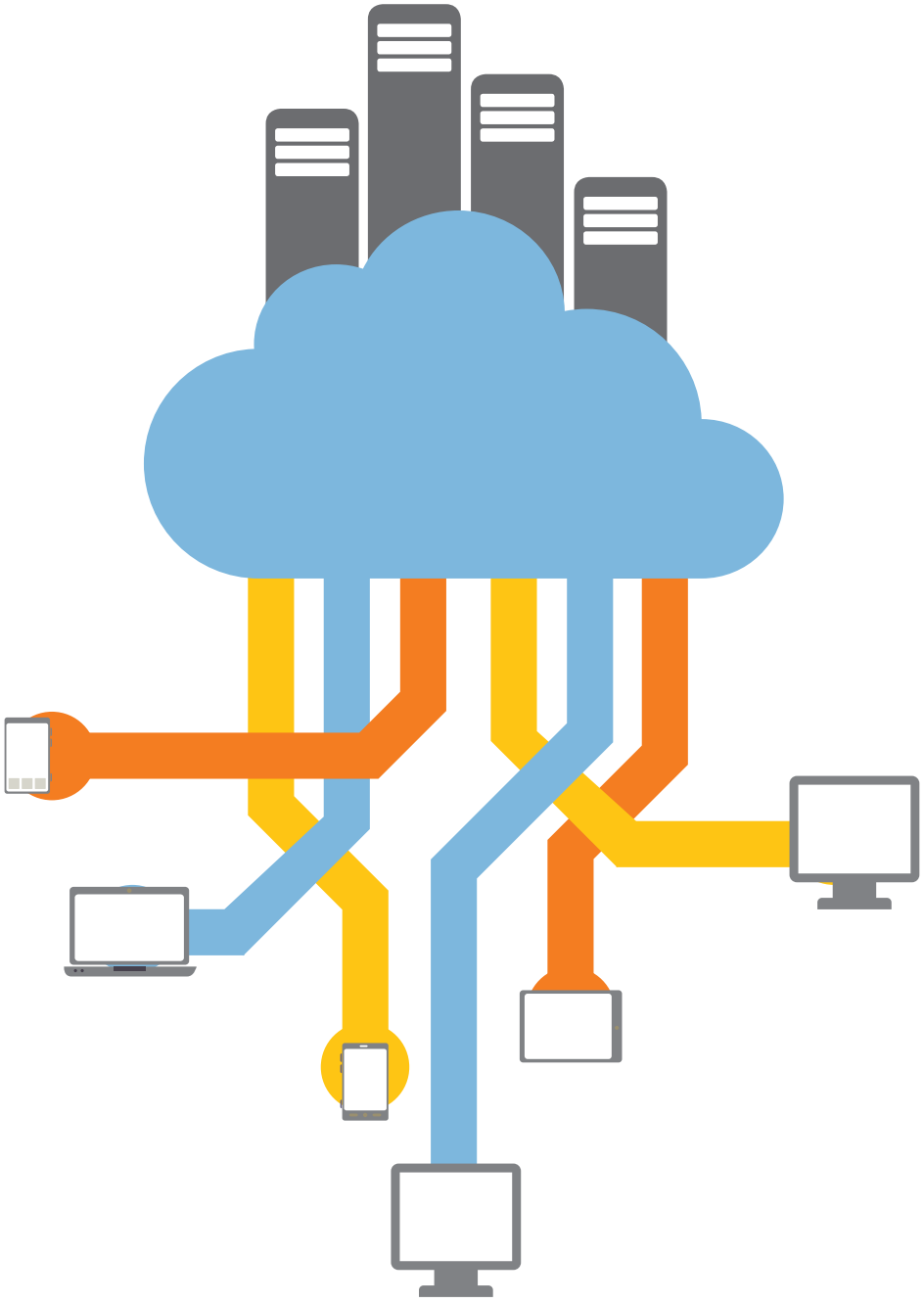
In association with
CIO INSIGHT

Sharp Demand FOR MANAGING IT Complexity

IT complexity has become a serious business problem—and IT managers are taking steps to control it, according to a new survey.



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AN EXCLUSIVE SURVEY AND REPORT | JUNE 2015

Contents

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Executive Summary

THE HARMFUL EFFECTS of excess complexity are well-known, with almost 9 in 10 respondents trying to simplify IT.

- The top drivers of complexity for IT include managing on-premises, hybrid and cloud environments and managing large datasets on multiple platforms.
- Others include integrating systems from multiple vendors, the continuing need for batch processing and inconsistent user interfaces.
- The most negative implications of complexity for IT are long implementation times, increased total cost of ownership and difficulty in helping businesses innovate.
- Business users (as seen by IT) are most harmed by the inability to change business processes as needed and to drive new business models, such as digital transformation.
- In-memory technology, self-service reporting and analytics, and customized dashboards are seen as key enablers to reduce business and IT complexity.

Methodology

TO UNDERSTAND THE CAUSES AND EFFECTS of excess IT complexity, and the technologies and processes that help simplify IT, CIO Insight conducted a global survey of IT executives.

Sponsored by SAP, the 15-question online survey was distributed via email invitation in early 2015 and 339 responses were received. In addition, we interviewed market researchers, academics and integrators to provide context and examples of the trends identified in the survey.

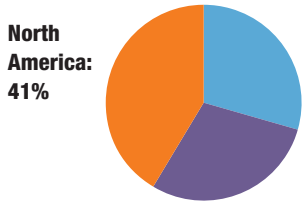
The objectives of the survey were to understand:

- What IT executives believe to be the prime drivers of excess IT complexity in their organizations.
- What IT executives believe to be the greatest negative impacts of excess IT complexity, on both IT and the business.
- What technologies and processes IT executives are finding most effective at reducing excess IT complexity.
- The goals of IT simplification programs at their organizations.

Forty-one percent of the respondents were from North America, with 29 percent each coming from Europe and Asia. Some 54 percent described themselves as working in "decentralized IT" within business units, with the rest working in centralized IT units. Director-level executives made up 56 percent of the respondents, with managers and C-level/vice president-level respondents each making up another 22 percent. The mean annual revenue of the companies in which respondents work was $3.27 billion. (See the Methodology charts at right for additional demographic information.)

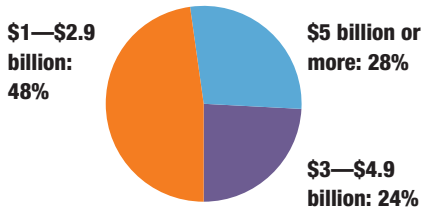
CIO Insight and Triangle Publishing Services provided support in the development of the survey questionnaire, in addition to the qualitative interviews, writing, editing and production of this report. Triangle Publishing Services and the author of this report, Robert L. Scheier, are grateful to everyone who provided their time and insights for this project.

BY REGION*

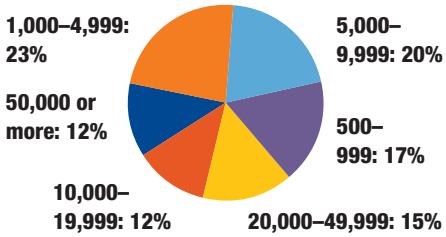


*Total does not equal 100% due to rounding.

BY COMPANY SIZE

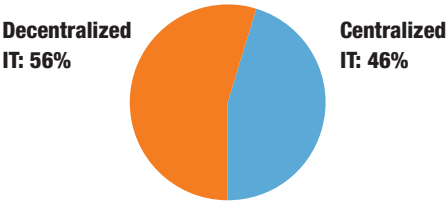


BY NUMBER OF EMPLOYEES*



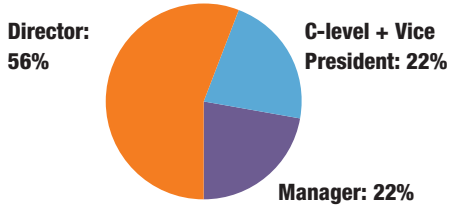
*Total does not equal 100% due to rounding.

BY ROLE*



Roughly half of the respondents work in the IT department, while the other half have IT responsibilities within the lines of business. This half we call "decentralized IT."

BY TITLE



Base: Survey of 339 IT executives at midsize and large enterprise organizations worldwide

Source: *CIO Insight Reports,* February 2015 Managing Complexity Survey

Introduction

IT professionals know far better than most that the complexity beneath today's IT systems can slow innovation and increase costs. Yet the limitations of technology to date have made IT more complex, not less. A global survey of more than 300 IT professionals conducted on behalf of CIO Insight in early 2015 suggests that IT managers recognize complexity as a major problem for their organizations. More than half of those surveyed feel that overly complex IT systems make it harder to meet customer needs, change business processes and drive innovative business models (see Figure 1, "The Negative Impact of Complexity on Business," at right). The good news is that they are doing something about it, with almost 90 percent of respondents' organizations implementing IT simplification projects.

We use the term "complexity" in this survey to describe decision-making, business processes and information management technologies that force employees, customers or business partners to perform too many manual steps, wait too long or struggle too hard to get the information they need.

The findings suggest that IT executives who have made the most progress in reducing complexity regard themselves as market leaders. But in many cases, "IT cannot operate at the speed at which the business needs to change," says Eric Dorr, senior research director at The Hackett Group, a strategic consultancy and enterprise benchmarking and best practices implementation firm. "Companies with the best handle on their technology landscape and the way they manage complexity really are at a competitive advantage."

The survey provides insights into what IT believes is contributing most to complexity, as well as the tools they believe will help manage it. Among the key drivers of complexity IT is working to overcome are:

- Managing hybrid deployments combining in-the-cloud and on-premises solutions.
- Managing large datasets on multiple platforms.
- Integrating systems from multiple vendors.
- Inconsistent user experience.

FIGURE 1

The Negative Impact of Complexity on Business

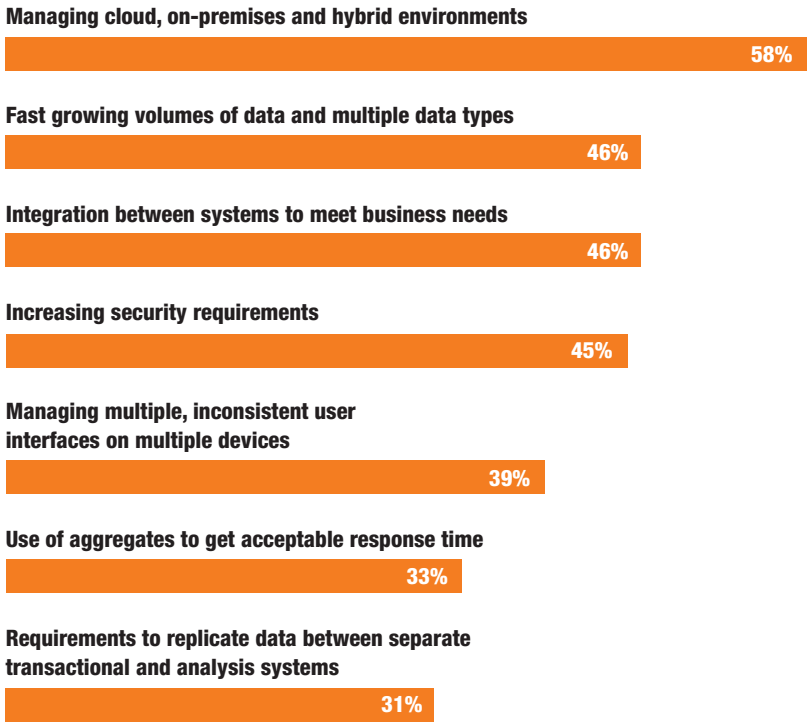
In which of the following areas does IT complexity have a negative impact on your business? (On a scale of 1 to 10, where 8, 9 and 10 are "extremely negative." Percent responding with at least a 4 rating.)

Base: Survey of 339 IT executives at midsize and large enterprise organizations worldwide
Source: *CIO Insight Reports*, February 2015 Managing Complexity Survey

FIGURE 2

Managing Complex IT Environments

Which of the following are among the most significant drivers of excess IT complexity within your organization? (Respondents could select up to four challenges.)



Base: Survey of 339 IT executives at midsize and large enterprise organizations worldwide
Source: *CIO Insight Reports*, February 2015 Managing Complexity Survey

Among the top technologies IT professionals are using or considering to master complexity are:

- In-memory databases.
- Self-service reporting and analytics.
- Customized dashboards for business users.

To simplify their IT organizations, analysts, academics and others we interviewed for this report also suggest companies consider new architectures, as well as new approaches to data management.

The Root Causes of Complexity

The major causes of complexity cited by IT respondents all reflect the difficulties involved in managing today's IT environments (see Figure 2, "Managing Complex IT Environments," on page 5). Not surprisingly, running mixed environments of cloud and on-premises systems ranked highest by nearly 6 in 10 respondents as a significant driver of excess IT complexity.

"When I was a CIO and we launched a customer-facing product, the hardest part wasn't developing the product and launching it," Dorr recalls. It was "working with our operations people and our QA [quality assurance] testers to figure out how to integrate what changes we should make in our existing processes so we could integrate that cloud-based application and connect it with other applications."

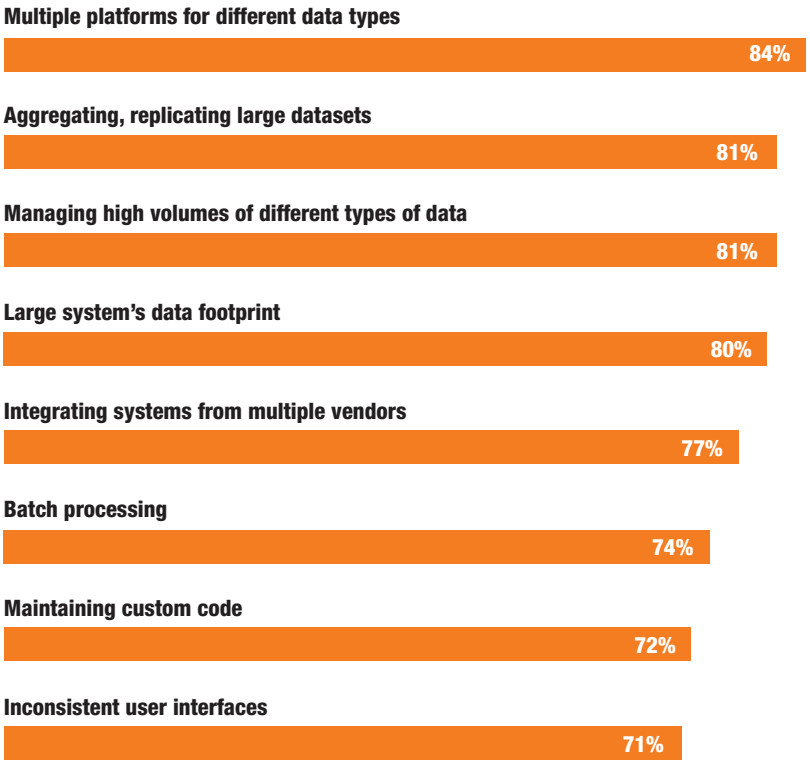
81% of respondents said managing high volumes of different types of data is an important factor in causing IT complexity.

Complexity and the cloud. Meanwhile, the global shift from in-house systems to applications and services in the cloud can sometimes cause more complexity, not less. "The availability of inexpensive cloud apps and services has certainly contributed to the expanding app portfolio," says Chris Curran, principal and chief technologist at professional services firm PricewaterhouseCoopers LLP (PwC). "Yet it has also made it harder for IT to understand, catalog and manage all of the apps in use by an organization."

FIGURE 3

What Causes IT Complexity?

How important are each of the following factors in causing IT complexity? (Percent of respondents indicating that these are "important.")



Base: Survey of 339 IT executives at midsize and large enterprise organizations worldwide
Source: *CIO Insight Reports,* February 2015 Managing Complexity Survey

Although moving systems that are not core to the business to the cloud reduces the time required to monitor and troubleshoot them, such applications still need to be managed appropriately. "Otherwise, if you're not careful, you just trade one complexity for another," warns Mark Peacock, IT transformation practice leader and principal at The Hackett Group. Software as a service (SaaS) applications can also add complexity, he adds, by creating multiple locations users must search to get a complete view of a customer.

The next-highest rated drivers of complexity are fast growing volumes of data and multiple data types, integration among systems to meet business needs, increasing security requirements and managing multiple user interfaces. The rapid growth of data is driven by the digitization of business processes, the increased use of social platforms to monitor customer data and the emergence of connected devices in the Internet of Things.

Technical Contributors to IT Complexity

When asked to drill further into the technical issues that drive complexity, the top factors—cited by 8 out of 10 respondents—all involve data management (see Figure 3, "What Causes IT Complexity?" on page 6). They are:

- Managing multiple platforms for different data types.
- Aggregating and replicating large datasets.
- Managing high volumes of different types of data.

IT continues to struggle with these issues for multiple reasons, including the separation between transactional and analytical systems. They also include the limitations of traditional databases and the growth over time of custom interfaces between the systems that support business functions, such as finance, reporting, billing and sales. IT must not only create interfaces between business systems but update each one as systems grow and change. This "creates a lot of brittle complexity in the IT platform," notes Curran. According to respondents, it also makes delivery of real-time information from multiple systems really difficult.

56% of respondents agreed that IT complexity negatively impacts their organization's ability to provide information needed to any device.

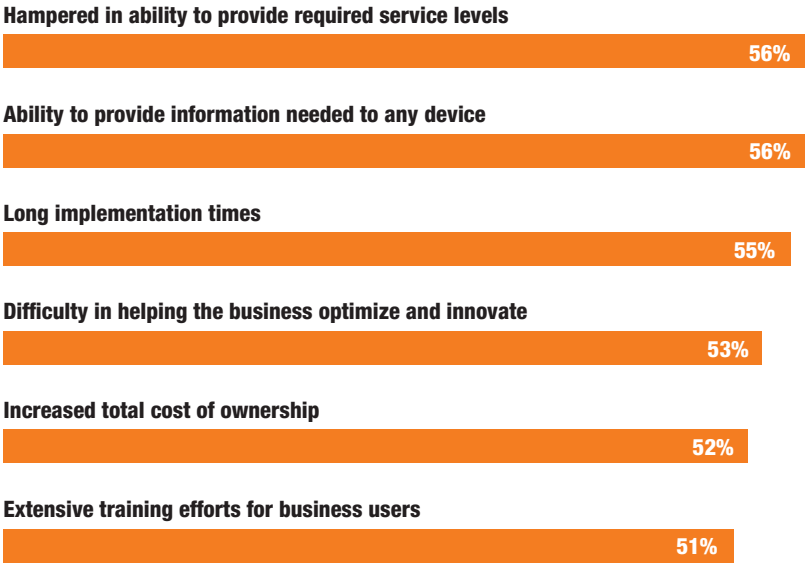
Application proliferation a factor. Another major source of IT complexity involves application proliferation and maintenance. Many organizations have acquired redundant applications over time, from multiple sources such as customer relationship management (CRM) systems, to serve various geographies or as the result of mergers and acquisitions. While these multiple applications may have been necessary at one point, the ongoing need to maintain and link them to other applications greatly increases complexity.

"If you ask almost anyone in IT if their application portfolio is clean, concise and well-defined, they'll say no," says Curran. "That's a big target for simplification and cost reduction. But it's also a very complex problem to solve."

FIGURE 4

IT Complexity Slows Business Innovation

In which of the following areas does IT complexity have a negative impact in your IT organization? (On a scale of 1 to 10, where 10 is "extremely negative impact." Percent responding with a 4 or higher rating.)



Base: Survey of 339 IT executives at midsize and large enterprise organizations worldwide
Source: *CIO Insight Reports*, February 2015 Managing Complexity Survey

The Burden of Complexity

As service providers to their organizations, IT managers recognize the cost that IT complexity imposes both on their own internal operations and across their entire organization.

When asked to rate those areas where IT complexity has had the most negative impact on their *IT department*, it is noteworthy that respondents ranked highest those impacts that affect the entire organization (see Figure 4, "IT Complexity Slows Business Innovation," above). Their top responses include difficulties in providing information users need on any device and long implementation times.

Similarly, when asked to rate the impact that IT complexity has on their *business*, IT managers identified two areas associated heavily with innovation: agility and real-time information access.

The larger the company a respondent works for, the more likely they were to mention the negative impact complexity has on their ability to provide business insights quickly to users. The same was true of complexity's harmful effect on IT service levels. This reflects the inevitable increase in complexity as companies add business units, geographical markets and product lines, and acquire or merge with other organizations.

Excess complexity can also make it hard to detect security risks, notes Professor Rita McGrath of Columbia Business School. As complexity increases, she says, "people can't see where the threats are. When I work with companies that have suffered from these kinds of unanticipated events, information that could have helped them to respond more effectively usually turns out to have been available, somewhere in their system."

The Benefits of Simplification

Just as IT respondents recognize the negative impact of IT complexity on business, they list business goals first when asked about their goals to simplify IT (see Figure 5, "IT Simplification Goals," at right). Their top two responses clearly reflect goals important to any organization, including increasing revenues, profits and market share, and providing better experiences for employees, customers and business partners.

Although business goals come first, some simplification goals naturally reflect more IT-centric concerns. These include the need to provide faster, more accurate justification or return on investment for technology solutions. This reflects the ongoing pressure IT is under to reduce costs and prove the business benefits of IT spending.

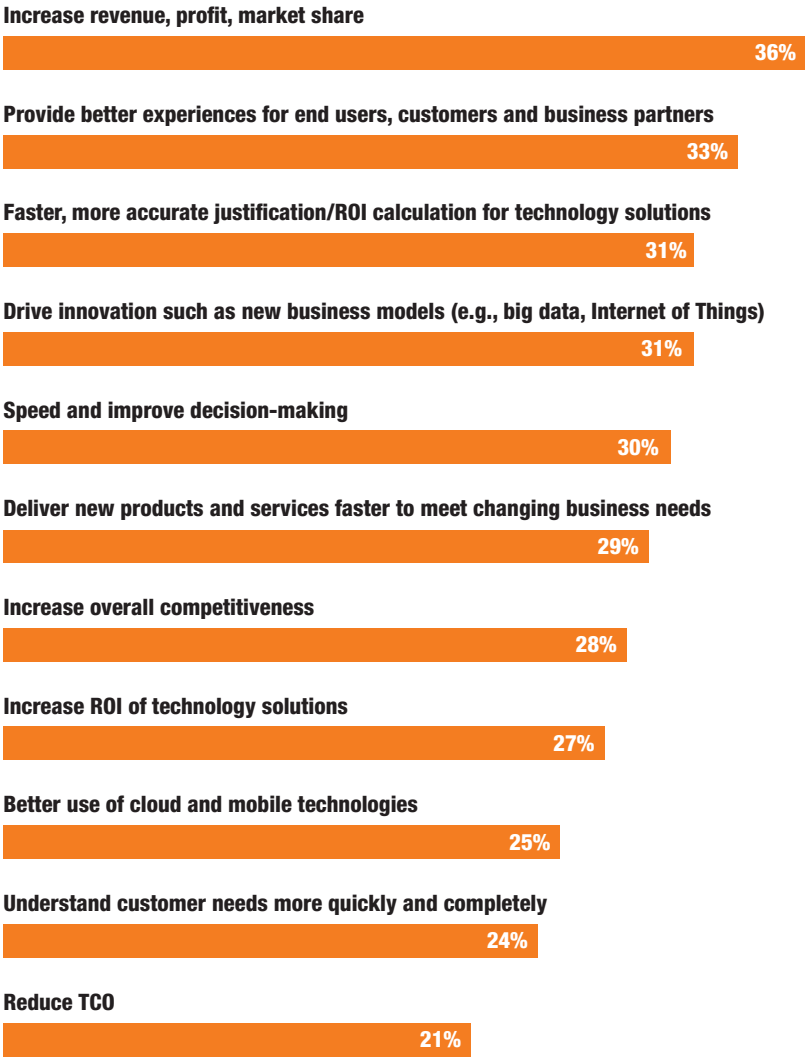
Where simplification is succeeding. On a hopeful note, survey results show that many simplification efforts are already paying off. Around 6 in 10 respondents say system consolidation has reduced costs; a similar share reports success with other simplification efforts, such as the use of a common data model. Skillfully managing the infrastructure required to deliver speedy business analytics and other services also reduces harmful complexity while meeting business needs to control costs.

A 2014 The Hackett Group study, "The World Class Performance Advantage: How Leading IT Organizations Outperform Their Peers," shows organizations that have made the most progress in reducing complexity report 22 percent lower total IT cost per end user than their peers. It also shows they operate 86 percent fewer datacenters, on average, and support 37 percent fewer applications than their peers for an equivalent number of users.

FIGURE 5

IT Simplification Goals

Which of the following are among the main goals of your plans and initiatives to simplify IT? (Respondents could select up to four challenges.)



Base: Survey of 339 IT executives at midsize and large enterprise organizations worldwide
Source: *CIO Insight Reports*, February 2015 Managing Complexity Survey

The need to drive innovation—cited by 1 in 3 IT respondents to the CIO Insight survey—is reflected in simplification efforts at USAA, a provider of financial services for military families. Those efforts increased agility by reducing the average project delivery time from more than 175 days in 2009 to 125 days in 2012, says Martin Mocker, a research affiliate at the MIT Sloan Center for Information Systems Research and professor of business administration and information systems at Reutlingen University.

USAA's approach included reusable IT components, such as one that enables developers to build a new screen for any device in less than one hour. Reuse also limits complexity by introducing fewer new technology components to test and support.

How to Reduce IT Complexity

Technology is both a cause of and a potential cure for excess complexity. The key enablers of IT simplification—cited by about 8 out of 10 respondents—include the ability to easily integrate and consolidate systems and to better connect people, devices and business networks in real time. An equal number of respondents give high priority to simplification efforts aimed at reducing data footprints, replacing batch processing with real-time processing and deploying applications better tailored to the needs of the business.

Other ways respondents see technology helping business users is by providing instant access on any device and a more personalized user experience. The focus on information access no doubt reflects the proliferation of smartphones and other mobile devices, in addition to laptops and desktop PCs.

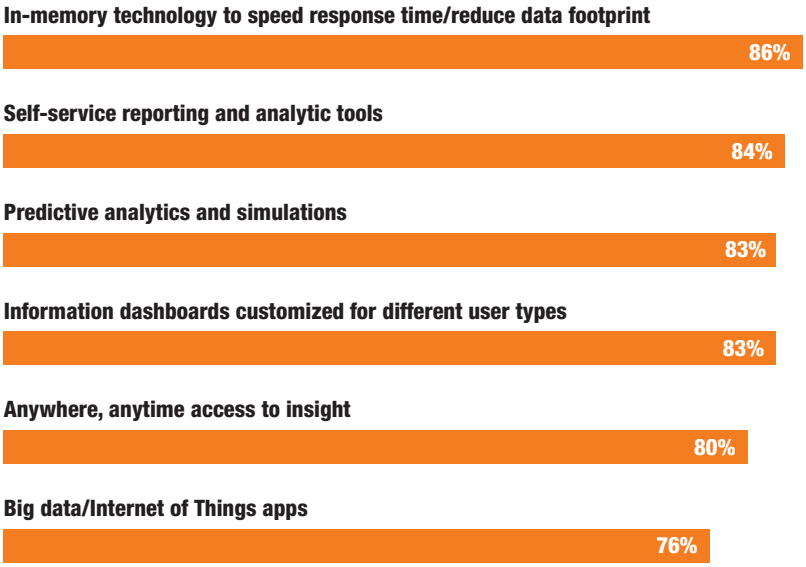
86% of respondents said that in supporting quick and effective business decision-making, in-memory technology helps speed response time and reduce the company's data footprint.

The technology mentioned as most likely to help IT professionals reach these goals—cited by 86 percent of respondents—is in-memory database technology (see Figure 6, "In-Memory Leads the Way in Business Decision-Making Value," above right). Among its benefits are the abilities to quickly process large volumes of data of many types and from multiple sources and to provide real-time information.

FIGURE 6

In-Memory Leads the Way in Business Decision-Making Value

Currently, how valuable are each of the following elements in supporting quick and effective business decision-making? (Respondents were asked to select one best response for each factor on a scale of 1 to 5, where 1 is "not at all valuable" and 5 is "very valuable.")



N = 206 respondents
Source: *CIO Insight Reports*, February 2015 Managing Complexity Survey

With in-memory database technology, "the complexity of the application stack thins out," says The Hackett Group's Peacock. Not only does the technology lessen IT's support burden when it comes to big data and analytics tools, but it can also speed and enhance the user experience. "If I'm in customer service and I can answer a complex question in a second, instead of a minute, there's a lot more interesting things I can do with my time," he says. Besides helping drive IT simplicity, the use of in-memory technology can free business users to create more innovative products and services.

Other key technologies. The next three highly regarded technologies—each considered extremely valuable by 8 out of 10 respondents—reveal growing business needs for both advanced insights and real-time delivery of information in a user-friendly format.

The demand for self-service tools is accelerating due to the increased use of mobile devices and users' demands for anywhere, anytime information access, says The Hackett Group's Dorr. Self-service is also attractive, adds Nik Rouda, senior analyst at IT analyst and business strategy firm Enterprise Strategy Group, because "the more insights you get from data, the more people will want access. You don't want IT or data scientists spending all their time just servicing requests."

Simplifying how massive amounts of data are managed and organized can also speed innovation and help organizations meet the demands of a digital age.

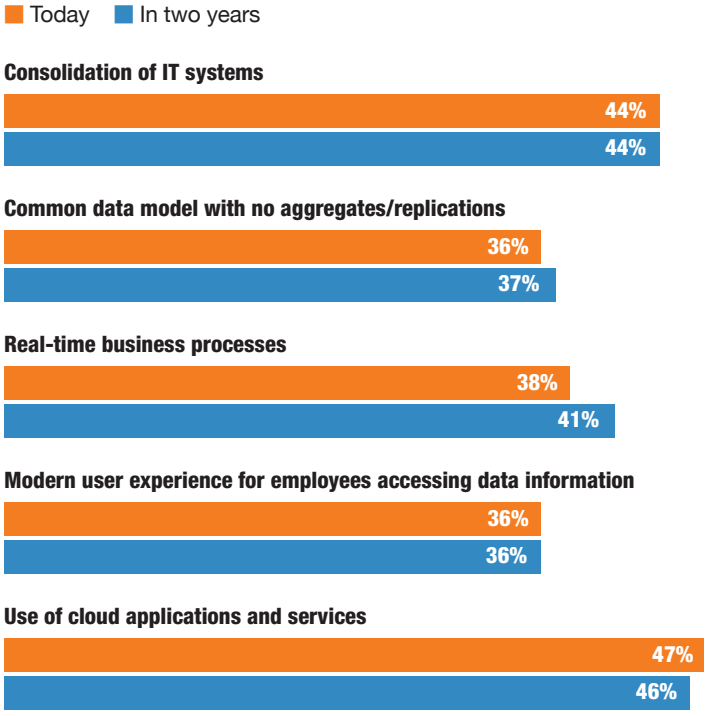
Creating master data records and datasets geared to the needs of each type of application simplifies IT by substantially reducing inaccuracies and the effort required to find and normalize data, says Corey Booth, a partner at global management consulting firm The Boston Consulting Group who leads the firm's "SIMPLIFY IT" topic area. Such master data records also simplify application development for new digital platforms by providing a common set of quality data available for any device.

Finally, the survey shows that the importance IT places on these technologies today likely will change very little in the next two years (see Figure 7, "Managing Complexity Is a Long-Term Challenge," at right). This supports the respondents' belief that the drivers of complexity will not ease any time soon—and that the technologies required to manage complexity more effectively tomorrow are available today.

FIGURE 7

Managing Complexity Is a Long-Term Challenge

Respondents were asked, today and in two years, how much will your organization be able to reduce its annual IT spending by implementing the following initiatives? (Percent of respondents indicating more than 10 percent savings.)



Base: Survey of 339 IT executives at midsize and large enterprise organizations worldwide
Source: *CIO Insight Reports,* February 2015 Managing Complexity Survey

Conclusion: Simplify and Transform

With a deep understanding of the harmful effects of excess complexity, 9 in 10 respondents to the CIO Insight survey already have initiatives in place to simplify IT. In a digital age, it's reassuring to know IT leaders both understand the harmful effects of excess complexity and are taking steps to control it.

*According to **44%** of respondents, consolidation of IT systems will help their organizations continue to reduce annual IT spending over the next two years.*

The demands for digital transformation are seen clearly in the wide range of activities respondents are working to simplify. These range from tactical initiatives—such as managing on-premises, hybrid and cloud environments—to more strategic initiatives—including the use of in-memory technology, the rollout of self-service analytics tools and the deployment of customized dashboards to speed decision-making and reduce business complexity.

"A lot of industries have extraordinary pressures these days," says Rob Asen, CIO Advisory Leader at global IT, consulting and business process services firm Cognizant. Ultimately, he says, "IT has to understand, decompose and solve the complexity issue to enable more effective business responses to these drivers."

To win in the digital transformation race, IT leaders must be ready to not just respond to business needs but anticipate them with new tools and approaches to simplification. "This is almost a matter of survival," says Asen. Without a proactive, strategic approach to IT simplification, he says, "you won't be ready when the starting gun goes off." ■

Robert L. Scheier is a veteran technology editor and writer who has held senior editing positions at PCWeek *(now* eWeek*),* VARBusiness *and* Computerworld.

This research project was funded by a grant from SAP.

SAP S/4HANA, The Digital Business Foundation

THE DIGITAL ECONOMY HAS CLEARLY ARRIVED. And while digital technologies offer businesses a new set of opportunities to create value, the digitization of the business world is pushing traditional IT to its limit.

Dr. Wieland Schreiner
Executive Vice President and Chief Product Owner, SAP S/4HANA

Over the years, growth in transactional databases and other data sources, as well as their associated systems, have complicated enterprise applications and infrastructure. As we see in this report, IT complexity delays the delivery of new technology capabilities, raises capital and operational costs, and makes it harder for IT to help the business. However, technology can be a liberating force that helps companies reinvent themselves.

SAP S/4HANA is the next-generation business suite designed to run simple in the digital economy. It was designed to break the limitations of the past by simplifying IT with massive simplification and innovation. It is built on the most advanced in-memory platform today, SAP HANA, and offers a personalized user experience with SAP Fiori. Deployable in the cloud or on-premises, SAP S/4HANA is built to drive instant value across lines of business and industries.

- **Reimagined business models.** Simplicity to connect to people, devices and business networks in real time to unlock the potential of the digital economy and deliver new experiences and value to customers. The Internet of Things and big data become accessible to any business—no more complex business collaboration and interactions.

- **Reimagined business decisions.** Simplicity to get any insight on any data from anywhere in real time. Planning, execution, prediction and simulation are now all done on the fly, at the highest level of granularity, to drive faster business impact—no more complex data consolidation through spreadsheets.

- **Reimagined business processes.** Simplicity to focus on the essential tasks in real time and gain flexibility and agility to change business processes as needed for new efficiencies—no more extensive batch processing.

- **Reimagined data model.** Simplicity to reduce data footprint and work with larger data sets in one system to save costs (hardware and operational) and time—no more indices, aggregates, data redundancies and discrepancies between systems.

- **Reimagined user experience.** Simplicity to get the job done across lines of business with a personalized, responsive and easy user experience available on any device—no more complex and different UIs.

- **Reimagined deployment.** SAP S/4HANA can be deployed on-premises, in the cloud or in a hybrid model, providing full choice of deployment and faster time to value. Furthermore, guided configuration radically simplifies the implementation so customers enjoy rapid success and ROI.

Now is the time for IT to spend less time managing complexity and more time leading the enterprise digital transformation. SAP S/4HANA represents the digital business foundation of the 21st century to help drive this transformation across industries, business functions and roles with the ultimate sophistication: simplicity.

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