Emerging Technologies

Big Data Analytics Service
Offerings

Strictly Private
and Confidential

28 February 2014
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Big Data Reality

Contents
1. Social enterprise – A business case
2. How does social enterprise look like
3. Benefits of social enterprise
Companies have heard the hype about big data, are trying to understand the impact and trying to decide whether to invest as a solution for their information challenges.
Acceleration of Technology Change – We’re experiencing a data deluge

- By 2013 the amount of traffic flowing over the internet annually will reach 667 exabytes
- In 2008, households were bombarded with 3.6 zettabytes of information (or 34 gigabytes per person per day)
- Worldwide mobile data traffic will double every year through 2013... increasing 66 times between 2008 and 2013
What kind of data constitute big data?

Unstructured External/Internal Data
- Social media messages
- Emails
- Blogs comments
- Video and Image Streams
- Click-stream data
- Mobile phone geo-location data
- Geo-location data
- Social profile datasets (e.g. Facebook)

Structured External Data
- Financial market data
- Road, rail, air, traffic data
- Census data
- Climate Data
- Website analytics
- Visitor traffic counts
- Marketing campaigns and responses
- Invoice records
- Inventory records
- Industry sales data
- Unstructured External/Internal Data
- Social media messages
- Emails
- Blogs comments
- Video and Image Streams
- Click-stream data
- Mobile phone geo-location data
- Geo-location data
- Social profile datasets (e.g. Facebook)

Internal Data
- Customer details
- Product details
- Product shipments
- Sales transactions
- Product returns
- Employee details
- Contact center transactions
- Partner data (suppliers, customers, loyalty programs)
- Website analytics
- Visitor traffic counts
- Marketing campaigns and responses
- Invoice records
- Inventory records
- Industry sales data
- Unstructured External/Internal Data
- Social media messages
- Emails
- Blogs comments
- Video and Image Streams
- Click-stream data
- Mobile phone geo-location data
- Geo-location data
- Social profile datasets (e.g. Facebook)
PwC Avoids the Hype and Focuses on the Business

Sometimes the hype is right; sometimes it is wrong. Overall, we believe Big Data provides a solution for sets of marketing information whose value to the organization is not proven but volume is enormous.
Our point of view

A forward looking strategy to achieve lasting change helps establish the roadmap to execute this change

The volume and variety of data is rapidly increasing as customer interactions evolve

...which forces leading firms to formulate and adopt a comprehensive strategy ...

...in order to realise sources of advantage

Sources of advantage

- Managing information
- Utilising data for actionable insights
- Reducing data complexities

The development and adoption of an information advantage strategy can drive profitability and a sustainable competitive advantage

Increasing revenue  Lowering costs  Operating and capital efficiencies  Improved customer experience and loyalty  Evolution and change of business models

Customers are changing their behaviours and preferences

Improved technologies allow firms to capture, manage, and utilise information in new ways at reduced cost

Internal and external data sets are growing in size and abundance

DB

Economics

Leverage

Capture

Cleanse

Analyse

Organisation

Delivery

DB

DB

DB

ROI

Quality

Evolution and change of business models

28 February 2014
Section 1 – Big Data Reality

Big Data Adoption: India and Global Scenario

Big data, big benefits

To what extent do you agree or disagree with the following statements – Harnessing ‘Big data’ will give my organisation a competitive edge

Rest of the world

-5% -6% 38% 23%

India

-5% -10% 27% 43%

Disagree Strongly disagree Agree

Don't know Agree strongly

Base: All respondents (1,108); India (60)

Source: PwC’s 5th Global Digital IQ Survey – The India story

62% of information technology and business executives surveyed by PwC believe that Big Data has significant potential to create business advantage

3 Key Challenges

Survey respondents also acknowledged three key Big Data challenges

58% indicated that transitioning from data to insight is a major challenge

41% noted that their systems cannot process large volumes of data from different sources

25% said they lacked the talent to undertake deep analysis of Big Data
The triggers for the need of Big Data solutions

Data volumes explode by 40% every year
Organisations are generating petabytes (*) of data annually but are only able to store and analyse terabytes
Google processes about 24 petabytes of data per day

(*) 1 petabyte = 1,000,000,000 megabyte

Storage costs decrease by 45% every year
Throwing away data is becoming more expensive than storing data. Generate business value now with scalable cost structure.

We live in a digital & connected world
Smartphones sales have outpaced PCs in 2011. Social medias are extensively used
NB: 900 millions Facebook active users in April 2012

Most data is unstructured and complex to analyse
Only 5% of data is currently in a structured format suitable for traditional Business Intelligence

Next-gen analytics & big data is a way to use and value the massive amounts of information companies collect today to get competitive insight
Big Data Challenges – The pace of technological advancement and adoption has created diverse sources of data that are generated in unmanageable quantities on a daily basis

**Velocity**
The speed at which data is generated and used. New data is being created every second and in some cases it may need to be analyzed just as quickly.

**Variety**
Represents the diversity of the data. Data sets will vary by type (e.g. social networking, media, text) and they will vary how well they are structured.

**Volume**
Reflects the size of a data set. New information is generated daily and in some cases hourly, creating data sets that are measured in terabytes and petabytes.

**Challenges**
- Integrating unstructured and external data feeds into existing analysis and processes
- Developing tools and algorithms that are efficient and scalable
- Identifying the data that will best enhance an analysis
- Linking data sets of varying structures and disparate sources
- Extracting knowledge from unstructured data sources
- Storage infrastructure that keeps pace with data growth and accessibility
- Data management practices that quickly react to changes in data sets and storage durations
- Filtering data before it becomes a data management issue
The fourth V – Value from big data

Accelerating technology and availability of real-time data is allowing companies to use Information as a ‘Game Changer’ and not just as a ‘Strategic Weapon’

Information as an Enabler
• Data:
  o Structured data
  o Batch data
  o Internal data sources
• Techniques:
  o Excel-based models
  o Statistical analysis
• Decision-making:
  o Operational
  o Backward-looking

Information as a Strategic Weapon
• Data:
  o Semi-structured data
  o Near real-time data
  o External data sources
• Techniques:
  o Predictive models
  o Neural nets
  o Optimization
• Decision-making:
  o Strategic
  o Project future based on past
  o Optimize solution

Information as a Game Changer
• Data:
  o Unstructured
  o Real-time
  o Internal & external data sources
• Techniques:
  o Simulation
  o Machine learning
• Decision-making:
  o Transforming business model
  o Explore future scenarios
  o Learn from data

Increasing Business Value
Increasing Sophistication of Information & Analytics
Conceptual Architecture – Leveraging Big Data For Insights

Interlocking your EDW and Big Data Environment is critical to supporting a comprehensive view of the business.

Emerging Technologies • Big Data Analytics Service Offerings

PwC

28 February 2014
Contents
1. What do we offer?
2. Summary of offerings
What do we offer?

PwC can help its client understand the potential of social media and develop strategies to leverage it to their advantage across their organization.

Service Offerings:

PwC will help its clients transform their businesses through innovative use of big data analytics tools and collaboration platforms.

- **Strategy**: PwC can help its clients design effective organizational structures to reach their social media and collaboration goals.
- **People**: PwC will provide its expertise to the clients so that they can encourage collaboration within and outside the organization.
- **Tech**: PwC will help its clients identify and utilise the right technology for their unique business needs.
- **Process**: PwC can help its clients design and implement processes and systems for effective utilization of social media tools and platforms to transform their businesses.

PwC will help its clients design effective organizational structures to reach their social media and collaboration goals.
PwC Social Enterprise Solutions

Our Big Data Capabilities

**Innovation**
We work with our clients to develop information driven innovation models by defining new processes and operating model using existing data sources as well as outside data sources to discover new insights.

**Strategy**
We design comprehensive approach that identifies and defines business capabilities that are enabled through improved insights achieved through big data and develop a comprehensive roadmap for execution.

**Design**
We architect integrated solutions that create scalable harvesting of large data sources into big data solutions which interlock with existing analytical solutions.

**Construction**
We build scalable big data solutions which combine analytics, business intelligence, data integration, and data warehouses to create a comprehensive solution to support extraction of insights and value.

Big Data Service Offerings

- **Executive Workshops:** Catalyst workshop that educates and identifies opportunities for big data
- **Innovation Operating Model Design:** Establishes the processes and capabilities for innovation using big data
- **Outside In Data Innovation:** Identifies outside data sources that are impactful for improved insights
- **On Demand Analytics:** Pilots the use of a big data source to prove out value
- **Capability Strategy and Roadmap:** Identifies needed capabilities required for big data, conceptual architecture, and develops a realization roadmap
- **Information Strategy:** Creates a cohesive information strategy for realization of traditional and big data insight capabilities
- **Risk and Governance:** Develop the approach for managing risks with big data and establish overall governance
- **Platform Architecture:** Develops an overall platform architecture for big data
- **Jump Start:** Take a real-work use case to drive a real-life pilot for Big Data by setting up the infrastructure, data provisioning, and analytics to jumpstart corporate big data capabilities
- **Solution Design:** Develop a comprehensive solution for a big data problem which can then be used for construction including tool selection/RFP
- **Big Data Integration:** Integration of big data sources into the enterprise information ecosystem by developing intake, cleansing, and loading processes
- **Innovation Platform Development:** Creates an innovation data warehouse by interlocking a companies data warehouse with big data technologies to provide new insights to the business
Big Data Solutions

Contents
1. Big data solution – use cases
2. Sector specific use cases
Unbundling of Services backed by Big Data Analytics

Directorate General of Civil Aviation (DGCA) had allowed airlines to charge fees for 'unbundled services' like check-in baggage, preferential seats, meals, snacks or drink (except drinking water) and sports and musical instruments on their domestic flights. That leads to major domestic airlines like Indigo to lower the base price after unbundling and charge a premium for such preferential services.

Big Data can help in unbundling and associated pricing in real time:

• Impact of revenue on a real time basis for such unbundled services
• Geographical sector based focus on such unbundled services, i.e. customers from which segment prefers what type of services
• By analyzing the excess baggage and fuel consumption due to decrease in baggage weight, offering an optimal base price and thus attracting more customers on a segment basis
Big Data Solutions – Use cases

All solutions essentially achieve the same thing with different means -- processing Information of 3 V’s (Volume, Velocity, Variety) in ‘Batch’ OR ‘Real Time’ basis to derive the golden nuggets required for generating business insights and customer facing applications.

Scientific
Medical imaging, sensor data, genome sequencing, weather data, etc.

Commercial
Financial, pharma, manufacturing, insurance, airline, energy, retail

Customer Service
Sales data, customer behavior, product data, accounting data, etc.

IT Operations
Logging, activity feeds, network messaging, analytics, intrusion detection, etc.

Emerging Data Platforms
(Hadoop, NoSQL, NewSQL, Data Appliances)

Reduce
Import

Business Intelligence & Analytics (e.g. prediction models, sentiment analysis, risk assessment, etc.)

Dashboards and Reporting

Data Storage

High Volume Data
Emerging Technologies • Big Data Analytics Service Offerings

MapReduce

Consume

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## Big Data Use Cases – BFSI Sector

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<th>Functional Area</th>
<th>Use Case</th>
<th>Description</th>
<th>Types of Data</th>
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</table>
| Sentiment Analytics   | Companies Utilize Sentiments Concerning Stocks Mined from Media Sources | By harvesting traditional as well as new media sources in order to gauge public opinion, financial institutions are able to identify trends earlier. Some hedge funds have gone as far as to base their entire investment strategy on trading signals generated by Twitter analytics. | • News Keyword Analysis  
• Entity Extraction  
• Social Media Response |
| Predictive Analytics  | Capital Market Firms Utilize Big Data for Strategy Development and Risk Mgmt | Capital market firms are starting to rely more on frameworks such as R and Hadoop to correlate large amounts of historical data and new data and quickly perform analytics in near real time. | • Historical Market Data  
• New Market Data (correlations, back-testing strategies, probability calculations) |
| Rogue Trading         | Rogue Trading Assessment and Control                       | Deep analytics permit the correlation of accounting data with position tracking and order management tools to identify patterns and identify rogue trading.                                                      | • Accounting Data  
• Position Tracking  
• Order Management Systems |
| Fraud                 | Utilizing Big Data for Fraud Detection and Reduction of False Positives | By correlating data from multiple points it is possible to identify fraudulent activity faster than current methods. Another benefit is the reduction of false positives by linking cellular location along with the financial data. | • Point of Sale  
• Data from other financial institutions  
• Data from service providers  
• Cellular location |
| Retail Banking        | Risk Profile Assessment Drives Loans and Other Financial Decisions for Financial Institutions | The increased access to customer web data allows financial institutions to make more thorough assessments of loan requests, as well as to make targeted service offerings based on major life events. | Web Data (life events such as job status, marriage, etc.) |
| Retail Banking        | Analytic Solutions Provide Customer Insight to Promote Lasting Relationships | Leading banks are focusing on Internet feedback and social media to identify areas of concern and improve their reputation and customer retention.                                                                 | • Internet feedback  
• Social media  
• Service logs |
| Stock Prices          | Social Media Sentiment correlation with Stock Returns      | Aggregate opinions from social media to generate predictions of industry stock prices - essentially utilizing social data analysis to boost investment returns.                                                      | Social media |

Emerging Technologies • Big Data Analytics Service Offerings
PwC
## Big Data Use Cases – Healthcare Sector

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<th>Types of Data</th>
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| Patient Care          | Big Data Reduces Patient Mortality Rate From Decision Making Improvements | Healthcare providers are able to make better, more holistic real-time decisions based on patient's medical history, current status, and environmental factors, as well as incorporate medical journal articles and other industry knowledge.          | • Previous medical history  
                        |                                                                           |                                                                                                                                             | • Test results  
                        |                                                                           |                                                                                                                                             | • Sensor information  
                        |                                                                           |                                                                                                                                             | • Biomedical data  
                        |                                                                           |                                                                                                                                             | • Environmental data  
                        |                                                                           |                                                                                                                                             | • Medical journals  
                        |                                                                           |                                                                                                                                             |                                                   |
| Disease Assessment    | Develop Non-Intrusive Test to Predict Coronary Artery Disease            | By analyzing millions of gene samples, identify the specific genes that have been proven to predict coronary artery disease in patients long before any other indicators are present.                                           | Gene Samples  
                        |                                                                           |                                                                                                                                             |                                                   |
| Patient Care          | Sensor data obtained from Home Carpet to Monitor Activity of Senior Citizens | Sensor data from home carpet can be used to monitor deviations in daily routine and can notify family or caretakers in the event of concerning behavior.                                                   | • Time  
                        |                                                                           |                                                                                                                                             | • Speed  
                        |                                                                           |                                                                                                                                             | • Pressure                                                   |
| Disease Assessment    | EKG Analysis Helps Predict Patients At-Risk of a Second Heart Attack Within the Year | By analyzing full EKG data as opposed to just a few minutes, specific indicators have been identified which imply that the patient is at risk of a second heart attack in the near future.                                | • Machine learning  
                        |                                                                           |                                                                                                                                             | • Data mining  
                        |                                                                           |                                                                                                                                             |                                                   |
| Disease Outbreak      | Measuring and analyzing disease related posts on Twitter                 | Automated social data collection platform, is used to identify the location and number of disease specific posts in Twitter, resulting in accurate results weeks ahead of the official data.                                               | Social media (Twitter)                             |
| Health Care Management| Opportunity to deploy mobility and cloud capabilities for more consumer-centric applications vs. clinical efficacy applications (Wellness, Fitness, Aging, Activity Date, Healthcare players’ social media goals) | Develop a 3P-agnostic consumer user single point hub (cloud-based) for consumer health that captures and provides rich access to wide variety of data from multiple sources and devices  
                        |                                                                           |                                                                                                                                             | Develop analytics tools both for consumer use that allow for intersection between different “Apps” – e.g. fitness with a specific condition tracker – but also allow potential third parties to access, with a structure for paying consumers market as an access point for payer, pharma, device companies etc. to access wide range of consumer data (health and wellness as well as other activity) on a disaggregated, non-provider driven basis |                                                   |

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PwC
## Big Data Use Cases – Retail Sector

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<th>Description</th>
<th>Types of Data</th>
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| Segmentation         | Individualized Marketing Reduces Marketing Costs and Enriches Shopping Experience | Identify which customers are in the vicinity of their shops and provide customer specific offers and advertisements based on purchase data and feedback form social media. | • Cellular location  
                           |                                                                           |                                                                                        | • Purchase data  
                           |                                                                           |                                                                                        | • Social media |
| Predictive Analytics | Stocking local retail branches based on customer preferences             | Utilizing a variety of data to identify customer preferences to a specific locality and customizing supply chains at the local level to increase customer satisfaction and generate more profit. | • Purchase data  
                           |                                                                           |                                                                                        | • Social media  
                           |                                                                           |                                                                                        | • Product placement |
| Customer Satisfaction| Engaging Customers pro-actively based on Social Media Response            | Monitoring social media chatter 24/7 to proactively engage customers and improve experience.                                                              | Social media                           |
| Online Sales         | Online Retailers track more than physical retailers, providing more tailored experience | Online retailers are able to track, not just what is sold and who bought it like physical retailers, but also what users are looking at and how they search, to provide a constantly evolving and more successful algorithm for recommendations and improved user experience. | • Viewing data  
                           |                                                                           |                                                                                        | • Site navigation  
                           |                                                                           |                                                                                        | • Influence of promotions, reviews, and page layouts  
                           |                                                                           |                                                                                        | • Similarities across individuals and groups |
| Customer Mapping     | Using mobile location data to predict the number of people / customers in a specific locality | Using mobile location data, retailers sales can be estimated using predictive analysis even before the actual sales numbers are recorded | Mobile location services               |
| Food                 | Restaurants Capable of Reacting to Feedback from Social Media for Optimization | Restaurants are able to make changes or continue product offerings based on customer reactions through social media avenues such as Facebook and Yelp. Examples include keeping or discontinuing products based on customer response, as well as adjusting employee training based on customer experience. | Social media                           |
## Big Data Use Cases – Telecom Sector

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<th>Functional Area</th>
<th>Use Case</th>
<th>Description</th>
<th>Types of Data</th>
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</table>
| Revenue Generation | Data Based Cross- and Up-sell Approach Drives Revenue Through Delivery of Highly Targeted Product Bundle | An increase in available information from existing customers such as search and view history allow telecomm companies to more strategically make up-sells to customers, which in turn makes the company more profitable. | • Existing customer information  
• Location  
• Search-history information (from smart phones, landline, TV, and Internet services) |
| Customer Retention | Using customer feedback to cut customer defection and enhance customer loyalty | Using customer’s billing information and comparing against social media data, analyze customer comments on social media, identify customer dissatisfaction and proactively address customer issues to enhance customer loyalty | • Customer data records  
• Web logs  
• Billing data  
• Social media |
| Telecom Bandwidth | Cell phone tower data analysis to detect and prevent network bottle necks | Detect collocation events to detect and prevent network bottle necks | |
| Security | Multi device event stream analysis correlating Firewall & IDS & Switch activity | Create a 360 degree view of an intrusion using an event log repository streaming thousands of events per second collected from firewalls, IDS, routers, switches etc | |
| Stimulating Behavioral Change | Using data analysis to target an off-peak feature, developing offers designed to stimulate the lowest prepaid users to carry and use the phone daily, improving segment revenues | Using data analysis to identify pockets of low usage subscribers within the prepaid base and developed an off peak feature, stimulating overall usage of target subscribers | |
| Telecom Bandwidth | Contact centre data mining | Analyze text keywords in call center data and use frequency of occurrence as an indicator to infrastructure bottlenecks and perform network throttling and route optimization | • Cell Phone Call data  
• SMS  
• Web data |
# Big Data Use Cases – Other Sectors

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<tr>
<th>Sector</th>
<th>Functional Area</th>
<th>Use Case</th>
<th>Description</th>
<th>Types of Data</th>
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<tr>
<td>Automotive</td>
<td>Quality Assurance</td>
<td>Social Media Predicts Trends in Automotive Equipment Failure</td>
<td>Research proves that the existence of safety and performance defects are strongly predicted by the incidence of automotive problem reports in social media.</td>
<td>Social media</td>
</tr>
<tr>
<td>Automotive</td>
<td>Auto user experience</td>
<td>Leverage LTE capabilities and functionality to connect to 250M Registered Vehicles in the U.S in enhance user experience. (requires ‘White label’ agreements with auto manufacturers)</td>
<td>Build a value added user experience for the auto manufacturers to market In vehicle connectivity - WiFi Addressable Advertising Telematics Monitoring Information Contacting for advice Locations Services Mapping and Traffic Communications Delivering media content to the car Music Video (Subscribed content by current FIOS users)</td>
<td></td>
</tr>
<tr>
<td>Communications</td>
<td>Networking Providers</td>
<td>Management of Customer Satisfaction by Monitoring Outages via Social Media</td>
<td>By monitoring social media, network providers are able to determine outages and customer issues faster than with formal channels, allowing a proactive approach to the management of the customer experience.</td>
<td>Social media</td>
</tr>
<tr>
<td>Communications</td>
<td>Customer Churn</td>
<td>Customer Churn Reduction Through Proactive Engagement</td>
<td>Reduce customer churn by analyzing customer data to anticipate which customers were most likely to move to a competitor and focus attention on ensuring their satisfaction.</td>
<td>“Customer Data”</td>
</tr>
</tbody>
</table>
| Energy     | Oil                | Major Oil Company Cuts Operating and Staffing Costs and Increases Production | By utilizing instruments to constantly read wellhead conditions, pipelines, and mechanical systems, operation centers can adjust oil flows to optimize production and minimize downtimes.                                                                                                                                                                                                                                             | • System readings  
*Physical condition data*
## Big Data Use Cases – Other Sectors Contd...

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<tr>
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<th>Functional Area</th>
<th>Use Case</th>
<th>Description</th>
<th>Types of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entertainment</td>
<td>Revenue Forecasting</td>
<td>Designing a simulation model to forecast the revenue a movie will generate across the full spectrum of release windows, physical and digital media platforms</td>
<td>Designing a model to evaluate revenue impact of release timing across windows and channels, which allows executives to safely “test drive” varied release and promotional strategies in advance. The model can be used to: 1. Optimize revenue across release windows 2. Plan media campaigns 3. Adjust in-flight campaigns and release strategies</td>
<td>Direct factors such as theater count, marketing spend, and descriptive information (e.g. rating, genre) Indirect factors such as word-of-mouth, movie competition, and movie quality (e.g. star power)</td>
</tr>
<tr>
<td>Hospitality</td>
<td>Staff Utilization</td>
<td>Hotel Staff Utilization Increased through New Scheduling Processes</td>
<td>By utilizing information from the National Weather Forecast in conjunction with historical hotel data, a major resort was able to drastically reduce staffing costs by hiring and staffing based on forecasted weather. The resort earned an ROI of 1.822%.</td>
<td>National Weather Forecast</td>
</tr>
<tr>
<td>Logistics</td>
<td>Trucking</td>
<td>GPS Technology Allows For Tracking, Rerouting, Customer Notification, Forecasting, and Pricing</td>
<td>The use of GPS technology allows for companies to better track their shipments, leading to better pricing structures, more efficient routing, and better customer satisfaction through notifications.</td>
<td>-GPS data -Live traffic updates</td>
</tr>
<tr>
<td>Media</td>
<td>Customer Usage</td>
<td>Content Optimization on Web Applications</td>
<td>By following the user clickstream patterns, companies can modify their web applications to promote certain actions or draw attention to certain functions or advertisements.</td>
<td>Clickstream Sessionization</td>
</tr>
<tr>
<td>Political</td>
<td>Military</td>
<td>Trend Analysis in documents</td>
<td>Analyzing terabytes of data to determine trends in the conflict such as the type of activities, evidence to seasonal spikes in conflict, and trends in attack locations.</td>
<td>Wikileaks data (location, type of activity, date)</td>
</tr>
<tr>
<td>Political</td>
<td>History</td>
<td>Investigative analysis of historical data</td>
<td>Historical Data can be used for forensic analysis and investigations to determine actions, motives, vectors, effects, and evidence for incidents, misuse, theft, or fraudulent activities.</td>
<td>Government Documents (arrest reports, documented disappearances)</td>
</tr>
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3. How to reach us?
Thought Leadership

Examples of Big Data Analytics Thought Leadership (Non exhaustive)
Big data – Case Study

Fortune 500 Insurance Company

Challenge:
It was critical for the company to avoid finding itself flat-footed if the market shifted suddenly, and it planned to build a high-performance direct distribution operating model to support future growth of online life insurance sales. But the client needed to know how soon would it need to ramp up? What barriers would it encounter? What sales criteria would change the market most? Which customers were most likely to gravitate toward online purchase options? Getting answers to all those crucial questions would require deep and far-reaching analysis of huge amounts of data.

Task:
The client determined that fast-moving marketplace changes would require a hard-hitting and sweeping analysis of its sales and marketing strategies in the online space. Auto insurance sales had moved online quickly and become commoditized over the past decade—70 percent of today’s auto insurance purchasers have obtained an online quote—and the company needed to know if the life insurance sales that were central to its growth were destined to follow the same evolution to direct distribution.

Solution:
PwC collected and analyzed vast Big Data sets to address impact of healthcare regulations and electronic medical records on online sales, marketing effort needed to make consumers feel comfortable shopping online for life insurance, and upcoming technology changes would make online sales more viable. PwC analyzed macroeconomic data, consumer data, and technology advancement data.

A 5-10 year model using this data showed 3 potential barriers to growth: medical underwriting requirements for most life insurance applications, consumers’ reluctance to share personal medical information online, and complexity of some life insurance products. Removing these barriers could accelerate the move to online sales. PwC’s model based on external third-party data sets that showed at a ZIP-plus-4 level the number of people who have life insurance, its type, their net worth, their demographic categories, their digitally savvy, and the length of time that they spend online per week was used to identify target customers and tailor marketing programs.

Results:
Estimated increase in direct term life insurance sales of about $200 million and substantial growth in its direct whole life insurance market share by 2015, under certain scenarios are expected. PwC is currently helping the company develop a more data-driven decision culture as it combs through more Big Data sets to predict other market changes that may shake up the insurance industry in the future.
## Big data – Case Study

### Large media company

**Task:**
A large media company found itself awash in data about its subscribers and customers, but it was not effectively using it to develop new business strategies. A legacy environment made up of several disparate transaction systems and customer databases forced marketing personnel to spend their time doing manual data integration across those legacy systems in slow and ineffective ways.

A new CEO accustomed to working in a much more data-driven environment was asking hard-hitting questions about the numbers, and business managers were struggling to answer them because they lacked the depth of analytics he was looking for. Friction developed between management and IT, and both sides faced the challenge of getting the answers the CEO was rightfully demanding.

**Challenge:**
The company asked PwC to help it understand the current state of its data and analytics and suggest changes that would help it achieve its goals:
- To make better, smarter, and faster decisions using its data
- To draw more timely and intelligent insights using traditional and Big Data techniques
- To clean up its disjointed customer experience, without wholesale changes to its legacy technology environment

**Solution:**
PwC understood the client’s core need: improve customer interactions from deep analysis of their preferences, patterns, and experiences.

Using Big Data concepts along with traditional business intelligence, PwC provided a 7 step roadmap to transform the organization’s decision culture, without sacrificing legacy system investments:
- A pragmatic data governance program with a defined agenda supported by key data management roles
- A single view of customers and products to manage customer and product profiles, relationship and hierarchy
- Flexible and robust automated data warehouse architectures and data distribution services to support 360-degree customer view, enhanced data access, and full-spectrum reporting
- A data quality factory to quantify, monitor, & remedy quality issues
- A lightweight metadata tool to manage common business/technical data definitions and lineage
- A sandbox environment - including Big Data technologies – and processes for business users to correlate different data sets
- Staffing needs for a sustainable data management organization

**Results:**
PwC’s solution provides the client deep analytical capabilities to make better, faster, and smarter business decisions in a Big Data environment with complex and interrelated data, to help them prosper in the years ahead.
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