

# Mapping Analytical Techniques to Business Problems

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# Agenda

- Three Goals of Analytics
- Analytics Solution Sets
- Exercise
- Common Fallacies
- Questions

# Analytics

"By analytics we mean the extensive use of data, statistical and quantitative analysis, explanatory and predictive models, and fact-based management to drive decisions and actions."

# The Goals of Analytics

- Description
  - What is happening?
- Explanation
  - Why is it happening?
- Prediction
  - What could happen?

Goals  $\neq$  Techniques

Goals  $\neq$  Technology

# Classification / Estimation

- Use attributes in the data to
  - Assign an object to a specific class (classification)
  - Estimate the value of a metric of interest (estimation)
- Examples:
  - Credit risk estimates
  - Likelihood to purchase



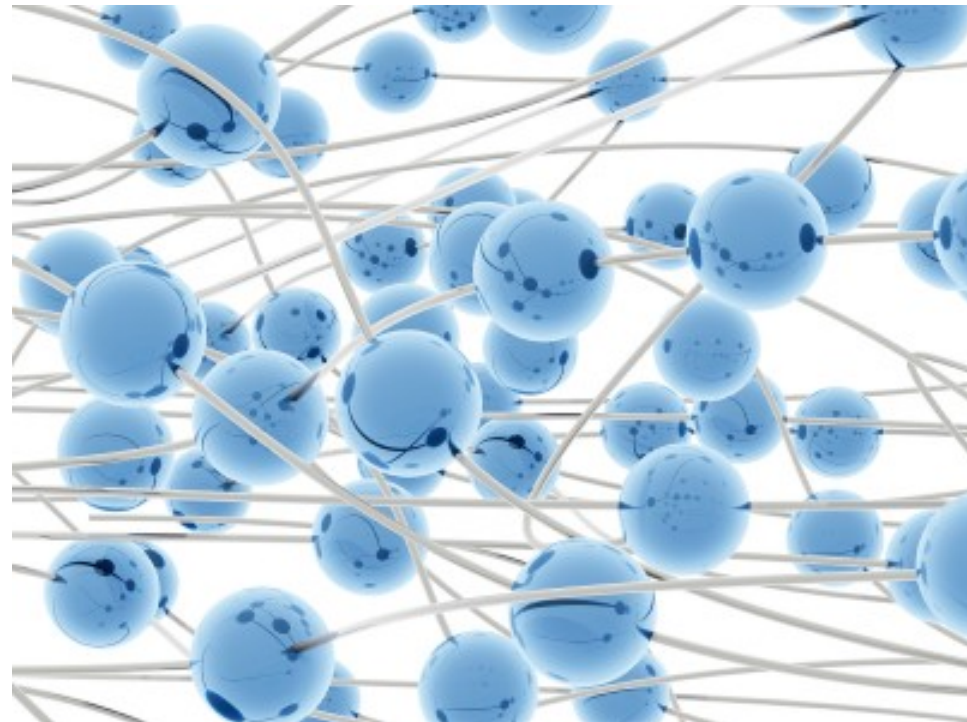
# Clustering (Segmentation)

- Separate the data into interesting sub-groups
- Examples:
  - Customer demographic segmentation



# Dependency Analysis

- Describe significant associations between data items
- Examples:
  - Market basket analysis



# Time-Series Forecasting

- Predict the future value of a measure based on past values
- Examples:
  - Stock price
  - Commodity prices



# Simulation

- Models a system structure to estimate impact of
  - Management decisions
  - Changes in “Nature”
- Examples:
  - Inventory re-order policies
  - Currency hedging



# Optimization

- Models a system structure in terms of constraints to find the “best possible” solution
- Examples:
  - Scheduling of shift workers
  - Routing of train cargo



# Exercise

- Read each business problem statement
- Classify each as one of the following solution sets:
  - Classification / Estimation
  - Clustering / Segmentation
  - Dependency (Association) Analysis
  - Time-Series Forecasting
  - Simulation
  - Optimization

# Beyond the Hype

- "...opportunities abound to employ simple analytic methods to marginally or substantially increase profitability... where a single insight can ring the cash register literally thousands or millions of times"
- Gary Loveman, CEO Harrah's Entertainment, Inc.

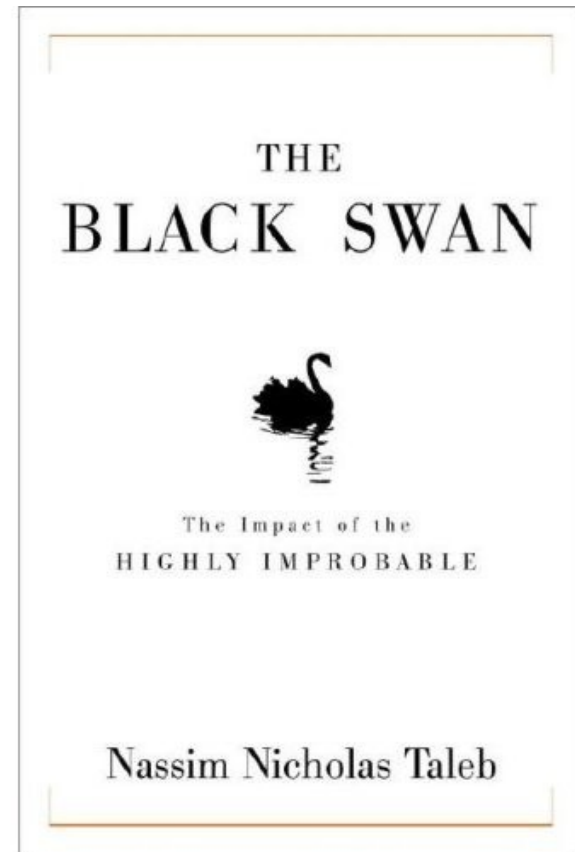
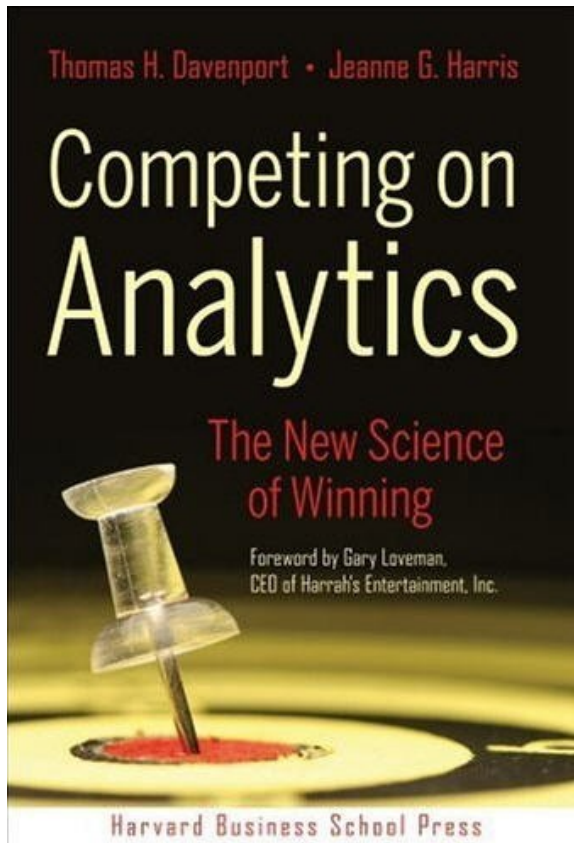
# What Analytics Won't do

- Solve a business problem “Once and For All”
  - Long-Term Capital Management
- “Automatically” identify interesting information
  - Siegfried and Roy
- Have immunity to poor data quality

# What Analytics Won't do

- Come as an “Off the Shelf” / “Plug and Play” solution
  - “optimize a distinctive business capability“
- Definitely have a high ROI
  - “at least be large enough to affect organizational fortunes.“

# Further Reading



# Questions?

# Contact Information

- If you have further questions or comments:

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