



★ **BigData**  
**4Analytics**

# CEO Masterclass: Using Big Data as a competitive weapon

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Mike Fish

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## About this guide

With a 25 year international career spanning enterprise software, management consulting and venture capital, Mike Fish spent many years in supercomputing software (where every dataset is ‘Big’). An experienced business advisor, board member and accredited CEO Coach, he is passionate about demystifying the technology-centric profile of Big Data - bringing it to a business audience by translating it into propositions that generate tangible value. He founded BigData4Analytics in 2012 to act as a thought leader and independent ‘Trusted Adviser’ to business leaders embarking on their Big Data journey.

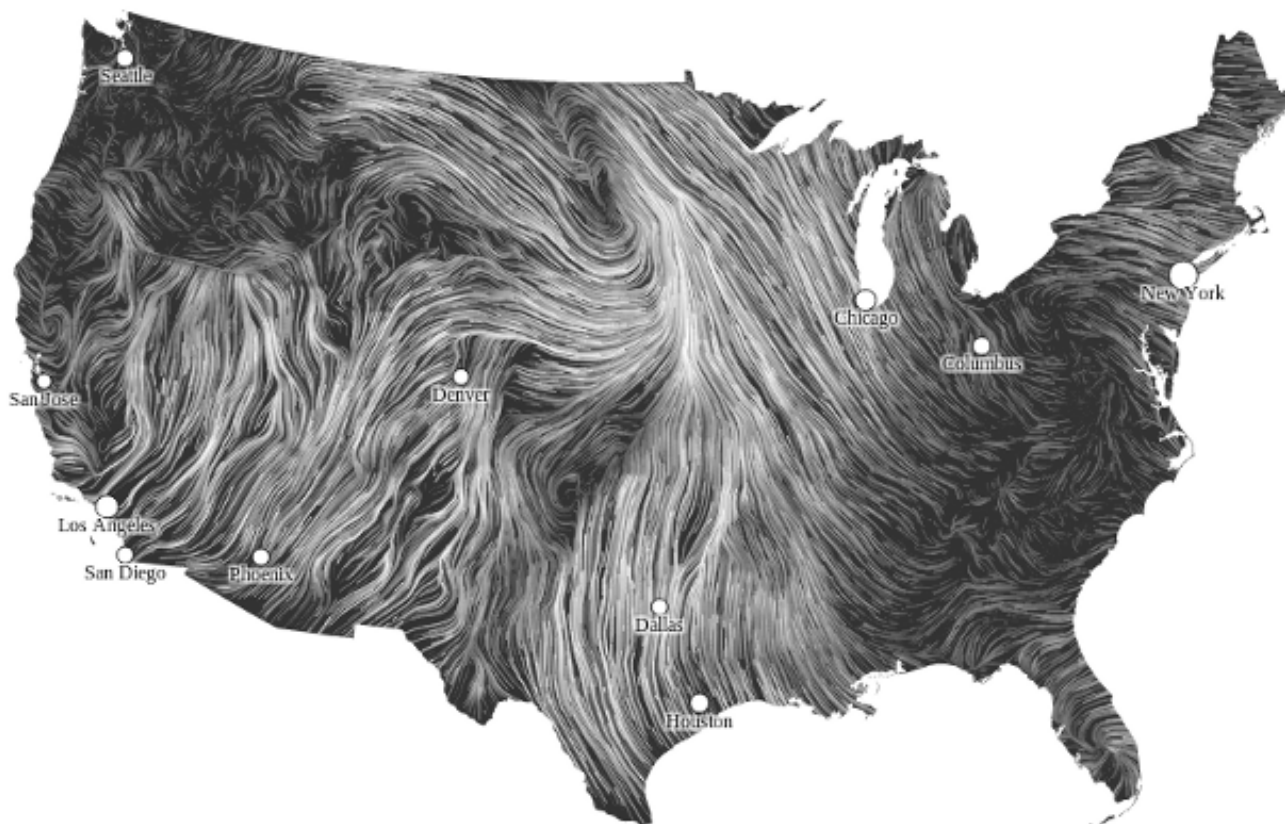


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This overview is intended to provide non-technical CEOs and senior executives with the information they need to make decisions about a significant change in the nature of competition that is starting to affect businesses of all kinds. Choosing not to have an opinion - or delegating to IT departments or junior staff - is to miss the significance of this transformation in the nature of competition itself.

Mike uses his detailed knowledge of this emerging topic to cut through the buzzwords and address the questions CEOs need to know, such as: What actually is Big Data? How is it different from the IT that I already have? How is it being deployed and what benefits are so far visible? And, last but not least: What should I consider to plan for it and to test the waters?

Sprinkled with real-world case studies from Europe and the USA, and refreshingly devoid of technology terms, this study draws on BigData4Analytics projects - and on work by leading journals, businesses, academics and consultancies - to produce the most practical, business-oriented and easily digestible guide to the Big Data landscape of 2013/4.



## Executive Summary

**M**any companies today do not have a Big Data strategy. And many senior leaders have yet to grasp the significance of what seems to be a purely technology wave. But the hype is hiding the emergence of a new opportunity to base management decisions on objective insight and unprecedented detail. By ramping up their marketing to target their traditional customers in IT departments the global technology companies are missing the target, since the initiators of Big Data projects are non-technical managers who are generally alienated by technology hype.

Despite the many 'What is Big Data' articles, no consistent definition has emerged so far. But this doesn't matter - what is more important is the potential for this emerging technology to

transform the way management is performed in large enterprises and to change the battleground for the hearts and minds of consumers. For those who are considering adopting it, defining Big Data by reference to how it improves enterprises is probably more useful. Five key areas of application include Revenue generation and business model development, Cost containment in real-time, Real-time forecasting, Tracking of physical items and Reinventing business processes. Once these areas of impact are understood then the identification of the different sources of Big Data becomes more meaningful.

Vast quantities of measurements from inexpensive internet-connected sensors can now be captured at modest cost - such as those that enabled UK retailer Tesco to learn that many of its

“There is no doubt that this emerging wave is a transformational wave not just a technology wave - where the competitive battleground is already shifting in favour of businesses that can use data to outwit or outperform their competitors.”

food chillers in its 1,800 stores had been running at too low a temperature. 70 million data points were translated into a saving on the company's electricity bill of 20%. Whether this Machine-to-Machine (M2M) data is collected from refrigerators, jet engines, vehicles or oil drilling rigs, the ability to collect it analyse it and use it to improve business is compelling. Just as useful is the operational data such as supply chain, financial transactions or website behaviour, that many companies already use to 'run' their business at the transaction level, but can - once aggregated, and with the right tools - yield up new insights to better 'manage' their business. The traditional record of a purchase, the humble till receipt, has now been replaced by a long trail of website visits, online comparisons, social media interaction and in-store browsing leading up to the actual purchase.

This is the key to the value of Big Data - the ability to combine large volumes of data in new ways to find unexpected patterns. Traditional analysis tools (Business Intelligence or BI) have been used for years to derive insight from operational data - but these tools generally analyse the past rather than the present. Big Data tools operate on far larger volumes of data (and more types of data) to provide the basis for "Real Time Analytics" (necessary to not only detect fraud but also to block a transaction as it is being made), 'Predictive Analytics' (that sends out a repair engineer before a generator fails) and even 'Prescriptive Analytics'. The distinction here is that Predictive analytics might help you understand the drivers behind customer buying patterns to anticipate the products customers want, whereas Prescriptive analytics actively incorporates management decisions into predictions, for example helping optimize scheduling, production, inventory and supply chain design to deliver forecasted purchases in the most optimized way.

All of these examples are based on data that is easily managed by computers, but the emergence of Social Media offers a tantalising new opportunity as ever more fickle consumers turn increasingly to their friends and online forums to make purchase decisions. Brands have attempted

to launch their own messages into this medium but with little success, and consumers now prefer to complain about brands on Social Media rather than contact customer support. So the capture and interpretation of these brief messages - 'Social Media Listening' has become crucial for reputation management, product launch and customer service- extending beyond just Marketing into many other functions. New technology approaches are required to filter and derive meaning from 'free text' data sources such as Twitter that generate 5,500 messages each second.

Far from being a 'Technology wave', Big Data looks more like a 'Business Transformation wave' in which the collection, analysis and interpretation of vastly more data than before is now possible, and in a far shorter time. The users of this data are in fact unchanged - they are the functional and business managers and the executive teams who now find themselves with a more powerful telescope (or perhaps microscope) to understand the influences within and outside their business.

This leads us to the most important element of Big Data adoption - people - and the changes in management behaviour that it will drive. 'Gut feel' will gradually be overtaken by a more 'evidence-based' culture that will require different behaviour right up to the boardroom. Organisations that consider data as a 'corporate asset are already outperforming their competition. New skills and job roles will emerge to support and drive this process, and the more visionary CEOs will realise that executive sponsorship is vital for those first steps that their company takes in Big Data.

Enterprises are starting to get results from Big Data - incremental ROI of 241% objectively measured<sup>6</sup>. So most forward-looking CEOs and Senior Management teams will now be laying the foundations for a Data-Driven future. "Big data has changed the C-suite entirely," said Shawn Banerji, Managing Director at Russell Reynolds Associates<sup>10</sup>, a New York-based technology recruiter. "Reliance on empirical data is in. Going with your gut is out."

"Reliance on empirical data is in. Going with your gut is out."<sup>10</sup>

# CEO introduction to Big Data

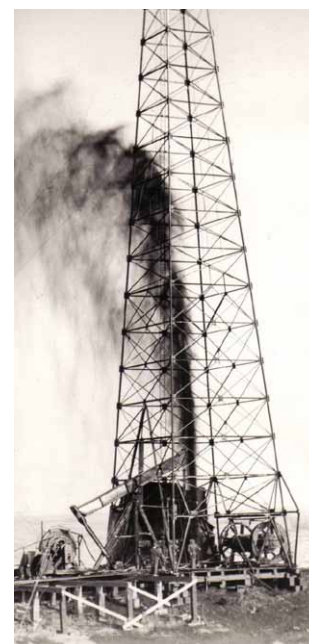
## The New Oil” - or “Failure to Launch”?

**O**n January 10, 1901, an enormous geyser of oil exploded from a drilling site at Spindletop Hill in southeastern Texas. Reaching a height of more than 150 feet and producing close to 100,000 barrels a day, the ‘gusher’ was more powerful than any previously seen in the world. A booming oil industry soon grew up around the oil field there, and many of the major US oil companies, including Gulf Oil, Texaco and Exxon, can trace their origins there. The discovery of the Spindletop geyser drove more than 1,500 oil companies to set up within a year. Oil became the dominant fuel of the 20th century and an integral part of the world economy.

Big Data has been dubbed “The New Oil” by the World Economic Forum, but it is different. Many of the larger suppliers are already established, and many customers are already testing the water. This emerging market looks perhaps more like a gold rush as they all vie for the attention of buyers. But who are the buyers? They are certainly not the traditional IT buyers – CIOs and IT departments of enterprises. These days IT departments are so

overloaded that they are more focused on ‘keeping the lights on’ and so rarely initiate Big Data projects – business managers do. And this goes to the heart of the reason why the immense volume of vendor hype is not working – it targets the wrong people and alienates the real decision makers, who dislike technical buzzwords and prefer to discuss business cases and Return on Investment.

It is not that business managers have their heads in the sand – far from it. They understand that one cannot act objectively on what is not measured. They also understand that the tide of raw data that surrounds them could be put to better use – they read about Big Data in the press and wonder if it is for them. It’s just that they don’t know what questions to ask or how to get started, despite the white papers of vendors promoting point technologies rather than solutions and the Big Four consultancies proposing global scale projects. This then is the biggest obstacle to the adoption of Big Data – the absence of independent, business-oriented sources of information, without which they find it just too daunting.



## Case studies

**W**hat do CEOs need to know about Big Data? From a technology perspective, not much. More interesting is what it can be used for, how easy it is to deploy and how to maximise the chances of success. There is no doubt that this emerging wave is not just a technology wave – it is a transformational wave where the competitive battleground is already shifting in favour of businesses that can use data to outwit or outperform their competitors.

This applies to a far wider range of businesses than just technology firms or online retailers. And not only does becoming ‘data-driven’ require new

skills and even new roles, it will also require today’s business leaders to learn to deal with data in many situations where ‘gut feel’ or HIPPO (the Highest Paid Person’s Opinion) can no longer be the main driver for decision making. While CEOs and CIOs need to prepare for Big Data decision-making, they should also be ready to delegate decisions to other managers.

Often, people on the frontline can make the better decisions, says Frank Diana, a principal consultant at Tata Consultancy Services’ U.S. operations. “It’s hard to get people used to not making decisions on a gut level. The key is that decision making has to be pushed closer and closer

Algorithm: The first algorithm was created in the ninth century by the Arabic scholar Al Khwarizami—from whose name the word is a corruption. Ever since, they have been mechanistic, rational procedures that interact with mechanistic, rational systems.

to the edge, where business is being conducted,” says Diana. He says the term big data may come and go, but the need for new sets of data analysis skills will only continue to grow; “one of the fundamental elements driving success in the future is analytics excellence.”

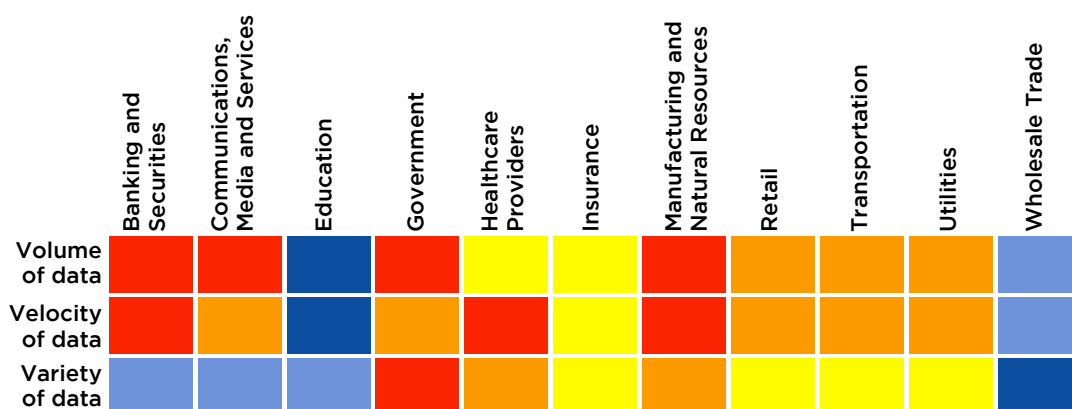
When your competitor takes the plunge first this can force a change of strategic direction. For example, the large hotel chains such as Starwood, Hilton, and Hyatt hotels suffered this by having to compete against the first wave of digital business models from sites such as Hotels.com, during the e-commerce era. And now the new digital business model created by companies such as AirBnB is causing these hotel chains to compete against an expanding inventory of rooms, not in other hotels, but in their customers’ own homes. “A ‘business moment’ can come from nowhere”, says Huan LeHong of Gartner, “yet they can happen anywhere, and are almost different in terms of product, time-frame or competitor.”

Sectors that we have researched<sup>1</sup> at BigData4Analytics, and have identified use cases for, include:

- B2B
- Entertainment & Gambling
- Financial Services
- Food & Drink
- Government & Weather Forecasting
- Healthcare
- Insurance
- Manufacturing
- Online Retailing
- Precision Farming
- Real Estate & Smart Buildings
- Retailing
- Semiconductors
- Sports
- Supply Chain & Logistics
- Telecommunications
- Transport & Aviation
- Utilities

Warren Buffett once said, “Beware of geeks... bearing formulas”

In addition we identified some other functional areas of interest, such as Skills & Recruitment, as well as the opportunity for monetising data as a by-product of Big Data adoption.



Potential big data opportunity on each dimension is:

- Very hot (compared with other industries)
- Hot
- Moderate
- Low
- Very low (compared with other industries)

Figure 1  
Sector heat map by industry<sup>2</sup>  
(Gartner)

# What CEOs really need to know

**T**here are five broad types of business applications that are directly enabled by Big Data<sup>3</sup>:

- 1. Revenue generation and business model development**, particularly in retail and consumer packaged goods where there is direct or indirect interaction with large consumer markets, moves to a new level. Marketing uses social media information, both content and relationship, to move from sampling to full dataset analysis; from demographic segments to markets-of-one, and from longer-term trending of historical data to near real-time reaction to emerging events. Prediction of customer behaviours and outcomes of proposed actions, allows new business models to be created and tested, ultimately driving increased revenue.
- 2. Cost containment in real-time** becomes viable as electronic event monitoring from automobiles to smartphones, fraud detection in financial transaction data and more, expands to include larger volumes of, often smaller size or value, messages on ever-shorter timescales. Big Data analysis techniques on streaming data, before or without storing it on disk, have become the norm, enabling faster reaction to specific problems before they escalate into major situations.
- 3. Real-time forecasting** becomes possible as utilities, such as water and electricity supply and telecommunications, move from measuring consumption on a macro- to a micro-scale using pervasive sensor technology and Big Data processes to handle it. Value arises as consumption peaks and troughs can be predicted and, in some cases, smoothed by influencing consumer behaviour. Predictive maintenance now becomes a competitive weapon.
- 4. Tracking of physical items** by manufacturers, producers and distributors. Everything from

food items to household appliances and from parcel post to container shipping—through distribution, use and even disposal—drives deep optimisation of operational processes and enables improved customer experiences. People, as physical entities, are also subject to tracking for business reasons or for surveillance.

- 5. Reinventing business processes** through innovative use of sensor-generated data offers the possibility of reconstructing entire industries. Automobile insurance, for example, can set premiums based on actual behaviour rather than statistically averaged risk. The availability of individual genomic data and electronic medical records presents the medical and health insurance industries with significant opportunities, not to mention ethical dilemmas.

What is conventionally described as 'Big Data' can include the data that businesses use today in their day-to-day operations, such as customer records, payment transactions, stock and supply chain records and so on. These transactional systems are designed to 'run' your business, whereas analytical systems - including Business Intelligence (BI) - are designed to help 'manage' your business. However, most BI systems produce weekly or monthly reports and dashboards, and so are primarily a 'rear-view mirror' on the performance of the business. Big Data goes further, looking at current (real-time) and future (predictive) behaviour and avoids pre-judging what analyses will be required (no standard reports) - instead including discovery tools to explore new patterns and relationships. It also handles a wider variety of types of data (not only structured records, but also unstructured data; from Twitter and Facebook posts to medical or CCTV images).

But using existing internal data does not provide the whole story. As part of our blue sky thinking with clients, we also consider what could be done

The ability of analytics to boost profits is real. For example, a European financial institution dramatically increased both the number and quality of segmented campaigns with sharply increased results. Combining its transaction data with demographic data, the financial institution was able to vastly improve its direct marketing. Sales from direct marketing grew from close to zero to 30% in consumer loans, 33% in overdraft protection purchases, and 60% in credit cards. Direct profit reached \$30 million.

to drive further business efficiencies. Perhaps credit-referencing data could be used to reduce customer default risk for example, or weather data used as an input to marketing campaigns

for outdoor goods or ice cream. There are many examples of where external data can be combined with existing processes to create new value or efficiencies.

## Machine to Machine data (M2M, or “Internet of Things”)

**Another type of Big Data is machine-generated data - produced by individual sensors that measure physical parameters (environmental, weather, smart energy meters or even data captured by the array of sensors on mobile phones and shared by their owners). Or it may be collected from manufacturing equipment, business processes (using RFID tags and barcodes) or even activity logs from IT systems such as websites, firewalls or servers.**

BMW’s “ConnectedDrive” offers drivers directions based on real-time traffic information, automatically calls for help when sensors indicate trouble, alerts drivers of maintenance needs based on the actual condition of the car and feeds operation data directly to service centres. The ability to track the use of products at a micro-level has also made possible monetization models that are based not on the purchase of a product but on services priced by their usage<sup>4</sup>.

And in the retail world, a leading UK supermarket chain fitted internet-enabled sensors to its refrigerators and chillers in its stores, only to find that many of them were running colder than required and thus wasting energy. The records of the fridge systems in one store alone produce 70 million data points a year, and the company managed to reduce its electricity consumption by 20%, by adjusting these temperatures - a pragmatic but effective use of Big Data.

For decades, the oil industry has used huge amounts of real-time data to develop ever more hard-to-reach deposits. Now, the industry has extended its use of Big Data to the production side to the automated, remotely-monitored oil field. The benefit of this approach is that it cuts operations and maintenance costs that can account for 60 per cent of wasted expenses. In the digital oil field, a single system captures data from well-head flow monitors, seismic sensors and satellite telemetry systems, monitoring and adjusting parameters to optimize production and minimize downtime. Experience suggests that the digital oil field can cut operational costs by ten to 25 per cent even while potentially boosting production by five per cent or more.

“Formula 1 is a very strong metaphor for how the world is developing around a more industrialised Internet,” says Peter van Manen, managing director of McLaren Electronic Systems, part of a group which makes F1 cars. “You take information and you measure things, and from that you try to adapt how things behave and flow, so you can make performance better”

### Consider 10 million page views a day on a popular web site:

- Capture the User ID for every page view and store them as integer
- 10 million x 4 bytes = 40MB of storage/day
- 40MB x 30 days = 1.17GB/month just for User ID



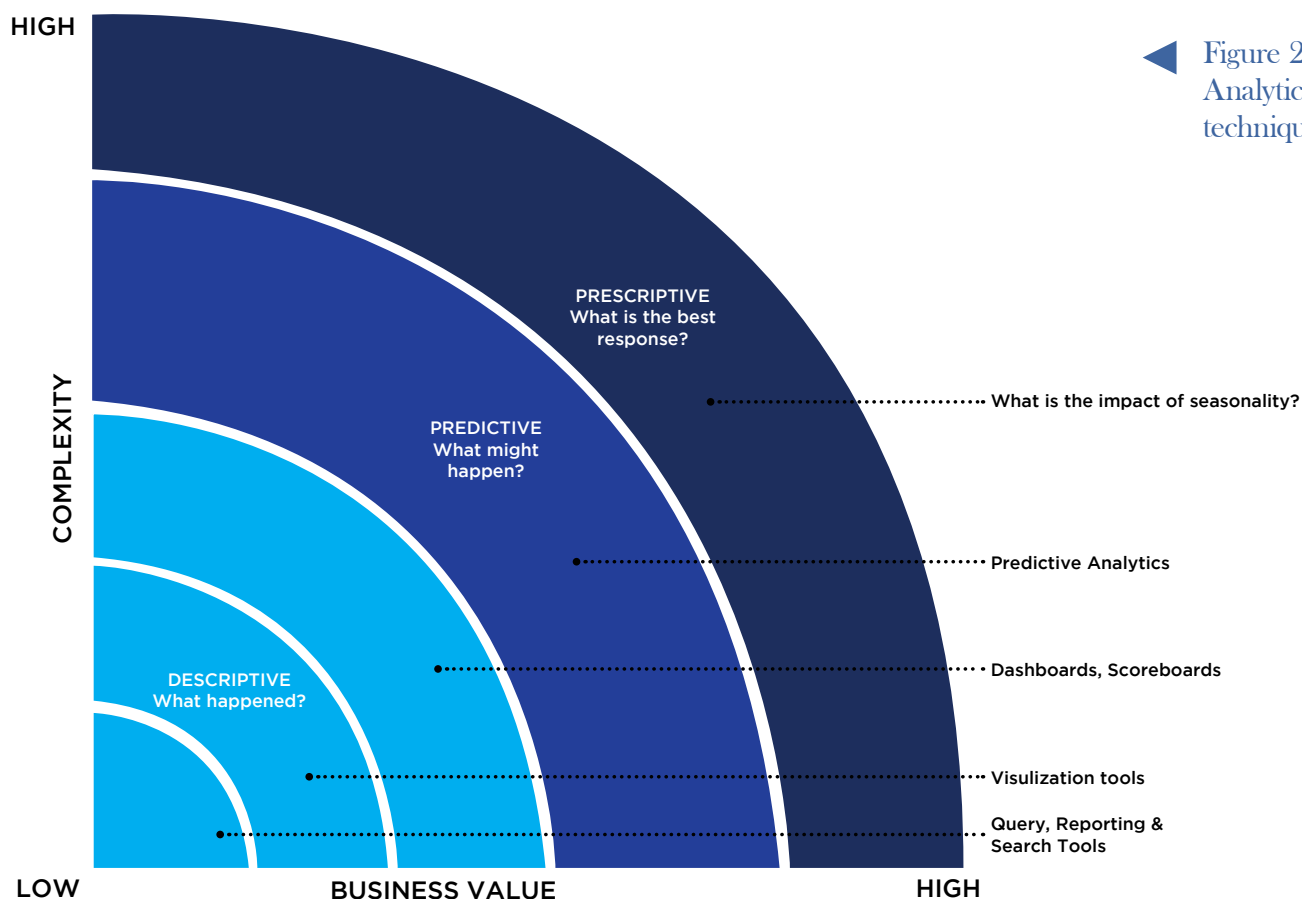
## Predictive Analytics vs Prescriptive Analytics

“Insight, not hindsight is the essence of predictive analytics,” according to a recent blog article<sup>5</sup>. Reporting on what is happening in your business right now is central to KPI scorecards or Business Intelligence (BI).

The next level of analytics maturity takes this a step further to enable businesses to anticipate what is about to take place - known as predictive analytics. By automatically delivering relevant insights to end-users, managers and even applications, predictive decision solutions aim to reduce the need of business users to understand the ‘how’ and focus on the ‘why.’ Predictive analytics (think FICO scores), is being deployed

in an increasingly broad range of applications according to Mooreland Partners<sup>5</sup>:

- Health care: clinical decision support systems are incorporating predictive analytics to support medical decisions at the point of care
- Asset maintenance: asset-intensive companies are collecting sensor data on heavy equipment to predict points of failure, while not over-prescribing costly pre-emptive maintenance
- Fraud detection: by tracking the behaviour of individual users, financial institutions can correlate out-of-bounds activities with the probability of illicit acts



◀ Figure 2  
Analytic  
techniques

- Consumer purchasing decisions: e-commerce companies are targeting unique advertising messages that are individually tailored to improve relevance and enhance conversion rates

Prescriptive analytics, sometimes referred to as the “final phase of business analytics,” is the next stage of development, and important because it adds the “so what” to descriptive analytics,

suggesting actions that need to be taken given historical and transactional data. Larger businesses use prescriptive analytics to optimise supply chains and for seasonal shifts in demand for example, but the technology can also be found in Google’s driverless cars – which make decisions based on various predications and future outcomes.

	Descriptive Analytics	Predictive Analytics	Prescriptive Analytics
<b>What questions are answered?</b>	<ul style="list-style-type: none"> <li>What happened?</li> <li>How many customers?</li> <li>Where revenue is less?</li> <li>Why it is so?</li> </ul>	<ul style="list-style-type: none"> <li>What will happen next?</li> <li>What trends will continue?</li> <li>What if we change pricing?</li> </ul>	<ul style="list-style-type: none"> <li>What is the best course of action for given situation?</li> <li>What is the impact of seasonality?</li> </ul>
<b>How it is done?</b>	<ul style="list-style-type: none"> <li>Use of KPIs, dashboards, charts</li> </ul>	<ul style="list-style-type: none"> <li>Use of statistical methods to understand the relationships in input data &amp; predict the outcomes.</li> <li>Use of data mining, forecasting, predictive modeling.</li> </ul>	<ul style="list-style-type: none"> <li>Use of advanced statistical optimization &amp; simulation techniques with inputs &amp; constraints to recommend what actions to be taken.</li> </ul>
<b>General examples</b>	<ul style="list-style-type: none"> <li>How many customers have churned? Why did they churn?</li> </ul>	<ul style="list-style-type: none"> <li>How many customers will churn in next few months?</li> </ul>	<ul style="list-style-type: none"> <li>What actions to be taken to retain these predicted churners?</li> </ul>
<b>Industry examples</b>	<ul style="list-style-type: none"> <li>Netflix uses data mining to find out correlations between different movies that subscribers rent &amp; then recommend the one which you are most likely to watch</li> </ul>	<ul style="list-style-type: none"> <li>ING using personalized campaign offers in real time by predicting who will respond, to increase 30-40% response rates &amp; reduce direct marketing costs by 35% per year.</li> </ul>	<ul style="list-style-type: none"> <li>Amazon.com using price optimization based on demand to</li> <li>increase the online shopping revenues.</li> </ul>

◀ Figure 3 Analytics techniques compared<sup>7</sup>

# Social Media Analytics – the new frontier

**Users of social media now represent a significant share of most B2C markets and many marketing departments now spend much effort in outbound social media communication. However, this effort has almost no definable Return on Investment since there is no return path and therefore no measurement of outcomes. A high proportion of social media postings relate to what users think of individual brands, and brand owners are now starting to realise that – rather than trying to compete by messaging. This material is more immediate and valuable than their traditional market surveys and can be mined and - more importantly – acted upon to produce measurable outcomes.**

Social Media Analytics, a relatively new branch of Big Data that evolved from website behaviour monitoring, thus comprises the means of capturing such user posts in real-time – from Twitter and Facebook, and also from postings in online forums (for example, review sites like TripAdvisor). This represents a huge volume of data (5,500 Tweets per second, as well as 8,500 Facebook comments and 4,000 Facebook status updates), so this is generally filtered to leave posts that are relevant and to reduce the volume to a more manageable level. The result is then mined for “meaning” using “Natural Language Processing” software that converts this “unstructured” data into a form that shows intent (to purchase perhaps), opinion (satisfied/dissatisfied), influence (reach, in a social medial sense) and geographic location, to name but a few. This is not as simple as it sounds, since dialect, sarcasm and street language can all produce incorrect results.

Once this data has been compiled into a usable form, it can be used in several ways. “Sentiment Analysis” enables brands to measure in real time what people are saying about their brands or individual products –as a like/dislike percentage or in a more qualitative way. A key application of this is to extend customer service into the social

media domain (a more likely place for customers to complain, and where immediate responses can be made to customers), to monitor competitors’ brands and to market test new products and services.

Slicing the same data a different way allows customer profiling – by analysing all previous tweets and locations from each user - to see what they say about his/her interests and propensity to purchase. And each user’s Twitter followers might indicate the degree of influence such a user might have. Cross-referencing this data with existing loyalty card data, for example, enables a far more valuable customer profile to be constructed (subject to relevant privacy laws) that can then be used to improve customer experience and drive revenue in real time. Not only is this valuable for a supplier, it can also be used to attract advertisers – since better profiling enables them to ensure higher relevance and thus a more receptive audience. High quality customer profiles become, in effect, a currency that can be used to attract partners.

Let’s take a call centre example. It is now possible for an agent working with a difficult caller to see from the data that this is actually a good customer who’s just having a bad day; he hasn’t been troublesome in the past, he frequently Tweets and is thus a social media influencer (presumably with lots of followers), he gave the company a Facebook “like” and he spends a fair amount of money with the business. This gives the agent the green light to offer this customer a refund, a free return shipping label and a coupon for 20 per cent off his next purchase. The customer is happy and, even better, he’s decided the supplier isn’t so bad after all. This is a significant step forward for organisations that, until now, had to rely solely on what the customer said to understand the issues and to treat customers according to their value.

In this way Social Media Analytics makes ‘Closed Loop’ and Omni-Channel marketing possible, with a far more measurable Return on Investment.

Last year Target, a US marketing company, yet again proved the power of algorithms, in a startling way. Its software tracks purchases to predict habits. Using this, it chooses which coupons to send customers. It seemed to have gone wrong when it began sending a teenage girl coupons for nappies, much to the anger of her father, who made an official complaint. A little later, the New York Times reported that the father had phoned the company to apologise. “It turns out,” he said, “there have been some activities in my house I haven’t been completely aware of.” He was going to be a grandfather—and an algorithm knew before he did.

# Becoming a “Data-Driven” company

## Enablers for growth

**C**EOs in every industry need to grow revenue, and companies have three catalysts for growth. “The way companies are growing revenue is upselling and cross-selling existing customers,” says Vivek Ranadive, CEO at Tibco. “That’s the number one catalyst to grow revenue - that means you’re talking to the CMO.”

The second catalyst is based on optimizing the supply chain to squeeze more value out of what you already have. That conversation revolves

around a General Manager of a business, Head of Supply Chain, operating chief and Chief Financial Officer. The third catalyst is managing risk and that involves dealing with things like fraud, security and infrastructure disruption.

There are three key issues that need consideration before embarking on a Big Data strategy (or worse, a Big Data project without a strategy). These are: Organisation, Culture and Skills.

## Organisation, culture and skills

**Since the first data that you should examine for mining additional value is the data you already have, this needs to be reviewed, catalogued and gathered into a unified format and system to permit this. But it is essential not to wait until “all our data is complete” – it never will be. So this should be a staged process – driven by a business-wide initiative to hunt down opportunities for new efficiencies and start with the most promising areas.**

The ownership of this data is likely to be similarly fragmented – and since most Big Data benefits cross-functional boundaries, this will need a cross-functional approach. It may be that you develop your first steps into Big Data on the back of expertise that has been developed in a specific function, such as where the Marketing department has developed a particular skill in analysing customers. To the extent that your existing data may be within existing systems, your IT department can play a pivotal role in making it available. So there is some work to do on removing organisational and information “silos” to fully take

advantage of Big Data.

The second element in becoming ‘Data-Driven’ is Culture. This refers to the change of behaviour that is needed – up to the highest level – to actually learn to rely on what the analytics systems are telling the company. Gut feel and HIPPO (“Highest Paid Person’s Opinion”) decision making need to be increasingly replaced by ‘data literacy’ – not just accepting the data but also engaging with and challenging it. The objective is for the entire organisation to start considering data as a ‘corporate asset’. Workshops and training are essential to effect this crucial transformation.

Lastly is the issue of Skills. New skills will need to be brought on board that can acquire and manage the data and then aid managers in its interpretation, quite apart from the technology. There is a key choice to be made here as to whether this should be built out of the IT function or as a separate group – eventually culminating with the appointment of a Chief Data Officer, perhaps, as addressed later in this article.

KPMG notes that, in retail banking for example, a more ‘analytically literate culture’ is emerging. What’s more, a new type of leader is emerging within many organisations. Often these are executives that have gained their experience in the cards and lending businesses and, as a result, have often relied on risk-based analytics to manage key risks (such as probability of default risk and loss given default risk). As a result, they are more likely to recognise the potential that customer insight and analytics offers towards creating and delivering greater business value rather than just protecting it.

## The crucial first project

At BigData4Analytics we have seen numerous cases where the global consultancies or technology vendors (yes, those ones that no one gets fired for hiring) are called in to advise, only for the company to have made zero progress three years later. Often the reason is that the projects these suppliers recommend are far too ambitious and far-reaching to risk starting.

It is often useful to look for specific business changes which Big Data can support - for example call centre repatriation to the UK, which many large UK banks and insurance companies are now doing. This represents a perfect opportunity to adopt Big Data to help deliver cost containment and at the same time improve customer service. Despite being small and typically located within a single division or function, such pilot projects have the dual function of meeting the short-term need and also acting as a touchstone for other deployments across the enterprise. For this reason CEO or other executive level sponsorship

is essential.

CEOs are now more likely to sponsor digital initiatives than they were in 2012, according to a recent McKinsey survey<sup>8</sup>: “Across most of the C-suite, larger shares of respondents report that their companies’ senior executives are now supporting and getting involved in digital initiatives (see Figure 4). This year, 31 per cent say their CEOs personally sponsor these initiatives, up from 23 per cent who said so in 2012. This growth illustrates the importance of these new digital programs to corporate performance, as well as the conundrum that many organisations face: Often, the CEO is the only executive who has the mandate and ability to drive such a cross-cutting program. 30 per cent of respondents also report a Chief Digital Officer (CDO) on their companies’ executive teams, a sign of the widespread awareness that these initiatives are important.”

“Successful organisations are starting to consider data as a ‘corporate asset.’”<sup>1</sup>

‘Goldilocks’ projects: BigData4Analytics helps its clients respond to business improvement opportunities with a project scope that is ‘just right’ - neither too small to prove the concept, nor too large to represent too great a risk and so never get started.

% of respondents<sup>1</sup>

Level of support and involvement in digital-business initiatives, by role<sup>2</sup>

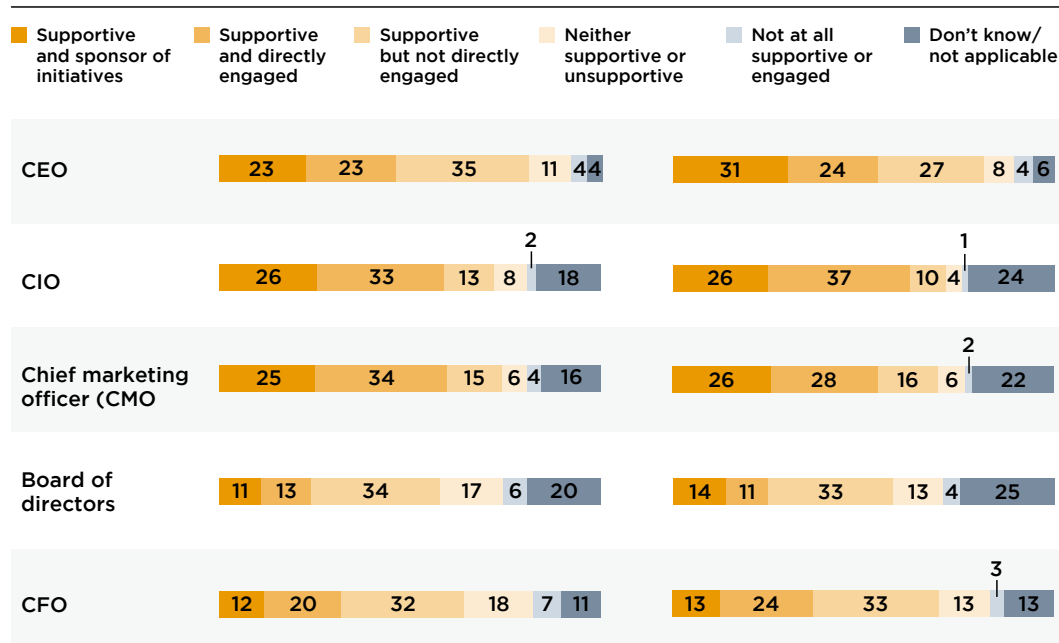


Figure 4  
Executive sponsorship<sup>8</sup>

<sup>1</sup> Figures may not sum to 100%, because of rounding.

<sup>2</sup> In 2012, we did not ask about the chief digital officers (CDO's) and their support and involvement in digital-business initiatives, so the 2013 results are not shown. Sixty-two percent of respondents report not having a CDO at their organizations; among others, the largest shares say their CDO's are either supportive and directly engaged (12 percent) or a sponsor of initiatives (12 percent).

<sup>3</sup> In 2013 'don't know' and 'not applicable' were presented as separate answer choices.

Typical use types<sup>1</sup>

Big Data Use types;	Social Media Analytics/Sentiment Analysis. Key use types;
<ul style="list-style-type: none"> <li>• Where significant volumes of Transaction Data exist are collected but underutilised</li> <li>• Potential to extend 'data coverage' of your business                             <ul style="list-style-type: none"> <li>- either by increasing granularity or by introducing new sources of data (newly instrumented processes/ equipment) or access to third party data (commercial or government)</li> </ul> </li> <li>• Testing of algorithms and predictive analytics on historical data sets (e.g. in financial services)</li> </ul>	<ul style="list-style-type: none"> <li>• Works best in B2C markets with consumers that have a propensity to use social media intensively, and which are sensitive to customer perception</li> <li>• Extend customer service by monitoring and responding to product comments on social media, blogs and forums</li> <li>• Monitoring how your brand or products are perceived by consumers - both relative to competitors and over time. Can be used to develop new products and outsmart competition</li> <li>• Profiling consumers - in groups (improved segmentation), or individually (customer loyalty/churn prevention)</li> </ul>

## Picking focus areas - key questions

Pick your early focus areas based on what is achievable. Early wins will generate excitement, momentum, and more funding to sustain and grow your efforts

### Strategy questions:

- Which solutions would have the most impact on the business?
- Which solutions are quickest & easiest to implement?
- What role(s) does the business need to play?

### Analytics questions:

- What are the criteria to evaluate the success of the solution?
- Do we have the tools to manage & analyze the data?
- Do we have the skills to analyze the data correctly?

### Technical questions:

- From which systems will I need data?
- Is the data clean, accessible, and timely?
- How much will it cost (HW, SW, people, 3rd party data) to build the solution?
- Do we have the skills to build it?
- How long will it take to build?

# Embarking on the Big Data journey

## What should be the role of IT?

**Y**our IT department may have some of the necessary expertise, but most teams are struggling just to 'keep the lights on' and simultaneously meet the demands of mobility, cloud computing, 'Bring Your Own Device' policies and other urgent technical requirements.

While they can provide access to all the internal data, in many cases the IT department does not

have the necessary business skills to be the primary driver of Big Data adoption. The emergence of Software-as-a-Service applications, such as Salesforce.com is relevant to Big Data adoption because for the first time it gives business managers the option to pilot (and sometimes to deploy) new IT applications without significant involvement from IT.

## Who should take the lead?

So who should be the driver of Big Data initiatives – the CIO, the BI team (if you have one) or Marketing (who are probably already familiar with social media)? If the primary focus is customer engagement, then Marketing leadership should play a major role. Many larger companies outsource large parts of their marketing – (often around the use of social media) to external marketing agencies (now increasingly called “Digital Agencies”).

Many such agencies may not be equipped to broaden into Social Media Listening based

customer service from ‘outbound-only’ marketing. Furthermore, consideration should be given to the question of whether the marketing leadership has the necessary analytical capability - and the will - to step up. In our experience, the decision on which function should lead Big Data adoption will be determined by the focus of the initial pilot and the capabilities of the functional head to ensure the pilot has relevance for the whole organisation – so Customer Service, Operations, Manufacturing or Supply Chain are all potential candidates.

“The Chief Data Officer would be someone who could speak to both the technology folks and the business folks and serve as the link that pulls business and IT together.”

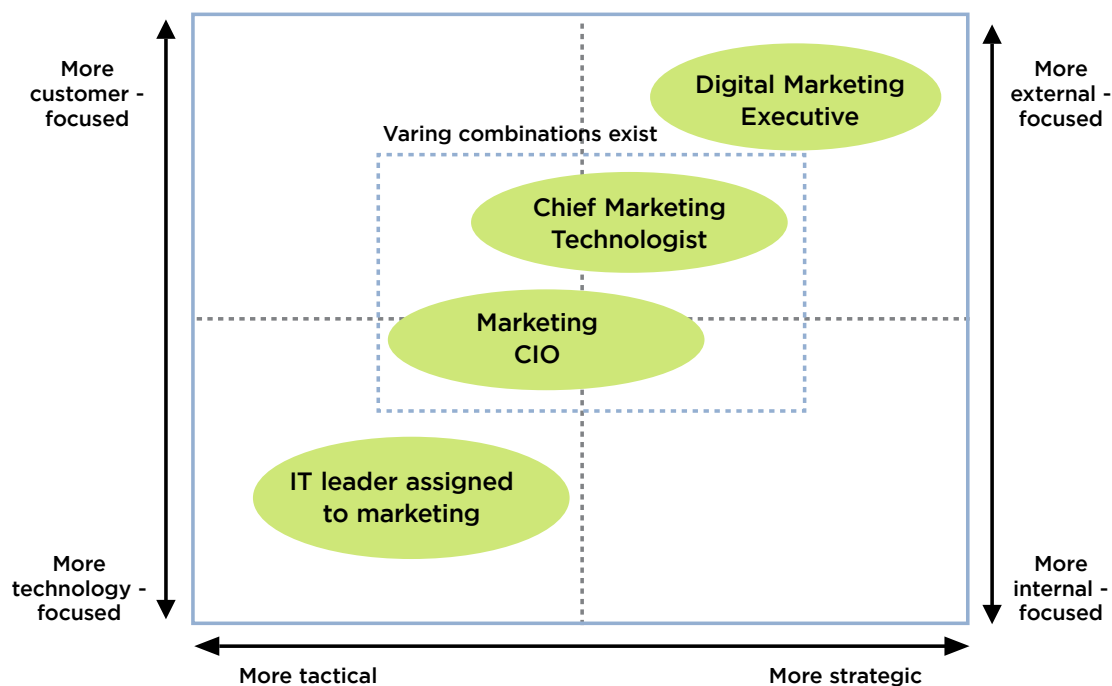


Figure 5  
Roles in big data deployment

Source: Gartner (August 2013)

## What new skills might be needed?

CEOs may face demands to hire new kinds of staff to deal with Big Data – perhaps a Chief Data Officer (CDO) or a Data Scientist.

An understanding of what these people do and how their role relates to the traditional functional heads of IT, Marketing and Finance is increasingly

important. Adopting a Big Data strategy will require new thinking among the existing team as well as the ability to hire new and potentially scarce skills. *“I work with folks who claim to be data people, but they’re data people who have no business experience, they’re more experienced*

*“There is no doubt that this emerging wave is a transformational wave - not just a technology wave – in which the competitive battleground is already shifting in favour of businesses that can use data to outwit or outperform their competitors.”<sup>1</sup>*

on the IT side, or they have no experience with the technology, they only understand the data from the business side.” says Dat Tran<sup>9</sup>, of the US Veterans Administration, “The Chief Data Officer would be someone who could speak to both the technology folks and the business folks and serve as the link that pulls business and IT together.”<sup>9</sup>

The new roles being created by Big Data, such as that of Data Scientist requires a variety of technical, business and people skills, a unique combination that partly explains the predicted shortage of data science professionals within a few years (4.4 million positions are forecasted for 2015, with a third filled, according to Gartner’s 2013 estimate). FICO, a global business known for its analytics and decision-making products and of course its eponymous credit-scoring service, identifies the key characteristics of a top-notch

Data Scientist. According to Dr Andrew Jennings, Chief Analytics Officer at FICO and Head of FICO Labs, three characteristics are essential, and every organisation in the market for a Data Scientist should know what they are: Problem-Solving Skills, Communications Skills and Open-Mindedness.

One other skill consideration is Data Security and Governance. Businesses and indeed governments need to take steps to secure these more complex systems, particularly those involving large numbers of machines. Traffic networks, Air Traffic Control systems, energy grids (Smart Grids) and even telecom networks are all at risk of hacking and Big Data applications require additional security due to their real-time nature, quite apart from the additional governance and privacy requirements created by more pervasive customer data.

The term ‘Data Scientist’ barely registered as a search term on Google in August 2010. Searches today generate close to one million results. But a search for data scientist jobs - on the website of UK professional recruitment company Harvey Nash, for example returned zero results at the time of writing.

## Conclusions

I sincerely hope that this CEO Masterclass has served to demystify the applications of Big Data for business applications. By covering not only the key types of application but also the organisational and people issues that can make the difference between a successful deployment and failure, I trust that managers and executives will feel more confident in taking those initial steps towards becoming a “Data-Driven” business.

Feedback on this article - or suggested topics for future articles - would be most welcome. We are also building a library of Big Data use cases by sector, and will be making this available in due course.

**Mike Fish**  
November 2013



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