Hands-On Evaluation

*The omnipresent hands-on symbol found throughout this service is a constant reminder that the essence of the value of **Microcomputers** is sound analytical advice with an emphasis upon hands-on evaluation of business micro-computer software packages. This section explains how we provide this valuable information. Please refer to the Pack-ages By Vendor (800) tab for detailed charts showing the numeric values used in this process.*

■ BACKGROUND

Microcomputers have grabbed the corporate world by the shirt sleeves and they are taking the business professional with them on their upward spiral. Because of the phenomenal growth in the microcomputer marketplace, businesses are faced with a new challenge—how to react to the huge influx of micro systems, micro software, and related micro products. Data Decisions is responding to the corporate need for accurate, up-to-the-minute coverage of the entire microcomputer spectrum with our 3-volume reference service—MICROCOMPUTERS.

One of the key features of this service is an expert hands-on evaluation of important microcomputer software. After several months of market research, which included speaking with corporate executives, data processing managers, and professional and clerical users of microcomputers, we repeatedly heard that the business world wants assistance in choosing microcomputer software. In a corporate environment, the cost of microcomputer software is usually not a problem because most packages only cost between $100 and $500.

However, the time involved in testing software packages to determine if they meet an organization's needs is very large and therefore very expensive. To assist corporations in their software evaluation process, we at Data Decisions have developed a unique, proprietary, precisely calibrated methodology to evaluate micro software in our own PC lab and present our results in an easy-to-interpret graph which can be used to compare software packages. Our methodology assures you that our results are consistent, reliable, and in-step with the real world purpose and effectiveness of the software package.

Each package is evaluated by our software analysts in our PC lab. The lab is currently equipped with several IBM PC/XTs, an Apple II and III, a DEC Rainbow, and several IBM PC-compatible systems. In addition, we maintain a library of popular operating systems in several versions and a wide range of low-, medium-, and high-performance peripheral devices. This gives us the opportunity to configure a system to run virtually all of the available microcomputer software and to take advantage of the features of these packages. As new systems, software, and peripherals become available, we add these to our laboratory.

Our analysts are specialists in several categories of microcomputer software. In order to insure that our evaluations are valid and consistent among reports, we have developed a certification and training program. Before an analyst writes a software evaluation for publication, a sample report must be submitted to an editorial review board for approval. This review board consists of 2 to 3 corporate users of a particular software package. One specific package has been chosen in each of the major categories of software; this package serves as a "signature piece" to qualify our analysts. The categories are:
- word processors
- spreadsheet programs
- database programs
- graphics programs
- communications programs

Upon receipt of approval of the evaluation, the analyst is then certified to review other software packages in the same category of software for which approval was granted, for example, word processors, graphics, spreadsheets, etc. This procedure must be repeated for each additional category of software for which certification is needed. Our certification program guarantees that the analyst thoroughly understands the functions of each package, and more importantly that the analyst can bring a consistent, appropriate corporate type of perspective to each evaluation.

The evaluation process combines the talents of our professional, technical, and clerical staff. The professional staff consists of those editors and senior editors who have received certification from the editorial review board. The technical staff includes programmers and editorial personnel with a background in software development, system design, computer science, or programming. The clerical staff consists of secretaries, our research staff, and assistant editors.

All packages are rated on 7 characteristics: Environment, Documentation, Functionality, Ease of Use, Support, System Interface, and Experience of Vendor. Each of 5 categories of software—Word Processors, Spreadsheets, Data Management, Graphics, and Communication—is rated on different criteria explicitly related to the package's particular function. Please refer to the report behind the Packages By Vendor (800) tab for an explanation of each of our rating criteria and the quantitative methodology used to score the packages.

The first step in each evaluation is always performed by a member of our technical staff. The staff member loads the program diskettes and rates the particular package in the areas of Environment and System Interface. The technical staff member may also make appropriate comments on the Ease of Use criteria. When the system is up and running, the remaining quantitative scoring for the Ease of Use,

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Documentation, and Functionality sections is usally performed through the combined efforts of our clerical, technical, and professional reviewers, depending on the particular category of software. The professional staff member is always available to the lab during this evaluation.

At the conclusion of the quantitative rating of the package, which is usually performed by the clerical and technical staff, the senior person carefully reviews the scores and will ring the software package up and verify many of the scores; particularly in the areas of Ease of Use and Functionality. This analyst then prepares the written report in consultation with the other staff members involved in the evaluation. He draws on knowledge of the micro software market, software trends, and knowledge of other software packages to create the Analysis, Strengths, Limitations, Hands-On Evaluation, and Experience of Vendor sections of the report.

■ DETAILED EVALUATION PROCEDURES

The functions provided by each different type of software package obviously vary. Therefore, the criteria by package type we use to evaluate each type is, of necessity, different. In the paragraphs that follow are included brief descriptions of the methodology used to evaluate the software, together with some short scenarios employed as aids in the evaluation process.

For each of the 5 major categories of software, we have included a discussion of important characteristics evaluated for each section to arrive at the Product Quality Ratings. The method for evaluating 2 sections in the Product Quality Ratings—Support and Experience of Vendor—did not vary from software package category to category; and consequently, is not included in the paragraphs below.

To evaluate Support for each package we looked for the presence of a vendor-supplied Technical Support Group; . we determined if a telephone hot line was available or an 800-telephone number; we determined how much the vendor relied on the distributor for support; and we looked for a software update policy.

The major features in the Experience of Vendor category were the number of years the vendor was in the micro marketplace; the number of micro software products offered; if the vendor had experience in developing and marketing mainframe software; and the quality of management.

For a more detailed description of our methodology and a listing of our numeric point structure used to arrive at the Product Quality Ratings please refer to the Software Evaluation report behind the Packages By Vendor (800) tab.

☐ Word Processor Packages

Environment ● We tried to pay particular attention to the disk and memory requirements and their effect on performance. We noted if the package ran on the configuration typically sold and if it used the most current operating system version. We also tested operation of the package on minimum memory by searching a file of at least 10K bytes to see if the time to find a word at the end of a document was excessive with small memory systems.

Documentation ● Most word processors need a good reference manual which is organized by user functions and not by the command to invoke them. Other helpful aids are a reference card or guide, a pocket reference, and a tutorial manual/diskette. A package received a high score for documentation if all three types were available and were well-organized for their specific function.

Functionality ● We looked for specific features in all word processing packages including: full-screen editing, a format of the display matching the printed page, on-screen page and line indications, and global search and replace, among others. For a full listing of scored features please refer to the report behind the Packages By Vendor (800) tab. In order to test all functions our clerical staff keyed in several documents prepared by our professional staff. These documents were then revised based on "standardized revisions." These "standardized revision" documents were also prepared by our professional staff to insure that all functions of word processing packages were tested.

Ease of Use ● The key points that we looked for in this area were the richness of the "Help" function and the quality of the command structure. A hierarchical "Help" structure with aid at each point is desirable; we rated a package lower if the "Help" structure required the user to know the command name to request help on it. In command structure, menu lists should be used for non-editing inputs such as the selection of files to be edited or basic pre-edit options.

System Interface ● Word processors must frequently operate in an environment with other types of word processors or with computer systems which store text. We awarded points for the presence of detailed formats of the document structure, for instructions on converting this format to that of other popular systems, and for the ability to read page-formatted documents and convert them to word process format.

☐ Spreadsheet Software

Environment ● Our scoring criteria was based on the fact that we believe spreadsheet programs should operate on a system with a single disk drive and should take advantage of additional memory to provide larger in-core storage of sheets. We awarded points if a system required only one disk drive for operation and operated in less than 64K bytes of memory. We scored additional points if the program could use 128K bytes or more of RAM.

Documentation ● We consider this an important characteristic for spreadsheet programs since there are usually many functions that require description. We believed there should either be two manuals for the spreadsheet packages or a tutorial section in the reference manual. It was also important that the reference documentation be organized in functional lines rather than by command, and that there be a list of commands and an indication of their use in a special section.

Functionality ● We determined that spreadsheets should have the following functions among others: the ability to use cursor control to move left/right and up/down from cell to cell; the ability to go to a selected cell, to the upper left or lower right of the worksheet; or to the left or right end of the current row or top or bottom of the current column. We also feel that spreadsheets should permit the entry of numeric or alphabetic data into a cell and should permit the naming of a particular cell and the use of the name as a reference to the cell. The report behind the Packages By

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Vendor (800) tab will indicate all other features which we evaluated.

In order to give this section of the evaluation a corporate perspective our professional staff developed real-world business applications to test all of the functions. Our clerical staff entered the data and noted on a worksheet the presence or absence of particular features. When value judgments were required, the professional staff member was consulted.

Ease of Use ● Since spreadsheets are rich in commands and often difficult to master the Help function is very important and should be usable to provide both a list of commands and the detail on any command. Data Decisions believes that the commands should be in menu form rather than free-form entry since there are many types of commands. We also feel that the display form should resemble a normal spreadsheet with the addition of row and column references. Points were awarded in the 3 areas of "Help" function, command structure, and display format.

System Interface ● Because of the complex structure of spreadsheets, there is little compatibility in interface between spreadsheets and other systems. However, we believed there should be an explanation of the file format for spreadsheet files provided with the package, or the package should provide the option of producing files compatible with the normal files of the computer on which it is run.

☐ **Data Management Packages**

Environment ● We determined that a data management package normally requires 2 disks and 64K bytes of memory for operation. If the system operates with a single drive, additional points were awarded. Extra points were given if the system supported 128K bytes or more of memory.

Documentation ● Our analysts felt that 2 manuals were a necessity. A tutorial manual with an accompanying demonstration program diskette should be provided to learn the system, and a reference manual with detailed command information should be available when the user is experienced. We believed the documentation should be organized with the realization that the user is necessarily more technical than the average user of a word processor. The tutorial manual/diskette should provide some introductory information on the concepts of the data management program and then move to build user confidence and experience through the use of successively more complex examples. The reference manual should provide a grouping of commands by their functions, but a reference of commands by command code word is also available.

Functionality ● Once the package was loaded by our technical staff, our clerical and professional analysts worked closely together. We examined 3 areas of data management functions: file maintenance, report generation, and special programming. In the file maintenance area we looked for the ability to design data entry screens, to define input field data types with editing for proper data, to define a record with a large number of fields, and for field size limits of 255 or more characters. In the report generation area we looked for automatic totaling, control break recognition with subtotals, column heading specification

including multiline headings, and specification of column width. In the special programming support area we tested for the ability to test field values (the IF command), and to maintain internal data areas or indicators. For a complete list of features and scoring criteria for this section please refer to the pages under Data Management in the Software Evaluation section behind the Packages By Vendor (800) tab.

Ease of Use ● In this section, we determined that the most important feature was the structure of the operator commands. We believe that commands should be in a roughly English syntax and should extend to multiple lines if required. Error messages should indicate the area where syntax or usage is suspect and not just reject the command. Other important features are the ability to define "command files" where lists of commands are stored for invocation as a single stream, and the ability to enter and update screen and report formats in a convenient way. In order to score this area our professional and clerical staff worked closely. In some cases our professional staff member had to translate error messages; in every case it was the professional member's responsibility to define and test the "command files" where lists of commands were stored for invocation as a single stream.

System Interface ● Data management files may be derived from input entered elsewhere or produced on the system but by other programs. We believe that the ability to manipulate database files was highly desirable, as was the ability to gather data from other popular systems on mainframe computers. We awarded points if the database file structures were defined for reference by programs written in other languages and if the file structure was designed to facilitate such use. We also gave points if there was a facility to produce files in non-database format out of the database package, and if the user could read such files and generate database files. We also awarded points if the package was integrated with at least one mainframe program for file exchange and if specific guidelines for cross-exchange of files was supported.

☐ **Graphics Software**

The elevation of business graphics software packages presented an interesting challenge because of the wide range of facilities available. We decided to divide the graphics program into 2 main categories: programs to produce graphs from spreadsheet or database information, and programs to generate graphic images "free-form" for presentations or reports.

Environment ● Our analysts consider that the major environmental question for graphic programs is the type of graphics equipment which is required for it to run. It is desirable that product-line hardware be used wherever possible rather than custom hardware, and that any equipment not provided by the computer manufacturer should come from a reputable and reliable source.

Documentation ● We believe that software for graphing of spreadsheet data should be easily operated and have little need for extensive documentation. The manual should outline the graphing options and indicate the way in which each is selected. It should give image-oriented examples of the appearance of each type of graph available and the

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effect of each variable option which the user can control. It should also provide suggestions on selecting options to match the characteristics of the data or the way in which the presentation is to be used.

Graphics software used for free-form creation of images should have extensive tutorial and reference documentation which teaches the basic use of the package and defines the detailed operation of commands. The tutorial material should ideally be accompanied by diskette media. Illustrations are vital in graphics manuals, and they should be large and accurately reflect the screen appearance. Use of external devices such as plotters and printers should also be covered.

Functionality ● Our professional staff developed one "standard" graph that was to be created from each spreadsheet and database program, and another "standard" graph which we used as a basis for the "free-form" graphics packages. It was against these "standard" graphs that we tested the features of each particular package. For example, on graphs developed from spreadsheets our professional and clerical staff developed a number of graph types—line, pie, and bar charts; color was changed; and the horizontal and vertical scales were changed, etc. For image graphics packages we considered that important features were: the ability to draw free-form images, the ability to generate geometric shapes at various points and at specified sizes, the ability to change colors and to fill in spaces with a particular color. The total number of colors in the palette was also considered important. For a complete list of features evaluated please refer to the Software Evaluation report behind the Packages By Vendor (800) tab.

Ease of Use ● Our analysts believe that spreadsheet graphics packages are easy to use if they can be easily invoked and if the graph options are pre-selected where possible and menu or prompt chosen otherwise. Those which are directly invoked from the spreadsheet are easiest to use. We believe that image packages are more easily used if they accept a form of analog drawing information from a mouse, joystick, or graphics tablet. They should also have a menu of functions and a Help function with commands.

System Interface ● For this we award points on spreadsheet graphics if the package graphed normal spreadsheets: if it works with multiple spreadsheet programs, and if it would work with other types of programs. For image graphics we award points for support of each standard graphics protocol supported such as Tektronix, HP, IBM color 3270, and NAPLPS videotex, and additional points for the quality of instructions on the use of the graphics data with other non-supported hardware.

Communications Software

Our technical staff played an integral role in evaluating the Communications packages. In fact, a technical staff member with communication experience usually took responsibility for a large part of the scoring section of this evaluation. With these packages we found remote sites with which to communicate by setting up communication links with several host computers, usually DEC or IBM systems. We evaluated each package based on the type of facility which it provides: terminal emulation, transparent file transfer, or program file transfer.

Environment ● The key questions in this category are the ability of the package to support product line hardware and the typical configuration of the system. We award points if the system runs on the normal configuration of the target computer; if it runs with the normal operating system; if it effectively utilizes additional memory to improve performance; and if all the hardware required is supplied by the computer vendor.

Documentation ● We feel that 3 areas of documentation are important: the communication link, the local operation, and the remote system operation. For the communication operation, we awarded points if the document defines communication terms and explains the various communication options, modems, etc which are associated with the package, if a detailed explanation of setup of the communication line is included and if the errors and problems which might be encountered are outlined and explained. In the local operation section, we award points if the manual/diskette explains not only how to load and run the program but also how to perform the operation of the device which was emulated on the PC, if a description of loading and running the program is present and if there is a mapping of "target terminal" keys to the PC keyboard. For remote system operation, points are given if the documentation defines the set up required at the remote system, if the error conditions of the remote system are related to the local package operation, and if tips are available on using the remote system to diagnose problems on the connection.

Functionality ● Our analysts determined that because communication packages could have many functions, it would be difficult to rate functionality. Therefore, we determined which of the 3 functional areas—terminal emulation, transparent file transfer, or programmed file transfer—the package was intended to support and then rated the package in those areas. Please see the description of features in the Software Evaluation section behind the Packages By Vendor (800) tab.

Ease of Use ● We rated three areas: the ease in setting up the connection to the other system using the package, including the special procedures on the other system; the ease with which an operator trained in the use of the target terminal would adjust to the new package; and the ease with which non-emulator functions such as file transfers could be invoked. We also give an extra point if the package allows the user to escape from the communication circuit to gain access to function menus or help documentation.

System Interface ● Our analysts determined that the rating should reflect the universality of the communication interface. We therefore award points for asynchronous, bi-synchronous 3270 interface, SNA 3270 interface, or 2780/3780 support; for support of multiple codes sets; for support of transmission speeds from 1200 to 9600 bps; and if the product can share a line with other devices.

□ Multifunction Packages

Multifunction packages present a unique challenge. We decided that our professional staff members should evaluate the whole package themselves with no clerical help. This decision was made because it was determined that some multifunction packages are in truth merely spread-

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sheet packages with some data management and graphics facilities; while other packages have completely integrated several functions. (We believe the micro user will increasingly see more of the latter type of software in the near future.)

Therefore, in order to evaluate accurately each multifunction package, a professional staff member has complete responsibility. If a multifunction package is determined to provide primarily spreadsheet functions, it will be evaluated using the spreadsheet criteria. If it provides primarily data management functions, those criteria will be used, etc. If a package is truly integrated, the characteristics for each function will be evaluated and reported separately.

● **END**