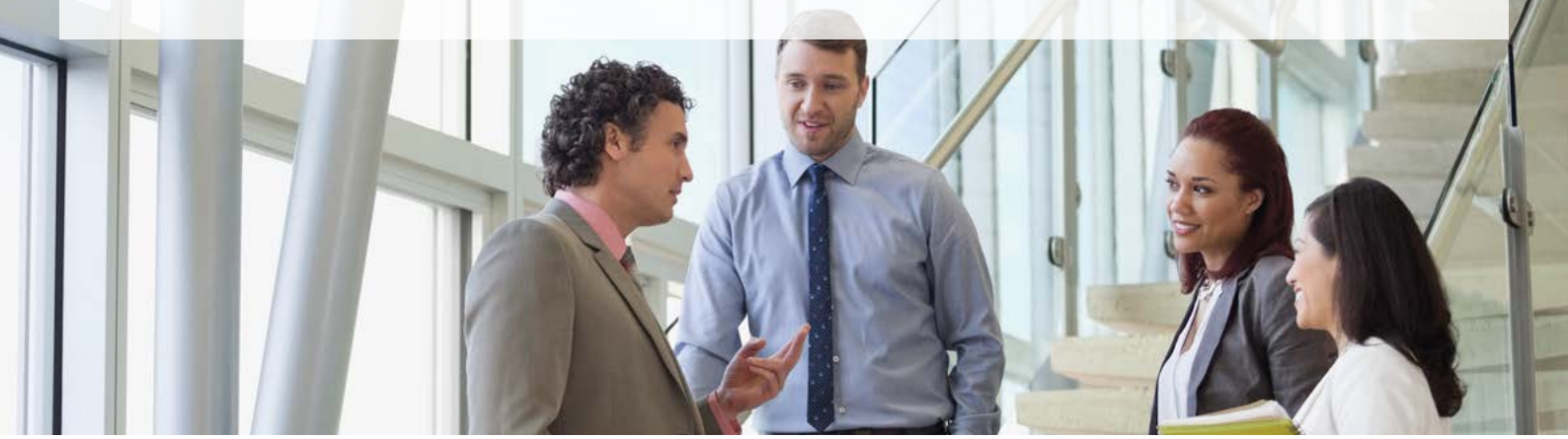
Big Data

Getting Value from Big Data: Focus on the Opportunities, Not the Obstacles



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Embark on Your Big Data Journey with Confidence

Organizations are going beyond business intelligence to create new capabilities using Big Data. Studies show that enterprises with investments in Big Data are generating substantial returns and outpacing rivals by a significant amount. However, as with new capabilities of this sort, only a small fraction of enterprises are achieving such results. The vast majority are failing to exploit Big Data for competitive advantage.

GETTING STARTED, KEEPING MOVING

CEOs and executives everywhere are eager to start mining the Big Data opportunity; but beyond the high-level expectations set by thought leaders and consultants, very little practical guidance exists. Many questions remain unanswered, such as:

- How am I supposed to build this business program?
- What are the practical steps my organization needs to take?
- Is my CIO's team capable of delivering on this, or do I need to task the CFO, CMO, or chief strategy officer?
- How do I ensure we don't boil the ocean on this and turn it into another Y2K?
- Technology architecture and platforms are important, but what other capabilities do we need?
- How should I think about the ROI of this initiative? When should I expect to start seeing returns on this, and where will they come from?
- What do we want to build as a core capability, and what do we want to outsource to technology vendors? What is the plan to build the core capability?
- How do I build a culture of data-driven decision making?

Understandably, many organizations are struggling to figure out where to begin in defining their Big Data strategies, let alone how to mature their Big Data capabilities.

Bringing together stakeholders from within your organization to develop a Big Data strategy can help you begin to address these questions and establish priorities. From an IT perspective, there are challenges around infrastructure and architecture. These can be addressed with a trusted technology partner, such as SAP, that has provenance in transactional, analytic, mobile, machine-to-machine, and "Internet of Things" innovation. From a business perspective, a successful Big Data initiative requires a combination of vision, talent, and tools to extract value from vast reserves of data that can be applied to customers, suppliers, processes, the bottom line, and business growth.

The key is to focus on the opportunities and rewards of Big Data initiatives rather than getting stuck in endless discussions about technology. The technologies supporting this space are evolving so fast that investing in capabilities is more important than investing in individual pieces of hardware and software.

Big Data – Hype Versus Reality

As with many disruptive capabilities, our first challenge is a semantic one: to understand what is really meant by Big Data.

The phrase was coined a few years ago. As the cost of storage fell, the boundaries of computing advanced, and yet organizations struggled to make sense of data at scale. But size, speed, and variety aren't the be all and end all. Less than five years ago, approaching Big Data as a data management challenge made sense; today that perspective is passé. Now the term is a catchall that describes exploiting internal and external information flows to radically improve organizational performance. So it's not important how many petabytes or zettabytes of data your business has accumulated. The issue is how to get big value from Big Data by exploiting its combination of speed, complexity, and diversity.

Big Data is neither a problem nor a solution in itself, or even a single technology. It's an opportunity to develop a foundation for decision management systems, incorporate new business signals into human and machine workflows, and drive growth and profit through innovation.

It can enable new applications and extend the value of older ones, such as in the domains of marketing, fraud prevention, risk analysis, and asset monitoring. That might involve bringing more granularity to a straightforward customer segmentation or something more complicated, such as updating a maintenance technician's service routes in real time or even sophisticated preventive maintenance using repair robots mobilized by wear, tear, and performance triggers to minimize production downtime. The table "Examples of Big Data Opportunities" lists additional examples.

One of the most popular aspects of Big Data today is the realm of predictive analytics. This embraces a wide variety of techniques such as statistics, data mining, modeling, and machine learning. These tools can be used to analyze historical and current data and make reliable projections about future or otherwise unknown events. This means exploiting patterns within the data to identify risks and opportunities, such as cross-sell and up-sell targets, propensity to churn, economic forecasts, credit scoring, and insurance underwriting.

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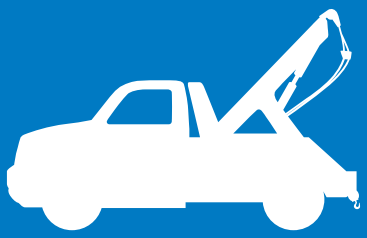
Examples of Big Data Opportunities

Big Data Opportunity	Examples of Impact
Make information transparent and usable at a higher frequency	• Enhance the customer's experience as it's happening • Shift from adversarial to collaborative relationships throughout the supply chain
Identify hidden relationships, patterns, and trends within data, such as individual or group behaviors	• Anticipate and avert business problems or risks before they materialize • Spot and stop fraudulent activity in the act • Identify compliance and security breaches and halt them immediately
Drive development of next-generation products and services using the "Internet of Things" or personal location data	• Maintain assets proactively before component failures occur • Base contextual promotions on time of day and or vicinity
Transform inventory allocation from a batch to an interactive process	• Accurately predict consumer demand against stock levels and adjust promotions in-the-moment
Provide more detailed performance insight and expose variability	• Monitor and maintain the availability and capacity of interconnected infrastructures such as utility grids, computer networks, or manufacturing facilities
Conduct controlled experiments, what-if analyses, simulations, and modeling	• Understand the impact of decisions before taking action



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Of course, these outcomes don't happen spontaneously – there's a legacy to contend with.

Traditional IT systems, processes, and skill sets simply weren't designed to cope with the challenges and opportunities provided by Big Data. Analysis and reporting have been based typically on a foundation of historical data – akin to a driver looking in the rearview mirror to anticipate the road ahead. Insight is often trapped within a bedrock of data that either has been discarded or can't be processed due to technology limitations.

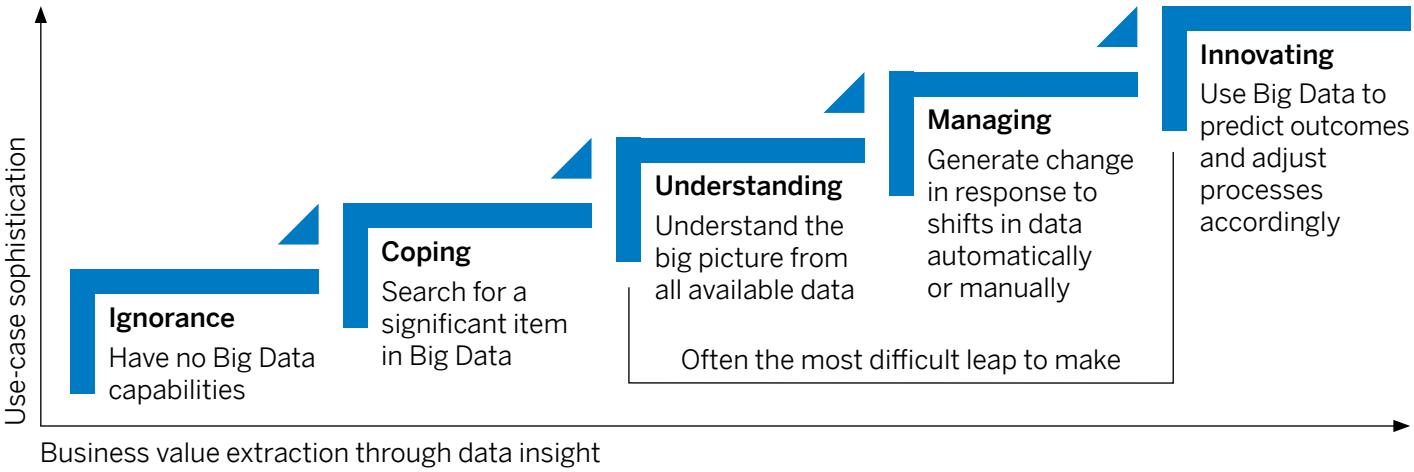
As a result, IT departments are having to rethink the way they deal with data and reconsider how to collaborate with increasingly tech-savvy business functions, such as marketing, that are looking to undertake autonomous Big Data initiatives in pursuit of specific departmental goals.

However, Big Data projects have a high failure rate, and because the resource investment and expectations are high, when they fail, they fail big. Successful initiatives, on the other hand, have two common characteristics. First, acceptance that this is not a technology initiative at all – it is a business initiative with technology underpinnings. Second, willingness to pilot, test, and scale.

HOW FAR IS YOUR ORGANIZATION ALONG ON ITS BIG DATA JOURNEY?

A solid answer to this question requires the use of a maturity model – one that goes well beyond the traditional BI maturity models that most organizations are familiar with. To assess where you are on your Big Data journey, SAP has defined five levels of Big Data maturity, from "Ignorance" to "Innovation" (see Figure 1). You might be great at reporting and business intelligence, but still fall short on Big Data maturity.

Figure 1: Five Levels of Big Data Maturity



Staying locked into a legacy infrastructure without evaluating its effectiveness to deliver on your use cases could well jeopardize your Big Data efforts.

Of course, not everyone needs to be at "Innovating." Advancing just one stage from where you are today can yield substantial incremental benefits. What's more, moving up the chain requires buy-in from a lot of people inside and outside IT, an investment of time and resources, and a willingness to learn from failure.

The bar for each level of the maturity model is significantly higher here than the business intelligence (BI) capabilities of most companies. For example, a company is at level 2 ("Coping") if it is able to search successfully for a significant item across multiple sources inside the organization and return an intelligent answer in a Google-like way. That goes well beyond a text search. Where your enterprise should be on this evolutionary path will depend on the business processes, or "use cases," you want to implement.

HOW TO MOVE FROM ONE LEVEL OF MATURITY TO THE NEXT

Moving from one level to the next depends on achieving best practices in five key areas: people and skills, use cases, governance, standards and processes, and information and application architecture.

Words of wisdom: Don't focus too narrowly on infrastructure issues, like investing in a Hadoop cluster, until you know where you want to get to in all five areas. Conversely, staying locked into legacy infrastructure without evaluating its effectiveness to deliver on your use cases could well jeopardize your Big Data efforts.

To derive value from Big Data, you must answer questions, such as the following, for each one of the five areas:

- What Big Data use cases should we be going after? Are they just "me too" use cases, or are they ambitious enough to give a breakout performance in my industry? How long will they provide a sustained competitive advantage before others catch up?
- Is our existing technology adequate to deliver on the use cases? What are the gaps, and what's the best way to fill them?
- Are our business processes where they need to be to aptly leverage Big Data?
- How many "data scientists" do we really need? What other skills do we need, and can we develop them internally? How do we evolve to a data-driven culture of decision making?
- What do we need to do to ensure that this capability is governed and managed in the correct way? Technology is changing so fast in this space, what is the right way to stay ahead?

Figure 2 provides the benchmarks for each area by maturity level. We have highlighted the "Coping" and "Managing" levels.

Figure 2: Big Data Maturity Model (Excerpt of Two Levels)

	Ignorance I Coping I Understanding I Managing I Innovating	
Use cases	**No Big Data business programs, seen only as technology programs** • Only technology evaluations • No business exploitation of machine data, social media data, logs, and e-mail in analysis • Only historical reporting; information reliant on lagging indicators • Executive key performance indicators only	**Understanding and managing Big Data insights** • Multiple Big Data use cases against a corporate information architecture • Insights into big-picture understanding and comprehensive process analysis • Automated responses • Machine-to-machine data capture and analysis • Operational efficiency and effectiveness • Routine use of Big Data
Information and application architecture	**No Big Data in any process** • Significant variances between business units • No access to Big Data • No choice for users; users get what IT gives • No enterprise standardization • No documentation • No information architecture	**Big Data projects across business** • Global Big Data architecture • Integrated information and self-service Big Data • Central tech support • Up-to-date documentation and use-case index • System consolidation • Capability and architecture delivery by business unit
Standards and processes	**Do not exist or are not uniform** • No service-level agreements (SLAs) • Information processes for design, development, and management • High use of generic business intelligence (BI) objects or heavily customized development • No reuse of data or information • Nonstandardized master data • Undefined or conflicting data ownership	**Exist and are not uniform** • BI process and standards documented but not always followed • Formal SLAs for data policies • Moderate to heavy reuse of information • Standardized master data, to a large extent • Senior champion for each major data area to drive data standardization and quality • Self-service tools • Awareness of metadata and change processes • Active process participation by key users • Predictive capabilities limited to expert department
People, skills, and culture	**No specific skills, executive audience, or personal service** • No skill to understand data and metadata • No targets around information contribution or usage • No training available to understand data • No awareness of information sources or Big Data strategy	**BI roles, stakeholders, and regular information skills** • Understanding of the importance of information • Contribution to information improvement • Formal training programs • Some self-service and statistics skills • Active contribution to governance and quality programs • Multiple roles and distributed skills to facilitate change
Governance	**No Big Data governance** • Technology-centric organization and implementations • No or little business participation in projects • No data quality or controls • No BI competency center • Limited data access to a few key individuals • No explicit security or sharing controls • Big Data technology understanding based on hearsay and individuals' hobbies	**Competency center and Big Data governance** • Business ownership of information assets • Centralized Big Data architecture • Shared governance of information assets • Some unstructured data capabilities • Big Data–specific visualization capabilities • Rules- and automation-centric Big Data • Uniform security and authorizations across the organization • Active information lifecycle management processes

How does your organization fare? To get full details on this maturity model, determine exactly where you rank, and obtain a customized assessment, visit us at www.sap.com/bigdata.

Help Is at Hand

NEXT STEPS, TOOLS, AND SUPPORT TO MOVE YOU FORWARD

Big Data can help you achieve big impact. You're eager to gain the advantage on your competitors – but being a pioneer can be a lonely and precarious existence. Fortunately, experienced, objective, and expert help is at hand.

Getting Started with Big Data

Take advantage of a half-day session that will help launch you on your Big Data journey. The format and content are designed to help you pinpoint quickly where you are on your Big Data journey and where you should go next for the most value. Learn from experts and exchange ideas with other organizations on similar journeys.

Participate in a Big Data Workshop

Maybe you are past the overview stage and want to jump straight into it. In that case, SAP offers a full-day workshop at your location to identify and get started on your most important use cases, dive deep into your specific architecture considerations, and codevelop the road map needed to make your use cases come to life.

Develop Your Big Data Strategy with Our Experts

Strategic advisory services offered by SAP can guide you in building a long-term strategy. That strategy may include simplifying your IT landscape to transact, analyze, and act instantly or updating governance to include Big Data implications. SAP experts work with you to identify the new skills your organization will require to get the most value out of your initiative.

TAKE THE NEXT STEP

Talk to the Big Data experts from SAP to take the Big Data Maturity Model assessment and then leverage the different ways you can engage with SAP to develop your business strategy, solution architecture, and road map for getting breakthrough business value using Big Data and advanced analytics. We'll help you align with internal executives and leaders, bring best practices and use cases from your industry, understand where the gaps truly are, and gather your leaders around the change management.

FIND OUT MORE

Contact the Big Data experts at SAP at **www.sap.com/bigdata**.

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