

DATA



BASE

Mapping out the DBMS territory

by Dr. George Schussel,
CDP

Data base and data management products have changed dramatically in the last several years. New hardware and software technologies have greatly changed the character and number of products available. Just as the oil crisis hit the auto makers, the "productivity crisis" has hit the software suppliers market.

In the 1970s there were no more than two dozen widely marketed DBMS product lines. Non-IBM DP shops, using equipment such as Univac, Honeywell or Burroughs, simply took the DBMS offered by the hardware vendor. IBM shops could choose IBM's IMS and DL/1 products, or they had a choice of a handful of successful, competing products such as Software AG's ADABAS, Cincom Systems' TOTAL and Cullinane's (Cullinet) IDMS.

Today, there are 75 to 100 qualified software vendors marketing DBMS packages for all types of computers—from micros to mainframes. Many different logical models are represented in the products being actively marketed: Hierarchical, inverted, CODASYL, master/detail and relational.

Another major difference from a few years ago is that few people seem to care whether or not a system is CODASYL. Buyers are more interested in the complete range of services provided by the software. CODASYL-type DBMSs represent approximately 15 percent of the worldwide user base of DBMS products. This ratio has held con-

stant both in terms of new product announcements and users since 1975. Of companies already using a DBMS product, 85 percent of these are not CODASYL, so it seems clear that CODASYL DDL and DML standards will not be adopted by the marketplace, at least in their current form.

Mainframe DBMS

The market for full-function transaction processing DBMS, with their required high-level technical data base administration gurus and large mainframes, is still active but extremely competitive. Successful vendors of this type of product have

Successful vendors provide tools to build a large online DBMS environment.

changed into providing a sophisticated set of high-level language tools which give the modern day data base designer the control that he or she needs to build a large online DBMS environment.

For these shops, the focus today is on evaluating a complete set of integrated data management products of which the DBMS is only one piece. A shop may choose a set of products without the most preferred DBMS because that vendor has an integrated data dictionary or application generation language which is deemed superior. A complete set of high-level integrated data management tools will typically sell for \$300,000 or more on a mainframe

environment and should include the following:

- A DBMS offering data independence
- A data dictionary defining and controlling the data environment
- A query language allowing user personnel access to the data base
- A report-generating system allowing simplified programming generation of reports
- A screen mapper allowing generation of data entry screens by a simple example process
- A user language that is high-level, easy to use and an alternative to procedural languages such as COBOL and PL/1.

Examples of products and vendors supplying software to this market include IDMS 82 by Cullinet, DATACOM by ADR, ADABAS by Software AG, TIS by Cincom and DM-IV by Honeywell.

The integrated sets of software products supplied by these manufacturers tend to be centered around the data dictionary/directory (DD/D) which controls the definition of fields and the design of the data base environment. The expertise required to install and support the complete integrated set of software products from any of these vendors should not be minimized. The resulting set of tools, however, gives the medium-to-large-scale shop state-of-the-art capability in defining and developing large online data base software.

Minicomputer data management

Software products that run on the classical minicomputer hardware manufactured by such companies as Hewlett-Packard, Digital Equip-

1983 DBMS Symposium

Information on 4th Generation Software Systems and DBMS Topics will be presented at the 1983 National Data Base Management Symposium which will be offered three times in 1983: March 1-4, Los Angeles; April 18-21, Washington, DC; and May 16-19, Chicago.

The 1983 Symposium will focus on new and enhanced data base and data management products that run on all sizes of computers from micros through mainframes.

The Symposium will feature a number of prominent guest lecturers including Charles Bachman and Edgar Codd, both ACM Turing Award winners, Thomas Nies, President of Cincom Systems and George Schussel, President of Digital Consulting Associates. Educational activities will include a combination of classroom and conference-style functions. More than 40 individual technical presentations on the major data management and DBMS packages will be made.

Conference registration is \$650 for all four days or \$350 for the seminar day only (first day). These fees include lunches and all materials. Group discounts and further details are available from Digital Consulting Assoc., 5 Kimberly Terrace, Lynnfield, MA 01940. Phone (617)334-5755.

ment and Prime have become the mid-sized models of the field. Data bases, query languages and data dictionaries are now commonplace in this environment.

Comprehensive DBMS products offered by minicomputer manufacturers include IMAGE by Hewlett-Packard, DG/DBMS by Data General, VAX Information Architecture by DEC and PRIME DBMS by Prime.

The minicomputer manufacturers are hard at work developing data dictionaries, teleprocessing monitors and application generating languages to fill out the array of software and make their products truly competitive for the medium-scale, general-purpose EDP environment.

This class of software normally runs on the high-end, 16-bit machines or the new 32-bit machines

What's available in data base software

Data base management system software is available for a wide range of systems and contains a wide variety of features. Here is a look at some of the systems available from top software vendors. Contact them for more details.

DATACOM/DB

System for developing, implementing, maintaining a data base. Compatible with IBM System/360, /370, 303X and 4300.

Applied Data Research, Inc.
Route 206 and Orchard Road
CN-8

Princeton, NJ 08540
(201)874-9000

dBASE II

Popular relational system for micros.

Ashton-Tate
9929 W. Jefferson Blvd.
Culver City, CA 90230
(213)204-5570

BASIS

Modular system runs on mainframes and minis.

Batelle
Columbus Laboratories
BASIS Coordinator
505 King Ave.
Columbus, OH 43201
(614)424-5524

DMS-II

All-purpose system for Burroughs' equipment.

Burroughs Corp.
Burroughs Place
Detroit, MI 48232
(313)972-7000

TOTAL

All-purpose system for mainframes and minis.

Cincom Systems, Inc.
2300 Montanta Ave.
Cincinnati, OH 45211
(513)662-2300

MODEL 204

System for batch and online modes.

Computer Corp. of America
Database Products div.
675 Massachusetts Ave.
Cambridge, MA 02139
(617)491-7400

DATABASIC

System allows for manipulation of data base during development cycle.

Consumer Systems
2107 Swift Drive
Oak Brook, IL 60521
(312)325-2102

IDMS

IBM-compatible system with CODASYL standards.

Cullinet Software (Cullinane)
400 Blue Hill Drive
Westwood, MA 02090
(617)329-7700

DBMS-10, DBMS-20

For DEC system-10 and -20.

Digital Equipment Corp.
146 Main St.
Maynard, MA 01754
(617)897-5111

I-D-S/II

For Honeywell DM-IV information management system.

Honeywell Information Systems
200 Smith St.

Waltham, MA 02154
(617)895-6000

IMS/VS

For System/370, 303X and 4300.

IBM
National Accounts div.
1133 Westchester Ave.
White Plains, NY 10604
(914)696-1900

INQUIRE

Multiple retrieval and reporting capabilities based on building-block design structure.

Infodata Systems, Inc.
5205 Leesburg Pike
Falls Church, VA 22041
(800)336-4939

SYSTEM 2000/80

Full-feature system runs on wide variety of systems.

Intel Corp.
Box 9968
Austin, TX 78766
(512)258-5171

SEED

CODASYL-compatible with COBOL and FORTRAN interfaces.

International Data Base
Systems, Inc.
2300 Walnut St.
Suite 701
Philadelphia, PA 19103
(215)568-2424

MDBS

Full-networking system for micros.

International Software
Enterprises, Inc.
350 N. Sagamore Parkway
West Lafayette, IN 47906
(317)463-4561

RAMIS II

Test-file generator for COBOL and other source languages.

Mathematica Products Group, Inc.
Box 2392
Princeton, NJ 08540
(609)799-2600

DPL

System for non-programmers as well as programmers. Supports DEC systems.

National Information Systems, Inc.
20370 Town Center Lane
Suite 245
Cupertino, CA 95014
(408)257-7700

ADABAS

Popular, powerful system for IBM computers.

Software AG of
North America, Inc.
11800 Sunrise Valley Drive
Suite 917
Reston, VA 22091
(703)860-5050

SYSTEM 1022

General-purpose system for DEC computers.

Software House
1105 Massachusetts Ave.
Cambridge, MA 02138
(617)661-9440

DMS 90, DMS 1100

DMS 90 is for Sperry's Series 90 and Series 80 computers. DMS 1100 is for Univac Series 1100.

Sperry Univac div.
Sperry Corp.
PO Box 500
Blue Bell, PA 19424
(215)542-4011

The DBMS territory

that have been announced by most minicomputer vendors.

Software license fees for mini-computer products are typically less than half the price of the comparable license fees for the large-scale IBM environment. On the other hand, the capability of the mini DBMS software is good, typically 60 to 80 percent of the capability inherent in mainframe software.

Rapidly filling the "compact" gap below the traditional minicomputer products are new products evolving from the keyboards of microcomputer gurus. Examples of this type

of product include MDBS from Micro Data Base Systems, DB Master from Stoneware, PFS from Software Publishing Corp. and dBASE II from Ashton-Tate.

Relational DBMS

The relational data base model has received much attention recently. This view of data, growing out of the work of IBM's Dr. Edgar Codd, has been adopted not only by IBM (with its SQL/DS product), but by a host of other hardware and software vendors.

True relational or relational-like products currently marketed include

ENCOMPASS by Tandem, ORACLE by Relational Software, INGRES from Relational Technology, the System 38 Data Base from IBM, RELIANCE from Perkin Elmer and MAPPER from Sperry Univac. Two years ago, relational DBMSs were an interesting debate item. Today, there are at least a half-dozen serious products available, some having been implemented into data base machine hardware.

Many vendors of non-relational DBMS are adding support for the relational logical model to their existing product lines.

Access Line

data base systems

70/Powerbase

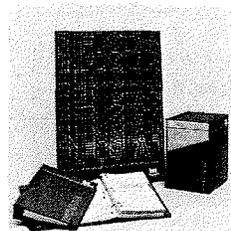


Powerbase, from GMS Systems, Inc., allows an executive to access information and perform complex business functions without months of computer training. Designed initially for use with the IBM Personal Computer using the PC DOS operating system, Powerbase can interface with mainframe computers through its Inload and Outload utility programs and appropriate communications software. The package comes equipped with a super-fast search,

sort and select feature, special search keys for "sounds like" retrieval, a strong front-end editor and the capability to handle arithmetic expressions written in familiar algebraic form. Powerbase automatically recalculates derived data fields whenever a base data field changes. Ready-to-run applications include: The Manager's Daily Planner, Financial/Insurance Records Inventory, Expense Reporting and Telephone/Mailing Directory.

Circle 70 on INFO CARD.

72/DBMS for non-programmers



InfoStar, from MicroPro International Corp., a business applications development system designed especially for non-programmers, provides on-screen menus in simple English that guide the user through each step of data entry form design and detailed report generation. InfoStar's transaction processing and updating capability takes advantage of the latest technology in data manipulation without requiring an investment in understanding the DBMS

relational model. This enables the user to update records easily across file boundaries, insuring the completeness and accuracy of records at all times. For data entry, a cursor is used to "draw" forms on the screen, instead of expending time with commands and calculating coordinates. Generating custom applications is four times faster with InfoStar than with other data base software because there is no need to write or debug code. A powerful sorting facility makes InfoStar five to six times faster than any other microcomputer data base management system, the company says. It can sort a file on up to 32 key fields at one time, at speeds up to 560 records per minute. (For example, to sort 2,000 records on a five-character key, it takes InfoStar only 2½ minutes as compared to over 15 minutes for other data base systems.)

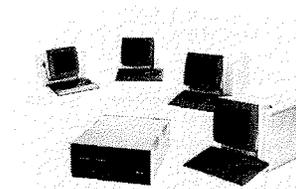
Circle 72 on INFO CARD.

71/Custom screen generation

Relational Database Systems, Inc. (RDS) has released Performix, a new custom screen data entry and data inquiry system for their Informix DBMS. Informix is designed for 16-bit micros and minis running UNIX and UNIX look-a-like operating systems. The new software package is the first to combine custom screen formatting and sophisticated data entry with relational query capabilities. It provides an interactive user interface to the data in a data base. Fields are placed anywhere on the screen, with any titles and labels desired. Multiple screens can be linked together, and data from multiple files can be viewed on a single screen.

Circle 71 on INFO CARD.

73/Optimum DBMS



TeleVideo Systems, Inc.'s new Optimum data base management software operates on simple English commands. It is designed to run on any of the company's 8- or 16-bit single or multiuser small business computers. It is designed to serve both single users of TeleVideo computers and networks of up to 16 stations. TeleVideo's CP/M-

based computers use its proprietary operating system, MmmOST (Multiuser, multitasking, multiprocessor Operating System Technology). Optimum places no limit on the number of fields per record for up to 12,500 characters.

Circle 73 on INFO CARD.

74/Relational DBMS

Logix, a relational data base management system designed by Logical Software, Inc., for users at all levels of experience and expertise, takes maximum advantage of the UNIX operating system. Logix runs on all major microprocessors—including the ONYX and Plexus Z8000, DEC's PDP-11 series, the Altos 8086 and the Fortune and Codata 68000 machines. In addition to the Bell UNIX Version 7, Logix also runs under Venix, Xenix, Unisoft UNIX and under Project Viking, one of the first UNIX systems that can be used on the IBM Personal Computer.

Circle 74 on INFO CARD.

The relational models seem to be preferred by the data base machine vendors, notably Britton Lee. Britton Lee's products are being OEMed to several software houses that build front ends and offer the entire system to users. Intel has also announced a data base machine at the low end of the cost scale.

Within the next year or two, there will be at least a dozen serious relational data base products available for the prospective user. But it is not yet clear how well the relational data base model will work on live production-type data. Relational DBMS products do work for query and browsing, however, most consultants feel a little nervous about recommending them for large multi-billion dollar character production-oriented data bases. Over the next two years, this issue should become more clearly defined.

"User" data management systems

The "user-oriented" DBMS product is also getting a lot of attention now. This type of product typically evolved out of a simpler file management language developed in the 1970s. These languages offer high-level data processing facilities to "non-programmer" users. Three days to a week of training time are frequently adequate for a user to be generating reports or building small data bases. Most of these languages have been redesigned and rebuilt by their vendors over the last three or four years, with DBMS capability added along with a number of advanced features such as screen mapping and data dictionaries. Some of the best examples of this type of product include MAPPER by Sperry Univac, NOMAD2 by National CSS, FOCUS by Information Builders and RAMIS II by Mathematica.

The user of one of these language facilities has Data Base, Query, Report Generation, Data Dictionary and Application Generation Facilities all integrated into a single product from one manufacturer. This type of product generally does not offer the detail control or processing capacity of the more comprehensive DMS products from Cullinet, ADR and Software AG, but offers simplic-

ity in training and installation instead.

"User type" data management systems can be more rapidly installed and used in environments where software productivity is the key issue. To a great extent, this type of product has permitted the entire Information Center concept to evolve.

It isn't unusual to find these products installed in a multiple data management vendor environment. A typical FOCUS or RAMIS might be used in an information center environment while IMS, IDMS or DATACOM is used by programmer personnel in the EDP department.

Conclusion

A large number of top-quality software products are available today. If a shakeout of suppliers is coming, it isn't obvious yet; the market is currently supporting an ever-growing list of suppliers.

One reasonable approach for choosing a product or set of software tools is to first determine the hardware size and what type of product is required; microcomputer based, minicomputer based or mainframe; user oriented or EDP oriented. Once the general functional type of the system is determined, the pursuit of individual packages can then be narrowed down, for study in greater depth.

To attempt to undertake a study of all data management and DBMS software in the marketplace today is indeed a major undertaking. Any way of streamlining the analysis should be used where possible. ■

About the author

Dr. Schussel, CDP, is president of Digital Consulting Associates based in Lynnfield, MA. A well-known author and lecturer on software and data base subjects, he is chairman of the National Data Base Symposium and is a consultant on data base and EDP subjects to the US Dept. of Justice. Dr. Schussel is also an advisor to a number of industrial companies on EDP issues.—Ed.



Boyer elected 1983 EF president

Terrence J. Boyer, vice president and manager of information planning and control, Mercantile Trust Co. N.A., St. Louis, MO, has been elected presi-



dent of the DPMA Education Foundation for 1983. He had been elected a Foundation Regent in early 1981. For the past two years he has been the coordinating Regent responsible for the Foundation's Model Curriculum for Undergraduate Computer Information Systems Education. He is currently co-authoring the first text book in the Model Curriculum series, entitled *Computer Information Systems: An Introduction*, to be released early this year. Boyer has served as President of the St. Louis Chapter of DPMA and has achieved the DPMA Gold Award. He was instrumental in restructuring the DPMA Student Chapter and Club programs. ■

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