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## The Stealth Computer

By **FORD FESSENDEN**

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**M**IKE CHIN'S eureka moment came in an Ikea store, on a spring day in 2002.

Mr. Chin, a technology writer in Vancouver, British Columbia, had just gotten a tiny motherboard from a Taiwanese chip maker, and he had been growling that he could not find a similarly small case so that he could build the computer he had promised to a friend's daughter.

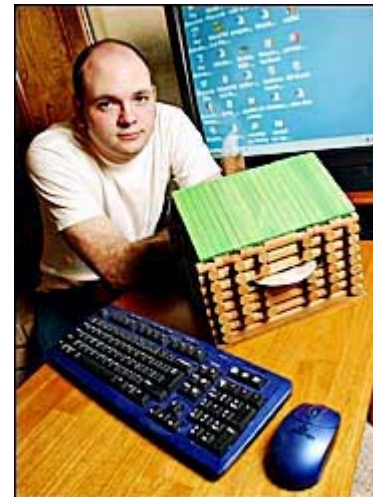
Then his eyes fell on a blue plastic Ikea breadbox - the "perfect marriage of cheap modern art, chintziness and utility," he said.

The fully functional breadbox PC that he then built and described on the Web was among the first to spring from an idea that has become a raging obsession in a far-flung community of electronic do-it-yourselfers: the stealth computer.

Across Europe, the United States and the Far East, hobbyists have been stuffing the works of personal computers into toasters, humidors, biscuit tins, lampshades, even a plush E. T. doll.

"It's tiny, it's wonderful, it's all integrated, it's extremely low power, and it fits almost anywhere," said Mr. Chin of the mini-ITX motherboard at the heart of his breadbox computer, which measures about 10 inches by 14 inches by 6 inches.

But the mini-ITX is not just an object of obsession. The stealth builders are the extreme flank of an assault against the status quo by the originator of the mini-ITX boards, Via Technologies. Via, which is based in Taiwan, wants to make the little computer the next big thing.



Michael Stravato for The New York Times HOUSING - Greg Sowell, built a computer with mini-ITX components, then created a case for it from Lincoln Logs.

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"We were surprised it was the enthusiasts who were interested," Richard Brown, the vice president for marketing at Via, said when the company introduced the tiny motherboard idea in early 2002. Today, the concept has already spread beyond hobbyists; a few stylish new PC's using Via's tiny boards have reached the consumer market.

The mini-ITX, which often includes the central processing unit, or C.P.U., as well as audio and graphics circuitry and other built-in components, measures less than seven inches on each side, about half the size of a typical board. The Via boards include relatively slow C.P.U.'s, which in terms of raw computing power are "a long way behind the Pentium 4 and top-of-the-line Athlon," Mr. Brown said.

But with sales of personal computers lagging, Via and others in the industry have been pushing the idea of the "second PC" - an inexpensive, quiet device that can take the pressure off the family computer, perhaps even breaking out of the home office and moving into the living room.

Such a computer would make a virtue of Via's competitive disadvantage. Although other manufacturers have begun to offer mini-ITX boards that accept its competitors' C.P.U.'s, Via so far dominates the field. With fewer transistors and slower speed, the Via generates very little heat and therefore does not necessarily need a noisy fan to keep it cool. "At 100 percent of what it can possibly do, it draws 23 watts of power, where my big PC draws 150," said Dave Helander, the computer manager for the Rochester Housing Authority, who has built a computer inside a plastic gasoline can. Mr. Helander's creation and others are featured at the Web site [mini-itx.com](http://mini-itx.com).

For the little computer to catch on, some significant changes in the direction of computer marketing will be required - not just away from the competition for faster processing that has driven sales for years, but also toward a new design paradigm.

Computers are typically either beige or black and businesslike, or fancied up by gaming enthusiasts with lights and picture windows that show off the esoteric beauty of circuitry. Either way, they are mostly air; the components occupy little space inside.


Mini-ITX boards contain everything a computer needs on one board, but they sacrifice flexibility. You can't add more than one video card or sound card, and with a Via, you can't swap out the processor, which is soldered to the board.

But the boards are inexpensive, selling for about \$100 to \$200, and they invite miniaturization. Mr. Helander's most seditious inspiration was to lop what seems like an impossibly small corner off a beige computer case with a hacksaw, and stuff a full-featured computer into it. Next to his "Bantam PC," the standard box seems outlandishly outdated, like the fins on a 1959 Chrysler.

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