Analytics in the Age of Big Data

IAN ABRAMSON
SENIOR CONSULTANT
IABRAMSON@SWI.COM
About Me

• Degree in Applied Mathematics
• Over 25 years with Oracle software
• Over 15 years with data and analytics
• Big Data Analyst
• Author of numerous Oracle books
• Blogger: http://ians-oracle.blogspot.com/
• Oracle ACE
• IOUG Past-President
• TOUG Board Member
• Twitter: @iabramson
About SWI

History
• For 35 years SWI has offered high-value consulting services to the Energy and Financial sectors
• We are experts in translating business needs into IT Solutions
• SWI always delivers on client commitments with a 100% success rate

Focus
• Our experienced staff possess a valued combination of business knowledge and technical skill
• We have hands-on experience with front and middle office systems, specialize in integration, data management, and analytics for the Energy and Financial sectors

Services
• SWI has 140 full-time employees, skilled in all areas of project execution
• Our stability is evident in that 65 staff members have been with SWI for over 10 years
• Our project delivery models: turnkey solutions, staff augmentation and private cloud hosting
Agenda

1. Where is Big Data and BI
2. Analytics from 1 to 3.0
3. Evolution of Analytics
4. Best Practices for Analytics
Any sufficiently advanced technology is indistinguishable from magic.

---------

The only way of discovering the limits of the possible is to venture a little way past them into the impossible.

- ARTHUR C. CLARKE
What is Big Data?

**Big data** are the words used to describe a massive volume of both structured and unstructured data that is so large it is difficult to process using traditional database and software techniques.
Business Intelligence Revolution

1990s
Data Warehouse
BI and OLAP
Tools like Cognos, Informatica, Brio, Excel, Oracle, Sybase, Red Brick

2000s
Interactive BI Tools
High Performance Appliances
Self Service BI
Qlikview, Exadata, Netezza

2010s
Big Data Revolution
Distributed Computing
Scalable Solutions
Open Source Software
Tools: Hadoop, NoSQL, Spark, R, Big Data Appliances, Cloudera, Hortonworks, Talend, Platfora

Copyright © 2015, Systemware Innovation Corporation
Why is Big Data Changing Business?

- New Businesses are data driven
- Data is changing lives
- Data is changing how learn
- Data is improving the world
- Data is the new Economy
Hype Cycle for BI and Analytics

Tomorrow:

Today:
# Trends in Analytics

<table>
<thead>
<tr>
<th>Lagging</th>
<th>Industry trends</th>
<th>Leading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional silos</td>
<td>Data</td>
<td>Spans enterprise</td>
</tr>
<tr>
<td>Internal</td>
<td>Users</td>
<td>Internal/external</td>
</tr>
<tr>
<td>Multiple</td>
<td>Sources</td>
<td>One trusted</td>
</tr>
<tr>
<td>Old patterns</td>
<td>Technology/repository</td>
<td></td>
</tr>
<tr>
<td>Several</td>
<td>Analytics</td>
<td></td>
</tr>
<tr>
<td>Historic trends</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Gut feel!”</td>
<td>Decisions</td>
<td></td>
</tr>
<tr>
<td>Tenure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perception</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Data**: Based on data
- **Users**: Internal/external
- **Sources**: One trusted
- **Purpose**: Exploratory
- **Variables**: Many
- **Discovery**: Predictive
- **Based on**: Data
- **Business case development**: Data
- **Road map prioritization**: Data
Effective Analytics Need Focus

Understanding the Data:
- Exploration
- Causation
- Noise Ratio
- Privacy

The ‘right’ data set makes the difference. Not the amount. Not the algorithm.

Chart: “Ask Measure Learn” by Lutz Finger and Soumitra Dutta
Intro to Analytics 1.0 to 3.0

BBD – Before Big Data

Analytics 1.0

• Reporting to the Masses
• The Era of Business Intelligence

ABD – After Big Data

Analytics 2.0

• New bells and Whistles – Dashboards, Proactive.
• The Big Data Age Begins

Analytics 3.0

• Apply powerful data-gathering and analysis methods not just to a company’s operations but also to its offering
• Embed data smartness into the products and services customers buy.

Adapted from Materials from Tom Davenport
Analytics 1.0

• What we are here calling Analytics 1.0 was a time of real progress in gaining an objective, deep understanding of important business phenomena.

• Change from Intuition to Fact-based decision making

• Enterprise DWs

• Complex ETL

• For the first time, data about production processes, sales, customer interactions, and more were recorded, aggregated, and analyzed.

• Leaders had BI

• BI needed experts
Analytics 2.0

• Competing on Analytics
• Big Data enters the Enterprise
• The 7 V’s (Velocity, Volume, Variety, Value, Veracity, Validity, Visibility)
• Predictive and Relational Analytics
• Cloud-based solutions
• Still complex to administer
• Need experts in Big Data & Data Science
• Self-service BI introduced
Analytics 3.0

• The monetization of Data
• Data as a Service
• Analytics is valued by business
• Data Products
• Data Sharing
• Self-Service Analytics
• Data is always available
• Data is everywhere, Analytics is everywhere
The Analytics Maturity Model


How Analytics Has Changed Us

- Smarter Healthcare
- Homeland Security
- Aircraft manufacturing and operations
- Multi-channel Dynamic sales
- Geo-Location Apps
- Network Operations
- Financial Analytics
- Predictive Search
- Social Media

"Your recent Amazon purchases, Tweet score and location history makes you 23.5% welcome here."
Reporting is now Analytics

1. Traditional Non-Relationship
   - Data: Single product master file, Credit bureau, Demographics
   - Analytics: Relationship data warehouse

2. Standard Relationship View
   - Data: Relational product ownership tags
   - Analytics: Single product time-ordered view

3. Multi-Product & Channel View
   - Data: Multi-product master files, Transaction detail on spending and collections, Channel usage, Customer research
   - Analytics: Integrated multi-product and channel time-ordered view

4. Experimental
   - Data: Internet click data, Social media, Media activity, viewing and listening
   - Analytics: ???
New Analytic Visualizations
More Visualizations
Business Challenges

- Combining private corporate data with big data in cloud
- Large amounts of data increases complexity of analysis
- BI is lagging behind the business’s desire for analytics
- Mature BI Organizations are slow to adopt Discovery Reporting

![Data usage statistics](chart.png)

- **22%** Data that is Useful if Tagged & Analyzed in 2013
- **37%** in 2020

![Data universe](diagram.png)

- **5%** Target-Rich Data in 2013

*Source: IDC, 2014*
Reporting and Analytic Goals

- New Technologies for Big Data and Analytics
  - Tableau, Qlikview, R, Hive, Spark
- Cloud Based Analytic Exchanges
- Data Discovery
- Everyday Analytics
  - Self Service BI, Visualizations and Analytics
- Delighting Customer with Data-driven products – Nordstrom’s
Architectural Goals

Data Hubs/Lakes
- Hadoop-based data hubs/lakes to store and process enterprise data
- BI that becomes one of many spokes of the Hadoop based data hub
- Secure your most important asset: Data.
- Open data sets make information sharing possible.
- The many will impact the one.
- Internet of Everything and Internet of Things

Data Discovery
- Accelerators to help profile and discover definitions and meanings in data sources
- Manage access to data

Data Governance
- Differentiates the processes you need to perform at the ingest, move, use, and monitor stages
- Integrated metadata for data lineage and impact analysis
How do we get there

- IT and Business need to collaborate
- Implement new business processes
- Focus on Data Governance
- Data Lakes/Big Data
- Internal and external Data Sources
- New tools; new analytics
- New skills
Final Thoughts

- Choose the Right Architecture
- Explore new reporting and analytic methods
- Change how you do business. Integrate analytics everywhere
- Empower the individual

If you want something in your life you've never had, you'll have to do something, you've never done.

~ JD Houston
Thanks & Questions

Ian Abramson
Principal, Senior Consultant
SWI (Systemware Innovation Corporation)

Email: iabramson@swi.com
Cell: 416-407-2448
Resources

3. http://www.iti.cs.uni-magdeburg.de/iti_db/forschung/index.php#projekte
13. Designing Data Products Lutz Finger (LinkedIn)
15. THE RISE OF ANALYTICS 3.0 How to Compete in the Data Economy; By Thomas H. Davenport, IIA Research Director
Data Innovation – Why now?

“It takes 20 years to make an overnight success”

Shift Focus from Technology Problem to Business Value