# Editorial

# Of IBM, Operating Systems, and Rosetta Stones

*by Chris Morgan, Editor in Chief*

The story behind the creation of the IBM Personal Computer is as interesting as the machine itself. In this issue Gregg Williams discusses in great detail IBM's most recent offering to the microcomputer field (see "A Closer Look at the IBM Personal Computer," page 36). In this editorial I'll tell you the story of its development, talk about the machine's operating system, and discuss the possibility of establishing a standard for operating systems.

## Breaking the Speed Barrier

As IBM watchers know, it usually takes about five years from the time a project at IBM is conceived to the first shipments of the completed product. This is typical for complex computer projects at large companies. Amazingly, the total time for the IBM Personal Computer project was about 13 months. How did this happen?

One answer is that IBM limited the number of in-house innovations. Instead it used existing hardware and software components from outside vendors—a departure for the normally vertically integrated giant. Imagine how bizarre an Intel-manufactured processor would have seemed in an IBM product of, say, five years ago.

Another factor in IBM's speed is that the company gave its design team a wide latitude and a great deal of autonomy. The rest of the company left the designers, based in Boca Raton, Florida, alone to do their job, although IBM's quality-assurance group did keep a close eye on the software chosen for the machine.

One of the most interesting aspects of the Personal Computer is that its design team included many computer hobbyists and "hackers"—people who owned and were familiar with existing microcomputers. And the IBM machine reflects their experience. I'm glad they avoided many design mistakes of the past. The keyboard alone is one of the best I've seen, though I wish the shift keys were more conventionally positioned. (Oh well.)

## Operating Systems

IBM has decided to let the marketplace determine which of its three operating systems will become dominant (if any). Thus, you can get UCSD Pascal, CP/M-86, or the IBM Personal Computer operating system from Microsoft. You can have all three if you want; it's a nice choice.

I'm particularly excited about Microsoft's approach to the IBM Personal Computer. As you may know, Microsoft recently introduced Xenix, its superset of Unix, Western Electric's popular multiuser operating system for small- and medium-sized computers. It turns out that Xenix is at the top of a pyramid of upward-compatible operating systems to be made available by

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Microsoft. At the bottom is the IBM DOS (called MSDOS by Microsoft). In the middle will be XEDOS, a new operating system written in the C language for the 68000, Z-8000, 8086, and LSI-11 processors. XEDOS will contain Xenix-like features and will be essentially a single-user version of Xenix.

XEDOS and Xenix are processor-independent. Because the different versions of XEDOS are written in C with a minimal amount of native assembly-language code, programs written for one 16-bit processor can be readily transferred to another. Microsoft demonstrated this capability, at the recent COMDEX show in Las Vegas, by exchanging unmodified code between four machines: a 68000, a Z-8000, an 8086, and a PDP-11.

### Standards, Anyone?

Unix has become well entrenched in the nation's colleges and universities due to Western Electric's extensive, inexpensive licensing of the system. As a result, many of today's graduating computer scientists are familiar with it. (See "The Unix Operating System and the Xenix Standard Operating Environment" by Robert Greenberg, June 1981 BYTE, page 248.)

Microsoft's proposed family of operating systems will also incorporate a significant feature—a graphics device driver that uses AT&T's proposed videotex graphics standard called PLP (Presentation Level Protocol). It's a minimal standard, admittedly (it's hardly high-resolution graphics), but think what it would mean if *all* 16-bit operating systems could support PLP. At last we'd have a *least common denominator* for graphics. And keep in mind that the creative use of graphics will be a vital part of the future of our field.

Digital Research, for its part, is promoting its latest efforts, CP/M-86 and its multiuser, multitasking version, MP/M-86, as candidates for the standard 16-bit operating systems of the future. (See "CP/M: A Family of 8- and 16-Bit Operating Systems," by Gary Kildall in June 1981 BYTE, page 216.) More than twenty OEMs (original equipment manufacturers) have made commitments to use the two operating systems. Both the IBM Personal Computer and the IBM Displaywriter use CP/M-86. MP/M-86 will soon be available for the IBM Personal Computer. One good feature of MP/M-86 is its foreground/background structure, which, for example, lets the user access the editor while compiling a program.

Of more importance than CP/M-86 is MP/M-2, Digital Research's new multiuser operating system. It will be a real contender against Microsoft's operating system. It includes file locking and record locking, 32-megabyte file capacity, and other sophisticated features. Significantly, the company also currently supports Unix through C BASIC and Pascal. Digital's official stand is that it is not "philosophically opposed" to the Unix concept, thus holding open the possibility for a future operating system standard.

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## The Battle

Who's going to win the 16-bit operating system sweepstakes? My guess is that there'll be no clear winner for several years; maybe never. Competing software and languages tend to coexist in our field, and this situation is no exception. IBM has set the tone by making *both* CP/M-86 and MSDOS available for its machine. Yet when I look at the mistakes made in the 8-bit world, I hope a standard will emerge.

## A New "Rosetta Stone"

In 1799 the Rosetta stone was discovered in Egypt. It contained the same message inscribed in three different languages: Greek, Demotic, and Egyptian hieroglyphics. Using the familiar texts of the Greek and Demotic, scientists were able to painstakingly translate Egyptian hieroglyphics for the first time—a triumph of scholarship that would have been virtually impossible without the decoding stone.

But translating is a slow, arduous job. Creative software designers waste a lot of time customizing their programs for different machines. Today, we need an entire set of "Rosetta stones," translating tools to disseminate software for all of the popular machines. But these tools have become more like a set of millstones around our necks.

We need a new approach to operating systems to cure the ills that still beset us from the footloose days of 8-bit machines. A standard 16-bit operating system is still the best way out of the linguistic woods.■

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