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*Benefiting  
from big data*

**&**

**A new approach  
for the telecom  
industry**



## Contacts

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### Beirut

**Bahjat El-Darwiche**  
*Partner*  
+961-1-985-655  
bahjat.eldarwiche  
@strategyand.pwc.com

### Dubai

**David Tusa**  
*Partner*  
+971-4-390-0583  
david.tusa  
@strategyand.pwc.com

### Düsseldorf

**Roman Friedrich**  
*Partner*  
+49-211-3890-165  
roman.friedrich  
@strategyand.pwc.com

### Frankfurt/Dubai

**Olaf Acker**  
*Partner*  
+49-69-97167-453  
olaf.acker  
@strategyand.pwc.com

### Madrid

**José Arias**  
*Partner*  
+34-91-411-5121  
jose.arias  
@strategyand.pwc.com

### Milan

**Luigi Pugliese**  
*Partner*  
+39-02-72-50-93-03  
luigi.pugliese  
@strategyand.pwc.com

### Moscow

**Steffen Leistner**  
*Partner*  
+7-985-368-78-88  
steffen.leistner  
@strategyand.pwc.com

### Mumbai

**Jai Sinha**  
*Partner*  
+91-22-6128-1102  
jai.sinha  
@strategyand.pwc.com

### New York

**Christopher Vollmer**  
*Partner*  
+1-212-551-6794  
christopher.vollmer  
@strategyand.pwc.com

### Paris

**Pierre Péladeau**  
*Partner*  
+33-1-44-34-3074  
pierre.peladeau  
@strategyand.pwc.com

### Riyadh

**Hilal Halaoui**  
*Partner*  
+961-1-985-655  
hilal.halaoui  
@strategyand.pwc.com

### São Paulo

**Ivan de Souza**  
*Senior Partner*  
+55-11-5501-6368  
ivan.de.souza  
@strategyand.pwc.com

### Sydney

**Steven Hall**  
*Partner*  
+61-2-9321-2835  
steven.hall  
@strategyand.pwc.com

### Tokyo

**Toshiya Imai**  
*Partner*  
+81-3-6757-8600  
toshiya.imai  
@strategyand.pwc.com

## About the authors

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**Olaf Acker** is a partner with Strategy& based in Frankfurt and Dubai. He focuses on business technology strategy and transformation programs for global companies in the telecommunications, media, and high-tech industries.

**Adrian Blockus** was formerly a senior associate with Booz & Company.

**Florian Pötscher** is a senior associate with Strategy& based in Vienna. He assists clients in consumer-oriented industries, such as telecom, high tech, and media, in developing new business and enhancing customer service.

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# Executive summary



**How much can companies in the telecommunications** industry benefit from “big data”? That’s a critical question. Every operator is searching for new ways to increase revenues and profits during a time of stagnant growth in the industry, but few have demonstrated the capabilities needed to make the most of this new technology.

That’s why operators seeking to make initial inroads with big data are advised to avoid the usual top-down approach, which sets up a business problem to be solved and then seeks out the data that might solve it. This method does have benefits, but it is unlikely to lead to any serendipitous and surprising results — and it is difficult to execute until a company has demonstrated mastery in its use of data.

Instead, operators should begin with the data itself, experimenting with what they have on hand to see what kinds of connections and correlations it reveals. This process must be carried out quickly and iteratively, without the overbearing oversight from which so many business development projects suffer. If it’s done right, what emerges can form the basis for more efficient operations and more effective marketing. At its best, this bottom-up method can give operators a more complete, transparent view of customers, enabling new and more profitable ways of capturing and retaining them.

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# *Opportunity awaits*

The virtues of big data have been touted in hundreds of articles and reports during the past few years. Yet the benefits have proven elusive for a lot of companies. Indeed, some analysts already see a considerable level of disillusionment regarding big data — an umbrella term encompassing the new methods and technologies for collecting, managing, and analyzing in real time the vast increase in both structured and unstructured data — because too many efforts to implement the technology have not lived up to the high expectations triggered by the hype.

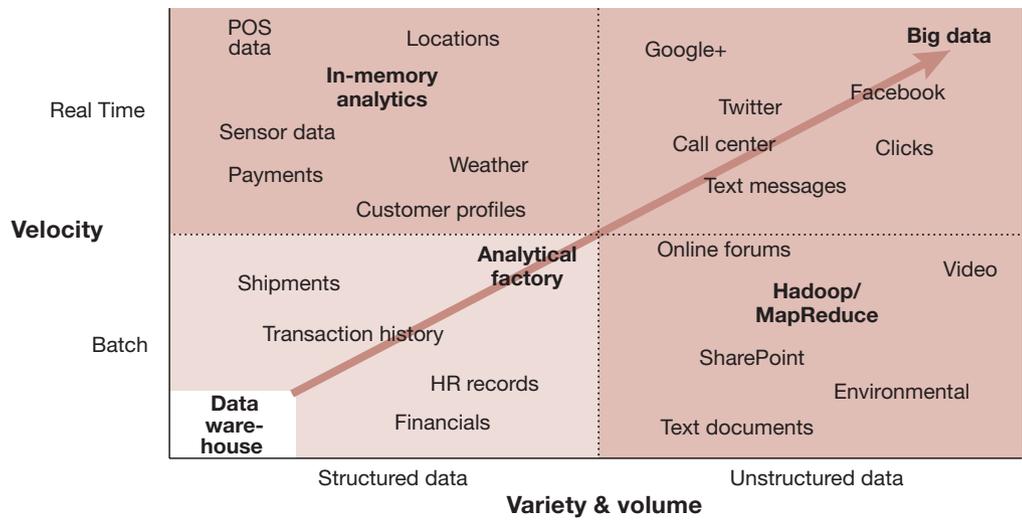
This is particularly true in the telecom sector. Most operators conduct analytics programs that enable them to use their internal data to boost the efficiency of their networks, segment customers, and drive profitability with some success. But the potential of big data poses a different challenge: how to combine much larger amounts of information to increase revenues and profits across the entire telecom value chain, from network operations to product development to marketing, sales, and customer service — and even to monetize the data itself.

The typical advice offered to telecom operators — indeed, to companies in every industry — is to take a top-down approach by focusing on specific business problems that big data might solve, and then gathering the data needed to solve them. But the challenge in this strategy is twofold: First, the business problem often exceeds the capacity of the available data to solve it, and second, the process of gathering the right data to help solve the problem is poorly understood by many companies.

To circumvent this problem, companies should begin with the inverse approach, viewing the opportunity from the bottom up. In this scenario, you examine the data currently available, and only then determine the business problems the data might help solve, with the help of any additional structured or unstructured data that might be needed (*see Exhibit 1, next page*). We believe the best way to get started with this approach is through pilot programs. Keeping initial expectations reasonable, a dedicated team gathers all available data, analyzes it to allow new and unexpected opportunities to reveal themselves, and then tests the efficacy of the results in solving one or more real business problems. This tactic offers telecom operators and others a concrete

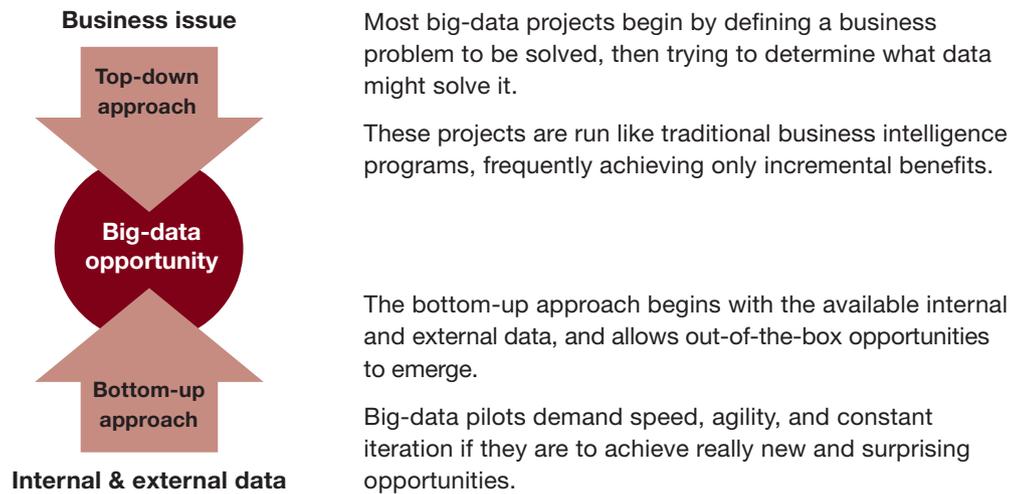
starting point, a more realistic assessment of the benefits of big data, and a better understanding of what is actually needed to achieve those benefits in the long term (see Exhibit 2).

**Exhibit 1**  
**What is big data?**



Source: Strategy& analysis

**Exhibit 2**  
**Two approaches to big data**



Source: Strategy& analysis

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# *The promise of big data for telecom*

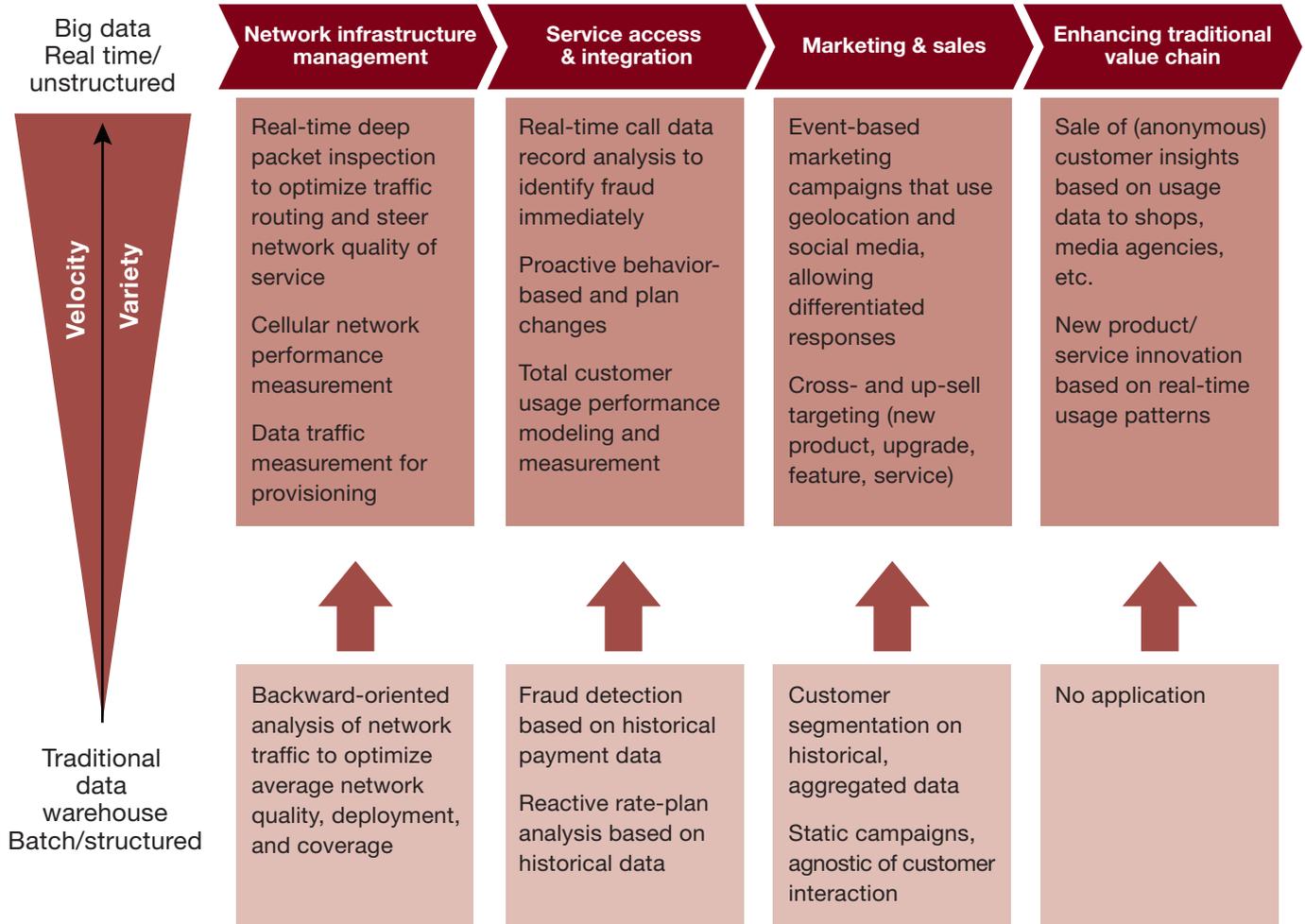
Big data promises to promote growth and increase efficiency and profitability across the entire telecom value chain. Exhibit 3, next page, shows the benefits of big data over the opportunities available through traditional data warehousing technologies. They include:

- Optimizing routing and quality of service by analyzing network traffic in real time
- Analyzing call data records in real time to identify fraudulent behavior immediately
- Allowing call center reps to flexibly and profitably modify subscriber calling plans immediately
- Tailoring marketing campaigns to individual customers using location-based and social networking technologies
- Using insights into customer behavior and usage to develop new products and services

Big data can even open up new sources of revenue, such as selling insights about customers to third parties.

Exhibit 3

Big data offers benefits across the entire telecom value chain



Source: Strategy& analysis

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# *From the bottom up*

The essence of the bottom-up approach lies in gathering together all the data available to the operator, both internal and external; applying software tools to process, analyze, and make sense of it; and then determining what can be done with the results. The key is to allow the data to “speak for itself,” bringing out not just the obvious correlations and connections, but the unexpected ones as well. Data has no agenda. It’s incorruptible, it has no boss, it doesn’t want to be promoted, and it doesn’t quit. Many types of data are potentially available to operators — though it is unlikely that operators will have all these sources at this stage — and certain sets of data might be combined to open up new business opportunities in areas such as campaign marketing and fraud prevention (see *Exhibit 4, next page*).

- *Enhanced recommendation engine:* Operators could generate more accurate and personalized offer recommendations for existing individual subscribers by combining internal structured data, such as how and where each subscriber uses his or her phone, with external unstructured or semi-structured data from social media platforms (for example, Facebook and Twitter). This information on customer preferences and behavior could enable the recommendation engine to match price plans and offer attractive add-ons, such as sports add-ons for fans and free audiobook offers for commuters. As a result, operators could lower the costs of retaining existing subscribers and identify cross- and up-selling opportunities to improve average revenue per user and reduce churn.
- *Improved fraud management:* By correlating internal location, usage, and account data with external sources such as credit reports, operators could significantly increase the detection of fraudulent activity such as looping or call forwarding on hacked PBXs (private branch exchanges), or fraud involving the swapping of SIM cards, and improve the overall accuracy and efficiency of their efforts to recognize patterns of fraudulent behavior.

*Data has no agenda. It’s incorruptible, it has no boss, it doesn’t want to be promoted, and it doesn’t quit.*

Exhibit 4  
 Potential data availability and usage



Internal data				
Network events	Product catalog	Customer devices	Order data	Call duration records
<i>Call records (on and off network)</i>	Product life-cycle data	<b>Option preferences</b>	<b>Contract data</b>	<b>Tariff data</b>
Number of text and multimedia messages	Product and platform costs	Sales channel data	Fault handling data	<b>Usage history</b>
Volume of data traffic	Innovation road map	<b>ARPU classification</b>	· Problem type	<i>Customer account data</i>
<i>Location-specific data</i>	Product usage	Response rate of marketing campaigns	· Resolution time and rates	
<i>User handset data</i>	Critical products	Segmentation data	· Repeated faults	
Technical fault data	Product delivery management	<i>Usage patterns</i>	Call center logs	
		Subsidy levels	Termination reasons	

External data				
EJLWireless	Gartner	eMarketer newsletters, consolidated data	<b>Social media data (e.g., Twitter, Facebook)</b>	<i>Credit Karma</i>
IDC	451 Research	Acxiom marketing data	European Commission: eCommunications external studies	<i>Experian</i>
Burton Group	Research Services	TDG research reports	BuddeComm	Tarifica
ECTA Broadband Scorecards	TBR	Ovum	TelegeoGraphy	ITU country & regulator Profiles
Informa WBIS	Digital World	Forrester	GlobalComms	ITU World Telecommunication/ ICT Indicators Database
Diffraction Analysis	iSuppli	Nielsen metric	Merrill Lynch Wireless Matrix	TeleGeography yearbook
FTTH Council Europe	ComScore Data Mine	GfK		OECD Communications Outlook
	European Information Technology Outlook	TNS Infratest		
	Arab Advisors Group	ITU country case studies		

**Bold** - Enhanced recommendation engine

*Italic* - Improved fraud management

Source: Strategy& analysis

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# *Piloting big data*

The eventual goal of big data is to combine and correlate every information source to generate a holistic, transparent, end-to-end view of all the interactions every individual customer or household has with the operator. But to really leverage big data, operators must radically modify how they gather, verify, learn from, and make use of the information at their disposal. That means completely rethinking the purpose of the traditional corporate pilot program, long dependent on uncovering incremental opportunities by setting rigid, predetermined goals and hoping to attain them through laborious and time-consuming stage-gate and approval processes.

Instead, operators must learn from companies such as Google and Facebook, where data is king and virtually every product decision flows from what the available data says about customers and how it can be used. The big-data pilot program should be made up of teams of people from all over the company — including network operations, IT, product development, marketing, finance, and perhaps even customers — who can bring their particular expertise to analyzing the data in new and different ways. They must know what it means to “play around” with the data, testing various combinations and correlations to see what works and what doesn’t.

This process must be agile, iterative, and quick. Piloting teams need to conduct numerous tests on the data, learn from their mistakes and false starts, and move to the next test. They must avoid the overly structured mind-set that can drag pilot programs out for months and years, carefully vetting incremental improvements at every level of the corporate hierarchy. And they must speed up the evolutionary process of development, allowing the fittest and most valuable results to emerge quickly.

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# ***Conclusion***

Big data offers telecom operators a real opportunity to gain a much more complete picture of their operations and their customers, and to further their innovation efforts. The industry as a whole spends far less on R&D than any other technology-oriented industry as a percentage of sales, and its efforts to change its ways have not yet proven broadly successful. Big data demands of every industry a very different and unconventional approach to business development. The operators that can incorporate new agile strategies into their organizational DNA fastest will gain a real competitive advantage over their slower rivals.

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