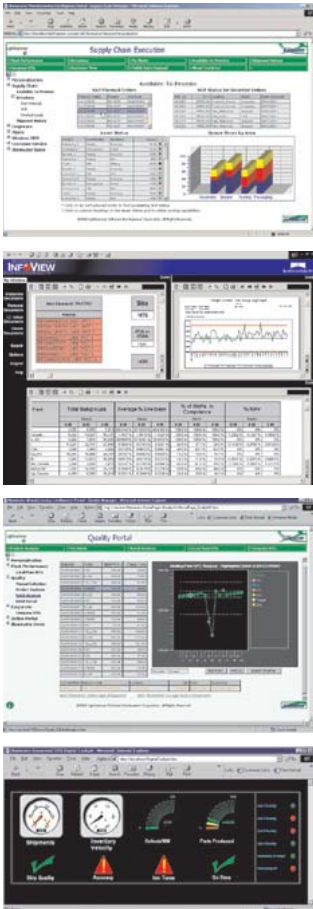


GE's Drive to Real-Time Measurement

CASE STUDY



How Information in real-time transforms the world's largest company

Gary Reiner, CIO of General Electric Co., leads a visitor over to the far side of his spacious office at GE's Fairfield, Conn., headquarters and takes a seat at a large table, on which the only objects are an unusually large keyboard and what looks like a PlayStation game controller. Before him, a huge, elongated flat-screen display panel is mounted on the wall. Like a kid at a game console, Reiner, in shirt-sleeves and open collar, punches a few keys. Suddenly at his fingertips and on display on the screen is an array of green, yellow and red which, on closer inspection, resolves itself into diagrams that signal the status of software applications critical to GE's day-to-day operations.

Reiner calls up the main screen for GE's plastics operation, which flashes a series of green lines (green is good) and a few yellow lines (which mean a certain operation is not running as efficiently as it could). At the moment, there are no red bars on the screen. Otherwise, Reiner says, he'd be pounding away at his own keyboard, sending an e-mail to the appropriate division manager asking for an immediate explanation.

Reiner's goal: to monitor, once every 15 minutes, GE's mission-critical operations-which, on his priority list, are sales, daily order rates, inventory levels and even savings from automation across the company's 13 different businesses around the globe.

These "digital cockpits," graphical depictions of up-to-the-minute business performance across GE's landscape, are checked regularly by electronic robots that send test transactions through the system-tests that should take four seconds to complete, and which likewise trigger an automatic e-mail warning, or inquiry, when yellow or red becomes the color of the moment. "The idea is to respond faster to change, reduce cycle times and improve risk management," Reiner says. "We are not waiting for end-of-the-month or end-of-the-quarter or even end-of-the-week results anymore before we act. We now respond continuously."



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Welcome to the frontlines of the real-time revolution, where response time means money. Since the dawn of machine automation, managers have sought to build processes that speed their ability to respond to change, but the real-time revolution promises to transform companies into complex sensing organizations that use everything from radio frequency sensors to global positioning satellites and worker-monitoring software to run everything from their in-house payroll departments to remote factories across the globe—and at speeds and split-second reaction times that, in some operations, will far exceed humans' ability to gather, process, analyze and respond on their own.

Driven by increasing pressure to cut costs and become faster and more responsive to increasing volatility in the marketplace, GE is one of a handful of giant corporations, from computer chipmaker Intel Corp. to Iberian fashion dynamo Inditex Group, that is fast becoming a digitized enterprise where every process, down to the activities of every production worker and the details of each minute financial transaction, is at least theoretically accessible to successive layers of plant managers and ultimately to top corporate managers.

But GE isn't the only company keen on getting faster. In years to come, many experts say, many more companies will use information technology to become a "real-time enterprise"—a company that can react within seconds to changes in its business. And as more and more firms wire themselves up and connect to their business partners, they make the entire economy faster. "What businesses like GE are creating is an explosive cocktail of time-based change that will rip out inefficiencies in our organizations based on our ability to gather, use and disseminate information," says Gartner research vice president Andy Kyte. "Wasting time will seem as stupid as wasting money itself."



Larry Biagini, Chief technology Officer at General Electric, tests the digital cockpit.

To be sure, in the current lackluster economic climate, it's little wonder that vendor hype has sprung up around the concept of the real-time enterprise: Gartner's annual schmooze-fest in Orlando in early October was all about real time, as are nearly a dozen conferences in the coming year, from Chicago to Berlin. But while experts acknowledge that getting to real time will require, in many cases, significant new levels of technology investments, the push for real time isn't all hype, either. Indeed, in a cost-cutting climate, real time can mean real savings. For its part, GE estimates that its digitization efforts saved the company \$1.6 billion last year. "We said we'd cut \$10 billion in costs in five years, and we're already a third of the way there," Reiner says.

According to Gartner vice president and research fellow Roy Schulte, the elapsed time of individual processes at e-businesses around the globe is already beginning to accelerate. Responses to call-center inquiries, for example, have gone from eight hours as of a few years ago down to 10 seconds today; refreshing a data warehouse has accelerated from one month to one hour; and the time it takes to build a custom-made PC has gone from six weeks to 24 hours, to name a few examples. Schulte predicts this acceleration has just begun and that process times will speed up even more, triggering a huge impact on the inner workings of companies large and small. For the strategic CIO, he says, the movement to real time will mean "increasing the velocity of business processes, and to get this kind of speed the CIO is going to have to rethink how he or she designs computer systems."

Analysts credit GE with having the management discipline built into the culture so that the movement toward more automation might be easier than at other companies. For his part, Reiner says he sees the real-time movement as an extension of GE's already relentless Six Sigma quality drive, which he helped spread through the company when he was promoted to CIO in 1996. Like vigilant quality controllers, he says, GE will continuously monitor time savings as passionately as it does quality improvements. "The technology is going to keep getting better and will keep wringing out costs," he asserts.

Yet as GE's cockpit shows, the real-time movement is also about strategic advantage: being able to monitor business continuously and react when conditions change. "Today, businesses mostly shoot in the dark," says Michael Maoz, a research director at Gartner and one of the pioneers of this concept. Internally, says GE Power Systems' DeLarge, the use of cockpits has eliminated the need for weekly operations reports. "In the past, some operating numbers weren't available until the Saturday of each week," he says. Now, information is loaded continuously into GE's cockpits and, he says, "in the case of past-due invoices, for example, salespeople know how much leverage they have over price in the field and can act on operations figures right away."

Advocates and experts on the subject of real-time operations say a 50 percent to 100 percent return on revenues should be possible. "Basically, every 1 percent of revenue you spend on real time should give you a 1.5 percent to 2 percent revenue increase as payback," says Vinod Khosla, a partner at the venture capital firm of Kleiner Perkins Caufield & Byers, and one of several experts widely credited with coining the term "real time." Says Khosla, "If you're not getting that kind of return, either you've already spent so much on IT that you have wrung out a lot of costs already, or you have a poor IT strategy."



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