

Analytic Enterprise: Identifying Barriers and Overcoming Challenges

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**THE
POWER
TO KNOW®**

Discussion Topics

- About SAS
- Definition of Terms
- General Barriers to Adoption & Implementation
- Eight Levels of Analytics
- Barriers Specific to Business Analytics
- Q & A

SAS Overview – Global Reach



- Founded in 1976
- Largest Private Software Company in the World
- Revenues over \$2.3 Billion (2009)
- 34 years of growth and profitability
- Average R&D spend is 25% of revenues every year
- 96% of the top 100 companies on the 2008 FORTUNE Global 500® list
- 45,000 customer sites in 108 countries

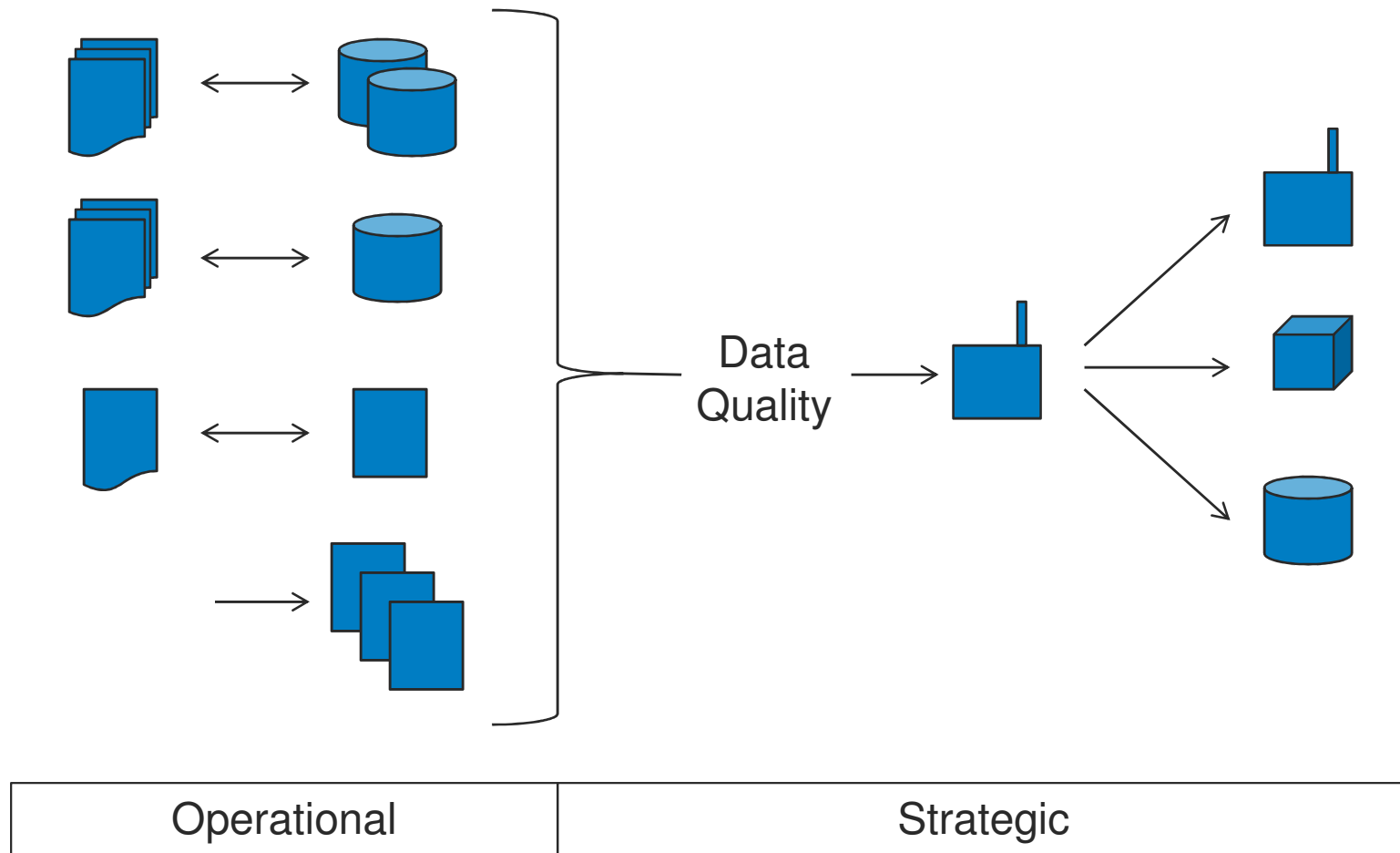


“We want to be the first company people call when they need to solve business problems.”

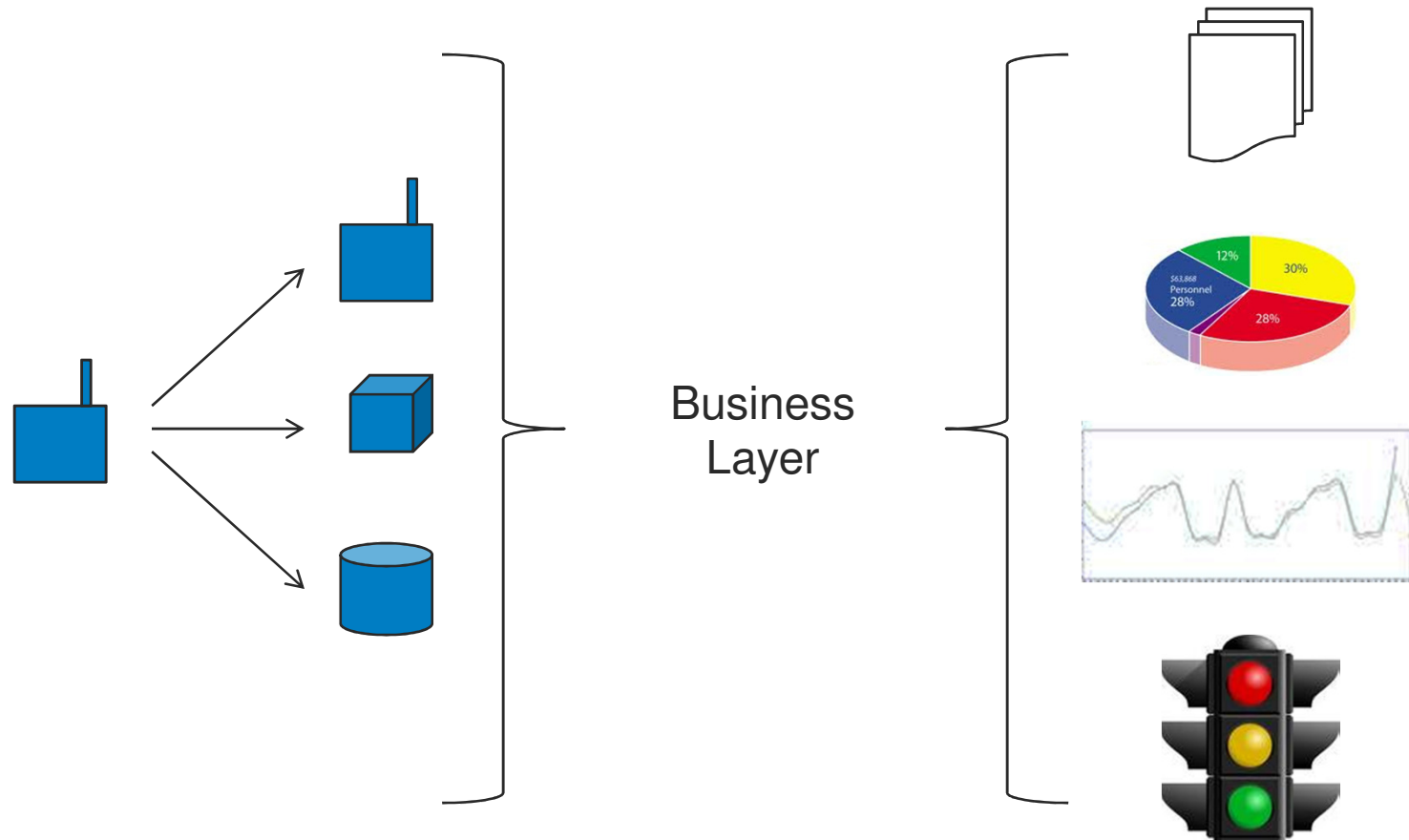
“SAS has everything it takes to achieve this: unmatched analytical capabilities, deep industry expertise, a long track record of delivering proven results, and the ability to innovate.”

Jim Goodnight, CEO
SAS

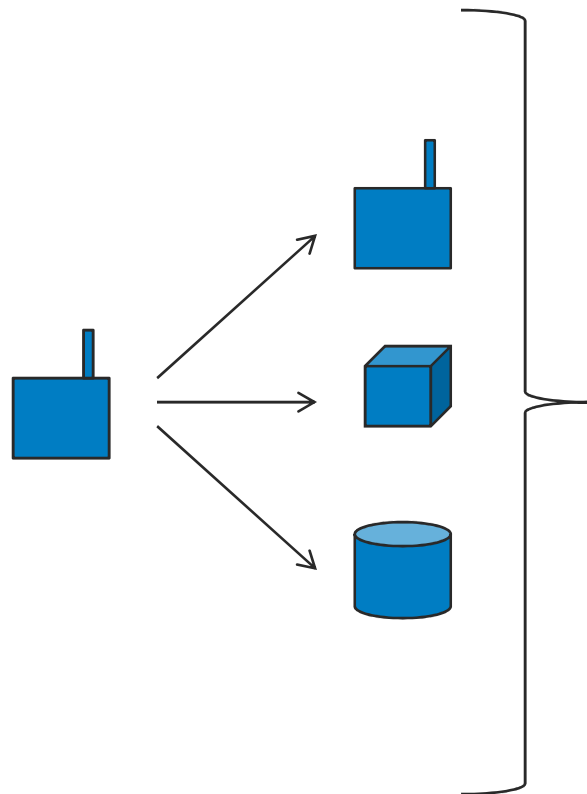
Definitions: Data Integration (DI)



Definitions: Business Intelligence (BI)



Definitions: Analytics



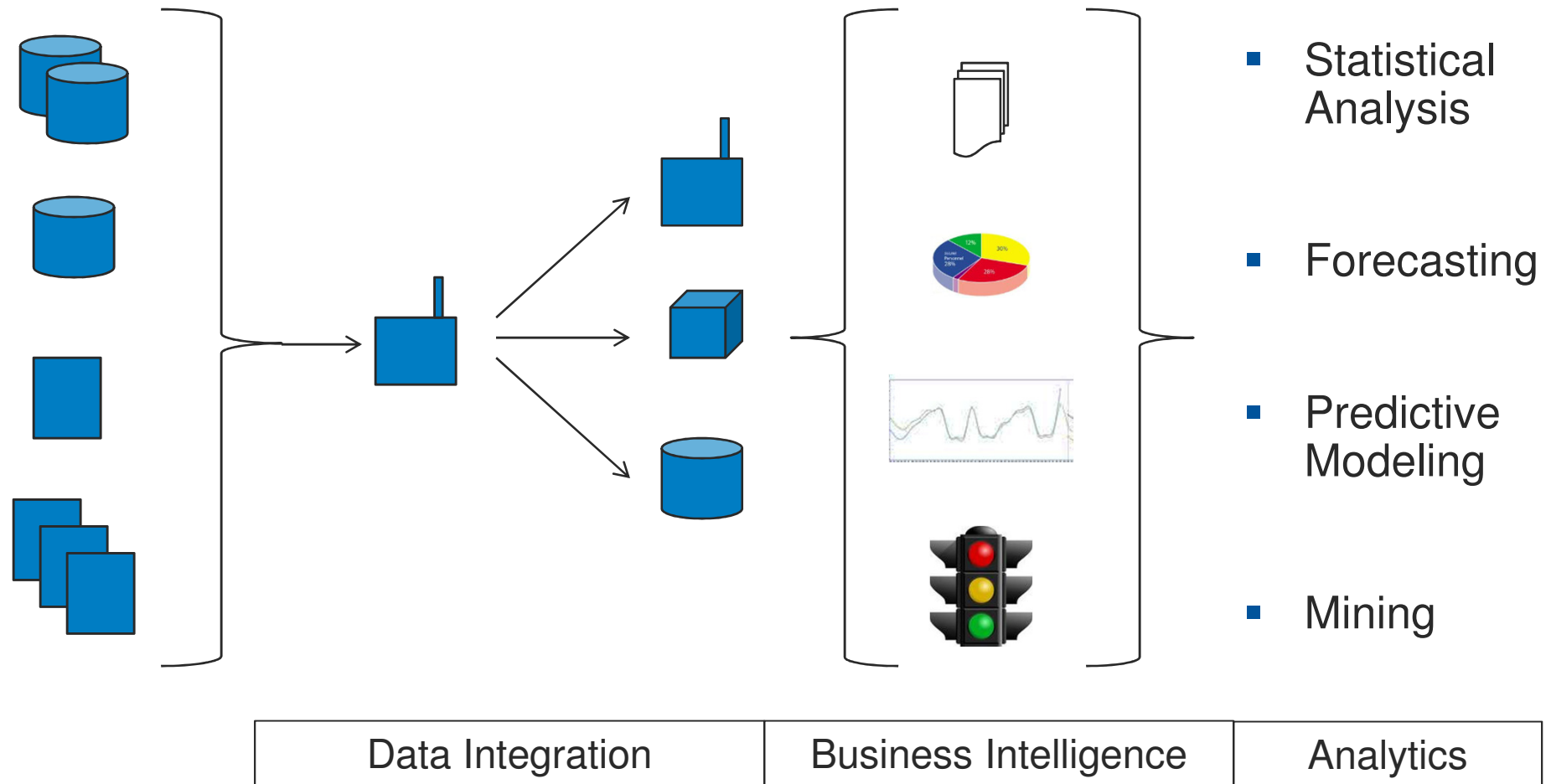
- Statistical Analysis
- Forecasting
- Predictive Modeling
- Mining
- Optimizing

Opportunity Abounds

- IDC defines the **Business Analytics** software market as tools and applications for tracking, storing, analyzing, modelling, and presenting information in support of automating decision-making and reporting process



Definitions: Business Analytics



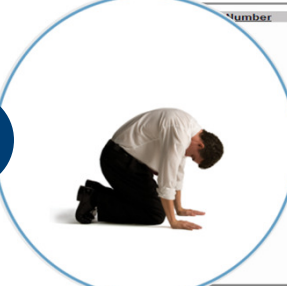
General Barriers to Adoption & Implementation

- Technology
- Data
- Expertise
- Culture
- Commitment



EIGHT LEVELS OF ANALYTICS

1



Number	Report Date	Expenditures
25-Oct-06		\$739.65
10-Oct-06		\$449.59
29-Sep-06		\$1,031.95
22-Sep-06		\$455.09
13-Sep-06		\$170.88
23-Aug-06		\$1,009.03
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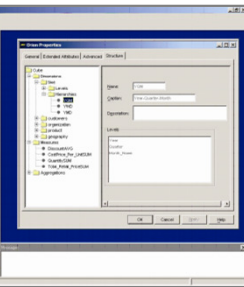
STANDARD REPORTS

Answer the questions: What happened? When did it happen?

Example: Monthly or quarterly financial reports.

We all know about these. They're generated on a regular basis and describe just "what happened" in a particular area. They're useful to some extent, but not for making long-term decisions.

2

AD HOC REPORTS

Answer the questions: How many? How often? Where?

Example: Custom reports that describe the number of hospital patients for every diagnosis code for each day of the week.

At their best, ad hoc reports let you ask the questions and request a couple of custom reports to find the answers

3




QUERY DRILLDOWN (OR OLAP)

Answer the questions: Where exactly is the problem? How do I find the answers?

Example: Sort and explore data about different types of cell phone users and their calling behaviors.

Query drilldown allows for a little bit of discovery. OLAP lets you manipulate the data yourself to find out how many, what color and where.

4

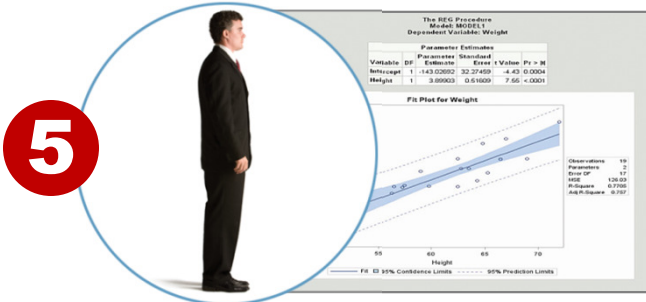



ALERTS

Answer the questions: When should I react? What actions are needed now?

Example: Sales executives receive alerts when sales targets are falling behind.

With alerts, you can learn when you have a problem and be notified when something similar happens again in the future. Alerts can appear via e-mail, RSS feeds or as red dials on a scorecard or dashboard.



STATISTICAL ANALYSIS

Answer the questions: Why is it happening? What opportunities am I missing?

Example: Banks can discover why an increasing number of customers are refinancing their homes.

Here we can begin to run some complex analytics, like frequency models and regression analysis. We can begin to look at why things are happening using the stored data and then begin to answer questions based on the data.

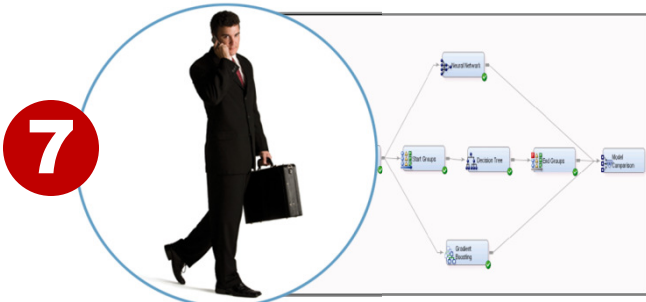


FORECASTING

Answer the questions: What if these trends continue? How much is needed? When will it be needed?

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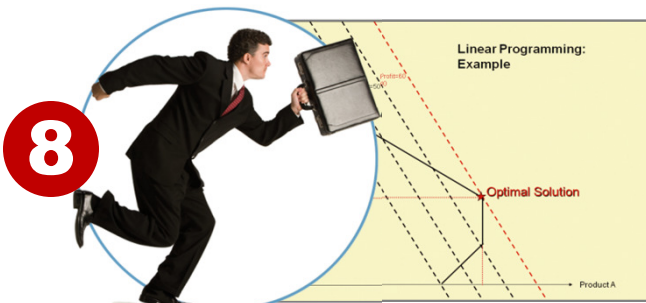


PREDICTIVE MODELING

Answer the questions: What will happen next? How will it affect my business?

Example: Hotels and casinos can predict which VIP customers will be more interested in particular vacation packages.

If you have 10 million customers and want to do a marketing campaign, who's most likely to respond? How do you segment that group? And how do you determine who's most likely to leave your organization? Predictive modeling provides the answers.



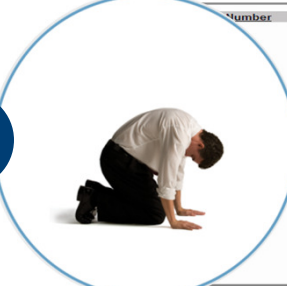
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Answer the questions: How do we do things better? What is the best decision for a complex problem?

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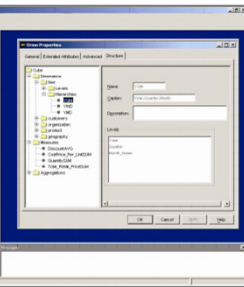
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Key Challenge(s)
Data, Technology, Expertise, Culture

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Key Challenge(s)
Data, Technology

BI = ?

Backwards Insight

- Extremely valuable...but REACTIVE
- The “now what” is heavily reliant on gut-feel, intuition, industry expertise...
...which just got a better job offer!

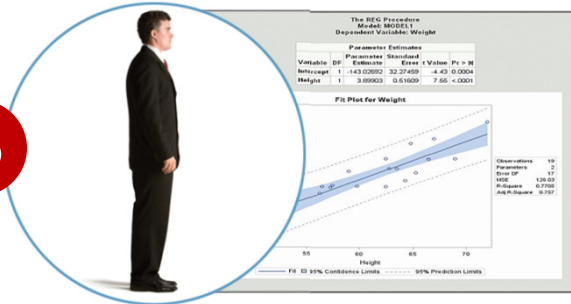
Analytics addresses the “Now What?”

"Worldwide services for the analytics market are projected to grow from \$16.8B in 2001 to \$29B in 2006, an 11.6 percent CAGR." (Gartner, 2001)

"Advanced analytics tools ... will become more relevant in an organization's daily operations as the opportunity to embed such tools into analytic applications increases." (IDC, 2003)

Advanced Analytics/Business Intelligence has been placed at no.2 in Gartner's list of the 10 top technologies in 2010 that information technology personnel need to plan for.

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Key Challenge(s)
Data, Expertise, Culture

Why not Technology?
“Table Stakes”

Key Business Question

Does the price of gas have a direct impact the amount of consumption?



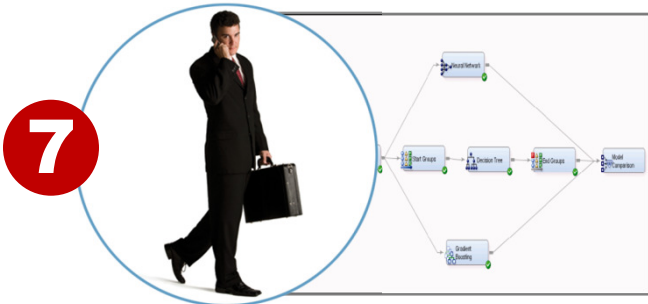
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Key Challenge(s)
Expertise, Culture, Commitment

Two Analysts Walk Into a Bar...

“Two analysts were examining the output of the new computer in their department. After an hour or so of analyzing the data, one of them remarked: "Do you realize it would take 400 people at least 250 years to make a mistake this big ?”



Cognitive Dissonance

Humans vs Rats

Balls (red and green) experiment rigged with a probability that green will show 75% of the time.

Rats quickly learned the pattern and always guessed green.

Knowing the pattern, humans applied “reasoning” to outperform (i.e. there have been 3 green, so I’ll predict red)

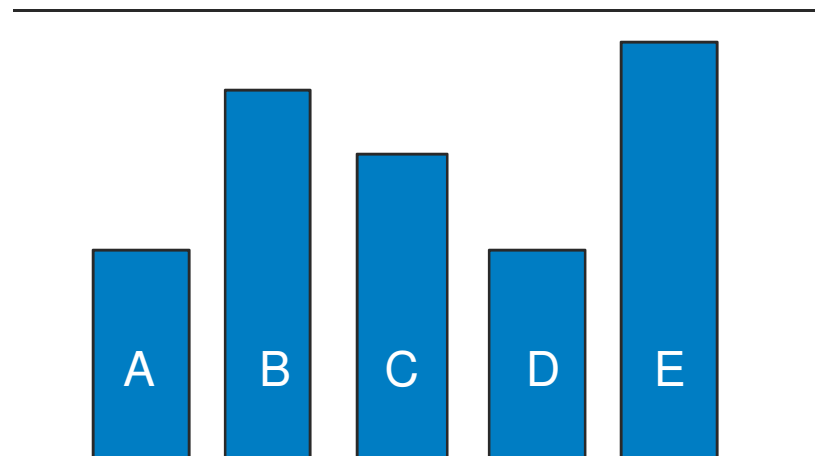
- see end slide for details of study

Cognitive Dissonance

- Huge amount of scenarios
- Role of Analysts needs to evolve
- Intuition > Intervention > Validation
- New avenues can yield biggest benefits

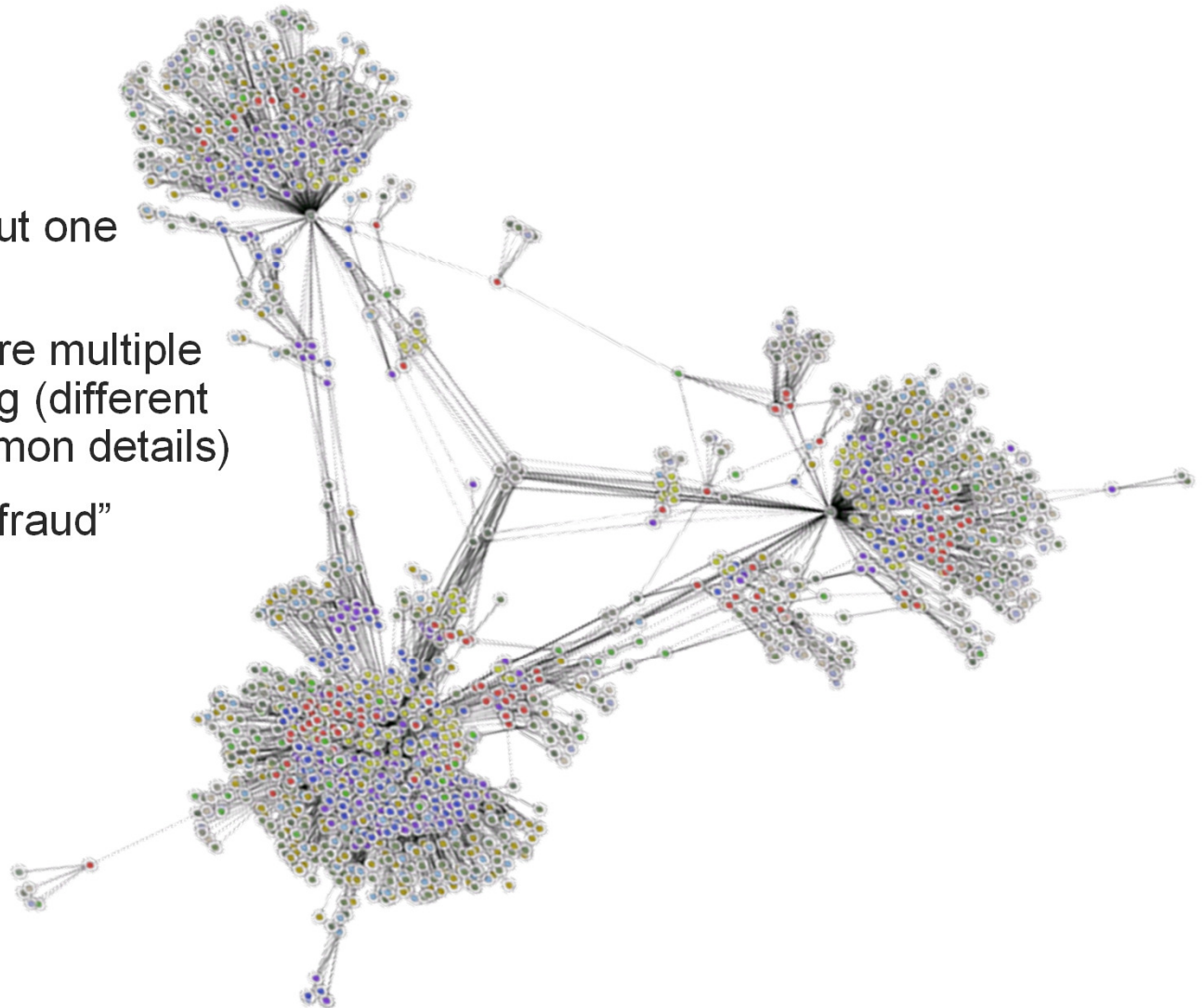
Commitment & Culture

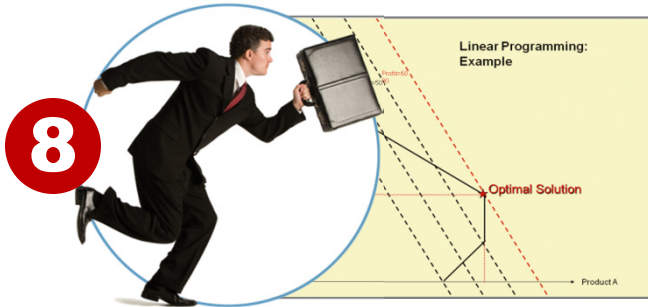
- Rationale must be clear – both ways
- Culture of Innovation
- Commitment to implementation



Sample of a Fraud Network

- Many user accounts but one underlying identity
- In this network there are multiple fraudsters collaborating (different identities – some common details)
- Red indicates “known fraud”





OPTIMIZATION

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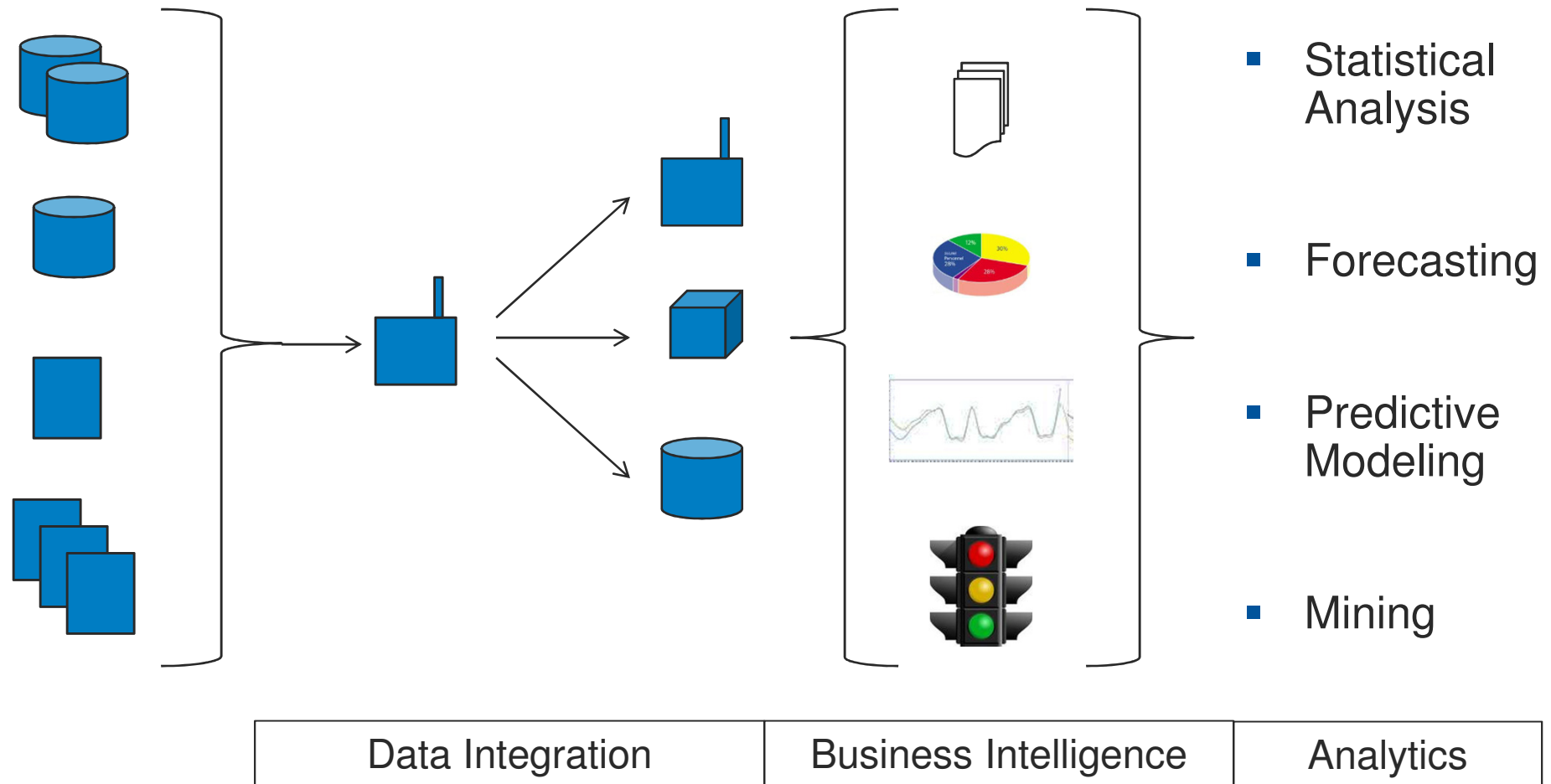
Optimization supports innovation. It takes your resources and needs into consideration and helps you find the best possible way to accomplish your goals.

Key Challenge(s)
Technology, Commitment

Examples of Optimization

- Fraud (deposits)
- Grocery (marketing)
- Retail (pricing)

Definitions: Business Analytics



Business Analytics

...is a Process...
not a Project

Q & A

Humans vs Rats – details of study

At A2009 (<http://www.sas.com/events/aconf/2009/>) Paul shared a story about laboratory experiments showing that rats outperform humans in interpreting data. The story is actually described in a book by Leonard Mlodinow (<http://www.amazon.com/Drunkards-Walk-Randomness-Rules-Lives/dp/0375424040>). The experiment consists of drawing green and red balls at random, with the probabilities rigged so that greens occur 75 percent of the time. The subject is asked to watch for a while and then predict whether the next ball will be green or red. The rats followed the optimal strategy of always predicting green. But the human subjects did not always predict green, they usually want to do better and predict when red will come up too, engaging in reasoning like “after three straight greens, we are due for a red.” As Mlodinow says, “humans usually try to guess the pattern, and in the process we allow ourselves to be outperformed by a rat.”