

Designing an Analytics Strategy for the 21st Century

Event: Northwest Oracle Users Group
Presenters: Tim VlamiS and Arthur Dayton
Date: October 10, 2016

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VlamiS Software Solutions

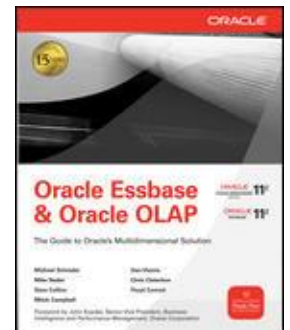
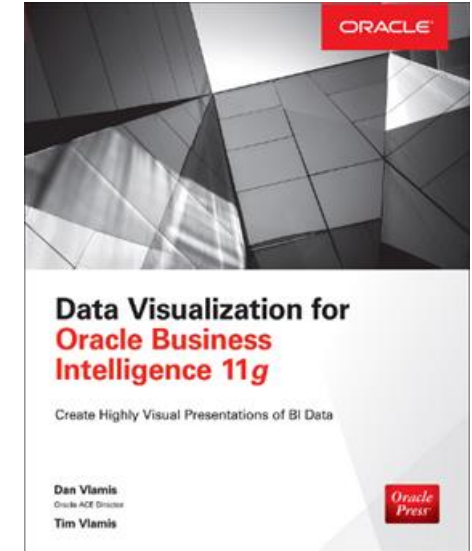
- VlamiS Software founded in 1992 in Kansas City, Missouri
- Developed 200+ Oracle BI and analytics systems
- Specializes in Oracle-based:
 - Enterprise Business Intelligence & Analytics
 - Analytic Warehousing
 - Data Mining and Predictive Analytics
 - Data Visualization
- Multiple Oracle ACEs, consultants average 15+ years
- www.vlamiS.com (blog, papers, newsletters, services)
- Co-authors of book “Data Visualization for OBI 11g”
- Co-author of book “Oracle Essbase & Oracle OLAP”
- Oracle University Partner
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Oracle Business Intelligence
Foundation Suite 11g





Tim Vlami and Arthur Dayton

- Tim Vlami – Vice President & Analytics Strategist
 - 30+ years in business modeling and valuation, forecasting, and scenario analyses
 - Oracle ACE
 - Instructor for Oracle University's Data Mining Techniques and Oracle R Enterprise Essentials Courses
 - Professional Certified Marketer (PCM) from AMA
 - MBA Kellogg School of Management (Northwestern University)
 - BA Economics Yale University

Arthur Dayton – Senior Consultant

- Financial Accounting background
- BS in Accounting / MS Management Information Systems
- Adjunct Technology Professor at University of Nebraska
- 10+ years developing with Oracle software
- Many years as an Oracle customer
- Twitter - [@arthurdayton116](https://twitter.com/arthurdayton116)
- Blog – Vlami.com & helpmewithoraclebi.wordpress.com



Agenda

- What we will talk about
 - Strategy and analytics
 - How to think about developing an analytics strategy
 - Underlying platforms and systems
 - What skills are needed to compete
 - How things fit together
 - Your opinions, corrections/additions, and questions

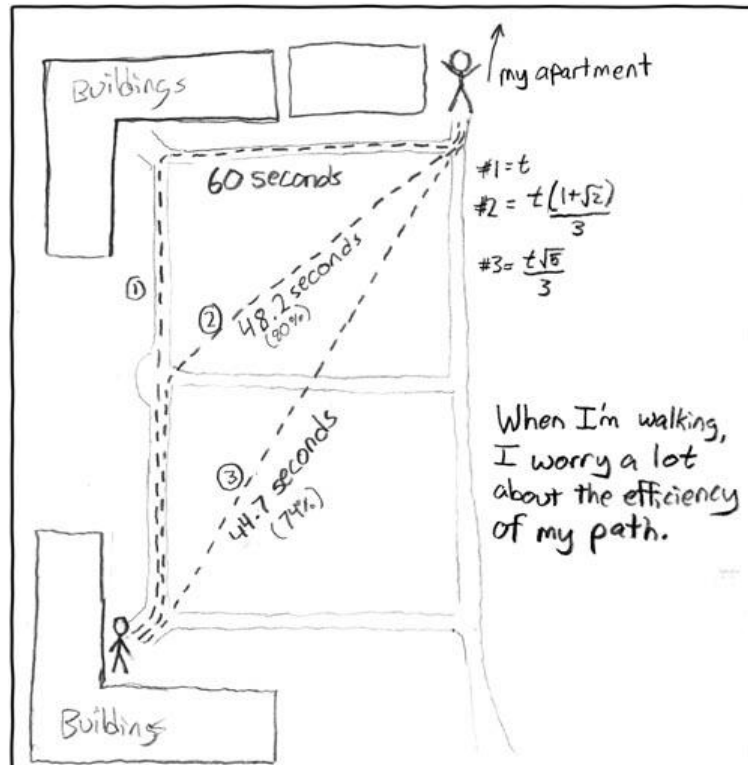


Your Database and Business Intelligence Platform Strategy *was* Your Analytics Strategy



Main Uses of BI Reports & Dashboards

Explanation



Exploration



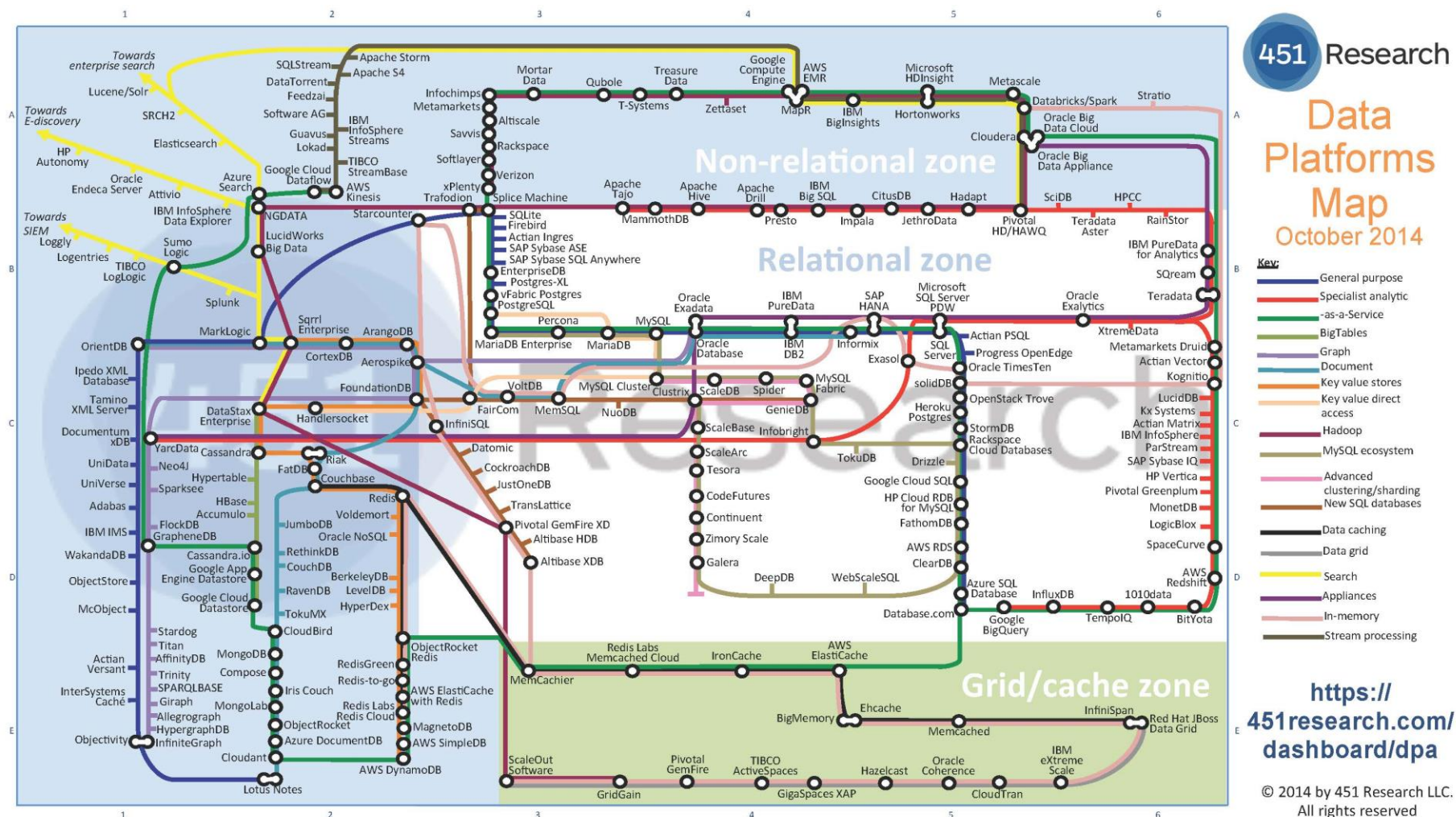


We have LOTS of data

- By the end of 2016, global IP traffic will reach 88.7 Exabyte's (88.7 Billion Gigabytes) per month, and by 2020 global IP traffic will reach 194 EB per month.
- Data is growing faster than ever before and by the year 2020, about 1.7 megabytes of new information will be created every second for every human being on the planet.
- By then, our accumulated digital universe of data will grow from 4.4 zettabytes today to around 44 zettabytes, or 44 *trillion* gigabytes.



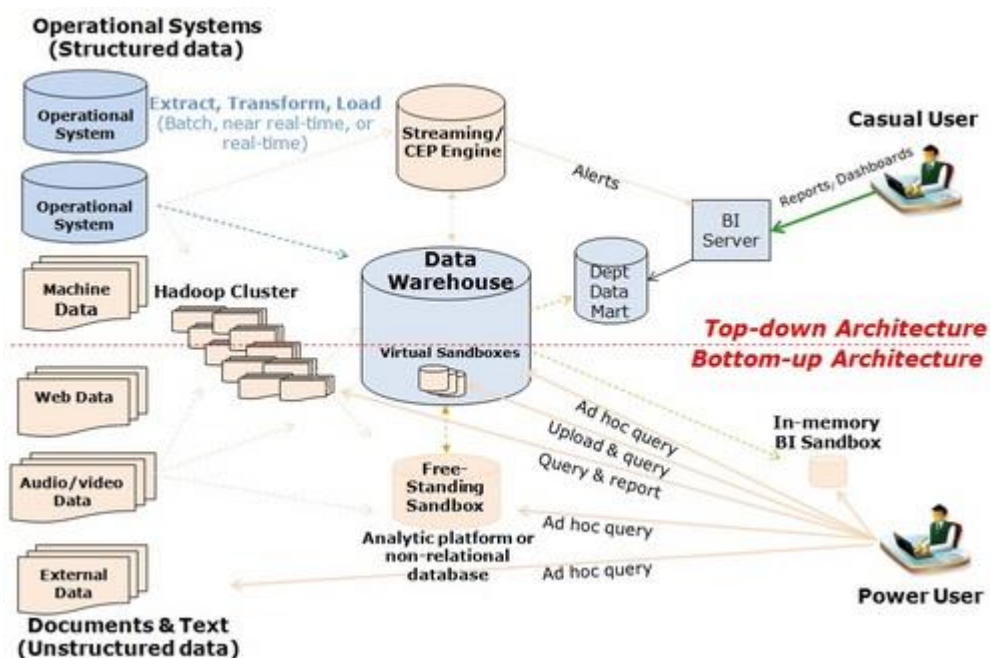
Database Landscape is Complex





Analytics Data Warehouses

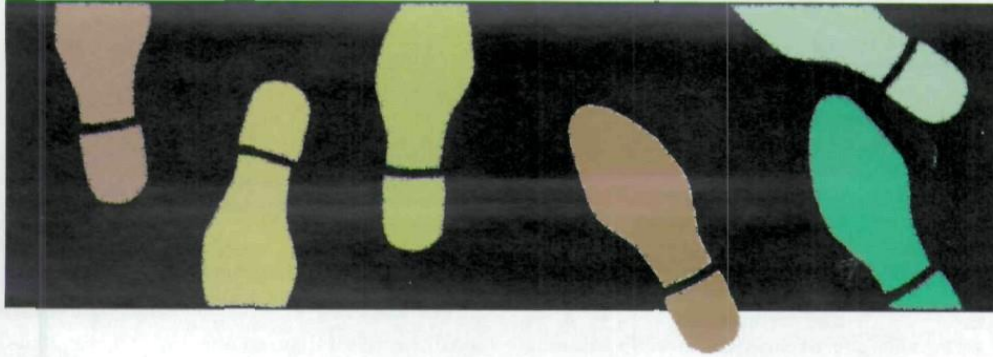
- Analytics requires a more dynamic architecture
 - The data warehouse landscape is evolving and growing





Good News!

- Analytical tools are readily available, very powerful.
- Significant performance gains are being achieved through advanced analytics.
- Everyone has a basic grounding in analytical thinking.



I. Operational Effectiveness Is Not Strategy

For almost two decades, managers have been learning to play by a new set of rules. Companies must be flexible to respond rapidly to competitive and market changes. They must benchmark continuously to achieve best practice. They must outsource aggressively to gain efficiencies. And they must nurture a few core competencies in the race to stay ahead of rivals.

What Is Strategy?

by Michael E. Porter

The quest for productivity, quality, and speed has spawned a remarkable number of management tools and techniques: total quality management, benchmarking, time-based competition, outsourcing, partnering, reengineering, change management. Although the resulting operational improvements have often been dramatic, many companies have

Strategy
involves
choices



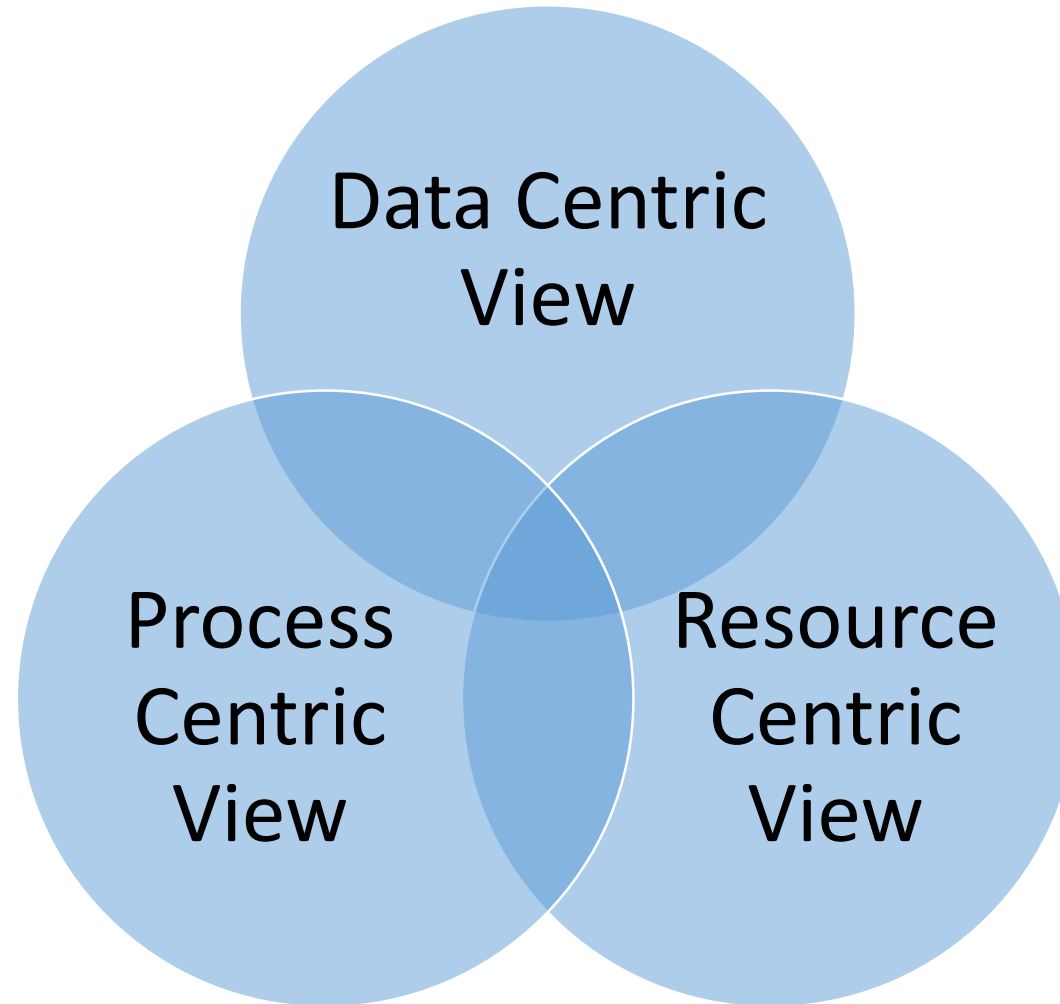
Strategy

=

Design



Perspectives for Developing Analytics Strategy





Data Centric View

- Most data is perishable.
- Data loses value at different rates.
- Some is important because of its age.
- Think of data as you would a building, piece of equipment, key staff member, cash, inventory, etc.
- The mechanics of data collection, preparation and usage.



Tension

- Common Enterprise Information Model
 - Consistent, clean, auditable
 - Allows for the development of a greater shared understanding of the organization's position and performance
- Data Discovery and BYOD
 - Allows for faster development of new insights and opportunities
 - Promotes a larger number of individual discoveries and insights



Process Centric View

- Sees analytics as an integral part of business processes
- Focus on application of analytics to improving functionality of business
- Focuses on data flows and getting information to decision makers (often customer facing positions)
- Data is about maximizing operational efficiency



Tension

- Business

- Analytics savvy business functions don't want to deal with IT "just give me my data"
- Other business functions rely too much on IT for analytics
- Business believes that IT is slow and power hungry

- IT

- May not understand the business issues driving analytic workflows designs
- Doesn't feel respected by business



Resources Centric View

- Sees data and analytics as a potential source of competitive advantage
- What are the sources of our analytic capabilities? Where do we need new capabilities?
- What's most important: Probability of positive return? Size of expected return? Minimization of potential loss?
- Highly focused on Return On Investment



Tension

■ Buy vs. Build

- Why spend money on expensive systems when commodity hardware and open-source software are available?
- Why take on problems that others have solved?
- Speed of results versus cost of build/train.

■ Best in Suite

- Easier process integration
- Consistent data model
- Common user interface
- “One throat to choke”
- Favored by IT

vs.

Best in Class

- Richer function set
- Deeper development
- Better industry focus
- Easier to use
- Favored by business



What's the Right Speed of Analytics Adoption?*

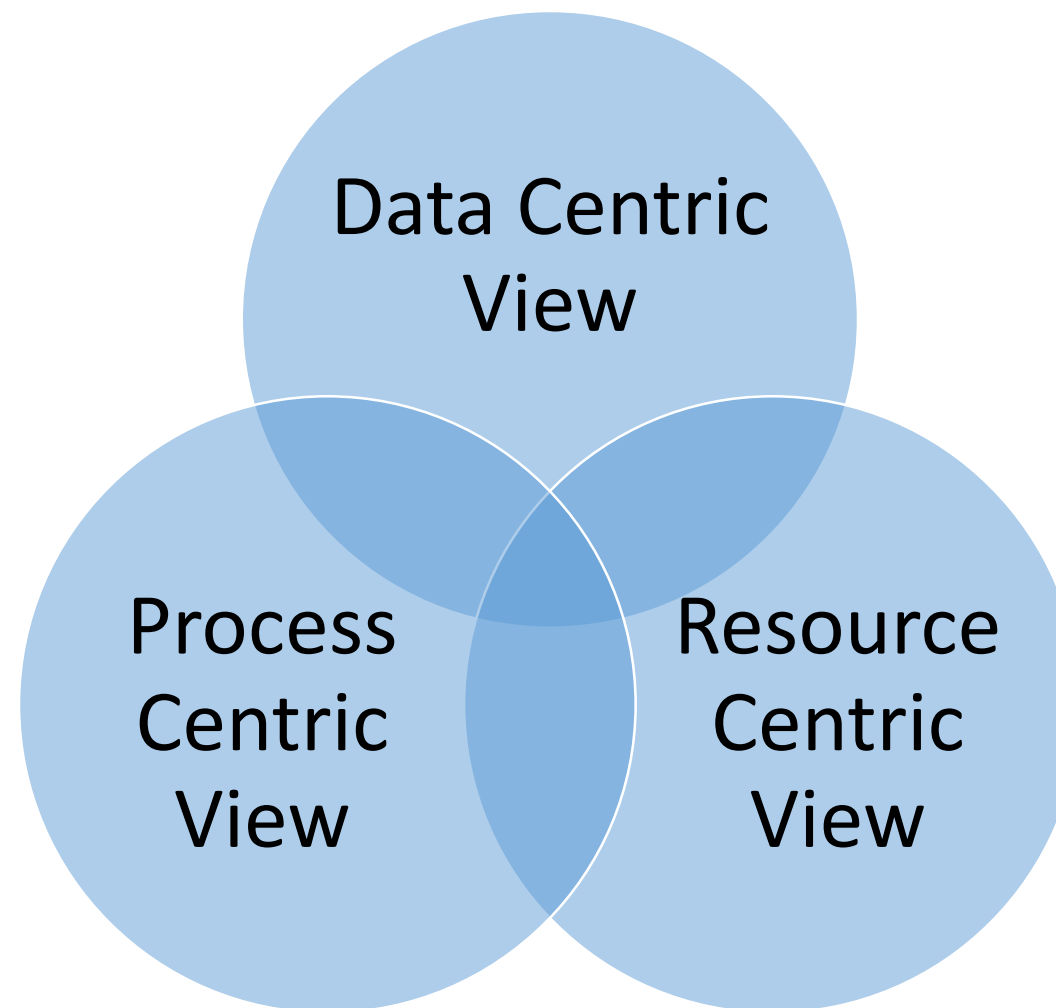
- Be conservative if:
 - Your competitors aren't doing much with analytics.
 - You don't have much data on customers or other business entities.
 - Your firm typically isn't a first mover.
- Be moderately aggressive if:
 - Your industry is already active with analytics.
 - You want to stay ahead of competitors.
 - You have some internal analytical talent.
- Be aggressive if:
 - Someone in your industry is already being aggressive.
 - You have been an analytical competitor in the past.
 - You have used technology to transform your industry in the past.

*Adapted from "big data @ work" by Thomas Davenport.



What do we need

- We need to enable self-service
- We need to mine our data
- We need predictive analytics
- We need to use R
- We need to use Hadoop
- We need to integrate
- We need governance
- We need to move to the cloud
- We need to stay on premise





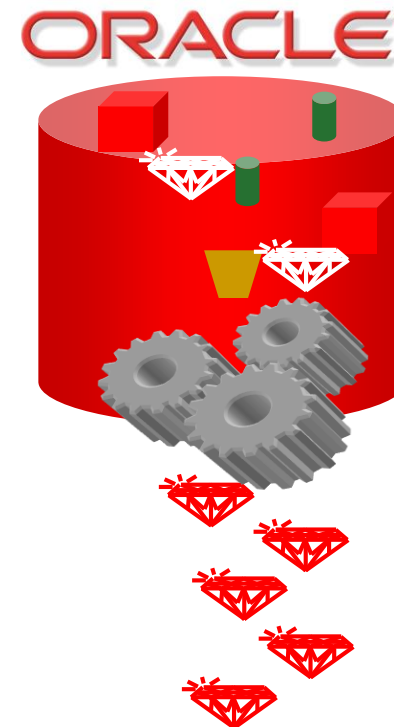
Self-Service

- Data Visualization Cloud Service (DVCS)
- Business Intelligence Cloud Service (BICS)
- OBIEE 12c - Visual Analyzer (VA)
- Data Visualization Desktop (DVD)
- Big Data Discovery (BDD)



What is Data Mining?

- Automatically sifts through data to find hidden patterns, discover new insights, and make predictions
- Data Mining can provide valuable results:
 - Predict customer behavior (*Classification*)
 - Predict or estimate a value (*Regression*)
 - Segment a population (*Clustering*)
 - Identify factors more associated with a business problem (*Attribute Importance*)
 - Find profiles of targeted people or items (*Decision Trees*)
 - Determine important relationships and “market baskets” within the population (*Associations*)
 - Find fraudulent or “rare events” (*Anomaly Detection*)





What is R?

CRAN Task Views

- R is an Open Source scripting language and environment for statistical computing and graphics <http://www.R-project.org/>
- Popular alternative to SAS, SPSS & other proprietary statistical environments
- Around 2 million R users worldwide
- Thousands of R packages available

Bayesian	Bayesian Inference
ChemPhys	Chemometrics and Computational Physics
ClinicalTrials	Clinical Trial Design, Monitoring, and Analysis
Cluster	Cluster Analysis & Finite Mixture Models
DifferentialEquations	Differential Equations
Distributions	Probability Distributions
Econometrics	Computational Econometrics
Environmetrics	Analysis of Ecological and Environmental Data
ExperimentalDesign	Design of Experiments (DoE) & Analysis of Experimental Data
Finance	Empirical Finance
Genetics	Statistical Genetics
Graphics	Graphic Displays & Dynamic Graphics & Graphic Devices & Visualization
HighPerformanceComputing	High-Performance and Parallel Computing with R
MachineLearning	Machine Learning & Statistical Learning
MedicalImaging	Medical Image Analysis
MetaAnalysis	Meta-Analysis
Multivariate	Multivariate Statistics
NaturalLanguageProcessing	Natural Language Processing
OfficialStatistics	Official Statistics & Survey Methodology
Optimization	Optimization and Mathematical Programming
Pharmacokinetics	Analysis of Pharmacokinetic Data
Phylogenetics	Phylogenetics, Especially Comparative Methods
Psychometrics	Psychometric Models and Methods
ReproducibleResearch	Reproducible Research
Robust	Robust Statistical Methods
SocialSciences	Statistics for the Social Sciences
Spatial	Analysis of Spatial Data
SpatioTemporal	Handling and Analyzing Spatio-Temporal Data
Survival	Survival Analysis
TimeSeries	Time Series Analysis
gR	gRaphical Models in R



R Integration with Oracle

- Oracle Database
- Oracle Business Intelligence Server
- Data Visualization Desktop
- Hadoop



Analytical Options to Oracle Database

- Oracle Advanced Analytics (Data Mining & R)
 - Predictive and statistical analytics.
 - Series of highly advanced algorithms and workflows.
 - Extends the “R” language to the Oracle Database
- Oracle Spatial and Graph
 - Provides the capability of relating data to geo positional coordinates, objects, and constructs.
 - Allows the construction and analysis of network topologies.
- Oracle In-Memory
 - Provides lightning fast aggregations
- Oracle OLAP
 - Defines a multi-dimensional data structure that allows information for highly complex calculations to be done quickly.

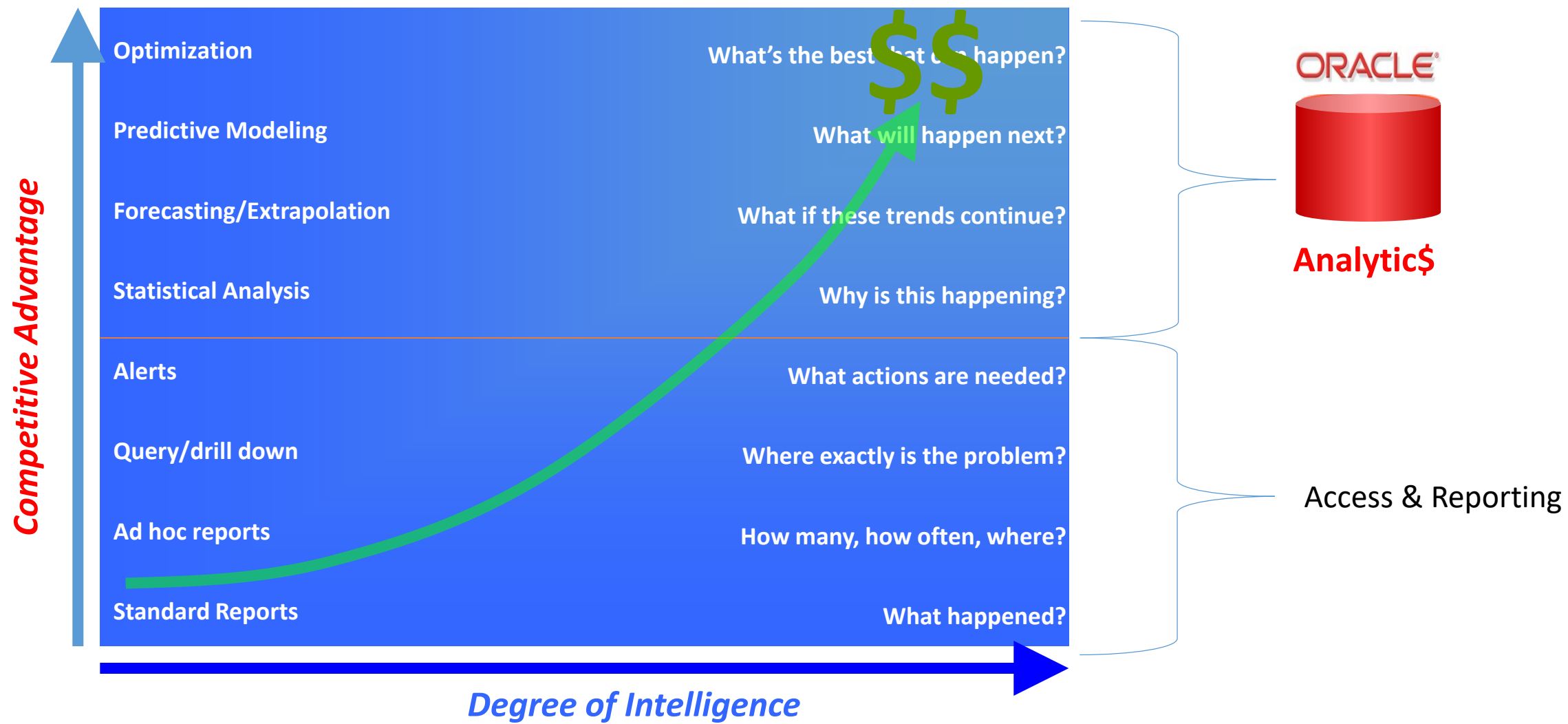


On-Premise or Cloud or Both

- Oracle is rapidly transitioning to a cloud provider
 - Software as a Service
 - Platform as a Service
 - Infrastructure as a Service
- Advanced capabilities are becoming much more accessible
- Highly focused on enabling hybrid cloud
- Highly focused on making the transition from on premise to cloud easy
 - Pluggable databases
 - Ravello



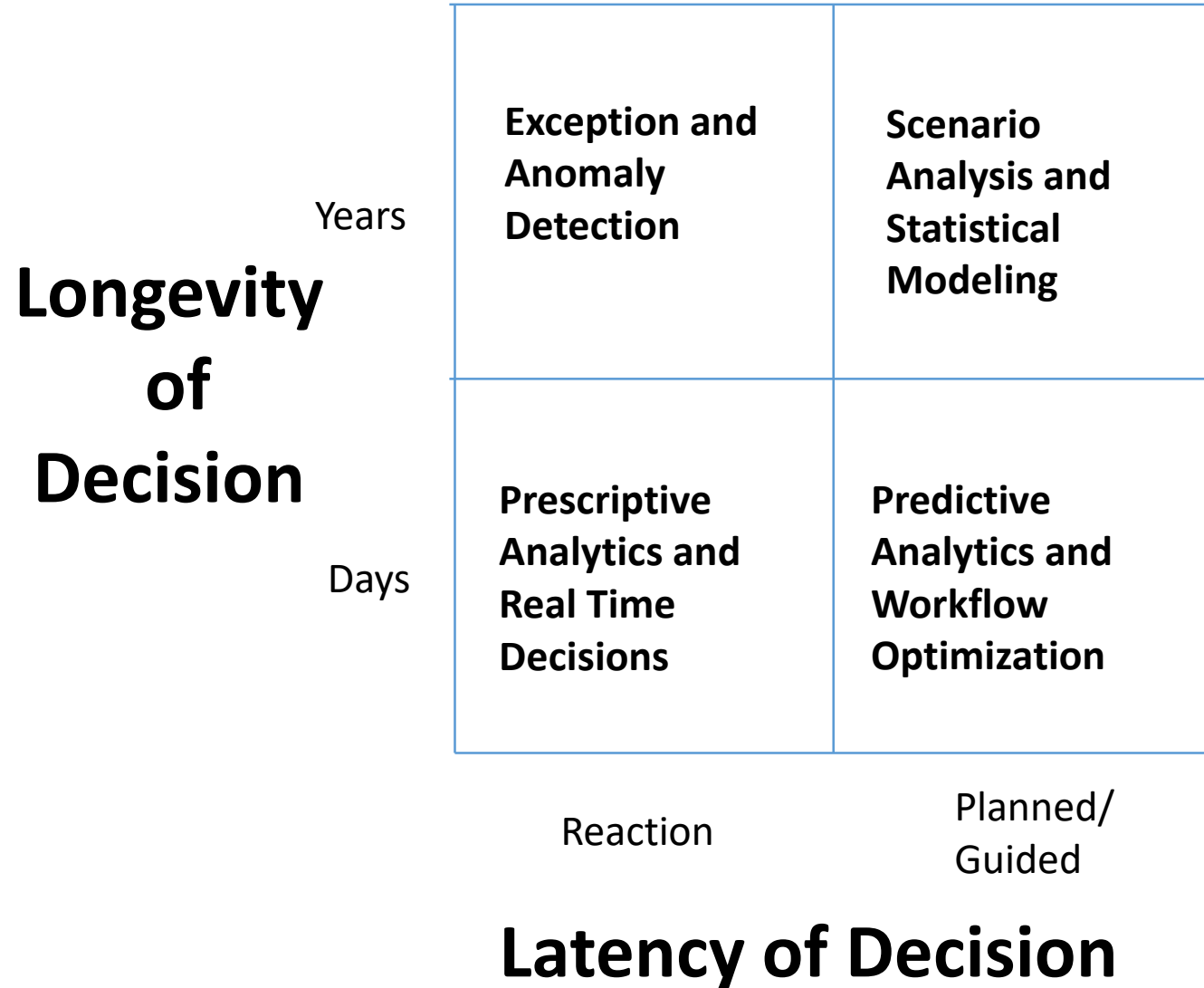
Competitive Advantage of BI & Analytics



Source: Competing on Analytics, by T. Davenport & J. Harris



4 Different Dimensions of Analytics

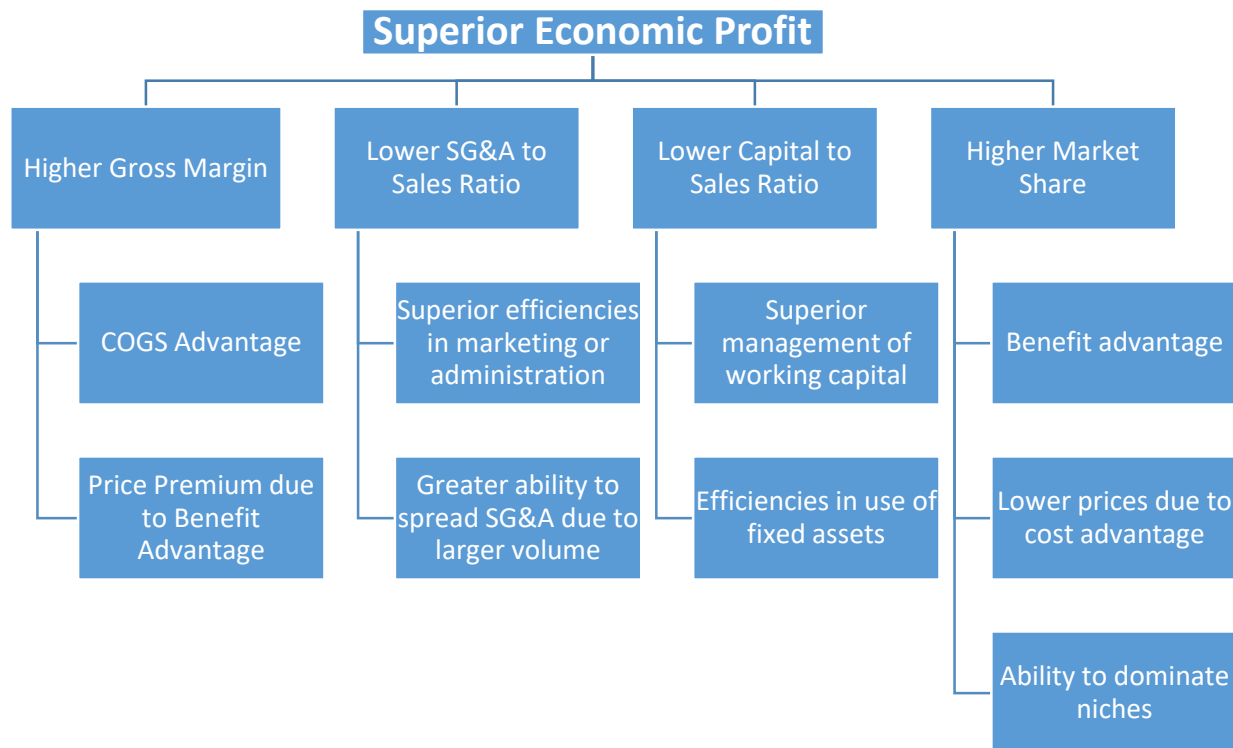




Economic Profit Analysis

$$\text{Economic Profit} = \text{NOPAT} - (\text{WACC} \times \text{Capital})$$

$$= \left\{ (1 - \text{tax rate}) \times \left(\frac{(\text{Sales} - \text{COGS})}{\text{Sales}} - \frac{\text{SG\&A}}{\text{Sales}} \right) - \text{WACC} \times \frac{\text{Capital}}{\text{Sales}} \right\} \times \text{Market Share} \times \text{Market Size}$$



- Cost Reduction
- Time Reduction
- Sales Increase
 - Market Penetration
 - Market Development
 - Product Development
 - Diversification



Target & the Pregnant Teen

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How Companies Learn Your Secrets



Antonio Bolfo/Reportage for The New York Times

By CHARLES DUHIGG
Published: February 16, 2012 | 570 Comments

http://www.nytimes.com/2012/02/19/magazine/shopping-habits.html?_r=1

"With great power comes great responsibility."

Uncle Ben to Peter Parker, Spiderman 2002





McKinsey's Take on Analytics Talent

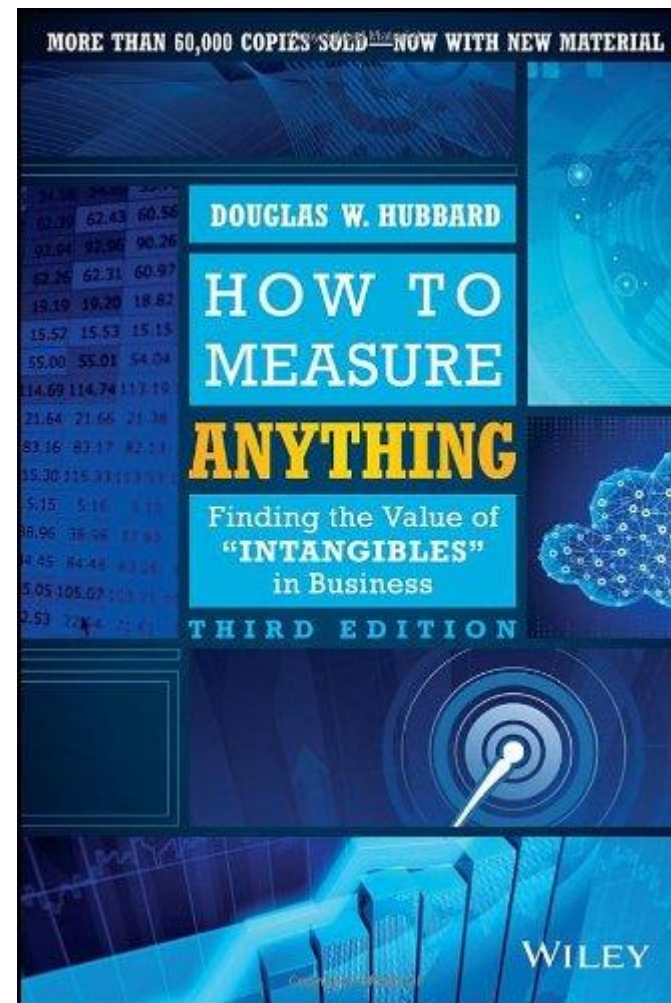
“There will be a shortage of talent necessary for organizations to take advantage of big data. By 2018, the United States alone could face a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions.”

McKinsey Global Institute 2014



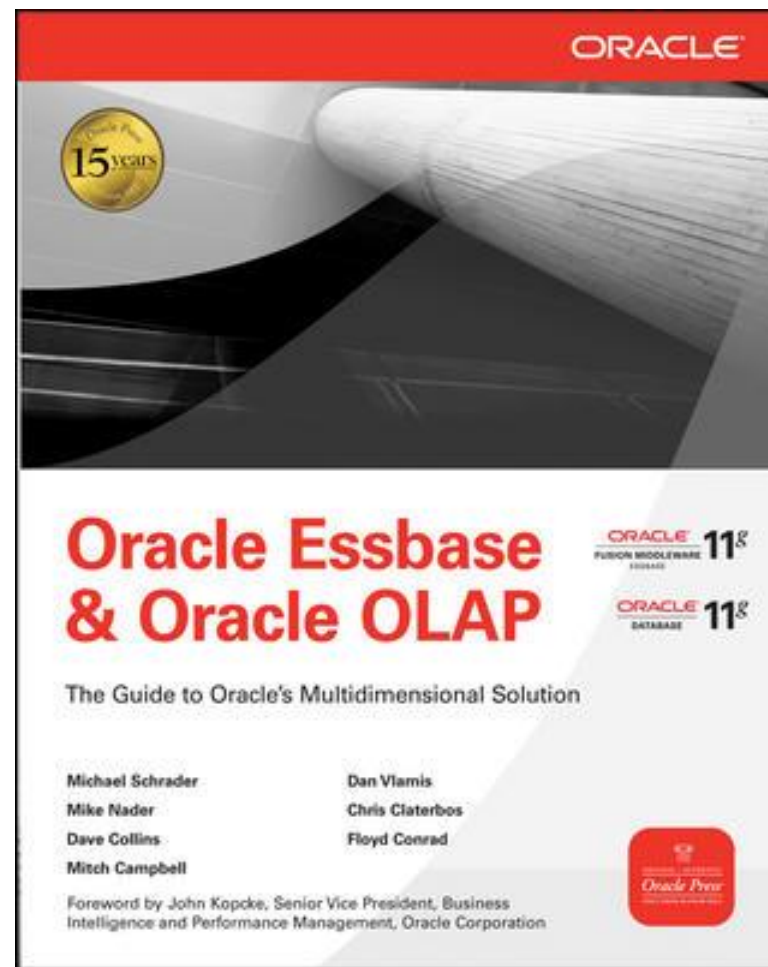
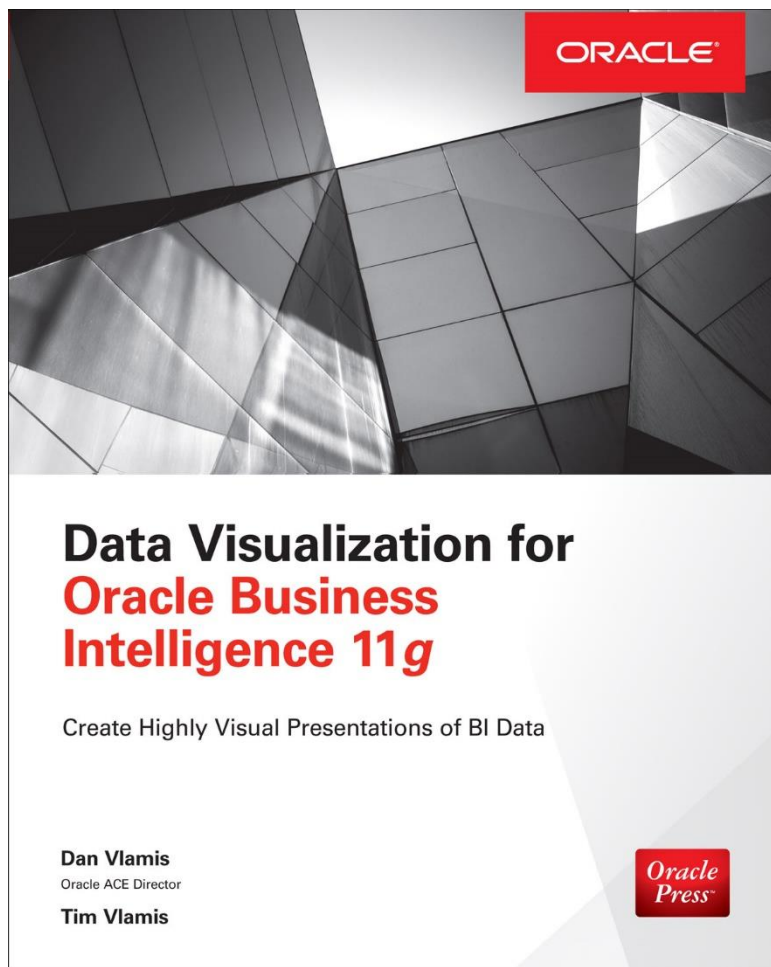
Assessing Returns on Analytics Projects

- Think Likelihoods and Distributions
- Don't think "single point" estimates
- Broad strategies and investments require broad measures
- Design metrics for specific initiatives
- Match the time scale of the investment returns with the longevity of the technology
- Compare the scale of the investment with the risk scale of not investing





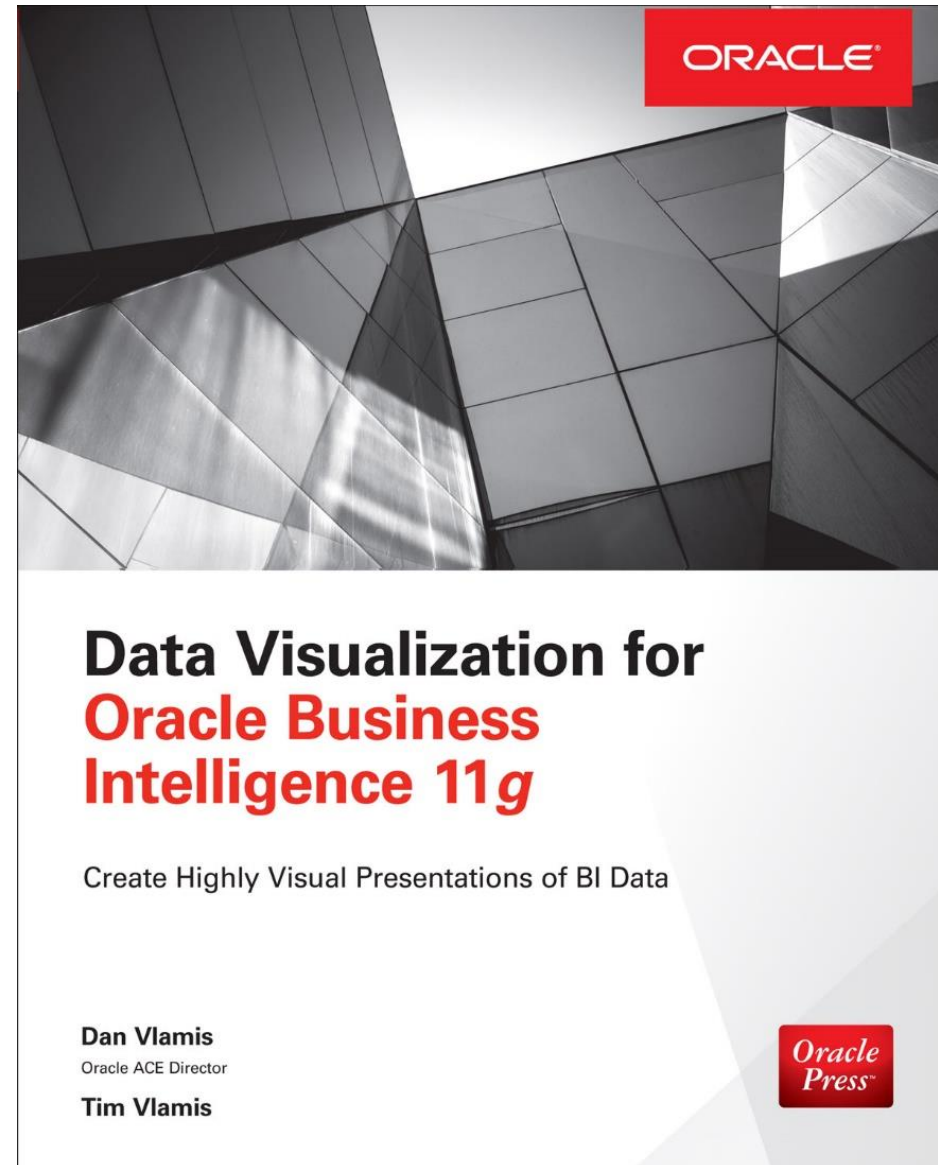
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Thank You!

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