

# Digital Research and CP/M move into the big time

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*... with a couple of shots in the arm: one from a group of venture capitalists and the other from an IBM endorsement*

Gary Kildall can barely sit still. He's talking about the things he plans to do with a new research and development group he's setting up within his Pacific Grove, Calif., company, Digital Research, Inc. "High-resolution color graphics. Voice synthesis and recognition. Sensors and effectors for machine interfaces. These are just a few," he says.

He's asked how much he will be involved.

"Plenty," he says beaming.

Kildall, 39, has a lot to smile about these days. His firm, best known for the single-user 8-bit  $\mu$ c operating system, CP/M, has just received a couple of shots in the arm: one from a group of venture capitalists, another

from IBM Corp.

Not that Digital Research needed either of them. The six-year-old company has watched its sales increase one hundredfold since its founding. Sales for this fiscal year are expected to reach \$6 million. Projections put next year's sales at \$10 million. That's not bad for a company that started in a children's playhouse in Kildall's backyard with \$500 and some systems hardware. Until the recent infusion of venture money, Digital Research had been self-funded.

Kildall's firm reflects the rapid growth in the  $\mu$ c industry in general. Insight Onsite, a San Jose, Calif., market-research group, predicts that the number of

| ESTIMATED WORLDWIDE $\mu$ C MARKET              |      |      |      |      |      |      |        |
|---|------|------|------|------|------|------|--------|
|   | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985   |
| <b>Hardware</b>                                 |      |      |      |      |      |      |        |
| Units (thousands)                               | 300  | 440  | 640  | 890  | 1190 | 1520 | 1890   |
| Value (\$ million)                              | 1300 | 1930 | 2800 | 3960 | 5300 | 6800 | 8500   |
| <b>Software</b>                                 |      |      |      |      |      |      |        |
| Average value per system (\$)                   | 400  | 600  | 800  | 930  | 1025 | 1070 | 1130   |
| Sales (\$ million)                              | 120  | 260  | 500  | 830  | 1220 | 1630 | 2130   |
| Percent commercial                              | 25   | 50   | 60   | 65   | 70   | 73   | 75     |
| Commercial sales (\$ million)                   | 30   | 130  | 300  | 540  | 850  | 1190 | 1600   |
| Percent consumer                                | 75   | 50   | 40   | 35   | 30   | 27   | 25     |
| Consumer sales (\$ million)                     | 90   | 130  | 200  | 290  | 370  | 440  | 530    |
| Demand (\$ million)                             | 420  | 730  | 1150 | 1670 | 2280 | 2900 | 3640   |
| Commercial                                      | 150  | 400  | 770  | 1230 | 1800 | 2370 | 3050   |
| Consumer  | 270  | 330  | 380  | 440  | 480  | 530  | 590    |
| <b>Total (hardware and software—\$ million)</b> | 1430 | 2190 | 3300 | 4790 | 6520 | 8430 | 10,630 |
| Percent software                                | 9    | 12   | 15   | 17   | 19   | 19   | 20     |

Source: Insight Onsite

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small,  $\mu$ c-based systems in use will reach nearly 2 million by 1985, with a value of \$8 billion. In contrast, the number this year is only 640,000 units valued at \$2.8 million.

In the same time span, the sales of  $\mu$ c-related software are expected to grow from about \$300 million to \$2.1 billion, with 75 percent coming from business-applications software. More importantly, the ratio of the value of hardware to the value of software in these systems will change dramatically. Insight Onsite says that by 1985, 20 percent of a system's cost will lie in its software, compared with 12 percent in 1980.

Expansion like that can be scary for a small company lacking skilled managers. And to keep up with its customers, Kildall believes, a company must match the growth rate of its industry. With that in mind, after rejecting several hopeful investors, Kildall accepted a deal with a consortium of venture-capital firms, primarily "because of their management expertise...their ability to help in a rapidly growing industry," he says.

In July, Digital Research secured an undisclosed amount of money from four firms headed by T.A. Associates, Boston, and including Hambrecht & Quist, San Francisco; Page Mill Partners, Palo Alto, Calif.; and Venrock Associates, New York. In return, the four received a minority interest in Digital Research. Two representatives of the investors, Jacqueline Morby of T.A. Associates and Larry Mohr of Hambrecht & Quist, will join Digital Research's board of directors.

Digital Research vice president Dorothy McEwen, who is Kildall's wife and the company's co-founder, hopes the investors' management talents will help the company's planning. "In the past," she says, "we made changes when we saw a need. We can't do that

anymore." Kildall adds, "It's too difficult to predict your staffing and space needs." McEwen says the funds will help bring in experienced management personnel. Additionally, the company will be divided into operational and product groups.

Foremost among Digital Research's divisions is the operating systems group. Kildall says the group is "very substantial, with good management and direction." CP/M is the flagship and has become the de facto operating system in the  $\mu$ c industry. Digital Research estimates that there are more than 250,000 CP/M installations and that more than 300 OEMs implement CP/M on more than 350 different systems.

Xerox Corp. and Hewlett-Packard Co. gave CP/M the nod when they made it available with their small systems. But the nod that mattered most was IBM's endorsement of CP/M-86—CP/M's 16-bit kin—for its personal computer announced in August. Under the arrangement, Digital Research will supply CP/M-86 as an alternate operating system for the IBM machine. The program will be customized for the 8088 CPU, a 16-bit processor with an 8-bit data bus used by IBM.

Such contracts are lucrative, and although Digital Research won't divulge the amounts, the contracts may be the reason that the company has changed the way it prices the product. A one-time fee of \$50,000 previously bought an OEM customer the CP/M source listing and the right to make as many copies of it and its documentation as needed. Under the new license plan, the fee is \$60,000, documentation costs are \$10,000, and customers are limited to 10,000 copies of the software. If more copies of CP/M are needed, the OEM pays a \$2-per-copy royalty or \$60,000 for the right to make unlimited copies. The change was made, says Digital Research's marketing director John Katsaros, because of "increased demand" for the product. "CP/M has helped OEMs sell a lot of hardware," he says. "It's a more valuable product today than before."

Not all Digital Research efforts succeed as well as CP/M, however. The company's multi-user, multitasking operating system, MP/M, didn't spark much imagination after a couple of years on the market. "MP/M suffered

### **KILDALL: CP/M AND BEYOND**

Intel Corp.'s loss was Gary Kildall's gain. While a consultant developing a programming language for Intel's (and the industry's) first 8-bit  $\mu$ p, Kildall independently designed what he called a control program for  $\mu$ cs. It was the first 8-bit operating system. He called it CP/M and offered Intel the chance to help develop it further. Intel said, "no thanks," and the rest is history.

CP/M has outgrown its hobbyist's sneakers and has donned the wing tips of big business, as has Kildall's Digital Research, Inc. But Kildall retains the exuberance of someone

embarking on a new adventure. With the help of money received from the venture-capital deal, Kildall's R & D group will delve into new areas, some of which at first glance seem to have no bearing on his company's direction. Using the sonar sensor from a Polaroid "One Step" camera is one instance. "It's a good example of the kind of sensor a computer can read," Kildall explains. But he's talking only in terms of "investigation."

On the more serious side, Kildall expects to investigate problems posed by what he calls the miniaturization of systems. Pointing to Adam

Osborne's portable machine (MMS, July, p. 23), Kildall says, "Personal machines with limited resources need streamlined software. We have to build software to match a machine's capability."

Commenting on Ada, the Defense Department's programming language, he says, "I'm not sure what its ramifications are yet, but Ada has forced us to think about language design. We've stagnated in language design; we're just redoing the old ones." His R & D group will be investigating Ada-related topics, he adds.

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## ***Lucrative contracts with IBM and Hewlett-Packard may be the reason Digital Research has changed the way it prices CP/M.***

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from its own limitations and from market weakness," says Katsaros, explaining that the package lacked the file- and record-locking features essential for a multi-user system. The company reworked MP/M and released it as MP/M-II this summer. Katsaros says several systems OEMs are expected to offer MP/M-II with their hardware, and at least 15 language companies have expressed intentions to support it.

As Digital Research has grown, so has its competition. Two rivals to MP/M-II are UNIX, the operating system Bell Laboratories developed for minicomputers, and OASIS, from Phase One Systems, Inc., Oakland, Calif. These systems' multi-user and multitasking



**Digital Research recently accepted a deal with a consortium of venture capital firms "to help in a rapidly growing industry." From left are Larry Mohr, an investor with Hambrecht & Quist; Jacqueline Morby, the lead investor, of T.A. Associates; Gary Kildall, president of Digital Research; Dorothy McEwen, vice president, and G. Gervaise Davis III, Digital Research's counsel.**

capabilities put them squarely on MP/M-II's turf. Kildall also expects competition from XENIX, a UNIX-like system from Microsoft, Bellevue, Wash. However, he thinks MP/M-II's niche lies in systems priced at less than \$12,000, while XENIX is better suited to higher priced hardware. Ironically, many of Microsoft's programming languages run under CP/M. The company's consumer division sells a plug-in board for personal computers that permits those machines to run CP/M. Sources estimate that 20 percent of all Apple computers sold contain that board.

CP/M-compatible operating systems are also springing up. Although Kildall claims that they have no effect

on CP/M sales—"They get limited exposure and die off"—they do represent a threat to CP/M's sovereignty because of possible copyright violations. Says Katsaros, "Making a CP/M-compatible system means taking some of our material. If we find that, we will go to court." The crux of CP/M compatibility, however, is language support and utilities, neither of which the lookalikes have, he says.

Meanwhile, work continues on CP/M. Version 3.0 is due this fall. Kildall is concentrating on the 8086 version, and says that he has "some commitments" for a version for Motorola's M68000  $\mu$ p. A program to study Intel's 32-bit iAPX-432 is also under way.

Kildall intends to put more emphasis on programming-language development. He says the company will add support for those languages that the software houses it deals with don't have. A major step toward strengthening Digital Research's in-house programming talent was taken in September when the company acquired Compiler Systems, Inc., Sierra Madre, Calif. The firm, best known for CBASIC, was started by language guru Gordon Eubanks. It will become the foundation for Digital Research's language division with Eubanks as vice president.

Industry analyst David Gold, San Jose, Calif., believes that the steps being taken by Digital Research make sense. "I expect the company to continue to grow CP/M horizontally, adding more machines." Further, he anticipates vertical activity and more multi-user, MP/M-II-like software. "The next step could be applications packages," he says.

One OEM customer, systems builder Dynabyte, Inc., Milpitas, Calif., looks for similar activity from Digital Research. Vice president of marketing Michael Seashols, who says that 95 percent of his firm's Z80-based systems are shipped with CP/M or MP/M, expects "more utilities, languages and database-management software." Concerning the impact of CP/M, Gold says, "It's interesting, given the number of vendors and products in this business, that a level of standardization has emerged." The environment needed CP/M, he continues, but Digital Research just didn't have the clout to make CP/M a standard.

IBM's imprimatur has helped. Gold says it's a further endorsement of CP/M by the community itself. Phase One president Howard Sidorsky agrees: "Opening microcomputing to more people than before is good for everyone in the industry."

Regarding Digital Research's venture money, Gold says, "People now see this business as one with long-term potential. It's not a cottage industry anymore." Sidorsky calls the funding a smart move. "Typically, software companies are not cash-hungry. Digital Research will likely be doing things with that money that won't be obvious."

"Four years ago," says Gold, "if anyone had said that there would be a de facto operating system in the small-system world, people would have laughed." Now, Gary Kildall is the one laughing. ■