

# Business Intelligence Overview

## Topics

- Terminology, frameworks, and concepts
- What's new in BI
- Different BI "targets"
- Exemplars of BI-based organizations
- Requirements for being successful with BI and analytics
- Using the Teradata University Network to teach BI

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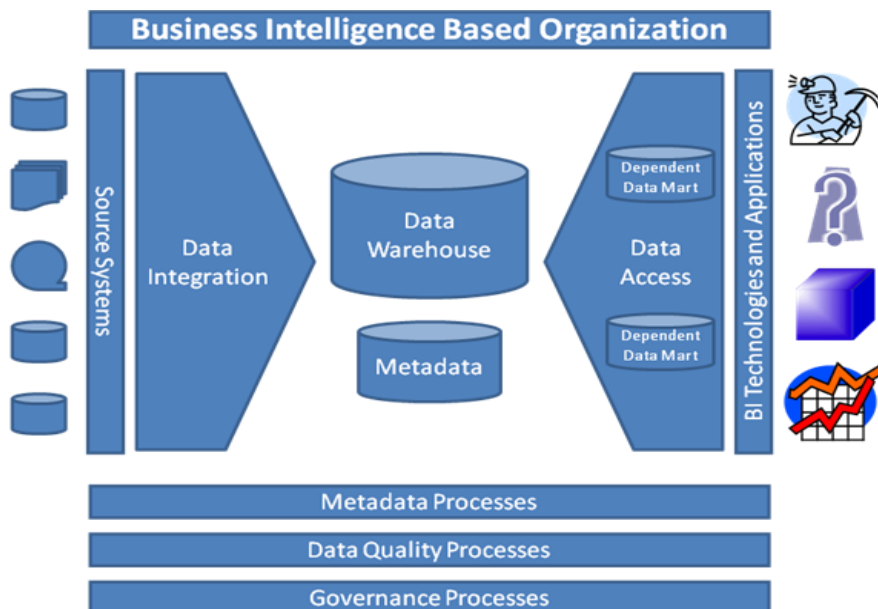
## What Is Business Intelligence?

- Its roots go back to the late 1960s
- In the 1970s, there were decision support systems (DSS)
- In the 1980s, there were EIS, OLAP, GIS, and more
- Data warehousing and dashboards/scorecards became popular in the 1990s

## What Is Business Intelligence?

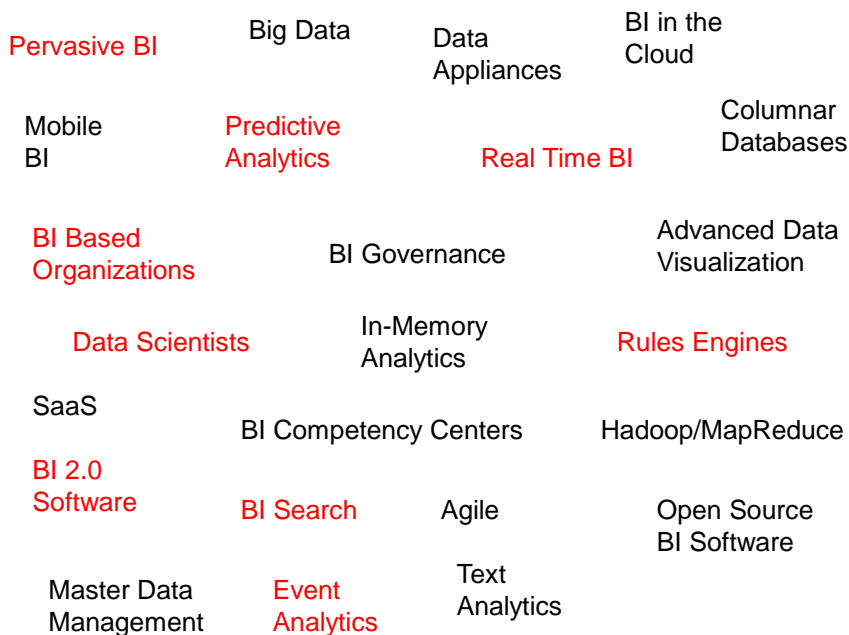
- Howard Dresner, a Gartner analyst, coined the BI term in the early 1990s
- Today there is much discussion of analytics
- There are many BI definitions, but the following is useful

Business intelligence (BI) is a broad category of applications, technologies, and processes for gathering, storing, accessing, and analyzing data to help business users make better decisions.



# Things Are Getting More Complex

- Source systems include social media, machine sensing, and clickstream data (Big Data)
- The cloud, Hadoop/Reduce, and appliances are being used as data stores
- Advanced analytics are growing in popularity and importance



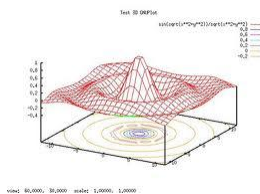
# What Is Meant by Analytics?

- A new term for BI
- Just the data analysis part of BI
- “Rocket science” algorithms
- Three kinds of analytics



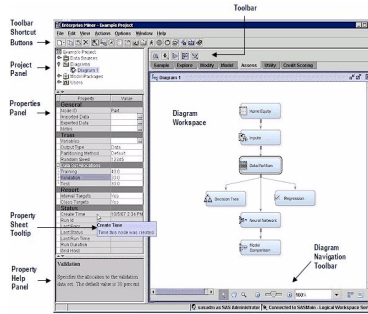
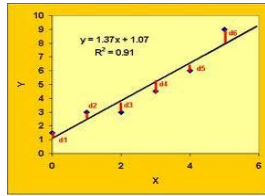
## Descriptive Analytics

Year	2009	Audio Division		Video Division	
Line Item	Budget	Actual	Budget	Actual	Actual
Cost of Goods Sold	\$1,891,006.49	\$1,152,981.39	\$4,252,914.74	\$4,526,254.71	
Marketing Expense	\$760,179.20	\$766,596.17	\$465,048.09	\$462,015.43	
Research and Development Expense	\$636,243.58	\$620,014.72	\$239,980.06	\$236,008.13	
Selling Expense	\$1,832,921.64	\$1,579,790.18	\$988,887.49	\$927,070.90	
Taxes	\$314,669.09	\$319,390.19	\$202,836.67	\$200,206.01	
<b>TOTAL</b>					
Year	2011	Audio Division		Video Division	
Line Item	Budget	Actual	Budget	Actual	Actual
Cost of Goods Sold	\$2,654,656.31	\$2,700,773.16	\$1,726,031.16	\$1,773,448.03	
Marketing Expense	\$294,786.22	\$290,696.70	\$187,797.29	\$176,778.52	
Research and Development Expense	\$200,719.83	\$193,246.83	\$134,200.96	\$126,125.86	
Selling Expense	\$800,427.33	\$811,649.42	\$466,692.93	\$460,161.91	
Taxes	\$130,826.70	\$122,526.31	\$82,490.78	\$80,671.87	



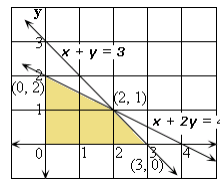
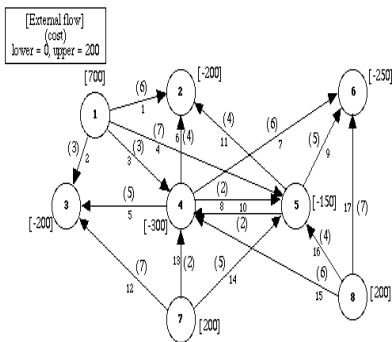
*What has occurred?*

# Predictive Analytics



*What will occur?*

# Prescriptive Analytics



*What should occur?*

## There are different “targets” for BI

### **A single or a few applications**

- A point solution
- May be departmental
- Serves a specific business need
- A possible entry point



## Enterprise analytical capabilities

- The infrastructure is created for enterprise-wide analytics
- Analytics are used throughout the organization
- Analytics are key to business success



## Organizational transformation

- Brought about by opportunity or necessity
- The firm adopts a new business model enabled by analytics
- Analytics are a competitive requirement





For BI-based organizations, the use of BI/analytics is a ***requirement*** for successfully competing in the marketplace.

## 2011 Academic Research

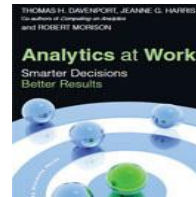
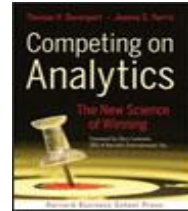
Firms that emphasize data and analytics



Productivity  
Return on equity  
Market value

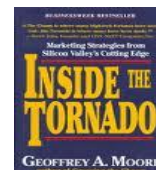
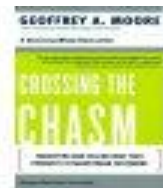
## Conditions that Lead to Analytics-based Organizations

- The nature of the industry
- Seizing an opportunity
- Responding to a problem



## Complex Systems versus Volume Operations

- A distinction made by Geoffrey Moore
- Helps in understanding what kinds of organizations are most likely to be analytics based



## Complex Systems

- Tackle complex problems and provide individualized solutions
- Products and services are organized around the needs of individual customers
- Dollar value of interactions with each customer is high
- There is considerable interaction with each customer
- Examples: IBM, World Bank, Halliburton

## Volume Operations

- Serves high-volume markets through standardized products and services
- Each customer interaction has a low dollar value
- Customer interactions are generally conducted through technology rather than person-to-person
- Are likely to be analytics-based
- Examples: Amazon.com, eBay, Hertz

## The nature of the industry: Online Retailers

### *BI Applications*

- Analysis of clickstream data
- Customer profitability analysis
- Customer segmentation analysis
- Product recommendations
- Campaign management
- Pricing
- Forecasting
- Dashboards



*“We are a business intelligence company”*

Patrick Byrne,  
CEO, Overstock.com

## Seizing an Opportunity: Harrah's



- In 1993, the gaming laws changed
- Harrah's decided to compete and expand using a brand and customer loyalty strategy
- Implemented WINet with an ODS and DW
- Offered the industry's first customer loyalty program, Total Rewards

## Seizing an Opportunity: Harrah's



- Fact based decision making replaced "Harrahisms"
- Today it is the largest gaming company in the world
- Recently renamed Caesars

## Responding to a problem: First American Corporation

- The bank was failing
- A new management team stopped the bleeding
- A customer intimacy strategy was implemented, Tailored Client Solutions



## Responding to a problem: First American Corporation

- The business strategy was enabled by a data warehouse and BI



## Responding to a problem: First American Corporation

- External talent was brought in as needed
- Applications using VISION were developed for every component of TCS
- The bank was transformed from “banking by intuition” to “banking by information and analysis”



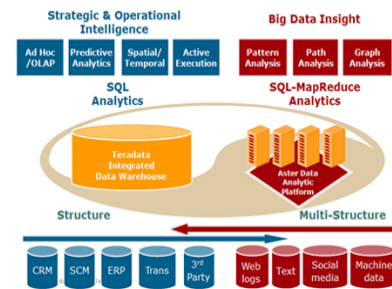
The right analytical tools



## New tools and architectures may be needed



Teradata Analytic Platform Solutions



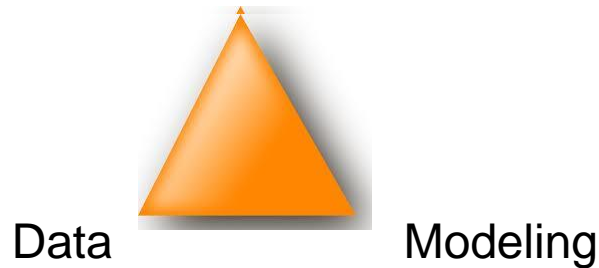
## Strong analytical personnel in an appropriate organizational structure





# Knowledge Requirements for Advanced Analytics

Business Domain



## Business Analyst

Uses BI tools and applications to understand business conditions and drive business processes



# Data Scientist

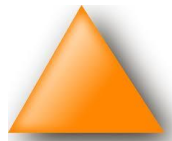
Uses advanced algorithms and interactive exploration tools to uncover non-obvious patterns in data



Business Analyst



**Business Domain**



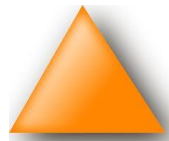
Data

Modeling

Data Scientist



Business Domain



Data

**Modeling**

## Business Analyst



*Education:* BBA, MBA

*Tools:* Cognos, Hyperion

*Analytics:* OLAP

*Focus:* Business

*Scope:* Departmental

*Value:* High

## Data Scientist



MS, PhD

KXEN, SAS

Neural networks

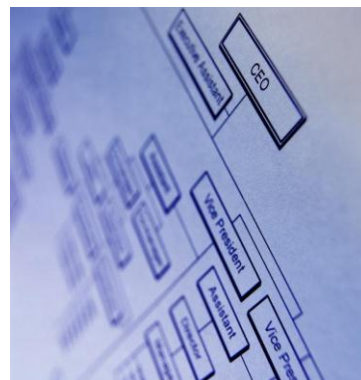
Analytics

Enterprise-wide

Exceptionally high

## Where to put the analytics team?

- Spread throughout the organization
- In a standalone unit
- In some form of an Analytics Competency Center



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- Faculty apply for membership, and are authenticated
- Faculty have access to course syllabi, articles, cases, projects, assignments, presentations, software (Teradata, MicroStrategy) various datasets, web seminars, and more.
- Faculty have the ability to post and share their favorite content
- Faculty send students to TUN to access course-related materials

## Resources from TUN

- Articles
  - ✓ Current state of BI
  - ✓ Business analytics
  - ✓ Big data
  - ✓ Future directions for BI software
  - ✓ Understanding users value proposition
  - ✓ Decision support sweet spot
  - ✓ Dashboards and scorecards
  - ✓ Dashboard design
  - ✓ Data warehousing
  - ✓ Data profiling
  - ✓ Data quality
  - ✓ Data mining primer
  - ✓ Assessing BI readiness
  - ✓ Business schools need to change what they teach

# Resources from TUN

- Cases
  - ✓ Harrah's
  - ✓ First American Corporation
  - ✓ Continental Airlines
  - ✓ Retailstore.com
  - ✓ Catalina Marketing
  - ✓ Norfolk Southern Railway
  - ✓ Spokane Teachers Credit Union
  - ✓ U.S. Xpress
- Videos
  - ✓ Applebee's
  - ✓ Nationwide
  - ✓ Continental Airlines
  - ✓ BSI: Retail Tweeters