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BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

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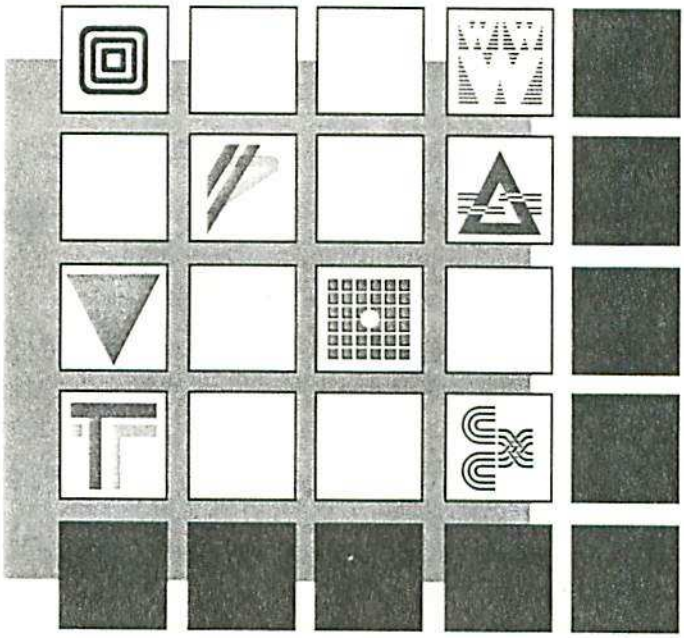
FOCUS®

General Information Guide



Information Builders, Inc.

This publication describes FOCUS, a nonprocedural language and database management system for building data and knowledge-based information systems. The description includes a discussion of the concepts behind FOCUS and an overview of its basic facilities.

The cover depicts the logos of Information Builders' Research and Development groups, each of which is responsible for delivering a compatible version of FOCUS for a particular operating system.

- IBM computers (VM or MVS)
- DEC VAX/VMS computers
- Wang VS computers
- HP-UX and HP MPE XL computers
- Microcomputers (OS/2 or MS-DOS)
- TANDEM computers
- AS/400 computers
- UNIX-based computers:
  AT&T, Apollo, DEC, IBM RT, Motorola, NRC, NIXDORF, Phillips, Pyramid, Sequent, Sun, SCO, and Unisys.

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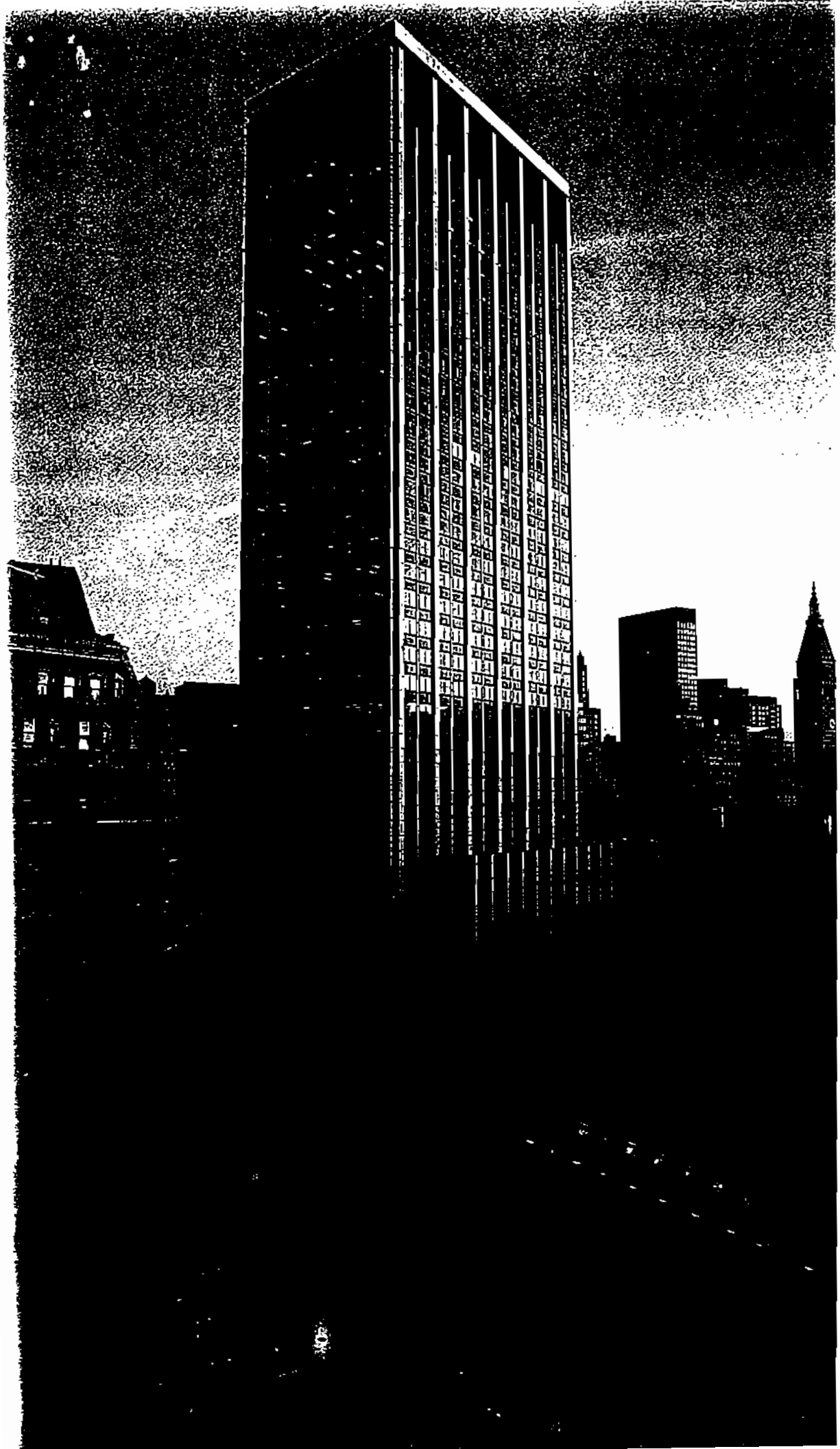


Headquartered in New York City, Information Builders, Inc. has 25 branch offices in the United States and Canada, as well as subsidiaries, affiliates and representatives in 32 countries worldwide. (Branch addresses appear on page 43.)

Introduction to FOCUS

FOCUS is a Fourth Generation Language and Database Management System (4GL/DBMS) from Information Builders Inc., the originators of 4GL technology. FOCUS is a superb language for developing applications. It also offers automatic generators for producing application code, screen layouts and presentation systems with pop-up and pull-down windows that application developers can customize to produce front ends for their applications. The comprehensive FOCUS facilities permit users of varying levels of experience to issue queries, analyze data, and build complete applications for reporting and managing data – without resorting to other tools or third generation languages.

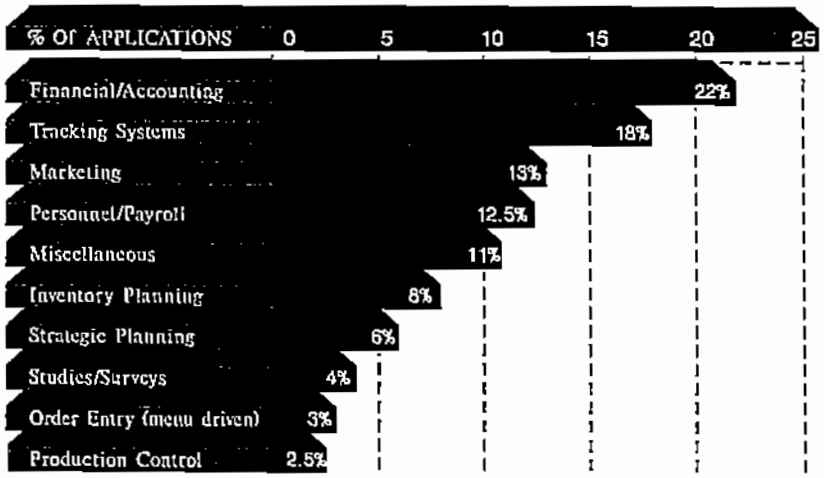
Business professionals will find that FOCUS' nonprocedural language handles all aspects of data selection, retrieval, formatting and display – freeing them from the intricacies of coding requests and allowing them to concentrate instead on formulating problems they wish to solve.

FOCUS is useful immediately with existing data – in almost any format! You can analyze data and produce reports, even update files, often ten times faster than writing requests in a traditional language. With interfaces to over 30 external sources (non-FOCUS tables and files), FOCUS provides direct access to the data as it stands – there's never a need to convert or re-enter valuable information. A single request can also access many files simultaneously: join IMS files and DB2 tables, for example, or combine IMS files from the IBM mainframe with Rdb files on a VAX machine – as many as 16 files can be joined at one time! No other product offers comparable support for leveraging existing investments in data and applications.

FOCUS provides enterprise-wide control of information on networks, in the corporate data center, in business planning groups, and on personal workstations. In addition to offering access to most files, FOCUS applications are portable. You can run them on computers from IBM, DEC, Wang, Hewlett-Packard, AT&T, Sun, Apollo (and other UNIX-based machines), as well as on microcomputers running DOS or OS/2. Thus, developers can take advantage of fast response and window-based screen-design facilities on intelligent workstations, while producing applications for mainframes and large minicomputers.

What Kinds of Problems Do People Solve with FOCUS?

A recent survey of FOCUS users revealed that 40% of their applications run in production centers, while the remainder support end-user activities in Information Centers. The chart below shows the functional categories.



Corporate Goals

A leader in the development of nonprocedural language, application generators, data interfaces and connectivity products, Information Builders is currently integrating database and expert system technologies by embedding the LEVEL5 expert system tool within FOCUS. This combination will enable users to tackle applications beyond the reach of conventional products.

Information Builders is dedicated to customers' success with FOCUS and provides support and service throughout the life of each FOCUS application – from inception through implementation. Information Builders provides professional education and consulting, technical documentation and publications, and local, national and international telephone support, through a network of 25 branch offices and education centers in North America and 50 offices in Western Europe, Australia, Japan and South America, including wholly-owned subsidiaries and licensed representatives in major cities throughout the world.

FOCUS Meets Every Application Need

The heart of FOCUS is a language: a high-performance, nonprocedural language that has come to define fourth generation language technology. The phrase emphasizes the distinction between FOCUS and traditional programming languages, such as C, COBOL, and FORTRAN that require detailed data processing instructions.

With FOCUS, you need only state what you want to see (SUM AMOUNT BY REGION) and describe the data-selection criteria (WHERE YEAR FROM 86 TO 89). Because the basic syntax remains consistent from one facility to the next, FOCUS promotes a smooth learning curve.

Complementing the nonprocedural query facilities are procedural tools for controlling database maintenance applications. FOCUS processes transactions and supplies the tools application developers need to implement and support window-driven, interactive programs for their end users.

```
TABLE FILE SALES

SUM AMOUNT
BY REGION
ACROSS YEAR
WHERE YEAR FROM 86 TO 89

END
```

TABLE command indicates a report request from the SALES file.

The body of the request specifies the desired functions, data fields, sort order and record - selection criteria.

1st 4GL

To develop the fourth generation language as a nonprocedural alternative to traditional programming languages

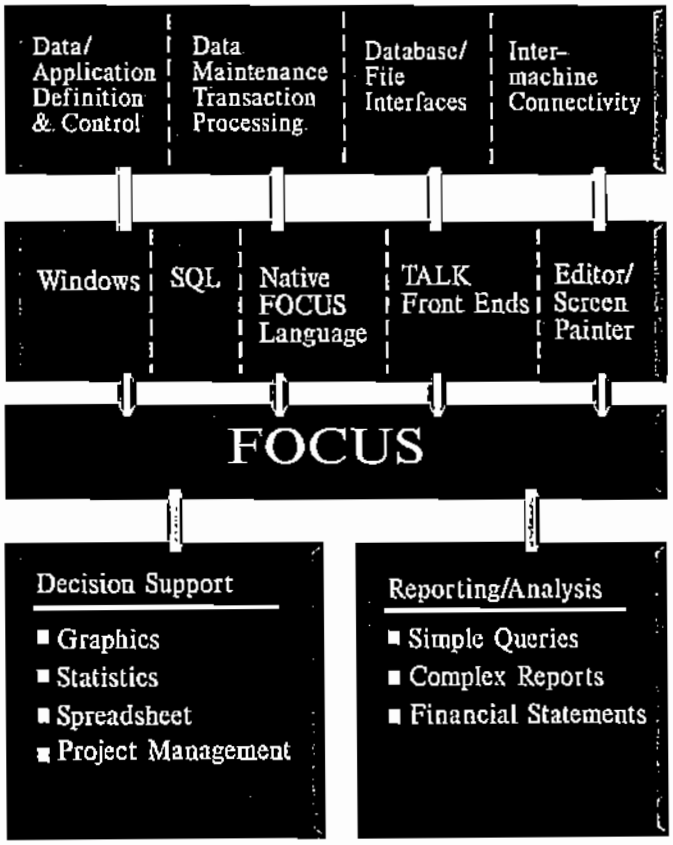
Comprehensive Facilities

The procedures for managing and converting data into useful information include data entry, storage, maintenance, selection, retrieval, computation and analysis. While some products offer either database facilities, report writing or data maintenance capabilities, FOCUS provides a database plus completely integrated tools for:

- Designing, building and maintaining databases.
- Accessing and analyzing FOCUS and non-FOCUS data.
- Creating and displaying reports, graphs, and spreadsheets.

FOCUS also offers support for SQL-based relational databases. You can use the FOCUS language and tools to query and maintain data in relational databases as easily as if the data resided in FOCUS files.

Whether analyzing data or producing reports, graphs, statistical summaries or spreadsheets, you move smoothly from one operation to the next. Use English syntax or window-based point-and-click tools to produce reports without coding.



FOCUS meets every need.

1st 4GL To release complete, functionally compatible PC version of a mainframe product

For specialized tasks, FOCUS syntax is rich in custom-formatting commands.

Code generators and visually oriented screen and window painters automate application development, substantially reducing the effort required to prototype and produce finished applications. FOCUS has conveniently integrated text and database editors and automatically performs many utility functions such as binding screens to applications.

Unmatched Portability

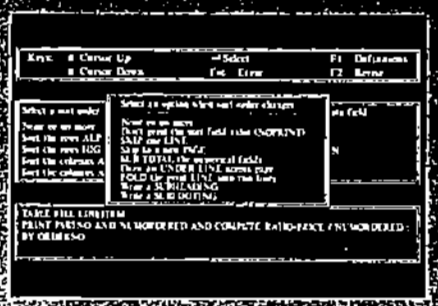
As computing power moved to the desktops of business professionals, Information Builders developed a microcomputer version of FOCUS. Personal computer users received the most powerful 4GL/DBMS on the market, as well as data-transfer facilities for uploading and downloading data and applications from a mainframe host. The success of PC/FOCUS foreshadowed development of parallel versions of FOCUS for other operating systems and established a standard of portability unequaled in the industry.

Today, Information Builders offers functionally equivalent versions on IBM mainframes and PCs, Digital Equipment Corporation's VAX equipment, Wang's VS machines, Hewlett-Packard, and Sun, Apollo and a variety of other UNIX-based workstations, minicomputers, and mainframes. The PC version, which is available for both DOS and OS/2, has also been extended to support the major local area networks.

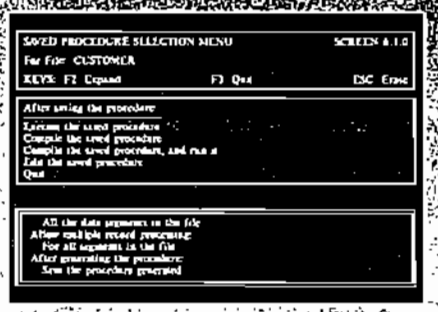
Consistent syntax, universal support for FOCUS features, and built-in communications links make FOCUS databases and applications interchangeable in these hardware environments. Applications can be developed and delivered on different systems without modification, moved to larger systems as needed, and shared among departments using different processors.

	CPU (Op.Sys)	Models
Mainframes	IBM & compatibles (VM/CMS, MVS/TSO, MVS/CICS)	370, 30xx, 43xx, 9370
	Amdahl (UTS)	IBM plug compatibles
Minicomputers	Apollo (DOMAIN/IX)	Domain series
	AT & T (UNIX)	3B2 series, 6386 WGS
	DEC (VMS, ULTRIX)	VAX series, DECstation
	HP (HP-UX, MPE/XL)	HP9000 & HP3000
	HCL (UNIX)	HCL
	IBM AS/400 (OS/400)	Bxx
	IBM (AIX, SCO XENIX)	RT, PS/2
	Intel 80386-based (XENIX or UNIX V/386)	All 386 models
	Motorola (UNIX)	8000 series
	NCR (UNIX)	Tower series
	NIXDORF (UNIX)	Targon/35, Targon/31
	Phillips (UNIX)	9070
	Prime (UNIX)	EXL
	Pyramid (UNIX)	98xx
	Sun (SunOS)	Sun-3, Sun-4, Sun386i
	SCO XENIX 386	All 386 models
	Sequent (DYNIX)	Symmetry series
	Siemens (SINIX)	MX series
	Tandem (GUARDIAN90)	CLX,EXT,NonStopII,TXP,VLX
	Wang (VS)	VS series
Microcomputers	IBM & compatibles (DOS & OS/2)	PC XT, PC AT, PS/2

FileTalk



TableTalk



ModifyTalk

Window-based, point-and-click user interfaces, first developed for creating report requests, make 4GL technology accessible to a wide range of users.

Information Builders Strongly Supports Industry-Standard Software

Communications
FOCUS connectivity products use proven protocols and transport software, including: Advancenet, Ethernet, DECnet, WangNet, SNA, LU6.2 and TCP/IP.

Local Area Networks
PC/FOCUS supports: Novell, Netware, Banyan VINES, 3COM 3PLUS, PC LAN and NET/ONE.

SQL
FOCUS reads and updates many relational databases(see *Universal Access to Data*). FOCUS applications are portable across dialects of SQL.

Database Servers
FOCUS supports dedicated Database Servers on stand-alone machines (Teradata, Britton Lee), as well as third-party relational database management systems on many operating platforms (see *Universal Access to Data*).

Windowing
FOCUS supports window management systems: DECwindows, Microsoft Windows, X Window System, Presentation Manager and New Wave.

OS/2
PC/FOCUS for OS/2 offers full two-way compatibility with the mainframe and minicomputer versions of FOCUS.

SAA
Information Builders supports IBM's System Application Architecture on all three platforms.

Imaging
FOCUS supports Wang WIIS image processing. PC/FOCUS users can create visual databases using FOCUS Vision.

FOCUS Applications

FOCUS applications are diverse, spanning all industries and functional areas. Typical applications include:

Accounting
Accounts Receivable
Accounts Payable
Budgeting
Capital Equipment Tracking

Finance
Cost Analysis
Commercial Loan Analysis
Profitability Studies

Personnel
Human Resources Planning
Personnel Directory
ERISA Reporting

Marketing
Market Research
Product Tracking
Direct Mail Program

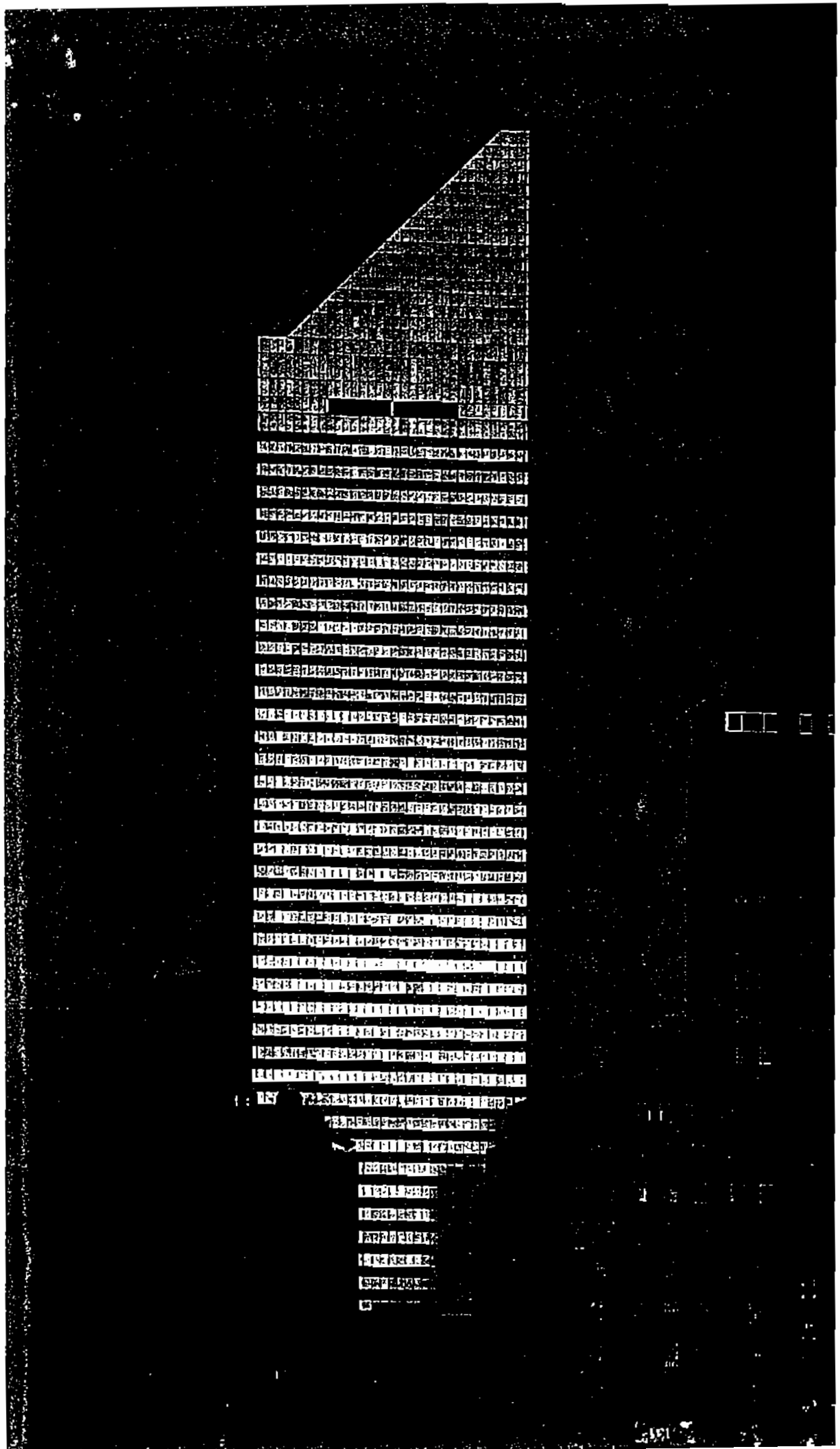
Sales
Sales Analysis
Expense Reporting

Manufacturing
Product Scheduling
Inventory Control
Order Tracking

Education
Class Scheduling
Institutional Administration

Engineering
Project Control
Reliability and Yield Analysis
Statistical Analysis of Product Characteristics

Insurance
Policy Administration
Claims Reporting



Major corporations maintain vast holdings of data in a variety of files under various operating systems. FOCUS offers direct access to the data in sequential, relational and indexed or variable-length files, as well as proprietary databases – wherever they reside.

Universal Access to Data

Information Builders fully supports open architecture. The corporate goal is to enable FOCUS users to access data – regardless of where it resides. In addition to providing functionally equivalent versions of FOCUS for the major operating environments, Information Builders offers interfaces that allow FOCUS users to apply their 4GL tools to other sources of data.

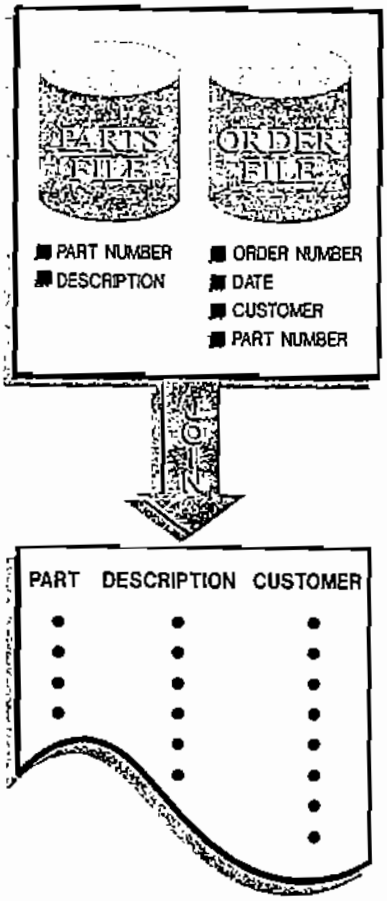
Direct Access to Data

FOCUS Interfaces provide access to data as it stands; there is never a need to convert or re-enter it, which saves valuable time and resources. Many of the interfaces include automatic generators that create FOCUS file definitions from native file schemas. In the case of SQL-based files, FOCUS actually expands the functionality of the SQL catalog with added support for field aliases, data-validation criteria and edit masks within the schema definitions.

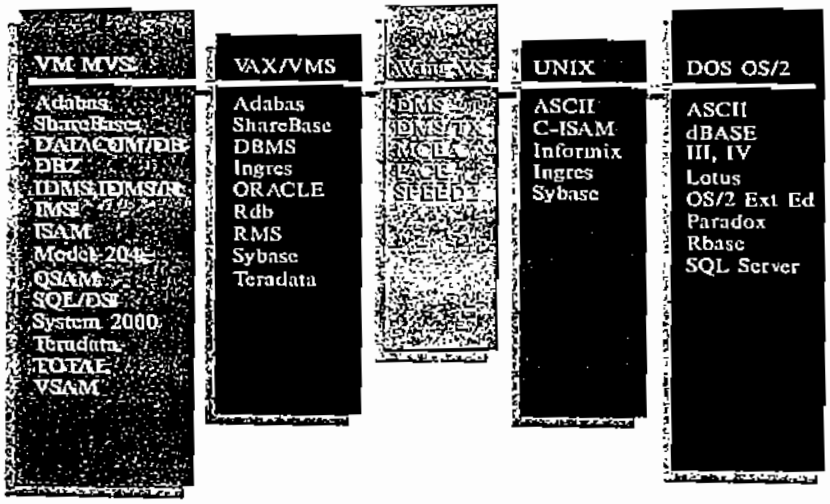
The interfaces enable FOCUS to work as easily with existing data as with native FOCUS files, producing highly efficient queries. Clients can preserve investments in existing files and applications by using FOCUS to access data throughout the organization without redesigning existing systems, re-entering data, or purchasing additional hardware or software.

Combine Data from Different Sources

FOCUS allows users to access several sources of data simultaneously through dynamic relational join operations that can link up to 16 different tables and databases at a time. Relational files can even be linked with nonrelational structures. The facility is simple to use; even casual users can produce reports which consolidate data from diverse sources.



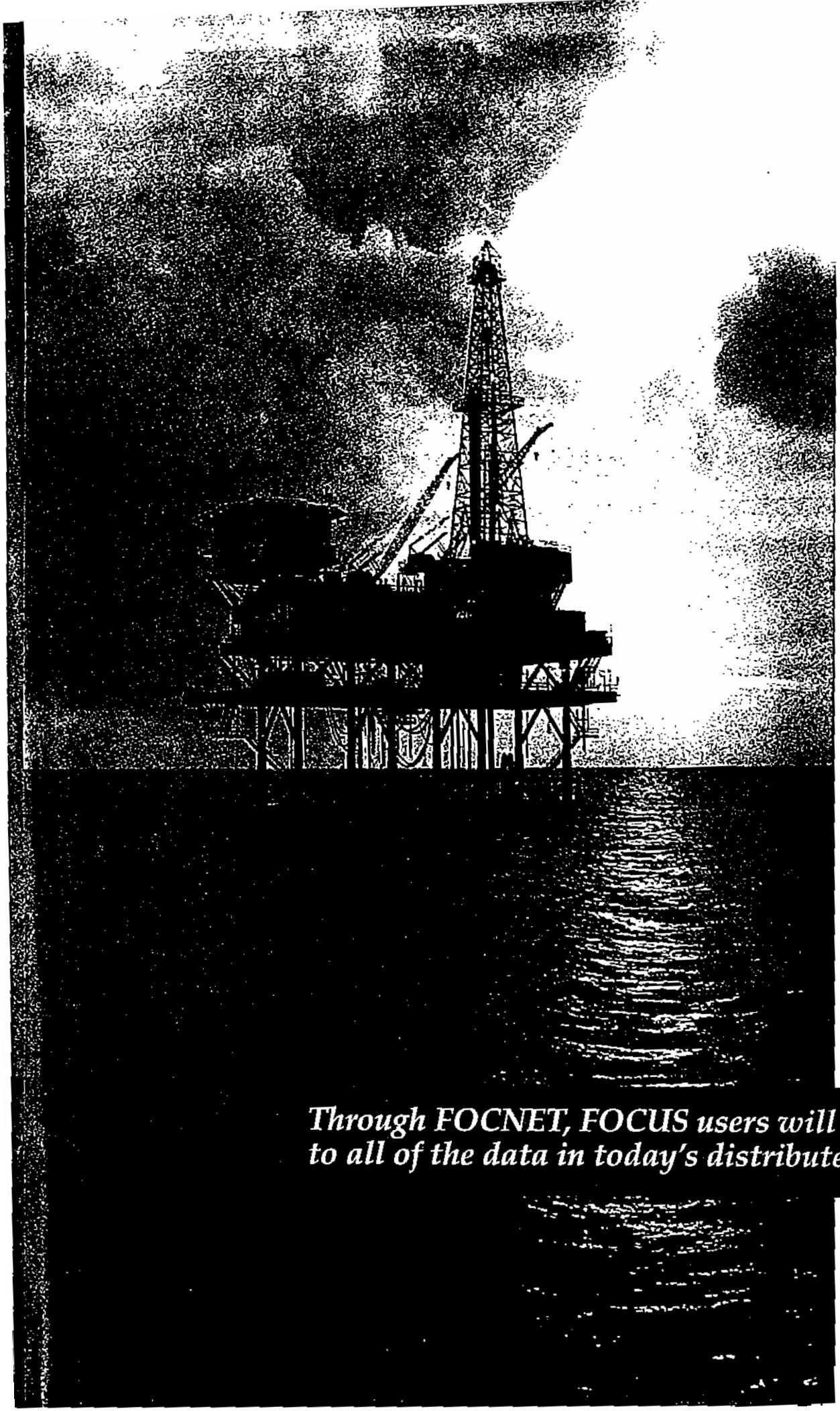
You can join up to 16 of the files listed on the Universal Access chart in a single FOCUS operation!



FOCUS offers Universal Access to more data than any other 4GL.

1st 4GL

To provide a wide selection of direct interfaces to other proprietary sources of data



A major oil company uses FOCUS to computerize documentation and report status of offshore oil production. Their system provides daily accountability of production and allows managers to reassess strategies based on the previous day's output and current prices and demand. The PC/FOCUS-based system, which runs on the drilling platforms, has also been ported to DEC and IBM mainframes.

Through FOCNET, FOCUS users will have access to all of the data in today's distributed networks.

Connecting Major Operating Platforms

Today, as computing moves increasingly to integrated computer networks from different manufacturers, Information Builders offers connectivity solutions that provide logical access to data on remote machines. These products allow FOCUS users to share data and applications freely, while shielding them from the complexities of unfamiliar operating systems, access methods and database management systems. FOCUS users can leverage the portability of their tools and applications to take full advantage of varied capabilities afforded by intelligent workstations, remote systems and dedicated servers.

Client/Server Model Uses Standard Protocols

Information Builders' client/server model layers on top of the operating-system and access-method architectures of each participating node. It consists of three components:

- Client (or requestor) software.
- Interfaces to network transport software.
- Server software.

By placing intelligence at both ends of the links, Information Builders minimizes traffic on the network, while taking maximum advantage of available CPU resources and providing the widest possible access to data through FOCUS data interfaces on individual nodes.

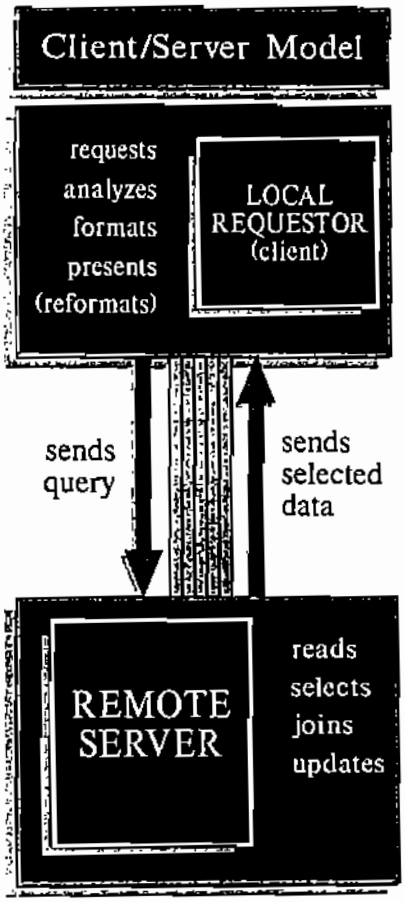
To preserve the customers' investments in existing network hardware and software, only accepted transport technologies are employed (i.e., VTAM, SNA, SNA Gateway, TCP/IP, LU0, LU6.2, DECnet, WangNet, etc.).

The Benefits of Distributed Processing

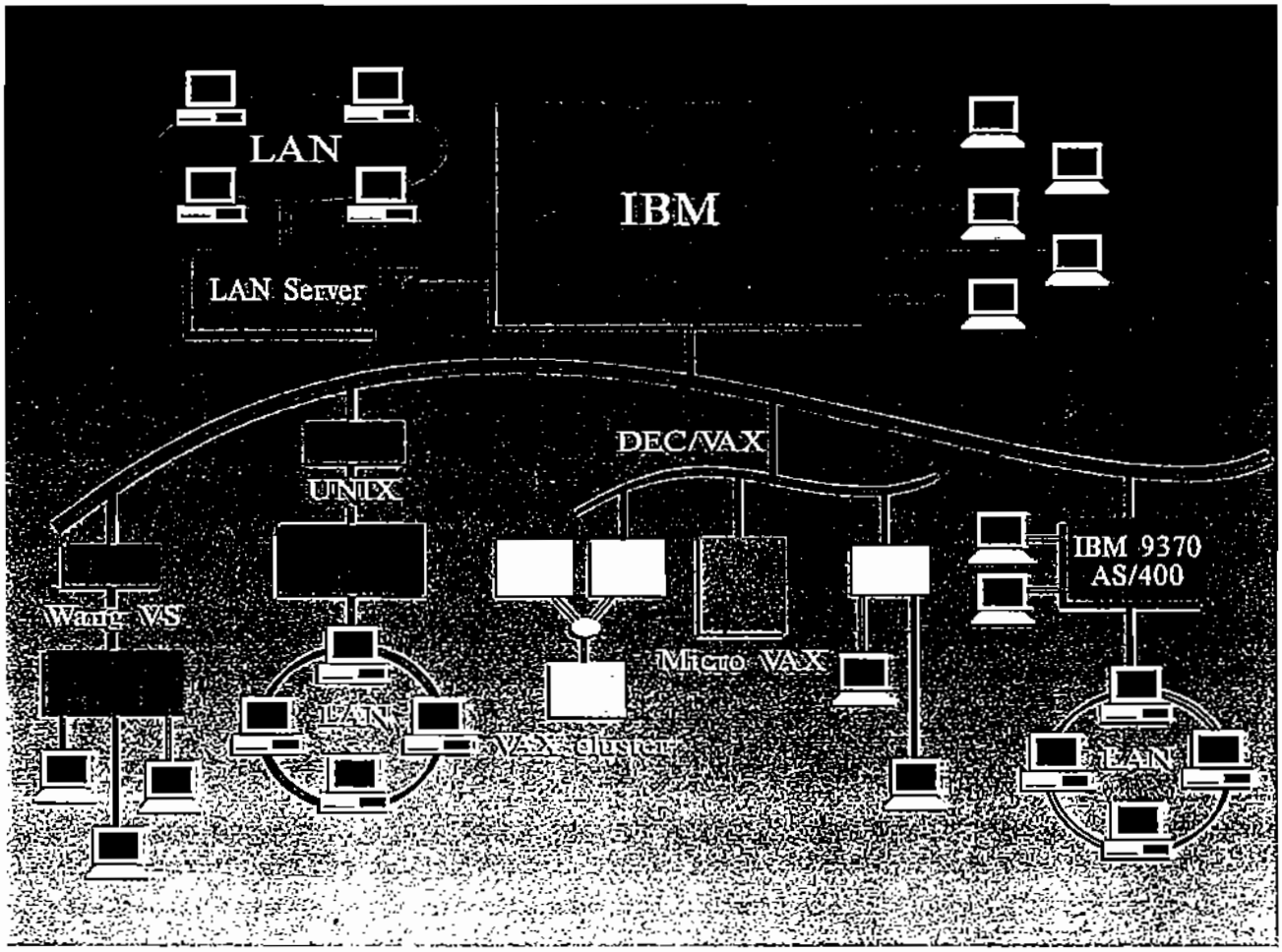
Intelligent workstations linked via gateways to dedicated database servers offer optimal solutions in many processing situations. Distributed client/server applications can dramatically reduce response times by employing servers as additional processing engines. Also, by taking advantage of the window-based graphic support available on today's intelligent workstations, developers can produce friendly, PC-type applications that make database management activities accessible to a broad population of users.

For those with high-speed communication links such as channel-to-channel adaptors, inter-machine controllers (Interlink), T1 dedicated links and Local Area Networks, it's possible to divide processing loads evenly between the requesting and serving nodes. This strategy offloads data selection to a server, while performing the data analysis and formatting at the requesting node. Thus, live data can be accessed in real-time at its source and data from local and remote nodes joined to complete requests.

Organizations with networks employing slower physical connections can elect to do more processing on the server machine. As an example, a user might run menu-driven procedures on a workstation, generating standard FOCUS requests to update DB2 tables on another node. At the mainframe, the FOCUS DB2 Interface would generate an SQL request for the DB2 Server. Since the Interface permits users to assign resource-intensive tasks, such as sorting, indexing and aggregations to the DB2 engine, users on PCs or midrange systems can harness the mainframe to share processing and minimize the volume of data returned across the network.



FOCNET allows FOCUS users to divide the processing load between the requesting and serving nodes.



The layered implementation hides underlying communications protocols from users. By using off-the-shelf technology, FOCUS assures users of stable operating environments for distributed processing. As improved communications technologies become available, they can be substituted transparently.

To offer location-transparent access to data elsewhere on a network

To offer LAN-based client/server architecture (PC/FOCUS-MultiUser)

PC–Host Links

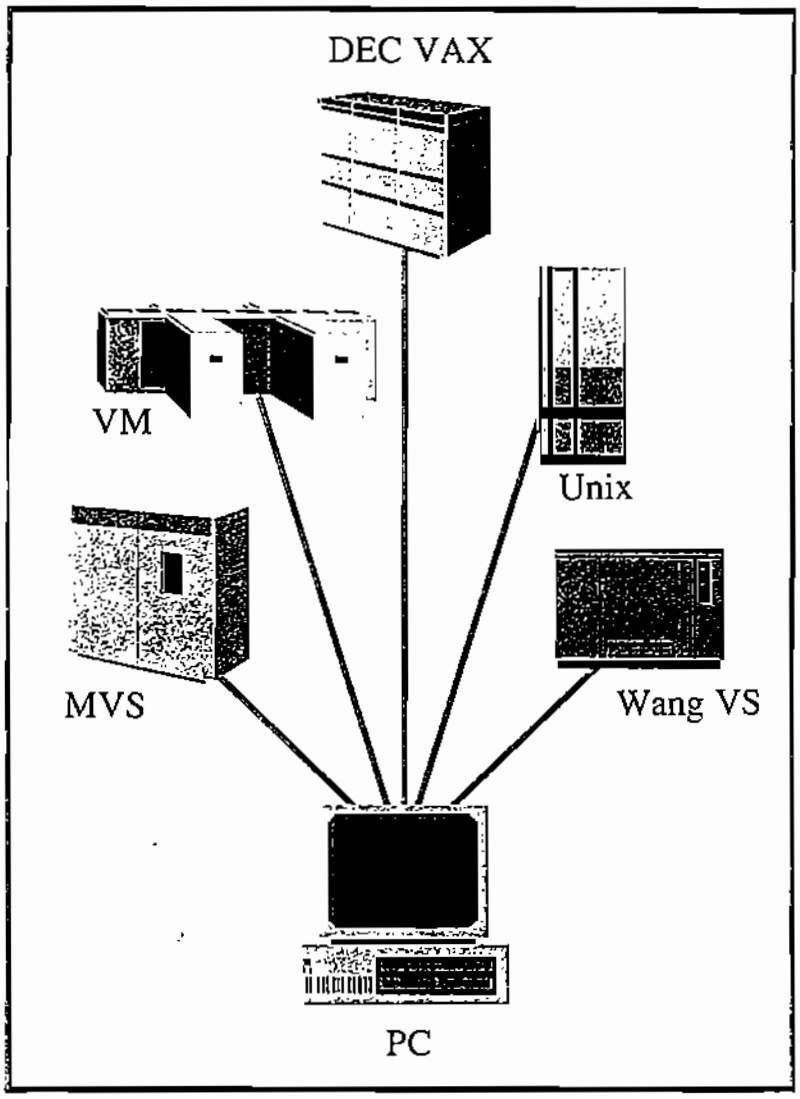
PC/FOCUS has always supported file transfers between PCs and attached host machines. The connectivity established under DOS with IBM mainframes running VM or MVS, now extends to host machines running VAX/VMS, UNIX, Wang VS, MPE/XL (HP) and TANDEM's proprietary operating system.

Customers who purchase the OS/2 version of PC/FOCUS can participate fully in client/server applications as standalone workstations or dedicated database servers on LANs or larger networks.

Connectivity Across Proprietary Networks

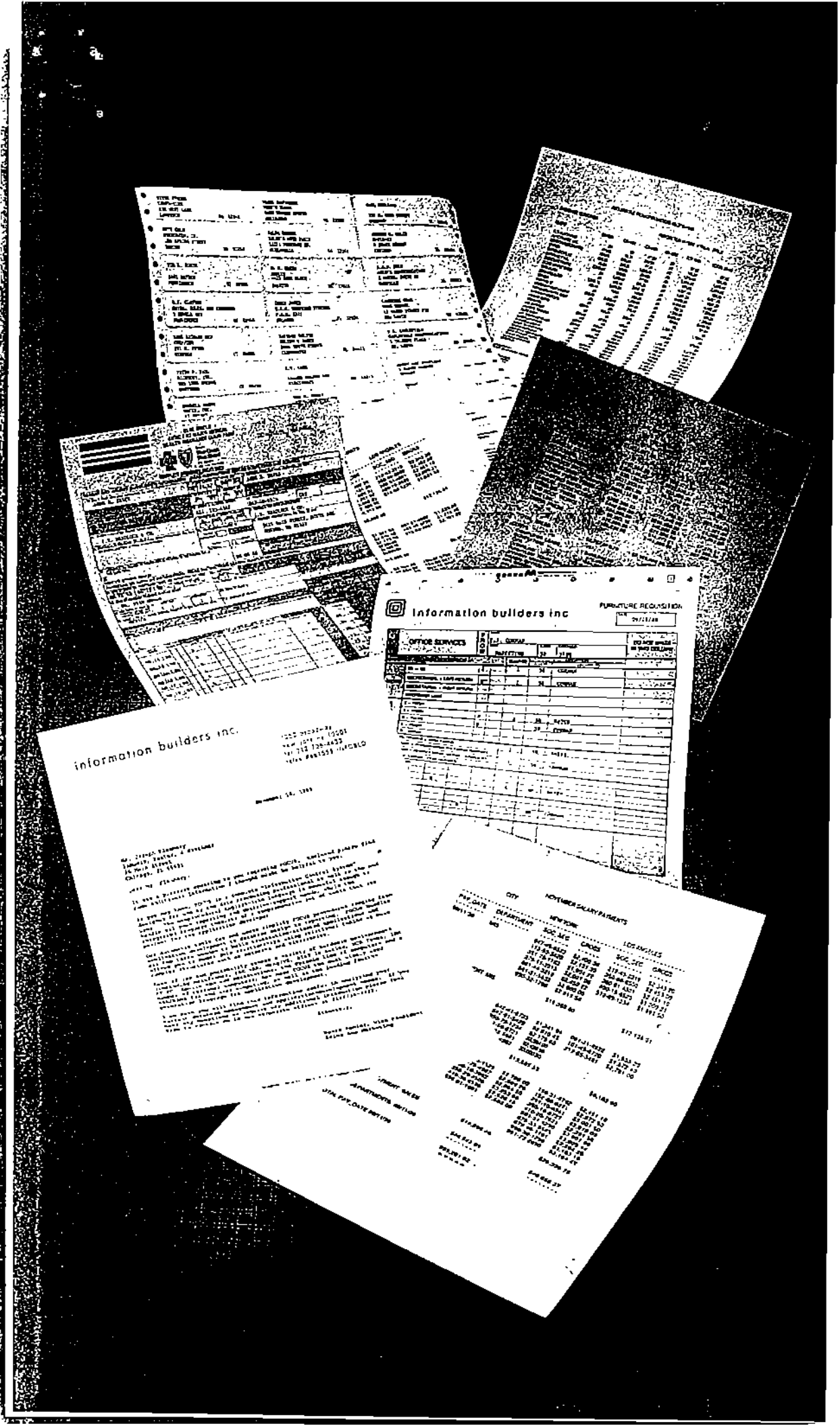
Information Builders already supports or is adding support for proprietary hardware and software connectivity facilities in most environments where FOCUS runs:

- On PCs – Distributed processing is supported through four proprietary LAN management strategies (see *Technical Summary*).
- On UNIX-based machines – Support is being added for TCP/IP- and LU6.2-based communications to link UNIX nodes and IBM machines respectively.
- On VAX – Distributed processing is supported through DEC's DECnet.
- On Wang VS Systems – Distributed processing and operations through the Wang System Network (WSN).
- On IBM mainframes – IBI supplies cross-machine products that use VTAM, LU6.2 and SNA for linking mainframe users on IBM systems with other IBM systems.



With PC/FOCUS and FOCNET installed, OS/2 machines can serve as fully enabled multitasking nodes on today's corporate networks.

1st 4GL To have an OS/2 version offering full two-way compatibility with midrange and mainframe versions



The same nonprocedural language can produce:

- *Ad-hoc queries with automatically formatted results.*
- *Formal reports with automatic or user-controlled formatting.*
- *High-resolution graphics, both color and monochrome.*
- *Statistical analyses that are prompt driven and interactive.*
- *Financial models and reports.*

Decision Support Tools

Decision support covers the processes by which data is retrieved, analyzed, formatted, displayed and transformed into information. In FOCUS, these functions are specified and controlled with simple English commands that are easy to learn, yet powerful enough to handle any reporting requirement, all with online help and error-correction facilities.

FOCUS users can have as much or as little control over format and display options as they wish. Intelligent defaults enable FOCUS to automatically format any report, whether a simple ad-hoc query listing items in an inventory, or a financial statement with many columns and levels of subtotals. At the same time, FOCUS is highly flexible, allowing users to freely customize the look of their reports. A budget analysis for top management may require a graphic presentation. Business analysts and planners, on the other hand, need financial models and statistical summaries on which to base projections. In both cases, formatting and display options can be defaulted or specified by the user as required.

Tools for Every Category of User

FOCUS reporting and analytical facilities offer support for all levels of expertise, from business end users to advanced DP professionals. Basic reporting functions are performed with a few simple commands. Users can add to their vocabularies as their needs increase. Because the syntax does not change, only expands, simple queries can grow into sophisticated applications. User interfaces range from English and SQL query generators to interactive, menu-driven report generators.

English Query Language (EQL)

This natural language facility accepts queries written in English instead of special commands to draw information from files accessible to FOCUS. It is ideal for nontechnical personnel, executives and casual users. With EQL, they need only know what type of information is in a file to ask FOCUS to produce reports: "Who sold the most units?" or "How many engineers in the Houston office?"

EQL includes a large lexicon of words used to translate requests into FOCUS syntax. Individuals can customize or expand lexicons to include special corporate terminology which reflects their personal styles and needs.

EQL

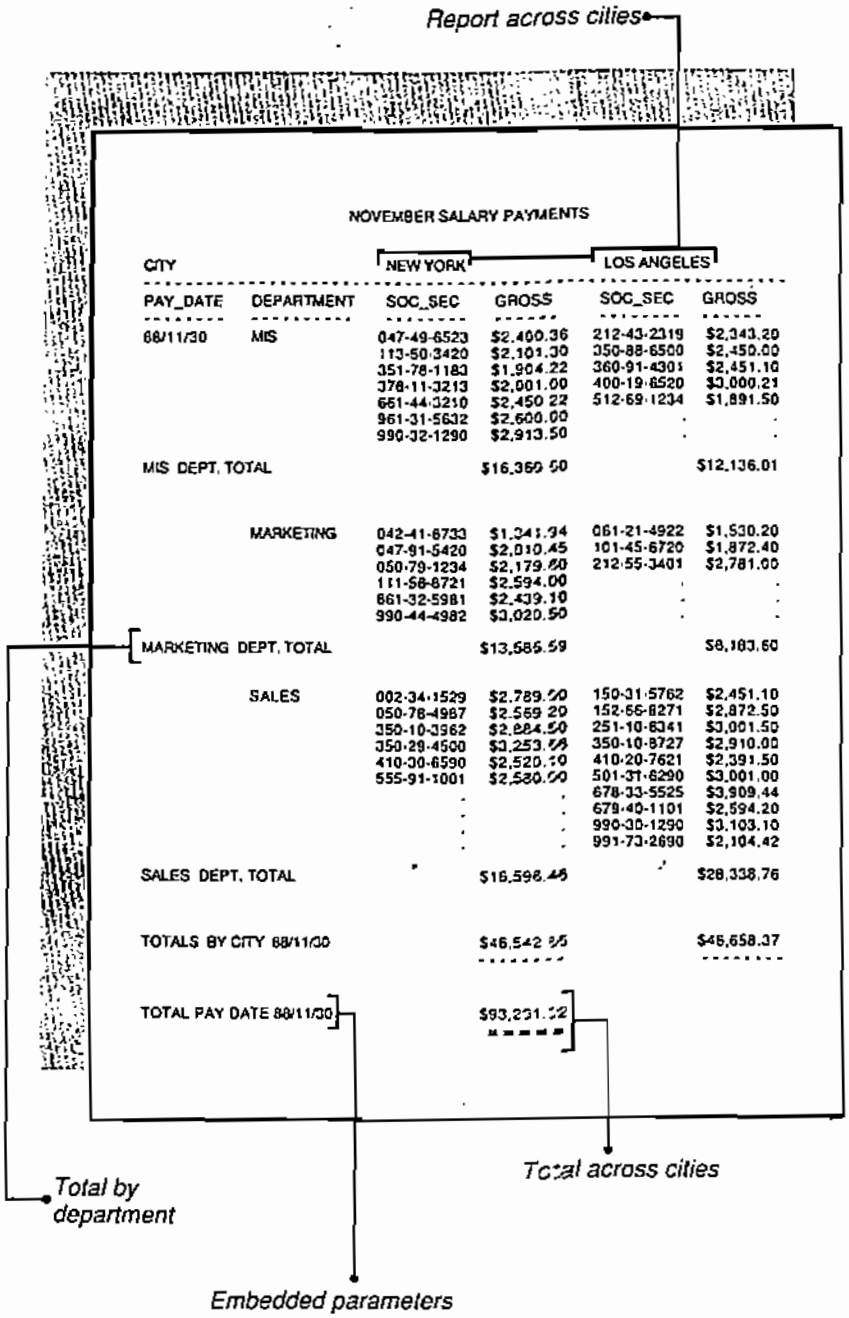
Automatic Report Generator

TableTalk, Information Builders' automatic report generator, allows users to create error-free requests through point-and-pick selections on a tiled series of pop-up windows – without typing! Requests can be revised and rerun or stored for later use. Highly efficient, TableTalk converts menu selections directly into FOCUS syntax. And because the generated FOCUS syntax is visible throughout the session, novices begin to learn the native language.

TableTalk

1st 4GL

To introduce menu-driven window technology for casual users



NOVEMBER SALARY PAYMENTS

CITY		NEW YORK		LOS ANGELES	
PAY_DATE	DEPARTMENT	SOC_SEC	GROSS	SOC_SEC	GROSS
88/11/30	MIS	047-49-6523	$2,400.36	212-43-2319	$2,343.20
		113-50-3420	$2,101.30	350-88-6500	$2,450.00
		351-78-1183	$1,904.22	360-91-4301	$2,451.10
		378-11-3213	$2,001.00	400-19-6520	$3,000.21
		661-44-3210	$2,450.22	512-69-1234	$1,891.50
		961-31-5632	$2,600.00	.	.
		990-32-1290	$2,913.50	.	.
MIS DEPT. TOTAL			$16,369.50		$12,136.01
	MARKETING	042-41-6733	$1,341.94	061-21-4922	$1,530.20
		047-91-5420	$2,010.45	101-45-6720	$1,872.40
		050-79-1234	$2,179.60	212-55-3401	$2,781.00
		111-58-6721	$2,594.00	.	.
		661-32-5981	$2,439.10	.	.
		990-44-4982	$3,020.50	.	.
MARKETING DEPT. TOTAL			$13,585.59		$8,183.60
	SALES	002-34-1529	$2,789.50	150-31-5762	$2,451.10
		050-78-4987	$2,569.20	152-66-8271	$2,872.50
		350-10-3962	$2,884.50	251-10-6341	$3,001.50
		350-29-4500	$3,253.60	350-10-8727	$2,910.00
		410-30-6590	$2,520.10	410-20-7621	$2,391.50
		555-91-1001	$2,580.00	501-31-6290	$3,001.00
		.	.	678-33-5525	$3,909.44
		.	.	679-40-1101	$2,594.20
		.	.	990-30-1290	$3,103.10
		.	.	991-73-2690	$2,104.42
SALES DEPT. TOTAL			$16,596.46		$28,338.76
TOTALS BY CITY 88/11/30			$46,542.95		$46,658.37
TOTAL PAY DATE 88/11/30			$93,201.32		

SQL Translator

The SQL Translator gives people who know SQL immediate access to FOCUS tools, databases and other relational and nonrelational files. SQL requests are translated automatically and can be ported to many hardware platforms.

FOCUS Report Writer

While TableTalk is ideally suited to quick analysis of data, the real power of FOCUS lies in the completeness of the native language. Users will find that as their experience grows they can write complex reports in a fraction of the time required with traditional programming languages. The nonprocedural language enables users to specify custom reports incorporating sophisticated computational logic and complex formatting.

Users will appreciate the ease and power of FOCUS syntax as they begin to design their own formats and specify how the data should be summarized and displayed. FOCUS supports complete selection and computational capabilities, including mathematical functions for subtotaling and cross-footing, substring manipulation and matches. Record-selection options support full Boolean operations on discrete fields and chains of field values.

Financial Reporting Features

A few additional commands allow clients to create more complex matrices, such as row- and column-oriented financial statements. Data can be sorted by rows and across columns to produce income statements, balance sheets, budgets and other reports better presented in matrices. Listings and matrices can be produced in ascending or descending order, or by ranges of values, and can include summary lines at any level.

Analysts can pass results from one financial model to another, using the result of one column or time period as the starting balance for the next. A matrix can also be structured line by line, with the definition and placement of each cell specified within the body of a report request. Cells can be referenced using convenient row-column notation, and internal computations can be produced and placed anywhere within the report.

Repetitive analyses and report requests are easily saved for recall. These stored procedures (called FOCEXECs) can then be executed on demand by entering a single command. Procedures can be menu driven and customized as needed.

Parameters embedded in headline

Total carried over from earlier quarters not printed in report

AMOUNTS DUE FROM OPEN INVOICES AS OF JANUARY 15, 1989

CUSTOMER DATABASE — REPORT RUN 01/15/89 4:10 p.m. (FRL2)

CLIENT	Q1-1988	Q2-1988	Q3-1988	Q4-1988	TOTAL 1988	TOTAL 86-88
ALS AUTOHAUS	.00	.00	67.00	.00	67.00	67.00
AUTO PARTS, INC.	411.00	78.70	250.50	.00	740.20	855.50
BENSON AUTO PARTS	829.00	975.30	111.10	.00	1,915.40	1,915.40
BRITES	555.25	216.20	1,853.40	.00	2,624.85	2,624.85
CAR EMPORIUM	45.00	144.00	284.00	.00	473.00	591.10
CAR RALLY INC.	2,317.40	993.00	717.00	.00	4,027.40	6,027.40
DISCOUNT PARTS	.00	1,005.00	656.20	.00	1,661.20	1,661.20
DONS SPARE TIRES	.00	985.10	3,447.15	.00	4,432.25	4,432.25
EDS AUTO	5,229.75	1,076.33	143.00	.00	6,459.08	7,829.08
EDWARD AUTO	456.10	115.00	225.20	.00	795.30	850.20
ERNIES	.00	.00	1,239.00	.00	1,239.00	1,239.00
FAST FIX IT	525.00	2,452.55	881.00	.00	3,858.55	3,858.55
FREEWAY AUTO PARTS	.00	66.60	715.30	.00	781.90	781.90
HERMANS PARTS SHOP	.00	.00	.00	.00	.00	.00
HIGHWAY MOTORS	673.11	745.00	332.00	.00	1,750.11	1,750.11
I 84 WAY AUTO	.00	.00	.00	.00	.00	.00
I 28 AUTO	220.00	97.50	139.00	.00	456.50	578.50
I-95 SERVICE	.00	.00	.00	.00	.00	.00
JIMMY'S TOWING	359.69	632.00	511.46	.00	1,703.15	3,572.65
LUBE & GO	737.00	825.20	355.20	.00	1,918.40	3,810.00
MILTON ROAD SHOP	.00	.00	598.10	.00	598.10	598.10
MUFFLER STORE	210.55	1,923.00	2,050.55	.00	4,184.10	4,184.10
ROGER & ANDYS	.00	.00	910.00	.00	910.00	910.00
SAMS AUTO STORE	.00	.00	703.00	.00	703.00	703.00
SPARKYS PLUGS	.00	2,010.10	834.00	.00	2,844.10	2,844.10
STREET & DIRT PARTS	399.00	518.54	1,211.00	.00	2,129.54	3,227.00
STREET SAFE AUTO	2,009.75	618.66	295.00	.00	3,123.41	3,123.41
TOM'S TOWING	.00	.00	.00	.00	.00	.00
U-DRIVE-IT PARTS	740.30	1,035.30	555.50	.00	2,331.10	3,329.10
U-SERVE	.00	.00	.00	.00	.00	.00
DOMESTIC	15,726.90	16,915.08	19,094.66	.00	51,736.64	61,373.60
% OF 86-88 DOM. TOTAL	25.62	27.56	31.11	.00	84.29	100.00
INTL AUTOHAUS	310.77	1,520.00	.00	.00	1,830.77	3,072.77
INTL CAR PARTS	1,004.00	550.90	1,003.00	.00	2,557.90	2,557.90
INTL LUBE & GO	.00	.00	2,991.00	.00	2,991.00	2,991.00
INTL MUFFLER	.00	.00	.00	.00	.00	.00
INTERNATIONAL	1,314.77	2,170.90	3,994.00	.00	7,479.67	8,627.67
% OF 86-88 INT. TOTAL	15.24	25.16	46.29	.00	86.69	100.00
GRAND TOTAL	17,041.67	19,085.98	23,088.66	.00	59,216.31	70,001.27
% OF 86-88 TOTAL	24.35	27.26	32.98	.00	84.59	100.00

Percentages calculated

Subtotals

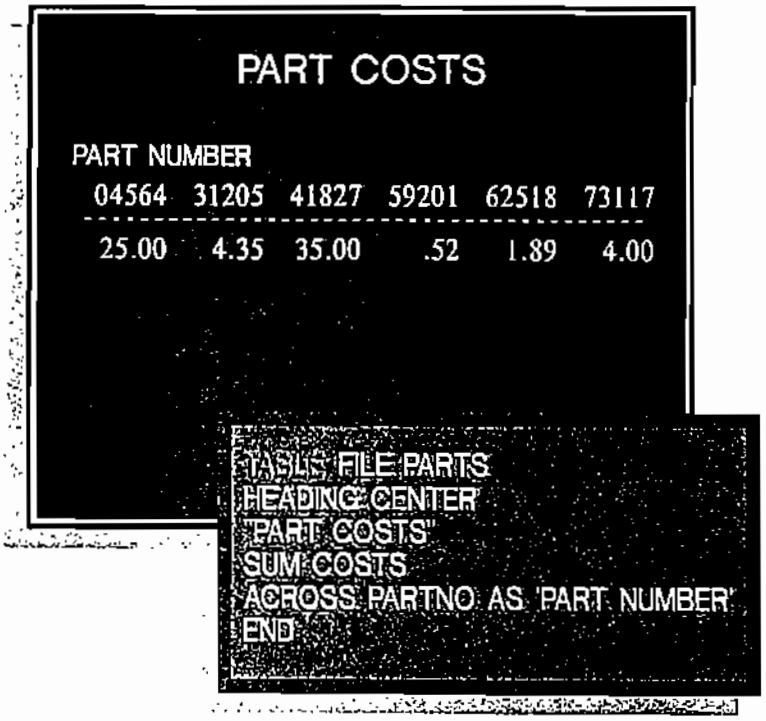
Grand totals

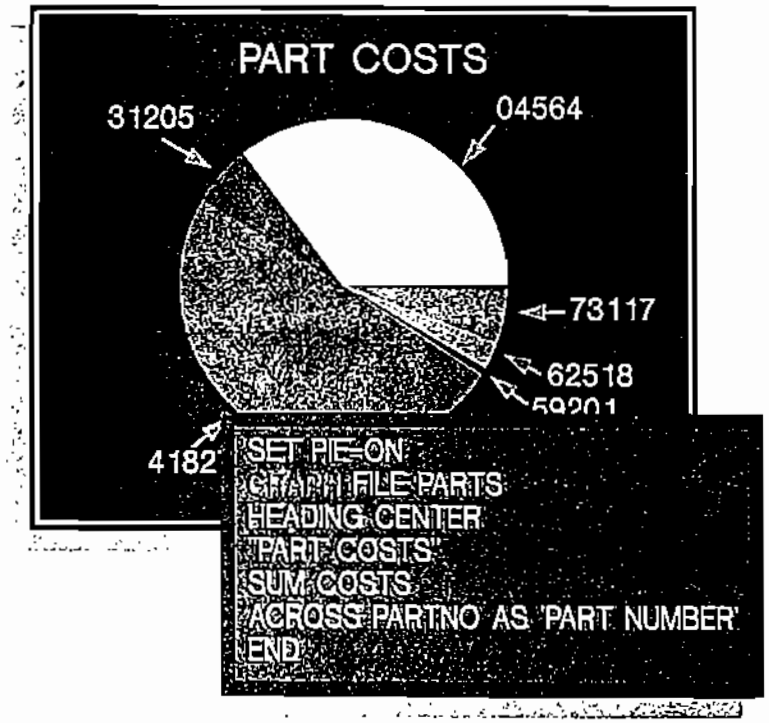
Graphics

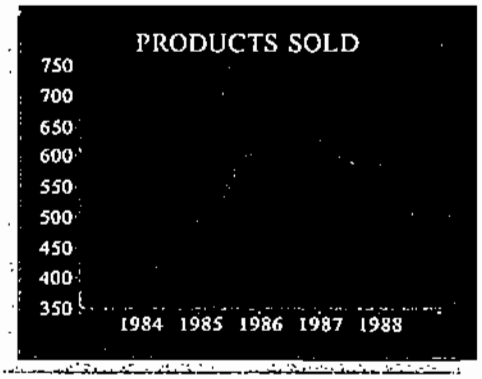
Sometimes information is more easily understood when presented graphically. Often, interrelationships between data elements are lost among the rows, columns, and totals of tabular reports. FOCUS graphics add a powerful visual dimension to reporting, reducing large volumes of information into easily understood graphs and charts.

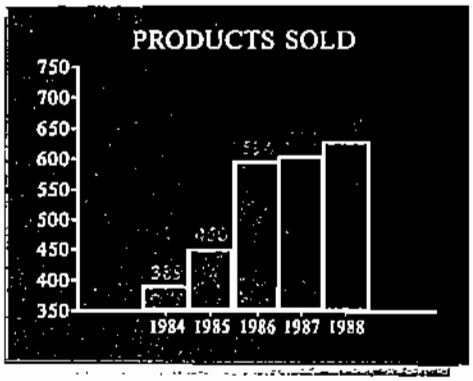
The integrated graphic facilities use the same syntax as queries and reports. Replacing the first word of a report request such as TABLE with GRAPH automatically converts a report into a graph and vice versa. A full set of intelligent defaults handles display parameters, making it possible to produce a graph immediately. After viewing the initial version, you can change the display parameters to customize the graph, without additional data retrieval.

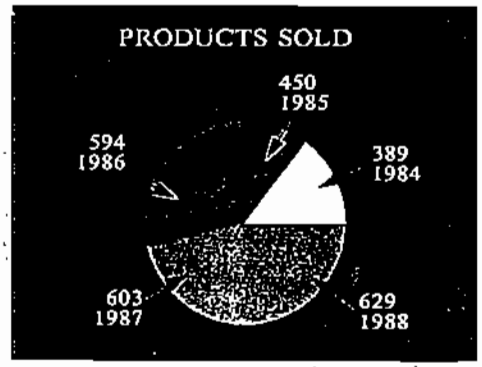
FOCUS produces connected point and line plots, histograms, bar charts, scatter diagrams and pie charts. Multiple variables can be plotted on the same graph, and a whole series of graphs is produced. The plotted data can reside in FOCUS databases, or in any existing files or databases that FOCUS reads, and can be displayed on monochrome or high-resolution color monitors, printers and plotters.

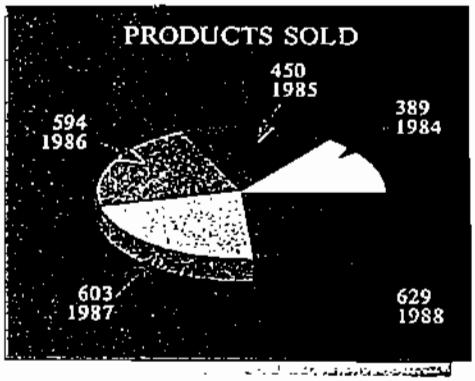










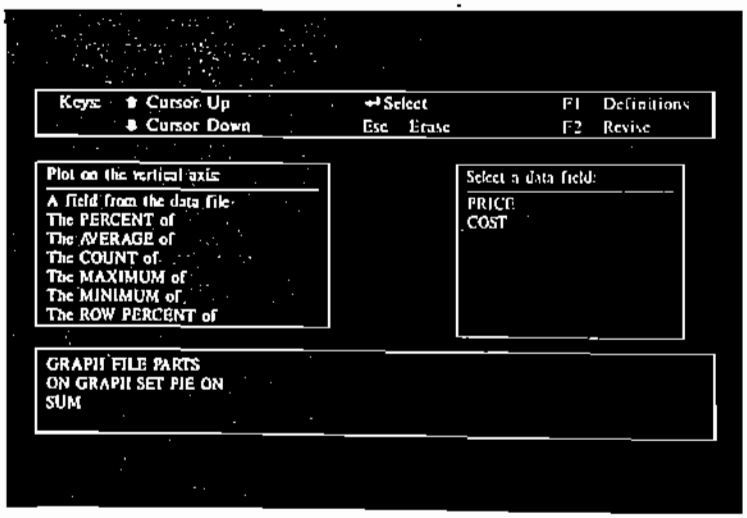


These are just a few of the graph types possible in FOCUS.

PlotTalk

This automatic graph generator enables end users to produce graphs without learning native FOCUS command syntax. Users select options from a series of tiled and pop-up windows. PlotTalk supports all FOCUS graph types.

The integrated FOCUS environment allows you to move easily from one presentation format to another all in one language, independently of data file types or formats.

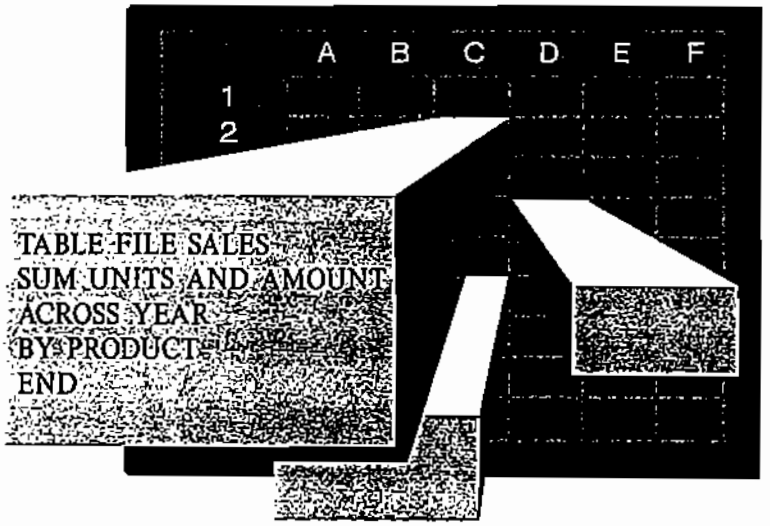


One Spreadsheet for Use on PCs, Minicomputers and Mainframes

FOCCALC is a full-function, Lotus-like spreadsheet with advanced features for consolidation and goal seeking. It provides consistent PC-type spreadsheet capabilities for FOCUS users on midrange and mainframe systems. Users can automatically calculate depreciation and amortization schedules, rates of return, linear regressions and standard deviation.

Since every cell in a spreadsheet can be formatted individually, different types of data can be listed in any column and in any format. Clients can populate cells of FOCCALC spreadsheets with data from any file that FOCUS reads, including live production data. They can build formulas, test hypotheses, and calculate results from within the spreadsheet environment. Because the data is maintained separately, different data sets can be applied against a model.

In many cases, it is more convenient to bring the FOCCALC model to the data on the mainframe, rather than transfer the data to a PC.



A single cell of a spreadsheet may contain an entire FOCUS retrieval program. When the request is executed, the data is selected and analyzed and the results are automatically placed in the spreadsheet.

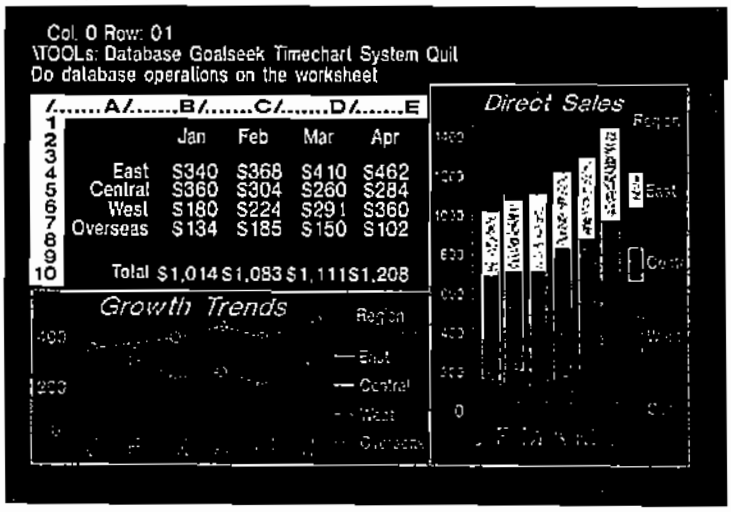
Lotus-Like Operation

The menu-driven operation and alphanumeric cell notation of FOCCALC closely parallels Lotus 1-2-3. In addition, existing Lotus models and data can be loaded directly into PC/FOCCALC spreadsheets and uploaded to any compatible FOCUS host running FOCCALC.

FOCCALC Graphics

FOCCALC spreadsheets can be displayed as line graphs, pie charts, bar charts and X-Y graphs. In addition, line charts can be overlaid on bar charts or several bar charts stacked for more effective comparisons.

Any combination of up to four graphs and spreadsheets can be displayed on a screen simultaneously – even combinations of data from different files and databases.



Statistics

The menu-driven, interactive statistics module integrated within FOCUS offers formal statistical functions.

To perform statistical analyses, users select operations from a main menu and respond to prompts for the necessary parameters. Moving from a report or graph to statistical analysis and back is easy in FOCUS. Data can originate in a FOCUS database or in any external file or database structure FOCUS reads.

CROSSTABS	TIMESERIES	CORRELATIONS
EXPONENTIAL SMOOTHING	ANALYSIS OF VARIANCE	DISCRIMINANT ANALYSIS
REGRESSIONS	FACTOR ANALYSIS	DESCRIPTIVE STATISTICS

PROCESS SELECTION SCREEN 1.0.0

For File: CUSTOMER

KEYS: F2 Expand ENTER Select F3 Quit

Select the type of procedure to generate:

A procedure with all actions defaulted
A customized maintenance procedure

ModifyTalk converts menu selections into error-free native FOCUS syntax to build applications for managing FOCUS database files.

SAVED PROCEDURE SELECTION MENU SCREEN 6.1.0

For File: CUSTOMER

KEYS: F2 Expand F3 Quit ESC Erase

After saving the procedure:

Execute the saved procedure
Compile the saved procedure
Compile the saved procedure, and run it
Edit the saved procedure
Quit

All the data segments in the file
Allow multiple record processing:
For all segments in the file
After generating the procedure:
Save the procedure generated

INSTRUCTIONS:
1-Move cursor to selection with ↑↓ arrow keys
2-Press ENTER to Select
3-ESC key to QUIT

Select the window type:

Menu (vertical)
Menu (horizontal)
Text input
Text display
File names
Field names
File contents
Return value di

File: MAINMENU Date:

Window Painter is an automatic, menu-driven facility that allows designers to create and incorporate pop-up and pull-down windows in their applications, without coding. These might be used to present processing alternatives, to solicit information, or to display additional instructions.

Exit this menu
Goto value
Return value
Heading
Description
Show a window
Unshow a window
Display list
Hide list
Border
Popup (Off)
Colors
Help window
Line-break
Multi-Select (Off)
Quit

What Do You Want To Do?

Update the Customer Database
Update the Line
Update the Part
Update the Orde
Report

What Report Do You Want to Run?

Outstanding Orders Listing
All Orders for a Specific Customer
All Parts for a Specific Order
Customer Listing
Parts Table Listing

File: MAINMENU Window: REPORT Type: Menu (vert) F1=Help F2=Menu R08C38

Application Development Facilities

FOCUS offers professional application developers a complete, self-contained environment for building applications to create and update files, including those created by other applications or products (see *SQL Support*). FOCUS combines a high-productivity language with a versatile database and integrated control facilities for rapidly prototyping, testing and implementing production applications.

Rich Native Language

FOCUS provides the selection and computational capabilities found in traditional programming languages, including mathematical functions, IF...THEN...ELSE logic, substring manipulation, tests on values and ranges. The syntax supports efficient database navigation and greatly simplifies the expression of transaction-processing logic for the add/change/delete operations required to maintain databases. FOCUS validates and computes database values, logs transactions and sends status messages to the terminal during processing.

FOCUS maintenance procedures can incorporate branching, looping, called subroutines, and substitution of values at run time for variable data fields. Graphically oriented editors allow designers to *paint* menus, data entry screens (and reports in PC/FOCUS).

Application Generators for Power Users

You can build complete FOCUS applications for database management without writing any third generation code. Information Builders provides a menu-based code generator, ModifyTalk, that automatically produces screens and procedures for updating FOCUS databases. Working from menus presented in pop-up and pull-down windows, you select the processing functions for a new application by simply moving the cursor and pressing function keys. In response, ModifyTalk generates executable procedures with all necessary logic and screen forms, as well as accompanying documentation.

Add Pop-Up or Pull-Down Windows Quickly and Easily

The popularity of FOCUS' windowed report and application generators led Information Builders to offer a Window Painter that allows developers to add window-based front ends to applications without coding. With Window Painter it's easy to give end users pop-up and pull-down windows for submitting parameters, selecting processing options, and indicating file and field names. Even end users working on mainframes and midrange systems can share friendly, PC-type applications with menu-driven operation. And the generated windows can be enhanced easily with the Screen Painter, if you later wish to add additional highlighting features – still without resorting to procedural language coding!

Intelligent Defaults

FOCUS provides intelligent defaults for almost every formatting or processing option. Designers can quickly traverse menus while defining the basic flow of an application, without thinking about display formats. Finishing touches can be added later with a text editor.

Procedural Controls

FOCUS Dialogue Manager supplies the process-control facilities that enable developers to specify process flows and interactive dialogues. Developers can incorporate interactive prompts into programs to solicit values for variable data fields (such as screening criteria) or pass control to other FOCUS applications or operating system macros. Additional facilities permit reading from and writing to sequential files, indexed table lookups, and other special processing options.

Editing Tools: Text Editor

FOCUS includes a text editor (TED) for writing applications and customizing programs created with the code generators. Developers who prefer system text editors can use those as well. While similar to other text editors, TED incorporates a Screen Painter and improves productivity by combining screen design and screen-processing logic in one facility. It also offers interactive debugging facilities. Because TED is identical in all environments, FOCUS users need only learn one editor.

Screen Painter

Screen Painter allows designers to visually lay out headings and data fields on screen forms. This speeds the creative process and eliminates frustrations encountered with conventional facilities that postpone viewing results until screens are compiled and link edited. FOCUS also automatically binds screens to the application, saving an additional step.

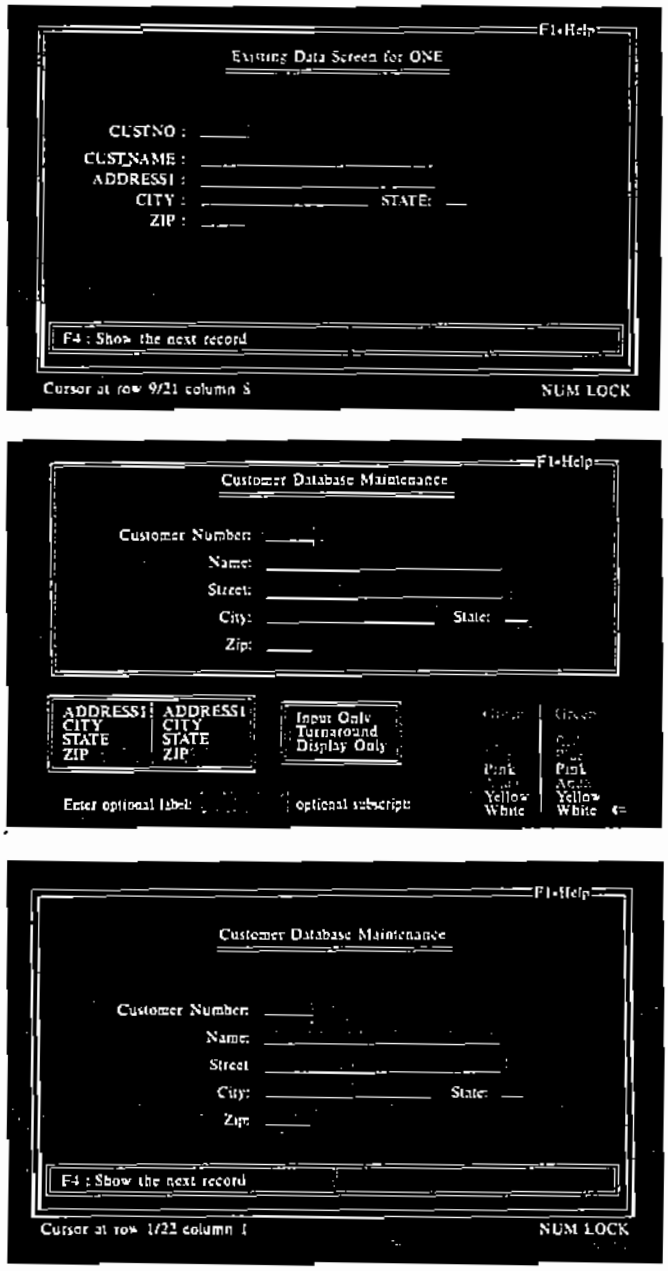
FOCUS CASE Tools

Rounding out the suite of application development facilities, Information Builders offers a structured Computer-Aided Software Engineering (CASE) methodology to guide users in the development of medium to large scale FOCUS applications. The FOCUS Application Creation Tool (FACT) provides an icon-driven user interface, as well as graphics and text editors supplemented by FOCUS-based rules that streamline the entire development process.

FACT automates the analysis and design of computer-based systems and provides complete design-visualization facilities including exception reports to identify missing or incomplete elements. FACT also generates portable FOCUS code, including file schema descriptions, input and output screen layouts, procedures and reports, all of which will run in any FOCUS operating environment.

Host Language Interface

The Host Language Interface (HLI) enables programmers to access and maintain FOCUS databases from programs written in C, COBOL, FORTRAN, Pascal, ADA, Assembler and other programming languages.



Screen Painter is a visually oriented code generator that automatically produces FOCUS screen definitions in response to options taken on menus and entries made on the screen. Designers can create easy-to-use screens with color and highlighting, without coding.

Automatic Facilities for Deploying and Controlling FOCUS Applications

The Application Control Environment (ACE) is a centralized facility for deploying FOCUS applications in corporate environments. ACE unifies the various aspects of the FOCUS environment – data descriptions, databases, procedures, documentation, security, etc. – into the single concept of an application. ACE manages applications in a repository which serves as an active data dictionary, providing information and interactive tools for end users, application developers and database administrators.

The ACE Repository

The ACE Repository actively tracks traditional data dictionary information about procedures, databases, field definitions and their interrelationships. Optionally, procedures and data descriptions can be stored within the ACE Repository enabling centrally managed pieces of an application to be delivered on request.

ACE exceeds the scope of traditional data dictionaries, since the repository maintains additional control on application information including:

- Security access rules: ACE can selectively restrict user access to applications and data.
- Logical database views.
- Messages sent to application users.
- Node-identification information needed to establish connectivity with distributed databases.

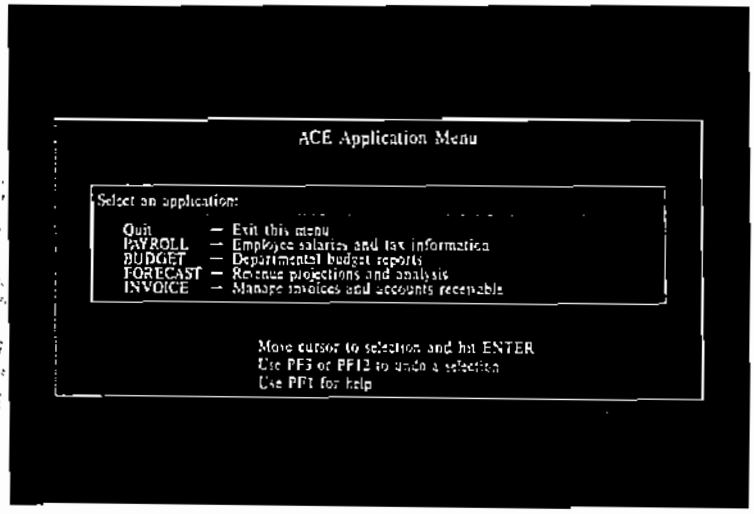
ACE Tools

ACE makes centrally maintained information available through interactive, window-driven facilities. Through them, users can review and use information on file, and add information about new applications – all without writing code. The main menu displays all applications that a user is authorized to run. When the user selects an application, ACE transparently sets up the necessary application environment, runs the application, and restores the environment when it is completed.

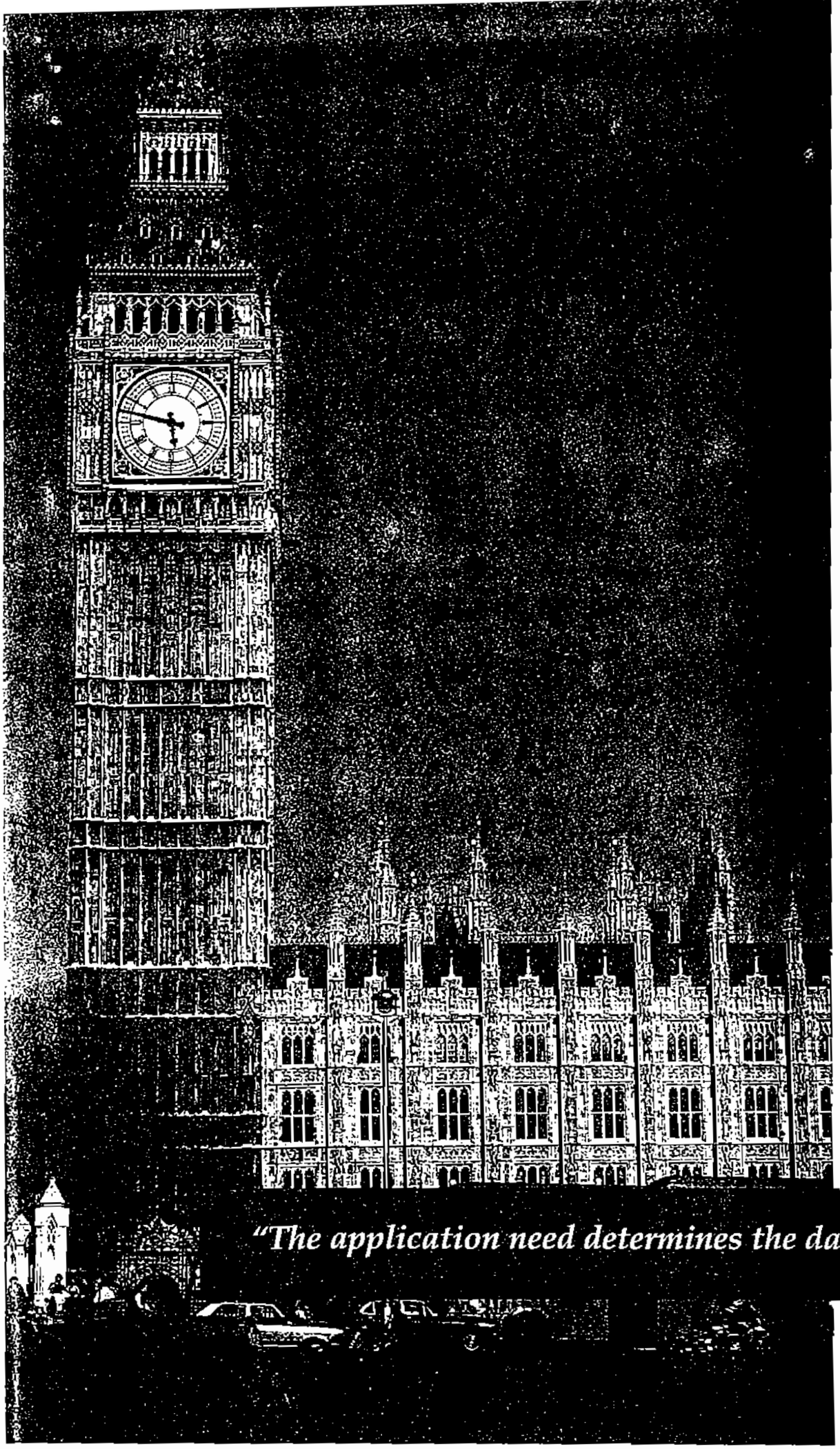
With ACE menus, users gain transparent access to databases for ad-hoc queries and reporting – no matter where the data resides. ACE, thus, insulates them from the complexities of the applications and the operating environments.

ACE

For application developers, ACE provides a full set of window-based tools for establishing security, managing test and production versions of an application, and resource sharing across applications.



ACE displays a menu of all the applications a user is authorized to run.



Many government branches use FOCUS for information analysis, program management, logistic support and procurement processing. A wide range of interfaces to existing sources of data and portability of applications make FOCUS ideal for organizations with multiple divisions or departments.

"The application need determines the database design"

Flexible Database Architecture

FOCUS supports a wide range of physical architectures and conceptual ways of viewing or modeling data: simple sequential files, relational tables, networks and shared-relational structures. With FOCUS it's also possible to physically or logically combine these structures within an application. The absence of a strict proprietary architecture leaves developers free to specify whatever design best suits the data and their operational goals.

Balance-Tree Indexing and Alternate Views

Balance-tree indexing speeds data retrieval and online updates of large databases. To further optimize retrievals for specialized queries, users can logically invert FOCUS databases, creating alternate views. An alternate entry point often significantly speeds processing without requiring physical restructuring of the file.

Rebuild Databases Easily

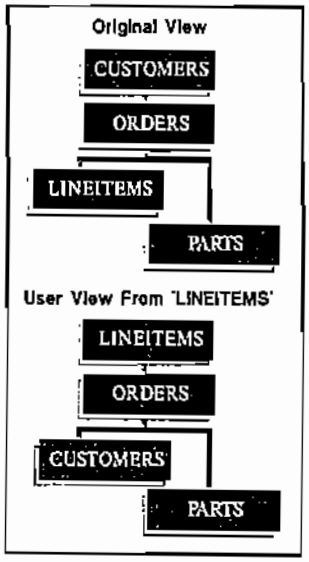
You can easily restructure a FOCUS database, even after loading the data. FOCUS includes utilities for adding or indexing fields, checking file integrity and reorganizing it if the integrity is poor – all without starting over or changing the application.

Excellent Prototyping Tools

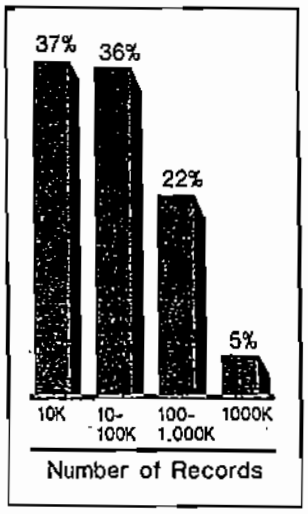
Versatility, flexibility and fast definition make FOCUS databases ideal for prototyping applications. Developers can select data models based on the end users' stated needs, with confidence that the whole design can be changed easily if the requirements shift in mid stream. There is virtually unlimited support for data types and files of every magnitude. FOCUS prototypes often prove so satisfactory that they are upgraded to full production status without conversion – even some that are slated for development with other RDBMS products!

Distributed Database Support

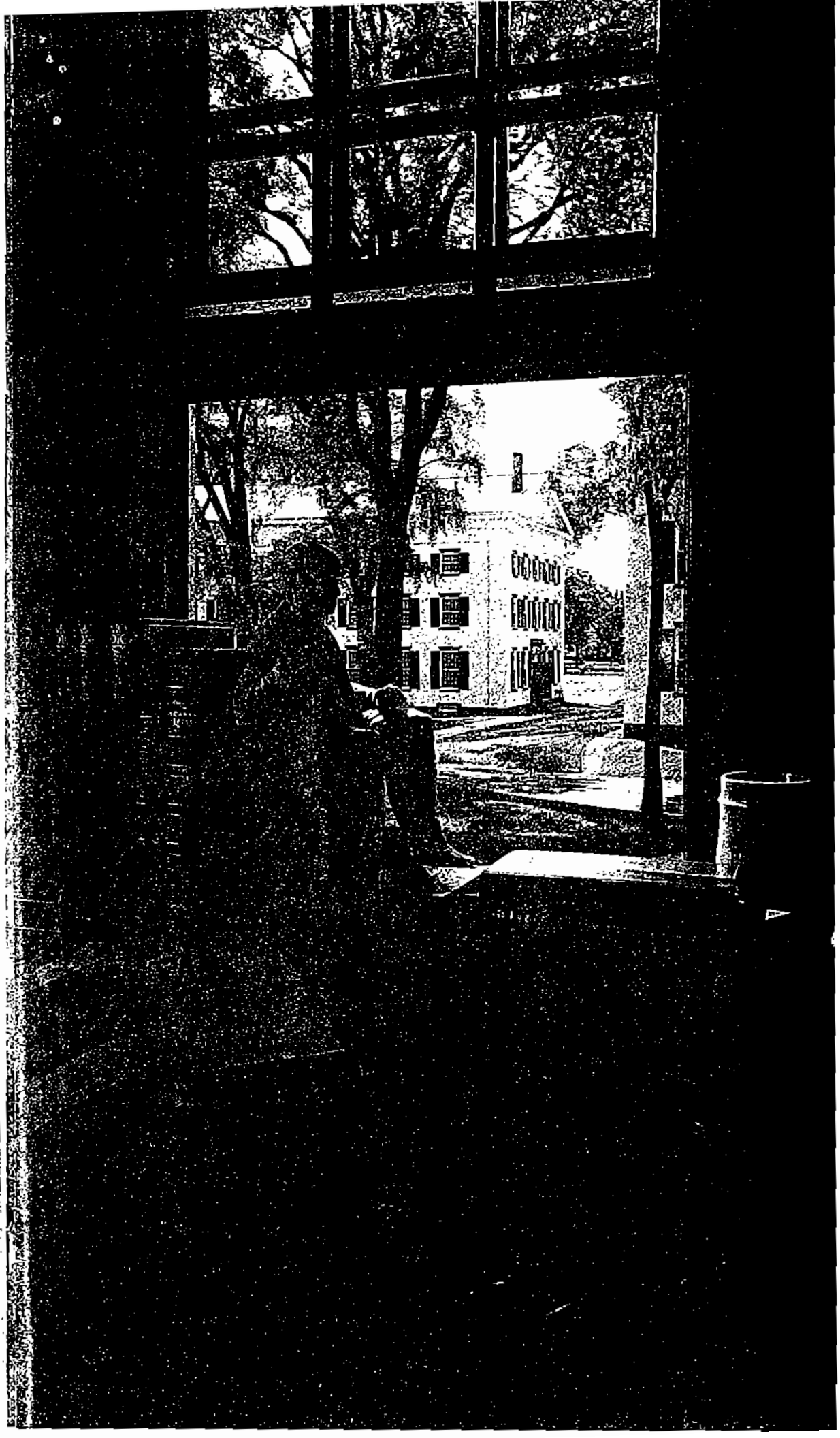
FOCUS databases support distributed access across a variety of communication networks. FOCUS users can combine data from multiple files in a single retrieval and update files on other machines across a network. Information Builders has an ongoing project to connect every node where FOCUS runs through transparent links to provide distributed access to all of the data FOCUS controls or accesses. This does not require mastery of the communication protocols through which the connections are made.



Alternate views allow users to optimize the retrieval strategy for a specialized query.



As the graph indicates, a recent poll of FOCUS users demonstrated that the majority of FOCUS databases hold between 10,000 and 1,000,000 records.



Major universities and colleges all over the world use FOCUS for managing information about students and classes, tracking alumni and annual fund-raising programs and providing data for managing investment portfolios. Libraries and museums use FOCUS to manage their collections and to gather information for the archives.

Data Definition Language

Before FOCUS can access data, the files must be described in the FOCUS Master Dictionary, which is the repository for information about files and the characteristics of each data field. In addition to standard information about field names, lengths, data formats and display formats, FOCUS file descriptions can also contain security restrictions, field aliases, data-validation criteria (with associated error-message text), predefined relational join operations and multiline column titles for use in reports. File descriptions can be moved freely between the various FOCUS operating environments.

The Tools

File descriptions are written in the FOCUS Data Definition Language. These simple English statements can be created automatically with the FileTalk code generator or entered using a text editor. For users describing third-party relational databases, FOCUS provides automatic facilities for creating them directly from the SQL Catalog (see *SQL Support*). Since descriptions are maintained separately from the actual data and application code, changes to field attributes, such as editing rules for display fields, are visible immediately – this is particulary helpful when building prototypes.

Data Security

Application developers and database administrators can specify access rights and secure confidential information through facilities applied in the file descriptions. It is possible to restrict access to files, or to specific tables, records, fields, or even values within fields. For example, individuals can selectively be denied access to the Salary field in a Payroll file whenever the salary value exceeds a specified amount. Database administrators can tailor access rights for individuals or groups of users, granting any of the following levels of access:

- No access.
- Read-only access.
- Write-only access.
- Full read/write access.

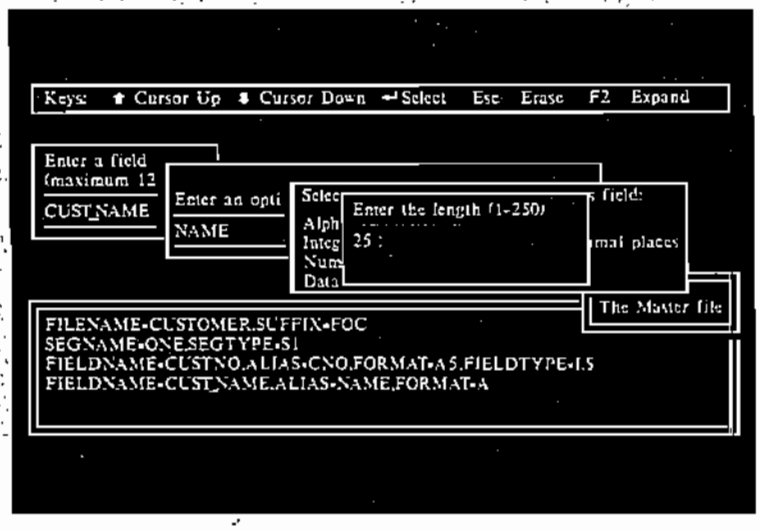
Additionally, FOCUS file definitions, databases and applications can all be encrypted to make them completely secure. FOCUS security facilities complement any operating system level security facilities already in use.

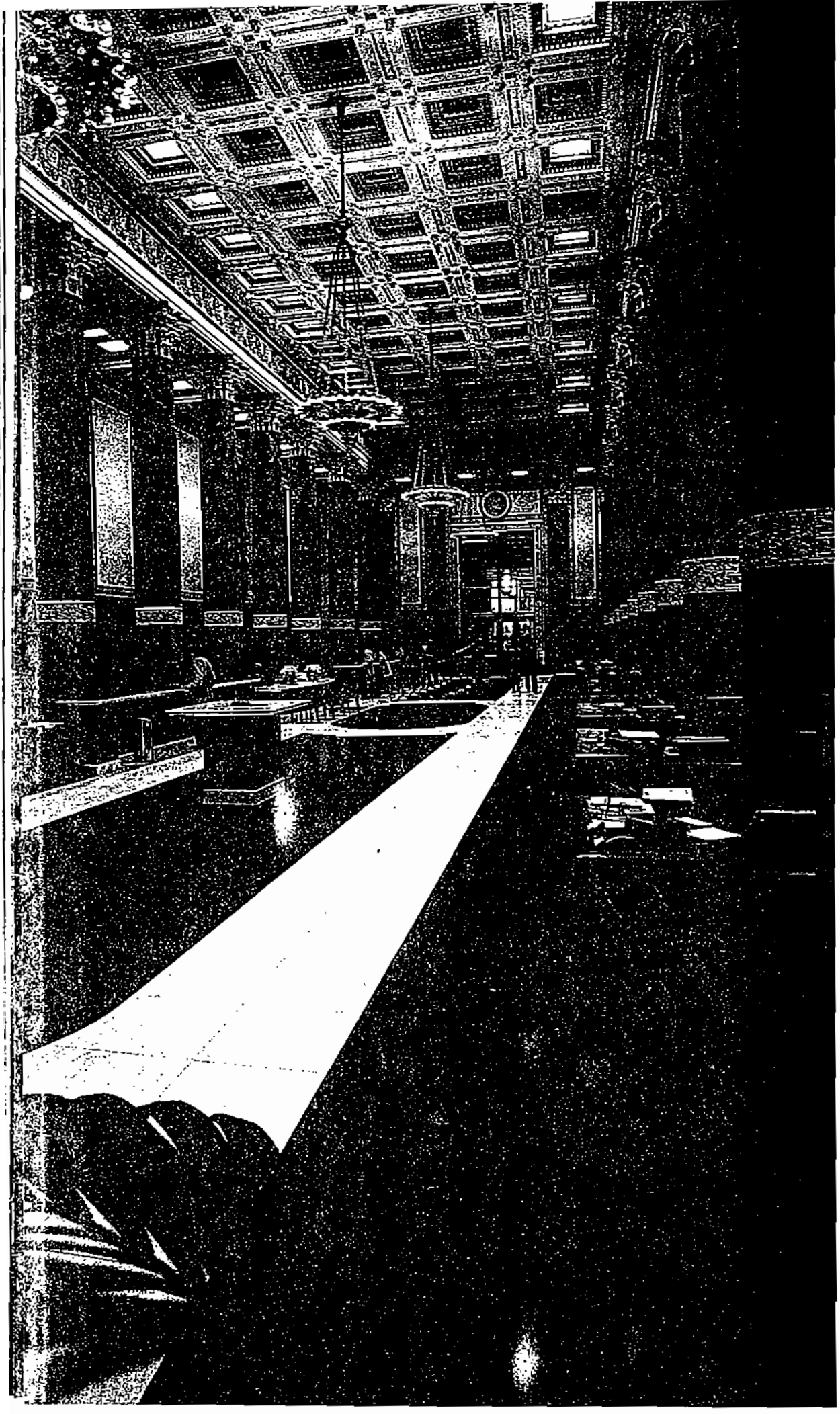
Resource Protection

Developers and administrators can set limits to control the numbers of records read or required to fulfill particular requests. This is useful for limiting I/O activity during the development and testing of prototype applications.

FileTalk

FileTalk automatic code generator allows users to create file descriptions by selecting options from a series of menus.





Investment houses and banks use FOCUS to analyze performance and measure profitability of stocks and other financial instruments. FOCUS' ability to read existing (non-FOCUS) files allows users to leverage investments in data and systems without reprocessing or conversion. Information Builders' SQL Interfaces provide tools for accessing and managing data in relational tables created with IBM's DB2 and SQL/DS, and DEC's Rdb, as well as tables created by Britton Lee, Oracle, Ingres, Sybase and Teradata.

Data Management Facilities

FOCUS provides complete data management facilities for building and operating transaction processing applications. Batches of update transactions can be applied against FOCUS files, as well as VSAM files and tables created with other vendors' products (see also *SQL Support*). The transaction processing facilities permit multiple individuals to update a database simultaneously, while preserving the integrity of the data and shielding users from errors due to record-level conflicts during update operations.

The high-productivity FOCUS language and automatic code generators shorten the process of developing maintenance applications, yet the syntax provides the power and controls associated with traditional languages. Each maintenance activity is accomplished with simple English phrases, from the bulk loading of data to add/change/delete operations . . . to the logging of transactions.

Tested maintenance applications can be compiled and even loaded into main memory to minimize processing time.

Convenient Interfaces for End Users

FOCUS' superb screen support facilities allow application developers to automatically generate menu-driven applications that present processing options in pop-up or pull-down windows, and make full use of colors and other highlighting devices to emphasize the processing instructions and data validation criteria.

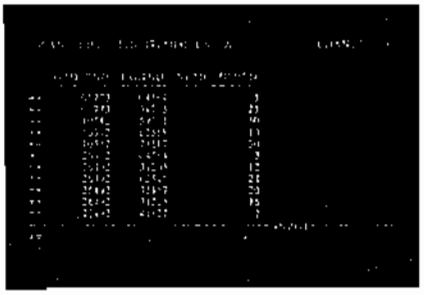
Simultaneous Updates by Multiple Users

FOCUS extends its sophisticated data management capabilities to multiple users working on the same or different machines. FOCUS manages contention for records at the record level through change/verify protocol, rather than conventional record locks. Before updating a record, FOCUS confirms that it has not already been updated by another user – if it has, then the update must be reapplied against the changed version. This maximizes throughput by not locking out users, while ensuring the integrity of the data. FOCUS also offers COMMIT/ROLLBACK capabilities that permit users to declare transaction boundaries, while processing batches of transactions, to control when a particular batch of updates is applied (COMMIT), or not applied (ROLLBACK).

Browse and Update Records – without Programming

The FOCUS database editor, FSCAN, provides functions similar to those of a text editor. This allows users to browse through FOCUS databases making ad-hoc additions, deletes and changes on-the-fly. They can display multiple records and fields on a single screen, greatly facilitating comparative reviews of live data. While offering wide latitude for making changes quickly at the record level, FSCAN scrupulously observes all data-access restrictions applied through FOCUS or through operating-system-level security packages.

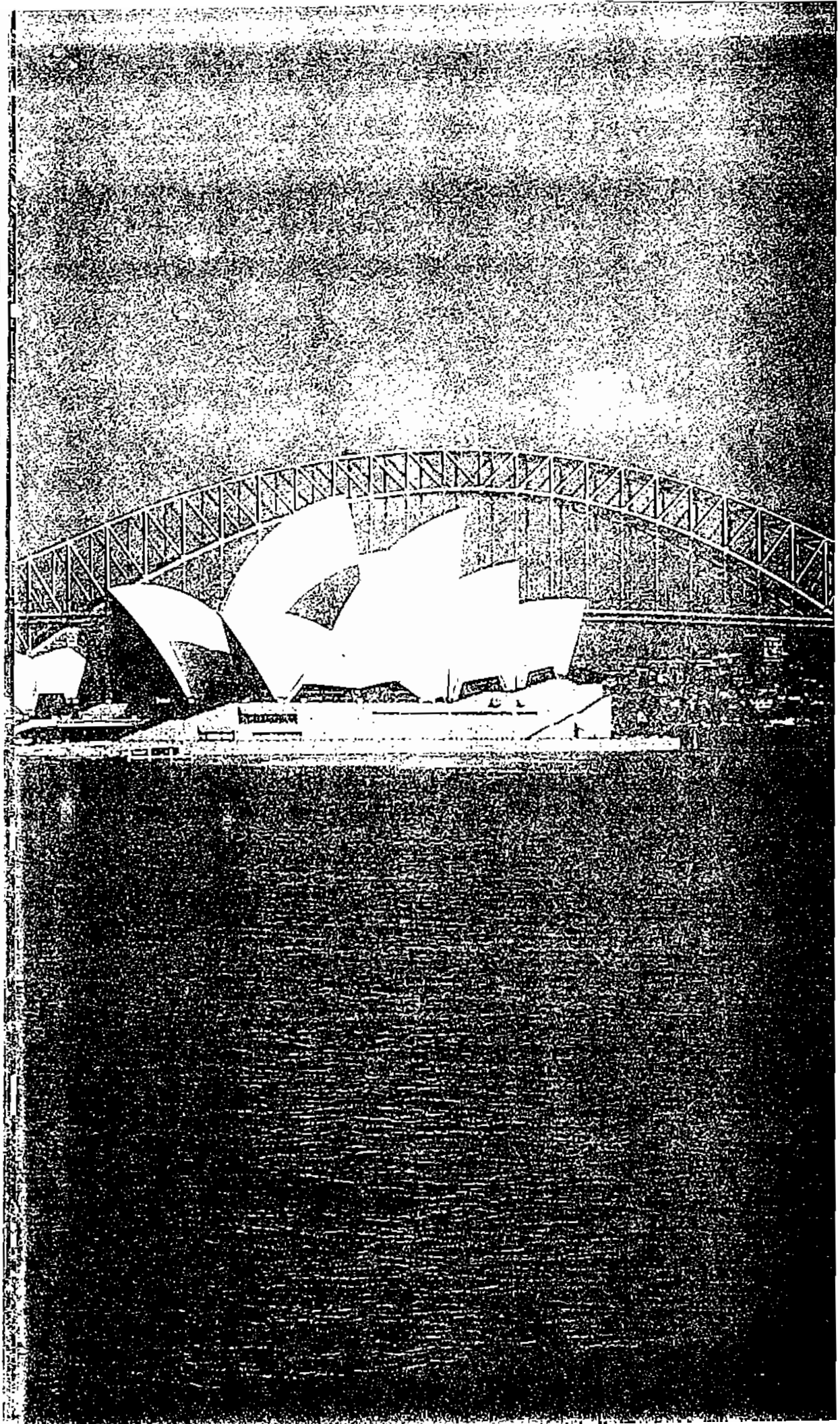
Data entry screens created with Screen Painter.



View multiple records with the FOCUS database editor.

1st 4GL

To support simultaneous updates by multiple users



FOCUS provides a bridge to foreign sources of data. A series of read/write interface allows FOCUS applications run unchanged against different database engines - even on different platforms.

SQL Support

In designing FOCUS products to work with relational database engines, Information Builders' goal was to make its complete 4GL available as a snap-on front end for reading and updating relational tables. This frees developers from having to write in traditional languages when developing serious applications, and produces applications that will run unchanged on any platforms with different database management systems.

FOCUS offers many more functions, yet end users will find it easier to learn than SQL. An organization can adopt SQL as a standard data-access language, without forcing its staff to master dialects of SQL for each relational engine. Information Builders shields users by generating dialect-specific SQL syntax within interfaces for the various relational products. This allows FOCUS applications to run unchanged on different engines.

Experienced SQL users can also submit interactive SQL requests directly through FOCUS, taking advantage of its relational JOIN facility and data interfaces to reach many new sources of data. When building applications, they can use FOCUS' automatic code generators and integrated screen- and window-painting facilities to produce friendly, window-based applications in a fraction of the time required with traditional languages. What's more, FOCUS generates optimized SQL for each database engine. Specifically, Information Builders offers :

- Read/write interfaces that generate appropriate dialects of SQL for popular relational database engines (Britton Lee, DB2, Ingres, Oracle, Rdb, SQL/DS, Sybase, Teradata).
- Code generators for automatically creating FOCUS data definitions directly from SQL catalogs and vice versa.
- Comprehensive application development facilities, including: report, graph and database management code generators.

FOCUS Offers Improved Access to Data

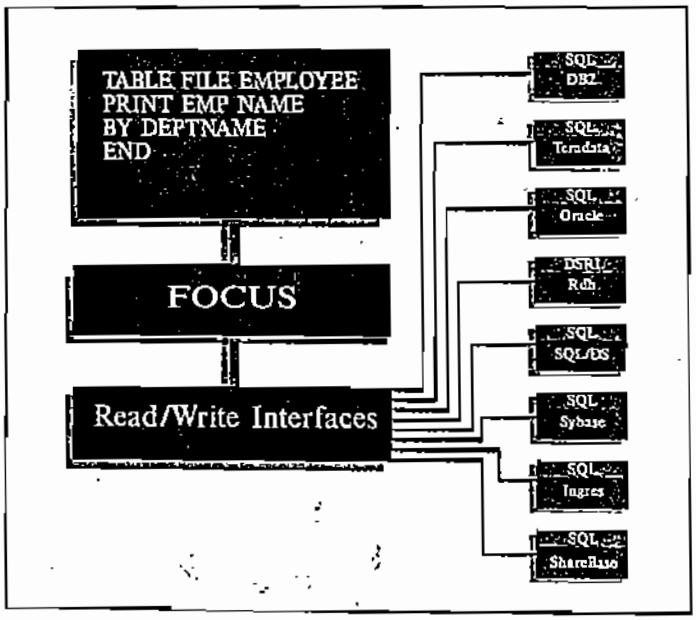
Through FOCUS, users have access to over thirty sources of data (see *Universal Access to Data*). Applications can merge data from multiple sources, combining relational and nonrelational data in a single operation. Thus, IMS files can be linked with DB2 or SQL/DS tables, Oracle tables merged with RMS files, or ASCII and dBASE files combined on a PC – just to name a few.

Automatic Translation – SQL to FOCUS and FOCUS to SQL

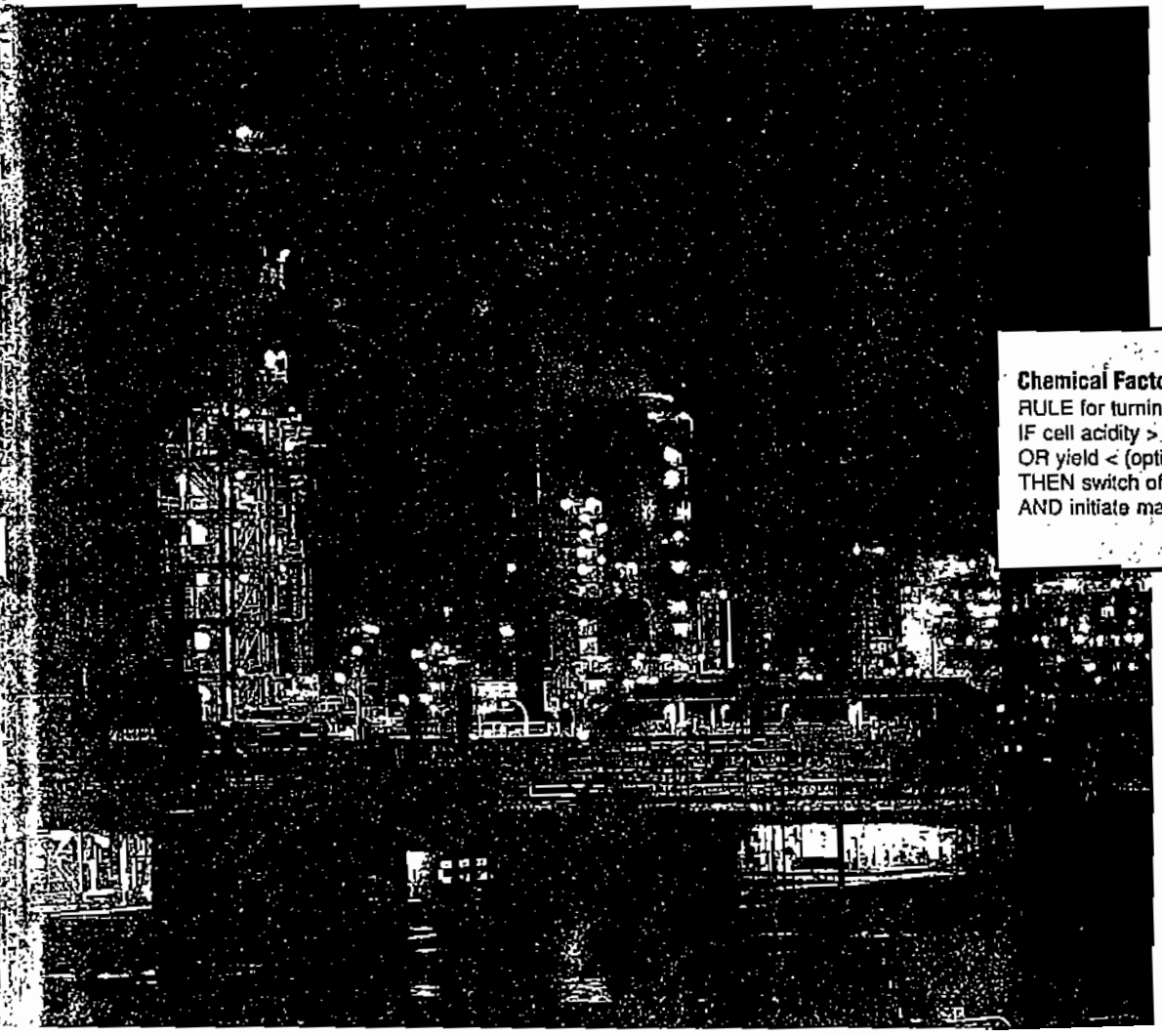
FOCUS offers fast automatic translation of SQL catalogs into equivalent FOCUS file definitions and vice versa. The contents of SQL catalogs can also be expanded to include additional field attributes such as: field aliases, field-display options, multiline column titles for use in reports, as well as predefined relational join operations, and even data validation criteria with associated error-message text.

Fast Development of SQL-Based Applications

In addition to the automatic facilities for generating file definitions, SQL users have FOCUS report, graph and application generators for building applications to run against their relational databases. The *Decision Support Tools* and *Application Development* sections illustrate the tools and explain the benefits of their use over traditional programming. FOCUS extends investments in relational technology with the best tools on the market today plus interfaces that generate optimized SQL for each of the major relational engines. When it comes time to replace a database engine with newer (or less expensive) technology, just drop in a new interface and run the FOCUS applications – without re-entering or restructuring the data.



Financial Rule
RULE for recommendation of tax free municipals
IF Rating for this bond IS BBB or greater
AND Bond is issued in your state or residence
AND Length of maturity is favorable
THEN purchase of Municipals is indicated



Chemical Factory Rule
RULE for turning off cell number 403
IF cell acidity > acidity guidelined
OR yield < (optimum yield* .85)
THEN switch off cell 403
AND initiate maintenance procedures

Integrated Expert Systems

Information Builders' LEVEL5 expert system product offers facilities for capturing specialists' knowledge and making their expertise available throughout the organization. The tools include:

- A simple language for describing knowledge as sets of rules in *Knowledge Bases*.
- An *Inference Engine* that fires the rules dictated by the specialist in response to input from the user.
- Easy-to-use interfaces for retrieving or applying knowledge.

Organizations can disseminate knowledge easily to other locations and reduce dependence on key individuals for their particular expertise.

The LEVEL5 Tools

The LEVEL5 Production Rule Language allows developers to express knowledge in simple English phrases. Problem-solving logic consists of a series of IF...THEN... ELSE statements. The self-documenting structure is easily expanded to incorporate additional rules and/or conditions. The LEVEL5 Inference Engine controls the sequence in which rules are fired, while the actual processing remains transparent to users. LEVEL5 control strategies include backward and forward chaining, goal outlining and logical segmentation.

LEVEL5 is well suited to a wide range of applications. Many of the most successful are intelligent work aids that support people performing repetitive tasks, such as evaluating applications, selecting shippers, or answering questions about products or corporate policies.

Integration with FOCUS

As with FOCUS, Information Builders offers compatible versions of LEVEL5 on multiple hardware platforms. LEVEL5 is available today as a standalone product for building and running expert system shells, and will be integrated as a *consulting* facility within FOCUS. Applications written in the standalone versions can access FOCUS files as knowledge bases, as well as non-FOCUS files. (Refer to the *Technical Summary* for access options in each operating environment.) As integrated elements within FOCUS, LEVEL5 applications can be called much like subroutines to apply special knowledge or expertise in the midst of a FOCUS application. This offers FOCUS application builders a new tool they can embed in applications to help users analyze situations or qualify data. Integration provides LEVEL5 users with direct access (via FOCUS and its many interfaces) to enormous stores of existing data in a wide range of proprietary files.

LEVEL5 Applications

LEVEL5 knowledge base systems are ideal for situations where established rules and procedures must be codified and stored.

Decision Management
Loan Portfolio Analysis
Employee Performance Evaluation
Demographic Forecasts

Diagnostic/Troubleshooting
Equipment Calibration
Help Desk Operations
Medical Diagnosis

Maintenance/Scheduling
Production Scheduling
Education Scheduling
Project Management

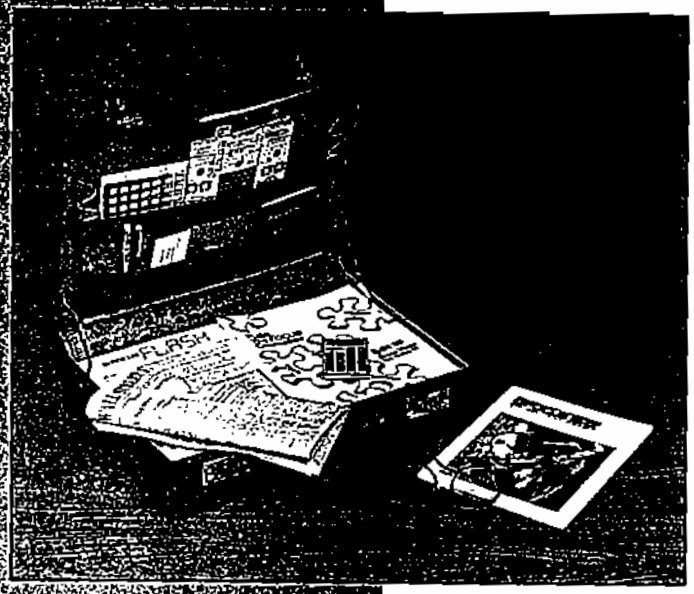
Intelligent Text/ Documentation
Building Regulations
OSHA Safety Standards
Employee Benefits

Design/Configuration
Manufacturability Studies
Communications Networks
Optimum Assembly Plan

Selection/Classification
Material Selection
Delinquent Account Identification
Information Classification

Process Monitoring/Control
Machine Control
Inventory Control
Production Monitoring

1st 4GL **To incorporate expert system technology into the 4GL/DBMS data management strategy**



Information Builders supports customers throu comprehensive education facilities, consulting and technical assistance.

Customer Support

Information Builders, Inc. is dedicated to the success of its customers. To this end, the company strives to maintain the high quality of FOCUS software as well as supporting all levels of users with comprehensive training and service facilities. Of IBI's 1000 employees, 40% provide customer support and service from its offices in North America and representatives' branch offices in 32 countries overseas.

Education

IBI's Professional Services Group offers comprehensive courses covering all phases of FOCUS operation...from reporting and simple data maintenance through advanced application development and FOCUS internals...as well as specialized workshops, such as PC/FOCUS for OS/2 and FOCUS on LANs. All are taught by highly trained and qualified FOCUS educators and are conducted either at IBI education centers or at customers' sites. The hands-on approach with problem sets and exercises assures that students learn practical skills they can put to immediate use.

Information Builders' FOCUS Top Gun School for High Performance™ and Top Gun Workshop series provide a wealth of advanced educational programs for experienced FOCUS users. Each year Information Builders runs three 4-day Top Gun schools at which senior systems developers, support staffs and advanced end users can pick and choose from a syllabus offering classes on over 30 advanced FOCUS topics. Courses are taught by Information Builders' most experienced teachers, consultants and developers, and are augmented with a computer lab, networking forums and updates on IBI's product-development plans.

Special Top Gun Workshops are held in conjunction with a Top Gun school or as standalone one- or two-day programs in cities throughout the U.S. The Workshop program is targeted for FOCUS users who require intensive training in new FOCUS releases, LEVEL5, FOCUS for VAX, or FOCUS interface products.

Consulting

Several hundred experienced DP and FOCUS professionals in 25 major cities in North America and 50 cities overseas provide on-site consultation services in all phases of project development. These consultants can review new application designs for ease of implementation and operating efficiency, revise and enlarge existing FOCUS applications, and provide comprehensive service from analysis and design through documentation and training. By working closely with clients, they assure the successful implementation and support of all applications.

Customer Support Services

Through many levels of support Information Builders provides quality service from the point of initial client contact through implementation of their applications.

Comprehensive technical support is provided from the time a client decides to evaluate FOCUS: to introduce users to the software, to get them launched effectively and to oversee ongoing maintenance. Technical support representatives located in IBI field offices ensure that all phases of client relationships are handled professionally and on time.

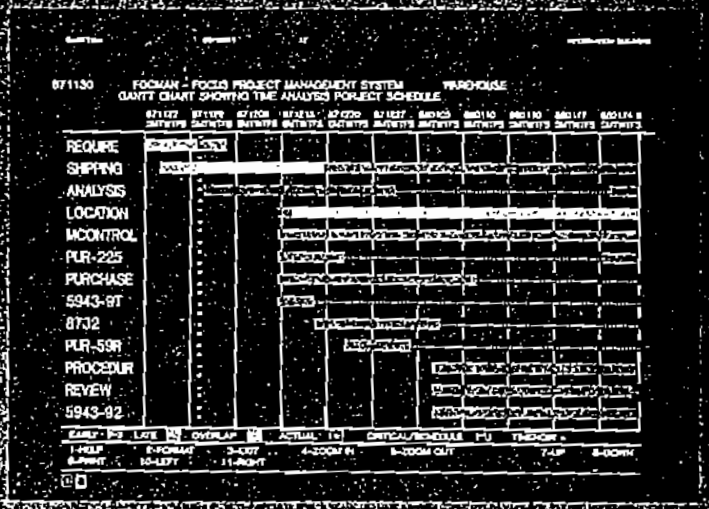
Local HelpLines and Customer Service and Support complement the field technical staff with expert telephone support. In the branch offices HelpLines provide local telephone support, backed up by a corporate Service and Support staff of dedicated FOCUS consultants who produce quick answers to technical questions and temporary solutions for reported problems. Customer Service Representatives at each branch office make periodic visits to FOCUS sites.

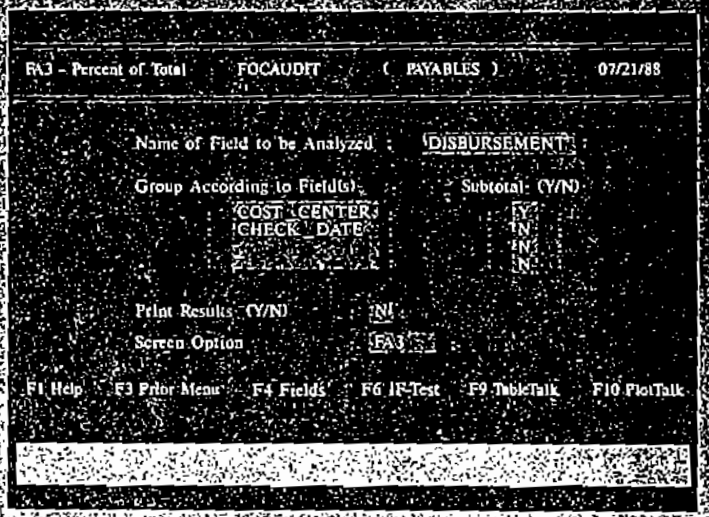
FOCUS User Group (FUSE)

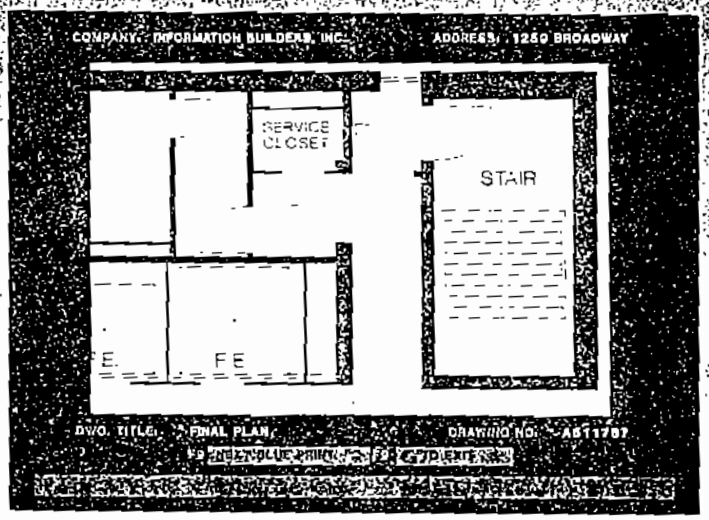
FOCUS users are supported by an independent user group, FUSE, Inc., managed by an Executive Board. FUSE, Inc. consists of nine Area Coordinators and 46 Regional Groups throughout North America and overseas. FUSE is a worldwide computer user group with close to a half million members who network and share FOCUS tips and information. Monthly and quarterly regional meetings and the annual national meeting provide FOCUS users of all levels with an independent forum to communicate their requirements and concerns to Information Builders.

IBI Publications

The FOCUS *FLASH*, a monthly newsletter, keeps clients up to date on new products, features and enhancements. The quarterly magazine, *FOCUS NEWS*, provides in-depth reports, technical information on critical FOCUS issues and articles illustrating clients' FOCUS applications. The FOCUS *Systems Journal* is published every other month and keeps readers informed about technical issues as well as providing an ongoing dialogue among readers.







These screens represent just three of the FOCUS products developed at Information Builders: FOCMAN (top), FOCAUDIT (middle) and FOCUS Vision (bottom).

FOCUS Products

In a number of areas, Information Builders has developed application products to help FOCUS users with data analysis and application development and maintenance. These products are menu-based for easy use.

Project Management System

FOCMAN, the FOCUS Project Management System, allows you to define a project, analyze time and resource requirements, perform critical path analyses, update the progress of activities, monitor project costs, prepare detail and summary reports, draw precedence network diagrams and produce Gantt charts.

Because it's written in FOCUS, FOCMAN offers greater flexibility and opportunity for customization than other project management systems.

FOCMAN requires neither data processing background nor expertise in project management. It is menu driven and makes extensive use of function keys for controlling navigation and display formats. It is also equipped with numerous special features such as support for multiple projects and calendars, historical comparisons, resource scheduling, progress posting, milestones, "What If" modeling, hammock activities and subnetwork breakouts.

Audit Tools

FOCAUDIT is a set of interactive tools and facilities designed by auditors for auditors. It performs all audit functions, including analyzing fields, sampling and validating data, testing and converting dates, and producing statistical summaries and exception reports. Unlike many traditional computer-assisted audit packages, FOCAUDIT is menu driven, fully documented and self-explanatory. FOCAUDIT requires no familiarity with programming languages or computer syntax.

FOCAUDIT can read any file that FOCUS can access – an important consideration when using it to access clients' systems.

FOCUS Vision

FOCUS Vision allows organizations to store full-color, digitized video images and data in a FOCUS database on a personal computer. Both textual and visual data can appear on a single screen. Potential applications of this technology include museum or art gallery inventories, personnel and security applications, product inventory identification systems and real estate applications that display photos of homes.

FOCUS Utility Products

Information Builders offers add-on utilities and productivity tools designed to simplifiy data management tasks, particularly during prototyping.

Menu Manager
An interactive facility helps developers build menu-based operating shells for applications.

FOCUS Design Analyzer
This utility helps developers evaluate alternative data structures.

Problem Tracking System
This application permits HotLine personnel or Information Center consultants to record reported problems, assign priorities, and maintain service logs.

FOCUS Data Dictionary
This application serves as a central repository for collecting comments and descriptions of data elements and programs.

COBOL FD Translator
This menu-driven utility converts COBOL file definitions into corresponding FOCUS formats.

FOCUS Technical Summary

General Description

FOCUS is a Fourth Generation Language and Database Management System that runs on mainframes, midrange systems and microcomputers.

Computer Environments

IBM

FOCUS runs on 370, 30xx, 43xx, and 9370 series (or compatible) machines running VM, MVS, or MVS/XA. FOCUS provides:

- Data Interfaces to Adabas, Britton Lee, DATACOM/DB, DB2, IDMS and IDMS/R, IMS, ISAM, Model 204, QSAM, SQL/DS, System 2000, Teradata, TOTAL, and VSAM.
- Support for IBM's Software Application Architecture (SAA).
- Support for SNA and VTAM communications protocols.
- Support for GDDM graphics, ICU and TELLAGRAF presentation-quality graphics, IFPS financial modeling, and SAS statistical analysis.

Digital Equipment Corporation

FOCUS runs on all DEC VAX, MicroVAX, VAXcluster, and VAXstation systems under VMS and MicroVMS. FOCUS provides:

- Data Interfaces to Adabas, Britton Lee, DBMS, Ingres, Oracle, Rdb, RMS, Sybase and Teradata.
- Integration with ALL-IN-1, WPS, and MAIL.
- Support for DECnet for distributed access across networks.
- Support for Regis graphics and TELLAGRAF.

Hewlett Packard

HP 3000 running MPE XL.

Wang

FOCUS runs on all Wang VS systems. FOCUS offers:

- Data Interfaces to DMS and DMS/TX, MCBA, PACE, and SPEED2.
- Integration with Wang OFFICE, WP and WP Plus.
- Support for Wang System Network (WSN).

Implementations of UNIX

FOCUS runs on the following UNIX-based machines:

- AT&T 3B and 6386 WGS series
- Apollo (DOMAIN/IX)
- DEC VAX (ULTRIX)
- HCL
- HP 9000 (HP-UX)
- IBM RT (AIX)
- Intel 386-based machines running XENIX or UNIX V/386
- Motorola 8000 series
- NCR Tower
- NIXDORF Targon/31, Targon/35
- Phillips 9070
- Prime EXL
- Pyramid (Osx)
- Sequent Symmetry Series
- Siemens (SINIX)
- Sun (Sun/OS)

FOCUS provides:

- Data Interfaces to ASCII, C-ISAM, Informix, Ingres and Sybase files.
- Supports Remote File Sharing for transparent, peer-to-peer connections between UNIX machines.

Tandem

FOCUS runs on NonStopII,CLX, VLX, EXT, and TXP under GUARDIAN 90.

Microcomputer Systems

PC/FOCUS runs on:

- IBM PC/XT and ATs and compatibles running PC/DOS and MS-DOS.
- PS/2-compatible machines running OS/2.

PC/FOCUS provides:

- Data Interfaces to dBASE III, dBASE III Plus, and dBASE IV; OS/2 Extended Edition; and SQL Server.
- Reformatting of data into comma delimited, DIF, PRN, ASCII, and WP formats.
- Support for over 30 graphic output devices and most Hercules and EGA-compatible graphics cards.
- Import of data from Paradox, dBASE, Lotus and Rbase.

Local Area Networks Supported

- Novell Netware (Version 2.0A or higher)
- Banyan VINES (Version 2.1 or higher)
- 3COM 3 PLUS (Version 1.2.1 or higher)
- IBM PC LAN Program (Version 1.2 or higher)
- Ungermann-Bass NET/ONE (XNS) - any version

Expert System Environments

- **LEVEL5/Mainframe**
  IBM or plug compatible machines running MVS/XA or VM/CMS Release 3. Optional read/write interfaces provide direct access to FOCUS, DB2, SQL/DS and VSAM.
- **LEVEL5/VAX**
  DEC VAX running VMS 4.5 or higher. Optional read/write interfaces provide direct access to FOCUS, Rdb, RS1 and RMS through Common Data Dictionary.
- **LEVEL5/PC**
  IBM PC/XT, AT, PS/2 and compatibles. Includes direct read/write access to dBASE II and III and ASCII files.
- **LEVEL5/Macintosh**
  Macintosh Plus, SE and II with System Release 4.2 or higher, Finder 6.0 and Multifinder 1.0. Includes HyperCard Interface and scripts and read/write access to text files. Knowledge base objects can be sourced from Excel spreadsheets (saved as text files).

4GL Capabilities

- Automated application development and maintenance.
- Graphically oriented screen-design tools.
- Screen-based application definitions and maintenance.
- Automatic code generation.
- Interactive report, graph, statistics and spreadsheet facilities.
- Screen-based query and reporting tools.
- Intelligent defaults.
- Compiled language.
- Preloading of executable procedures.
- Interactive error-handling tools.
- Debugging tools.
- Direct access to run-time libraries.
- Direct access to operating system.
- Screen- and window-painting facilities.
- Online and batch processing .

Query Languages Supported

- FOCUS
  - Natural Language
  - Automatic queries generated by TableTalk
  - Native FOCUS syntax
- SQL
  - Native SQL queries
  - SQL commands embedded in FOCUS requests
- Host Language Interfaces to ADA, Assembler, Basic, C, COBOL, FORTRAN, Pascal, and PL/1.

Data Models Supported

- Relational tables
- Sequential files
- Shared-relational (hierarchical) files
- Networks
- Hybrid structures

Data Types Supported

- Alpha numeric
- Binary integer
- Single-precision floating point
- Double-precision floating point
- Packed decimal
- Zoned decimal
- Date formats

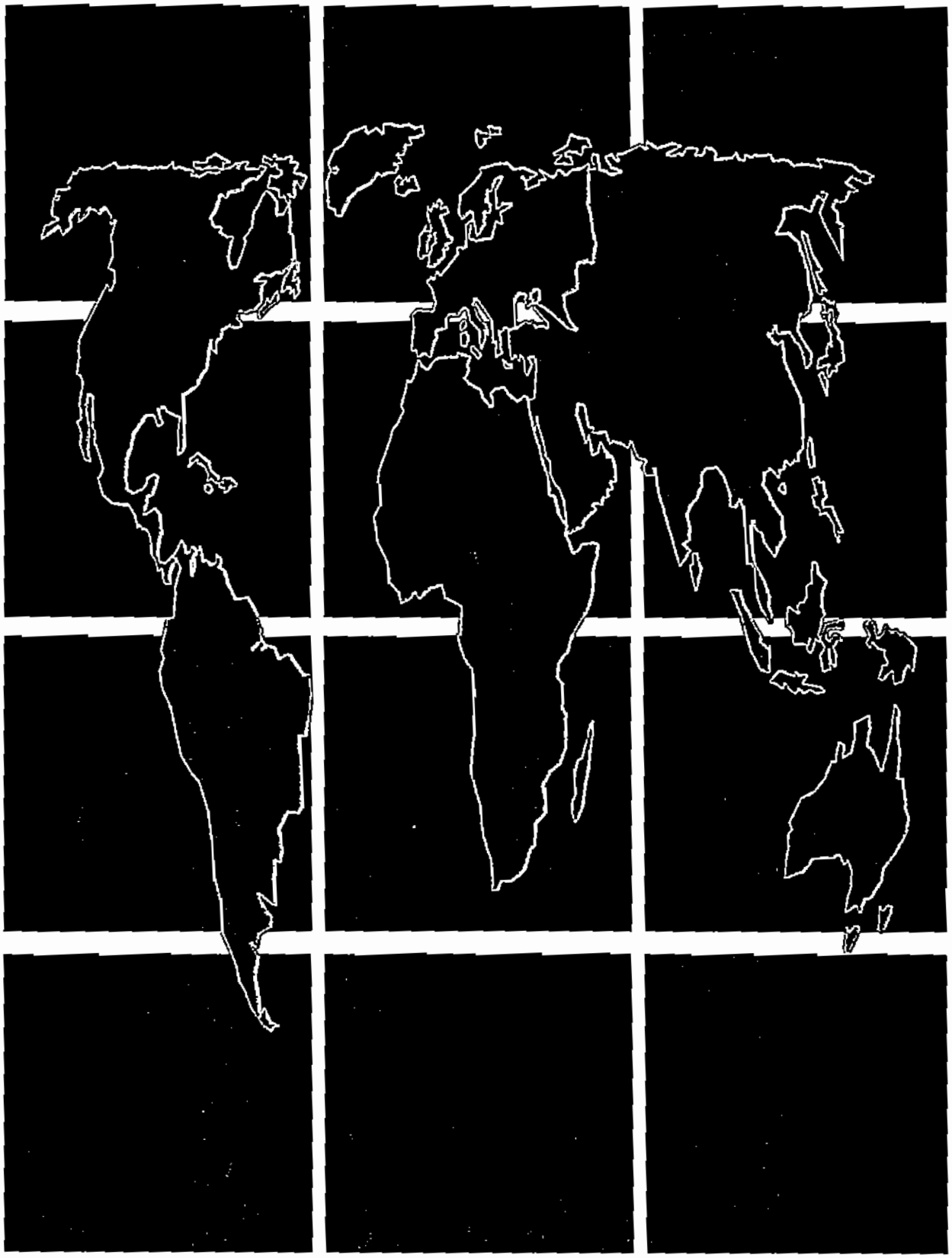
Special Features and Facilities

- Connectivity between copies of FOCUS on different machines.
- Portability across hardware boundaries.
- Access to data in over 30 types of existing file and database structures.
- Inner and outer JOINs between FOCUS and non-FOCUS files.
- Integrated expert system product (LEVEL5).

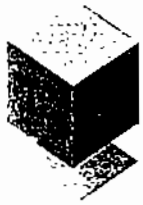
Dictionary and Library Facilities

- Data dictionary
- Application dictionary
- User-written subroutine library
- User-defined lexicon for English language queries
- User-defined syntax

FOCUS is included on the GSA schedule



The founders of Information Builders, Inc., who wrote FOCUS and originated Fourth Generation Language technology, incorporated the company in 1975. Today, based on sales and enrollments in FOCUS education courses, it's estimated that there are more than 600,000 FOCUS users worldwide.



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  Barcelona 34-3-3011533
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