

THE INFORMATION SERVICES

# Leader

GENERAL  ELECTRIC

Partners In Innovation



April/May 1973  
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# GE transmits computer power to Moscow

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General Electric demonstrated the world's first international commercial data processing network link with the Soviet Union at Electronmash-73, an electronic trade exposition held in Moscow, April 4 through 15.

During daily on-line demonstrations, GE representatives and many attendees of the show used a Mark III computer in Ohio for production scheduling, critical path method and business report generation applications. A GE representative reports that interest was keen. "Several hundred people would gather in anticipation of each scheduled demonstration."

Over ten thousand Russians visited the GE exhibit during the eleven day exhibition of electronic equipment.

The success of the special Moscow-to-London dial-up telephone link used to link the terminals to the Supercenter, clearly demonstrated the technological feasibility of such a service on a regular commercial basis.

The show was sponsored by the Moscow Chamber of Commerce and Industry.

## ALASKAN PREMIUM LIFTED

In response to increasing usage of the Mark III service by firms based in Alaska, the Information Services Business Division announced that these customers will now be charged at the same rate as continental U.S. customers.

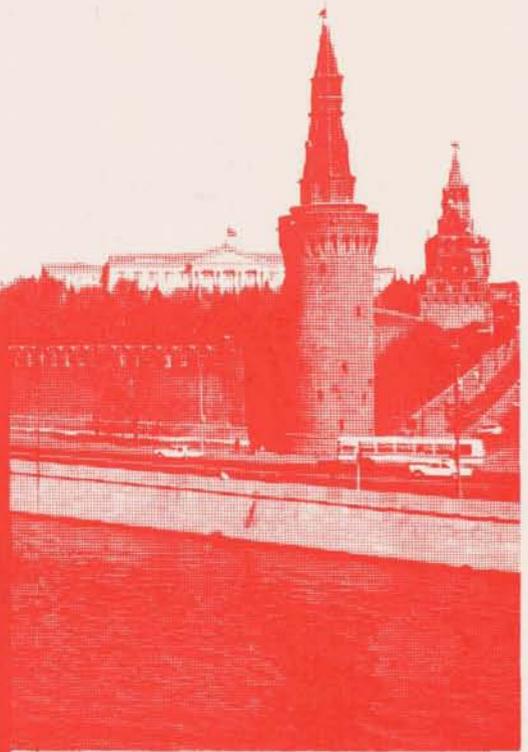
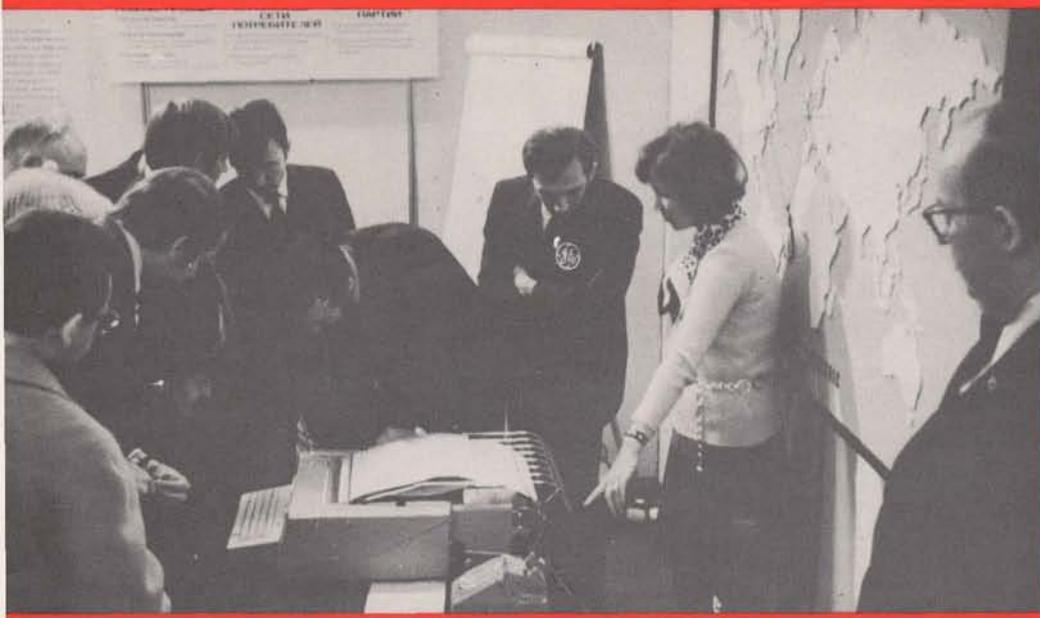
Effective April 1, the announcement eliminates a premium charged to partially offset the higher costs incurred in making the service available. Local dial-up service has been available in Alaska since November 1971.

## TERMINAL PRICE REDUCTION

The TermiNet-300 ASR, a 30 character-per-second terminal with automatic send and receive capabilities and paper tape punch and reader, now leases for \$215 per month.

The 13% price reduction is in effect as of May 1. Customers currently leasing the ASR unit may take advantage of the price change by terminating their current contracts and signing a new one-year lease at the new price.

(Check with your account representative for further details.)



One of the GE representatives reports that, "At times we were in danger of being crushed by the mob as they strained to get closer and see more."

## BILLING IMPROVEMENT

To eliminate any rounding discrepancies, two additional decimal places have been added to the cost figures on the monthly Invoice supplement.

Now, when the units on the Invoice are multiplied by the unit cost, the totals match rather than being just close.

This improvement should simplify monthly bill reconciliation.

## LINK TO JAPAN COMPLETE

The Japanese link to GE's worldwide data processing network officially opened for commercial customers on April 18.

Speaking to Japanese businessmen at the inauguration of the new service, Dr. George J. Feeney, vice president and general manager of the Information Services Business Division, remarked that this expansion of the network meets two important needs.

"First, it provides an indispensable tool for the management of multinational firms by permitting geographically distributed access to common data files and computer programs," Dr. Feeney said.

"Second, the service provides Japanese industry with direct local access to the world's most powerful and economical data processing service."

The new offering is managed locally by Dentsu Advertising, Ltd. and culminates efforts begun in 1969 by General Electric.

## GPSS NOW ON MARK III BACKGROUND

General Purpose Simulation System — GPSS III — has been added to Mark III background. Called GESIMTEL, it offers almost unlimited capacity and represents a considerable cost savings over foreground implementation.

Accepted as the most widely used simulation language in industry, GPSS is designed to analyze the work flow of almost any business or industry. With it, a user can set up a model of his current operations including facilities, employees, and schedules. From this model he may then identify bottlenecks, inefficient operating procedures or time delays.

Once a problem area is spotted, the user can then try various methods to eliminate it. Since the experimentation is done on the computer, the expense and possible embarrassment of real life experimentation is eliminated. The program is also useful in spotting trouble areas in beginning new operations or introducing new products.

Extensive background experience is unnecessary with GESIMTEL since the program operates in foreground to drive the job in background.

Contact your local account representative for further information on GESIMTEL.



## Partners in Innovation



In looking back over the last seven or eight years at the development of our information services business, one has to be impressed by the innovative partnership that has developed between GE and its customers. We were the first company to recognize the benefits of providing individual users with access to centralized computer power and to frame this as a commercial offering. We were the first to implement an international network, marrying communications and computers to provide unparalleled power and flexibility in the solution of important distributed data processing applications. We were also the first to commercially offer interactive and batch processing in a single integrated service.

We recognize, though, that General Electric did not single-handedly produce these advances. Our partners in innovation have been our customers. It has been your requirements, your imaginative application of the service to solve your technical and business problems that has provided a constant pressure for increased scope and sophistication. Milestone applications in order entry and financial consolidation, in inventory control and construction management have resulted in new language capabilities, the ability to create customized user interfaces, increased control capabilities, and other features too numerous to mention.

For example, this Leader issue cites three examples of innovative uses of our service. In addition, customers made significant contributions in the design and test of the new financial analysis language just released on Mark III service. Their comments and a description of the language are also detailed in this issue of Leader. The new system enhancements package previewed is still another example of product features which have been developed to meet our common requirements.

It is our belief that the success of GE's information service is based largely on this beneficial interaction between company and customer — a dialogue that has resulted in the expansion of GE's service to meet almost any business data processing need, almost anywhere in the world.

As partners in innovation, GE and its customers are combining to break new ground in discovering ways to change the shape of business in today's world through innovative uses of remote data processing.

Paul W. Sage  
General Manager  
Information Services Sales Dept.

# Innovation

## NETWORK HONES COMPETITIVE EDGE FOR THREE FIRMS

Leadership in information logistics comes in many forms. The following pages illustrate three examples where the GE Network is providing the competitive edge, the extra opportunity or the resource that adds up to success in the marketplace. These range from a relatively small company utilizing the network to compete successfully with larger manufacturers while, at the same time, providing itself with an attractive source of additional revenue; to a large international concern, where the network is providing the means of keeping track of inventory on three continents.



### CITIES SERVICE

CITIES SERVICE CO. — through its Plastics and Special Products Division, is perfecting a means of saving dollars for manufacturing subsidiaries through company-wide processing. At the same time, subsidiaries can give their parent corporation a better look at their operations by dual-accessing of data via Mark III service.



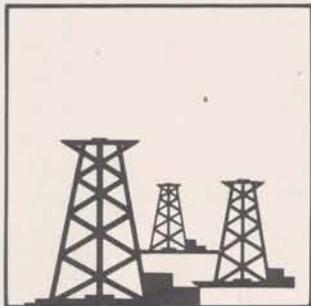
### STAR SHIPPING

STAR SHIPPING CO. — a multinational concern based in Bergen, Norway, has, through Marine Management Systems of Stamford, Conn., utilized Mark III service to schedule cargo and vessels around the world. The results have cut shipping times and order routing problems. Soon, the company will be using timesharing to examine overall profitability of individual maritime operations.



### HYDRO AIR ENGINEERING

HYDRO AIR ENGINEERING — manufacturer of automation machinery and fasteners for houses now has two new and valuable services to sell to their growing list of customers. Computer programs are available in the field to design lumber trusses, and to fabricate completed trusses using a minimum of materials. This expertise is now being inexpensively marketed overseas via GE's international network.



## Multi-company housekeeping... by network

Keeping close tabs on subsidiaries while trying to cut their costs is a neat trick for any corporation, but Mark III has been utilized in exactly this way by a Cities Service Company division. In an innovative solution to multi-company housekeeping, Cities Service has solved the processing needs of one unit and the input and report needs of another, both at the same time, in a solution tailor-made for this diversified division.

The Plastics and Special Products Division of Cities Service Co. is using Mark III foreground services to keep track of subsidiary operations while at the same time, providing for many of the processing needs of a subsidiary. As an example, Albi Mfg. Co., maker of fire retardant coatings and mastics, participates in this system, and has even been able to move some functions, such as billing, out of the headquarters, and into the subsidiary office where a small staff with intimate product knowledge is better prepared to handle any problems which arise.

Moreover, as the majority of programming is developed and entered from the terminals at Cities Service, the need for highly sophisticated data processing personnel at Albi has been eliminated with considerable cost savings. "In terms of actual profits for Cities Service," said Phil Wood, Vice President, Plastics and Special Products Division, "the use of information developed through the Mark III service has increased our earnings by at least half a million dollars — and I would say that's a very conservative figure."

The secret to the system is simultaneous access to shared files. This enables Cities Service to provide programming support, regardless of the particular program involved. More importantly, it makes it possible for Albi to enter data for a system such as sales analysis on a profit model, that can also be accessed and utilized at the higher level. "Through this system," Wood commented, "we've been able to get more timely and thorough sales and profit analysis."

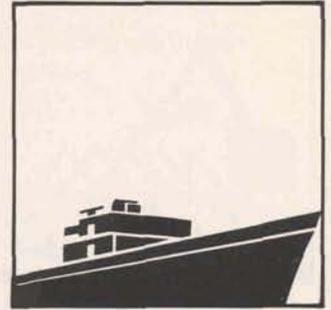
At the heart of the shared data system is billing entry. Upon receipt and processing of an order phoned in by the Cities Service field sales force, Albi enters the basic information into the system — what the order was, who placed it and the price. "For the subsidiaries we serve," Wood said, "this system has given them a far better knowledge about their businesses."

The system program then automatically adds the freight and tax calculation, sales office coding, the invoicing number and extends the invoice, etc. The billings are printed out at the Cities Service terminal in invoice format with multiple copies for Albi, the customer, the Cities Service accounting office and such other offices or units as may be desired.

*"In terms of actual profits for Cities Service, the use of information developed through the Mark III service has increased our earnings by at least half a million dollars — and I would say that's a very conservative estimate."*



## Network guides shipper on profitable course



Additional data from the invoices is also generated at the corporate terminals at Cities Service for such uses as profit and loss, etc.

Within Mark III Foreground, however, the information is retained in selected files ranging from sales and commissions to product codes. On command then, the system is able to print out reports, or in the case of the product codes — book inventory. Regular reports are prepared monthly including year-to-date data, while interim reports are available daily.

Similar systems have also been developed by the Plastics and Special Products Division of Cities Service for use by other components. The division is also able to mix parts of the data from the various files to gain an immediate insight into its operations as a whole. "The individual subsidiaries might have been able to obtain this business information through another method," Wood said, "but any that we studied would have been prohibitively costly. Mark III service made the system possible."

The total system is designed to make it easy for field personnel use, both for their own purposes and as part of the division's overall program. Different user numbers and file code words automatically prevent one unit from inadvertently breaking into another's data base.

Currently, the entire system is on Mark III Foreground, or entirely within the timesharing mode. With time, as the data bases grow, much of the computations can be moved to Background for even greater efficiency and cost reduction.

*"... any that we studied would have been prohibitively costly. Mark III service made the system possible."*

For a global maritime company such as Star Shipping, A/S, accurate knowledge of cargo locations, destinations, space availability, and route timing are critical to profitability. Maintaining that knowledge via a standard communications system was becoming unmanageable last year with the growth of the service, and so, Star commissioned Marine Management Systems, Inc., of Stamford, Conn., to determine what new generation of service would be required to meet Star's growth. Their answer — a global information processing system, unbothered by time zones or languages, or starting a costly data processing department within the company.

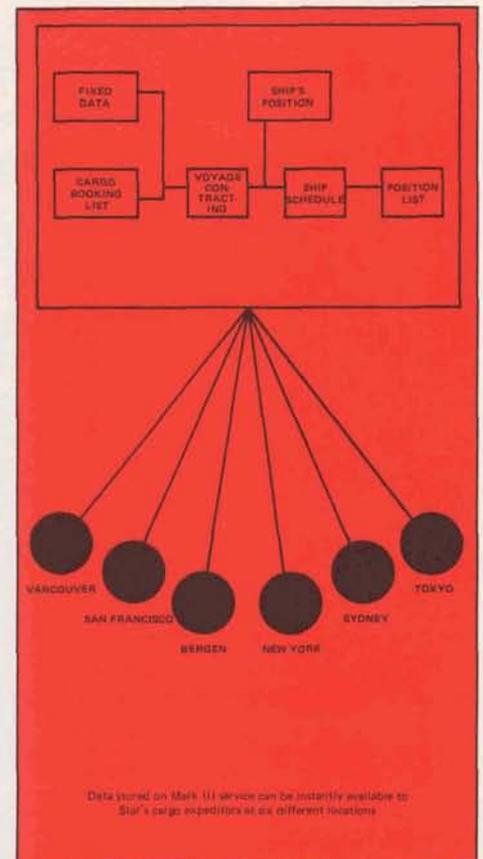
The result, according to Marine Management's president Eugene Story, has been an innovative unique cargo booking operation which is far ahead of other shipping companies and gives the global company an increasingly better look at its own profitability. Already, this system has begun returning its investment to Star.

Until last November, Star operated entirely with a standard communications system, which fed data from the company's North American, European, and Japanese offices into headquarters in Norway. This system became increasingly impractical as Star grew, until finally, cargo tonnage estimating and vessel scheduling were being made on insufficient information.

The challenge Star presented to Marine Management was to provide a total information system which would meet Star's demands for exact information everywhere, at any time, and at the same time, be a tool to help the day-to-day operation at each office. Mark III service, according to Stalle Kolbeinsen, Manager of Information Systems at Star, has met that challenge. "We are totally satisfied with our Mark III service," he says. "So far, it has been everything we expected, and we expected excellence."

The result has been a two step system, designed for Star. The first step has been in operation for just under six months. The program is a tailored version of one of Marine Management's systems developed over the past four years.

For Star, profitability is found by managing two necessities — making the minimum number of port calls to fill the ship, and making those calls to fit the customer needs. The prime requirement to Star is instant accessibility to a multi-



*"One of the greatest advantages to us has been that GE's information network has given our branch offices greater autonomy and authority, while we can monitor more easily the actions they take."*

tude of variable information. Before, daily reports were sent to headquarters in Bergen, and a weekly status report on cargo booked was issued. Now, decisions are made in a matter of minutes based on continuously updated information.

Order entries are made in much the same way as an airline reservation is made. Most orders generally come from the West Coast, usually Vancouver or San Francisco.

The cargo booking expediter must be able to receive bookings from the shippers for shipments between specified

ports within a given time period. Star has developed a special type vessel that moves cargo very efficiently in the shortest possible time but the system is dependent on accurate assignment of cargo and vessel schedules. To do this the booking expediter must know the space availability and vessel schedule almost instantaneously and make adjustments to meet the demands. "One of the greatest advantages to us has been that GE's information network has given our branch offices greater autonomy and authority, while we can monitor more

easily the actions they take," said Kolbeinsen. "We can look over their shoulders, and it gives us far more time to intercede effectively in the event of problems."

Similarly, the scheduling agent in Bergen can now use the information network to judge alternative impacts of an additional port call, the desirability of re-routing another vessel to a location to split a cargo load, etc.

Just beginning is a second step: a system whereby Star can take an instant look at the projected profitability of any given voyage, as well as judging the actual profit or loss of a just completed cargo. This is done by calculating the time required and vessel operating costs for various alternative schedules and combining them with net cargo revenues. "We began in information management by placing a reasonable portion of our business — cargo scheduling — onto Mark III service," commented Kolbeinsen. "We did it that way — instead of a total commitment — because we wanted to be sure that this was the best thing for us. Now, we feel we're confident in placing more work into the computer."

This system is already being used to plot the most profitable ports of call, and to determine instantly whether a given voyage will produce a profit or a loss. A valuable adjunct to the system is the ability to run statistical analysis of the port operations. In the fast moving maritime industry, with global access a prime requirement, Star Shipping is an innovative leader in utilizing remote data processing and that leadership is paying off in increased profit and better service to its customers.

"There seems to be no end to the uses for the computer system, said Kolbeinsen. "We are currently investigating several new possibilities which will take us beyond the range of what we had initially expected."



## Marketing to contractors via the network



Building a successful marketing strategy in a field as competitive as construction materials is no easy task, but for Hydro Air Engineering of St. Louis, GE's Mark III information network has proven to be just the tool.

As a manufacturer of automated truss machinery and connector plates, Hydro Air has found a competitive edge in using timesharing to offer truss fabricators a low cost service to design and build trusses. By making this engineering expertise available to customers, Hydro Air has built up its reputation, and consequently, its sales.

Hydro Air's formula is a simple one: use GE's information network to save the truss fabricator valuable days or weeks between the time truss designs are needed and when such designs are usually received in the field. In construction, lost days at the building site can mean the difference between profit and loss.

Providing fabricators with complex truss designs isn't new in the industry, but until now, designs have spent as long as several weeks in the mails and on the drafting tables at manufacturers. Now, the customer can have a completed design in seconds, and it's built around Hydro Air's own specifications.

"With GE Mark III service, we're able to give accurate designs, cutting schedules and estimating information on the spot," says Lou Lewis, manager—sales for Hydro Air. "Our customers tell us they have a far better feel for our building systems, and as long as we have their confidence, they'll keep coming back to us for products and service."

Hydro Air is a relative newcomer to GE's information network; a convert from another company which couldn't meet Hydro Air's expansion requirements. "There's no doubt in my mind that the changeover was worth it," commented Assistant R&D Director Bob Havlin. "We now have the competitive edge — local access and an international scope."

For Hydro Air's customers, local access means no more long distance calls to gain entry onto the system. To sales manager Lewis, that was the key stumbling block to expanding customer usage. Now, local access in nearly 300 North American cities has allowed Hydro Air to take their product and service story around the country in the form of seminars held in key regional cities. These seminars, though just started, have already begun bringing in new customers at the rate of three or four each week.

International access has also meant new European business for Hydro Air. Customers throughout Europe are now being serviced through the company's subsidiary in England.

"Through Mark III," said Havlin, "we

are able to provide our European customers with the same engineering service without having to duplicate our staff at another location. This means that now we can have an edge anywhere in the world, and I'm sure that as GE's information network expands, we'll be close behind."

In a few short years, Hydro Air has built an industry reputation as a marketing leader through the use of timesharing, and yet this growth role has eased rather than strained their engineering capabilities.

"Ninety percent of our engineering applications are already on-line and immediately accessible," said Havlin. "Mark III gives us a chance to concentrate on the remaining ten percent where the engineer is really in a bind."



*"There's no doubt in my mind that the changeover was worth it. We now have the competitive edge — local access and international scope."*

NET INCOME  
FED. INCOME TAX  
AVG. SHARES  
EARNINGS PER SHARE

JUN SIX MONTHS  
ORDINARY INCOME  
\$ 247,404 \$ 1,425,291  
- 31,475  
(7,422) (42,759)  
-----  
\$ 239,982 \$ 1,414,007

SALES  
EXTRAORDINARY INCOME  
DISCOUNTS  
GROSS INCOME  
EXPENSES  
COST OF GOODS SOLD  
G & A  
MARKETING  
SALARIES  
ADVERTISING  
DISTRIBUTION  
FACILITIES  
DEPRECIATION  
TOTAL EXPENSES

NET INCOME BEFORE TAX  
FED. INCOME TAX  
NET INCOME

AVG. SHARES  
EARNINGS PER SHARE

	JAN	FEB	MAR	APR
REVENUES				
SALES	\$ 235,840	\$ 228,563	\$ 233,134	\$ 237,797
EXTRAORDINARY INCOME	8,050	-	23,425	(7,134)
DISCOUNTS	(7,075)	(6,857)	(6,994)	(7,134)
GROSS INCOME	\$ 236,815	\$ 221,706	\$ 249,565	\$ 230,663
EXPENSES				
COST OF GOODS SOLD	\$ 129,712	\$ 125,710	\$ 128,224	\$ 130,788
G & A	21,300	21,300	21,400	21,600
MARKETING	24,292	23,928	24,157	24,390
SALARIES	2,358	2,286	2,331	2,378
ADVERTISING	4,717	4,717	4,571	4,663
DISTRIBUTION	8,200	8,256	8,300	8,300
FACILITIES	820	826	830	830
DEPRECIATION				
TOTAL EXPENSES	\$ 191,399	\$ 187,022	\$ 189,813	\$ 192,949
NET INCOME BEFORE TAX	45,416	34,684	59,752	37,714
FED. INCOME TAX	23,616	18,036	31,071	19,611
NET INCOME	\$ 21,799	\$ 16,648	\$ 28,681	\$ 18,103
AVG. SHARES	875,000	875,000	875,000	875,000
EARNINGS PER SHARE	.02	.02	.03	.02

# FAL'S GOT

NET INCOME BEFORE TAX  
FED. INCOME TAX  
NET INCOME

# YOUR NUMBER

There are many questions a financial decision-maker must answer on a day-to-day basis. Questions such as —

“How much should we offer to acquire Company Y?”

“How much would a strike affect next quarter's profits?”

“Should we build a new warehouse or expand the one we've got?”

“What is the rate of return on the new lathes?”

These questions are difficult and time-consuming to answer. Doing a good job usually requires more time than is available.

To help financial decision makers get fast, more accurate answers to questions such as these, General Electric has developed FAL, the Financial Analysis Language. Available worldwide on MARK III, this interactive program is ready to start saving your company money today.

Report preparation and in-depth analysis (including analysis of complex “what if” questions) is fast and easy with

FAL. FAL is ideal for both recurring and non-recurring financial activities such as the following.

## Budgets

- “rolling” forecasts
- variance analysis
- depreciation schedules
- expense budget consolidation

## Cash Flow Statements

- present value analysis
- return-on-investment analysis

Enthusiastic endorsements from those already putting FAL to good use appear in the letters reproduced below.



OWENS-CORNING FIBERGLAS CORPORATION FIBERGLAS TOWER, TOLEDO, OHIO 43659, (419) 259-3000

April 26, 1973

I have used FAL to build a financial model of OCF which produces pro-forma balance sheets, sources and uses of cash statements, and ratio analysis reports. FAL has enabled me to format the output so that it resembles our regular financial statements which facilitates comparison. In addition, I have made major structural changes in the model with a minimum amount of time and effort.

I am pleased with the program. It gives me the flexibility of FORTRAN, plus greatly simplifying the output formatting task.

Sincerely,

C. Jackson Snyder  
Manager - Financial Planning

CJS/smd

## Health Facility Developers

DIVISION OF KAISER AETNA

March 22, 1973

As the financial analyst and controller for my division, I use FAL as a tool to assist me in determining the financial feasibility of our medical office building developments. To date I have constructed two models: One model is used for cash flow forecasting over the life of the project construction and rent-up phases. Elements of the model compute construction loan draws, architect's fees, interest costs, time-phased receipts and expenditures, and total project cost displays.

The second model is used to evaluate operating income and expenses for the completed project, operating cash flow, and debt, equity, sales price and project profits, all on various rental rate assumptions.

Prior to writing these FAL models, I had no experience in computer programming and had not worked with any of the standard computer languages. My experience in accounting and financial matters provided the principal discipline necessary to understand and use FAL.

I would say that FAL really does a job for us. It saves hours of routine “numbers crunching”, provides a finished report format, and has, after a short familiarization period, been easy to use.

I especially like the ease with which I can write or modify a program to meet special project needs since each of our projects has some unique financial feature.

Paul, I expect to be using FAL for some time and to expand its applications to our business.

Warm regards,

HEALTH FACILITY DEVELOPERS  
Division of Kaiser Aetna

Thomas E. Bradner  
Controller

TEB:ia

2150 Valdez Street — Oakland, California 94604 — (415) 271-6170  
Mailing Address — P.O. Box 12972

# FAL'S GOT YOUR NUMBER

(con't)

## Risk Analysis & Modeling

- acquisition and merger analysis
- capital expenditure evaluation
- real estate analysis

Specifically designed to serve the needs of financial decision-makers, FAL combines power and flexibility to provide one of the best values available.

FAL is extremely simple to learn and operate because of the built-in financial analysis routines and logic. A complete accounting-convention format is also built-in to speed report generation. At the same time, FAL is designed to allow easy tailoring of report formats to the user's specifications.

An open-ended flexibility is inherent in FAL through its capability to interact with other GE business management programs and user-written programs. Since FAL is based on FORTRAN IV, all FIV capabilities, routines and functions can be

incorporated in your analysis.

As FAL is available on MARK III, a financial analyst gains the obvious advantages of the worldwide network for gathering and using financial data from all offices or subsidiaries. And, system features, such as Independent Run, Commands From Files, High Speed Service, etc., add directly to the value of this new package.

Compare FAL with other financial analysis systems; you will find FAL surpasses anything offered by other systems in value and total service.

During the past few months, FAL has been tested by a number of customers; their comments on the package appear on these pages.

Your Account Representative can provide copies of the FAL user guide so that you, too, can take advantage of this useful and time-saving tool.

## OSCO DRUG, INC.

Executive Offices 3030 Cullerton Drive, Franklin Park, Illinois 60131 Area Code 312 589-0500

April 4, 1973

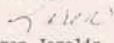
FAL is an entirely new concept for Osco Drug, since all of our Time Sharing systems have been programmed in FORTRAN IV in the past. We decided to use FAL to aid our Real Estate department in such applications as Profit & Loss Statements, ROI Flows, Cash Flows and other financial statements.

In working with FAL I have found it easy to use and straight forward to understand, not only from a programming standpoint, but also from a users point of view. FAL has been beneficial to me as a programmer in saving me a considerable amount of programming hours, which has a direct effect on the users as far as costs are concerned. FAL is also beneficial to users since they can do their own program changes once the program is completed, plus the fact that standard G.E. commands are used, so the user doesn't have to learn a new set of commands.

When we first started using FAL, we thought of using it exclusively for Real Estate, but after working with it, we have found it has definite possibilities for other financial applications.

I just have one parting comment, and that is that I have enjoyed working with FAL and hope to do more with it in the future.

Sincerely,

  
Karen Jarolin

KJ/ds

WELLS FARGO BANK  
NATIONAL ASSOCIATION

WELLSPLAN  
Trust Division

March 23, 1973

Gentlemen:

I would like to take this opportunity to comment on our usage and evaluation of your Financial Analysis Language.

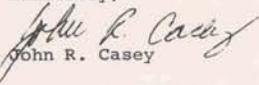
Approximately one year ago we began the task of writing our financial planning model, the output of which would take the form of three pro-forma financial reports. After trying to use two other business oriented languages, we became a GE time sharing user in order to avail ourselves of FAL.

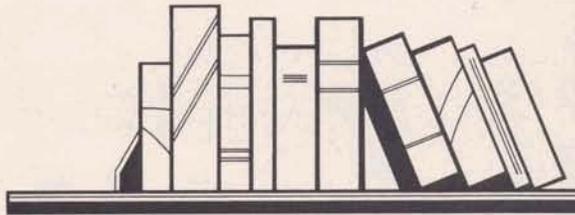
After initial familiarization, we were able to adapt FAL to our specific use in a very short amount of time. We were especially pleased with the ease of use and flexibility of the language in the presentation and manipulation of columnar data.

We have found FAL to be easily adaptable to sophisticated financial applications. We are currently writing two more models in FAL, and are confident that the language will continue to meet our programming needs.

FAL has worked out extremely well for us, and I would not hesitate to recommend its use to other financial institutions.

Sincerely,

  
John R. Casey



## new and revised documentation

A SUMMARY OF RECENTLY ISSUED OR REVISED REFERENCE MANUALS, USER GUIDES AND RELATED DOCUMENTS: YOUR ACCOUNT REPRESENTATIVE CAN PROVIDE THE COPIES YOU NEED.

**Command System** (3501.01H). Revised February, 1973. Both an introductory and a reference document, contains basic concepts of system usage, overview of system features and capabilities, instructions for terminal operations, and a dictionary including rules and syntax for all system commands and features. New items in revision include file conversions via MEDIA command; Commands from Files (CMF); expanded information on files, including new file types and characteristics; and an appendix of character conversion tables.

**Editing Commands** (3400.01E). Describes the Foreground editors: EDIT for line and file editing, TEDIT for string editing, and EDIT RUNOFF for text formatting. Contains elementary section on most commonly used functions. Other sections give a reference summary of all editing commands, complete descriptions of the three editors, and an alphabetical listing of all error messages with explanations. March revision incorporates a new elementary introduction to EDIT RUNOFF for the typist, plus explanations of the EDIT TAB and TEDIT X (exit) commands.

**FORTRAN IV** (3102.01A). Another March revision. Incorporates use of core image files and overlays, \$LINK and \$USE, string processing capabilities, NULLIFY and NAMELIST, expanded list of file I/O error codes, initialization via TYPE statements, and description of chaining to programs in other user numbers. Manual serves as a learning vehicle as well as a reference document for experienced users; covers all FIV language functions, operations, execution, control, I/O, subroutines, plus systems and compiler control.

**FORTRAN IV System Routines** (3104.01B). Provides descriptions of routines that can be used to improve FIV program creation and execution. The March revision contains extensive descriptions of recently released subroutines for string handling, translating to and from IBM 360 data formats, new I/O routines, and the CALL SCRAM encode and decode routines.

**FIV Sorting Routines** (3104.11). An advance-release document, introducing new sorting routines — PSORT, RSORT, MSORT1, and MERGEM. Also includes explanations of existing FIV sort routines — QUICK and SHELL.

**BASIC** (3200.01E). Contains complete description of BASIC; includes sections on fundamental elements of the language, development of example program, advanced features such as use of external data files, matrix operations, and various other functions. All error messages are listed and explained in an appendix. February's revision includes new material on OPTION NOCHECK; the WARN subroutine; FILER and FILEW statements; unbuffered random binary file I/O; CMP, LCP, LFP, LOCS, and UPC\$ functions; plus new Independent Run codes.

**Administrative User** (3502.01A). Describes validation controls, Project Activity Reporting (PAR) and Administrative Budget Control (ABC). This new manual replaces Administrative User booklets and the ABC System supplement. Both an instructional guide and a reference source with self-contained descriptions of each validation command and PAR subroutine call; overview and syntax summaries; fully annotated terminal sessions.

**MARK III Service Foreground-Background Interface** (2000.01A). A revised edition containing descriptions of Background file access errors and procedures for splitting large files returned from Background. Presents vital information for Background processing via Foreground interactive control.

**FLEXIMIS** (5603.01A). A major rewrite of GE's Flexible Management Information System user guide. Incorporates information in previous supplements. Provides consistent method of presentation, a "getting started" section, a 2-page reference table for each module. For advanced users an over-all capabilities chart and section on advanced techniques have been added.

**Financial Analysis Language** (5103.15A). This new user guide describes fast and flexible financial report production with FAL. Programming expertise is not essential; but with FIV, FAL capabilities are almost unlimited. Manual features an easy-to-use introductory section; chapters on constructing a model, execution, operation, and advanced features; and extensively annotated examples.

**GETURN** (5304.22A). This numerical control user guide has been reissued with numerous updates and changes to reflect current software.

**Software Library Index** (5001.02B). Update of the Applications Program Library Index. Lists all on-line application programs and related documents; this revision includes system and language processors and routines, Background applications and related publications.

**Vocabulary Cards:** A new vocabulary card for Administrative User Commands (3502.05). Revised cards reflecting new reference manuals — System and Edit Commands (3501.02B), FORTRAN IV Language Elements (3101.04A), and BASIC Language (3200.02B).

**Publications Price List** (402.01C). A pocket-size folder listing available technical documents (i.e., reference manuals and user guides) in numerical order. Includes prices; updated as of April 1, 1973.

# FIV BASIC FORTRAN PROGRAMMER'S

## NEW FEATURES PREVIEW

This summer a new service package will be brought up on the GE system. The many new additions to the system language and software will even further improve business application of the GE Network, while expanded high speed service capabilities will make the offering very attractive if you are already using or thinking about implementing high speed service. LEADER is previewing these new system improvements so that you can plan to take advantage of them as soon as they are on the system.

Full documentation will be off the presses, ready for your use, by mid-year. You can place your order for it now by contacting your local GE account representative, or by checking the LEADER reply card, box 575.

*FIV's new picture edit will give Cobol-like output editing capability for business applications.*

## BASIC UPDATES

The original language of timesharing has come a long way since the 17 commands of its first release. Although it still retains its traditional ease of use, BASIC has become a powerful interactive language with over 200 commands and functions.

More features are to be added in mid-year. For instance, a double precision feature will be at your disposal. Nineteen usable digit positions will permit your programs to handle very large numbers and maintain greater precision throughout computations. Dollar and cents values up to 17 digits will be accommodated.

And that's not all. Modifications and additions to BASIC's much-used print using capability will enable you to format reports with greater convenience. You'll be able to easily insert standard familiar symbols, such as plus and minus signs, debit and credit abbreviations, asterisks, commas, etc., making your printed output more readily understood.

## PAPER TAPE I/O

With the new features, you'll be able to initiate paper tape activity under program control.

Faster and more efficient than the previous method, a new CALL command subroutine will allow your running program to turn on the paper tape reader, read data into a temporary file, and allow that file to be accessed by your program. This operation can be repeated as required.

The capability also permits tapes to be punched with the same convenient flexibility, in effect, giving you another secondary peripheral storage device.

## FIV EXPANDS

Already considered the most up-to-date interactive FORTRAN IV available, FIV will have many new features which, among other things, will improve your output readability and will simplify I/O and string handling.

FIV's new picture edit will give Cobol-like output editing capability to your business applications. You'll get the convenience of floating currency symbols, check protection fillers, imbedded commas, and trailing credit/debit sign indicators — all features which should improve the readability of your printed output.

The capability for reading and writing records of unknown length will be added for users with large amounts of I/O. You'll be able to treat your binary random, sequential and ASCII files in the same manner.

With international applications you'll find good use for the new Greenwich-Mean-Time functions. Four new subroutines will provide flexibility in GMT-oriented times and dates to suit a variety of needs for international reporting and data consolidation.

In business and accounting applications, new Julian data functions will make it easy to determine the exact number of days between January 1, 1950 and January 1, 1999.

Core image file users should know that your files will periodically become obsolete, due to system changes, and require reloading. To remind you to reload these files on time, a new capability will date the files at the time of initial loading and will automatically signal you of the need to reload for three months in advance of the cut-off date.

Other new conveniences include routines for moving and manipulating data, additional debugging aides and improvements in handling input/output operations.

# SUB COMMAND NOTEBOOK RMS EDIT

*If you commit to use \$2000 per month of high speed service, GE will supply a high-speed terminal at no charge.*

## COMMAND SYSTEM

New changes in the command system are going to make it even easier to use the GE Network.

For example, the familiar OLD command will no longer be needed with RUN. You'll be able to simply enter RUN (FILE NAME) and your program will execute.

New convenient methods of obtaining catalog information will be added. The form of MDS (MASTER DESCRIBE) will be altered to give you the ability to output into a file the current state of your entire catalog. There it can be read, rearranged, or edited by your own FIV statements, or you can make use of another new feature, the EDIT CATALOG command.

EDIT CATALOG will give you an easy method of arranging and retaining file storage information in the form most convenient for you. At your choice, it will arrange the data alphabetically by file name, by date of last access, or by date of last modification.

## BACKGROUND RMS

Users of MARK III Background will soon be able to enjoy the economy and convenience of REMOTE MEDIA SERVICE (RMS) formerly available only in Foreground.

New enhancements will give you the ability to efficiently enter large amounts of data from magnetic tape or punched cards. Similarly, you may choose to receive volume output in cards, magnetic tape, or printed form. This will be particularly efficient if your files are resident only in Background or if you do not wish to transfer large amounts of data through the Foreground.

## HIGH SPEED SERVICE

High speed service modifications include more comprehensive error checking, improved operator intervention options, and more complete session statistics printed at the terminal. Also, if you have a Mohawk 2400 terminal, you'll be able to use it on the system.

In addition, if you commit to use \$2000 per month of high-speed service, GE will supply you with a high-speed terminal at no charge.

### PUBLICATIONS ORDER FORM

(Note: This literature is descriptive in nature, not instructional.  
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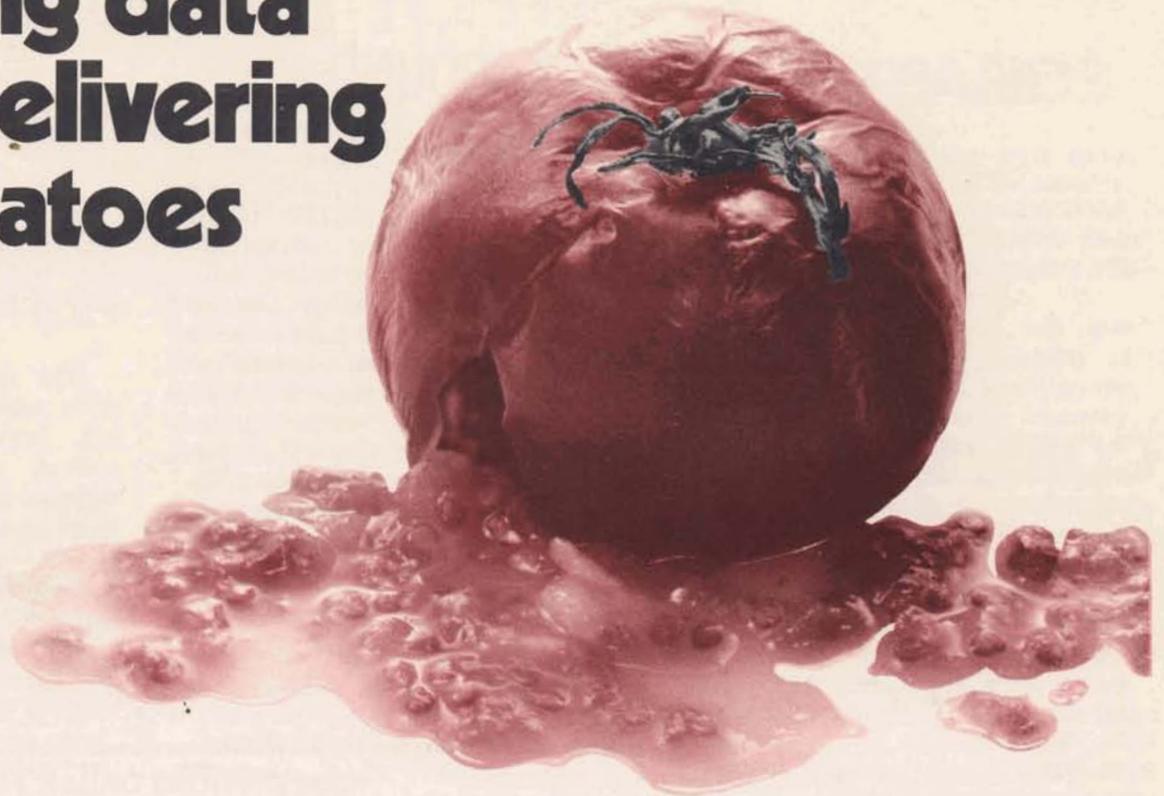
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General Electric's  
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