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## SPEED THE NEW X FACTOR

Consumers want newer, snazzier versions of electronic goods faster than ever before. Producers have come up with speedier ways to get the goods to market | By Kerry A. Dolan

**A** DECADE AGO DELL SPENT 18 MONTHS developing the Latitude C series notebook computer. It stayed in Dell's catalog for the same length of time it spent in development. Last year Dell unveiled the Inspiron 700m notebook. Development time: 9 months.

Nokia introduced its 5100 series mobile phones in 1998 and sold tens of millions of them over five years, changing only the color of the phone. Last fall Nokia debuted its "fashion" line, phones intended to be sold for only 12 months or so.

Apple Computer launched the iPod in October 2001. Over the next two years the company put out six new models. But in just this year alone Apple has pushed eight new iPod models into the marketplace.

Planned obsolescence has fallen under the sway of Moore's Law. Consumers now expect swift and regular upgrades and makeovers of just about every electronic product out there. But this hamster wheel of innovation—especially when it's tied to getting a gadget out for the holiday buying crush—puts manufacturers in an almost impossible position. "The average mobile phone is still several hundred components. What makes them interesting for the consumer is more and more of a design challenge for the producer," says Thomas Deitrich, vice president for mobile communications at Flextronics International, which makes phones for Motorola, Kyocera and Sony Ericsson.

The speediest companies have developed a bag of tricks to accelerate product development. Dell has shifted much of its component design work—laptop screens, optical drives—to supplier partners, typically Taiwanese firms such as Quanta, Compal Electronics and Inventec. "We're not home-growing every single



thing," says Gretchen Miller, Dell's director of marketing for laptops and handheld gadgets.

Three years ago Hewlett-Packard moved much of its engineering and testing for notebooks to Taipei to be closer to these suppliers, and it has cut its development time in the product line from 12 months to 7 months. That eliminated communication lags and delays in U.S. customs, says Thomas Mitchell, vice president of HP's consumer notebook business unit.

Flextronics has shrunk its mobile phone development time from 12 to 18 months five years ago to as little as 3 months today. In 1995 it took between 12 and 16 weeks to create the injection mold tooling for the plastic on the front cover of a phone. Each step—from initial artists' renderings on paper to the turning of a hunk of steel into the properly shaped mold—was independent of the others. The steps are now linked via software, so it can take as little as a week to make a mold. Rival contract manufacturer Sanmina-SCI has made a similar transition.

Few cases better illustrate the speed-to-market trend than that of the Playaway, a digital audio book player conceived in August 2004 and designed and produced at breakneck pace to make this year's holiday season. Christopher Celeste, Mitch H. Kroll and Blake Squires, partners at fledgling firm Findaway in Chagrin Falls, Ohio, figured there was a market for a digital device pre-loaded with an entire audio book for people not used to downloading. Half the thickness of a deck of cards, the Playaway looks like a mini hardcover and sells for the same price as a CD audio book (\$35 to \$50).

Thirteen months later more than 75,000 units were shipped to the warehouses of Borders, Barnes & Noble and OfficeMax. Celeste claims \$2.5 million in revenue from this first shipment.



Ready, set, go: Findaway's  
Kroll, Squires and Coleste;  
the Playaway (opposite).

Wal-Mart has the item in 100 stores.

The partners were not experienced gadgetmakers, but they came close enough and were eager to tap the iPod-created mania for digital audio. Celeste, the son of former Ohio governor Richard Celeste, had worked in e-commerce and advertising, Kroll had manufacturing experience with a hair products company, and Squires had run a streaming media company.

Findaway was able to replicate the tactics of the giants: Out-source almost everything, use foreign suppliers and cut every corner necessary to get out early. "Everyone told us we were involved in something that was impossible, from finished design to out-the-door in nine months. We kept pointing to the name on our business cards," says 40-year-old Celeste.

The race began in August 2004 with the filing of two patents. The partners raised money from private investors and budgeted \$1 million to get them through the manufacturing stage. Findaway hired a Columbus, Ohio design firm in October to work up a prototype, and a month later it brought in Ideo to complete the design. Findaway then put it out to bid with several contract manufacturers, including Sanmina-SCI and Flextronics.

People warned the Findaway partners that they would spend extra for rush jobs. But the tight schedule saved them money by forcing them to cut projects they didn't have time for. Ideo did two focus groups with consumers, showing them a computer simulation of how the Playaway would work. If time and money hadn't been such big issues, the Findaway partners might have done one or more additional focus groups with physical prototypes. Ideo, which normally takes six to nine months for a job, finished the industrial design in 12 weeks.

By January the Findaway partners took their prototype to the big Consumer Electronics Show in Las Vegas to meet with their potential contract manufacturers. A few weeks later they chose Sanmina-SCI because it was unafraid of working with such a small company and was willing to do short manufacturing runs, one Playaway book title at a time. Ideo continued to refine the design to shave cost and time, changing the controls on the player from a smooth-surface membrane to the more commonplace rubberized buttons that stick up through the plastic. That cut 45 cents off the cost of the device.

Sanmina-SCI committed to produce, package and deliver the Playaway to retailers' distribution warehouses by late September. George King, who runs the company's printed circuit board assembly, directed the development work to six operation centers, including one in Calgary, Alta. for the plastics and tooling work, one in Phoenix for printed circuit board layout and one in Huntsville, Ala. for test development. He chose to assemble the Playaway in Guadalajara, Mexico, even though it would have been cheaper to do it in China. Guadalajara can ship to the U.S. faster and is in the central U.S. time zone, better for the three to five

daily phone calls he'd later make.

In February Findaway's Celeste worked his father's connections to score a meeting with a buyer at Borders. With a verbal okay from the chain, Findaway rounded up audio book rights to what eventually became a list of 33 titles from six publishers, including *The Da Vinci Code* and David McCullough's *1776*.

By June Sanmina-SCI had the first 20 units ready for the testing and software group in Huntsville. On July 8 Sanmina-SCI began construction of factory space for Findaway in its Guadalajara plant. In mid-August, just before manufacturing was to begin, Sanmina-SCI's testers turned up a problem. Carpet static would make the Playaway reset to chapter one. King's engineers determined the problem was caused by the metal in the earbuds. He had to fly in a load of all-plastic earbuds from Asia the last week of August.

Another glitch occurred when the Guadalajara factory started to load multiple Playaways at once with the audio book content. Loading a single player had worked fine during tests in Huntsville. But the cradle that held eight units for simultaneous downloads wasn't getting enough voltage. The Huntsville test group had to fly in and fix it.

The lack of time to do extensive preproduction testing came back to hurt Findaway. Software crashes forced programmers to rewrite the device's software. LCD screens didn't always work, so they had to add product testers to the production line. Only one out of three custom labels went on as designed. They had to shrink each label by one-one-thousandth of an inch.

The Findaway folks had hoped to fly the machine that made the Playaway's casing from Taiwan to Guadalajara. But they were running out of time. Instead, they had 50,000 casings made in Taiwan and, without knowing if they were usable, flew them to Guadalajara—an added, unexpected cost. Luckily, the casings snapped together.

The original plan had called for making 5,000 units a day. On Sept. 15, the second full day of production, Sanmina-SCI made 1,728. In the next week Sanmina-SCI added 1,000 square feet of space, doubled the workers per shift to 30 and added weekend shifts. But the assembly line that fit the Playaway, earbuds and lanyard into the retail package was too slow. Its rate of 1,000 Playaways per day never would have met the late-September deadline. Sanmina-SCI took down walls to make more room to improve the work flow. The rate shot up to 6,000 a day. On Sept. 30 the first truck left Guadalajara with 56,000 Playaways, headed to Borders' warehouses in California and Tennessee.

Findaway is already gearing up for the next iteration. In November the partners were back at the drawing board with ideas for better volume controls and battery doors. Sanmina-SCI's King has an 18-item checklist to make next year's Playaway even better, while cutting costs by 25%. **F**

