Class 2

BUSINESS INTELLIGENCE

Learning Objectives

- Describe the business intelligence (BI) methodology and concepts and relate them to DSS
- Understand the major issues in implementing computerized support systems
- List the major online resources for BI

A Framework for Business Intelligence (BI)

- **Business intelligence (BI)**

  An umbrella term that combines architectures, tools, databases, applications, and methodologies

  Data->Information->Decisions->Actions

- Evolution of BI
  - EIS

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A Framework for Business Intelligence (BI)

FIGURE 1.6   Evolution of BI

- Querying and reporting
- ETL systems
- DSS
- EIS/ESS
- Metadata
- Data warehouses
- Spreadsheets (Excel)
- Financial reporting
- Data marts
- OLAP
- Digital cockpits
- Scorecards and dashboards
- Business intelligence
- Workflow
- Alerts and notifications
- Data mining
- Predictive analytics
- Broadcasting tools
- Portals

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A Framework for Business Intelligence (BI)

- **BI architecture**
  - *Data warehouse*
  - *Business analytics*
  - *Performance management (BPM)*

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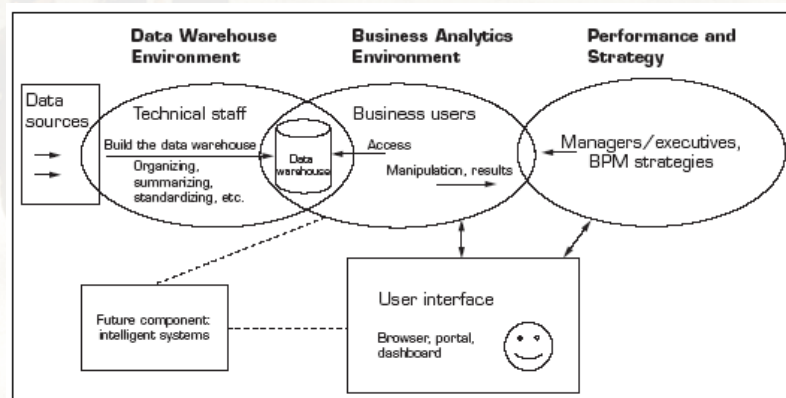
A Framework for Business Intelligence (BI)

Data Warehouse Environment	Business Analytics Environment	Performance and Strategy

Data sources

Technical staff

Build the data warehouse

Organizing, summarizing, standardizing, etc.

Data warehouse

Business users

Access

Manipulation, results

Managers/executives, BPM strategies

Future component: intelligent systems

User interface

Browser, portal, dashboard

FIGURE 1.7 A High-Level Architecture of BI

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A Framework for Business Intelligence (BI)

- *Data warehouse*
  - Originally, included historical data that were organized and summarize, so end users could easily view or manipulate data and information
  - Today, some data warehouses include current data as well, so they can provide real time decision support

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A Framework for Business Intelligence (BI)

- Business analytics
  - Reporting and queries
  - Advanced analytics
  - Data, text and Web mining and other sophisticated mathematical and statistical tools
- Demo:
  - http://www.axsellit.com/olapcubedemo2.html
  - http://www.jedox.com/en/Demos/Online-Demos/OLAP-demos.html

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A Framework for Business Intelligence (BI)

- **Data mining**

  A process of searching for unknown relationships or information in large databases or data warehouses, using intelligent tools such as *neural computing*, predictive analytics techniques, or advanced statistical methods

Examples of data mining

- http://www.oracle.com/technology/oramag/oracle/07-mar/o27data.html
- http://www.predictionworks.com/decisiontree/index.html
- http://www.montefiore.ulg.ac.be/~geurts/dtapplet/dtexplication.html#online

Case study: tax service

- Which companies to audit for tax evasion?
  - Auditing takes time and is costly
  - Mass auditing is not effective
- Texas state
  - Predict the companies to audit (select only those probable for tax invasion)
  - Spss.com data mining
  - 150$ million savings per year

A Framework for Business Intelligence (BI)

- **Business performance management (BPM)**

  An advanced performance measurement and analysis approach that embraces planning and strategy
  - BPM extends the monitoring, measuring, and comparing of sales, profit, cost, profitability, and other performance indicators by introducing the concept of "management and feedback
  - BPM provides a top-down enforcement of corporate-wide strategy

A Framework for Business Intelligence (BI)

- Business performance management
  - User interface
  - Dashboard
    A visual presentation of critical data for executives to view. It allows executives to see hot spots in seconds and explore the situation
  - Dashboards integrate information from multiple business areas
    - Visualization tools

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A Framework for Business Intelligence (BI)

- Styles of BI
  1. Report Delivery and Alerting
  2. Enterprise Reporting (dashboard, scorecard)
  3. Cube Analysis (Slice and Dice Analysis)
  4. Ad-hoc Query
  5. Statistics and Data Mining

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A Framework for Business Intelligence (BI)

- Benefits of BI
  - Faster, more accurate reporting
  - Improved decision making
  - Improved customer service
  - Increased revenue

A Framework for Business Intelligence (BI)

- The DSS-BI connection
  1. The architecture is very similar since BI evolved from DSS
  2. DSS are constructed to *directly* support specific decision making; BI systems are geared to provide accurate and timely information (*indirect support*)
  3. BI has an executive and strategy orientation while DSS has been oriented toward analysts

A Framework for Business Intelligence (BI)

- The DSS-BI connection

  4. BI systems are constructed with commercially available tools and components that are fitted to the needs of organizations; DSS more programming is used to construct custom solutions to very unstructured problems

  5. DSS were developed mostly in the academic world; BI were developed mostly by software companies

  6. Many tools used by BI are also considered DSS tools (e.g., data mining and predictive analysis)

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The Major Tools and Techniques of Managerial Decision Support

Computerized Tools for Decision Support

- Data management
- Reporting status tracking
- Visualization
- Business analytics
- Strategy and performance management

- Communication and collaboration
- Knowledge management
- Intelligent systems
- Enterprise systems

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The Major Tools and Techniques of Managerial Decision Support

- Tools-Web connection
  - All of these tools are available in both web-based and non web-based formats
- **Hybrid (integrated) support systems**

  A support system that uses several tools and techniques to assist management in solving managerial or organizational problems and assess opportunities and strategies

Example of hybrid

- Integration of BI with GIS
  - http://spatialolap.scg.ulaval.ca/Demo_flash/Version_prototype/Interface_ameliore.html
  - http://132.203.82.216:8081/solap/index.html
    - User: demo passwd: solap

Implementing Computer-Based Managerial Decision Support Systems

- Developing or acquiring support systems
- Justification and cost-benefit analysis
- Security and protection of privacy
- Integration of systems and applications
- The Web in DSS/BI implementation
  - Information portals and MSS

Resources and links

- The Data Warehousing Institute
  - dw-institute.com
- DM Review
  - http://www.information-management.com/
- The OLAP Report
  - http://olapreport.com/
- DSS Resources
  - http://dssresources.com
- Information Technology Toolbox
  - http://businessintelligence.ittoolbox.com
- Business Intelligence Network
  - b-eye-network.com
- Kdnuggets
  - http://kdnuggets.com

Periodicals

- http://cioinsight.com
- http://technologyevaluation.com
- http://baselinemag.com
- http://tdwi.org
- http://advisor.com

BI Book's web site

- http://prenhall.com/turban