

Big Data:

A BIG problem and a HUGE opportunity.

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Introduction

The volume and amount of data in the world has been increasing exponentially at ever increasing sizes, being able to analyse large and complex data sets will become a major point of difference and competition for all brands that will see new waves of productivity, innovation and consumer surplus from research by MGI and McKinsey's Business Technology Office.

World Data Growth

According to Eric Schmidt from Google the amount of information being generated every 2 days is now as much as the total amount of data that existed in 2003.

The surge in data being generated globally is due to a range of factors, including the increased cost efficiency in storing and processing data, the increased use of the Internet from all walks of life in developed and developing nations, access from multiple devices, along with increased media usage and highly affordable bandwidth and connectivity are the key reasons it has exploded.

The following graphs show this exponential growth in recent years.

Worldwide Mobile Data Usage Forecast by Region

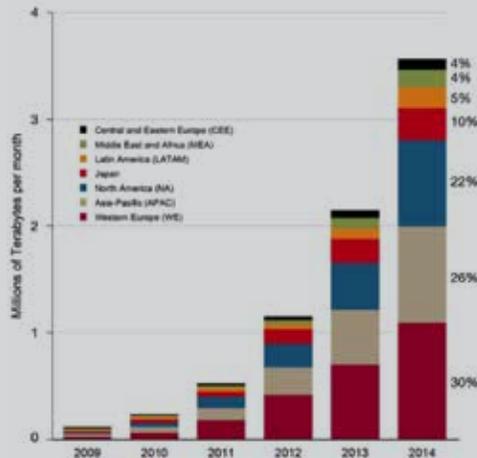
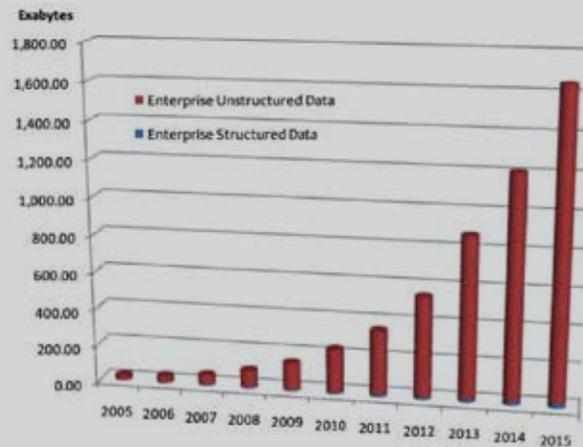


Chart 1: Western Europe and the Asia-Pacific region will account for nearly 60 percent of worldwide mobile data traffic by 2014. But emerging markets such as Central and Eastern Europe, Latin America, and the Middle East and Africa, having started with relatively small numbers, are growing the fastest

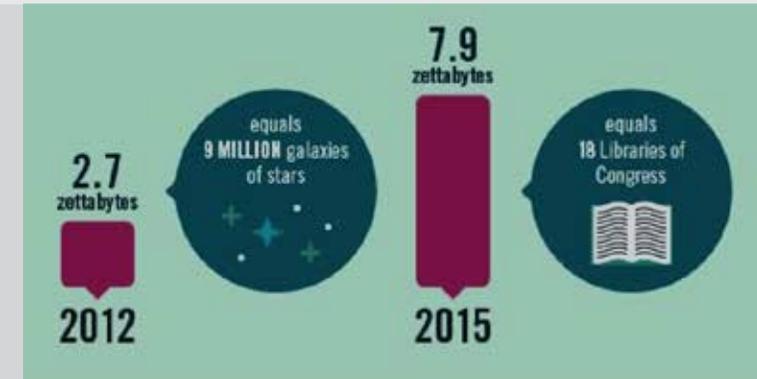
Source: Cisco

Total Enterprise Data Growth 2005-2015



<http://www.rosebt.com/1/post/2012/12/total-enterprise-data-growth-2005-2015.html>

Volume of Digital Content



source: www.marketingpilgrim.com

World Data Growth

IDC estimates the volume of digital data will grow 40% to 50% per year. By 2020, IDC predicts the number will have reached 40,000 EB, or 40 Zettabytes (ZB).



The world's information is doubling every two years. By 2020 the world will generate 50 times the amount of information and 75 times the number of information containers.



Information Overload?

A great pictorial example of this growth and overload can be seen in this awesome video: <http://vimeo.com/36152743>



Some Practical Examples of Big Data

- Walmart handles more than 1 million customer transactions an hour.
- 340 million tweets are sent per day. That's nearly 4,000 tweets per second.
- Facebook has more than 901 million active users generating social interaction data.
- RFID (radio frequency ID) systems generate up to 1,000 times the data of conventional bar code systems.
- 10,000 payment card transactions are made every second around the world.
- More than 5 billion people are calling, texting, tweeting and browsing websites on mobile phones.

Another example is this great collection of large data sets and complex analysis that is then summarised in Infographics to distill powerful understanding and interpretation of the results.

<http://www.informationisbeautiful.net/>

The Analytical Skills Shortage

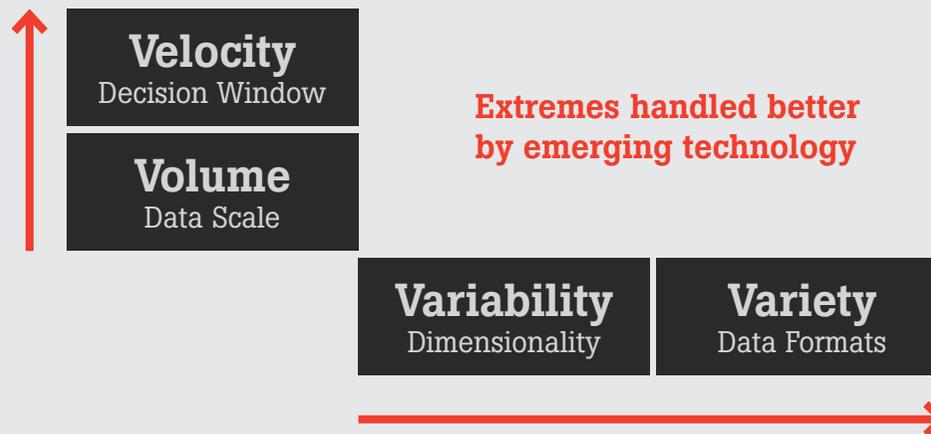
To capture the full economic potential of big data, companies along with the education sector, Governments and policy makers will all have to try and address a highly alarming predicted talent gap.

Research by McKinsey Global Institute (MGI) Projects that by 2018 the United States alone may face a 50–60% gap between supply and demand for deep analytic talent, essentially people with advanced training in statistics or machine learning.

BIG Data Defined

Techniques and technologies that make handling data at extreme scale economical.

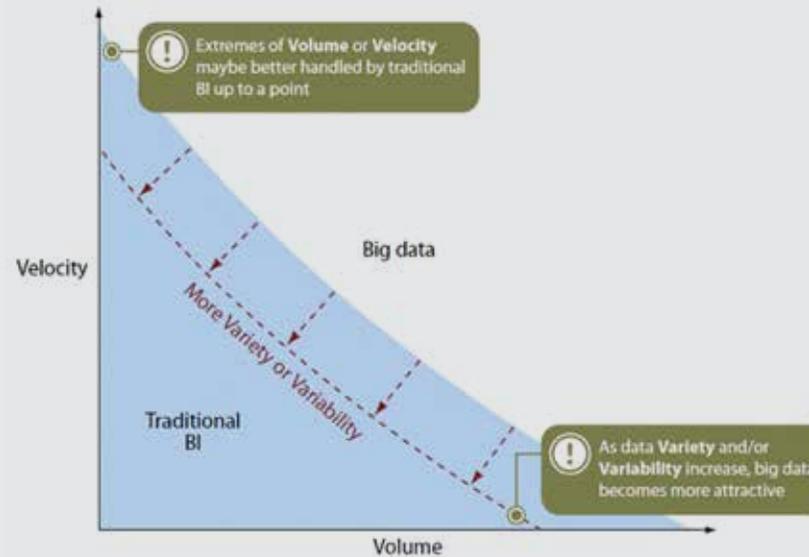
Big data is defined by four V's.



Source: September 2011 "Expand Your Digital Horizon With Big Data" report.

The four V's of Big Data

Volume — exceeds physical limits of vertical scalability	Velocity — decision window small compared to data change rate
Variety — many different formats makes integration expensive	Variability — many options or variable interpretations confound analysis



Source : Forrester Blog

Velocity

Sometimes 2 minutes is too late. For time-sensitive processes such as catching fraud, big data must be used as it streams into your enterprise in order to maximize its value.

Volume

Enterprises are awash with ever-growing data of all types, easily amassing terabytes—even petabytes—of information.

Variability

Variability exists in the data being analyzed and it can have a profound effect on the believability of the business decisions being made.

Variety

Big data is any type of data - structured and unstructured data such as text, sensor data, audio, video, click streams, log files and more.

What Big Data Means for Marketers

“ 95% of all data with an organisation is still untapped ”

“ Marketing is the biggest user of big data technologies ”

“ Big data technologies allow for more sophisticated segmentation ”

“ Produce more personalised results ”

Source : Forrester Research (2012)

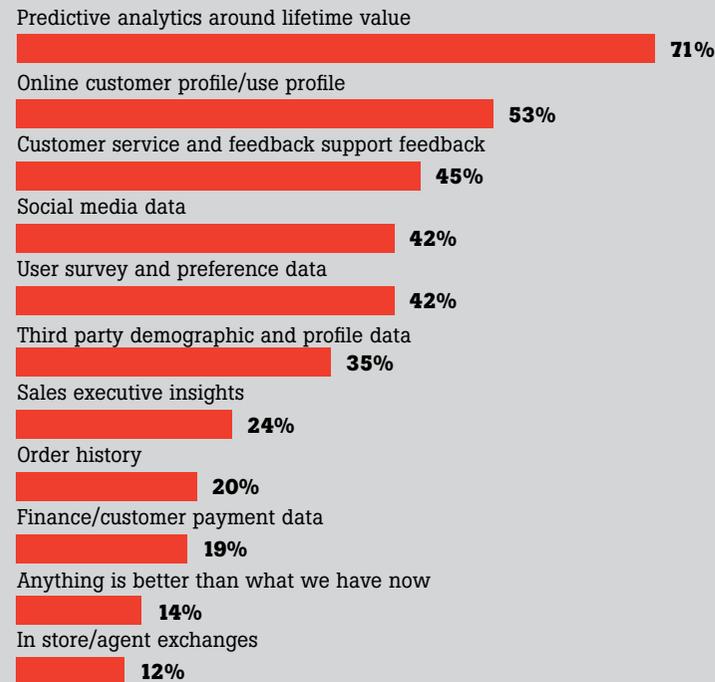
The most useful customer information?

One of the challenges of Big Data is assessing what information is really worthwhile to marketers. The emarketer survey found that the greatest percentage of respondents, 71%, were interested in adding predictive analytics around the lifetime value of customers to their customer data profile—figuring out who would be their best customer going forward, and perhaps even how best to target that customer.

Over half of respondents cited a more general interest in developing a more fleshed-out online customer profile and an ability to put that profile to work.

Types of data marketers worldwide would like to add to their customer data profile Q1 2013

% of respondents



Note: respondents who feel that they are missing data points to provide a more comprehensive view of their customer.
Source: CMO Council and SAS, "Aligning the CMO & CIO" Mar 28, 2013

Big Data is both an obstacle and an opportunity

Big Data is top of mind for marketers but putting it to work is a huge undertaking that very few have truly mastered. Marketers view data as both an obstacle and opportunity. And they are also more than aware that they have a long way to go before truly harnessing it.

Full opportunity - we have the storage, processing capacity and skilled to use the analytics we need



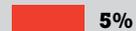
Part obstacle/part opportunity, and we're almost there



Part obstacle/part opportunity, but we have a long way to go



Full obstacle - it strains our data storage capacity and our internal data processes and we're unable to harness data for consistent, confident decision making



Source: CMO Council and SAS, "Aligning the CMO & CIO" Mar 28, 2013

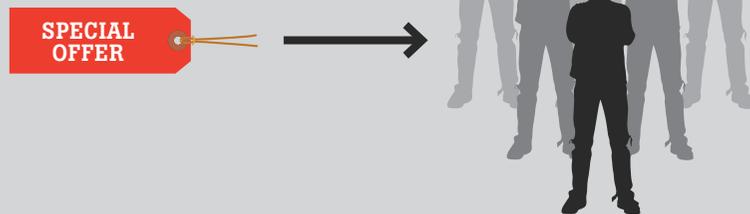
Generating greater user experiences and relevancy

The capacity to create more meaningful relevant experiences, and the ability to deliver personalised offers will greatly shift the compass for many brands to move from a product marketing centric view to the ultimate digital nirvana of a single view of their customers. Brands that are able to quickly understand and utilise a customers' previous or current behavior along with their profile history, transactional history and other data sources will help them present the right message, to the right customers, at the right time and in the right medium.

Being able to do this as close to real time as possible will be the ultimate challenge, offering high rewards for dynamic and progressive brands that can effectively achieve it. This will take a huge investment in strategy, staff, skills, technologies, and processes and must be considered as a whole of business approach for the best success.

Product-Centric Campaigns

I have an offer, let me find a segment to send it to.



Customer-Centric Campaigns

I have a customer, let me present the best offer.



Cross Channel Offers via additional channels



Key Focus areas for Businesses to effectively Manage Big Data

- **Capture** – what data is to be kept.
- **Storage** – where the data is to be held.
- **Curation** – how data is tagged or described for use, analysing and searching (e.g. Meta Data)
- **Search** – how data can and should be queried.
- **Sharing** – how data can be accessed and used.
- **Transfer** – the transformation, integration and transfer of multiple data sources.
- **Analysis** – both machine and human analysis of the data.
- **Technology** – the technology used to manage the data.
- **People / Skills and Knowledge** – resources and skills to plan, manage, use and act on data.
- **Policies / Security / Access** – who can access the data and rules around its' usage.
- **IP / Liability** – the Intellectual property ownership for data. Especially important when using 3rd party technologies as part of the solution.

Tools and The Big Data Landscape

There are a multitude of Open source and proprietary technologies focusing on data integration, logging, tagging, transformation, media and advertising, business intelligence, visualisation and analytics.

These range from traditional businesses that have focused on big data and insight generation for a long time such as Oracle, SAS , Cognos and IBM through to affordable large-memory capabilities, such as Hadoop, along with new pure play big data companies such as splunk, vertica or cloudera and new technology service models such as IIAS, DAAS along with a multitude of other services and platforms across the Big Data Landscape.

Apps

Vertical Apps AGILORE Atigoo ellucian emcien MYRRIX Placed Quantivo NUBDATA wibridata	Ad / Media Apps DataXu Media Science TURN	Business Intelligence ATTIVOZ Autonomy bime blirst Chartwell COGNOS DOMO GoodData IBM SAP XSense	Analytics and Visualisation 1010data alteryx AYATA centrifuge CETAS CIRRO dataSpora emcien metaLayer OPERA Palantir platforma QlikView sas visual.ly
Operational Intelligence VITRIA loggly splunk sumologic TIBCO			
Data as a Service bluekai DATASIFT Gnip factual FICO Gnip INRIX kaggle LOGATE			

Infrastructure

Analytics Infrastructure cloudera EXASOL Hadoop Hortonworks MAPR ParAccel VERTICA	Operational Infrastructure 10gen Couchbase VoltDB	Infrastructure as a Service MORTAR Du bale	Structured Databases ALTRASE IBM ORACLE SQL Server MySQL SYBASE
Ad / Media Apps HBASE Cassandra Hadoop			

Best Practices

For brands the biggest opportunities with big data include facilitating data driven pricing and product recommendations, marketing and sales optimisation, operational intelligence, customer insights, automating critical operations, more relevant and engaging customer experiences or measuring goals and objectives in greater detail than was ever possible before.

Some best practice considerations and approaches to gaining traction with big data are as follows:

Look at customers not data

Start with the customer and a problem or question to solve – is it returning customers, driving desired behavior, what content is most engaging, what are the conversion triggers or current and desired experiences around your brand and products / services. Think about your core business problems and how you might solve them by analysing big data.

With questions in mind it helps focus on what data needs to be used and analysed to uncover the right learning's to answer those questions. Answering one question will open up more questions or tests, and thus requires more analysis and a greater understanding is possible.

Decide on the most important data

Considering all the important data sources that can answer these questions or problems such as website analytics, merchandise, inventory, campaign behaviour, ecommerce reporting and a multitude of others. Also planning for the needed internal or external resourcing and technology are also critical to get right to manage this effectively.

You need to manage data like a ninja. Technology is one key aspect but the right people and skill sets are also very important. Maintain one copy of your data rather

continued overleaf

Best Practices

than lots of copies, the more it is copied the less reliable it becomes. Also consider the more diverse the data analysed more insights can be generated.

Brands can take two approaches to working on Big Data solutions, incorporate massive data volumes in analysis or decide on which data is relevant.

Failure equates to deeper learning

Many businesses struggle by thinking technology alone is the answer or quickly cancel programs using big data concepts based on unsuccessful early implementation results.

Focus on an outcome

Instead of having large or vague goals consider something really specific that if improved on could have an enormous impact on your business. It could be focusing on understanding what affects shopping cart abandonment actions, reducing customer service enquiries or generating sales outside of core promotion periods.

By having this focus it becomes easier to decide what data is needed to support analysing, testing, reviewing results with an intention on improving performance.

Test, test and then test some more

The more you test and analyze, the more is learned. When a feature, campaign, or test fails, it has likely uncovered a new or deeper learning that is of value in the longer term. No matter the results, running more tests will increase your knowledge about your customers, leading to the customer features and relevant website experiences that generate more sales.

continued overleaf

Best Practices

Real time

The faster you analyze your data, the greater its predictive value. Companies are moving away from batch processing to real-time to gain competitive advantage.

Planning to react to customers in real time is one thing, but actually doing it is another. To react in real time, you need to plan the type of content and engagement you want or else you will react quickly, but not efficiently, to customer needs in the moment.

The era of the customer brings with it many challenges and opportunities, particularly as it relates to big data. But the companies that learn to anticipate and plan to respond to visitors in the moment based on device, needs, and past behaviors will likely be the ones that succeed.

You need people

Humans and data need to work together to make the most of generating and acting on insights. Data alone is not sufficient for deeper interpretation of what the data means or what can be done with it.

References and further reading

Big data: The next frontier for innovation, competition, and productivity

http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation

Big Data Trends

<http://www.forbes.com/sites/davefeinleib/2012/07/24/big-data-trends/>

3 Keys to Succeeding in the Age of the Customer

<http://monetate.com/2013/05/3-keys-to-succeeding-in-the-age-of-the-customer/#ixzz2Sqfd4flt>

What Do Marketers Want From Big Data?

<http://www.emarketer.com/Article/What-Do-Marketers-Want-Big-Data/1009798>

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