Poller Applications package can be implemented on TI's minis (DS990 Models 4 through 30), allowing collection and distribution of data to and from 767 and 769 terminals. Either tty or 3780 protocols can be used for polling, downloading and broadcast functions. TIBOL 2.0 cross-support also can be performed on DS990s.

Opting to base its first IBM-compatible terminal entries on the extant bubble memory line seems a good choice. The terminals have already been proven in many respects—the 30cps thermal printer, the bubble mass storage, etc. And, since those terminals are microprocessor-based, much of the 3780 support turns into a software project (e.g. protocol handling, converting from the terminal's internal ASCII representation of data to EBCDIC).

TI will not call the Models 767 and 769 "portables," since they require external modems for their major application as 3780 devices.

While TI says there are some engineering considerations that would have increased the terminals' cost if it allowed ASCII tty communications from the bubble store, it's probably as much a marketing consideration to protect the 763 and 765.

Initial availability of production units is slated for the third quarter (Model 767) and the fourth quarter (Model 769). In basic configurations both come with 40KB of bubble memory, expandable to 80KB in 20KB steps. The 767 lists at $3,995 and the 769 is $4,295; the external modem—which will be serviced by TI—sells for $1,095. All prices are quantity one.

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DDP DECADE IS HERE

Four-Phase is finding that people now want to offload applications from their host mainframe and run them at the remote sites.

It was shortly after IBM had introduced its E-Series computers, the 4331 and 4341, in January 1979. At the annual shareholders' meeting of Four-Phase Systems Inc., the company's chairman and president Lee L. Boysel was asked whether those 4300s could be used as remote processors in the distributed processing marketplace where Four-Phase had staked its claim. Boysel said he couldn't see that happening, figuring IBM's offerings for this environment would instead be its Series/1, the Systems/34 and 38, and the 8100.

"Boy, was I wrong," he now says.

For the last nine months, Boysel claims, there has been a veritable parade of customers though the Four-Phase headquarters in Cupertino, Calif. They've been telling their systems vendor they intend to acquire 4300s for the local processing function, retaining the Four-Phase hardware for the interactive, front-end jobs. The reason, he explains, is that they want to off-load applications from their host mainframe and run them at the remote sites. Those customers are saying the local batch processor must be 370-compatible. After all, there are $200 billion to $300 billion in applications programs at user sites that run on IBM iron.

"What's happening is that 4300s are winding up in ddp networks. I never would have believed it, but that's where we're coming from."

During this period, fortunately, Four-Phase had been discussing the terms under which it would acquire Two Pi Corp., maker of the 370-compatible V/32 computer with the power of a 4331-1. Simultaneous with the consummation of that deal earlier this year, Four-Phase announced a processor with twice the power of the V/32 and renamed the two machines the Four-Phase Systems 311 and 312—which are the last three digits of the 4331-1 and 4331-2. Now the company is prepared to begin supplying its customers with a 370-compatible, back-end batch processor for use at remote sites in conjunction with the old Four-Phase System IV interactive processors now in place. And it is promising a fall '81 announcement of new front-end processors that will run existing Four-Phase software.

While IBM blessed the ddp concept two years ago with its 8100, there's been more jawboning than joining by users.

"The story at Four-Phase is consistent with what seems to be happening in the industry," says Richard Matlack of Dataquest, the research and consulting firm also in Cupertino. "That is, people *are* offloading from the mainframe."

While IBM blessed the distributed processing concept two years ago with its introduction of the 8100, there's been more jawboning than joining by the user community. Some say the transformation will occur in this decade, that the '60s was the period of decentralized processing, the '70s of centralized processing, and the '80s will

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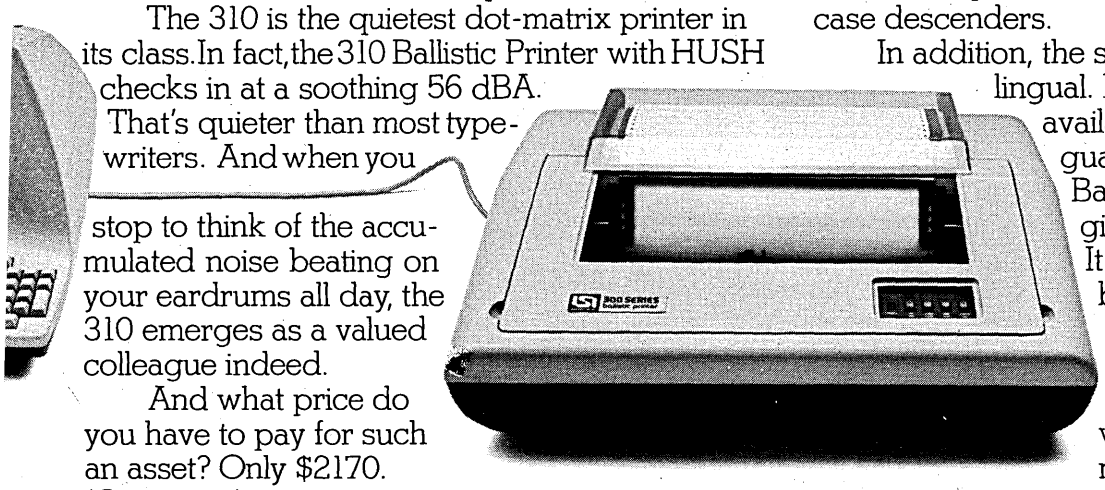

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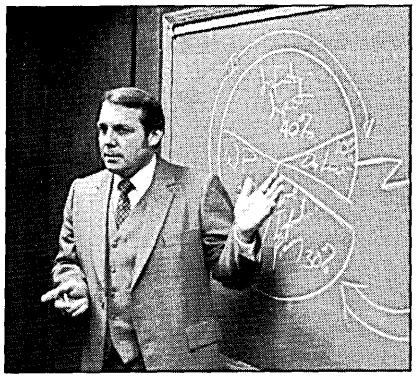

LEE L. BOYSEL: "What's happening is that 4300s are winding up in ddp networks. I never would have believed it, but that's where we're coming from."

be the decade of distributed processing. The marketplace is growing "but not exploding overnight, like a lot of people say," according to George Weiss of Quantum Science Corp., New York. Still, he sees it becoming a $55 billion market by 1985.

It will not come too soon for Four-Phase Systems, founded in 1969, shipper of more than 13,000 systems since that time, known for what some call the shared-processor data entry application on a processor design that's now more than 10 years old. The company has concentrated its direct sales effort on the nation's largest corporations, which may purchase their IBM and Amdahl mainframes but lease their Four-Phase hardware (the software is bundled). At least 90% of its hardware is on long-term lease.

Four-Phase is known among market analysts for its loyal customer base, for possessing an excellent sales force, and for a crack field support network of more than 1,000 people operating out of 130 locations nationwide. One of its oems, confirming these superlatives, is also high on the hardware. "The design is dated but not out-of-date," says B. R. Cabaniss, president of San Francisco-based Maestro Systems Inc. The company has installed about 30 on-line

Ddp could be a $55 billion market by 1985.

programmer workstation systems based on the Four-Phase hardware. Cabaniss tells of visiting a user site, asking what the user liked about the system. "Without any prompting the guy said, 'The best thing about your system is availability.' He said the thing never goes down."

Cabaniss readily admits there are two things he would like. One is a bigger terminal, one with a 132-character line width and graphics capability. The other is a larger disk drive. He's led to understand that both enhancements are being planned. Looking at products on the market, he concludes, he doesn't see anything else that can provide the kind of response time he needs.

Oems are important to Four-Phase's business, accounting for some 20% of sales. The medical industry, for example, accounts for about 24% of its installed base, and most of that was installed by a few oems.

But the thing to understand is that the company concentrates its end-user sales on large customers with, for example, large networks. "Our objective is not to compete [as a PCM] with IBM," says Boysel. "I don't care if we do have better price-performance." The company shies away from the onesy-twosy user who would require too much support for what little hardware it buys. In contrast, a large customer could be given a lot of support at its corporate headquarters, the buyer then taking the responsibility for installing the machines at branches around the country. Following this sales philosophy, Four-Phase has managed to have about 10 systems installed for each customer on its books.

Four-Phase has enjoyed an uninterrupted growth since its inception. Last year for the first time there was a drop over the previous year in net income, but total revenues increased by 10% and were just shy of reaching the $200 million mark.

The company paid some $10 million for Two Pi. ("It was a real steal," Boysel says laughingly.) He estimates it would take them three years and $15 million to develop the same hardware today. He says the $15 million isn't bad. "The three years is the kicker." They need the Two Pi hardware today, and would be a lot better off if they had had it to sell last year.

According to Dataquest's Matlack, the company has had problems with its R&D. He thinks the initial impetus for the acquisition of Two Pi stemmed from the fact the company is late with its new line of ddp products. It needed something to sell in the interim, lest it lose its sales force. He estimates the company is 18 months behind where it should be in its product cycle.

Indeed, consultant David Gold of Saratoga, Calif., describes the Two Pi ma-

Four-Phase's focus for end-user sales is on large customers with large networks.

chine as "somewhat the equivalent of a midlife kicker on their old product line. It gives them the additional horsepower that they need outboard without having to change the current product." And the beauty of it is that it's IBM-compatible.

Four-Phase's product line "is getting old, becoming obsolete," observes Grant (Skip) Bushee of Dataquest. The company has put a lot of money into R&D

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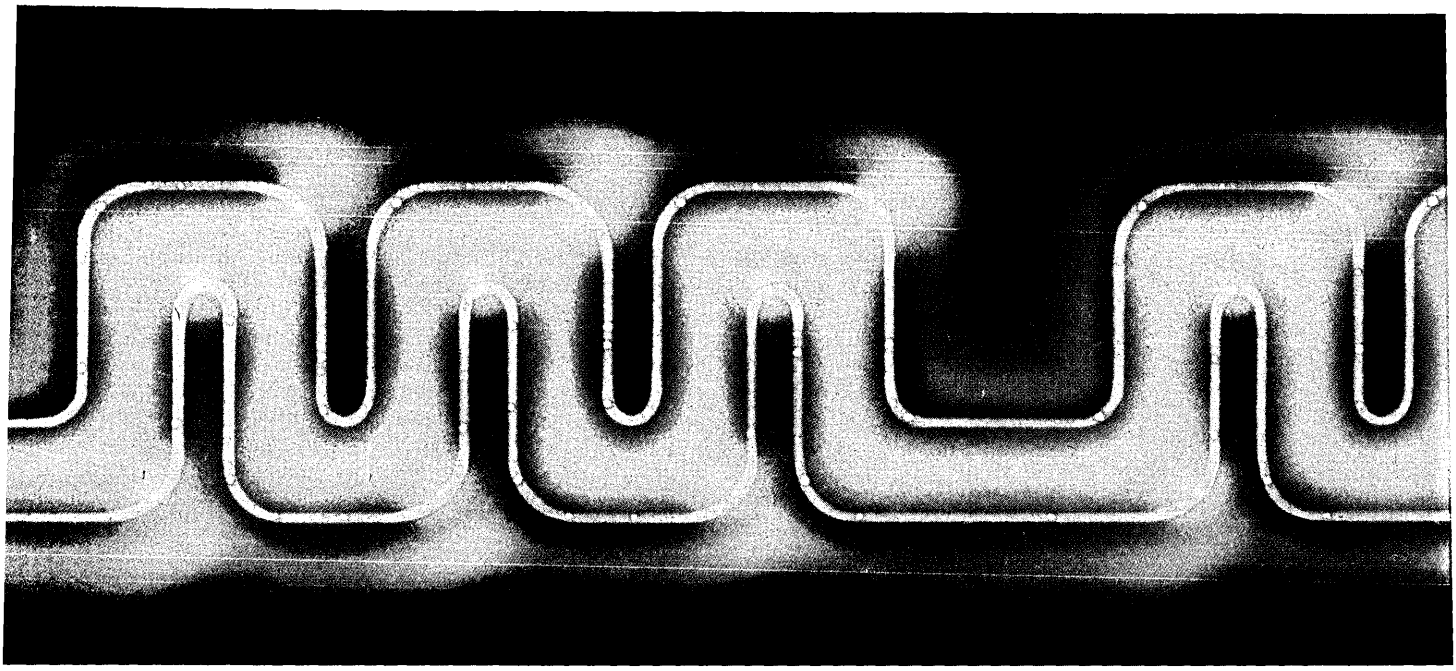

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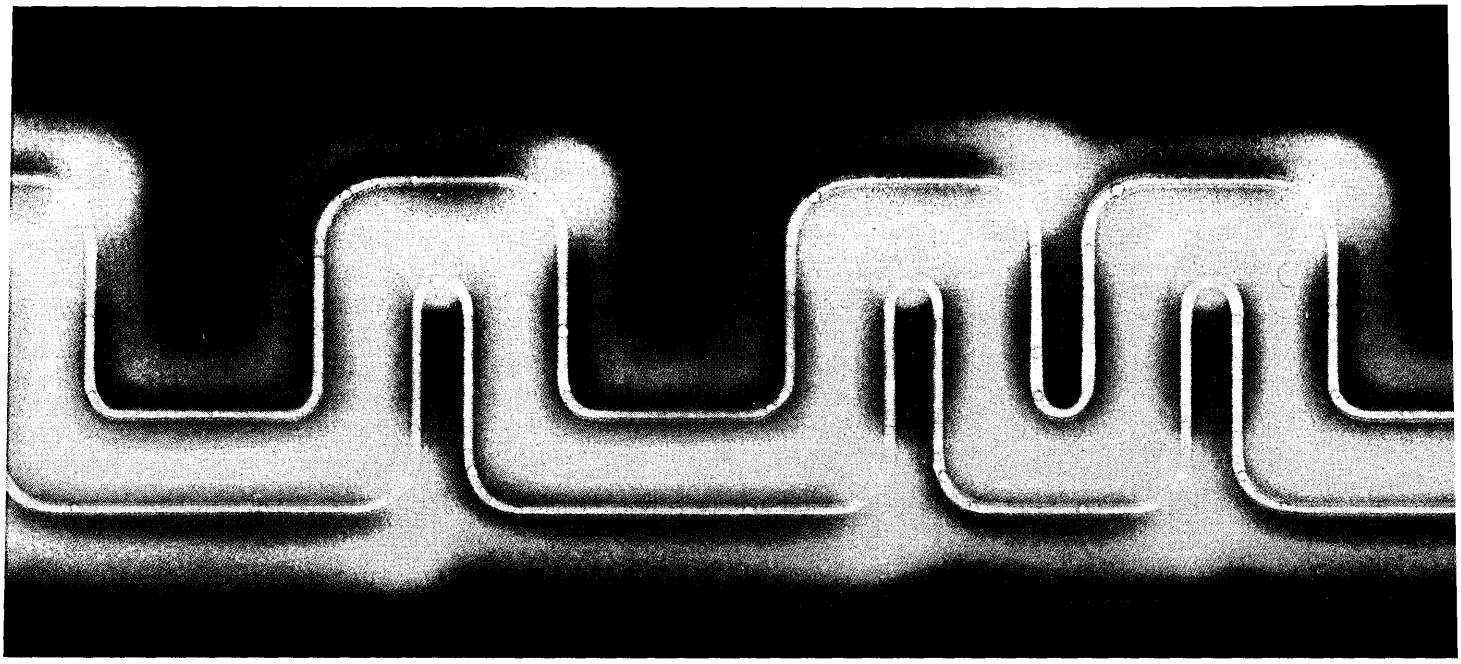

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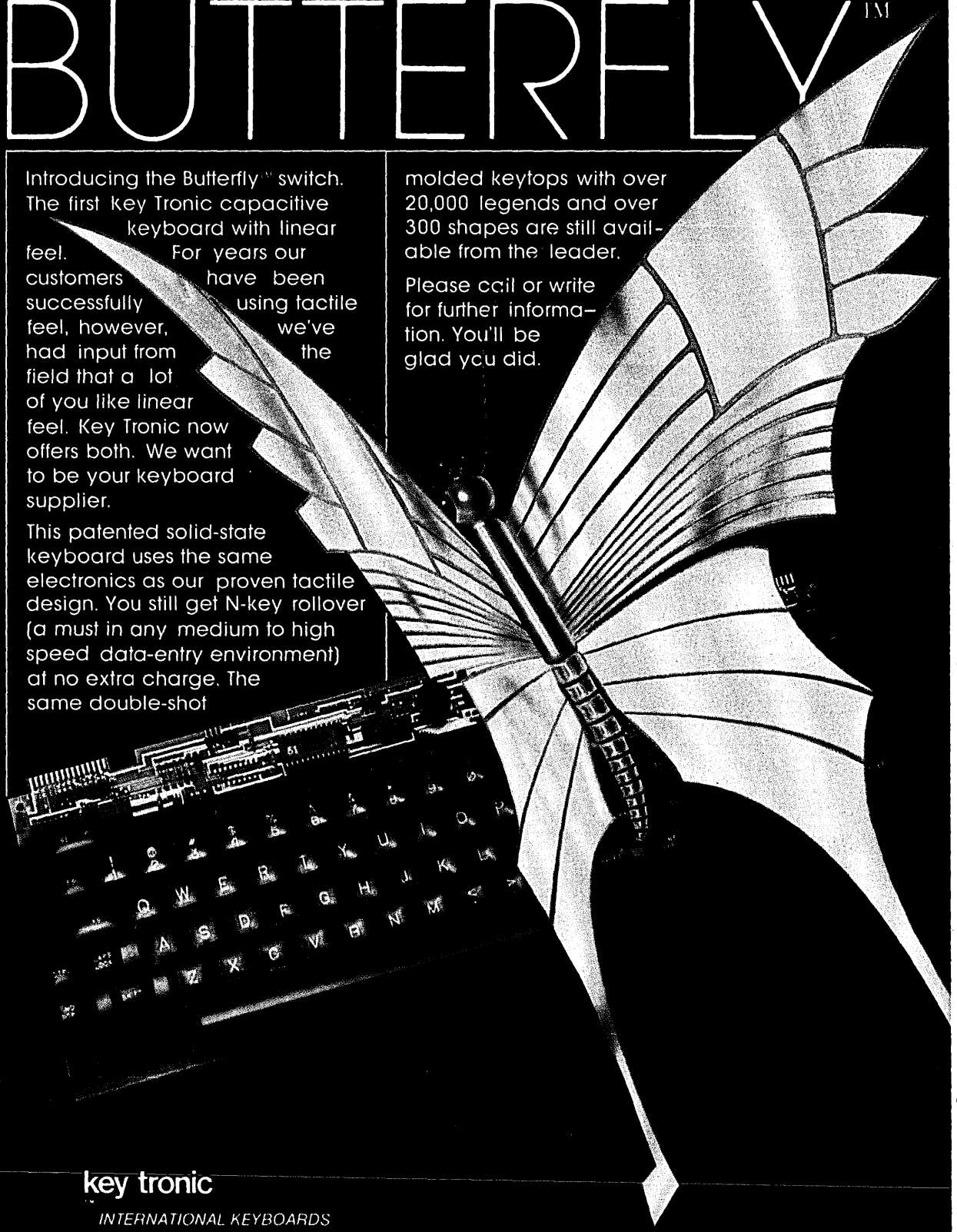

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but is not getting much out of this effort. "Frankly I think they have a serious problem" because the company insists on developing and making its own semiconductors, he says, and it's questionable whether Four-Phase is large enough to be able to afford this. That is said to be the reason for the delay in new product development, "which means that their product line is becoming obsolete and they don't have new products coming along quite fast enough." He adds that everyone else in the shared-processor data entry marketplace, including Northern Telecom Systems and Inforex, is also having problems. "Where it has hurt them is in their ability to go into new markets, like the so-called office automation market," Bushee continues. "That's where their product obsolescence potentially could hurt them a little bit."

Four-Phase segments the distributed processing marketplace of the '80s into four pieces. The on-line inquiry function, using dumb terminals to access remote databases or to allow a user to talk to other parts of the network, is expected to account for 10% of the total. The local data entry application, which is becoming information entry, is the largest segment at about 40%. It's a fill-in-the-blanks job, interactive, and includes some file execution. In the decade of the '70s, it is thought, these two segments comprised the majority of the market; that in the '80s they will become 50% of a growing market.

Four-Phase estimates it would take three years and $15 million to develop the hardware it acquired when it bought Two-Pi for $10 million.

The third segment, about 20% of the whole, is word processing/electronic mail. More than half the company's systems are being shipped with software that makes all three of these applications possible, running under the Multifunction Executive operating system, which supports up to 32 terminals.

The fourth segment of the ddp marketplace, local processing, is said to be only now becoming prominent. Four-Phase's Boysel says his customers are now indicating a desire to offload applications from the host mainframe to run on local processors—this to gain better response times, to reduce communications line costs, and to take advantage of lower hardware costs. This segment in the '70s comprised at most 5% of the market, he says, but in the '80s it will represent about 30% of the ddp money spent. "That's a different type of marketplace," he adds. "We're just making that transition now."

The first three segments are interactive, requiring perhaps a one-second response time. But the local processing is predominantly batch. In the '70s Four-Phase spent 95% of its software dollars on making the interactive functions possible. Presumably now they'll have to direct their attention to software for the Two Pi machines, renamed the Systems 311 and 312.

The Two Pi machine is described as "somewhat the equivalent of a midlife kicker on their old product line."

The practice of having both a batch and an interactive processor at the remote sites is the way things are going initially, according to Matlack. That's what IBM is doing in selling the 4300 as a ddp processor, because of all the batch software that already exists. But in time he thinks this will change, the 4300 will become more interactive, and the Two Pi hardware will have to do the same.

"I think the challenge at Four-Phase is to coordinate the software development of their Four-Phase gear with the Two Pi gear and perhaps come up with software that complements one another, that really runs interactively," he says.

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