



# DATA ANALYTICS

Is there a pot of gold at the  
end of CSPs' data repositories?

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## Introduction

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**B**ig data today is a reality. Communications service providers (CSPs) that want to be innovative and maximise their revenue potential must have the right solution in place so that they can harness the volume, variety and velocity of data coming into their organisation and generate actionable insights from that data

Today's phenomenal growth of data requires that CSPs not only understand big data to decipher the information that counts, but also – more importantly – the possibilities of what they can do with it using big data analytics. CSPs are sitting on terabytes of data that are stored in siloes and scattered across the organisation. In order to exploit the full potential of this stored data, service providers must have solutions that can help them correlate, process and decipher nuggets of actionable information. This is not possible without big data and advanced analytics. For simpler and faster processing of only the relevant data, service providers need an advanced analytics driven big data solution that will help them to achieve timely and accurate insights using data mining and predictive analytics, text mining, forecasting and optimisation capability to continuously drive innovation and help CSPs make the best possible decisions.

Heavy Reading's conclusion is that CSPs are well aware that they must effectively manage and extract the value out of their big data and are planning on significant investments to do so.

### Key findings

The world of communications has seen unprecedented data growth in the last few years. The advent of smartphones, mobile broadband, peer-to-peer traffic,

growth in mobile data volumes, social media chatter and the increase in video-based services have all contributed to the data volume. Smartphones like the Apple iPhone, Android devices, the Samsung Galaxy and others have vastly improved the web surfing experience and increased consumption of media and content-based services. The result is a significant increase in data usage, as well as explosive growth in bandwidth consumption. Heavy Reading's research believes that what we are witnessing is only the beginning and just the tip of the iceberg.

The internet has changed how we communicate and consume services. The explosion of data will be primarily driven by consumer demand for low-latency services that are more video intensive, integrated and interactive. Quite simply, an increase in network performance – accompanied by the availability of devices, services and applications to take advantage of that performance – will result in dramatic growth in data traffic.

CSPs do not have a dearth of subscriber data; they collect usage transactions, network performance data, cell site data, device information and other information spread across network and back office systems. In spite of this treasure trove of information on customer behaviour, most CSPs do not have the real-time, end-to-end view of their subscribers that can help maximise their revenue potential from each subscriber. The reasons for this are manifold:



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- Most of the data is collected in silos by various departments, spread across the organisation. Correlating a 360-degree view from fragments of customer data is a complex endeavour that consumes significant time and effort.
- The quality of data is suspect and needs significant massaging, de-duplication and cleansing before it can be used effectively.
- There are significant political and organisational barriers that impede a free flow of information across departments and business units.

As CSPs try to become more than just bit pipe providers, their ability to use and exploit customer data becomes a key competitive advantage. What strategies can they pursue to shore up their capabilities to monitor, manage and monetise customer data effectively? This report examines scenarios and best practices that demonstrate the value of big data and advanced analytics in telecoms. This report forecasts the global market for big data and advanced analytics. Key findings include:

**CSPs view real-time analytics as critical to the success of their businesses.** Our research shows that the majority of global respondents believe that real-time analytics is critical to CSP success.

**CSPs are planning for most application areas within the year.** All the application areas are in respondents' plans for 2014-15, including network planning and optimisation, personalised tariffs and offers, real-time or location-based marketing and business intelligence and reporting.

**CSPs are planning big data and advanced analytics initiatives with the customer in mind.** Our research shows that most global CSPs plan to utilise their usage traffic information for each of the listed use cases, including segmenting the customer, predicting or preventing churn and optimising network experience.

**CSPs are looking to fully implement big data and analytics initiatives in the next two years.** The majority of global respondents report they plan to fully implement their big data and analytics initiatives by the end of 2015.

**CSPs expect increased revenue as a result of their big data and analytics planning.** The majority of global respondents predict that it will take one to two years for their company to see increased revenue from its big data and analytics.

**CSPs report that big data and advanced analytics will continue to be critical.** A large majority (87%) of global respondents report that big data and advanced analytics will be either "critical" or "very important" to their company in the next 12 to 24 months.

**CSPs are looking to big data and analytics solutions to help them with customer-centric pain points.** The most critical pain points and priorities that global respondents believe can be resolved by big data and advanced analytics in the next 12 to 24 months include targeted offer and campaign management, churn prediction and proactive customer care.

## Evolving from legacy to advanced analytics

Heavy Reading believes that customer centricity and profitability hinge on three key pillars: efficiency, insight and performance. Profitability, customer churn reduction and increase in wallet share hinges upon obtaining a coherent, current and actionable view of a CSP's entire business. In a world where more and more customers interact online via Facebook, Twitter, blogs and other channels, and talk about their experiences and issues online, CSPs must have a proactive social strategy through collecting data and analysing the data to take action on customer retention and offer attractive services.

However, dealing with social media means dealing with unstructured data, which is complex as it does not always fit into neat tables of columns and rows. The advent of these new data types that can be both structured and unstructured means they must be pre-processed to yield insight into a business or condition. Data from Twitter feeds, blogs, call detail reports, network data, video cameras and equipment sensors is not stored directly in a data warehouse until it is pre-processed to correlate and normalise the data to detect basic trends and associations. It is a cost-effective mechanism to structure the unstructured data part, load that data into data warehouses for comparison and then use that data with other collected data to run advanced analytics processes on it.

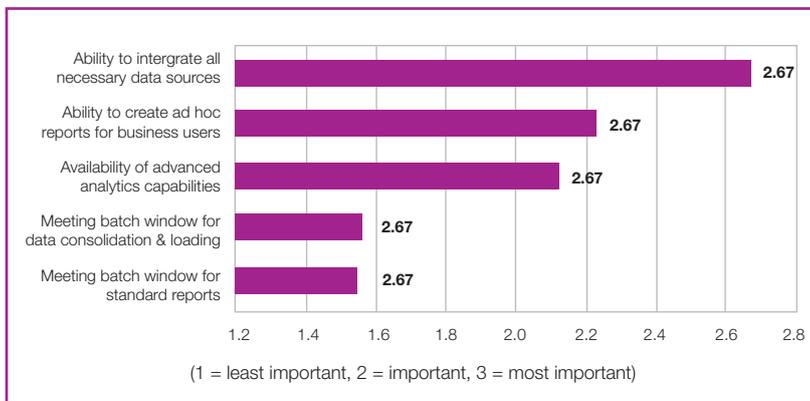
There is a need for solutions that can combine customer usage and subscription data with insight into the network, cost, customer mood and customer preference data to trigger specific actions, which helps enhance customer experience.

CSPs have no dearth of data at their disposal, but they are missing actionable insights from that data. The fact that data passes through the network does not mean that actionable, correlated information is available to the company. Service providers must find efficient ways to bring together, normalise and correlate all data sources, which poses a serious challenge. As shown in **Figure 1**, Heavy Reading's survey identifies integration of data sources as a primary operational challenge for CSPs.

A big data advanced analytics solution that effectively utilises structured and unstructured data to improve decision-making will be the silver bullet that CSPs need to alleviate their business



**Figure 1: Top operational challenges that are a priority for CSPs**



problems. Big data is definitely an industry-wide buzzword, and there are several competing definitions circulating in the market.

Heavy Reading defines big data and advanced analytics as the utilisation of hardware and software solutions to process large volumes of data – in the range of hundreds of terabytes – to unearth actionable insight. Big data is a combination of both structured and unstructured data coming from text, social media, video and others. As such, real-time streaming technology and complex event processing technologies are part and parcel of big data solutions.

**Figure 2: Legacy Analytics vs. Advanced Analytics Infrastructure**

	LEGACY ANALYTICS	ADVANCED ANALYTICS
Storage Cost	High	Low
Analytics	Offline	Real-time
Utilising Hadoop	No	Yes
Data Loading Speed	Low	High
Data Loading Time	Long	Average 50%-60% faster
Data Discovery	Minimal	Critical
Data Variety	Structured	Unstructured
Volume	Gigabyte, terabyte	Petabyte, exabyte, zettabyte
Velocity	Batch	Real-time
Administration Time	Long	Average 60% faster
Complex Query Response Time	Hours/days	Minutes
Data Compression Technique	Not matured	Average 40%-60% more compression
Support Cost	High	Low

**Figure 2** illustrates the key differences between the realities of yesterday's analytics infrastructure and our expectations for today's advanced analytics infrastructure.

**Figure 2** highlights how using big data and advanced analytics can provide measurable return on investment benefits for CSPs. An advanced analytics infrastructure is not a replacement for the traditional analytics infrastructure; rather, it is an add-on to fill in the gaps and create data collections that can provide richer information. As such, information is requested and consumed either to make better decisions or to create new products or applications, and the overall infrastructure evolves to better serve the demand. This evolution creates an organic relationship between a CSP's business, network and IT territories, gradually effacing the infamous silos.

Key savings and operational efficiency benefits that CSPs will obtain include:

- Reduction in data compression, maintenance cost and support cost
- Increase in data loading speed
- Reduction in administration cost
- Reduced time to run queries and real-time response for ad hoc queries by hundreds of concurrent users
- Easy implementation of any data model from any data source with no changes needed and no additional response time with data growth
- Saving in storage space because of advanced compression techniques
- Utilisation of complementary technologies such as Hadoop and Map-Reduce with existing RDBMS and data warehouse technologies
- Usage of commodity hardware

## The advanced analytics market opportunity

Simplifying business operations is a big endeavour for CSPs that have organisational and IT implications. CSPs are trying to be operationally lean and are in the process of simplifying their business operations by adapting best practice methodology, becoming more collaborative and breaking their silos in order to reduce opex and become more competitive.

CSPs are looking for the next big thing to differentiate themselves

Figure 3: Key decision-makers for advanced analytics initiatives

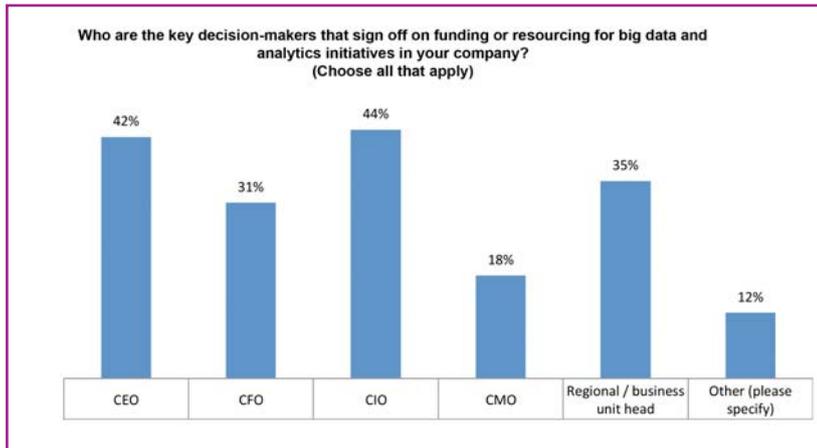


Figure 4: Agreement on advanced analytics initiatives among lines of business

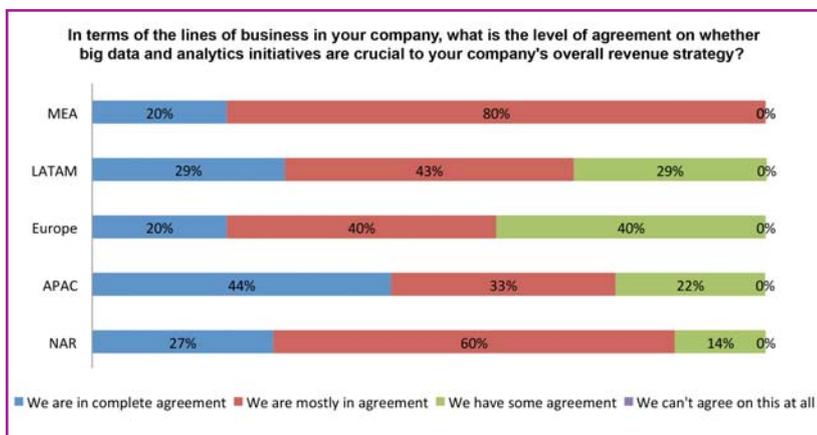
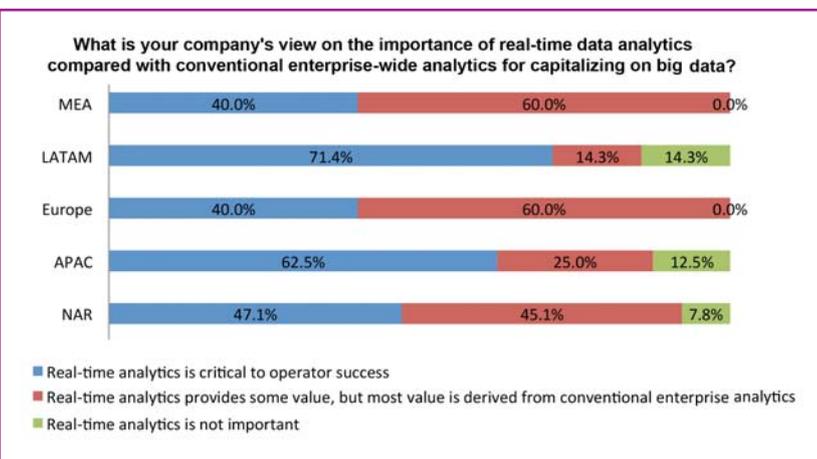


Figure 5: Importance of real-time data analytics for capitalising on big data



from their competitors. When every CSP has similar networks and services, they can only separate themselves from the pack by offering a superior customer experience. The company that does so can be more efficient, more proactive and ultimately more innovative than its competitors. CSPs' customer experience strategy must be transformative and should be able to anticipate, contextualise and preempt customer complaints and queries, as well as effectively address subscribers' challenges.

CSPs believe that big data and advanced analytics will play a critical role in helping them meet their business objectives. In a recent Heavy Reading survey global respondents report that their CIO (44%) and CEO (42%) are the key decision-makers that sign off on funding for big data and analytics initiatives (see Figure 3).

Respondents from all regions report that their lines of business are mostly in agreement on whether big data and analytics are critical to the company's overall revenue strategy. Notably, 44% of Asia/Pacific respondents say their lines of business are in complete agreement (see Figure 4).

Asia and Latin America report that real-time analytics is critical to CSP success, except for 60% of Europe and Middle East/Africa respondents who answered that real-time analytics provides some value, but not as much as conventional enterprise analytics (see Figure 5).

When asked about capabilities regarding analysing usage traffic, global respondents seem most confident that they are able to determine customer segments such as heavy video users or heavy social media users (70%). 42% of global respondents plan to fully implement their big data and analytics initiatives in 2015 (Figure 6).

A large majority (87%) of global respondents report that big data and advanced analytics will be either critical or very important to their company in the next 12 to 24 months (see Figure 7).

46% of global respondents find proactive customer care to be the most critical pain point that can be



Figure 6: Timeline for fully implementing advanced analytics initiatives

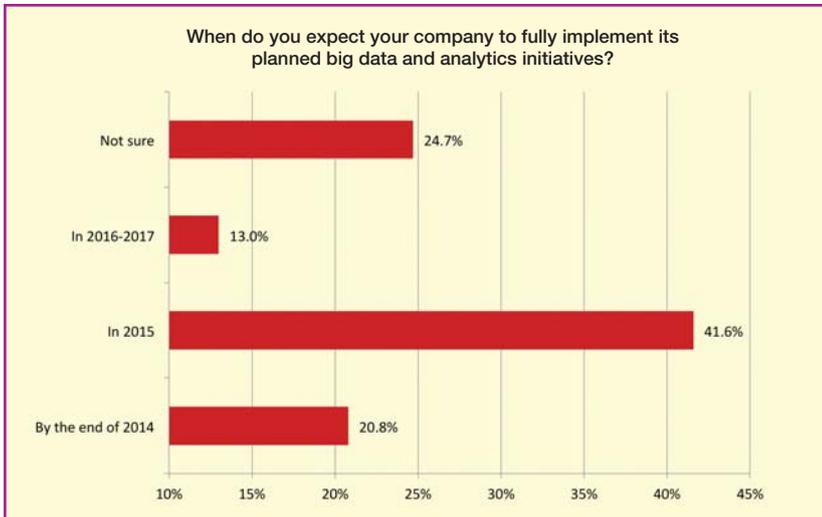


Figure 7: Importance of advanced analytics in next 12-24 months

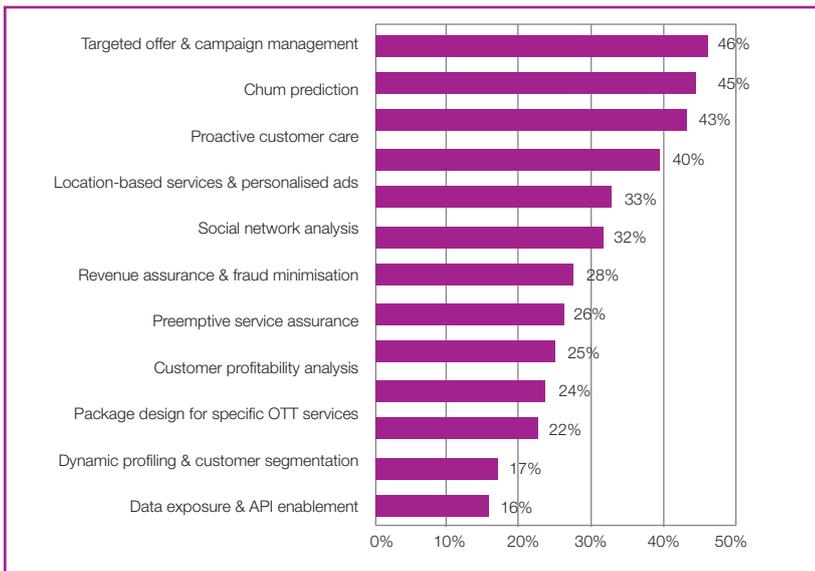
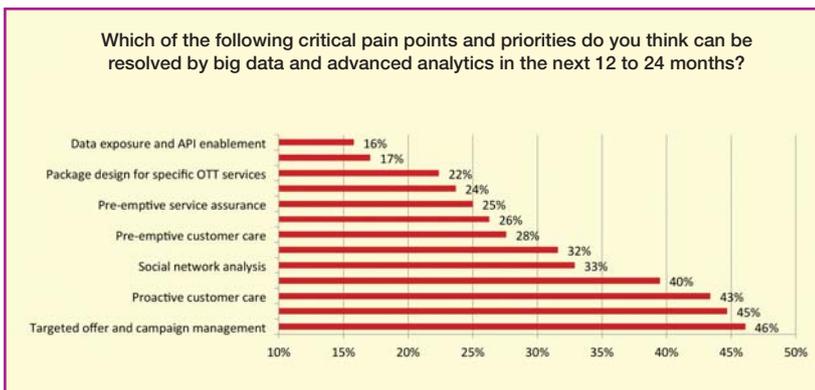


Figure 8: Pain points advanced analytics can resolve in next 12-24 months



resolved by big data and advanced analytics, followed by targeted offer and campaign management (46%) and churn prediction (45%) (see Figure 8).

### Advanced analytics is critical for CEM

Subscribers are becoming increasingly demanding, expecting personalised offerings, ubiquitous access, broad choices and a reliable, seamless experience. Meeting these needs will require a fundamental rethink of CSP customer experience management (CEM) infrastructure. Today, most CSPs use off-line data analysis for reporting, planning and CEM purposes. Their current analytics infrastructure does not provide the kind of real-time analytics capabilities that can help them continuously monitor and respond to VIP customer issues in real time, engage in personalised marketing in real-time, conduct sophisticated network planning and proactively detect and prevent fraud.

The analytics solution's underlying smart data infrastructure must be able to efficiently support the data volumes, concurrency and query complexities involved, along with a streaming analytics engine that supports complex event processing. While the data infrastructure is key, this must be surrounded by an information management environment that feeds it clean, trusted information. Critical services in this environment include data integration, data quality, data profiling and master data management. The final component is an advanced smart analytics environment that allows both interactive users and automated processes to efficiently access and derive insight from the data at a granular level to drive optimised decisions.

For CSPs, understanding business process inefficiencies and being able to create cause-and-effect mapping of processes and dependencies to help drive optimum decision-making for their most valuable customers will prove vital to achieve their vision of delivering on optimum customer

Figure 9: Advanced analytics market in telecoms

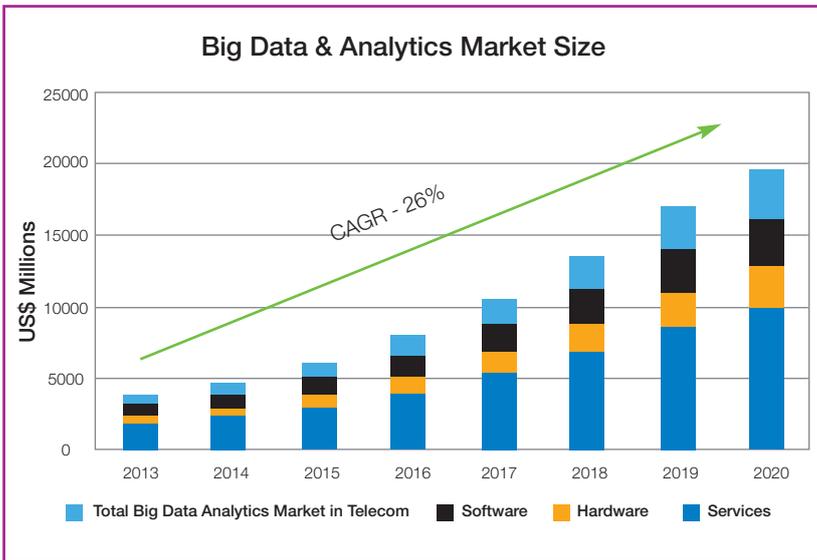
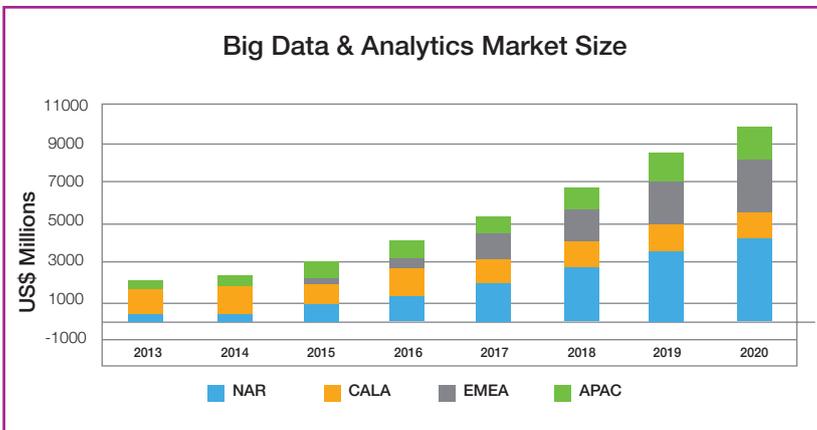


Figure 10: Advanced analytics market size in telecom by region



experience. To transform customer experience via continuous improvement of business processes, it is also critical that the underlying solution be dynamic in nature and able to absorb and contextualise data from the environment constantly.

Simplifying business operations is a big endeavour for CSPs that have organisational and IT implications. CSPs are trying to be operationally lean and are in the process of simplifying their business operations by adapting best-practice methodology, becoming more collaborative and breaking their silos in order to reduce opex and become more competitive.

We believe that a CSP's CEM strategy must be transformative and should be able to anticipate, contextualise and pre-empt customer complaints and queries for their VIP customers. Smart data management and advanced analytics will be a critical component of next-generation CEM solutions and will play a pivotal role in helping them meet their business objectives.

## Investment priorities for advanced analytics

Heavy Reading's study of big data technology usage in telecoms indicates widespread adoption of big data and analytics in the telecoms industry. Our primary research conducted with major global CSPs suggests a fast growing multi-billion market potential that will provide opportunities for both hardware and software vendors. Some of the key findings from our forecast include:

Heavy Reading expects the big data technology and services market to grow from US\$1.95 billion in 2013 to US\$9.83 billion in 2020, as shown in **Figure 9**. This represents a total compound annual growth rate (CAGR) of 26%. Breakout CAGR growth between software, hardware and services are: software will grow at 29.3% CAGR; hardware will grow at 22.8% CAGR; and services will grow at 26.8% CAGR.



Of the five identified business application categories, we believe customer experience enhancement will grow the most, from \$546 million in 2013 to \$3.57 billion in 2020, at 30.8% CAGR. The precise marketing category will increase from \$273 million in 2013 to \$1.6 billion in 2020, at 28.5% CAGR. Operational efficiency improvement will increase from \$449 million in 2013 to \$1.7 billion in 2020, at 23% CAGR, followed by the innovative business model category, which we predict will grow from \$332 million in 2013 to \$1.3 billion, at 22.4% CAGR between 2013 and 2020, and real-time analysis and decision-making from \$351 million in 2013 to \$1.4 billion in 2020, at 21.9% CAGR.

North America continues to be the biggest spender on big data and advanced analytics, as shown in **Figure 10**. We expect spending in this region to grow from \$936 million in 2013 to \$4.37 billion in 2020 (24.6% CAGR). EMEA is next, with a spending of \$565.5 million in 2013, estimated to grow to \$2.97 billion in 2020 (28% CAGR). Asia/Pacific follows with \$292.5 million in 2013, growing to \$1.6 billion in 2020 (26.8% CAGR). Central/Latin America accounted for \$156 million in 2013, which will grow to \$874.7 million in 2020 (27.9% CAGR).

## Conclusion

Converting the deluge of information into actionable real-time information is an arduous task that CSPs must tackle if they want to have a user-defined CSP IT architecture to dynamically meet their business objectives that centres on accurate network planning, providing pre-emptive service assurance and delivering

superior customer experience. Real-time analytics will play a key role in the success of CSPs as they will not only provide them with real-time intelligence, but also help them to maximise their revenue potential from a short window of opportunity.

The challenges of taming big data in order to achieve actionable insight lies in the CSP's ability to collect all data generated and analyse those data collected cost effectively. Unstructured, non-standard, incomplete and inaccurate data makes the task all the more complex. Overall, the complexity surrounding big data is that it is expensive to manage and difficult to extract value out of it. However, big data used effectively has the potential to revolutionise the way CSPs build, run and market their services.

CSPs can use advanced analytics to effectively manage and monetise their big data. They can use advanced analytics for more innovative business models that can offer more targeted campaigns based on specific customer segmentations, as well as location. These more personalised offerings not only increase revenue, but ultimately reduce churn. CSPs can use advanced analytics for pre-emptive service assurance and customer care by correlating the information about the customer from various systems, which can trigger certain actions to prevent problems before they occur.

Strategic big data and advanced analytics implementation can enable CSPs to do all of the above. In the future, big data and advanced analytics implementation will become a fundamental pillar of service and network strategy, and CSPs must start planning for them now. 



Heavy Reading, the research division of Light Reading, offers deep analysis of emerging telecoms trends to communications service providers, technology suppliers and investors. Its product portfolio includes in-depth reports that address critical next-generation technology and service issues, market trackers that focus on the telecoms industry's most critical technology sectors, exclusive worldwide surveys of network operator decision-makers that identify future purchasing and deployment plans, and a rich array of custom and consulting services that give clients the market intelligence needed to compete successfully in the global telecom industry.

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## comptel

### Company summary

Comptel perfects digital moments by transforming the way CSPs serve, meet and respond to the needs of cloud generation customers. The company's solutions allow CSPs to innovate rich communications services instantly, master the orchestration of service and order flows, capture data-in-motion and refine their decision-making. Nearly 300 service providers across 90 countries have trusted Comptel to put what it calls 'Generation Cloud' at the heart of their business and perfect customers' digital moments.

### Big data and advanced analytics credentials

Comptel acquired Finland-based advanced analytics company Xtract in 2012, which empowers CSPs with advanced intelligence and highly accurate predictions to reduce friction in their business. Data Fastermind embeds artificial intelligence, anomaly detection, predictive analytics and machine-learning capabilities on top of Comptel's solutions. Comptel will introduce a cloud-based advanced analytics service for the Internet of Things (IoT) at Mobile World Congress, taking place 2-5 March 2015.

With Comptel's advanced analytics and machine-learning technology, customers have achieved the following outcomes:

- 25% reduction in churn and 75% of potential churners identified by targeting the top 10% of the customer base
- 14 times higher hit-rate in a product marketing campaign and faster campaigning cycles, from monthly to weekly campaigning
- 93% of failing network elements found at the top 10% to improve problem identification

### Key differentiation

Comptel provides CSPs with a fast analytics layer that automatically enriches data streams from every potential source in real-time. Comptel's analytics solution also has machine learning capability, which enables in-stream pattern matching, anomaly detection and predictions, to drive the right actions, at the right times and through the right channels. Comptel's advanced analytics capabilities seamlessly integrate with Comptel EventLink, its big data mediation technology. The company has also productised use cases, to speed up analytics deployments and to ensure quicker business results and time-to-revenue.



## ERICSSON

### Company summary

Ericsson, a world leader in communications technology and services, has a growing, well-defined big data and analytics practice, with a strong product portfolio centred around Ericsson Expert Analytics (EEA).

### Big data and advanced analytics credentials

EEA is a real time, end-to-end, configurable, analytics solution that turns big data into actionable insights addressing CSPs' customer experience and customer behaviour requirements. Based on algorithms developed by Ericsson Research and validated by Ericsson ConsumerLabs, EEA capitalises on Ericsson's domain knowledge and network expertise to deliver CSP-ready use cases for marketing, operations and customer care that help CSPs achieve improved net promoter score (NPS), better retention and loyalty, increased ARPU, and operational savings. Integration with product catalogue, self-care and policy allow EEA to turn insights into actions, such as directly improving the customer experience, or selecting and delivering targeted retention or upsell offers.

### Key differentiation

Ericsson's portfolio also includes other robust and established analytics solutions covering network optimisation and planning, BSS insights, and cloud analytics. This portfolio is complemented with a best-of-breed partner ecosystem and a growing services organisation of more than 200 plus big data practitioners spread across the globe.



## Company summary

Polystar enables CSPs to achieve excellence in CEM, big data analytics, service assurance, network monitoring and high-performance testing. More than 110 CSP customers in more than 50 countries depend on Polystar's solutions. With expertise built on 30 years' of experience, Polystar has its headquarters in Stockholm, Sweden and offices around the world.

## Big data and advanced analytics credentials

Polystar offers award-winning, innovative analytics solutions that enable CSPs to unlock the value of big data and monetise assets more effectively. The solutions include network analytics and network monitoring platforms, as well as a customer insight solution with its Subscriber Analytics and Marketing Analytics modules. With Polystar, CSPs can understand their customers better, help them become faster and more efficient and design personalised offers that fit their needs.

Polystar's solutions can be deployed as stand-alone analytics solutions with their own easy-to-use user interface, or integrated into big data systems from other providers. The information Polystar delivers enriches that from other sources to create new insights into both network and customer behaviour.

## Key differentiation

Polystar has developed a single, integrated solution that delivers data adapted to suit the needs of different stakeholders in the CSP organisation. It is specifically tailored to the needs of departments, such as customer care, product management, operations and more, and backed by drill-down capabilities enabling more data to be exposed as required.



## Company summary

Procera Networks calls itself a global subscriber experience company, and is working to revolutionise the way CSPs and vendors monitor, manage and monetise their network traffic.

## Big data and advanced analytics credentials

CSPs have realised the need for smart data and actionable intelligence in real-time. Mass collection of raw data and storing them into Hadoop platforms is relevant for data scientists. In telecoms, where data is inherently structured, the need is to detect trends and deviations quickly. Procera does just that. By understanding the raw data, through signature definitions, metrics and performance measurements can immediately be extracted. Data is correlated to add perspectives and send forward to analytics applications. Either data is inserted in Procera's Insights engine for immediate action and visualisation, or it can be forwarded with industry standard interfaces like IP-FIX to third party solutions. Advanced analytics needs to understand the traffic and its performance, segment it and enhance the data to put it in perspectives. The key to success is understanding the utilisation of contextual information such as location, subscriber and other information. This needs to be done in real-time because it's only by taking action that the CSPs can enhance the subscribers' experience.

## Key differentiation

Procera's subscriber experience systems are based on best in class deep packet inspection technology, complemented with intelligence gathered from Procera's Perspectives products, which address RAN, video, subscriber, device, routing, traffic, content and topology. Results are displayed in real-time using Dynamic LiveView or streamed using IPFix, and then stored in the PacketLogic Intelligence Center for visualisation in the Insights product family, in an external big data solution, or directly put into action using the inline congestion management, advanced traffic steering or policy solutions.