

Intel, Microsoft inspire SIGPRO's new chip

On the ground floor of a colossal market for do-anything-anywhere wireless devices, Sundara Murthy is thinking big, Christopher Guly writes.

For a man who works with microchips, Sundara Murthy has macro-ambitions.

Though the idea for SIGPRO Wireless Inc. is barely 18 months old, it has yet to release a product and has no customers, Mr. Murthy believes his company has a good chance of becoming as

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big a technology player as either Intel Corp. or Microsoft Corp. Furthermore, he reckons that SIGPRO could reach that summit in one-fifth the time it took those other two giants. And even if SIGPRO captures only five per cent of its target market, the Ottawa semiconductor company could reap more than \$3 billion in revenue, according to Mr. Murthy, founder, chairman, president and

chief executive of SIGPRO.

"Just like Intel and Microsoft made chips and software for computers, we are making chips and software for next-generation personal communication devices (PCDs, a term he coined). The only difference is, the wireless market we are addressing is a lot bigger."

In Mr. Murthy's estimation, the global PC market stands at about 250 million units. But it has taken 25 years to get to that number.

By contrast, it will only take five years for the PCD market, which includes digital cell-phones, Palm handhelds, Research in Motion (RIM) Ltd.'s BlackBerry wireless e-mailers, portable MP3 audio and MPEG-4 video players, and handheld GPS navigation devices, to jump from 100 million subscribers in 1998 to 1.6 billion by 2003. By then, Mr. Murthy says, cell-phones alone will outnumber telephones wired up to copper cables



BRUNO SCLUMBERGER, THE OTTAWA CITIZEN

SIGPRO Wireless Inc. founder Sundara Murthy sees a huge market for his company's Centium communications chip, which is expected to be release in mid-2002.

worldwide. "Analysts are predicting that by 2007, there will be 2.5 billion PCD subscribers around the world. If our chip sells for \$40 U.S. apiece, we are looking at an addressable market of at least \$64 billion U.S. per year. So even a five-per-cent share of the market would generate \$3.2 billion in annual revenue for us," explains Mr. Murthy, who, prior to

forming SIGPRO in May 2000, worked briefly at RIM as its vice-president responsible for code division multiple access. (CDMA is the global standard that would enable handheld devices to handle greater quantities of data, such as Internet traffic.)

Given wireless technology's promising future, it's not surprising then that Mr. Murthy wants

SIGPRO to be a major part of it in a similar way in which Intel and Microsoft revolutionized computer use.

Indeed, the pioneering role of both companies is acknowledged in SIGPRO. Like Microsoft, which bears the notion of software in its corporate moniker, SIGPRO stands for "signal processors" for personal communicators. And while Mr. Murthy downplays any reference to Intel's Pentium processor in SIGPRO's communication system-on-chip, called Centium (it means "100 per cent" he says), SIGPRO has mirrored Intel's famous "intel inside" campaign with its own "SIGPRO Inside" strategy, an idea that originated from one of SIGPRO's employees.

"In the next five years, there will be only two chips," says Mr. Murthy, who holds a doctorate in electrical engineering specializing in digital communications from the University of Essex in England. "One chip will handle applications; the other will handle communications."

It's the latter one in which he hopes SIGPRO will become the dominant player as it prepares to go public next year.

Essentially, the company

is doing what Intel, with its microprocessors, and Microsoft, with its operating systems such as Windows, have done in bringing various applications (word processing, spreadsheets, graphics, e-mail, Web surfing, video and audio streaming) together on the desktop.

The Centium chip that SIGPRO is developing is intended to achieve convergence of various communication applications, be they telephony, e-mail or GPS (global positioning system) services, audio and video on a single PCD.

Currently, wireless handheld devices cannot talk to one another since they run on different communication platforms. However, SIGPRO's Centium chip, which is scheduled to be launched soon and released in mid-2002, can handle applications that require speeds anywhere from 20 kilobits-per-second (e-mail) to 2,000 kbps (video and audio downloading), and it supports multiple standards.

In other words, the chip effectively treats all of a PCD's packets of digital information as being equal, enabling the device to transmit and receive signals to and from

a base station much the way cellphones do.

"We're trying to evolve a common communication platform just as Intel and Microsoft evolved a common computer platform," Mr. Murthy explains.

SIGPRO's Centium chip would do most of the thinking and linking once inside a PCD, which essentially would be left to serve as a display with a bit of a local memory. A simple click of a button and the chip would be able to switch applications -- from making voice calls and sending e-mail to downloading music files from the Net while keeping an eye on the baby in the nursery -- on a single device. As a result, the PCD would become a "dummy terminal," Mr. Murthy explains.

"Rather than having too much computing power in the PCD, the Centium's wireless technology would enable the PCD to exploit the computing power resident in a remote location, such as a desktop computer at the office or home."

In so doing, PDAs that now have the processing power of an Intel 286 computer, could as PCDs operate as fast as desktops to which they are linked and be

able to run previously inaccessible applications such as Microsoft Windows 2000.

While SIGPRO's Centium chip could work in today's Palm handhelds or cell phones, making them run faster than they otherwise would by connecting them to more robust digital cellular networks, the technology will truly shine when it is featured in PCDs working with third- and fourth-generation broadband wireless systems.

"Consumers would buy one device and use smart cards to access different applications," Mr. Murthy explains. "One card might be for GPS, another one might be for e-mail and so on."

The resulting uses of a Centium-equipped PCD are quite extraordinary. Consider the GPS scenario. You're running late for an important business meeting and are getting confused by the directions as you drive down the Queensway. Since you have programmed the address of the meeting site into your PCD, you could call up the address and automatically receive a detailed directions, either as audio or text.

A PCD could also, via the desktop computer functioning as a server,

access a remote Web camera, perhaps placed in a child's bedroom, and enable a parent to keep an eye on a toddler either inside or outside the home, depending on the range of the cellular network in the area.

As well, the Centium chip could use GPS tracking to provide a PCD with call-follow capability. In other words, a user's cell, office and home phones could all be connected through one number.

All these grand plans began germinating in Mr. Murthy's mind while he was working on designs for the Centium chip in the basement of his west-end Ottawa home. When he started sharing his thoughts with venture capitalists, several were eager to write cheques, including a New York VC that offered \$20 million U.S. and three VC firms in San Jose, California, that offered anywhere between \$10 million and

\$16 million to help Mr. Murthy start SIGPRO.

In the end, he went with a pair of Ottawa companies -- Skypoint Capital Corp. and Celtic House International Corp. -- which have contributed \$9 million U.S.

Mr. Murthy launched SIGPRO last year and set up shop on Woodward Drive, where the company now employs about 50 people. Many of the employees have been working on design prototypes for the Centium chip while Mr. Murthy has pursued alliances with some of the world's major chip manufacturers in which they would not only make the Centium but also work with SIGPRO to develop future products. Plans are also in the works to open a sales office in Irvine, Calif., and a research centre in Bangalore, India, not far from Mr. Murthy's hometown, Coimbatore. SIGPRO has already formed a relationship

with Wipro Technologies of Bangalore. Wipro will provide software and ASIC (application specific integrated circuit) hardware design in support of SIGPRO's programmable Centium system-on-chip.

Asia, of course, is a huge market for wireless technology. The world's most densely populated region, it is more cost-effective to set up cellular base stations in cities rather than lay down fibre-optic cable. That market reality translates into a viable opportunity for chip-design companies such as SIGPRO that will form the communication brains of one generic PCD in the future.

Certainly, urban commuters juggling cell phones, personal digital assistants and other handheld devices will be relieved when that day arrives. The question is, why didn't it happen sooner? Mr. Murthy believes he has the answer.

"Widespread VCR use has been around for almost 15 years, yet you cannot find a television set with a built-in VCR. That's how the market wanted it to be. More devices are introduced, like DVDs, and the industry earns a greater profit when consumers have to keep upgrading the extras.

"It's been the same story in the audio world, where music has gone from record turntables to eight-track, tape, CD and DVD players. But the one constant has been the speakers, which have always been separated from the players because a speaker amplifies signals wherever they are coming from. So while the storage technology has changed, amplifier technology has not.

"In a sense, our Centium chip is an amplifier for the wireless world that can be used in any PCD applications."