



Ted Tewksbury's IDT Makeover



Beyond the industry's handful of wildly successful household names, it's hard to find a Silicon Valley company that has weathered three decades with its independence intact. Generally, you dominate or you get acquired.

The generalization doesn't apply to Integrated Device Technology, which was formed in 1980, went public in 1984 and, with little fanfare, entered a self-reinvention phase in 2008 that has brought about a marked change in direction and product mix. The makeover remains a work in progress, but IDT today serves as a case study on revitalizing a venerable but stale semiconductor brand by restoring its relevance.

The company's roots are decidedly digital. In 1981, IDT rolled out the industry's first low-power, high-speed CMOS-based SRAM. It followed up with the first CMOS FIFO, the first dual-port memory and advances in embedded RISC processor technology.

Three decades later, however, IDT makes neither processors nor memories, and bills itself as an analog and digital company "delivering essential mixed-semiconductor solutions." This from a company whose analog expertise just over three years ago was virtually nil.

Steve Ohr, Gartner's research director for analog and power semiconductors, says the "strategic shift" at IDT "shows up in more than one product line." "There has been a shift away from memory and logic into analog, especially where the company's expertise in high-speed signal processing and timing control can add value," Ohr says. "IDT's growing strength in programmable clocks and timing controllers," as well as memory interfaces, "ensures a significant footprint for the company in servers and enterprise-level routers"—the hardware building blocks of high-growth data center and cloud services applications.

Ted Tewksbury, a veteran analog engineer who joined IDT as CEO on April Fool's Day in 2008 and is the primary architect of its new strategy, acknowledges that the overhaul was undertaken without anyone's "really noticing it," during a period of economic upheaval. Five months after he took the helm at IDT, the Great Recession kicked off a chip industry downturn of unparalleled severity. "My work was cut out for me," Tewksbury recalls.

The grim outlook in the wider market mirrored IDT's own dimming prospects. Indeed, just weeks after his arrival, Tewksbury had come to the sobering realization that "40 percent of our revenue from our products was on the verge of decline." Products like PC clocks, advanced memory buffers and network search engines "were all about to fall off the cliff," he recalls. "Then, I learned that we had very few new products in the pipeline."

It seemed like a good time to push the reset button.

At heart, Tewksbury is an engineer, not a turnaround specialist. So he began the company's transformation by leveraging his intimate familiarity with analog technology, whose star has risen in recent years as systems-on-chip increasingly integrate analog and mixed-signal circuitry.

The IDT CEO began his career at—where else—Analog Devices, where he had focused on analog and RF design. Later, at IBM Microelectronics, Tewksbury assembled the team that commercialized the industry's first silicon germanium RF products. At Maxim Integrated Products, he founded high-speed data converter, RF and wireless infrastructure business units. In his last role before joining IDT, Tewksbury was president and COO of AMI Semiconductor, which ON Semiconductor acquired in 2008.

Hiring binge

Once he had decided on IDT's new direction, Tewksbury went on a hiring binge, recruiting ADI fellow Paul Brokaw to lead the company's first analog design team. Members of that team now include alums of such companies as Freescale, Linear and Maxim along with ADI. Of the 600 engineers IDT currently employs, one-third are analog and power experts, up from zero in 2008.

With a solid team of analog specialists and digital experts in place, Tewksbury drafted a plan to pursue an opportunity that other analog chip vendors had largely ignored: mix-signal solutions that interface with complex digital systems.

"Conventional analog chip vendors continue to sell general-purpose analog chips in their catalog. I see IDT's role differently," Tewksbury says. "We offer our customers system-level solutions that require both analog and digital technologies."

Even as he added analog engineering to IDT's core competencies, Tewksbury narrowed the company's target markets to enterprise, communications infrastructure and mobile products. "I am fanatical about focus," he says.

For the enterprise market, IDT has zeroed in on devices that enable servers in the cloud. Its offerings here include timing devices, memory interface and PCI Express switches. IDT has collaborated with Micron Technology to roll out the industry's first single-chip enterprise-class flash controller with native PCI Express. "Our product offers much higher performance in IOPS [input/output operations per second], than our competitors' products, like the flash controller Marvell introduced just a few weeks ago," Tewksbury claims.

For the communications market, the CEO says IDT is zeroing in on a "complete signal chain solution for wireless basestations." Customers include Alcatel, Ericsson, Huawei, Nokia and ZTE; products include communications clocks, serial RapidIO solutions, RF products, power management offerings and timing devices. IDT is leveraging its 2009 Tundra Semiconductor acquisition to move quickly into the market for RapidIO switches.

In the consumer segment, IDT provides products for power management ICs and timing components for audio subsystems, batteries, tablets, notebook computers, mobile devices and touch controllers. As an example of IDT's system-level mix-signal solutions for the consumer market, Tewksbury describes what he claims is the industry's first monolithic solution for timing, thermal sensing and fan control. Primarily targeting laptop and notebook computers, the chip integrates a low-power system timing solution, two-channel thermal sensor and four-wire pulse-width modulation fan controller.

Gartner's Ohr notes that ternary content-addressable memory (TECAM) parts have disappeared from IDT's catalog while video interface parts have proliferated. "The content of IDT array drivers in LCD TVs, less than \$1 in 2008, goes to \$10 or more in 2010. IDT's notebook content goes from zero in 2008 to better than \$2 per machine in 2010. Penetration of capacitive touchscreen controllers and power management ICs also increases in mobile devices," he says.

Tewksbury says simply, "We have 50 percent more products in the pipeline compared with last year."

M&A strategy

Tewksbury has been snapping up companies to support IDT's strategy in its target markets. Notable acquisitions over the past three years include the aforementioned Tundra, for serial-switching bridge products; Leadis Technology, for touch sensor technology assets and engineers; the assets of IKOR, a former subsidiary of iWatt Corp., to develop power management technology for servers; and Mobius Microsystems, a developer of silicon oscillator technology.

Tewksbury is betting on the solid-state oscillator to address the \$4 billion quartz crystal and oscillator replacement market. "Crystal-free options can achieve higher accuracy for communications applications," he says.

Commenting on IDT's prospects for the next year or two, Ohr says the company "will likely retain a leadership position in clocks and timing controllers. With the intent of surpassing crystals, IDT is developing silicon-based timing controllers, including MEMs-based devices. This is a good move as it exercises one of the company's key strengths."

Ohr says gaining and retaining share in the crowded and competitive market for LCD panel drivers, where the best parts are subject to commoditization, will be harder. But "the [company's] ability to integrate will be valuable here," he adds.

The analyst notes that touchscreen controller arena will be even more competitive. But Tewksbury counters that IDT has "no plans to compete against Atmel or Cypress"; rather, it will look to create integrated power management solutions for the growing touchscreen market.

Ohr notes that "despite the broad shift to analog," IDT has some work to do. The company's revenue is "still dependent on memory interface and timing controllers. The PC timing products were negatively impacted by the introduction of Intel's Sandy Bridge CPU, which incorporates its own timing mechanisms and eliminates the need for external timing controllers."

IDT reported revenue of \$120 million for the quarter ended Jan. 1. Weakness of the market climate for consumer and communications remains a concern, but IDT has reported healthy bookings for its server-related products. Market watcher Canaccord Genuity recently repeated its "buy" rating for IDT, citing server memory interface and wireless infrastructure prospects in the coming quarters.

It may be a few more quarters before Tewksbury's makeover of IDT bears fruit. Then we'll see whether the company has another 30 years in it. — *Junko Yoshida*