Keeping telecom on target

How CSPs tap the transformative power of data and analytics

IBM Institute for Business Value

IBM's unique capabilities for the telecommunications industry

Telecommunications organizations now need to rely more than ever on solutions related to analytics, cloud, mobility, network optimization, digital transformation and global integration. IBM has an extensive global network of telecom solution labs, research labs and innovation centers to support its industry offerings. With more than 22,000 subject matter experts working in the telecommunications industry, we work with more than 200 major communications service providers across the globe. IBM continues to invest significantly in key acquisitions to add expertise and capabilities that enable clients in this industry.

Data: The competitive advantage

Today, the potential value of mining internal telecommunications (telecom) data – particularly when combined with external third-party data – is indisputable. Our research shows that leading organizations with clear analytics strategies and capabilities have enjoyed a significant positive impact on revenues and business outcomes. Twenty-three percent of communications service providers (CSPs) consider themselves to be analytics leaders, implying that more than three-quarters of the CSPs surveyed are not targeting analytics for greater competitive advantage. To stay relevant in a rapidly changing market, CSPs will need to develop and execute analytics plans that focus on customer objectives, business operations and building new platforms to create new revenue streams.

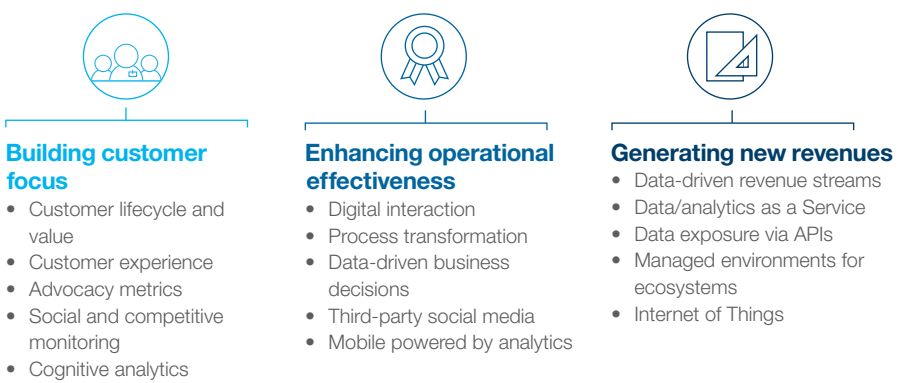
Executive summary

CSPs have been increasing their focus and investments in big data analytics capabilities over the past few years. Of more than 1,000 respondents in the 2014 IBM cross-industry study "Analytics: the speed advantage," 52 percent of the 65 CSPs had big data-related projects in either pilot or production status, compared to just 33 percent in 2012.[1] However, a gap is emerging. The leaders, or Front Runners, are starting to accelerate away from the rest and capturing significant business and competitive advantages.

By exploring the growing performance gap, we found that the 23 percent of CSPs that consider themselves Front Runners had three main priorities. At a high level, these are: customer focus, operational effectiveness and revenue generation (see Figure 1). The majority of benefits today are from improvements gained in customer focus, with 71 percent of CSPs claiming a return on analytics investments within the first year.

Figure 1

Advanced analytics underpin the delivery of superior outcomes



Source: IBM Institute for Business Value.

71%

of CSPs that invested in analytics achieved a positive return within the first year

53%

of CSPs focus on end-to-end analytics transformation, integrating data into business processes

While just

21%

of CSPs collect and analyze social media today, another 56 percent plan to do so in the near future

So, how can the 77 percent of CSPs that are not yet Front Runners take aim at the competitive advantages that strategic use of big data and analytics offers? Specific findings from our study highlight many barriers and challenges that CSPs must address to bank the value from analytics investments, including:

- *To capture business value, CSPs must move beyond data collection to leverage insights.* While CSPs are performing well on sourcing and analyzing data, only 30 percent excel on the capability to act on data. For many CSPs, big data initiatives are predominantly technology-led rather than business-led, potentially resulting in too much data and not enough value. While they acknowledge the enormous potential value of combining deep insights with real- or near real-time data, many business users within their organizations remain limited in their ability to understand, use and extract such value.
- *The move toward systems of insight must be based on an outside-in perspective.* At the core of transformation to systems of insight across the enterprise, we see 53 percent of CSPs taking the first steps toward analytics-led process transformation. This not only requires a shift in the way CSPs assess and execute transformation, it reflects a fundamental change in their design thinking so that they build "from the customer in" rather than the "enterprise out." They must also move from historical analysis about what has already happened to concentrate on predictive analysis. We still see significant barriers to true cross-enterprise adoption of big data analytics for operational transformation due to traditional approaches, organizational silos, budgets and priority mismatches.

- *For many, the promise of massive revenue generation from providing big data analytics services to others remains elusive.* To date, CSPs have mainly gained internal value through building customer focus and improving operational efficiencies. It's true that the opportunity to "sell" customer data has significant privacy and brand risk. However, with the rise of cloud-based services and exposure of APIs, a CSP can offer analytics-as-a-service by combining certain data elements, third-party data and value-added services for its customers to use and create services in multiple partner ecosystems. We expect significant innovation in this space, with further investment in new platforms to increase revenue through collaboration with a variety of partners.
- *Investment with intent is vital.* Front Runners are moving past the stage of multiple proofs-of-concept (PoCs) across a broad range of big data fronts to make more targeted investments in use cases with high business return. They also work through short cycle times to learn and improve. Business is working closely with technology. Now, the challenge for many CSPs is to break out of the tech PoC cycle.

Fortifying analytics maturity in telecommunications

Organizations – including CSPs – align to one of four clusters (see below, "Four distinctive groups based on analytics use"), as determined by their use of analytics and associated technical capabilities.

While almost a quarter of CSPs regard themselves as Front Runners, the other three-quarters of the telecom industry are thus "behind" and risk losing competitive advantage to Front Runners (see Figure 2). Our study shows that Front Runners are building clear analytics strategies and capabilities, and getting a strong return on investment. CSPs lagging in analytics maturity can learn from leaders how to decrease the performance gap.

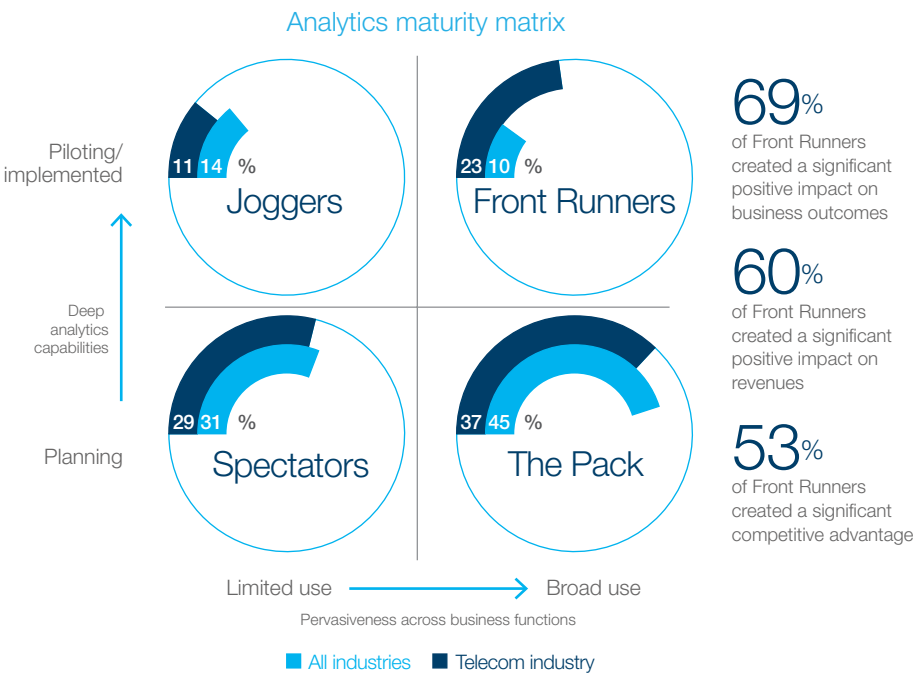
Four distinctive groups based on analytics use[2]

Organizations align to four clusters based on how pervasively they are using analytics and the technical capabilities necessary to support analytics:

- Front Runners are data-driven organizations using deep analytics capabilities to drive business processes within most business functions
- Joggers primarily use analytics to automate and optimize operations, but do not use analytics pervasively
- The Pack are in the early adoption phases, although they aspire to use analytics within multiple business functions
- Spectators are also in the early adoption phases, but their plans only include limited use across business functions.

Figure 2

Almost a quarter of CSPs regard themselves as Front Runners in the use of analytics for business advantage, as opposed to only 10 percent of study respondents from other industries



69% of Front Runners created a significant positive impact on business outcomes

60% of Front Runners created a significant positive impact on revenues

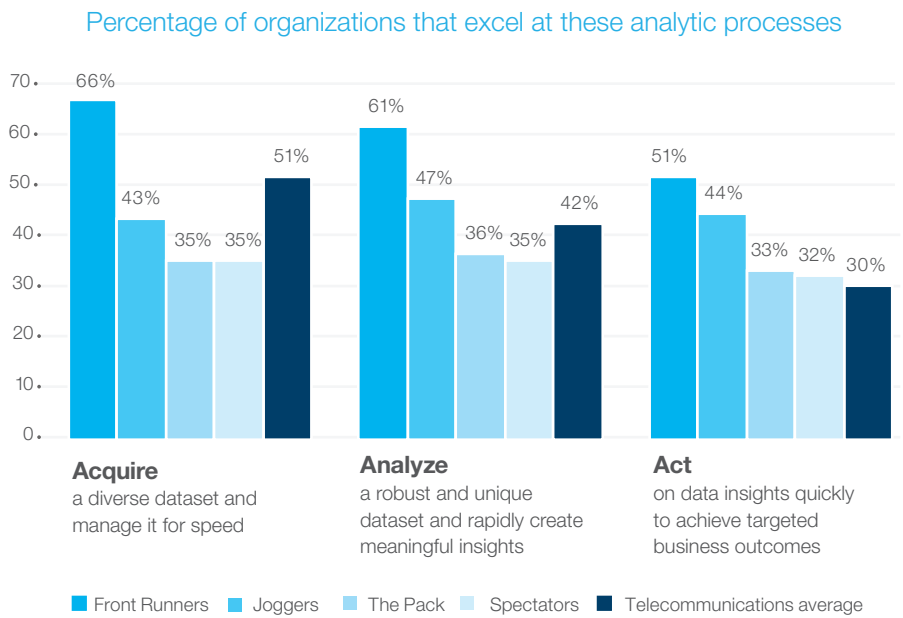
53% of Front Runners created a significant competitive advantage

Source: 2014 IBM Institute for Business Value analytics survey.

By assessing the attributes of Front Runners, CSPs that fall behind can identify actions to improve. Three characteristics are common among Front Runners (see Figure 3):

Figure 3

On average, CSPs are performing well in acquiring a diverse dataset and analyzing it quickly, but many have room to improve in terms of acting on data insights.



Source: 2014 IBM Institute for Business Value analytics survey.
Note: CSP represent the average of the telecom sample, not the CSP front runners.

Acquire: Front Runners support a wide variety of data – both in motion and at rest – and enable the blending of traditional and big data infrastructure components across the extended ecosystem. For instance, Front Runners are ten times more likely than The Pack to have a big data platform, which expands their access to both structured and unstructured data.

Analyze: Front Runners use a wider variety of analytics methods extensively within organizations. In particular, Front Runners outpace others in the use of forward-looking predictive analytics, with about one-third using them extensively throughout a variety of business processes.

Act: Front runners embed analytics within a broad range of business processes to enable quick, precise actions. They increasingly recognize the speed advantage of using analytics to inform (25 percent), drive (25 percent) or even automate (13 percent) key processes within their organizations.

It is striking that only 30 percent of the entire CSP sample excels on the capability to act on the data, less than any cross-industry cluster. This implies that for most CSPs, big data initiatives are predominantly technology-led rather than business-led.

To take the CSPs to the next level, their analytics plans must focus on: improving customer relationships and experiences; achieving enterprise operational excellence; and generating new revenue streams.

"The goal is to turn data into information, and information into insight. But no value is created by insights if they are not acted upon."

Telecommunications Chief Executive Officer, Brazil

"We need to go deeper than the surface-level information to uncover the valuable insights hidden within our data."

Telecommunications Chief Marketing Officer, UK

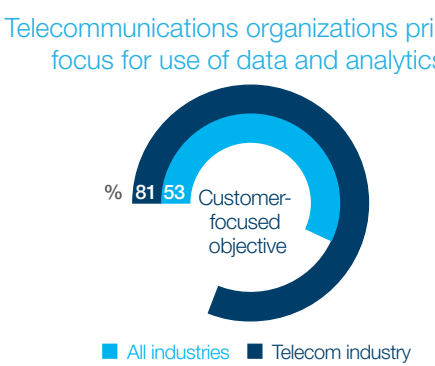
Building customer focus

CSPs told us they plan to improve customer relationships and are rebalancing their priorities to reflect the growing importance of the customer experience. The majority (81 percent) of CSPs with analytics plans therefore have customer-focused objectives (see Figure 4). Of these, 41 percent prioritize improving customer acquisition and 40 percent emphasize improving the customer experience. The remaining 19 percent of analytics plans are operations-focused.

Improving customer relationships requires an understanding of customer preferences, behaviors and sentiment. Each phase in the customer lifecycle can be supported by analytics methods or models, from acquiring customers, through managing customers, expanding relationships/selling, retaining customers and risk analytics, to "voice of the customer" analytics, such as sentiment analysis.

Figure 4

Much more than the other surveyed industries, CSPs' plans with analytics are particularly customer-focused



Source: 2014 IBM Institute for Business Value analytics survey.

By leveraging both company-owned and external data, CSPs can make business decisions that better anticipate consumer needs and wants (see sidebar, "Leveraging Twitter data to improve churn predictions"). External data includes that from third-party ecosystems, such as Twitter and Facebook, to generate richer insights in the context of customer issues and sentiments. But, only 21 percent of CSPs collect and analyze social media today. However, another 56 percent said they plan to do so in the near future.

As the demand for real-time support in business decision making intensifies, cognitive analytics will become increasingly crucial for the telecommunications industry. Cognitive analytics is the technology that enables machines to learn from experience and penetrate the complexity of data to identify associations. Cognitive computing is making analysis "deeper" and more contextual (see Figure 5). Its real-time capabilities allow transformational customer engagement that can improve the customer experience and business value (see sidebar, "Using machine-learning to improve customer-inquiry responses"). Such capabilities include:

- *Power of pinpoint accuracy* – Understand information, interpret context and sentiment, and learn based on experience
- *Instant omni-channel readiness* – Help CSPs engage customers consistently across channels and provide self-service
- *Immediate responses* – Enable fast reactions and interact with language by reading social data, blogs and the like.

Leveraging Twitter data to improve churn predictions

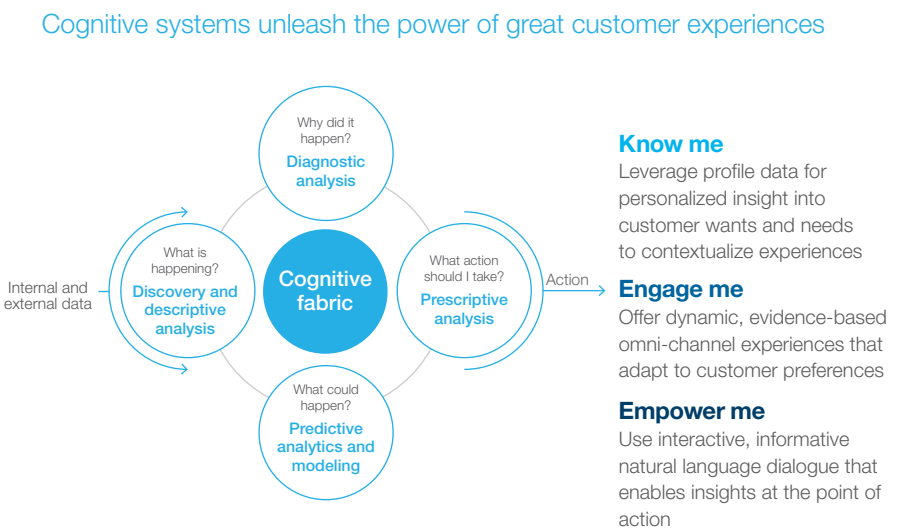
A CSP in North America needed to decipher the signs of at-risk customers and move proactively to keep them. The company used a combination of internal and external data (including Twitter data, econometrics, real estate data and more) to tease out telltale patterns of disaffected customers. Twitter data included Tweet snippets, trending words, sentiment and more over a one-year period in 2014. The ROI business case showed a 3 percent improvement in predicting customer churn. Approximately 75,000 additional churners were identified, through which close to USD 9 million annual revenue loss could be avoided.

Using machine-learning to improve customer-inquiry responses

A CSP in East Asia wanted its call center operators to answer customers' questions quickly, but that required searching a database of more than 5,000 responses to frequently asked questions. By combining natural language processing analysis with machine-learning technology, the company's new customer-inquiry response solution overcomes a longstanding barrier to creating relevant and accurate automated responses to unstructured user inquiries. The solution helps the CSP improve service quality and efficiency, thus enhancing customer satisfaction.

Figure 5

Cognitive computing is making analysis deeper and more contextual/real-time



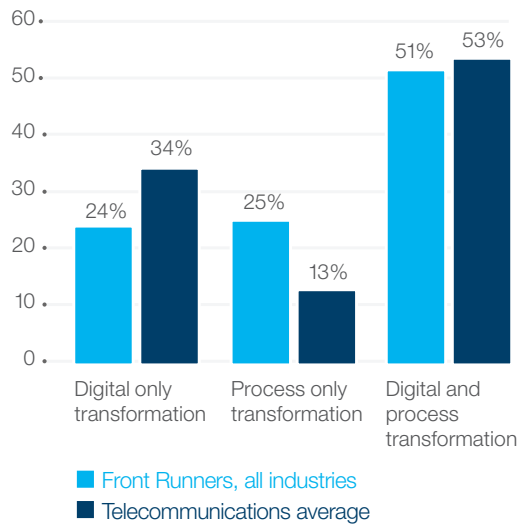
Source: IBM Institute for Business Value.

Recommendations: Building customer focus

- *Add depth to customer profiles, interactions and operations* by tapping into behavior patterns, trends and sentiments from both structured and unstructured data, such as call center transcripts. Use external data, including social media and customer-generated text.
- *Make the strategic leap from hindsight* (descriptive and diagnostic analysis) to foresight (predictive and prescriptive analytics). For instance, perform analysis to forecast customer churn or determine the likelihood that a customer will accept a certain offer.
- *Invest in cognitive computing to perform more sophisticated analyses,* and to fuel contextual and real-time customer engagement. For example, improve the contact center experience by using cognitive technology in conversations across multiple channels.

Figure 6

CSPs are pursuing end-to-end transformation, primarily by integrating data into business processes



Source: 2014 IBM Institute for Business Value analytics survey.

Enhancing operational effectiveness

As revenue growth slows and profit margins decrease, CSPs have to aim for dramatic cost reductions and more efficent operations. Applying analytics to enterprise operations and processes – for example, by using analytics to derive predictive insights from information – can help.

Enhancing operational effectiveness can be approached in at least two ways:

- Through digital interaction, re-imagine the ways people connect, transact and engage with companies, institutions and governments, as well as how these new interactions can create mutual value
- Through process re-invention, use embedded analytics to continuously monitor, measure and refine decisions related to organizational operations. This can help transform organizations for greater agility and precision that enable new growth.

Leading CSPs are combining both of these approaches. They create end-to-end transformation by integrating data into business processes (see Figure 6). Fifty-three percent plan both digital and process transformation with the help of analytics.

Most CSPs (54 percent) are still in the early phases of embedding analytics within business processes. The main use is descriptive: using business intelligence and data mining to learn what has already happened. The next most common use of analytics is diagnostic (cited by 44 percent of CSPs).

By contrast, just 23 percent of CSPs aim to improve business processes through increased use of predictive analytics. Predictive analytics uses statistical models and forecasts to provide answers and anticipate what may occur in the future (see sidebar, "Using predictive analytics to improve productivity"). Notably, high-performing organizations use predictive analytics 73 percent more than the rest of their peers.[3]

And finally, 23 percent use prescriptive analytics, such as optimization or simulation, to provide suggested actions to attain a certain business outcome or to drive processes (in particular, routine activities). Prescriptive analytics can also help automate processes, such as using analytics to make decisions or perform tasks.

Existing enterprise data streams can be enriched with external ecosystem data – such as demographics, economics and social media – to support better business decisions. Marrying CSP internal systems with social data sources, such as Twitter, can deliver a set of new enterprise applications to:

- Transform how CSPs understand their markets and improve business decisions
- Allow sales, marketing and customer service professionals to map sentiment and behaviors to engage and support their customers
- Learn about problems with new products and services, and anticipate sudden shifts in moods and markets
- Accelerate innovative product development by predicting long-term trends.

Using predictive analytics to improve productivity

As pressure on margins and response speeds increased, a CSP in the Asia-Pacific region needed a means to rapidly and cost-effectively track its marketing performance. The company rolled out a predictive analytics solution that develops propensity models to track customer preferences and identify? business opportunities. As a result, the CSP had 10 percent higher net revenues by improving productivity and competitiveness, created business reviews 92 percent faster and increased the speed of its *ad hoc* reporting by 190x.

Making complexity simpler for telco field engineers

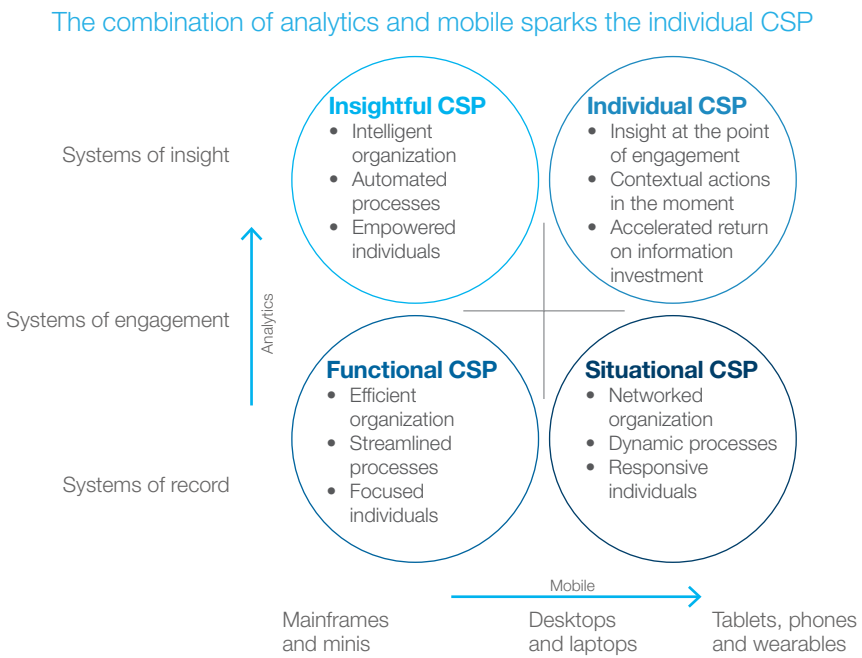
Mobile devices powered by analytics provide a collaboration platform and sales support tool for telecommunications field engineers, who can establish real-time collaborations to solve complex problems on location. With access to instantly available expertise, repair and service times are compressed while efficiencies expand. Scheduling and other functions will allow for flexible rerouting to address urgencies or fill open time slots. Increased customer face-time can be used to provide analytics-enabled suggestions and recommendations for additional services.

The value of analytics for operational effectiveness is further amplified by mobile technology (see Figure 7). The combination of mobile (tablets, phones and wearables) and analytics (systems of insights) makes CSPs "smarter," more productive and faster. Mobile is the primary force behind potential new CSP capabilities, including:

- Delivering insight at the point of engagement, for example, the customer location or retail shop. Mobile technology couples situational information with analytics to accelerate improved insight delivery, as needed.
- Recommending contextual actions in the moment. Mobile capabilities provide always-connected devices with relevant notifications and advice by delivering in the moment and within context.
- Accelerating the return on investment. Every step – from product and service creation to every customer touch point – can take advantage of advanced analytical capabilities.

Figure 7

The combination of analytics for operational effectiveness is amplified by mobile



Source: Balboni, Fred, Saul J. Berman and Peter Korsten. "The Individual Enterprise: How mobility redefines business." IBM Institute for Business Value. July 2014. www.ibm.com/services/us/gbs/thoughtleadership/individualenterprise/

Recommendations: Enhancing operational effectiveness

- Embed analytics within business processes to automate, drive or inform key business processes within the organization by forecasting outcomes and empowering employees to act quickly and precisely in each situation.
- Enrich internal data streams with third-party social media (for example, Twitter) to create a set of new enterprise applications to improve understanding of your markets. Use these to learn about problems with new products or services, and to predict long-term trends.
- Create a mobile strategy, empowering employees to access insights from analytics anytime, anywhere by making enterprise assets accessible from mobile devices. Bring intelligence to as many actions as possible, in the moment.

Generating new revenues

Big data and analytics solutions open a vast array of opportunities for CSPs to offer services in multiple ecosystems, such as connected cars, clinical remote monitoring and pay-as-you-drive car insurance (see sidebar, "PLDT: Big data platform as a service"). The market for big data-driven telecommunications analytics and Data-as-a-Service (DaaS) is expected to grow at a CAGR of nearly 50 percent between 2014 and 2019.[4] By the end of 2019, the market for big data will eventually account for USD 5.4 Billion in annual revenue.[5]

Being able to offer business-to-business (B2B) data and analytics services represents a fast-growing secondary revenue stream. This is especially true in ecosystems where connectivity plays an important role. According to a GSMA study, the global market of connected devices will be worth USD 4.5 trillion in 2020, and with their strong data assets CSPs should be able get a significant part of it.[7]

The most critical factor for many ecosystems is the ability to manage real-time data, events and alerts (see Figure 8). Such ecosystems must be:

- *Context-aware,* as actions should be calibrated to location, consumer preferences, moment in time, and any other relevant context
- *Predictive and prescriptive,* to forecast situations to act on, for instance maintenance situations, and
- *Continuous real-time at scale,* because ecosystem information can lose value within milliseconds of being generated.

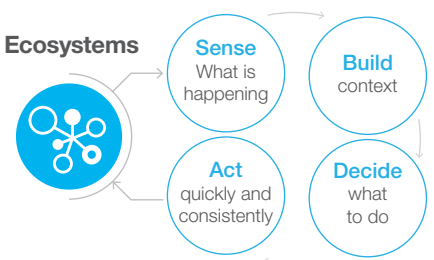
With CSPs at the very core of these massive amounts of data, new business models are critical for turning this information into "smart data" that can generate new revenue. Combined with other distinctive assets that CSPs own in the areas of analytics, security, mobility, cloud, machine-to-machine (M2M) and personal communications – for example, only CSPs can provide high availability and secure cloud solutions with end-to-end Quality-of

PLDT: Big data platform as a service[6]

PLDT, a CSP in the Philippines, has already invested USD 30 million in developing its big data platform and is planning to invest another USD 100 million in its big data business to help companies and government agencies develop more effective products, services and programs for their target markets. Financial services, logistics, retail, hospitality, healthcare and utilities are among the industries expected to benefit most – at least initially – from big data analytics.

Figure 8

The most critical factor for many ecosystems is the ability to manage real-time data, events and alerts.



Source: IBM Institute for Business Value.

Developing with Orange[8]

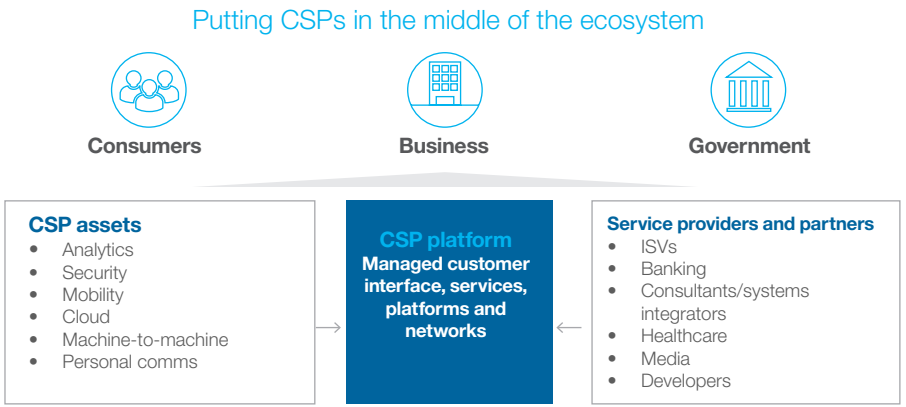
Orange is one of the world's largest CSPs. Through its Orange Partner program, it exposes a portfolio of APIs that enable developers and partners to build rich mobile and Web applications that have resulted in innovative services. For instance, the lefigaro.fr site, like 26 other media sites, has chosen to integrate the API Search Toptrends, which aggregates the most searched news stories in France from the 2 million daily searches which pass Orange's @lemoteur.

Service (QoS) levels required for mission-critical applications – CSPs have a huge opportunity to profit from creating new platforms that can be service delivery vehicles for other parties (see Figure 9).

This greatly expands the addressable market for CSPs – from one that is constrained by connecting people to one that is opening up to connect virtually everyone and everything. But new operational and business models are required to address these opportunities and APIs will be the driver. CSPs need to expose APIs to share their assets with others to create new revenue (see sidebar, "Developing with Orange"). And APIs for CSP big data analytics are the number-one new requirement to support the development of new services – not only for CSPs, but for external developers, partners and the Internet of Things (IoT) market.

Figure 9

CSPs' distinctive value propositions can help them provide a major service delivery vehicle for other types of platforms.



Source: IBM Institute for Business Value.

Recommendations: Generating new revenues

- Engage with your ecosystem. Develop a good understanding of what extended ecosystems will mean to you. Evaluate the roles you can and want to play. Use the ecosystem to generate additional revenue in collaboration with third parties.
- Develop new capabilities and business models. Turn your unique set of information into useful data that enables ecosystem partners to build innovative applications.
- Understand and embrace the API-led economy. Expose your distinctive assets to third parties, including big data and analytics, in the form of APIs to unlock additional business value.

Are you ready to hit your analytics target?

- How do you track customer behaviors, preferences and sentiments to better meet customer needs and wants?
- To what extent are you using analytics to drive or inform business processes within multiple business functions?
- How are you gaining competitive advantage by deploying analytics within your organization?
- To what extent have you made analytics “consumable” for employees? How do you empower them to access enterprise intelligence and insights anywhere?
- In what ways are you exposing your data assets to other parties to create new revenue streams?

For more information

To learn more about this IBM Institute for Business Value study, please contact us at iibv@us.ibm.com. Follow @IBMIBV on Twitter and for a full catalog of our research or to subscribe to our monthly newsletter, visit: ibm.com/iibv

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