Make Trustworthy Business Technology Decisions With IT Analytics

Introduction

IT service operations are suffering extreme pain from the complexity we developed in these services. This pain is felt across the entire service life cycle. The complexity obscures visibility into the management of these services, severely limiting IT's ability to develop and maintain trustworthy business capabilities. These limitations in monitoring then hamper more advanced efforts companies would like to initiate, like cloud computing, continuous delivery, and mobility. Organizations cannot realize the value from these advanced initiatives without a solid monitoring foundation.

Organizations are evolving their IT monitoring tools to gain more visibility into the new complexity. One major, and long overdue, trend is the coalescence of tools into a unified portfolio under the auspices of a consolidated organizational entity. Operational monitoring has matured to commodity, and now deeper insight is needed. The deeper insight will come via analytics technologies that are rooted in mathematical algorithms.

This IBM-commissioned profile of IT operations decision-makers at enterprise companies in the US, UK, and Germany evaluates IT operations analytics adoption, benefits, and challenges based on Forrester's own market data and a custom study of the same audience.

Analytics Is A Top Enterprise Software Priority

In general, analytics software is a top priority of businesses. This software comes in many forms targeted at a wide variety of needs. The methods and algorithms are similar and all deliver unprecedented insight.

Our Forrsights Software Survey, Q4 2012, data shows that for enterprise IT decision-makers in the US, UK, and Germany, increasing the use of business intelligence and analytics tools was the top IT software priority for 2013. It was the highest ranked critical priority, with 26% of IT decision-makers ranking it as a critical priority and another 51% ranking it as a high priority (see Figure 1).

The enthusiastic embrace of analytics for business intelligence is at the heart of the *big data* movement. Much of this refined intelligence is for consumption by business leaders, but IT leaders recognize the same potential for analytics inside IT itself. The challenge is similar — and the solutions are also.

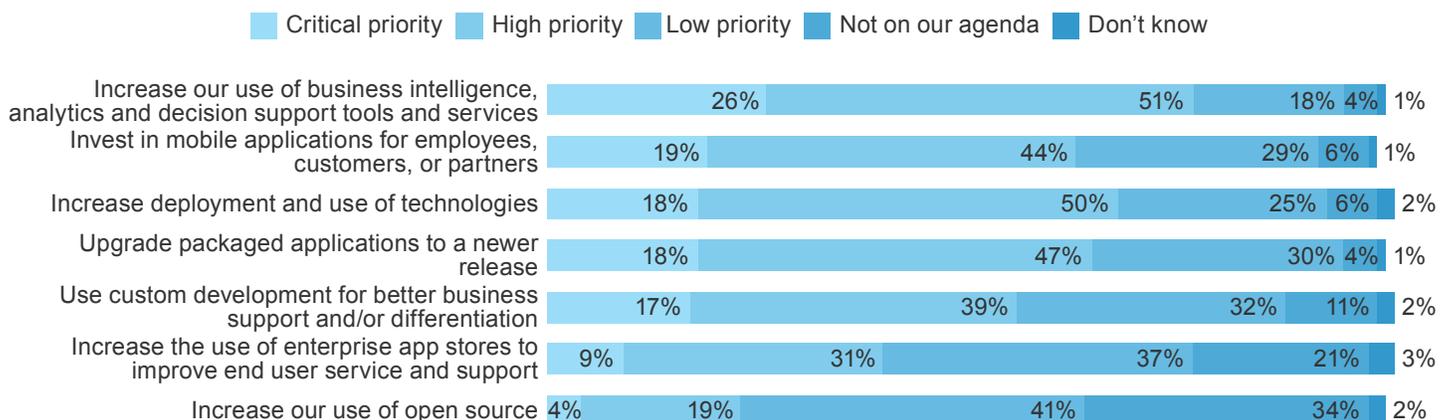## Monitoring Is Amidst A Big Shift In Focus To Apps And Analytics

Monitoring tools are among the most ubiquitous software products used by IT. The focus for about two decades has been largely aimed at observing basic availability and performance of technology infrastructure:

› According to our Forrsights Software Survey, Q4 2012, adoption plans for monitoring software show a saturation of basic infrastructure monitoring. Over 70% of respondents have implemented infrastructure monitoring for physical servers (74%) and network monitoring for corporate networks and WAN (71%) (see Figure 2). However, respondents felt that there was still value in expanding and upgrading these types of monitoring software too: 34% of respondents plan to expand or upgrade their infrastructure monitoring for physical servers (74%) and 32% are expanding their network monitoring for corporate networks and WAN; 33% of respondents are also planning to expand or upgrade their database monitoring. While pervasive for basic needs, it is clear that these tools must evolve more.

FIGURE 1

Top Software Technology Priorities: Increasing BI, Analytics Is A Top Priority

"Which of the following initiatives are likely to be your IT organization's top software technology priorities over the next 12 months?"

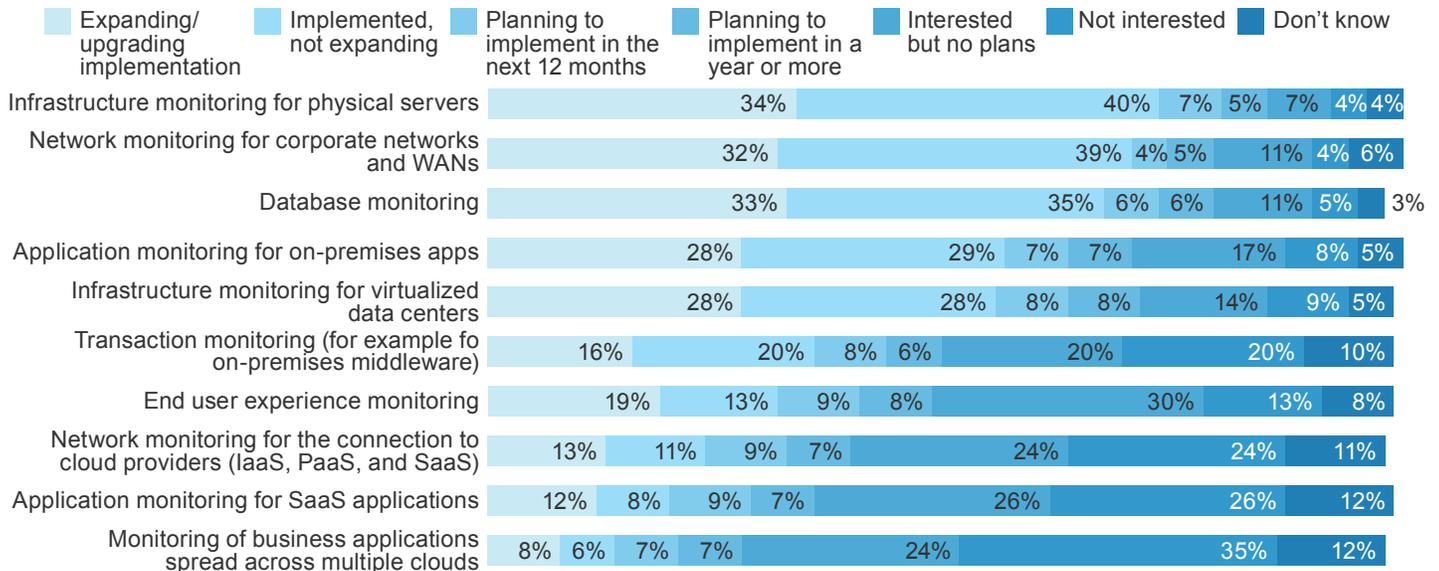|	Critical priority	High priority	Low priority	Not on our agenda	Don't know
Increase our use of business intelligence, analytics and decision support tools and services	26%	51%	18%	4%	1%
Invest in mobile applications for employees, customers, or partners	19%	44%	29%	6%	1%
Increase deployment and use of technologies	18%	50%	25%	6%	2%
Upgrade packaged applications to a newer release	18%	47%	30%	4%	1%
Use custom development for better business support and/or differentiation	17%	39%	32%	11%	2%
Increase the use of enterprise app stores to improve end user service and support	9%	31%	37%	21%	3%
Increase our use of open source	4%	19%	41%	34%	2%

Base: 960 US, UK, German enterprise IT decision-makers

Source: Forrsights Software Survey, Q4 2012, Forrester Research, Inc.

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FIGURE 2

Adoption Plans For Monitoring Software Show A Saturation Of Basic Infrastructure Monitoring

"What are your firm's plans to adopt the following types of application performance management and monitoring software?"

	Expanding/ upgrading implementation	Implemented, not expanding	Planning to implement in the next 12 months	Planning to implement in a year or more	Interested but no plans	Not interested	Don't know
Infrastructure monitoring for physical servers	34%	40%	7%	5%	7%	4%	4%
Network monitoring for corporate networks and WANs	32%	39%	4%	5%	11%	4%	6%
Database monitoring	33%	35%	6%	6%	11%	5%	3%
Application monitoring for on-premises apps	28%	29%	7%	7%	17%	8%	5%
Infrastructure monitoring for virtualized data centers	28%	28%	8%	8%	14%	9%	5%
Transaction monitoring (for example fo on-premises middleware)	16%	20%	8%	6%	20%	20%	10%
End user experience monitoring	19%	13%	9%	8%	30%	13%	8%
Network monitoring for the connection to cloud providers (IaaS, PaaS, and SaaS)	13%	11%	9%	7%	24%	24%	11%
Application monitoring for SaaS applications	12%	8%	9%	7%	26%	26%	12%
Monitoring of business applications spread across multiple clouds	8%	6%	7%	7%	24%	35%	12%

Base: 386 US, UK, German enterprise IT decision-makers

Source: Forrsights Software Survey, Q4 2012, Forrester Research, Inc.

› Basic infrastructure monitoring has become commodity, making cloud and application monitoring the next focus. Less than a quarter of respondents are able to monitor network connections to cloud providers (23%), SaaS applications (20%), and business applications spread across multiple clouds (15%). Interest in these types of monitoring, however, is high. Forty-two percent of respondents are planning to implement or are interested in adopting SaaS application monitoring, 40% are planning to implement/interested in cloud network monitoring, and 38% are planning to implement/interested in monitoring applications across multiple clouds.

Most monitoring tools in use are effective for yesteryear's IT needs. The very near future brings challenges that cannot be covered by these tools. A new approach to tools is already emerging that preserves the existing investment and augments it to conquer new levels of complexity.

Complexity Is Overwhelming Staff And Slowing Execution

IT's reputation is at risk of irreversible damage unless bold action is taken now. The culprit is complexity, much of which is self-inflicted through poor planning and technology sprawl. This complexity expands exponentially and inexorably, whereas the ability to manage this complexity grows much more slowly, creating a growing gap between the two.

New ideas and technologies are required to manage this growing gap — the bigger the gap, the more urgency to act. The gap expands rapidly, so quick action is paramount.

These assertions about complexity are validated by the research data:

› Service complexity creates problematic time sinks and puts extra stress on your IT staff. The top three challenges caused by service complexity were "overworked staff" (66%), "changes take too long" (58%), and "incident or problem resolution takes too long" (51%) (see Figure 3).

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This data is alarming for several reasons, including:

› When overworked staff are pushed even harder, they depart, burn out, or fail to deliver. Even the smartest and most ambitious people have their limits. The human toll can trigger a death spiral for the organization.

› Delays from slow change execution, incident and problem resolution, and software releases are intolerable at a time when demands for speed are increasing dramatically. Higher complexity naturally exacerbates these issues, compounding the problem.

Analytics Will Expand Based On A Need For Decision Visibility

As with big data efforts, analytics technologies help by sifting through the enormous quantities of raw data to glean actionable information for IT operations. The myriad decisions you need to make in a highly complex world demand deeper insight than you can attain unassisted.

Analytics tools are able to navigate the data and identify patterns that extract useful information from the data,

discarding the overwhelming cacophony of useless bits.

Examples of analytics are root-cause analysis of problems and incidents and predictive algorithms that understand behavioral patterns that are precursors to incidents. These respectively help accelerate incident response and trigger actions that can preemptively avoid incidents.
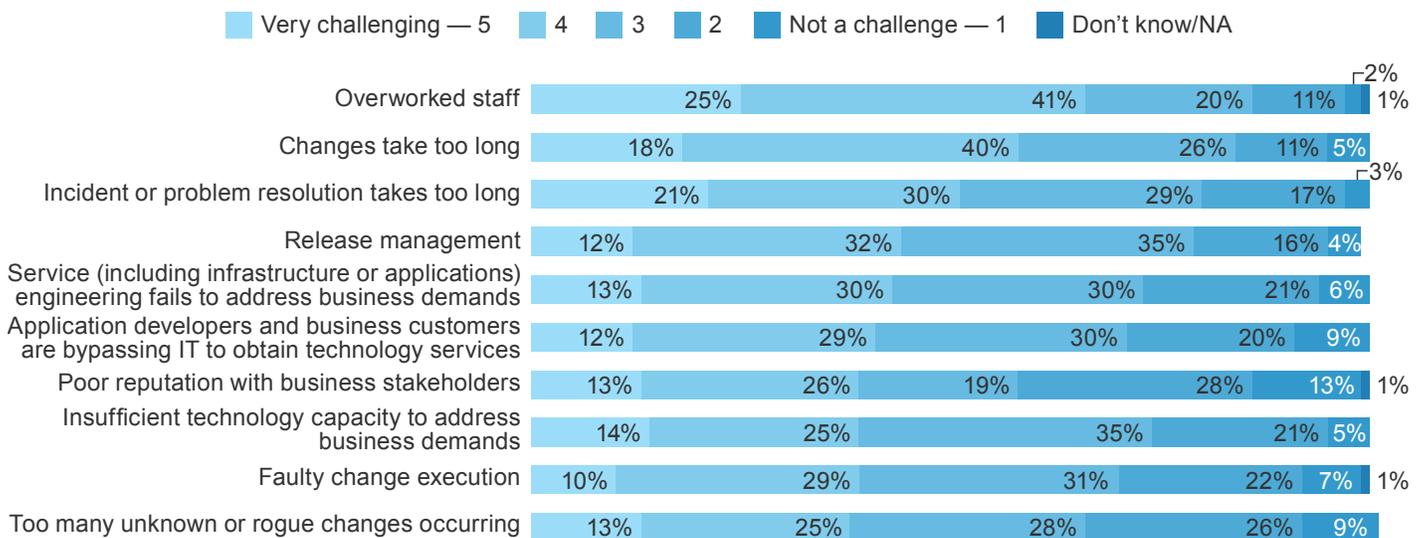
All of this processing is done to provide visibility and glean insight. It points out the fundamental challenge of complexity — complexity causes obscurity. It obscures the truth needed to make trustworthy decisions. Without visibility, there is no trust in your systems. Without trust, the future is just as obscured.

The data supports this need for improved visibility as a key driver of IT analytics technologies (see Figure 4):

› Less than half of respondents have implemented performance analytics (44%), embedded analytics (41%), and OLAP (37%). There is significant interest in all three. These are more advanced technologies. They represent a smaller proportion of currently installed tools, but IT leaders plan to expand them aggressively.

FIGURE 3
Service Complexity Causes Unneeded Time Sinks And Stress On Your IT Staff

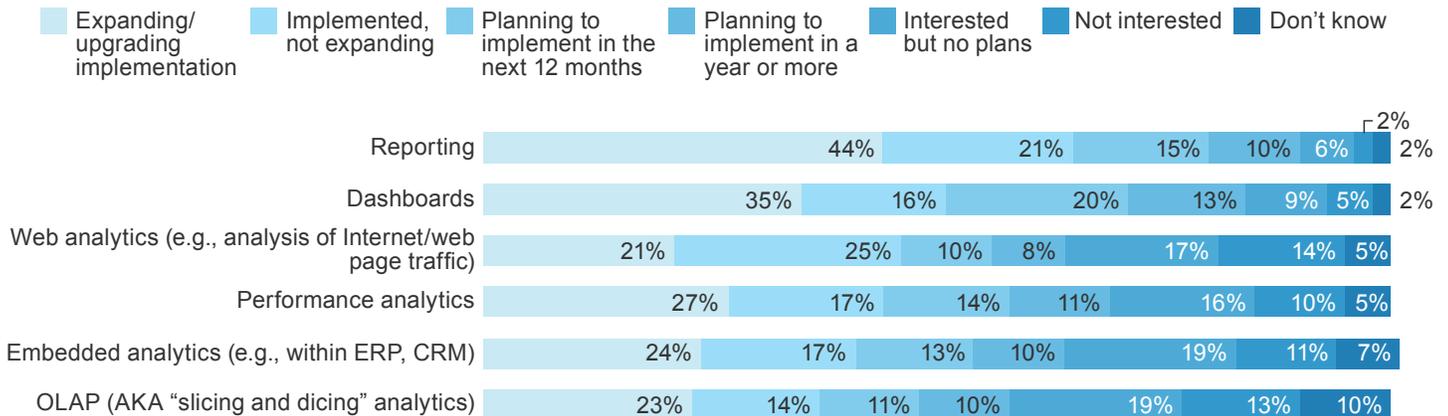**"How challenging are the following issues caused by service complexity in your organization?"**

Legend: Very challenging — 5 | 4 | 3 | 2 | Not a challenge — 1 | Don't know/NA

Issue	5	4	3	2	1	DK/NA
Overworked staff	25%	41%	20%	11%	2%	1%
Changes take too long	18%	40%	26%	11%	5%	
Incident or problem resolution takes too long	21%	30%	29%	17%	3%	
Release management	12%	32%	35%	16%	4%	
Service (including infrastructure or applications) engineering fails to address business demands	13%	30%	30%	21%	6%	
Application developers and business customers are bypassing IT to obtain technology services	12%	29%	30%	20%	9%	
Poor reputation with business stakeholders	13%	26%	19%	28%	13%	1%
Insufficient technology capacity to address business demands	14%	25%	35%	21%	5%	
Faulty change execution	10%	29%	31%	22%	7%	1%
Too many unknown or rogue changes occurring	13%	25%	28%	26%	9%	

Base: 105 US, UK, German IT decision-makers

Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, December 2013

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FIGURE 4
Analytics Adoption Plans Highlight A Need For Visibility

"What are your firm's plans to adopt the following business intelligence and analytics technologies?"

Legend: Expanding/upgrading implementation | Implemented, not expanding | Planning to implement in the next 12 months | Planning to implement in a year or more | Interested but no plans | Not interested | Don't know

	Expanding/upgrading implementation	Implemented, not expanding	Planning to implement in the next 12 months	Planning to implement in a year or more	Interested but no plans	Not interested	Don't know
Reporting	44%	21%	15%	10%	6%	2%	2%
Dashboards	35%	16%	20%	13%	9%	5%	2%
Web analytics (e.g., analysis of Internet/web page traffic)	21%	25%	10%	8%	17%	14%	5%
Performance analytics	27%	17%	14%	11%	16%	10%	5%
Embedded analytics (e.g., within ERP, CRM)	24%	17%	13%	10%	19%	11%	7%
OLAP (AKA "slicing and dicing" analytics)	23%	14%	11%	10%	19%	13%	10%

Base: 679 US, UK, German enterprise IT decision-makers
Source: Forrsights Software Survey, Q4 2012, Forrester Research, Inc.

› The top two analytics technologies are reporting and dashboards. While these may not be considered analytics capabilities, they are indeed the most common output of analytical tools. After all, people are still executing the huge majority of actions and turning to their reports as the window to the information they need to decide which actions must be taken.

Reporting and dashboards have been in use for decades. Most failed to deliver the promise of true visibility, opting for colorful aesthetics that offered little true insight. The real value came from highly trained technologists interpreting the graphs in the reporting tools, similar to a cardiologist reading the cryptic scribbles on a patient's EKG printout.

The new age of complexity demands more because no human possesses the extreme skills needed to interpret even the fanciest reports. Furthermore, the reports cannot possibly present the barrage of data in a visual form. Simply put, we can no longer interpret the data without some assistance from algorithms designed for that purpose.
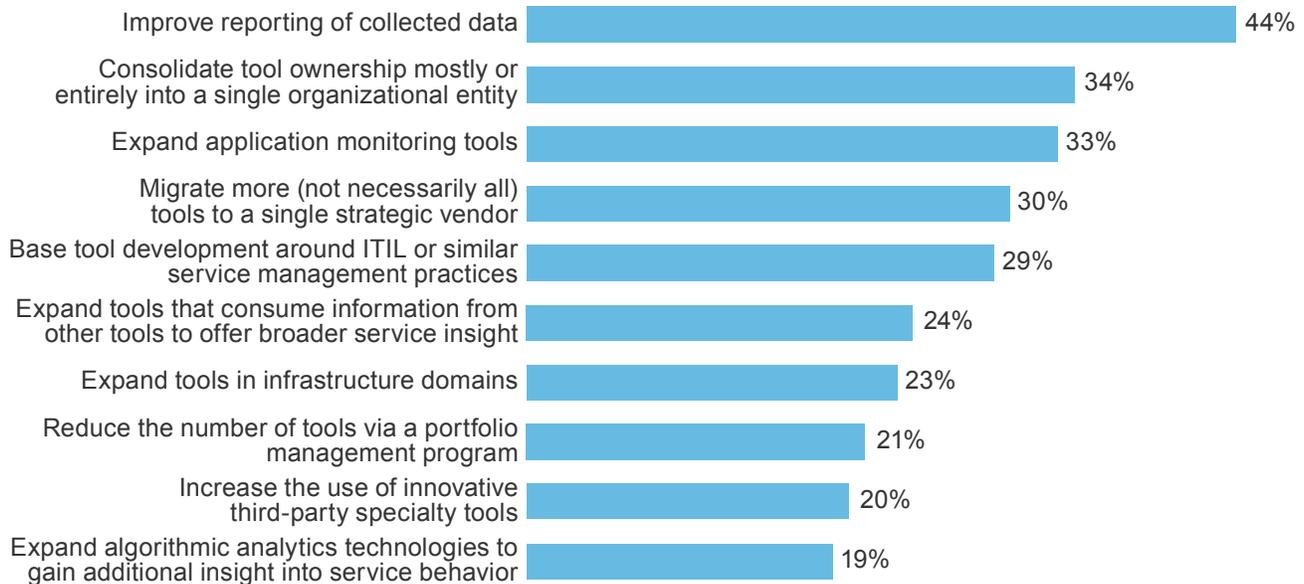
Organizational Change Must Consolidate Tool Responsibilities

Study responses to management software priorities offer a mix of optimism for innovation and potential impediments to progress (see Figure 5):

› By a notable margin, the top priority for IT operational management software is improved reporting of collected data (44%). This is consistent with the earlier data point about visibility. Improvements to reporting alone will offer little genuine help. The processing that precedes the reporting is where progress is critical. This study makes it clear that the real concern is a need to improve visibility.

› You may be surprised to see analytics ranked lowest on this list. As you examine the evolution of IT management software, this is actually less of a surprise. First, analytics tools of the past were mostly aimed at event correlation — a theory that proved too difficult and therefore largely a failure. Second, the more sophisticated analytics tools based on advanced mathematics and richer context are quite new. As such, people are less aware of them.

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FIGURE 5

Analytics Adoption Plans Highlight A Need For Visibility

"What are the top 3 priorities for your IT operational management software?"
(Select up to 3)

Priority	Percentage
Improve reporting of collected data	44%
Consolidate tool ownership mostly or entirely into a single organizational entity	34%
Expand application monitoring tools	33%
Migrate more (not necessarily all) tools to a single strategic vendor	30%
Base tool development around ITIL or similar service management practices	29%
Expand tools that consume information from other tools to offer broader service insight	24%
Expand tools in infrastructure domains	23%
Reduce the number of tools via a portfolio management program	21%
Increase the use of innovative third-party specialty tools	20%
Expand algorithmic analytics technologies to gain additional insight into service behavior	19%

Base: 105 US, UK, German IT decision-makers

Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, December 2013

The typical IT organization remains mired in practices that are now obsolete. The rapid expansion of technology over the past decades left little room to stop and plan appropriately. Infrastructure, applications, and processes proliferated with insufficient coordination. It now serves as a legacy with significant inertia, encumbering efforts to leverage better methods and technologies.

Change for these organizations will prove painful, but most understand the urgency. They are getting more aggressive at attacking the issues. They know they must quickly and boldly tear down the barriers to progress.

The research data offers signs of hope for this progress:

› The number two priority for management software is organizational, not technological. This is a great step forward. Thirty-four percent expressed plans to consolidate tool ownership into a single organization. This is a prerequisite to any improvements in tools. You need a consolidated portfolio and you can only realize this portfolio by consolidating responsibility for the management software tools.

› Expansion of application monitoring tools follows closely, at 33%. Infrastructure visibility alone is insufficient without the context of applications. You need to understand what is happening at the application layer if you want to offer trustworthy services. Analytics technologies are proving valuable at all levels of the service stack, but the most relevant technology layer to the business is the application. The application must be the beachhead of management software attention.

Analytics Will Drive Management Tool Evolution — Not Revolution

This study substantiates other empirical and anecdotal research about the future of management tools. Advanced algorithms at the heart of existing and emerging analytics technologies are exciting — the impact these innovations will have on IT management software tools is undeniable. Tools are becoming much more useful because they can offer better visibility into the exploding complexity of your technology services.

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The bottom line is one of trust. Complexity erodes trust. You need to trust your decisions so your customers can trust you! Management software exists to enhance trust — at least in theory. The installed tools portfolio needs to evolve further to realize that goal.

This research sought to quantify how analytics will impact IT management tools in the next two years (see Figure 6). The results are encouraging; however, the expected progress also shows evidence of the inertia holding back progress:

› Every single capability is expected to grow well through 2016. People have faith that analytics will bring great innovation to this field of software.

› Capacity management ranks highest, with 70% indicating optimism (analytics will likely or highly likely impact this category). On one hand, capacity management can be seen as an incremental step up from legacy capacity planning. Another perspective is more ambitious. It seeks to dynamically adapt virtual and cloud resources based on business demand and resource supply. This more evolved capability requires a lot of processing on huge data sets at high rates. Its placement at the top of the list

is encouraging. Proactive capabilities like automated technology delivery (56%) and service engineering guidance (53%) rank last. Their anticipated growth is still impressive, but their placements reflect today's priorities. All categories are improving, while their order remains largely unchanged.

Analytics will first prove its value in assisting in reactive processes (e.g., incident and problem management), where the pain is greatest. Most IT organizations cannot make a bold leap away from their legacy practices, but they obviously must move more aggressively to combat the complexity monster. They will do so in a more calculated manner, which is wise. Moving fast is good. Moving too fast is not.
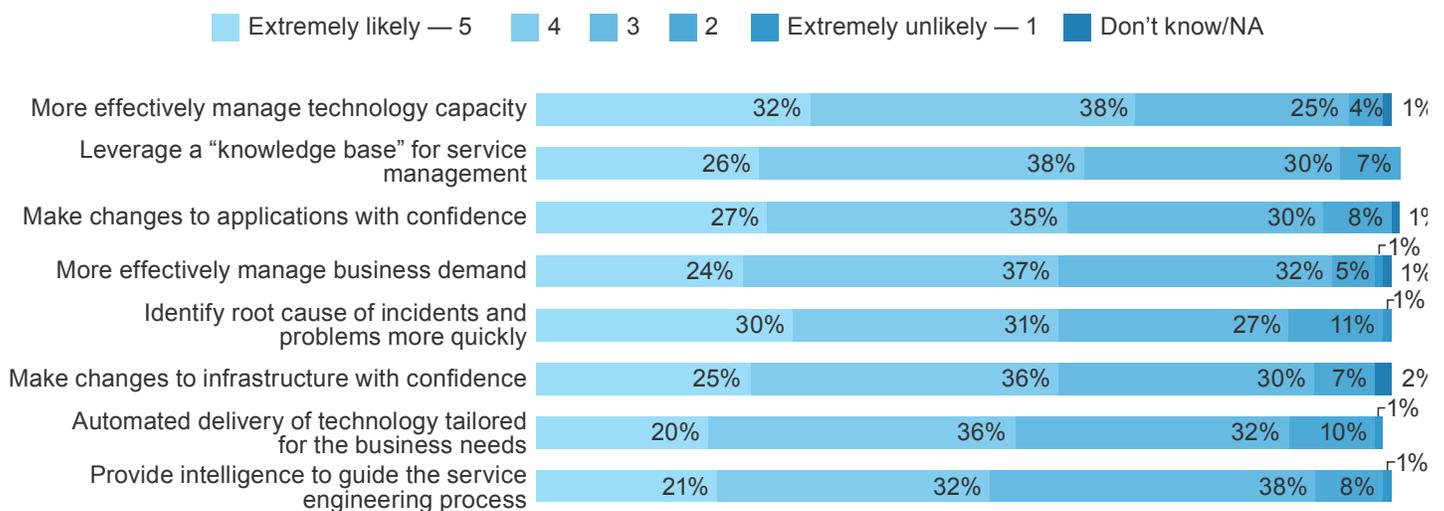
Ultimately, the greatest value will lie earlier in the service life cycle, where analytics will improve the design of applications and services and more sophisticated automation will streamline the whole life cycle. These are currently low on the list in Figure 6, yet the hard numbers still look good (e.g., 53% likely or extremely likely to provide intelligence to guide the service engineering process).

What appears to be a new IT revolution will play out in a

FIGURE 6
IT Management Software Tools Will Improve, But Expected Progress Will Follow Today's Priorities

"How likely do you think it is that IT management software tools will be able to deliver the following analytics capabilities by 2016?"

Legend: Extremely likely — 5 | 4 | 3 | 2 | Extremely unlikely — 1 | Don't know/NA

Capability	5	4	3	2	1	DK/NA
More effectively manage technology capacity	32%	38%	25%	4%	1%	
Leverage a "knowledge base" for service management	26%	38%	30%	7%		
Make changes to applications with confidence	27%	35%	30%	8%	1%	
More effectively manage business demand	24%	37%	32%	5%	1%	1%
Identify root cause of incidents and problems more quickly	30%	31%	27%	11%	1%	
Make changes to infrastructure with confidence	25%	36%	30%	7%	2%	
Automated delivery of technology tailored for the business needs	20%	36%	32%	10%	1%	
Provide intelligence to guide the service engineering process	21%	32%	38%	8%	1%	

Base: 105 US, UK, German IT decision-makers
Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, December 2013

rapid succession of evolutionary innovations. These will naturally be technical, but they inevitably require associated innovations in processes and behaviors. An industrialized model for business technology is the end result.

Analytics will be central to this IT industrial revolution. Every industrialized business is driven by extreme automation of well-engineered processes, all guided by rich feedback of information. The information is produced in real time by

analytics technologies that are encoded with the intelligence to assist in our decisions.

Soon, they will make the decisions for us and then trigger the resulting actions without human intervention. This is not some futuristic science fiction scenario — it is already happening. Your business will insist on this industrialized model as well, because the survival of the entire enterprise is at stake.

Methodology

This Technology Adoption Profile was commissioned by IBM. To create this profile, Forrester leveraged its Forrsights Software Survey, Q4 2012. Forrester Consulting supplemented this data with custom survey questions asked of105 US, UK, and German IT decision-makers at organizations over 500 employees. Survey respondents included IT decision-makers directly responsible for at least one of the following software tools: monitoring tools, analytics tools, application lifecycle management tools. The auxiliary custom survey was conducted in December 2013. For more information on Forrester's data panel and Tech Industry Consulting services, visit www.forrester.com.

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