



**Harvard
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Making the Real-Time Enterprise a Reality



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Making the Real-Time Enterprise a Reality

REAL TIME. ON DEMAND. ALWAYS ON. Such are the expectations of businesses in today's global information economy. Customers demand agility, responsiveness, and innovation from all companies today. And they're comparing their experiences with businesses in every industry against firms such as Amazon that embody all three capabilities.

Real-time business has always been the reality in some industries, such as financial trading, where stocks are bought and sold every second based on immediate and free-flowing market data. FedEx and UPS transformed themselves from simple shipping companies to providers of up-to-the-minute business intelligence. Retailers like Walmart and Tesco developed their supply chains into just-in-time operations. Google and Amazon analyze vast stores of data to serve up instant recommendations to users.

Yet the value of real-time business is increasingly compelling for more companies today. Organizations with the most advanced analytic capabilities outperform the competition. A 2013 global survey of 400 large companies by Bain & Company found that firms using advanced analytics were twice as likely to be in the top quartile of financial performance within their industries, three times as likely to execute decisions as intended, twice as likely to use data very frequently when making decisions, and five times as likely to make decisions much faster than market peers.

So business-to-business and business-to-consumer companies, private- and public-sector organizations alike are transforming not only their systems but also their cultures and processes, to take advantage of an increasing volume of data collected in the moment. They're reinventing the enterprise not simply so they can react to business demands in real time but also to anticipate changes before they occur. "The real-time enterprise is about getting the right information to the right people at the right time to make the right decision," says Narendra Mulani, senior managing director of Accenture Analytics. And it's not relegated to one corner of the business or another.

HIGHLIGHTS

70%

of leading global firms have access to financial, customer, and supplier information in real time.

62%

of top-performing companies improved analysis of costs and benefits by integrating data, IT, and business processes.

46%

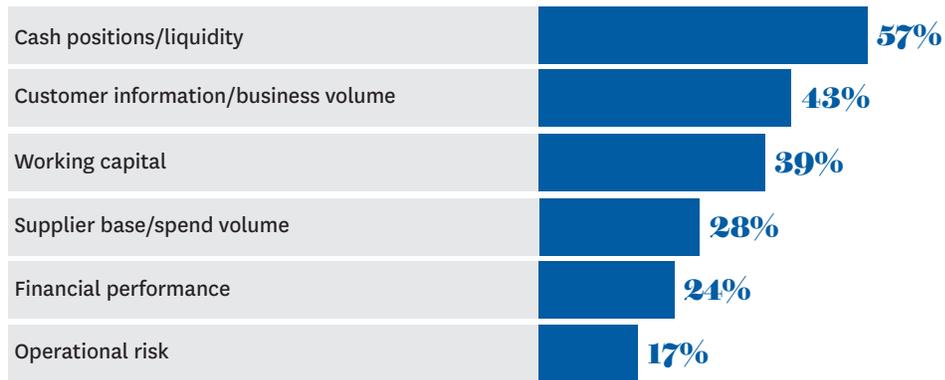
of top-performing companies provide just-in-time customer information to employees.

Figure 1

Not Yet Real Time

Most global companies know their cash positions in real time, but fewer have other types of data at the ready.

Source: “Transforming Business Services to Support the Globalization of Enterprise Operations,”
The Hackett Group, 2013



The prospect of becoming a real-time enterprise may seem daunting due to the technological and organizational changes required. Legacy business processes and the decades-old IT systems that enshrine them may thwart companies from making decisions faster. “If it takes a lot of time and effort to get information out of your systems, it hampers your ability to make business decisions in a timely manner,” says Ron Grabyan, manager of business intelligence services for Southern California Edison. “You can’t always predict what you’re going to need or when you’re going to need it, and oftentimes, by the time you get the data together, the opportunity is lost.”

New technologies—including cloud computing, in-memory technology, mobile devices and apps, social networks, sensors, and embedded software—enable companies to innovate faster and with less risk. Retrofitting legacy systems and business processes to accommodate real-time processing might break them, warns Chris Curran, chief technologist with PWC’s advisory group. The modern tools that advance real-time transformation are becoming widely deployed, although not all companies have yet been able to take advantage of them fully. A recent study of global companies by The Hackett Group found that among leading firms—those with mature, tightly integrated operations—more than 70 percent had access to financial, customer, and supplier information in near real time or within one day. Most companies, however, do not have such widely available access to real-time data. [figure 1](#)

Technology itself is one part of the solution. As business drivers become more dynamic, business management must make a cultural shift. The real-time environment demands an organizational capacity to respond in ever-shorter time frames with information and insight, says Donald A. Marchand, professor of strategy, execution, and information management at the International Institute for Management Development (IMD). “That can be a disruptive opportunity or a risk,” he says. Competitive advantage, adds Rita Gunther McGrath, an associate professor of management at the Columbia Business School, is finite. “The extent to which you can innovate faster gives you longer to enjoy it before it erodes. That’s real ROI,” she says.

What executives need is a blueprint for the real-time enterprise—an end-to-end framework covering people, processes, data, and technology—that will enable them to rethink their products, services, and operations. To succeed at the transition, companies must take several steps:

1. Define what it means for their organization to be a real-time enterprise.
2. Determine what business problems the organization is trying to solve.
3. Take a systematic, iterative, and long-term approach to introducing new technologies and business processes.
4. Create a more responsive and open corporate culture, from the management ranks to the front lines.

Those that do will be best poised to compete in the data-driven future.

Defining the Real-Time Enterprise

The real-time transformation is about more than instant access to information. “The issue is not really real time but right time,” insists Mulani. “It’s about being ready for interaction not just with the customer but also across the value chain.” [figure 2](#)

What qualifies as real time or right time varies—by industry, by company, and by business function. For example, Kingfisher, Europe’s largest home improvement retailer, is testing real-time systems designed to improve sales and demand forecasting, make its supply chain more efficient, and provide improved commercial information across its individual operating companies. Mercedes-AMG is deploying a real-time quality assurance platform that harnesses predictive analytics to optimize engine-testing processes when manufacturing its high-performance automobiles. Southern California Edison is implementing new ways to deliver instant information about electricity generation and consumption to its customers, regulators, and employees so it can better manage its multibillion-dollar assets.

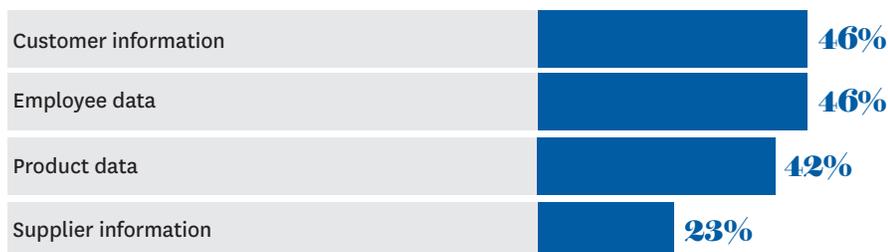
“You have to ask what value a decision has for the organization and what value it would have if you could make it more intelligently,” contends Henry Morris, senior vice president for IDC’s Worldwide Software, Services, and Sales and Marketing Executive Advisory research groups. “If it doesn’t matter very much, it’s not worth the effort.”

Figure 2

The Right Data at the Right Time

Among top-performing companies, nearly half deliver key data to employees when they need it in the moment.

Source: “High Performance in IT: Defined by Digital” Accenture, 2013



Business leaders must focus on moments of engagement—whether they be with customers, suppliers, partners, or people within the enterprise.

Getting to Why

Because the interest in real-time operations has surged with the emergence of new technologies, there's a natural inclination, when thinking about real-time opportunities, to start there.

But throwing software or hardware at the issue seems easier than asking and answering the hard questions. “Everyone says they want to be a real-time enterprise, but they haven't thought it through,” argues business transformation expert Behnam Tabrizi, consulting professor at Stanford University's department of management science and engineering. An effective real-time transformation isn't a one-off IT project; multiple initiatives must be aligned. “You need to think about it holistically,” he adds. “You must consider business strategy, incentive systems, siloed structures, the supply chain, etc. If you throw new technology at a bad process, you won't resolve anything. It's not just about real-time systems; it's also about real-time organizational transformation.”

It's not a matter of doing things faster, it's a matter of doing them more intelligently. “It's really easy to buy some fast piece of technology,” notes enterprise applications consultant Josh Greenbaum. “But if you're going to do something resembling the real-time enterprise, you're going to have to reinvent how you work.”

You don't have to transform the enterprise all at once, however. Companies that have succeeded at introducing new real-time systems and processes start with targeted, high-value projects and build up from there. For example, at Southern California Edison, the utility's leaders wanted to get detailed information about electricity usage to their commercial and residential customers faster so customers could moderate their energy use and therefore reduce SCE's capital costs. The utility's smart meters were collecting a wealth of data, which became the foundation of an online tool to enable customers to better manage their utility spending.

The online service shows customers what their bill might look like under various usage scenarios. Grabyan says SCE had to deliver the results, which are based on the previous year's consumption, within five seconds or customers would abandon the exercise. Using legacy systems to perform the data analysis took 40 seconds. So SCE chose new in-memory platform and analytics technologies to enable its customers to access the data and analytics within seconds.

SCE's management first chose a business strategy and then found the technology to execute it. “Then we looked at what kind of information we needed, how much information we needed, and what needed to be done with it,” explains Grabyan.

Real-time efforts fail when they don't connect with the priorities of the enterprise, adds PWC's Curran: “What are the core objectives that will move the dial in terms of either saving money or growing the business?” Only when you know your objectives can you determine what data you could use to achieve them or what new software, processes, or sensing equipment could deliver more useful data and intelligence. “Without asking the question, you'll come up with a solution,” says Curran. “But it will be for the wrong problem.”

Management consultant Geoffrey Moore says that to define their objectives, business leaders must focus on such moments of engagement—whether they be with customers (as is the case for SCE’s energy management tool), suppliers, partners, or people within the enterprise. And they must be moments that matter. [figure 3](#)

Stanford’s Tabrizi calls this initial step the pre-transformation. “You need a vision of where you want to go, what you want to achieve,” he says. Comparing that future state to current operations enables leaders to create a road map to real time.

There may be some easy wins from taking some existing business processes and speeding them up. But smart leaders will innovate. Greenbaum suggests a brainstorming process taking several weeks, involving a broad cross section of the company and banning all tech talk. For some, that’s an entirely new approach. Most companies are already doing the best that they think they can do, so they need to open their minds beyond what they can easily imagine.

Moore advises creating a map of delays that are built into the value chain, in order to eliminate them. “The more your systems can adjust to change dynamically, the more real time you are,” Moore says. “But you don’t need to have a real-time travel expense system. Pick your spots.”

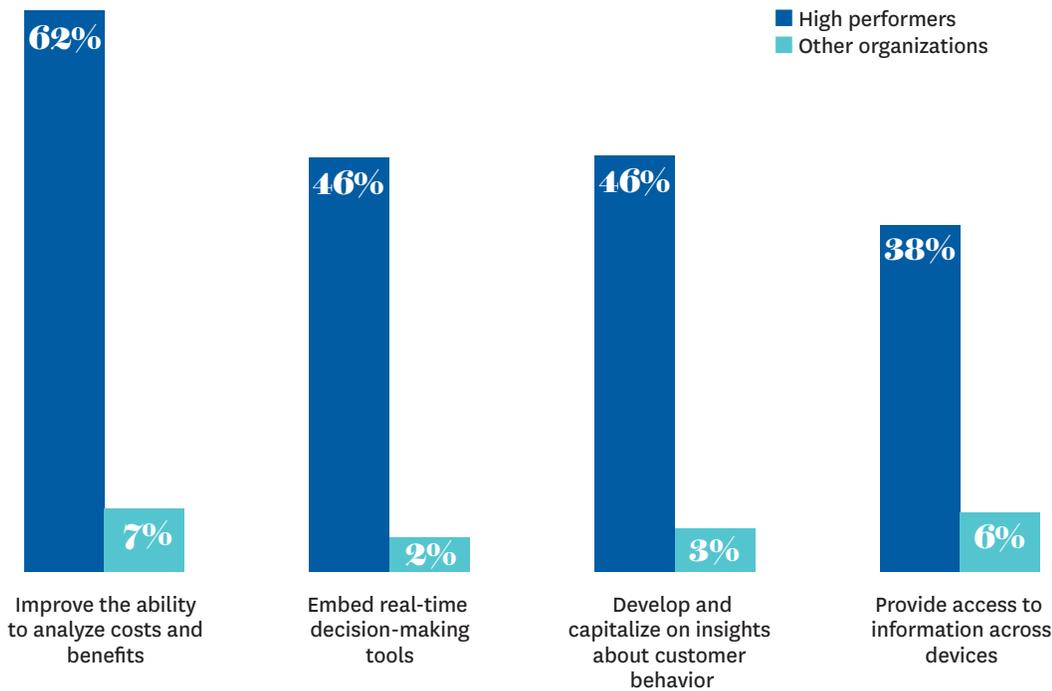
For Mercedes-AMG, that spot was obvious. The Affalterbach, Germany, company specializes in high-performance vehicles; engineering is the beating heart of its operations and the engine the key component

Figure 3

Real Time Bolsters Business Performance

Organizations have realized key operational benefits from large-scale integration of processes, information, and technology.

Source: “High Performance in IT: Defined by Digital,” Accenture, 2013



The real-time transformation is a series of steps. Each smaller win bolsters the case for other projects throughout the enterprise.

of its vehicles. But the dynamometers used to determine the torque or power characteristics of engines being tested were expensive, and efficient usage of the facilities was a priority. The ability to correlate historical test data in real time with sensor data from the engines being tested would enable engineers to identify problems more quickly and also predict unusual engine behavior.

Like SCE's tool, the in-memory platform Mercedes-AMG employed speeds up the analysis of large volumes of data. Instead of having to wait to analyze engine data after an hour-long test run is complete, engineers can halt a test at any step in the procedure the minute it exhibits unusual behavior. That's led to more engine testing capacity each week, enabling engineers to focus on further refinement of the company's high-performance engines.

What's more, Mercedes-AMG now has a scalable platform it can apply to other testing processes, including track tests, crash tests, and evaluations of vehicle interiors, for end-to-end quality assurance. Dirk Zeller, Mercedes-AMG director of IT consulting, and his team now want to use the same data analysis and predictive functionality for project management, in order to visualize in real time how the assembly of a vehicle is progressing and be able to predict potential bottlenecks, such as supplier delays, before they impact manufacturing.

Starting Small Yields Big Benefits

As the SCE and Mercedes-AMG examples suggest, becoming a real-time enterprise is not a one-shot project. In fact, taking a big-bang approach to real-time transformation destines it to failure. "This isn't going off into the shed, inventing something from whole cloth, and unveiling it as a *fait accompli*," cautions Greenbaum. The real-time transformation is a series of steps—targeted prototypes and projects, metrics setting and gathering, work and rework—that delivers increasing value over time. Each smaller win not only delivers a return but also bolsters the case for other projects throughout the enterprise.

At Kingfisher, the starting point for real-time transformation was the proof of concept for a predictive analysis system that would integrate data from its 10 independent operating companies. Kingfisher had grown over 30 years via merger and acquisition; each operating company had its own systems, metrics, and processes. Executives wanted to take better advantage of the company's scale and group knowledge.

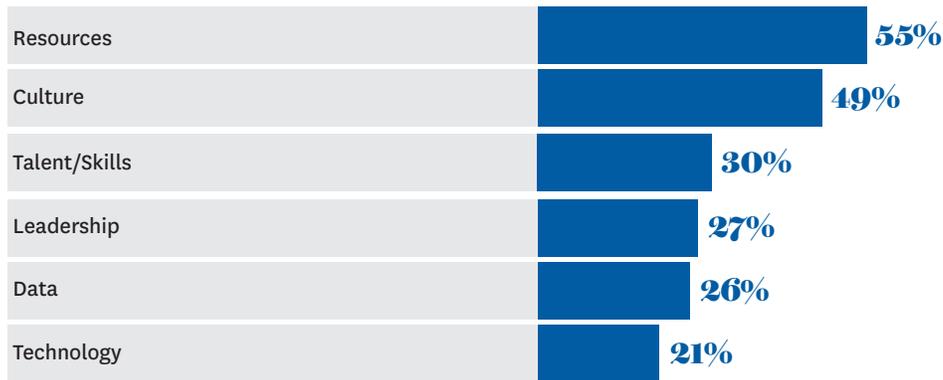
Building the analytics prototype itself involved constant iteration: it was produced using agile development methodologies that delivered capabilities in small increments. Kingfisher's sourcing and offer commercial finance manager Eoin Canty got continuous input from finance directors, store managers, and commercial managers, among others, about what they did that worked and what didn't. Managers participated from day one, when they needed to agree on data definitions and quality. "We didn't want to end up with a new commercial system people didn't trust," Canty says. "We wanted them to recognize the data as their own."

Figure 4

People Before Technology

Culture change is among the top barriers to building analytical capabilities needed to become a real-time enterprise.

Source: "Organization Culture, Lack of Resources Impede 'Big Data,'" American Management Association, 2013



End user input continued throughout the proof of concept phase of the project and will kick off again before it is approved for a wider rollout. "We wanted to build something and let people tear it apart as part of an iterative process to delivering the right final solution," adds Canty.

The iterative approach can make the business case for real-time transformation easier to argue than for a traditional enterprise system. "You can lay out your whole journey and what you want to go after and turn this into a set of granular projects under a big program," suggests Accenture Analytics' Mulani. "Each one delivers specific value. You can be much more surgical in your approach on this data-driven journey."

With each smaller project or experiment, there are clear before and after metrics. Those results then fuel further real-time efforts. "You have to be bold in your vision," says Mulani. "But you can be very pragmatic and systematic in your execution." There will be limits to the extent to which real-time projects pervade the organization. "Some processes don't need it," he says.

But the willingness to keep perfecting what it means to be real time should not end. "The hallmark of a real-time company," says Greenbaum, "is that it's constantly refining itself."

Building a Real-Time Culture

Companies such as Mercedes-AMG already have this mind-set. Its engineers live and breathe data. They had been yearning for real-time access for nearly 50 years, explains Zeller, and they were eager for change. In addition, Mercedes-AMG is a midsize company, where all the engineers work in the same city. "It was the perfect place to roll out real-time solutions," Zeller says.

In the typical company, however, employees and their managers may need to adapt to real-time operations, as it will change the way they work. Culture, observes Accenture Analytics' Mulani, "becomes the constraint for how fast a company will move in this direction." [figure 4](#)

A command-and-control environment and the real-time enterprise are largely incompatible. A real-time enterprise enables decision making on the front lines.

The organizational shift that accompanies real-time transformation has to start at the top. Although they're the furthest from the front lines, where transformation has the biggest impact, senior leaders send the biggest signals to the rest of the organization about its goals. Executives have to buy in to an operating culture that enables the free flow of information. "The kind of leadership required for the real-time enterprise seeks to magnify collective intelligence," says Marchand of IMD. "You have to have a set of mature behaviors and values about the way knowledge is to be expressed, used, and shared by people in the company. You have to have that yourself if you're going to instill it in your management team."

A command-and-control environment and the real-time enterprise are largely incompatible. A real-time enterprise enables decision making on the front lines, not just in the executive suite, according to Mulani. And sometimes, the best decision may be made by a machine. "Allowing that recommendation to flow through the organization is a huge cultural change" for most companies, Mulani says.

In any company, "there's data generated at every step of the way in every task that's performed," declares Curran. "The challenge is, first, how do you capture that information and, second, how do you do something with it that's meaningful?" Companies that successfully embrace real-time functionality introduce not only new systems but also new ways of thinking and working.

In other words, there has to be an appetite for change not simply on the part of company executives but also among all employees whose jobs will be impacted. "When we tell them they need to change their processes in order to leverage the technology, we work with them so they understand what that means," offers Grabyan. Their buy-in will continue to be important as SCE rolls out real-time capabilities to new areas, such as power procurement and outage management.

At Kingfisher, changing how and when employees at all levels of the company access information is empowering the corporate workforce. "They won't have to wait as long to get good commercial information, enabling them to be more responsive," says Canty. Directors and managers will be able to pull up real-time data on tablets when they're in meetings rather than waiting for monthly reports from business analysts. Brand managers and buyers have financial information at their fingertips, putting them in stronger negotiating positions with suppliers. "By comparing performance on key metrics across the group at a corporate, category, or store level, we will be able to identify areas of opportunity to maximize sales and margin potential," Canty says.

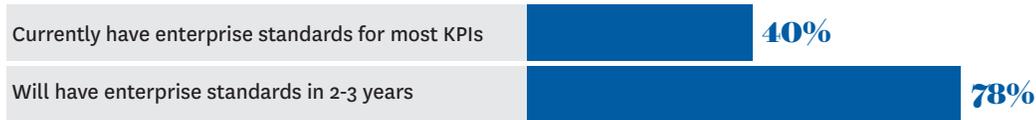
When real-time transformation takes hold, companies "create an operating environment where people feel empowered to use knowledge they have about products, services, and customers to meet and anticipate the needs out there," suggests Marchand.

Figure 5

Defining Real-Time Data Takes Time

Global companies are at work to create enterprise standards for the majority of their reports and key performance indicators.

Source: “Transforming Business Services to Support the Globalization of Enterprise Operations,” The Hackett Group, 2013



Are You Delivering Data or Information?

Once a real-time culture has taken hold, business leaders and managers can become starry-eyed about the prospects of instant access to a wide array of information. Companies can collect more up-to-the-minute data today than ever before. But just because you can capture it doesn't mean you should. [figure 5](#)

“If you collect too much data without a plan for how you're going to use it, you can quickly get overwhelmed and paralyzed by it,” notes PWC's Curran. That happened, he says, to one financial services company that decided to collect recordings of all contact center calls. The company spent millions but had no idea what it would ever do with the data. And the company never used it.

The key to becoming a real-time enterprise is not delivering more data quickly; it's delivering information more quickly that can improve decisions. “You have to figure out what the signals are that you should be looking for that would require real-time response,” says Morris.

Kingfisher wanted to improve the visibility of consistent sales and margin information across operating companies and product categories, so it could analyze and proactively manage performance.

The project kicked off with an eight-week design-thinking workshop attended by key commercial, finance, and IT stakeholders from Kingfisher, along with experts from its technology vendor. By the end the company had a proof of concept for a group business information system using in-memory analytics. But Canty was diligent about preventing scope creep. “As we went through it, someone would say, ‘I'd like to add these KPIs’ or ‘It would be great if it could present this,’” he recounts. Each suggestion was considered, but Canty kept an eye on the ultimate goal. “It's better to deliver something within what we set out to do and deliver 100 percent of it than trying to expand it and deliver only 80 percent of what we promised.”

By actively managing the scope of data collection and analysis, Kingfisher has the potential to deliver a broad base of business benefits. For example, the company is better poised to deliver the right product or information to the right customer via the right channel, whether it's the call center, the web site, or one of its 1,080 stores in nine countries. The company has launched Click and Connect, whereby a home improvement contractor can use a smartphone to select the supplies he or she will need for the day's job and have them ready to pick up at the retail store on the way to the jobsite.

Kingfisher is also aiming to rationalize its SKUs across its operating units; the goal is to improve unit costs and reduce inventory by standardizing more than 50 percent of the items it stocks throughout the chain. In addition, improved demand forecasting will enable the company to better negotiate discount pricing with suppliers and improve its margins.

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Mercedes-AMG is also vigilant about not taking real time too far. “I sometimes feel that the real-time capabilities we have might put too much pressure on decision makers,” observes Zeller. “If you have all these alerts, there’s a danger of overreacting, leading to decisions made too fast or not in a profound way.” The concern about data overload is similar to that which accompanied the introduction of email, Zeller recalls. “We need to define whether our target audience is prepared for the solutions we’re offering.”

Indeed, there is value in some facets of the organization remaining stable during the transformation to a real-time environment, notes Columbia’s McGrath. Companies need “pools of quiet with stable values, stable talent, stable relationships even as the rest of the organization is responding to changes in the world around them.”

The key is matching the right real-time capabilities with the right business need. “If you have a financial report due once a month, you don’t need to provide it in sub-second time,” says Grabyan of SCE.

Conclusion

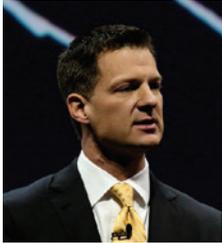
The window for competitive differentiation in all sectors of the economy continues to get smaller, declares Mulani. Companies “must take advantage of time as a differentiator and ensure they are organized to operate as data-driven competitors,” he says.

The true real-time enterprise will accelerate the transformation of data into information that can be used to make decisions about the most vital functions of the company, whether that’s manufacturing and logistics, marketing and sales, or customer service and product life cycle management. With real-time information, business leaders will be better able to manage their core objectives, whether they are focused on the bottom line or business growth, and make better predictions.

“The real-time enterprise is able to sense and respond to stimuli in a way that’s coordinated across the enterprise,” suggests McGrath. As a result, real-time players will become adept not simply at reacting to the shifts in the environment or responding to changes as they occur but also at anticipating them before they happen. They’ll know when a product or part is going to fail, sense whether a customer is ready to buy, predict when to make a capital investment, understand when demand might spike or dip. “The biggest benefit for large enterprises is the ability to dynamically alter a process in flight—reroute a shipment, change a bill of materials, reprice in the face of a competitive threat,” says Moore. The result? “Organizations that are far more customer- and market-oriented,” says Marchand.

And those enterprises that invest in true transformation—defining what it means for their organization, targeting crucial business challenges, creating a more responsive culture, and investing in an iterative approach—will see their real time returns compound over time through differentiating innovation. “When you make a decision to go down this path, the real benefits will come two, four, five years in the future, when you get all of your systems and data together,” concludes Grabyan. “That’s when the exponential changes will come and you’ll be able to do things you never would have dreamed of doing.”

Sponsor's Perspective



STEVE LUCAS
President, Platform Solutions
SAP AG

Real-Time Companies Make Decisions in the Moment

Harvard Business Review Analytic Services interviewed Steve Lucas, president of Platform Solutions with SAP AG, about transforming business operations with real-time insight.

What does it mean to be a real-time business?

Being a real-time business means being aware of the key factors that will impact your decision and being able to make a decision in the moment that it matters. In most companies today, decision makers have to wait for batch processes to run. If you enter a store, for example, most often you don't get personalized offers—you get a generic 25 percent off. What if something personal and relevant for you could be delivered to you in the moment? There will be a time when we walk into a store and our experience will be radically different. That's why the SAP HANA platform exists: to enable companies to do business in the moment.

Where do you see the most value for large companies?

The value comes from three main drivers. First, we reduce the complexity of the systems required to produce your existing results. This was one of the key motivations in designing SAP HANA: massive IT simplification. You can use the platform to feed data from all different sources into one system. Second, we enable agility by giving customers the ability to get real-time insight for decision making. Third, we're unlocking the true potential for innovation through new business processes and models: the real-time business innovation.

Companies began to deploy SAP HANA three years ago, and since then, the SAP Business Suite powered by HANA. In that time, how far have customers progressed in their transformation to real-time businesses?

We have more than 3,000 SAP HANA customers. So far, they have been transforming their businesses process by process. A lot of processes are built around the time it takes to get data and analyze it. When you eliminate the latency, you have to think through how you want to work differently.

Our clients are unequivocally seeing the benefit of real-time. For example, one of our customers sees real-time planning as its "game changer." With HANA it has reduced the processing time of one financial report from 40 hours to 20 seconds—a 7,000 times improvement.

As you look ahead, what new ways of doing business do you envision?

Our SAP HANA platform not only can enable customers to make decisions for today but also provides a powerful predictive engine. Most companies make decisions by looking in the rearview mirror. But the rearview mirror is tiny compared to the windshield looking forward. Companies will start to build forward-looking decisions into their operating models.

What is your best advice to companies that want to start their real-time transformation?

It is not just about the technology. SAP HANA is extraordinarily innovative, but the first thing we do is look at where the opportunities are to transform business processes. Then we spend time with customers rethinking how those processes are designed and how to remodel them. You have to start at zero: what would you do if you didn't have to wait for information? If you don't have to wait, there's an opportunity for massive reinvention and value creation across industries.

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