynamic storage conception. This aggregation has a cross-section and time-series characteristic. The system is gradually developed by each application and follows a pattern capable of reaching a precise degree of compatibility using the BURROUGHS Data Base Management System DMSII. The main idea of this data base is to store the aggregated data. From this data base, periodical managerial reports can be made as well as eventual studies with cross referenced information. It also permits diagnosis of
eventual distortions of the data. This data base will permit the implementation of simulation models in order to evaluate different strategic alternatives and its sensibility within the different applications. The modelling area describes this task. The integrated Time Series Sub-system (SINTEF) for information retrieval makes on line queries easier for the user. The great availability of the interactive programs releases the intermediation of analysts and programmers. Access to SINTEF is controlled by a dialogue control that handles a hierarchical user-code/password that identifies master, authorities or public users covering different sets of applications data according to previous definitions on the Data Dictionary. This DD is supervised by a data administrator group. The main effort of the control area is to provide statistical interpretation of data and to formalize information definitions. The statistic control of the data is linked to the appropriate section of the routines during the updating among the fields of the basic area and of the management area. Control shows the irregularities in the behaviour of data of the information system. Automatization of this procedure is extremely necessary to reduce the gap between the creation of the information and its final use. Until full automatization is reached it requires a large amount of interplay between the developers and the users to assure that the information gathered by and flowing in the system agrees with the common concepts on the stored data items.

Models in the modelling area are necessary to permit evaluation of the impacts on the economic-financial behaviour of SINFAS. Models have been built with operational research techniques, and interact with the other systems. This constitutes the financial/simulation information sub-system to which all financial information of SINFAS is directed. The particular problems with the design and implementation of this system, started in 1981, were discussed.

Arnold Shiemann D. Independent Consultant, Colombia.

Data bases and db technology as faced by the Latin American enterprise have been experienced and investigated. The attitude and problems, especially at the management level, were presented and discussed.

Jorge Franco, Carlos Váleze, IBM de Mexico.

The data base applications and the functions that support this environment are not common and are often misunderstood. The existence of a user friendly tool is absolutely necessary for data base design and development of applications. MIDAS (Multiple Interface for Development of Applications System) was conceived as an interactive tool that uses dialogues that lead a given user through all the processes of data base design, data capture, application design, development, etc. MIDAS uses a language to generate complex parameters for non-procedural languages such as IBM's ARF.

MIDAS is a friendly interface that links several subsystems by providing them with the necessary input. This input is generated via an interpretative dialogue with the user, relieving him of the detailed knowledge that is required to interact with all of the subsystems. MIDAS was designed with the following characteristics in mind: user friendliness; dialogue driven process: independent control language; proved structure that comprises from data base design through application development: use of non-procedural language for the application development stage: intelligent links between several products which have many options for data base design, application development, data base control and other related functions. The interaction with MIDAS begins with a dialogue with an applications analyst that has already captured the users' views of the system that DB is going to implement. Assuming that these views were validated with the corporations' DATA MODEL, the analyst then feeds the views into the data interface of MIDAS. This function validates the consistency of the input and constructs the proper language used by IBM's Data Base Design Aid. In the next step the above mentioned tool interacts with the user as many times as needed to define the most suitable data base model. This tool weighs the data traffic, constructs paths, and maps the different data associations declared by the user, pointing out differences and inconsistencies, finally constructing a canonical representation of the users' views. The process is ended by feeding the logical model into IBM's Data Dictionary. This is done by constructing the internal schema of the data base and the different views of the application programs. The second interaction with MIDAS is for a physical data base definition. The third step deals with loading of a physical data base. MIDAS cannot fuliy cover all the requirements for a given application. MIDAS has taken a major step in providing a single system image to the applications analyst by providing functions for code generation, input validation, help dialogues and extensive prompting. An important consideration for db design is the type of data modelling that is used. In most installations, data bases are application dependent, due to the absence of a complete data model that reflects all the data relationships of the enterprise. Assuming that such model exists, the different data relationships that are relevant to one application can become the input to the MIDAS data analysis function. A process where difficulties may arise is in the db loading phase. A MIDAS function helps the user by constructing all the JCL statements and commands needed by IMS utilities and the adequate steps for them. Using MIDAS an application user may load any
number of test data bases requiring a minimum effort and less time. The application development process has been slow due to many factors, such as analysis techniques, languages used, debugging time, etc. The approach taken in MIDAS is to provide a dialogue between a user and a fourth generation non-procedural language: IBM's ADF (Application Development Facility). MIDAS produces a set of source macros that can be compiled by ADF. MIDAS validates the user's input, detecting errors of connections between segments of fields. MIDAS allows the user to generate applications in a more flexible way reducing development time and increasing productivity, also enabling an organization to be assured that all of its installations are developing IMS applications that share a common and widely understood previously defined architecture. MIDAS presents all screens and messages in Spanish. During last year several major Mexican enterprises participated in a pilot project using the prototype version of MIDAS, working outside their premises. The experiences of this project in training db personal, developing and implementing db/dc applications were discussed. A productivity increase of more than 400% was reported. MIDAS is an example of domestic technology aimed at increasing productivity which would help to solve the more pressing problems of developing countries.