

2013

SURVEY FINDINGS



## EXECUTIVE SUMMARY

Big Data...The Next Frontier

*TEKsystems' IT Industry Survey series explores the hottest trends affecting the IT workforce. With over 80,000 IT professionals deployed at 6,000 client sites annually, our network of connections offer real-world insights into what works, what doesn't and what's possible in IT today.*



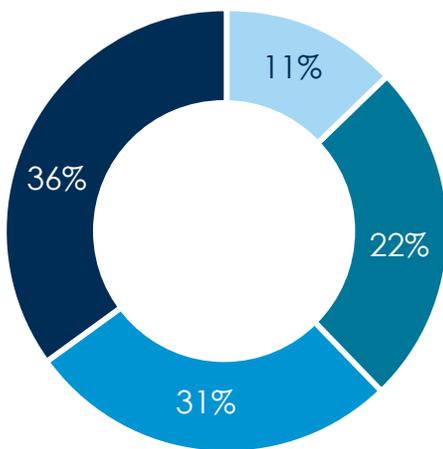
*Our people make IT possible.*

*Big Data has the power to fundamentally change how organizations analyze, synthesize and leverage information to guide business decisions. New information is being created at an astonishing rate, but the velocity, volume and variety of the data create obstacles for organizations to overcome. This research explores the Big Data landscape, identifies critical challenges and offers recommendations that organizations can apply to address their Big Data dilemmas.*

## Survey methodology and respondent profile

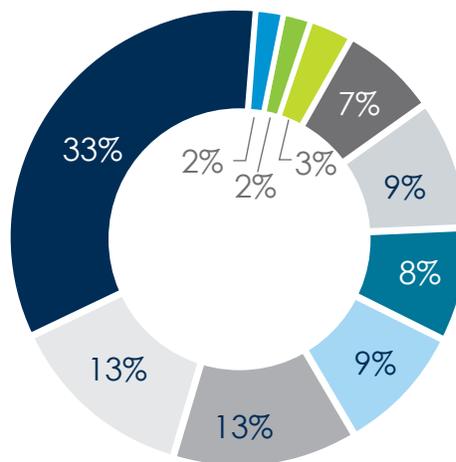
In the second quarter of 2013, TEKsystems conducted an online survey of more than 1,500 IT leaders and 2,000 IT professionals in the U.S. and Canada. The IT leaders included CIOs, IT vice presidents, IT directors and IT hiring managers. The IT decision makers spanned a wide cross-section of industries, including technology, financial services, healthcare, manufacturing, government and professional services, among others. Respondents also included a wide range of company sizes, from less than \$5 million to more than \$1 billion in revenue. The IT professionals' respondent population included developers, network administrators, architects and help desk skill sets, among others.

IT Leader – Annual Revenue



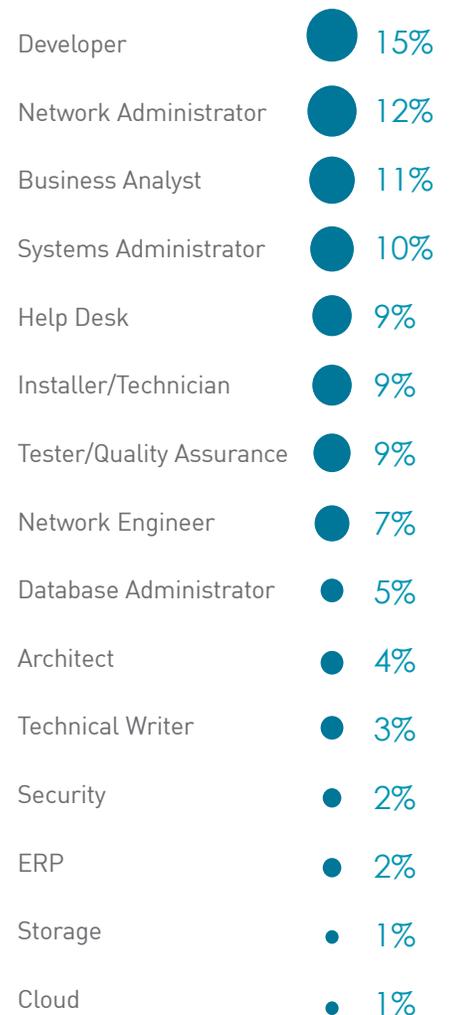
- Less than \$5 million
- \$5 million to \$50 million
- \$50 million to \$1 billion
- More than \$1 billion

IT Leader – Industry



- IT
- Manufacturing
- Healthcare
- Financial Services
- Telecommunications
- Professional Services
- Government and Education
- Transportation and Construction
- Energy
- Retail

IT Professional – Skill Sets



## Key survey findings

### **Big Data is evolving from a hot future trend to normal business process.**

Seventy-seven percent of IT leaders and 63 percent of IT professionals report their organization seeks to take advantage of the potential of Big Data. Efforts range from exploratory and development stages to a regular application of Big Data concepts throughout the organization.

### **Big Data is worth it!**

An overwhelming majority of IT leaders (90 percent) and IT professionals (84 percent) believe investments of time, money and resources into Big Data initiatives are worthwhile.

### **Big Data's impact runs far and wide.**

Thirty-eight percent of IT leaders and 42 percent of IT professionals report Big Data has a significant impact on their organization, meaning that all strategic and tactical business decisions are driven by information produced through analytics.

### **Big Data capitalization boils down to people.**

IT leaders and IT professionals report a lack of skilled resources to implement, maintain or interpret analytics is among the top challenges that inhibit their organization's ability to effectively leverage data and analytics.

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## Recommendations

**Consider all components of Big Data, not just size alone.** Other factors such as velocity and variety affect how IT infrastructure and software is built and acquired to support Big Data initiatives. IT will need to work closely with the business to fully understand their goals and objectives so that they can appropriately capture the necessary technical requirements.

**Accept the fact that Big Data is not a fleeting trend.** Business and IT leaders must strategically plan for how to unlock the full potential Big Data represents. The level of competitive advantage obtained from Big Data initiatives could drastically change the business landscape and position organizations for sustained growth.

**Develop and implement a single Big Data strategy across the entire organization.** Identify a team or specific individual, such as a Chief Data Officer (CDO), who will identify gaps and inhibitors of Big Data initiatives. The team or individual can then make recommendations on how the organization should address the challenges preventing Big Data implementation.

**Partner with vendors that can source Big Data talent quickly and innovatively.** The skills organizations need for Big Data initiatives do not necessarily come from the usual IT talent pools. Organizations need innovative thinkers with backgrounds in mathematics and statistics to help them make sense of the data and then make recommendations.

## Big Data landscape – hot trend or new normal?

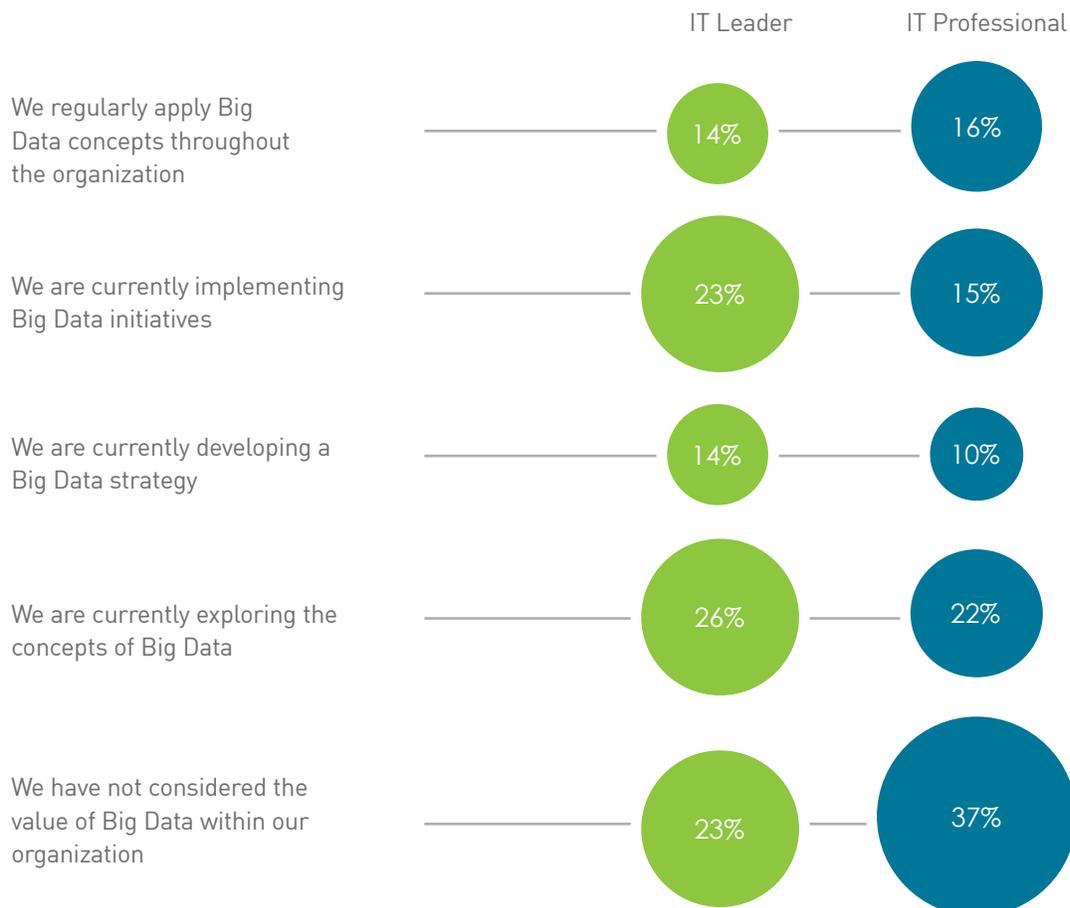
### The new normal.

The concept of analyzing data and information to make strategic business decisions is nothing new. Advances in software and technology make data analysis easier and cheaper than ever before. When you add in the potential to analyze massive data sets to produce predictive analytics, you have something revolutionary that can provide your organization with a substantial competitive advantage.

Our research reveals organizations are involved in a broad range of Big Data initiatives. Fourteen percent of IT leaders and 16 percent of IT professionals report their organizations regularly apply Big Data concepts throughout the

organization; at the other end of the spectrum, 23 percent of IT leaders and 37 percent of IT professionals report their organization has not considered the value of Big Data. Everyone else falls somewhere in the middle, ranging from implementing Big Data initiatives in certain departments, developing a strategy or exploring the concepts of Big Data. Regardless of where organizations find themselves along the path to Big Data utilization, about 40 percent (38 percent of IT leaders and 42 percent of IT professionals) report Big Data is having a significant impact on their organization.

### Which of the following best describe your organization's efforts as they relate to Big Data initiatives?

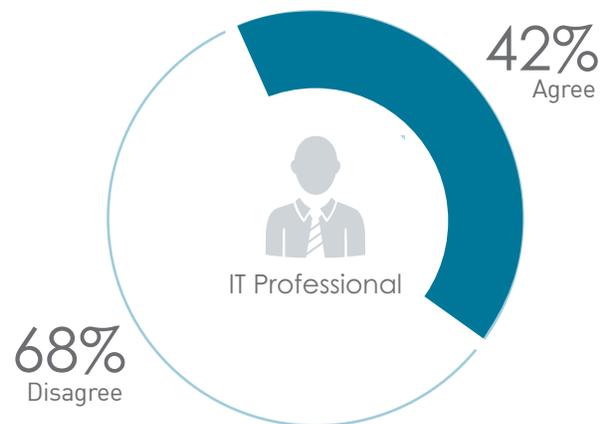
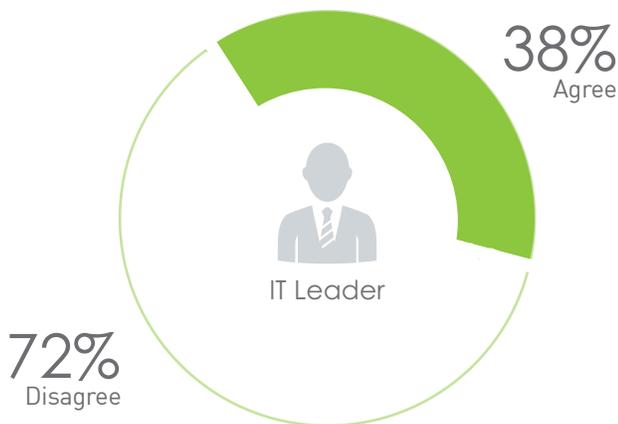


**The new normal. (continued)**

Even in the elementary stages of exploring Big Data concepts, organizations will feel a significant impact from Big Data implementations. Big Data initiatives are extremely complex, and organizations must answer a myriad of questions in the early stages that require input from IT and the business. Organizations will often experience heartburn, even at these preliminary stages, because the business may not be able to articulate their requirements without fully understanding the data capabilities, and IT may be unable

to provide clarity without fully understanding the needs of the business. Collaboration will be key as organizations work through the beginning of their Big Data implementation. Once requirements have been identified, organizations must evaluate new software and technologies that make Big Data a reality. They will also need to review policies and processes regarding data governance and identify data owners that will drive accountability when it comes to maintaining data quality.

Big Data has a significant impact. All strategic business decisions are driven by information produced through analytics.



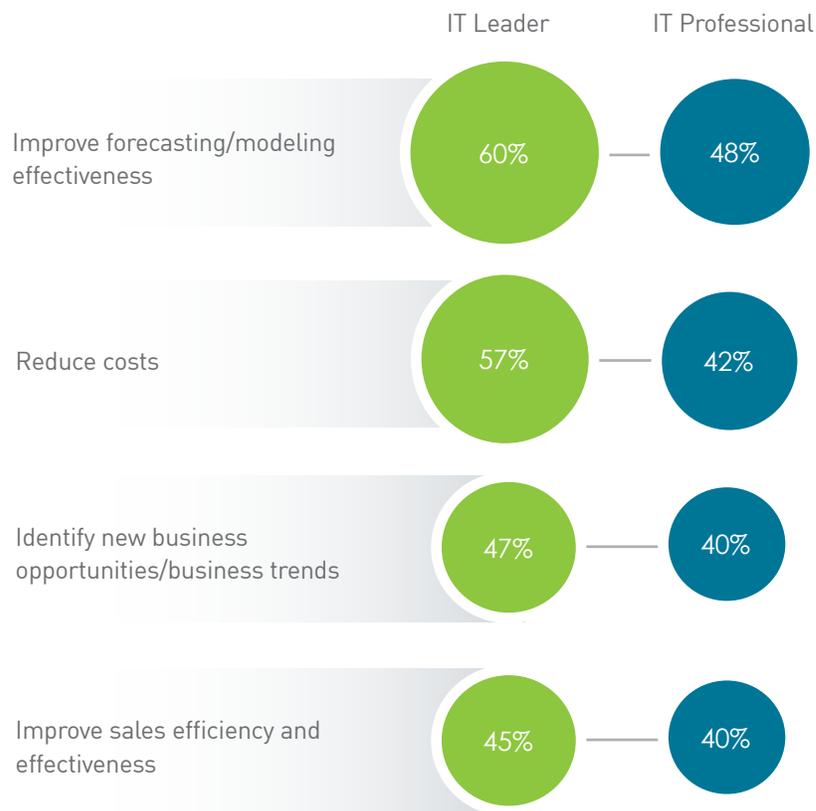
**We're at the party, now what?**

Big Data has the potential to synthesize vast amounts of data and produce solutions to problems an organization didn't know existed. Not surprisingly, IT leaders and IT professionals alike both indicate a need for Big Data to assist in improving the effectiveness of forecasting and modeling, reducing costs and identifying new business opportunities/trends. If Big Data is to live up to the hype, then these types of objectives must eventually be fully realized.

A common misconception about Big Data is that dissecting huge chunks of data and information offers a silver bullet solution: unlocking growth, profits and untold riches.

Unfortunately, organizations who come to the Big Data party with such expectations will find themselves disappointed. Before organizations can enjoy the fruits of their Big Data projects, they first need to fully identify the business goals and objectives of their initiatives. Without this guidance, the organization's analytics reports will lack direction. Also, the reports themselves will not necessarily provide a black and white roadmap to success. Organizations need talented individuals with the skills to interpret the information and draw conclusions to inform decisions.

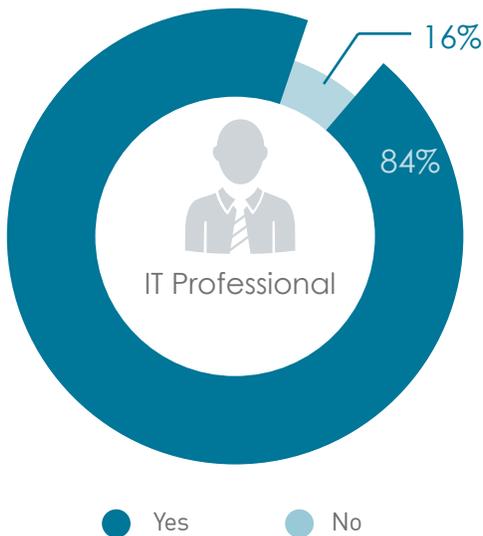
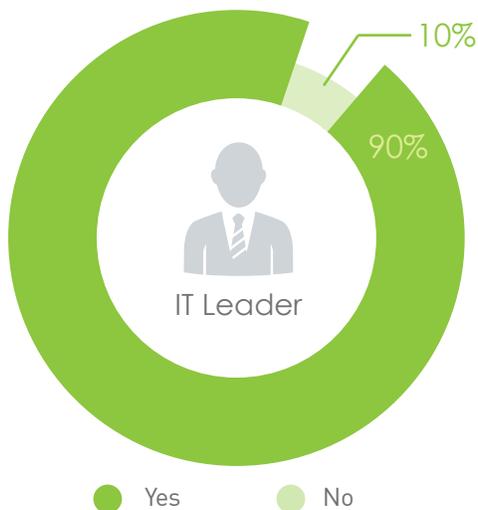
**What business objectives are you hoping an ability to fully leverage Big Data will achieve?**



### Will data geeks rule the business universe?

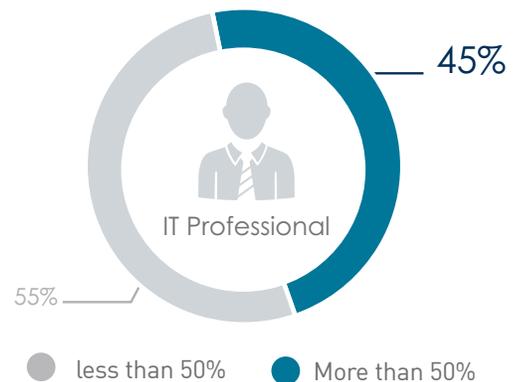
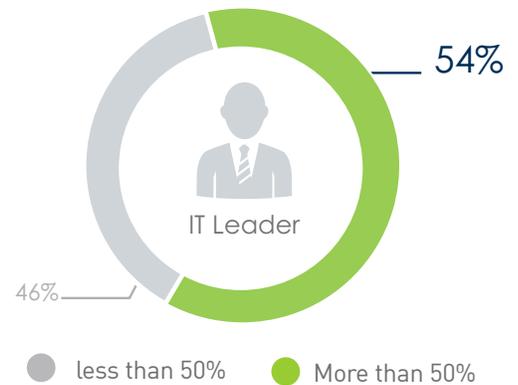
If Big Data has anything to say about it, the answer is yes. Ninety percent of IT leaders and 84 percent of IT professionals believe investments of time, money and resources into Big Data initiatives are worthwhile. We have the buy-in for Big Data—but are IT leaders and professionals able to take advantage of the Big Data promise?

Do you believe the investment of time, money and resources into Big Data initiatives, as they are defined today, will be worthwhile?



Intel's introduction of the 8080 microprocessor revolutionized data processing. The microprocessor inspired more software firms to write programs and provide solutions that would eventually evolve into today's systems and platforms. Thanks to these types of ongoing advancements in software and technology, data analysis and compilation is easier and cheaper than ever before. The dizzying volumes and varieties of information available at the push of a button are quite enticing for organizations looking for a competitive advantage. Our research reveals that 59 percent of IT leaders and 52 percent of IT professionals report precise, accurate data and analytics are always or frequently available, highlighting the ease of access to data and information. As a result, the survey shows that more than half of strategic business decisions are based on data and analytics.

What percentage of the strategic business decisions you make are based on data and analytics (as opposed to intuition, experience or gut feelings)?

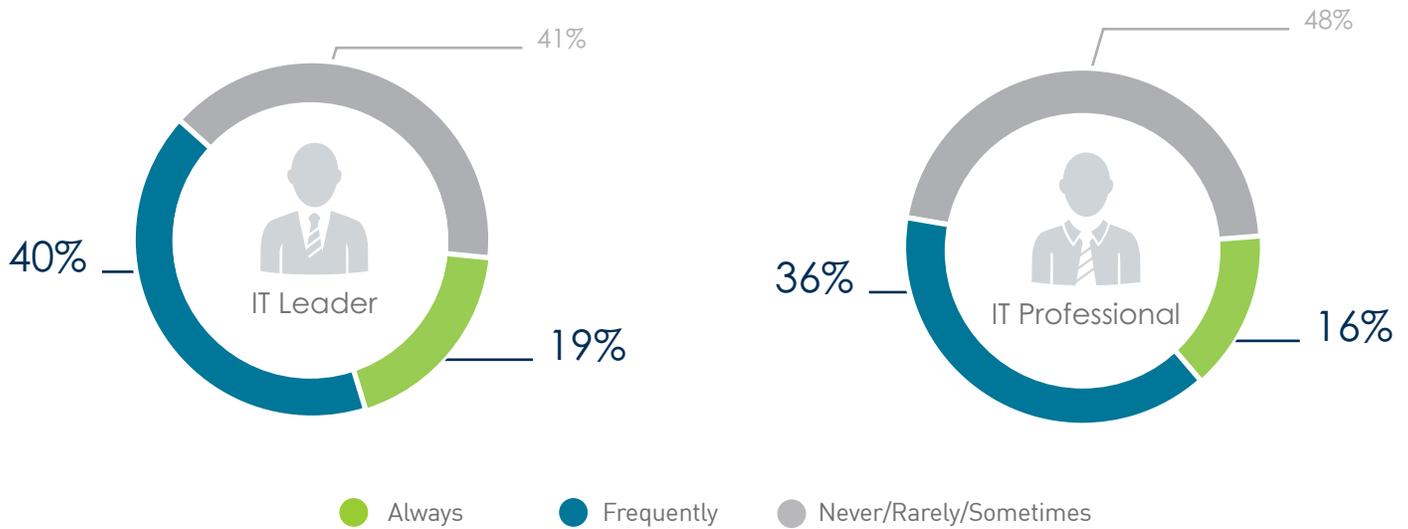


**Will data geeks rule the business universe? (continued)**

However, there is still room for improvement. Only 19 percent of IT leaders and 16 percent of IT professionals report the necessary data and analytics is always available; the rest cite the information as being frequently available. Improving the quality and accessibility of information must be a focus of any Big Data initiative. The ultimate goal

of Big Data is to have accurate, predictive data available anytime and anywhere a concept worthy of reality in many circumstances. For example, with proper data, retailers can maneuver sales staff during peak periods to better serve customers, and healthcare providers can promote better and faster diagnoses to improve patient care or even save lives.

**How often are precise and accurate data and analytics needed to make business decisions available?**



### Mastering Volume, Velocity and Variety.

The terms volume, velocity and variety are often used to segment different components of Big Data. Yet, many organizations only associate volume with Big Data, conjuring up images of spreadsheets and huge quantities of numbers, rows and fields. Managing and processing massive volumes of information is one of the primary appeals of Big Data analytics and typically the first obstacle organizations will navigate when implementing Big Data initiatives.

In order for organizations to maximize Big Data initiatives, the velocity and variety components must also be addressed. Velocity doesn't just refer to the speed at which new data is incorporated into the system. It's also about decreasing the time spent from data input to analysis, to synthesis through to final decision.

The organizations that can quickly transform raw data into digestible recommendations will have a distinct advantage over the competition.

Variety describes data that is unstructured and includes data sets in several formats. Relational databases are not able to effectively interpret this data without losing some of the information. However, Big Data allows for the interpretation of diverse data sources with little to no structure into something meaningful without losing any parts of the information. Most often when organizations attempt to clean up unstructured data, portions of data are lost or thrown away, potentially destroying critical components due to an inability to effectively manage the variety of information. With Big Data, nothing is thrown away.

In which of the following areas of Big Data does your organization experience the most difficulty?



46%  
Volume



41%  
Velocity



27%  
Variety

### Addressing the obstacles.

As organizations explore the value of Big Data and implement new initiatives, they will encounter obstacles along the way. IT leaders and IT professionals agree that a lack of skills and gaps in infrastructure and software hinder their organizations' ability to fully leverage Big Data analytics. Other challenges include the lack of business process alignment and reporting/recording of information (meta-data).

IT infrastructure, software or tools capable of turning data into actionable insights are a necessary investment for an organization serious about leveraging the value of Big Data. Fortunately, these solutions are readily available. Advancements in hardware and software, as well as the growth of cloud computing, allow organizations to evaluate and implement the systems and software best suited to their needs.

### Addressing the obstacles. (continued)

How often are precise and accurate data and analytics needed to make business decisions available?

#### IT Leader

- 1 Business processes are not aligned to capitalize on the promise of Big Data
- 2 Lack of skilled resources to implement, maintain or interpret analytics
- 3 Lack of IT infrastructure, software or tools capable of turning data into actionable insights

#### IT Professional

- 1 Lack of IT infrastructure, software or tools capable of turning data into actionable insights
- 2 Lack of reporting/recording of information (meta-data)
- 3 Lack of skilled resources to implement, maintain or interpret analytics.

But before deciding on the right systems and tools, organizations should first evaluate the quality of their data. Even careful planning cannot overcome faulty data, and the adage 'garbage in – garbage out' illustrates the consequence of poor quality inputs. Secondly, organizations need to ensure implementations of new hardware or software programs are able to talk to each other. Survey respondents indicate the most widespread data challenge is the storage of data across different systems, leading to gaps in knowing what data is available and where it resides and then aligning all of the information from disparate systems in a meaningful way.

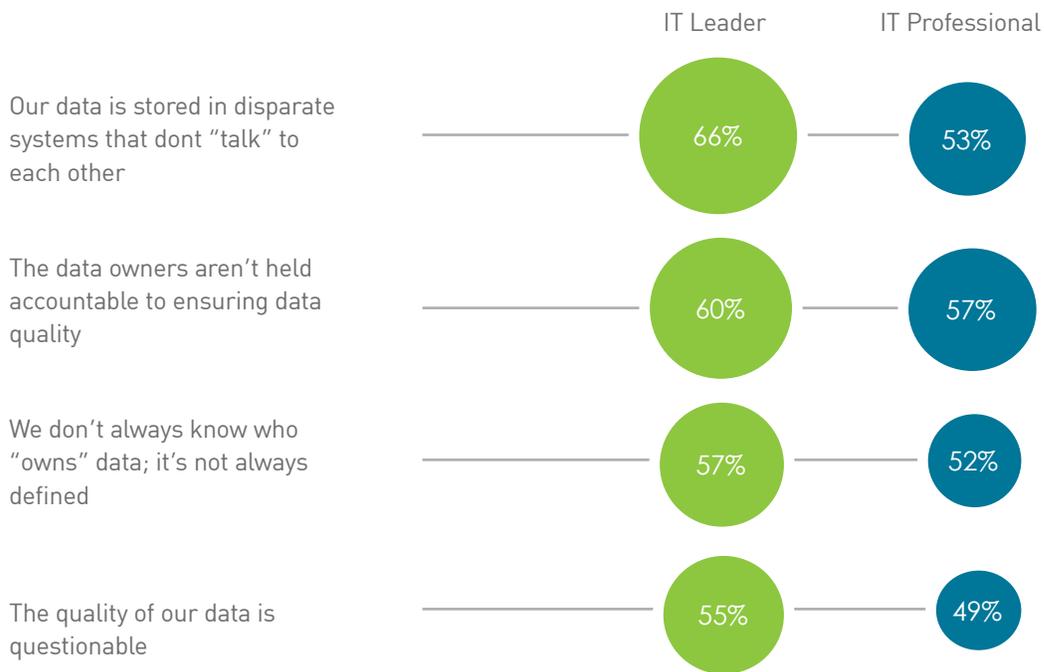
Interestingly, while IT leaders and IT professionals cite varying top challenges to Big Data initiatives, there are commonalities. IT leaders claim it's a big picture issue and misaligned business processes are a challenge to fully capitalizing on Big Data. IT professionals, those on the line levels of the organization, view reporting and recording of information or meta-data as the biggest hurdle. Meta-data Big Data drives the accuracy of calculations and reports, and it enforces the consistent definition of terms used to analyze the data. Consistent, well communicated data policies can help ensure alignment of business processes as well as clarify expectations regarding reporting and recording of information.

**Addressing the obstacles. (continued)**

Ultimately, the underlying issues to Big Data problems often involve accountability. Organizations can struggle with the question of data ownership, and if the owner is in question, accountability for quality becomes extremely difficult. More than half of IT leaders and IT professionals report their organization doesn't always know who owns the data, and 60 percent of IT leaders and 57 percent of

IT professionals say data owners aren't held accountable to ensuring data quality. These two statistics point toward data quality issues, validated by about half of survey respondents stating the quality of their data is questionable. A sound, well communicated data policy that articulates data ownership expectations is essential to Big Data success.

**Which of the following apply to your organizations' data?**



Defining ownership in a policy is just the first step. There has to be intrinsic motivation and/or strong organizational accountability to perform quality data management practices or follow-through is not going to happen. Often, a structure with multiple data owners for various data types, embedded in various business units, works best. These individuals then have some level of accountability into a central governing body to ensure the data can map and relate to other data within the organization. This approach ensures sound data quality and streamlines the ability to find and report on data within disparate systems.

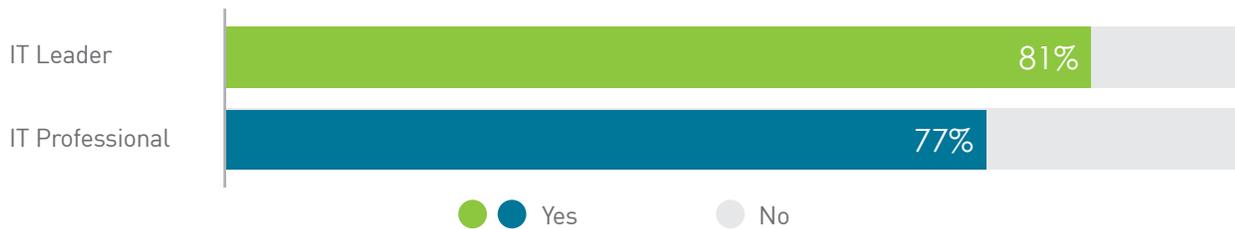
The need for qualified talent may be the most difficult challenge to overcome, inhibiting an organization's ability to effectively leverage data and analytics. IT leaders and IT professionals report organizations lack the skilled resources needed to implement, maintain and interpret Big Data analytics. Attracting, retaining and developing IT talent is a major difficulty for any organization. The challenge is compounded for Big Data initiatives, as the talent needed must possess a set of skills that may be above and beyond those of the typical IT worker. Finding these skills requires organizations to dip into unfamiliar talent pools and create new employee value propositions.

**Addressing the obstacles. (continued)**

Unfortunately, 81 percent of IT leaders and 77 percent of IT professionals believe there is a significant shortage of workers with the skill required to plan, execute and take advantage of the potential inherent to Big Data projects. Attracting IT workers with strong aptitudes for technology and business has become almost status quo when searching for IT talent today; Big Data demands business acumen but also places several additional requirements on the candidate search. Organizations need IT professionals

who can clean, sort and synthesize huge data sets, with strong backgrounds in business analysis, namely mathematics and statistics, to make sense of the data and create the predictive models to inform decision making. Collaboration skills are also key, as Big Data initiatives demand organizations build effective cross-functional teams spanning business unit managers, IT administrators, programmers, statisticians, graphic designers and other experts in the company's products or services.

Do you believe there is a significant shortage of workers with the skill required to plan, execute and take advantage of the potential of Big Data projects?



The competition for talent is poised to intensify. Many organizations report their Big Data initiatives are already underway. Survey respondents reveal 51 percent of organizations regularly apply Big Data concepts or are developing/implementing Big Data initiatives. And another 26 percent report they are exploring the concepts of Big Data. As more organizations enter the Big Data arena,

the competition for workers with Big Data skills will only increase. More than half of organizations are already feeling the squeeze as 56 percent of IT leaders and 57 percent of IT professionals report their organization finds it difficult to retain workers with analytics skills due to mobility issues, such as job hopping or the high demand for their services.

Do you find it difficult to retain workers with analytics skills due to mobility issues (such as job hopping or the high demand for their services)?



### Metricsians and Librarians and Curators.....oh my!

Big Data initiatives require new skills – so new in fact, that roles are being created everyday. IT leaders and IT professionals report the following titles are now associated with Big Data initiatives: data scientists, Chief Data Officers (CDO), metricsians, data librarians, data curators, data stewards and forensic librarians.

IT departments may not be familiar with how to source and screen some of these essential Big Data skills – or

how to manage them. It's critical that IT work with these new roles to exploit the value of the data within their systems, but does it make more sense for these roles to sit within business units so they can better represent their needs and provide relevant intelligence? Consulting with service providers experienced in strategic workforce planning will be essential as organizations grapple with these questions.

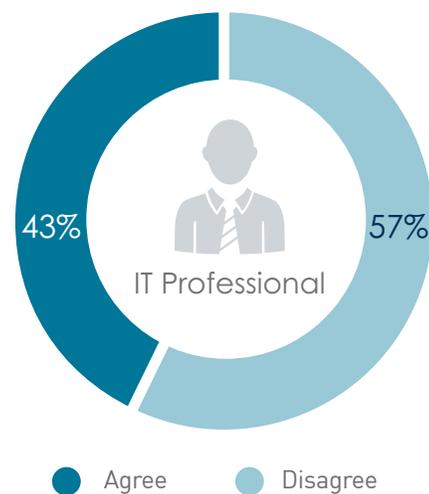
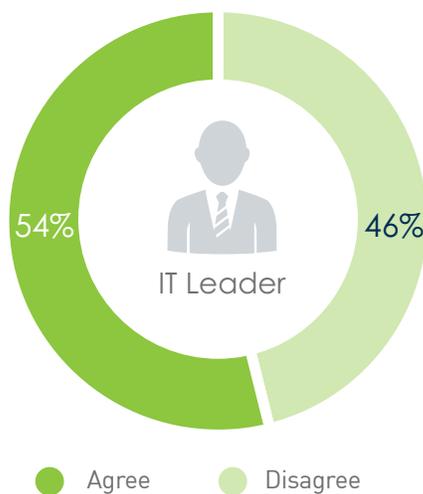
### Navigating the talent shortage.

How are organizations filling the gaps created by Big Data initiatives? Most IT leaders (54 percent) and IT professionals (43 percent) report the organization will attempt to train and develop internal staff. Due to the projected shortage and competition for workers with Big Data skill sets, this route makes sense - but is it feasible? Given the demand for their talents, and the compensation associated with Big Data skills, most organizations will experience difficulty in finding the number of specialized professionals needed to fully leverage Big Data in-house. Even if potential workers are identified, getting them up to speed and fully trained on all of the contextual intelligence a Big Data initiative must account for is an intensive and time consuming endeavor.

IT leaders and IT professionals also note that organizations are hiring permanent workers, consultants for knowledge transfer and contingent labor to augment the skill gaps. Indeed, a blended sourcing strategy is likely the best option. Big Data initiatives are long-term investments that will eventually become ingrained in normal business operations. Organizations will need a mix of well-trained staff, permanent and contingent labor to address various elements as the organization plans, builds and runs its Big Data projects.

### How does your organization address the shortage of analytics expertise?

We train and develop internal staff



## Conclusion

*The ability to leverage huge volumes of data, moving at incredible velocity in perpetually evolving varieties into a consumable format, can yield competitive advantage. With this insight, leaders can make timely decisions, essentially providing insights and solutions to issues previously unknown as problems.*

*If organizations properly plan for success, get ahead of data quality and ownership challenges, and proactively address their talent sourcing and management strategies, Big Data nirvana is truly attainable.*

## About TEKsystems

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People are at the heart of every successful business initiative. At TEKsystems, we understand people. Every year we deploy over 80,000 IT professionals at 6,000 client sites across North America, Europe and Asia. Our deep insights into IT human capital management enable us to help our clients achieve their business goals—while optimizing their IT workforce strategies. We provide IT staffing solutions, IT talent management expertise and IT services to help our clients plan, build and run their critical business initiatives. Through our range of quality-focused delivery models, we meet our clients where they are, and take them where they want to go, the way they want to get there.

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