Introduction

What is big data analytics?
What is the scope and size of the market?
What systems are needed to support big data?
What are the challenges today?
The ‘big data’ business model: opportunity and key success factors

Historically, data storage and computation has been a challenge because of technological constraints

This was 1956 …

… Doris Day was in the top UK charts with the hit “Que Sera, Sera”…

… you would need an entire plane to carry the digitalised version of one of her albums …

… and a lab with a dozen scientists just to copy it …

… but things have changed

5MB hard drive being forklifted into a plane
Open-source tools and cloud-based data infrastructure continue to drive down the costs of analytics

Quick facts:
- It costs USD600 to buy a disk drive that can store all the world’s music
- 1 billion pieces of content are shared daily on Facebook
Big data and analytics drive business value in three core areas

- ‘Super-charge’ established operations – by providing deeper insight into the current processes to make better decisions.
- Expand established revenue streams – a sub-set of the above to provide more targeted, timely, context-aware offers to customers to encourage them to spend more.
- Create new revenue streams – such as selling of customer insights, providing data analysis for M2M applications or offering targeted advertising.
The large-scale utilisation of internal data is becoming a key competitive factor for all industries

- **US health care**
  - $300 billion value per year
  - ~0.7 percent annual productivity growth

- **Europe public sector administration**
  - €250 billion value per year
  - ~0.5 percent annual productivity growth

- **Global personal location data**
  - $100 billion+ revenue for service providers
  - Up to $700 billion value to end users

- **US retail**
  - 60+% increase in net margin possible
  - 0.5–1.0 percent annual productivity growth

- **Manufacturing**
  - Up to 50 percent decrease in product development, assembly costs
  - Up to 7 percent reduction in working capital

Source: McKinsey Global Institute, “Big Data: The next frontier for innovation, competition and productivity”.

MENA Summit 2013: Enabling innovation, driving profitability
© Analysys Mason Limited 2013
The telecoms industry is in the front line of the big data revenue generation in the short term

Key factors for the telecoms industry

- Quantity of customers
  - Telecoms services have typically high penetration rates
  - Telecoms operators have a large percentage of the population in their customer base
  - Telecoms groups have access to worldwide customer database

- Quantity of data
  - The average telecoms customer generates data entries on a daily basis
  - Frequency will tend to increase as Internet services become widespread, potentially resulting in continuous generation of data

- Diversity of data
  - Telecoms operators’ data includes different dimensions, including telecoms patterns, location, devices used, content accessed, online transactions, demographics and so on … and the range is growing
Growing mobile Internet usage creates opportunities for operators to expand their data capturing capabilities

New analytical dimensions

- The increasing use of mobile Internet brings new data sets to explore:
  - **Content**: Being able to understand what types of website and application individual customers access gives operators a more detailed overview.
  - **Device**: These were an analytical dimension before the rise of mobile Internet, but the type of device, the screen size and the utilisation of multiple devices have now become a more relevant.
  - **Location**: Mobile data is permanently switched on, creating a continuous flow of information to the operator.

Deeper levels of segmentation

- Traditionally, telecoms analytical segmentation used voice and SMS usage data and segmented customers using that data and the demographic information available.
- By offering insights into location, the content accessed and the devices used, mobile Internet analytics allows operators to perform a behavioural segmentation on an individual basis, getting a much better knowledge of individual needs.
- Operators can use the available data for internal purposes, or can package it as a product for third parties.
## Operators are now using their internal data as a direct source of revenue

<table>
<thead>
<tr>
<th>Description</th>
<th>Big aggregates</th>
<th>Segmented data</th>
<th>Big data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operator does not capture and manipulate individual data</strong></td>
<td><strong>Data not captured</strong></td>
<td><strong>Operator captures individual data for internal analysis</strong></td>
<td><strong>Operator uses its data and customer data is a standalone product</strong></td>
</tr>
<tr>
<td><strong>Data utilisation</strong></td>
<td></td>
<td><strong>Data is captured and aggregated at customer level</strong></td>
<td><strong>Data is captured, aggregated at customer level and as B2B2C product</strong></td>
</tr>
<tr>
<td><strong>Revenue Impact</strong></td>
<td><strong>No impact</strong></td>
<td><strong>Indirect impact through the improvement of management decisions</strong></td>
<td><strong>Direct impact on revenue by selling customer data</strong></td>
</tr>
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</table>
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What systems are needed to support big data?
What are the challenges today?
Setting up the right analytical methodologies is more important than setting up the right IT infrastructure

What is big data analytics?

Big data analytics is the business opportunity to enhance revenue and operational efficiency by exploiting the widespread availability of valuable data on individual customers across the organisation.

What is not big data analytics

Big data analytics is not only about volume of data, but about the value of that data.

Big data analytics is not about IT infrastructure implementation, but about the methodologies and analytical frameworks needed to take advantage of that infrastructure.

Establishing the analytical capabilities, frameworks and algorithms before investing in IT infrastructure is key to ensuring that operators can truly take advantage of big data and obtain a return on their IT investment.
Big data analytics is not only about the characteristics of the available data, but what operators can do with it

The large volume of available data is a key characteristic of big data. Data comes from established sources (CDR, billing data sessions) and interactive data social networks, location and in different formats (structured and unstructured).

The velocity, understood as the frequency at which data is generated. The high frequency of data capture brings new opportunities in terms of real-time management and reporting. The value of data is the key component of big data analytics. Establishing the right methodologies and analytical frameworks to extract value from data is essential.

The 5 “Vs” of big data analytics

- **Volume**
- **Variety**
- **Velocity**
- **Value**
- **Visualisation**

Presenting the data in a meaningful and insightful manner, doing the correct slicing and dicing to achieve the defined objective.
Big data analytics can be used both to improve internal decision making and as a source of revenue

How companies can gain from big data analytics

Internal use

Use big data to support internal management decisions as well as improve operational efficiency and support commercial strategy.

Internal decision making can be supported at different hierarchic levels, with each level requiring a different model and different analytical frameworks and tools.

External use

The data generated in a telco is part of the assets that it should exploit.

By packaging the available data in a structured and visual way, access can be sold to third parties – for example, handset vendors can benefit from information about usage trends among customers with different handsets.
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Big data analytics solutions are set for growth as CSP margins come under pressure and solution costs fall

- Declining cost of computing
- Decreasing cost of storage
- Increasing data for modelling customers, operations and capital requirements
- Growing demands from smarter customers
- Increasing competitive pressures
- Decreasing margins and growth

- Dutch mobile market declines by 4.5% to EUR5.8 billion in 2012
- Orange’s profit declines by 79% amid economic decline
- ‘Spain loses 5% of its mobile subscriber base in 2012: warning for Europe’  
  *Forbes 2013*
- 5 billion mobile phone users worldwide
- AT&T’s call data record database has 1.9 trillion rows of data
- Facebook works on more than 30PB of user-generated data

"Spain loses 5% of its mobile subscriber base in 2012: warning for Europe"  
*Forbes 2013*
CSPs have applied analytics to a rich set of use cases across different aspects of their business

<table>
<thead>
<tr>
<th>Customer management</th>
<th>Supply and partner management</th>
<th>Financial and legal management</th>
<th>Marketing and campaign management</th>
<th>Network and operations</th>
<th>Digital data services</th>
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</thead>
<tbody>
<tr>
<td>Churn management</td>
<td>Channel management</td>
<td>Revenue assurance</td>
<td>Campaign management</td>
<td>Network asset optimisation</td>
<td>Mobile advertising</td>
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<td>Customer care management</td>
<td>Partner management</td>
<td>Fraud management</td>
<td>Customer segmentation</td>
<td>Dynamic policy management</td>
<td>Market data research</td>
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<tr>
<td>Social media management</td>
<td>Settlements liability</td>
<td>Risk management</td>
<td>Offer creation and pricing</td>
<td>Revenue-driven network planning</td>
<td>Identity verification services</td>
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<tr>
<td>‘Golden path’ analysis</td>
<td>Offer margin analysis</td>
<td>Customer lifetime value analysis</td>
<td>Fulfilment management</td>
<td>M2M monitoring services</td>
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<tr>
<td>Dynamic offer management</td>
<td>Data retention and retrieval</td>
<td>Net promoter management</td>
<td>Root-cause analysis</td>
<td>Traffic flow services</td>
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<td>Cross-sell and upsell management</td>
<td>Social network analysis</td>
<td>Performance management</td>
<td>Proximity promotions</td>
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</tbody>
</table>
Market maturity dictates the analytics solutions that CSPs need to deploy

New segments

Developing segments

Mature segments

- Cross-selling models
- Fraud and bad debt
- Campaign management
- Churn models
- Credit risk
- Network planning
- Social network analysis
- Base segmentation
- Lifetime value
- Sentiment analysis
- Context-based marketing
- Insight services
- Mobile advertising services

Context-based marketing

Sentiment analysis

Network planning

Social network analysis

Mobile advertising services

Insight services

Context-based marketing

Sentiment analysis

Network planning

Social network analysis
Scaling of market opportunities

Expanding established revenue streams

“Super-charging” established processes

Creating new revenue streams

Market size

- USD1.9 trillion
  - Telecoms worldwide revenue in 2012
- USD1.71 trillion
  - Telecoms worldwide IT spending in 2011
- USD500 billion
  - Advertising and market research

Potential impact for CSPs

- First-mover advantage could provide a sustained market advantage, but it will become “table stakes” when competitors follow.
- Annual spend can be impacted each and every subsequent year to exploit efficiencies.
- Non-telecoms revenue – potential to compete with online, mobile and proximity advertising. Other opportunities can greatly increase potential.
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What are the challenges today?
Big data analytics is challenging established systems, and leading CSPs are investing in new infrastructure.

The market maturity of analytics tools

- **Business intelligence tools**
- **Predictive analytics tools**
- **In-line analytics tools**

Growing volume, variety and velocity of ‘big data’

What happened?

What will happen?

What is happening now?
Key components in an analytics framework

**APIs**
- BPM
- Applications

**Tool users**
- Front-line workers
- Operational systems
- Customers or partners
- Executives
- Data scientists
- Business analysts
- Engineers

**Presentation or visualisation**
- Portals
- Mash-ups
- Dashboards
- Reports
- Departmental data marts
- APIs

**Business intelligence and analytics tools**
- Optimisation
- Predictive modelling
- Forecasting
- Statistical analysis

**Data infrastructure** (can be part of EDW)
- Analysable data
  - Database
  - Server
  - Storage

**Source data**
- Audio and video
- Images
- Docs
- Text
- Web and social media
- Billing
- CRM
- Network
- ERP

**Data access**
- ELT or ETL tools
Vendors are continuing to expand into the telecoms analytics market from different perspectives

Types of analytics vendor

Storage tools vendors, which have expanded from providing data storage solutions to include analytics

Specialist software vendors, which have developed products they have used to support specific business applications, such as revenue assurance, service assurance, mediation and customer care

Analytics and business intelligence tool vendors, which apply generic tools to the telecoms business environment through configuration and deployment of specific templates and models

Customised solutions based on open-source software and generic hardware
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What are today’s challenges?
CSPs are struggling with three broad issues today

- Prioritisation of use case development
- Systems selection and implementation architecture
- Organisation structure to adopt
CSPs are struggling with three broad issues today

- Prioritisation of use case development
- Systems selection and implementation architecture
- Organisation structure to adopt
Big data analytics is creating lots of complex choices for IT and business managers …

**Presentation or visualisation**
Tool selection, legacy integration

**Business intelligence and analytics tools**

- **Batch Data processing**
  Language SQL, NoSQL, open source, vendor-specific

- **Real-time data processing**
  Real-time query engines
  NoSQL database selection
  MPP database selection

- **Database resourcing**
  Hadoop – which distribution, other vendor options

**Big data appliances**
General purpose, vendor specific, re-use of the EDW and utilisation of cloud resources
The ‘big data’ business model: opportunity and key success factors

... that need to be developed to support different use cases

<table>
<thead>
<tr>
<th>Platform</th>
<th>Resource management</th>
<th>Data transformation</th>
<th>Real-time analytics</th>
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<tbody>
<tr>
<td><strong>Online transaction processing</strong></td>
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<td>▪ RDBMS</td>
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<td>Large structured data</td>
<td>▪ Cloudera</td>
<td>▪ Hadoop</td>
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<td>▪ MAP/R</td>
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<td>▪ Horntonetworks</td>
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<td>Data storage and indexing for analytics applications</td>
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<td>100T data with multi-structured with minute or more latency</td>
<td>▪ Cloudera</td>
<td>▪ Hive</td>
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<td>▪ Java MapReduce</td>
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<td>▪ EDW</td>
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Supporting specific use cases can be efficiently achieved through the use of tightly integrated applications

- Supporting a use case requires the data sources to be incorporated into specific data marts and the development of a data model, which is then visualised through the presentation tools and incorporated into a process via business process management tools, if required.

- Analytics applications provide these components pre-configured, which enables fast and low-risk deployment. However, in order for these analytics applications to work in this way a prerequisite platform is need.

- Most use cases are not supported by analytics applications, but are supported through a combination of configuration, data adapters, integration and professional services support by vendors.
CSPs are struggling with three broad issues today

- Prioritisation of use case development
- Systems selection and implementation architecture
- Organisation structure to adopt
To understand the organisational changes required, you need to define the value chain you want to operate in.

**Organisational changes required**

- **Data pipe**
  - Operator keeps business as usual, allowing third parties to extract data directly from IT or network systems.

- **Data aggregation**
  - Operator captures and aggregates the data from its own systems into a ‘big data’ datamart, providing anonymised data to third parties.

- **Data analytics**
  - Operator captures, aggregates and segments customer data.

- **Product packaging**
  - Operator uses segmentation algorithms and packages the data for different types of client, based on their needs.

- **Market analysis**
  - Operators offer turnkey customisable solutions based on client needs, without ever providing customer data to third parties.
Ultimately, as a significant source of revenue, big data should become a department on its own.

**‘Big data’ practice**

**Data warehousing**
- Responsible for creating and maintain the ETL processes required to extract data from systems.
- Responsible for ensuring data capture requirements are in place from a network perspective.

**Product development**
- Team responsible for analysing aggregated data enterprise-wide.
- Responsible for product design and algorithm generation for product creation.

**Business development**
- Responsible for identifying and contacting potential clients.
- Co-operation in the product packaging based on the knowledge of clients’ needs.
CSPs are struggling with three broad issues today:

- Prioritisation of use case development
- Systems selection and implementation architecture
- Organisation structure to adopt
The selection and prioritisation of different projects on which to implement a new BDA strategy is complex.
Thank you for your attention.

Any questions?

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Our unique skillset ensures a holistic understanding of the big data phenomenon

Big data

Operational + Regulatory + Software research

Operational analytics strategy

Centralisation of analytics functions

Customer lifetime value management

Operational analytics implementation

RFP support

Regulatory support and advice

RFP support

Technical strategy and implementation

New generation big data strategies
Second breakout streams – choose one to attend – 4.15-5pm

- **Mobile Internet trends in the Middle East–Africa Region – MEA Mobile Internet Survey Results:** Karim Yaici and Ronan de Renesse
  - *Godolphin Ballroom (this main room)*

- **The impact of real-time network analytics on making faster, more informed business decisions:** Justin van der Lande and Patrick Kelly
  - *Level 5, Room 2*