PARALLEL PROCESSING
A new route to superfast computing

Sung, Korea's Mr.Computer', battles bureaucratic meddling

What director of a nonprofit laboratory in his right mind would spurn lavish government subsidies? Only Sung Ki Soo would - the man variously described as South Korea's "Mr. Computer" and "No. 1.scientist." He has been president of the Software Development Center at the Korea Advanced Institute of Science and Technology(KAIST) in Seoul since its founding in 1967. Now the iconoclastic Harvard Ph.D. in mechanical engineering is busy trying to wean his center from dependence on government largesse.

His goal is to insulate Sourth Korea's largest software-development organization form meddling by bureaucrats and politicians in staff appointments, equipment selection, and services pricing. "I have resisted government interference from the beginning." Sung explains. "They eventually retaliated by not allocating us any money, which was find with me.

"By 1979, we were self-sufficient with a beautiful balance sheet." But a new Kaist president arrived with different ideas, and now about 30% of the center's $10 million annual budget comes from the government.

Sung says he has made sure the money arrives with no strings attached; but total independence, relying only on income form services performed, still lies in the future.

Business is growing by 30% to 50% a year, he says, so self-support is not unrealistic, especially as the center now has almost all the equipment it needs.

Large operation. The center counts more than 500 customers, ranging from businesses and hospitals to government offices and schools. With 350 staff members, about half of whom are engineers, and equipment including two main-frames and more than 20 smaller computers, Sung describes his center as perhaps the largest of its kind in Asia, certainly outside Japan.

Sung's staff is divided into 11 research and development groups working on software ranging from industrial management and medical information to microprocessor applications and remote sensing. It is also the heart of Korea's largest timesharing network. Terminals linked to the center's regional offices can get access to central computers for the cost of a local phone call. The recent legalization of dial-up connections should spark a boom in this activity.

With most Korean electronics companies still concentrating on the early stages of hardware manufacture, a software resource like Sung's center, whose accomplishments include development of the first Korean-langugage data systems, is invaluable. It is also the government's key software source. With that under his belt, plus confidence in his own instincts and abilities, Sung may one day realize his dream of running his own ship.

Morris and Compton shift disign service into high gear

The capitalist bug first bit Bill M. Morris and Jim E. Compton in 1976, when they worked at the Wolfson Microelectronics Unit, a commercial spin off of Edinburgh University's Microelectronics Department. Set up to design and fabricate semicustom integrated circuits for academia and industry, it inspired them with plans for their own semicustom-IC design company.

So in 1977, they left campus life to form Silicon Micorsystems Ltd. in Malmesbury,

Wilts, with the idea of serving the small-volume user ignored by the larger semicustom-IC suppliers. Such companies may need 500 parts or even less, says Compton, making it essential to use computer-aided design to keep design charges to level that the small firm can afford.

CAD, of course, is an area in which Edinburgh University has a deservedly high reputation. After graduating from there, Morris joined the Wolfson unit and rose to be deputy director before leaving to form Silicon Microsystems. Compton, sporting a degree from Newcastle University, has migrated to Edinburgh after microcircuit design jobs with companies like PYE TMC Ltd. Plessey Microelectronics Ltd., and Texas Instruments Ltd.

For the past few year, therefore, Silicon Microsystems has been developing its complementary-MOS design service based on its own cell library, meanwhile subcontracting itself to semiconductor firms for the design of standard circuits. "The idea during that period was to establish our credibility." says Compton.

New facility. Now that the software for the semicustom service is in place, the company is busy removing another potential bottleneck to its growth plans. It uses several manufacturers as C-MOS silicon foundries but ran into a desperate shortage of companies providing a packaging and testing service. So Compton and Morris have just obtained close to $1 million in financing to set up a new 5,000-square-foot design, test, and packaging facility.

To the outsider, Silicon Microsystems might still seem like just another semicustom design house, despite its small-user focus. But Morris, 38, and Compton, 39, believe they have a second major cometitive advantage-their service can use multiple foundry sources.

That claim, though frequently made, is seldom as firmly based as in the case of Silicon Microsystems, whose design rules fit within the envelope of six different manufacturers'

process specifications. To ensure that the processes stay within specification, the company has devised its own process-validation module that is dropped into several sites on the wafer.