MCC Moves Out of the Idea Stage

Electronics and computer R & D joint venture picks Austin site, begins search for top technical talent, and sets timetable for start-up

Since retired Admiral Bobby R. Inman took the job as president and chief executive officer of the Microelectronics and Computer Technology Corporation (MCC), he has been operating from a lone office on the top floor of a high rise office building on the Virginia side of the Potomac with a crow's nest view of Washington, D.C. That is about to change. MCC, a $50 million a year joint venture of 12 high-technology companies,* has settled on Austin, Texas, as its home (*Science*, 3 June, p. 1025) and begun the crucial task of picking a chief scientist and project leaders.

MCC was created explicitly as a U.S. response to the successful cooperation of Japanese industry and government in advanced electronics. Inman, 52, a former director of the National Security Agency and deputy director of the Central Intelligence Agency (CIA) was chosen to head MCC last October and took charge of the enterprise in January.

Inman is quick to disclaim credit for the concept or groundwork laid for MCC. It is the acknowledged brainchild of Control Data Corporation (CDC) chairman William C. Norris who grew concerned about the Japanese challenge in microelectronics in the mid-1970's and set out to do something about it when the Japanese announced a program to develop a Fifth Generation computer embodying artificial intelligence functions in 1981.

Norris's initiative led to a meeting of 18 electronics and computer company executives in Orlando, Florida, in early 1982. Out of the meeting came a decision to create a joint-venture corporation to fund research and also contribute researchers. Task forces then thrashed out a research agenda focusing on four programs—computer aided design and manufacturing (CAD/CAM), computer architecture, software technology, and packaging.

CDC took the lead in putting together the new corporation, which is chartered in Delaware, formulating its bylaws and laying out its R & D arrangements. Inman has been largely occupied since he joined MCC with the site selection process, which was completed last month. In a recent interview with *Science* he discussed the problems of conducting cooperative research in the United States and his views on the direction MCC will take.

Was there a direct American model for MCC? The enterprise is unique, says Inman. There have been some joint research ventures over the years, but in most cases "two or three companies have come together to do research and development and to manufacture a product and market it. And there has always been a concern about antitrust."

Inman says the first real example of shared research was EPRI (Electric Power Research Institute), whose aim is to enable utilities to get maximum benefits from research investment. The new Semiconductor Research Corporation located in North Carolina's Research Triangle follows the same pattern. Both concentrate on funding research by other organizations. MCC operates quite differently, notes Inman, because, like the Japanese model, the shareholders are committed to providing research staff as well as money.

Inman says his main concern in weighing the offer to head MCC was "understanding the extent of the commitment of the companies. How important do they consider MCC to the future of their own corporations? And if they really consider it critical, were they prepared to provide the best people they have in the area?"

He says he "kept tugging at the question of talent to insure I wouldn't be running a retirement home, a turkey farm, in the vernacular." He did win such guarantees as the right of refusal of staff and the option of sending people back to their companies. Inman says he has been persuaded that he worried needlessly. He says that if MCC's research "ultimately doesn't end up in products that flow out and are marketed and make a profit for stockholders, then (MCC) will not survive."

MCC is structured to encourage broad participation by member companies. "A shareholder gets in for a relatively small sum," says Inman, "but the real expense is that they must fund at least one area of research for 3 years."

The entrance fee is $150,000, which Inman calls "a tiny capital investment. But the smallest program's probably going to cost the guy who's in it about a million a year and that runs up if you're going to do all four programs probably to about $10 million a year."

The bylaws prescribe that all patents belong to MCC, says Inman, "and those who fund the research get a 3-year lead in being licensed. After those 3 years anyone can be licensed, so companies that are shareholders but don't support the project get no lead over others."

These terms have proved to be a substantial spur to member companies to fund as many programs as they can manage. Inman notes that as more companies join each project the cost shrinks. In the 5 months since he joined MCC, Inman says that the number of participants in the CAD/CAM program has risen from three to nine, in computer architecture from three to five, in software from three or four to six or seven, and in packaging from four to perhaps eight.

What about the antitrust laws which have been regarded as putting a damper on research cooperation in the past? Is Inman looking apprehensively over his shoulder?

"No, I am proceeding some would say recklessly." In fact, he says, "I am absolutely confident that we are within the letter of the antitrust law. If we thought we were violating the law we wouldn't be here. But there are ambiguities."

A comment on MCC's encounter with antitrust policy was made by MCC's godfather, William Norris, in remarks on intra-industry cooperation in R & D at a Washington meeting in mid-April. MCC did not seek a formal review, said Norris, but the Justice antitrust division conducted its own investigation. After 5 months, Justice issued a press release indicating that it would not challenge formation of MCC but that the decision should not be construed as advance approval of all [MCC's] activities. It then mentioned several criteria on which MCC would be judged, which Norris complained provided "zero guidance to the MCC companies involved."

Inman says the present antitrust situation has the strongest discouraging effect on small companies. "The size of the R & D investment is a big one for them. . . . Then when you look at the prospect of a treble damages law suit—even being very comfortable that they would inevitably win—they've got 5 years of high legal fees piled on top of

*Advanced Micro Devices, Allied, Control Data, Digital Equipment, Harris, Honeywell, Mostek, Motorola, National Semiconductor, NCR, RCA, and Sperry.

R & D bills for something that is uncertain."

Legislation has been proposed which would specifically exempt ventures such as MCC from antitrust action. Inman says, "I would be comfortable to legislation so that I wouldn't have to worry about the diversion of attention. But I'm much more interested in how to encourage other industries to do this kind of research to get the most out of our investment and talent."

In MCC's early stages Inman concedes that site selection provided "a real test for the board." He says "There were some gulps" over a basic decision not to locate near any of the academic big three in electronics and computer science research—Carnegie-Mellon, MIT, and Stanford.

"We would clearly have had to pay a premium for being there and it was a conscious judgment by the board that we were ultimately better off in a long-term building process if we could find the right climate and place at the next level, but still with a very established base of computer science and electrical engineering."

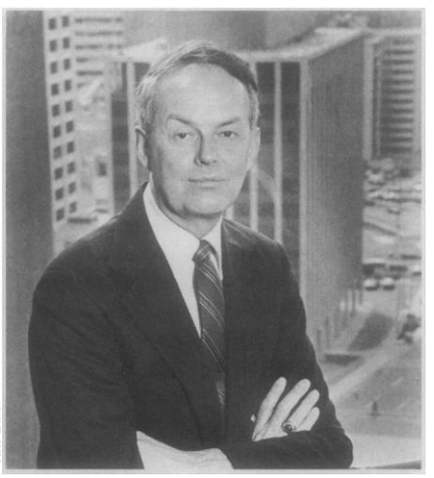
Austin won the prize in part because its backers had money in hand, so to speak, and MCC "did not have to wait for a decision by the state legislature to sustain it." But what clinched it was attitude of the statewide committee made up of "bankers, industrialists, academics, politicians," and especially "their sense that for the first 100 years cotton and cattle had been the basis of the state's economy. For the next 50 years it was oil and gas, and that was finite. And now it was time to invest in the long-term future."

As for the question of Japanese or European companies joining MCC, Inman says the matter should be considered later. "MCC is a U.S. concern. It is chartered as a U.S. concern and certainly for the next 3 years, as it gets under way, that is how it will operate. If one is going to talk about broadening MCC beyond the United States I think you have to include the Europeans as well as the Japanese. Because the real problem I see out ahead of us for the next 15 or 20 years is a time of intense economic competition. That competition is going to fray the alliance structure," he says, because it is going to pit the allies against each other. "A lot of the competition will be in our own countries, but a lot will also be in the unstable Third World." Sharing technological leadership "encourages them to want to keep their economic relationship with the U.S."

It was Inman while still at the CIA who sent the first clear warning signal that the government would move to protect research with national security implications if scientists did not do so voluntarily (see story on p. 1258).

Inman says that in his new job he finds that he is concerned to see the same sort of balance struck as he was in his other career. "Before, I used to worry about protection of information for national security reasons, but also about getting it used.

"You wanted the maximum interaction between scientists to talk about approaches. But then you wanted to compartment the actual applications. The same thing's going to be true [with MCC]. Indeed when we get to the point of developing prototypes we will be trying to compartment and very tightly protect for the advantage for 3 years of those who have actually funded the research effort." Inman adds "But this is a fast-moving industry. You aren't looking to try to lock something up for 10 years or 20 years."



Tim Dillon

Bobby R. Inman

Looking for "absolutely first-rate talent"

Inman expects MCC to have fruitful contacts with universities. "We will not be a major source of funding for research at universities. The Semiconductor Research Corporation will be the place to find that. We will more likely work out arrangements with individual faculty members or graduate students. I think we will be able to do it in a way that won't confront proprietary issues."

Will MCC compete for federal R & D contracts? Inman says that his shareholders were split on the issue.

MCC hammered out a policy which Inman concedes "was not entirely well received by all the senior executives. At least in the early years, MCC will not seek government contracts. We already have our programs defined and we're going to have enough problems getting those under way and using our talent without going out to say what jobs do you want done that we might do for you." But in the event that government officials are interested in a particular program and "want to accelerate or broaden that area of research, then we'll discuss it," says Inman.

Recruiting of staff Inman sees as the biggest challenge. "From the very beginning one area about which I've been most apprehensive is the problem of assembling absolutely first-rate talent. I've been much more interested in that than I have been in total numbers or total dollars." Though he was eventually convinced that the shareholders would make their best people available to MCC, Inman says that "I have a visceral sense that where we are trying to push the edge of technology we may not have in these 12 companies all the body of talent [needed]. And I'm not sure there's a wide supply in the country.

"In attracting talent we are not going to be throwing out large sums of money like bidding for football players or free-agent baseball players. We're not structured to do it. But we will have a salary scale [based] on the experience of large corporations scattered all over the country. So we will have very competitive scales for what people draw in industry for working in these areas. And we're going to be in a relatively low-cost environment, but in a good intellectual climate in a city of 300,000."

At the end of a year and a half or so Inman expects that MCC will have mustered the corps of about 255 researchers and 50 or 60 support staff that the "floor" budget of $50 million a year provides for. By this fall, however, Inman hopes to have 40 or 50 people at work in interim facilities in Austin. Scheduled to be among these are an MCC chief scientist and four program managers and their deputies. And there lies what Inman calls his number one problem.

"There is a very heartening flood of applicants—bright young talent who want to be a part of [MCC]," says Inman. "There isn't any question that youngsters are excited about the idea and the process. It's clear we're going to be able to be very selective.

"It is too early to know what the prospect is for the talent at the top. I've had a little experience in this brief period with the baseball free-agent types in which I'm not interested." But, to sustain the sports metaphor, it is evident that Inman is optimistic about signing some all stars.—JOHN WALSH