Panel Session: DATABASE APPLICATIONS IN DEVELOPING COUNTRIES

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SUMMARY

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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 poin-
ted 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. (Teleinformáti-
ca 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.

Ronaldo 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 dificulties 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 characteris-
tic. 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 (SINTESE)
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 SINTESE 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 SINPAS. 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 SINPAS 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 Vélez. IBM de México.
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 ADF.
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
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
DP is going to implement. Assuming that the
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 fully 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 minimun
effort and less time. The application develop-
ment 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.