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DECENTRALIZED PROCESSING - NEW HORIZONS FOR SYSTEMS'DESIGNERS

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Opening Address
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1. Introduce who you are: D.A. Saunders, B.Sc., M.I.C.S.   OR ...

2. Thank audience for attending, as this is the last session and we
   realise a number of them would like to wind up.

3. Introduce subject matter:
   a) We are going to talk about a Financial & Management Accounting
      System which utilises the most up to date System Software
      facilities available.
   b) Computer Manufacturers invest substantial amounts of money in
      the Research & Development of Systems Software - however the
      development of application Software to match the System Software
      in capability is mostly out of the reach of the user due to its
      high cost.
   c) This normally would have led to a totally unbalanced state in
      the development of advanced end-users software. However,
      imaginative systems' designers with the background and backing
      have clutched the challenge so that now there are some application
      systems matching the system software capability.
   d) These systems in general are either produced by a Software House
      so that costs can be spread among many users or by extremely
      large concerns that can justify the expenditure.

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History

In 1971 when EUROSPAN started, the COMPUTER installations were in the
main 'Main Frame' oriented. We approached our design of EUROSPAN by
looking at the following:

    a) STRUCTURE OF FILES
    b) ACCOUNTING PRINCIPLES
    c) HISTORICAL COMPUTER DESIGN OF
       ACCOUNTING SYSTEMS

In structuring our files we recognised that the system should be capable
of handling a multi division or multi company type structure. Indeed our
first customer was a service bureau and needed such a structure. Systems
Analysts traditionally designed systems which broke the accountants
normal conventions which he was used to (i.e. non double-entry bookkeeping
and seperate ledger systems whereas he was used to 3 in 1 type systems).
This led to an alienation of accountants to computers so we brought the
computer back to the liking of the accountant by designing an integrated
double system for him. This design was not done by computer people but
by accountants with the help of computer people. We were fortunate in
having a qualified accountant who also was an expert in the computer
field.
From 1971 the system evolved from a basic accounting system to a more
complex one include such facilities as automatic creditor payments and
cost accounting. This changing design brought us up to 1977 when we
realised the significance of the emereging mini computer market place.
Which market has brought computing power to companies heretofore unable
to afford it.
We decided to completely rewrite EUROSPAN to allow for Online facilities
whilst still retaining it's much vaunted and accepted structure. In
addition auditors by now were aware of the possibilities and dangers
of computerised accounts and through consultation with them we included
new further enhanced security measures into EUROSPAN.

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Theoretical Frame Work

There were many implications in designing and producing a truly Online-
System. Many of you, no doubt, have been presented with semi-online
(not interactive) type systems that effectively only replaced the punched
card and we felt that our EUROSPAN should definitely not be confused
with such systems and should be the tool of the non computer trained
accountant.
The implications of such a system needed consideration in the following
areas:

    - Storage capabilities
    - Hardware and
    - Software Portability
    - Integration of other applications
    - End of Year Problems
    - User Friendliness
    - Speed
    - Security in Multiprocessing

At that stage also computer manufacturers were introducing and 'Singing
about' the new buzz word 'Decentralisation' (naturally this was influenced
largely by an ever-aware end-user demand owing to their increased
awareness of computer power) and we took the initiative of designing our
system to cater for the communications problems that usually exist.

B I L D

In recognising communications we also took account of multi-international
requirements by solving those at the same time. The implications of this
are not technical but conceptual and are as follows:

    a) Currency
    b) Language
    c) Corporate Reporting

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Methods and Techniques
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In consideration of the implications of online, multi-international
systems we adopted the following solution taking into account a rigid
standards system development by one of our sister companies.

1.) Storage capabilities
   In a 'multi type' situation large duplication of data can exist
   so we set out in adapting EUROSPAN to the end-user to perform a
   clear analysis of each Group's/Companies'/Divisions' responsibilities
   to cut down on the unnecessary holding of duplicate data by the use
   of a common data base and subsidiary ones. We integrated our
   ledgers into a simple data base.

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3.) Hardware/Software
   Nowadays functionality depends largely on the joint facilities
   provided both in hardware and software. We did not want a system
   which tied us exclusively to a particular manufacturer or operating
   system as we don't determine that manufacturer's future. We are
   confident that many of you present are in the same frame of mind.
   So we wrote the following facilities ourselves and used an industry
   standard language of COBOL.

   - Menu Processor
   - Screen Handler
   - Logging and Recovery Routines
   - File Handler
   - Security Routines

These enabled us to retain a large degree of Manufacturer Independance.

4.) Integration of Job Functions/Other Applications
   Trough our menu processor we have the ability to switch from function
   to function inthout having to go back through the menu itself which
   gives the flexibility and ease of use demanded by the discerning
   end-user. In addition we adopted a parameter/table driver system to
   enable the end-user to define their own requirements (e.g. functions,
   languages, help routines, reporting formats) without the painstaking
   job of changing programs for minor requirements.

5.) End of Year Problems
   Most systems we have come across impose fixed booking periods on the
   end-user and at the end of year before starting a new one cumbersome
   procedures must be carried out in balancing/finalising the old year
   before proceeding with the new. This costs a company real money in
   delayed revenue and has put an unacceptable strain on the data
   processing divisions within companies.
   Through parameters, the EUROSPAN user can determine exactly the periods
   he requires and can post details to previous periods until he finally
   decides to close them off, whilst always having an up-to-date balance
   on all accounts for a period of two years. He can also retain his
   history for ad-infinitum depending on his disc-storage.

6.) User Friendliness
   It is enough to say that through the use of our menu system and
   breakdown of functions in the familiar way the user is used to using,
   he relates totally to the system.

7.) Speed
   Speed can be a real 'bug bear' in any real-time system especially
   with sophisticated processing requirements. We incorporated the
   following procedures to overcome this:
   a) Logical grouping of fields in Data Base Design which afforded us
      less system overhead and additional logical data item space for
      individual requirements.

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    Furthermore grouping of data items eleminates the need to
concatenate data items and hence reduces system overhead.

b) By freeing space on the data base other applications such as
order processing, fixed assets accounting, stock/warehouse etc.
control can be incorporated under the one schema.

c) Our menu processor enables the user to move between online
functions without necessarily going through the menu each
time, carrying across all relevant data. This makes a very
efficient and fast usage of the system possible.

d) We have developed screen handling routines with prompt and
help facility on each field. Online processing is character
mode, i.e. fields are validated upon acceptance and
redundant screen input by the user is avoided. Field by field
processing has proven to be overall faster and more efficient,
especially in a very large user environment.

e) Our file handling routines were also designed for fast input
and retrieval of data. The dabase design and own logging/
recovery procedures that we implemented reduce the overall
system overhead.

f) Finally our concept of defining up to 99 different transaction
types within the bookings-posting functions, with user-defined
parameters, reduces dramatically the necessity to input
recurrent data within logically similar types of transactions
(e.g. posting invoices, cash etc.).
The speed of entry and validation is thus very high within
all areas of postings, as default or predefined values need
not be entered anymore by the user.

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8.) Multiprocessing

    One of the major headaches of software designers that multiprocessing
has brought about, is security and recovery of data. As already
mentioned, we have developed our own logging techniques.
The terminal number, user number, date, time, and type of transaction
as well as the logical end of cycle for transaction cycles are part
of the log information. One is thus in the position of determining
the last transaction per terminal as well as any logically incomplete
transactions. Recovery may be then effected, either from the previous
data security, or merely by eliminating any incomplete transaction
cycles from the database, i.e. working backwards.

9.) Communications

    Communications software and hardware are now readily available. Postal
links are constantly improving through postal radio developments and
sattelite communication.
We have found HP's DS software & H/W a very easy to use and reliable
tool, within our distributed network applications.
Our philosophy in this area is simple. Provide the facility for
immediate retrieval of relevant data through communications, but
always ensure that every unit within a network may continue to process
its own data independantly, at any time. We must subsequently provide
subsets of the central database to remote locations and update these
as required daily. The relevant information as to which data is
required where, is held on file so that again, no redundant transfer
of data needs to take place. Also a set of reconcilation procedures
had to be developed to ensure the integrity of all remote databases.
When communications are across borders, there are also time differences
to take into account. Here the priority is to enable data exchange
at the most efficient and also economic time, while ensuring maximum
data security.

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10. International

Factors are most important in any international system are:

- Currency
- Language
- Different accounting periods and fiscal years
- Different balance sheet formats
- Different reporting conventions
- Different logal considerations to be considered

We have given everyone of these points considerable attention, as the
constantly growing list of our multinational users proves.
We have kept language constants separate from the program code.
Flexible currency conversion routines have been developed to enable
the user to define the rules according to the procedures he is used to,
and the legal regulations in the respective country.
Decimal points are not available if the foreign currency does not
require them (increased speed of entry).
EUROSPAN offers multinational concerns the tools to maintain accounts
in local and remote company format, currency and language, as well
as providing each company with a number of different reporting,
budgeting, consolidation and grouping options.
In addition to this our report generator WHAT-IF integrated with
EUROSPAN gives the user an additional tool for retrieving data and
producing new reports in any desired format, as and when necessary.

Result

Sophisticated application software for sophisticated system software
is now made possible at a price that end-users' budgets can allow, as
the development costs have been spread over a large number of users.
Installation and trial time is also cut short by the fact that EUROSPAN
is a proven system.

If you have time please come and see us at stand 1.