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## UNDERSTANDING THE **BENEFITS OF BIG DATA**



*By Chris Talbot*

### **DEFINING BIG DATA: TRANSFORMING THE FUTURE OF TELECOMMUNICATIONS SERVICES**

The phrase “big data” may conjure up visions of vast amounts of information in a central repository, but the compiling of data goes far beyond traditional data analytics capabilities. Using a variety of technologies and multiple sources of data, telecommunications companies can gain insight into customers and operations that older analytics models were unable to provide.

According to John Morrell, senior director of product marketing at big data vendor Datameer, telcos were among the first organizations to make use of big data analytics (even before the term was popularized more than a decade ago). Historically, the telecommunications big data journey began by analyzing common data representation (CDR) models, but has grown to include data from disparate sources.

**WHAT EXACTLY IS BIG DATA?**

Although there are conflicting origin stories for the term, today’s definition of “big data” is a little easier to present (but not necessarily easy to understand). According to research firm Gartner, big data is “high-volume, high-velocity and/or high-variety information assets that demand cost-effective, innovative forms of information processing that enable enhanced insight, decision making and process automation.”

Svetlana Sicular, research vice president for data and analytics at Gartner, indicated many people believe big data is simpler than it really is.

“In principle, volume is what people think of big data while in reality it’s only a part of the equation,” she said.

Big data isn’t just about large amounts of data, Sicular said. It’s also about velocity, either in the speed at which data is analyzed or in the enablement of fast business decisions based on insights from big data analytics tools. The last piece of the puzzle is variety. Today, corporate data comes from a myriad of sources, both in structured and unstructured forms.

customer care and so forth. And now they have new sources of data such as text, social media or maybe call center agents’ notes. Or it could be some kind of geolocational data. Geolocational data is extremely important for telcos because that’s one of the great assets that other vendors and other purchasers care about — where people spent their time at 5:00 yesterday,” Sicular explained.



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SVETLANA SICULAR, RESEARCH VICE PRESIDENT FOR DATA AND ANALYTICS, GARTNER RESEARCH

“And variety means traditionally they have only one kind of data, mostly structured data, and they knew how to store it, such as billing, ordering, CRM (Customer Relationship Management), catalogs,

Also important to big data is the application of new technologies to provide new insights for decision-making, she said. There’s not a one-size-fits-all approach to doing big data analytics, though.

“The interesting part of this definition is that it’s relative. Many people make the mistake of thinking that big data is only limited to some particular technology, and the technology that is mostly associated with big data is Hadoop. This is not a single technology and it’s not the only technology,” Sicular said.

The decade-old Apache Hadoop is one of the most frequently referenced big data analytics offerings. Hadoop is a Java-based open source project consisting of four base modules, as well as related modules from an ecosystem of partners and contributors. It’s not the be-all and end-all of big data analytics.

In February, Matt Turck, a managing director of venture capitalist FirstMark, provided a simple explanation of the value of big data: Basically, it's part of the plumbing behind many consumer and business applications.

**HOW TELECOMS USE BIG DATA TODAY**

Many telecommunications companies were early adopters of big data analytics, even if only to better estimate customer churn and improve network operations. Geolocation data is one of the more important elements of big data analytics for telcos, Sicular noted.

Geolocation data combined with customer usage data can be analyzed to provide not only historical data on cellular performance, but also create predictive models to better estimate what usage will be like in particular areas in the future.

various common problems and setting up customer-facing self-service applications for faster resolution.



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JOHN MORRELL, SENIOR DIRECTOR OF PRODUCT MARKETING, DATAMEER



For many telcos today, big data analytics provides a means to reduce customer service costs and identify potential opportunities for new products or services, Datameer’s Morrell said.

Datameer, a California-based big data analytics and visualization vendor, works with about a dozen telecommunications companies. According to Morrell, one such customer is Comcast, which used big data analytics to reduce truck rolls by analyzing

Morrell indicated the company not only decreased time to resolution, but also ensured its call centers and services were more effective. Another end result was improved customer satisfaction. That was only the start for Comcast, which has since used big data analytics to increase the quality of service of its IP telephony networks by examining usage patterns. The company has also improved the customer experience for its video communications services.

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Jack Norris, senior vice president of data and applications at big data analytics vendor MapR, said many telcos are using big data analytics to improve network infrastructure and create value-added service level agreements (SLAs) that are only possible by analyzing large volumes of data rapidly.

The most common telecommunications big data analytics applications focus on customer service

and marketing, improving the network and service delivery, Norris said. The future may present new ways to make use of big data.

## **THE FUTURE OF BIG DATA ANALYTICS FOR TELECOM COMPANIES**

A 2014 IDC/EMC study indicated the amount of data being created is doubling every two years and is expected to reach 44 zettabytes by 2020. The digital transformation of the enterprise and the emerging Internet of Things trend are adding new sources of data to manage and analyze.

It has also enabled telcos to craft and personalize new services.

“We’ve seen huge changes, even to the point that it’s hard to distinguish for a customer whether it’s a media company or a telco,” Norris said.

Add in the growth of microservices and greater connectivity to not just people but also things (such as connected vehicles), and there’s an ever-increasing amount of data to mine for new product and service ideas.

“We talk often about how there’s a big technology replatforming going on,” said George Demarest, director of solutions marketing at MapR.

Although there’s a certain conservatism within the telecommunications sector, Demarest also noted MapR’s telco customers are considering transforming traditional systems using big data analytics.

Telcos are putting more emphasis on making use of streamed data, Demarest said. Big data analytics could help to make data streaming between data centers more efficient. It would help telcos “squeeze every ounce of bandwidth out of their networks,” he said.

According to Gartner’s Sicular, there are also ways to monetize big data that telcos are, for the most part, not currently taking advantage of. She noted how adept telcos are at monetizing CDR data, but with large volumes of different types of customer and network data, telcos may be missing an opportunity to become providers of higher value information. It could be a significant future opportunity. ■

## ALL DATA IS NOT CREATED EQUAL - **THE VALUE OF END-TO-END, CORRELATED DATA**

by John English, Sr. Solutions Marketing Manager, NETSCOUT  
Mike Serrano, Sr. Product Marketing Manager, NETSCOUT

In today's always-on, always connected, mobile world, service providers are looking for a real-time understanding of the user experience so they can make informed decisions about how, where, and when to modify and evolve their networks and services. Traditionally, building such a real-time, 360° view of a user or community of users would be a herculean task pulling together data from multiple sources, multiple vendors, and in multiple formats.

As service providers know, there is no shortage of data within their networks. The challenge is the quality and the depth of the data. Ideally, a service provider would want to leverage packet flow data as this provides the most granular information about the user experience. But, packet flow data has been hard to consume.

First, there is the sheer quantity of data. Second, the multiple formats in which data exist across the network. Third, is correlating data across the network from the RAN to the core to provide a real-time picture of the user. Being able to successfully leverage correlated packet data, would allow operators the ability to move beyond today's flood of low quality data and empower decision makers with high quality data.

### **THE VALUE OF REAL-TIME, RELIABLE, CONTEXTUAL DATA**

The competitive nature of the communications industry and continued evolution in devices has made the need for real-time network and user insights vital to maintaining happy and loyal customers. To be successful, the data must be able to correlate the experience from the device across the network allowing the operator to understand the user experience and within context of how they were

consuming the service. In addition, the process must be repeatable, reliable, and consistent.

To leverage packet flow data, the process must create usable metadata at the source that is imbued with customer experience metrics in real-time. By synthesizing the relevant data and eliminating extraneous data at the source, ensures that operators aren't wasting money and resources on idle, irrelevant data, and provides valuable insight and cost effective scalability. The ability to export this data to a data lake extends the value to big data queries and "what-if" analysis.

In addition, when the instrumentation is independent of the network elements, the operator will have end-to-end visibility that will allow for the evolution of architecture to virtualized elements as well as support the explosion of Internet of Things (IoT) devices all while maintaining visibility.

### **ACCESSIBLE AND USEABLE ANALYTICS**

For far too long, understanding a user or community experience required dealing with a deluge of data. Unfortunately, that data was expensive to gather, complicated to correlate, and rarely, if ever, provided an end-to-end view of user experience. Today, cutting edge service assurance technology is being leveraged to provide operators to end-to-end, correlated user and community views of service and network performance. Providing seamless views from the RAN to the core over physical and virtual infrastructure allows managers and executives to make better decisions based on better data. ■

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## THE BIG DATA **MONEY PLAY IN TELECOM**

by Pam Baker

Proponents have long touted big money in big data for telecom operators, specifically in developing new revenue streams and products. Yet the industry appears sluggish on the big data uptake, which is most often attributed by industry watchers to telecoms being mired in tradition, legacy systems, competitive fears, and a bevy of regulations. But sluggish doesn't mean stagnant and appearances can be deceiving. Despite the deafening silence on what telecom operators are up to with big data, there are quite a few projects underway. Here's the big data money plays in telecoms today.

### HOW O2 IS CASHING IN

Telecoms are notoriously mum on what they're doing with big data, so getting a firm read on how the industry is progressing is challenging.

"It's hard for us to get them to open up," said Rowan Curran, an analyst at Forrester, in a phone interview. Analysts at other firms echoed the sentiment.

"But several are telling us they are running behind in big data and are looking to understand where to start," Curran said. "They're interested in both tools and use cases."

Curran points to mobile operator O2 in the U.K. as a public example of how more forward-thinking telecoms are using big data to create and increase revenues or cut costs.

"O2 is using it for network analytics and contextual marketing," he said. Curran cited a specific use case that is significantly pumping revenue for O2 wherein the company is making international data plan offers to customers en route from the U.K. to France.

"They learned that offering international data plans after their customers arrived in France was too late as few took the offer," he said. "But they also soon learned that pushing the international plan to

customers while they were on the train headed to France, especially before entering the tunnel on one of the routes, substantially increased sales."

Only big data could find that particular revenue generator for O2 as "train schedules had to be inputted; customers on the train, or preparing to be, had to be identified; and appropriate data plan offers had to be pushed to them at exactly the right moment," he said.



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ROWAN CURRAN, ANALYST, FORRESTER RESEARCH

While there is an "arc of maturity" in the industry regarding big data adoption and projects, he said, leaders are racing way ahead.

### AT&T'S BIG DATA USE IN CUSTOMER EXPERIENCE

Victor Nilson, senior vice president of Big Data at AT&T, said in an email interview that the operator is heavily focused on improving the customer experience in three primary areas: internet, wireless connectivity and cyber security.

In internet connectivity, the company is seeking to prevent problems from occurring at all. "We're

tracking 53 metrics on our landline network to discover historical clues that reveal when a cable is about to cause trouble. By using predictive analytics to send crews out proactively rather than reactively, a pilot program showed a 40% reduction in total repair dispatches,” Nilson said.

“As the program expands, in the first half of 2016 we completed more than 1,100 rehabilitation jobs based on the Big Data predictive method—before the customer experience was affected.”



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showed a 40% reduction in total repair dispatches.”

VICTOR NILSON, SENIOR VICE PRESIDENT OF BIG DATA, AT&T

AT&T faces harder challenges in doing the same for its wireless network.

“It’s actually quite complicated to figure out what’s going on when the network has issues,” said Nilson.

“TONA, the Tower Outage and Network Analyzer tool developed here at AT&T, uses real-time data and historical measurements of previous disturbances to capture the effect of the disruption. We’re able to prioritize restoration work quickly, and in a way that is not necessarily intuitive,” he said.

“By analyzing true customer impact, not just system alarms, TONA helps us shorten the duration of events for the greatest number of people.”

Curtailing security threats is also vital to ensuring a good customer experience. To that end, Nilson says big data combined with machine learning is the “brains behind our security services.”

“It uses multitudes of unique threat signature data streams, analytics and intelligence to help detect known and unknown threats,” he said. “It uses machine learning to adapt to the latest global threat activity, based in part on the 5 billion vulnerability scans and 200,000 malware events targeted at AT&T every day.”

### USING BIG DATA TO STAVE OFF NEW COMPETITORS

Most telecoms are just now dipping their toe in the big data waters. Typical projects are small but generally effective.



“The payoffs are mostly incremental—tweaks over time that add up to make a major difference,” said Gerry Purdy, principal analyst at mobile research firm Mobilicity, in a phone interview. “Occasionally a project will deliver a big payoff and change pricing models.”

While slow and steady increases in revenue and decreases in costs may indeed win the race, more

aggressively competitive telecom operators are actively seeking to hit the new revenue jackpot.

“A particularly apt use of Big Data to generate revenue opportunities for operators involves operators combining external data with their own internal data not only to better serve customers but to create new revenue opportunities,” said Frost & Sullivan Big Data & Analytics Industry Director Jeff Cotrupe in an email.

However, this move is not spurred by greed but rather by competitive necessity.

locations, and service provisioning data,” so that “the operator is able to create targeted marketing offers to subscribers to generate new revenues.”

### **NEW BIG DATA, BIG MONEY PLAYS FOR TELECOM OPERATORS**

But it isn't just revenues from consumer subscribers that telecoms are after. They're looking to create new revenue streams from enterprise customers and partners too.

“Telecom operators aren't just looking for opportunities internally, but at how to create data products for partners to add value on top. They're looking to create data deliverables,” said Forrester's Curran.

There exists some confusion on how best to do that at the moment.

“Some operators have sought to monetize location based information but it didn't work out and those efforts have faded away. The challenges lie in how these service providers package their offering but also in how other industries value the service providers,” said Elisabeth Rainge, Research Vice President of IDC's Communications Service Provider Operations research program, in an email interview.

“It's going to take time. Digital relationships are at the heart of the telecom industry: telecom is a digital product,” she said. “For some, seeing the explicit points of value is as hard as explaining how to ride a bicycle. Digital value is intuitive for telecom. But it's not necessarily easy to articulate: telecom can have very jaded, dated or technical language. Getting the value right will take time. It's a cultural shift that will make the difference.” ■



“This is extremely welcome in today's environment where over-the-top (OTT) providers are delivering, for free or at extremely low cost, the communications capabilities that used to be the sole province of operators. Operators are fighting back,” he said.

They are doing that, Cotrupe said, by resolving specific service issues and “by combining customer satisfaction surveys scores, such as the Satmetrix Net Promoter Score (NPS), customer experience data, in-store analytics from an operator's retail