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
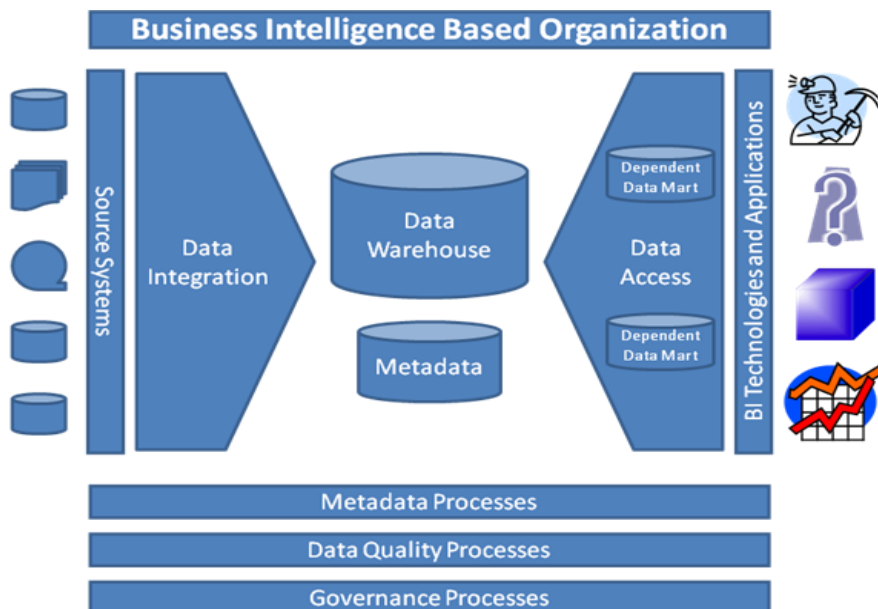- Using the Teradata University Network to teach BI

I

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
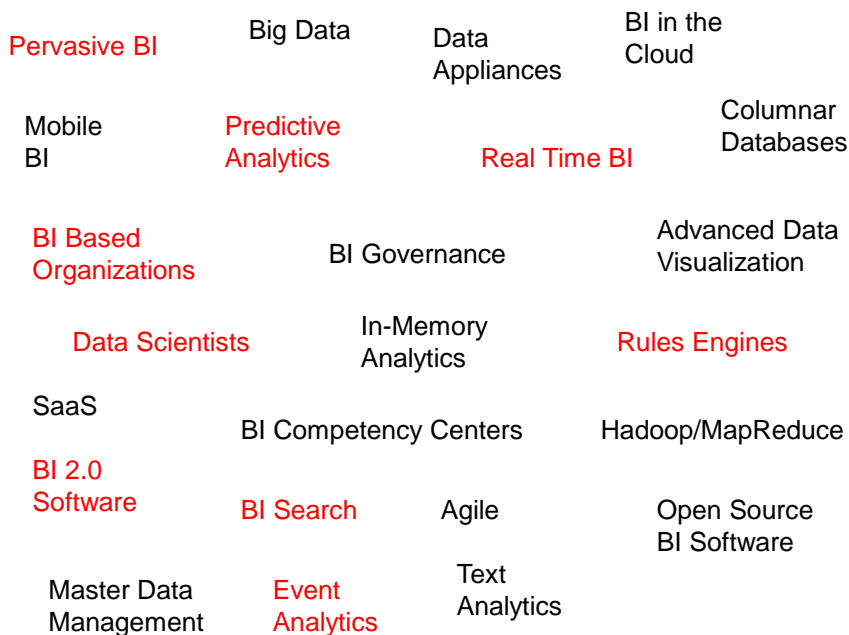
What Is Business Intelligence?

- 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.

Business Intelligence Based Organization

Source Systems

Data Integration

Data Warehouse

Metadata

Data Access

Dependent Data Mart

Dependent Data Mart

BI Technologies and Applications

Metadata Processes

Data Quality Processes

Governance Processes

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
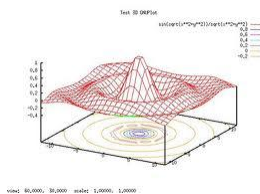- Advanced analytics are growing in popularity and importance

Pervasive BI   Big Data   Data Appliances   BI in the Cloud

Mobile BI   Predictive Analytics   Real Time BI   Columnar Databases

BI Based Organizations   BI Governance   Advanced Data Visualization

Data Scientists   In-Memory Analytics   Rules Engines

SaaS   BI Competency Centers   Hadoop/MapReduce

BI 2.0 Software

BI Search   Agile   Open Source BI Software

Master Data Management   Event Analytics   Text Analytics

What Is Meant by Analytics?

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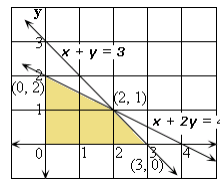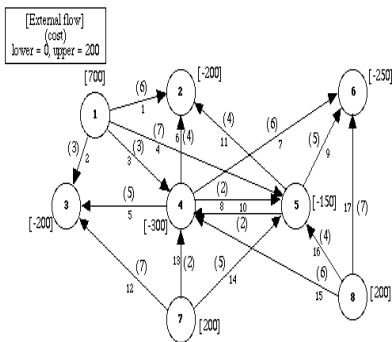- Three kinds of analytics

Descriptive Analytics

What has occurred?

Predictive Analytics
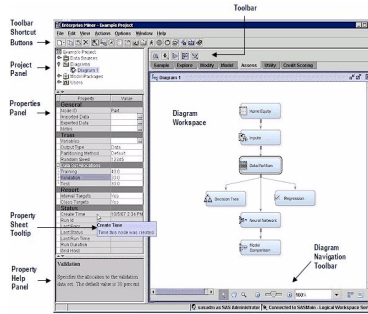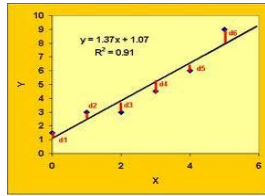
What will occur?

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

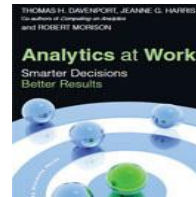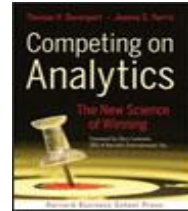Firms that emphasize data and analytics
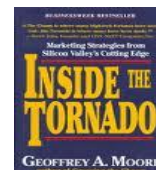
5-6%

Productivity
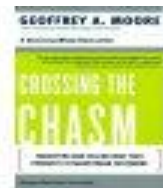Return on equity
Market value

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

First American

Responding to a problem: First American Corporation

• The business strategy was enable by a data warehouse and BI

First American

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"

First American

The right analytical tools

New tools and architectures may be needed
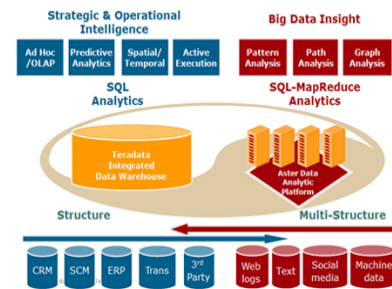
Strong analytical personnel in an appropriate organizational structure

Knowledge Requirements for Advanced Analytics

Business Domain

Data   Modeling
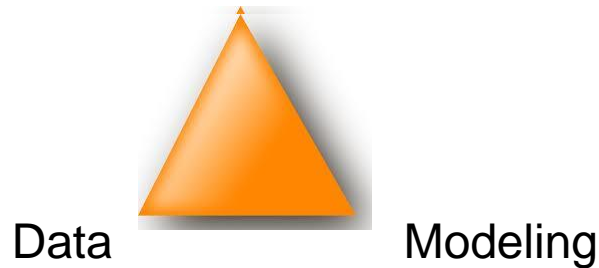
Business Analyst

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
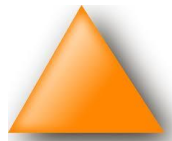
Data   Modeling

Data Scientist

Business Domain
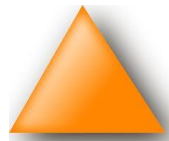
Data   **Modeling**

Business Analyst	Data Scientist

Education: BBA, MBA — MS, PhD

Tools: Cognos, Hyperion — KXEN, SAS

Analytics: OLAP — Neural networks

Focus: Business — Analytics

Scope: Departmental — Enterprise-wide

Value: High — Exceptionally high

Where to put the analytics team?

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

Teradata University Network

- A premier, free online educational resource for university professors around the world who teach classes on data warehousing, DSS/business intelligence, and database.

<u>Current Membership</u>

- ✓ Over **3,000** registered faculty members
- ✓ Representing **1,641** universities
- ✓ In **90** countries
- ✓ Thousands of students

- An international community, <u>led by academics</u>, whose members share their ideas, experiences, and resources with others

www.teradatauniversitynetwork.com

Using the Teradata University Network

- 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