100 Information and Analytics Predictions Through 2020

VIEW SUMMARY

Information and analytics are a priority across many IT and business disciplines. As a result, analysts throughout Gartner have issued related predictions for 2015 and beyond. We highlight those that are most relevant to CIOs and analytics leaders and that merit in-depth investigation.

The ability to transform the business for competing or delivering service in an emerging digital economy will be contingent on the organization's ability to curate, manage and leverage:

- Big data
- The Internet of Things (IoT) content
- Social media
- Local and federal government data
- Data from partners, suppliers and customers
- Any other exogenous data sources that are materializing

Information and analytics are central to the success of any business function or industry, as this helps provide the much sought-after competitive differentiation, operational effectiveness and any early-mover advantage within the digital business age.

Generally, an information and analytics strategy is a broad topic, but defining how organizations use, manage and leverage information affects all aspects of IT, business management and transformation. In addition, Gartner analysts observe how viewing information as a valuable company asset and turning more data into achievable actionable insights can allow almost all organizations to uncover new business insights, enhance their operational efficiency, derive competitive advantage and improve overall decision making. For these reasons, business intelligence (BI), analytics and information management are consistently ranked among the most critical and top CIO investment priorities through 2015 (see "CIO Survey Uncovers the Need to Focus on Digital Workplaces and Engaged Workforces").

As evidenced by the pervasiveness within our vast array of recently published Predicts 2015 research, it is evident that information and analytics are increasingly critical elements across most industries, business functions and IT disciplines. Most significantly, information and analytics are key to a successful digital business. This exhaustive collection of over 100 information and analytics-related strategic planning assumptions (SPAs), or predictions, through 2020 heralds several transformations and challenges ahead that CIOs and IT leaders should embrace and include in their planning to formulate successful strategies.

Core Information Predictions

Information strategies and the use of information are increasingly driven by — and currently driving — digital business and the Nexus of Forces. An information strategy is a complex subject, yet defining how organizations use and manage information affects all aspects of IT and business management — along with its transformation. In "Predicts 2015: Information Strategy — New Roles, New Responsibilities," Gartner offers the following strategic planning assumptions that CIOs, chief digital officers (CDOs) and information leaders need to include in their planning.

Information Strategy

- By 2017, 80% of chief data officers will strive to maximize the value of information while they continue working to minimize its risks.
- Through 2017, 50% of organizations will not have an information strategy that addresses the emerging role of information citizen.
- Through 2018, more than 75% of chief data officers will not report to the CIO or other IT leader.
- Through 2017 and beyond, an unprecedented growth in multistructured data will require vastly improved tools, skills and principles for effective analyses.

Information Innovation

In "Predicts 2015: The Intersection of Information Innovation and Business Digitalization," we advise business and IT leaders on how organizations will be deploying information assets in transformative ways, and what these information sources will consist of.

- By 2017, over 30% of enterprise access to broadly based big data will be via intermediary data broker services, serving context to business decisions.
- By 2020, information will be used to reinvent, digitalize or eliminate 80% of business processes and products from a decade earlier.
- By 2020, 30% of data will be prescribed provenance, business, security and value metadata at the time of its creation.
- By 2017, 15% of global organizations will use linked data methods to create open data applications to generate alternative revenue streams.
- By 2017, over 20% of customer-facing analytic deployments will provide product-tracking information leveraging the IoT.

Big Data

In "Predicts 2015: Big Data Challenges Move From Technology to the Organization," we focus on the cultural and organizational elements

impacting big data deployments. With the focus shifting away from technology to cover governance of information assets, security and infrastructure integration, enterprises will face tough decisions on deployments, investment and transparency in relation to big data analytics. The following strategic planning assumptions will help IT and business leaders moving beyond the big data pilot phase to prepare and equip themselves for successfully mitigating the upcoming big data challenges.

- Through 2017, 60% of big data projects will fail to go beyond piloting and experimentation and will be abandoned.
- Through 2017, fewer than half of lagging organizations will have made cultural or business model adjustments sufficient to benefit from big data.
- Through 2018, 90% of deployed data lakes will be useless as they are overwhelmed with information assets captured for uncertain use cases.
- By 2018, 50% of business ethics violations will occur through improper use of big data analytics.

Information Governance and Master Data Management

To uncover the full potential of key enterprise information programs, organizations need to develop a digital culture that addresses governance, advocates ethics and risks in a meticulous and coordinated fashion. In "Predicts 2015: Information Governance and MDM Will Be Foundational to Improving Digital Culture," we offer targeted advice for CIOs and chief data officers that will enable them to develop a strategic response to these pressing challenges.

- By 2017, 50% of information governance initiatives will have incorporated the concept of information advocacy, to ensure they are value-driven.
- By 2018, 40% of CRM and ERP customers will demand solutions that embed master data management (MDM) capabilities.
- By 2018, regulatory disclosures that are related to a failure in the organizational information risk control environment will see a rise of 50%.
- By 2018, 90% of information governance programs based on "citizen stewards" will fail to meet their declared objectives.
- By 2017, 25% of large enterprises will have a digital ethics code of conduct, to avoid the abuse of information and ensure consumer value.

Information Infrastructure

Information infrastructure technologies are being transformed due to hardware changes. In "Predicts 2015: Information Infrastructure Technology Rewrites, Refreshes Rules," we offer key predictions and recommendations to CIOs and IT architects on how to adapt their information infrastructure to exploit the new economic opportunities arising from rapid changes in technologies. This includes in-memory database management systems (IMDBMSs), in-memory computing (IMC), data lakes, shifts in storage economics and demand from the Internet of Things — to name a few.

- By 2017, IMDBMS as a differentiated DBMS market category will disappear. In-memory will be a "permission to play" capability for DBMS.
- By 2018, HDDs will still account for 75% to 85% of all petabytes shipped to the server and external controller-based (ECB) storage markets, but solid-state solutions will expand, to account for 15% to 25% of all mission-critical, near-line and archived data.
- Through 2020, there will be no dominant IoT ecosystem platform; IT leaders will still need to compose solutions from multiple providers.
- By 2018, 30% of streaming, near-real-time data integration and data management use cases will be supported by stacks that include Apache Spark.

Enterprise Content

Content that goes beyond text-based information is key to digital business. IT leaders responsible for content management (CM) must treat it as strategic, recognizing that it is the medium in which enterprises communicate strategy, tactics and offerings — both inside and outside of organizational walls. In "Predicts 2015: Content Gets Smarter and More Strategic in the Digital Business Era," we assist IT leaders responsible for CM, helping them recognize the value of content by providing them with key insights, recommendations and predictions surrounding CM.

- By year-end (YE) 2017, more than 50% of workers will search corporate information using software that has been given a name and a personality.
- By 2018, 20% of business content will be created by nonhumans.
- By 2018, more than 20% of enterprise content management (ECM) solution sales will address multiorganization "ecosystem" content.
- By year-end 2017, more than 50% of the world's business websites will be based on open-source Web content management (WCM) software.
- By 2018, 50% of enterprises will be managing their content using a hybrid content architecture.

Core Analytics Predictions

Advanced Analytics

"Predicts 2015: A Step Change in the Industrialization of Advanced Analytics" offers expectations focused on analytics marketplaces, citizen data scientists and the convergence of data discovery and predictive analytics. It offers valuable advice to business intelligence and analytics leaders on how to leverage the step change in the industrialization of the advanced analytics ecosystem as it presents transformational

business opportunities.

- By 2016, at least 25% of the major advanced analytics vendors will offer functionality via analytics marketplaces.
- Through 2017, the number of citizen data scientists will grow five times faster than the number of highly skilled data scientists.
- By 2018, data discovery and predictive analytics offerings will converge, with most of the leading vendors of each capability offering both.

Business Intelligence

The balance of power is shifting from IT to the business with the rise of self-service data discovery and access to multistructured data. Data preparation tools and smart capabilities will further democratize access to analytics and emphasize the need for governance. In "Predicts 2015: Power Shift in Business Intelligence and Analytics Will Fuel Disruption," we offer critical advice and predictions to BI and analytics leaders on how to prepare their organization for this shift in balance; as well as being prepared to tackle and overcome organizational, behavioral and process-related changes required to address governance issues inherent with self-service BI.

- By 2017, most business users and analysts in organizations will have access to self-service tools to prepare data for analysis.
- By 2018, data discovery and data management evolution will drive most organizations to augment centralized analytic architectures with decentralized approaches.
- By 2017, most business intelligence (BI) and analytics platforms will natively support multistructured data and analysis.
- By 2017, most data discovery tools will have incorporated smart data discovery capabilities to expand the reach of interactive analysis.
- Through 2016, less than 10% of self-service BI initiatives will be governed sufficiently to prevent inconsistencies that adversely affect the business.

Digital Business/Commerce Predictions

Digital Business

Digital business and digitalization are acting as catalysts for driving improved customer outcomes. IT leaders should leverage our predictions in "Top 10 Strategic Predictions for 2015 and Beyond: Digital Business Is Driving 'Big Change'" as planning assumptions on which to base their digital business strategy.

- By 2018, digital business will require 50% fewer business process workers and 500% more key digital business jobs, compared with traditional models.
- By 2017, a significant and disruptive digital business will be launched that was conceived by a computer algorithm.
- By 2018, the total cost of ownership for business operations will be reduced by 30% through smart machines and industrialized services.
- By 2020, retail businesses that use targeted messaging in combination with internal positioning systems will see a 5% increase in sales.
- By YE16, more than $2 billion in online shopping will be performed exclusively by mobile digital assistants.
- By 2017, nearly 20% of durable goods "e-tailers" will use 3D printing to create personalized product offerings.

Digital Commerce

Digital commerce is on the rise, with vendors striving to keep up with demand by utilizing more apps and analytics, investing in commerce innovation, and expanding digital commerce to business buyers. "Predicts 2015: Adaptable, Innovative Digital Commerce Approaches Drive Opportunities" helps application leaders devise a holistic digital commerce strategy.

- During the next three years, 60% of digital commerce analytics investments will be spent on customer journey analytics.
- By 2018, more than 25% of B2B sellers will offer data-driven, usage-based subscription models.

Information Infrastructure and Technology Predictions

Smart Machines

Smart machines are having a disruptive impact on workplaces and customer relationships. They are expected to rapidly increase productivity and affect employment patterns. In "Predicts 2015: Smart Machines to Complicate Labor Markets and Ethics," we offer targeted advice to CIOs and IT strategists in technology companies on how to engage with — and devise — a strategy for smart machines as they continue to disrupt labor markets and ethics.

- By 2018, smart machines will distribute 10% of human work, acting as intermediaries between the organization, employees and external workers.
- By 2018, 30% of our interactions with technology will be through "conversations" with smart machines.
- By 2018, at least one smart machine maker will have settled a liability suit because its product made a negligent or criminal decision.
- By 2018, at least one developed nation will have started creating a legal framework governing the rights and responsibilities of smart machines.
- By 2020, four out of 10 high performers will distribute their work across a team of "virtual doppelgangers" to boost their personal

productivity.

Operational Technology and the Internet of Things

Both operational technology (OT) and the Internet of Things (IoT) are among the fastest growing producers and consumers of information and analytics. In addition, the convergence of IT and OT is key to realizing digital business opportunities for asset-intensive organizations. To aid organizations in recognizing its impact on their businesses and dealing with the risks, we present our predictions to advise CIOs in affected organizations.

"Predicts 2015: IT and OT Convergence Impacts in Many Areas"

- By 2018, 50% of industrial companies will have put OT data in the cloud, creating an industry for data brokering and analysis, but raising issues of security and ownership.

"Predicts 2015: The Internet of Things"

- By 2020, there will be a quarter billion connected vehicles on the road, enabling new in-vehicle services and automated driving capabilities.
- By 2020, security solutions made from IoT architecture will unleash an era of inexpensive surveillance and spying, and a $50 billion global market.
- By 2020, the connected kitchen will contribute at least 15% savings in the food and beverage industry, while leveraging big data analytics.

Storage

Every year, Gartner's analysts offer their predictions on what they envisage as key issues facing the market spaces they cover. In "Predicts 2015: Managing 'Data Lakes' of Unprecedented Enormity," the storage research community's predictions for 2015 and beyond address changing hardware, software and service trends in the management of enterprise data. IT architects and storage product planners should internalize the following strategic planning assumptions to address the multidirectionality of data flows in the corporate and consumer systems in evolving data center transmogrifications.

- By 2018, 50% of organizations will give up on managing data growth and will redirect funds to improve classification and analytics.
- By 2018, 20% of the largest 2,000 enterprises will use Apache Hadoop as an archive repository, up from 1% today.

Integration

"Predicts 2015: Digital Business and Internet of Things Add Formidable Integration Challenges" addresses data integration challenges and opportunities for ensuring the flow and availability of traditional and emerging classes of information assets — which are growing exponentially. The following strategic planning assumptions will assist directors of integration and IT leaders in addressing the most complex and the most current application and data integration challenges arising from the proliferation of the Internet of Things.

- By 2018, in most organizations, at least 50% of new integration flows will be implemented by citizen integrators.
- By 2018, 35% of enterprises will consolidate their data integration and application integration competencies as one team for aligning disciplines and technologies.
- By 2018, the number of new connections for IoT devices will exceed all other new connections for interoperability and integration combined.
- Through 2018, integration will be required for more than 70% of public APIs.

Mobile, Web and Portal

As expressed in the following Predicts 2015 research documents, mobile devices and applications will continue to predominate as platforms for both capturing and consuming information. Unfortunately, user experience will still resemble more art than science over the next couple of years. The following research provides insight for CIOs, IT leaders, application leaders and mobile application development managers into what Gartner perceives as some key developments over the next few years for mobile devices and applications.

"Predicts 2015: Mobile and Wireless"

- By 2018, more than 50% of users will go to a tablet or smartphone first for all online activities.

"Predicts 2015: Mobile Apps and Development"

- By 2018, 25% of mobile enterprise apps will incorporate voice interaction for data presentation and capture.
- By 2017, 90% of enterprise mobile apps will gather usage analytics, but less than 5% of organizations will use the data.

"Predicts 2015: The Impact of Digital Business on Web and Portal Technologies"

- By YE17, the majority of enterprise applications will still be "flying blind" in terms of lacking meaningful user experience (UX)-related analytics.

Security, Privacy and Identity Predictions

Gartner analysts foretell the growing demand for information and analytics to enable effective security solutions. These predictions also paint a somewhat disconcerting picture of the availability of personal information globally, and what business leaders, privacy professionals and compliance officers must do in an attempt to control it.

"Predicts 2015: Security Solutions"

- By 2017, 30% of threat intelligence services will include vertical-market security intelligence information from the IoT.
- By 2017, the demand for security analytics as a service will grow by 50%.

"Predicts 2015: Privacy Erodes, Prompts Action From Companies and Regulators" paints an alarming picture of the availability of personal information:

- By 2017, the number of permanently traceable individuals in developed countries will double from 25% to 50%.

"Predicts 2015: Identity and Access Management"

- By year-end 2016, the Internet of Things will drive device and user relationship requirements in 20% of new identity and access management implementations.
- By 2020, 60% of organizations will use active social identity proofing and let consumers bring in social identities to access risk-appropriate applications.
- By 2020, new biometric methods will displace passwords and fingerprints for access to endpoint devices across 80% of the market.

Business Function Predictions

Digital Marketing

In "Predicts 2015: Digital Marketers Will Monetize Disruptive Forces," we focus on the transformative power of information-based innovation and how digital marketers can leverage the creative disruption in the field of digital marketing as the "connected economy" continues to transform the nature of competition.

- By 2017, a significant disruptive digital business, conceived by a computer algorithm, will be launched.
- By 2017, 50% of consumer product investments will be redirected to customer experience innovations.

CRM Sales

"Predicts 2015: CRM Sales" envisages how sales organizations will be using information and analytics to become smarter and better — much faster. The focus of this research note is to provide insight into how IT leaders supporting sales can leverage key technology trends, information and analytics to introduce transformative changes to their sales organizations.

- By 2017, 65% of sales organizations will use smartphones to drive user adoption and improve data quality for sales force automation (SFA) systems.
- By 2017, 50% of B2B selling organizations will invest in predictive analytics solutions for prospect qualification, opportunity automation, forecasting automation and renewal management.
- By 2017, 15% of sales organizations will use crowdsourced benchmarks to design their sales incentive compensation management (ICM) plans.

Customer Service

In "Predicts 2015: Weak Mobile Customer Service Is Harming Customer Engagement," Gartner experts share their expectations of blending analytics with an ongoing human touch. IT leaders will need to innovate, engaging customers on all channels and increasingly use analytics to scrutinize the metrics to help choose the right projects.

- By 2017, one-third of all customer service interactions will still require the support of a human intermediary.
- By 2018, 75% of social-only customer service agents will be blended into the customer service agent pool.
- By 2018, 50% of agent interactions will be influenced by real-time analytics.

Workforce

"Predicts 2015: Nexus of Forces Enables Human Capital Management to Support the Digital Organization" highlights how most IT and human resources (HR) leaders will continue to overlook the intelligence inherent in HR data.

- By 2018, only 10% of business operations planning and review cycles will leverage self-service, data-driven workforce insights.

Digital business has the potential to alter almost every job within an organization. In "Predicts 2015: The Digital Workplace Underscores the Benefits of a Consumerized Work Environment," our digital workplace experts predict the impact that consumerization and engagement trends will have on business, IT and workforce strategies.

- By 2020, 20% of organizations will include employee engagement improvement as a shared performance objective for HR and IT groups.

"Predicts 2015: Nexus of Forces Enables Human Capital Management to Support the Digital Organization" highlights how HR directors continue to witness nexus elements, especially mobile and analytic technologies, fundamentally transforming outdated human capital management processes.

- By 2018, nearly 50% of learning providers will look to streamline the learner's experience by providing context-aware capability.

IT Procurement and Asset Management

Our "Predicts 2015: The Digital Revolution Expands the Strategic Importance of IT Procurement and Asset Management" report chastises procurement and IT asset managers for continuing to overlook the economic value of their information assets.

- By 2018, at least 15% of industry-leading companies will inadvertently gift digital knowledge to "IT vendors" who use it to compete against them.

IT Operations

In "Predicts 2015: IT Operations Management," we show infrastructure and operations (I&O) leaders how IT and operations data increasingly will be tied to business value, but perhaps not at levels that are yet high enough.

- By 2017, 25% of I&O organizations will invest in discrete business value dashboard tools as the primary means of communicating to the business.

Supply Chain Planning

In "Predicts 2015: Supply Chain Planning — Coping With Uncertainty in Global Networks," we provide supply chain and IT leaders with targeted advice on how they will need to integrate their planning across their supply chains to ensure demand and supply are fully aligned and synchronized. In addition, we examine how the type of planning they use has to change for improved alignment and synchronization with supply chain execution processes.

- By 2018, 90% of demand-driven value network (DDVN) leaders in consumer products will leverage downstream consumption as pull signals to drive near-term upstream supply execution.
- By 2018, only 10% of global enterprises will have 30% or more, of their planning capability in the respond planning category.
- By 2018, 90% of Gartner's top 25 supply chain companies will have deployed a planning system of record to support at least Stage 3 planning maturity.

Enterprise Resource Planning

A digital business requires the ability to transform business capabilities with ever greater speed. In "Predicts 2015: ERP and Enterprise Applications in the Digital World," we advise CIOs and enterprise resource planning (ERP) leaders on how to plan and take proactive decisions to meet the business's growing need for responsive core systems.

- Through 2018, 20% of large enterprises will deliver real-time visibility into financial performance, using in-memory computing (IMC) with their finance systems.

Industry Predictions

Government

Over the remainder of the decade, we expect federal and local governments to ramp up their efforts to leverage exogenous data sources and to become increasingly clever about ways to gather it. However, such advances will render them more vulnerable to cyber attacks. As governments continue to pursue varied digital strategies to optimize, transform or create new services — the strategic planning assumptions in "Predicts 2015: Government Adapts to the Digital Era" will certainly assist government CIOs in accelerating the transition to digital government by changing the way they manage and source IT.

- By 2018, more than 30% of local government agencies will depend on data supplied by the IoT to support at least 50% of their mission-critical programs.
- By 2018, over 30% of digital government projects will treat any data as open data.

City planners and CIOs should leverage Gartner's "Predicts 2015: Urban Management Transformation Supported by Smart City Applications" research for their technology and big data scenarios:

- By 2017, a major smart city will experience a cybersecurity attack on critical infrastructure, resulting in significant service disruptions and deaths.
- By 2020, streetlamps will be the primary infrastructure for 80% of smart cities.
- By 2018, an epidemic will be confined in a smart city due to the analysis of data collected through people's smartphones as part of

urban resilience.

- By 2018, 20% of smart cities worldwide will have key initiatives that address medical/healthcare and ageing population issues to improve the quality of life.

Utilities

Energy technology consumerization continues to drive transformation of the utility business model. In "Utility Predicts 2015: Utility Transformation to Digital Business Gets Underway," our utilities experts anticipate energy companies becoming more amenable to collecting and storing off-premises data. Gartner advises utility CIOs of the need to leverage universal connectivity via the IoT and the ubiquitous access to digital information assets for addressing their current complexities.

- By 2018, 30% of energy and utility companies will have put asset data in the cloud to support asset performance management (APM).
- By 2018, 30% of global utilities will use IoT to partner with outside entities to deliver uninterrupted energy service.

Manufacturing

"Predicts 2015: The Rise of Digital R&D Innovation for Manufacturers" discusses how manufacturers will be challenged with managing the surge in product sensor data. It offers targeted advice to CIOs and R&D IT leaders on how their R&D programs must adapt to new digital business realities, in order to drive opportunities within connected infrastructures for product, service and channel innovations.

- By 2017, nearly 75% of manufacturers will have R&D strategies that include an increased number of sensors in products, but most of them will lag with digital data integration capabilities.

Life Sciences

Digital business disruption in life science is accelerating, creating a need for strategic and innovative approaches to embrace change. Our "Predicts 2015: Digital Business Accelerates Strategic Focus in Life Science" research explores the future benefits of social media data and advises IT leaders on how to tackle the challenges of shared clinical trial data.

- By 2017, over 50% of life science companies will use social media analytics for growth-oriented business opportunities and competitive advantage on a regular basis.
- By 2017, nearly half of pharmaceutical companies will need to create new systems to handle the volume of redactions associated with the European Medicines Agency's (EMA's) clinical trial data transparency.

Product Management

In "Predicts 2015: Product Managers Have New Tools to Reinvigorate Consumer Engagement," we foretell the direct economic and health benefits of sensor data. Product managers (of connected consumer electronic devices, medical device suppliers and healthcare providers) and wellness program managers in HR departments should internalize the following strategic planning assumptions to reinvigorate consumer engagement.

- Through 2018, monetizing consumer data from sensors will be an essential element of new business models.
- By 2020, developed world life expectancy will increase by half a year, due to the widespread adoption of wireless health monitoring technology.

Retail Digital Commerce

As digital commerce revenue remains relatively low through 2015, the industry will look progressively more at undertaking business transformation and innovation projects to bolster overall revenue. In "Predicts 2015: Retail Digital Commerce Stays Low, Crowdstorming Leads Innovation, In-Moment Pricing Drives Personalization, and Augmented Reality Rallies," we uncover innovative ways through which CIOs and their leadership teams can advise and assist their business counterparts on emerging technology business models, along with innovative ways in which to achieve competitive differentiation by leveraging their information assets.

- By 2017, at least eight of the world's largest multichannel retailers will have incorporated customer collaboration "crowdstorming" platforms for innovation into their business model.
- By 2017, more than 25% of all products sold by multichannel retailers will be priced "in the moment" through personalization that supports digital business strategies.
- By 2017, five of the 10 largest retailers will implement augmented-reality applications in an effort to improve the customer experience.

Evidence

Gartner's strategic planning assumptions (SPAs), or predictions, are conceived throughout the year by Gartner analysts based on hundreds of client and vendor interactions, primary and secondary research, and in collaboration with analysts within their own area and across research agendas. Gartner's year-end collection of "Predicts" research notes gathers and elaborates further on these predictions.

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