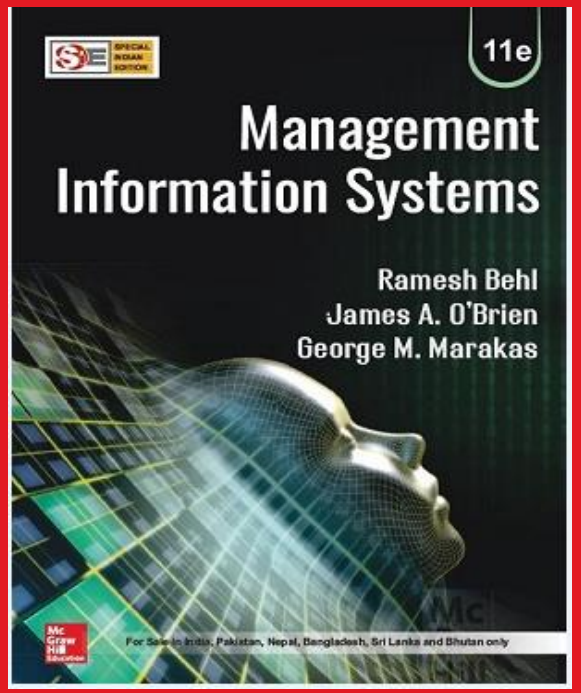
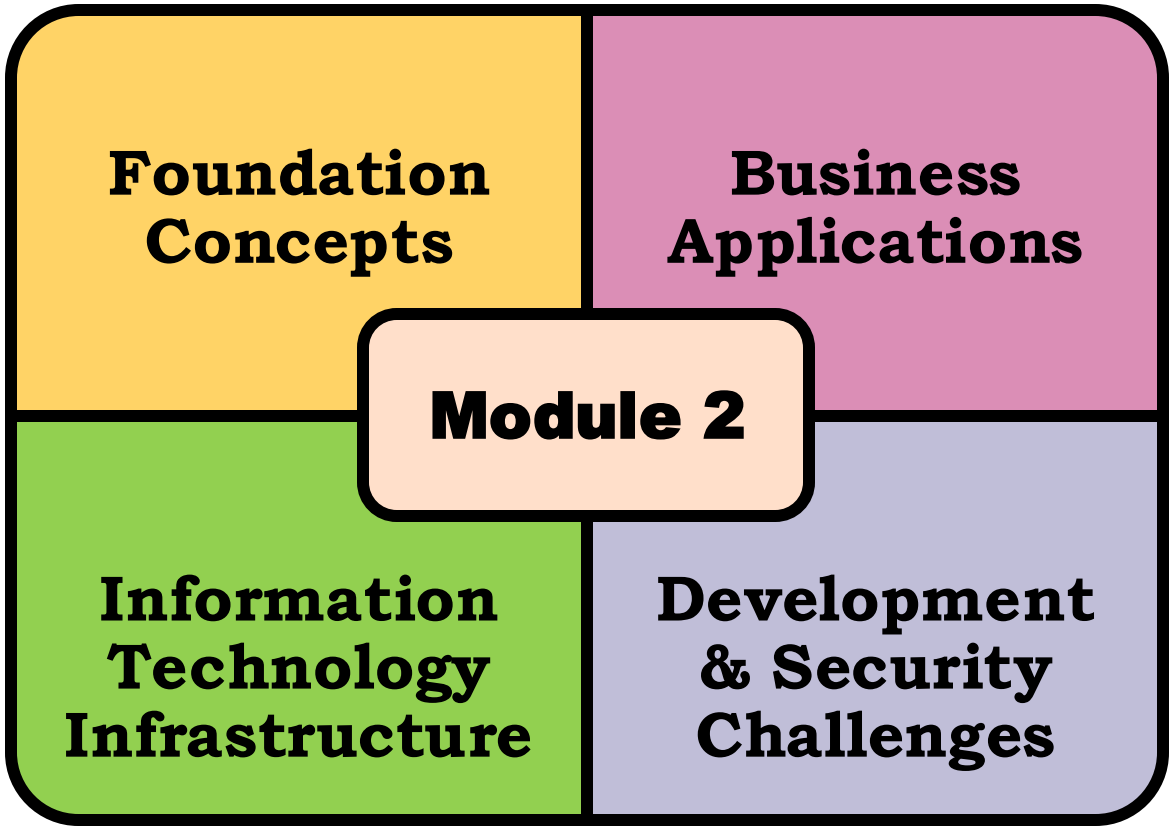
Because learning changes everything.®

Management Information Systems

Eleventh Edition



Chapter 6 : Decision Support Systems & Business Analytics


Foundation Concepts
Business Applications
Module 2
Information Technology Infrastructure
Development & Security Challenges

Learning Objectives

Understand the role that information system plays in supporting decision making at various levels of management.

Know the decision support systems and iden- tify the trends in decision support systems.

Analyze how decision support systems are different from traditional management information systems.

Discuss how online analytical processing systems can meet key information needs of managers.

Know the meaning and applications of decision support systems.

Understand the meaning and applications of data mining.

Learning Objectives

Discuss the meaning and applications of executive information systems.

Understand the meaning and applications of enterprise information and knowledge portals.

Analyze business analytics and power of data visualization.

Discuss the meaning and applications of artificial intelligence (AI).

Identify different types of AI technologies.

Apply expert system applications for effective decision making.

Decision Support in Business

Companies are investing in data-driven decision support application frameworks to help them respond to

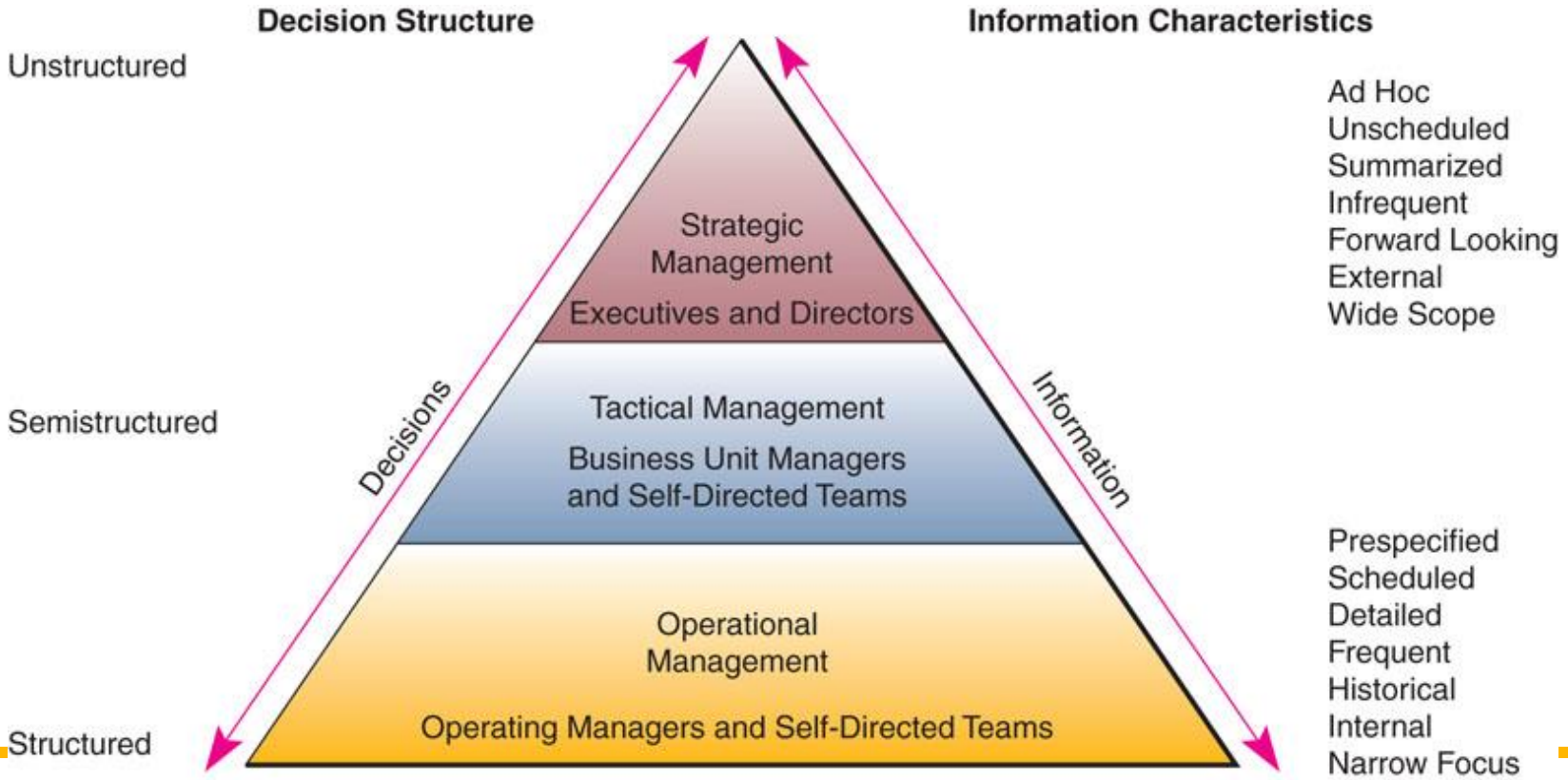
- Changing market conditions
- Customer needs

This is accomplished by several types of

- Management information
- Decision support
- Other information systems

Levels of Managerial Decision Making

The type of information required by decision makers in a company is directly reated to level of management decision making and amount of structure in decision situations they face



Decision Structure

Structured (operational)

- Procedures can be specified in advance

Unstructured (strategic)

- Not possible to specify procedures in advance

Semi-structured (tactical)

- Decision procedures can be pre-specified, but not enough to lead to the correct decision

Attributes of Information Quality

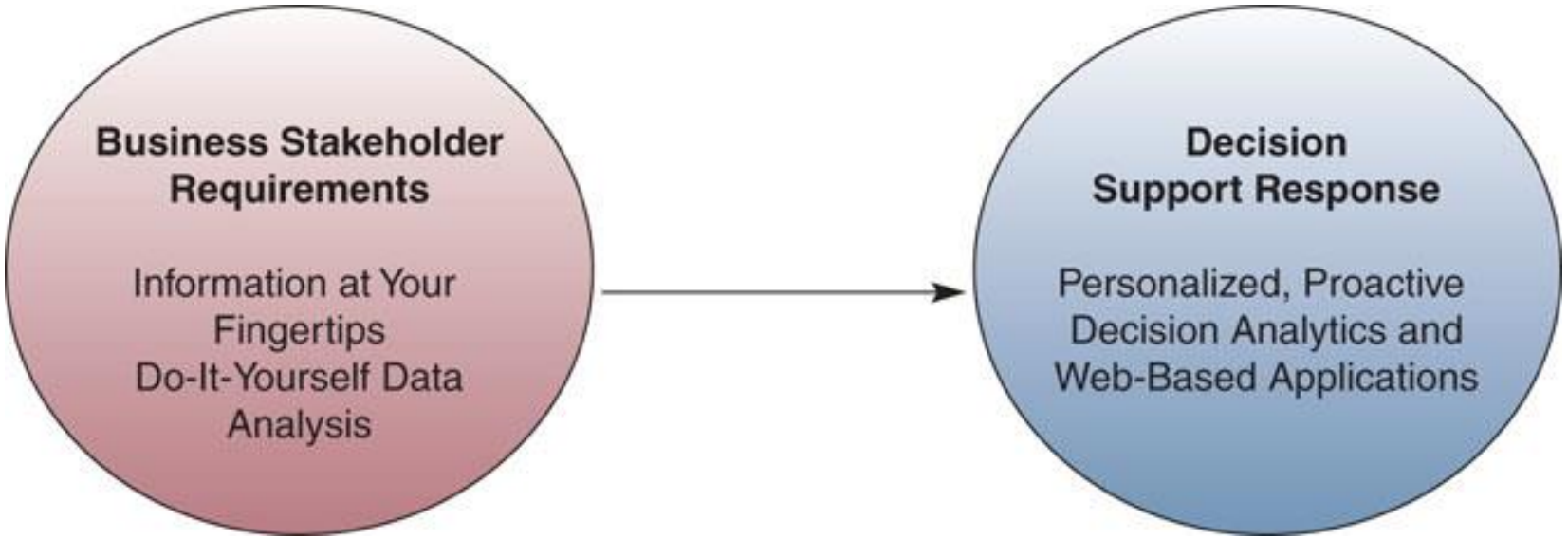
Time Dimension	
Timeliness	Information should be provided when it is needed.
Currency	Information should be up-to-date when it is provided.
Frequency	Information should be provided as often as needed.
Time Period	Information can be provided about past, present, and future time periods.
Content Dimension	
Accuracy	Information should be free from errors.
Relevance	Information should be related to the information needs of a specific recipient for a specific situation.
Completeness	All the information that is needed should be provided.
Conciseness	Only the information that is needed should be provided.
Scope	Information can have a broad or narrow scope, or an internal or external focus.
Performance	Information can reveal performance by measuring activities accomplished, progress made, or resources accumulated.
Form Dimension	
Clarity	Information should be provided in a form that is easy to understand.
Detail	Information can be provided in detail or summary form.
Order	Information can be arranged in a predetermined sequence.
Presentation	Information can be presented in narrative, numeric, graphic, or other forms.
Media	Information can be provided in the form of printed paper documents, video displays, or other media.

Decision Support Systems

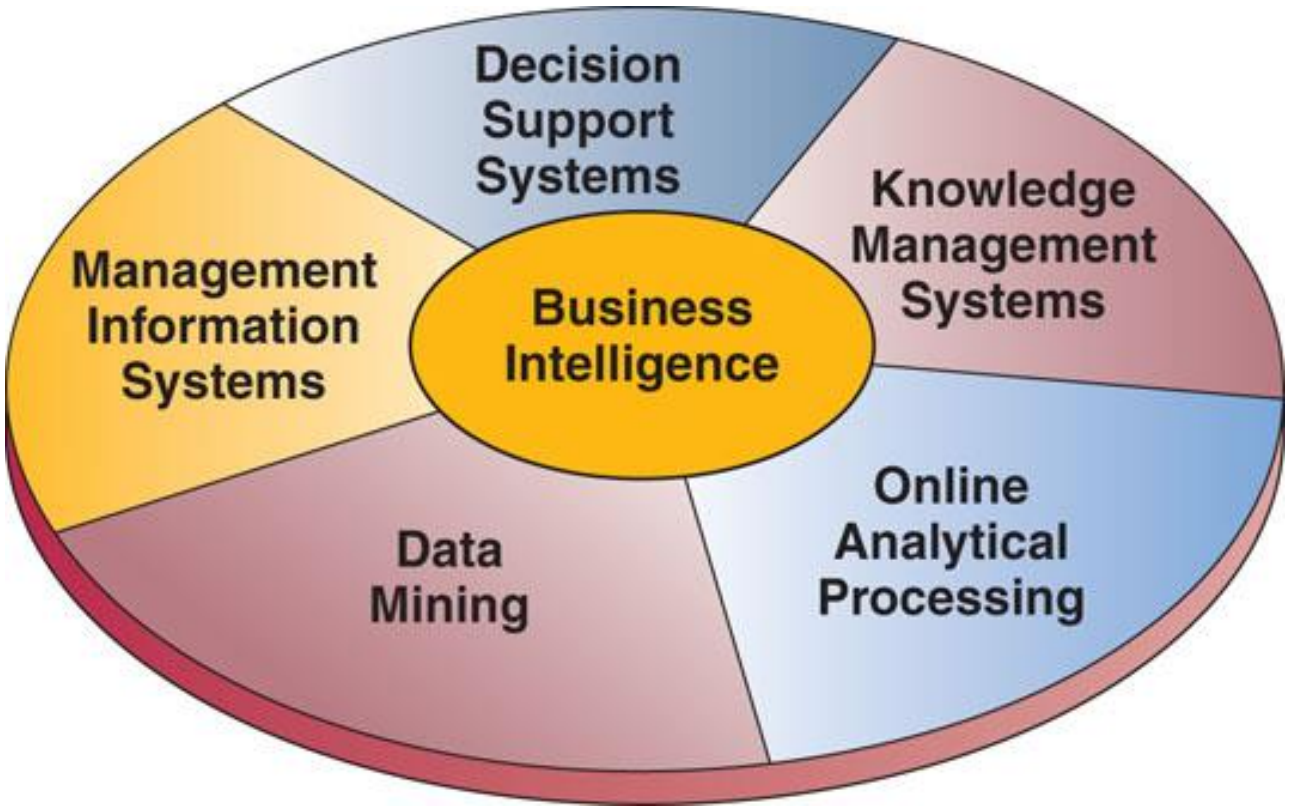
	Management Information Systems	Decision Support Systems
Decision support provided	Provide information about the performance of the organization	Provide information and techniques to analyze specific problems
Information form and frequency	Periodic, exception, demand, and push reports and responses	Interactive inquiries and responses
Information format	Prespecified, fixed format	Ad hoc, flexible, and adaptable format
Information processing methodology	Information produced by extraction and manipulation of business data	Information produced by analytical modeling of business data

Decision Support Trends

All business stakeholders expect easy and instant access to information and web enabled data analysis.



Business Intelligence Applications

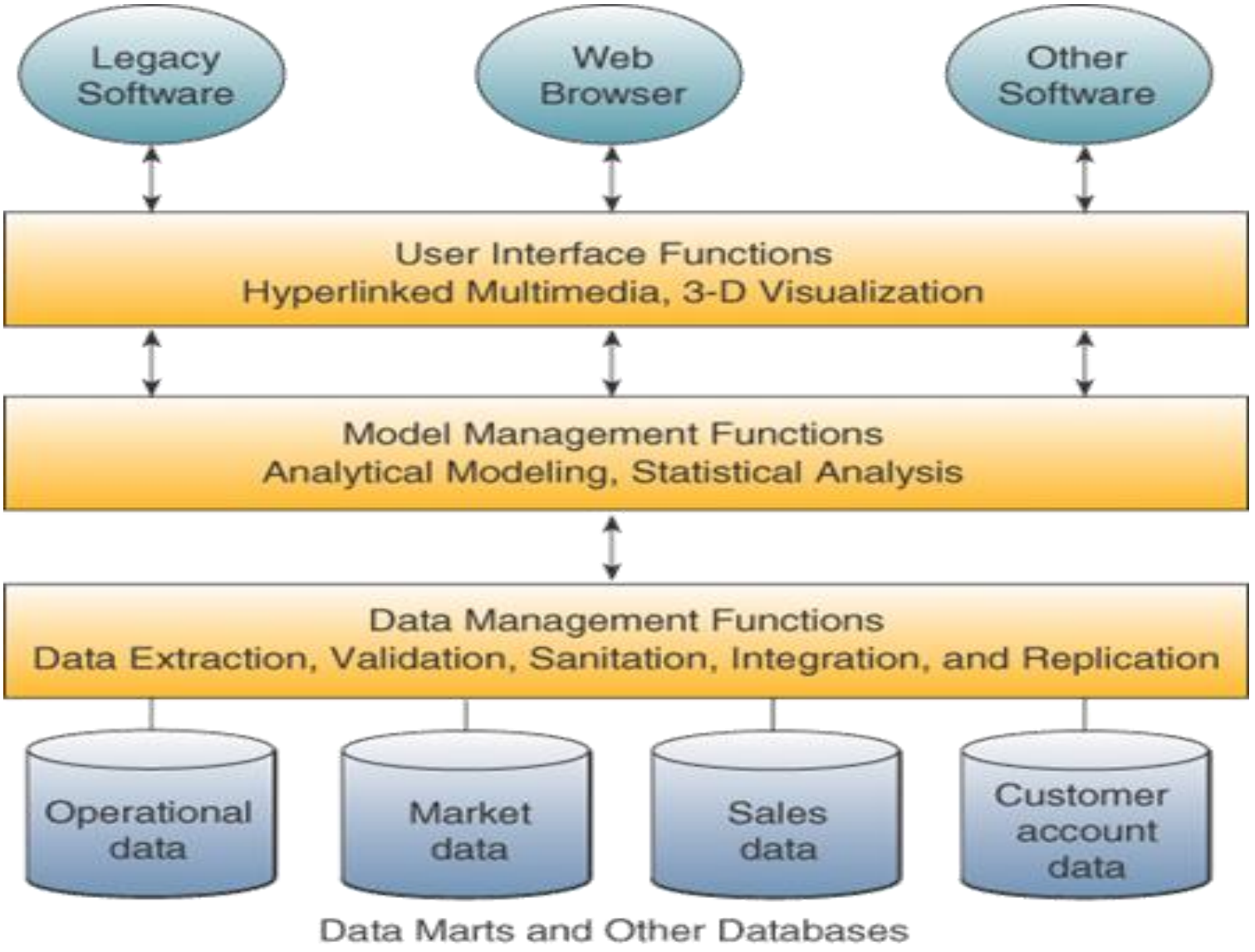


Decision Support Systems

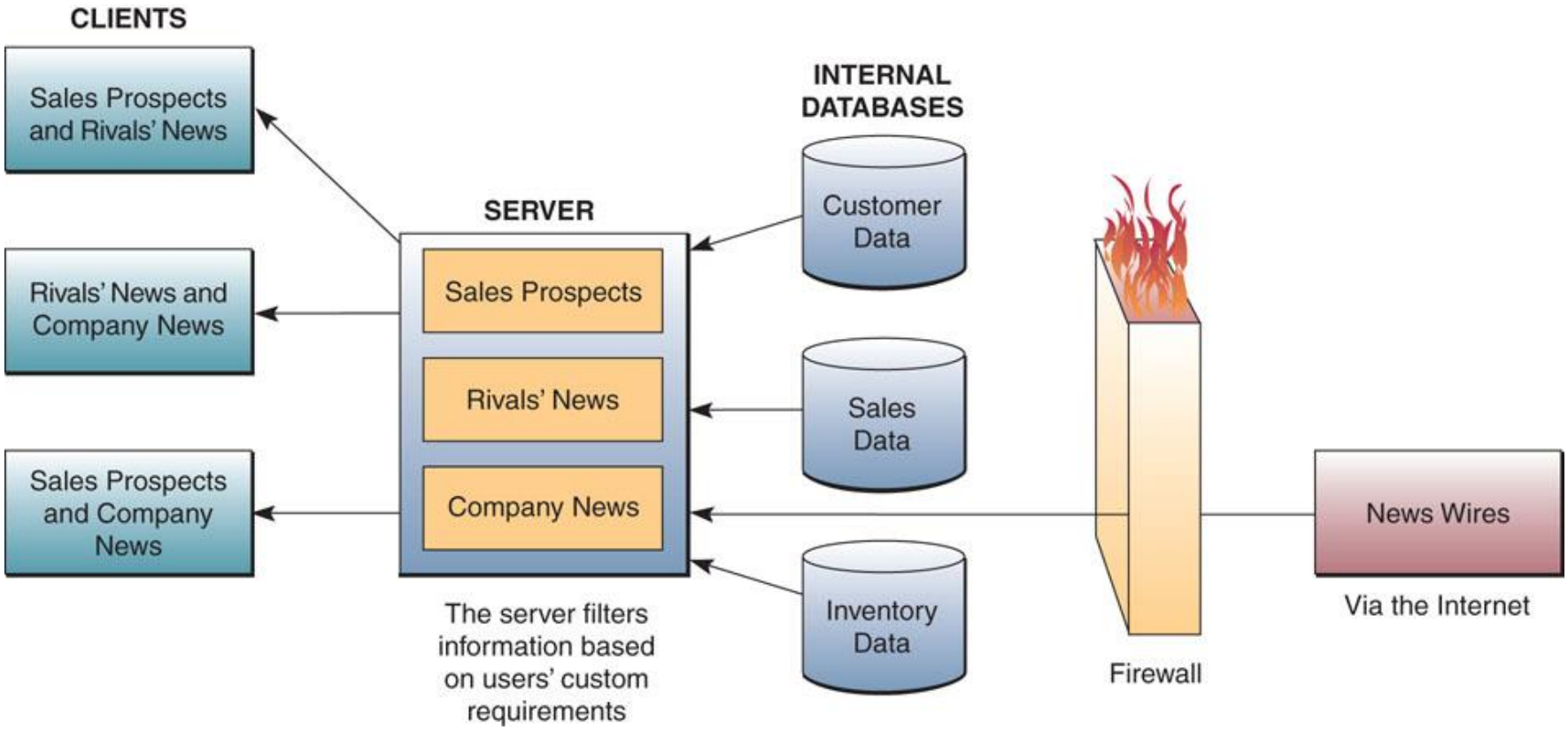
Defn:

- are computer-based information systems that provide interactive information support to managers and business professionals during the decision making process

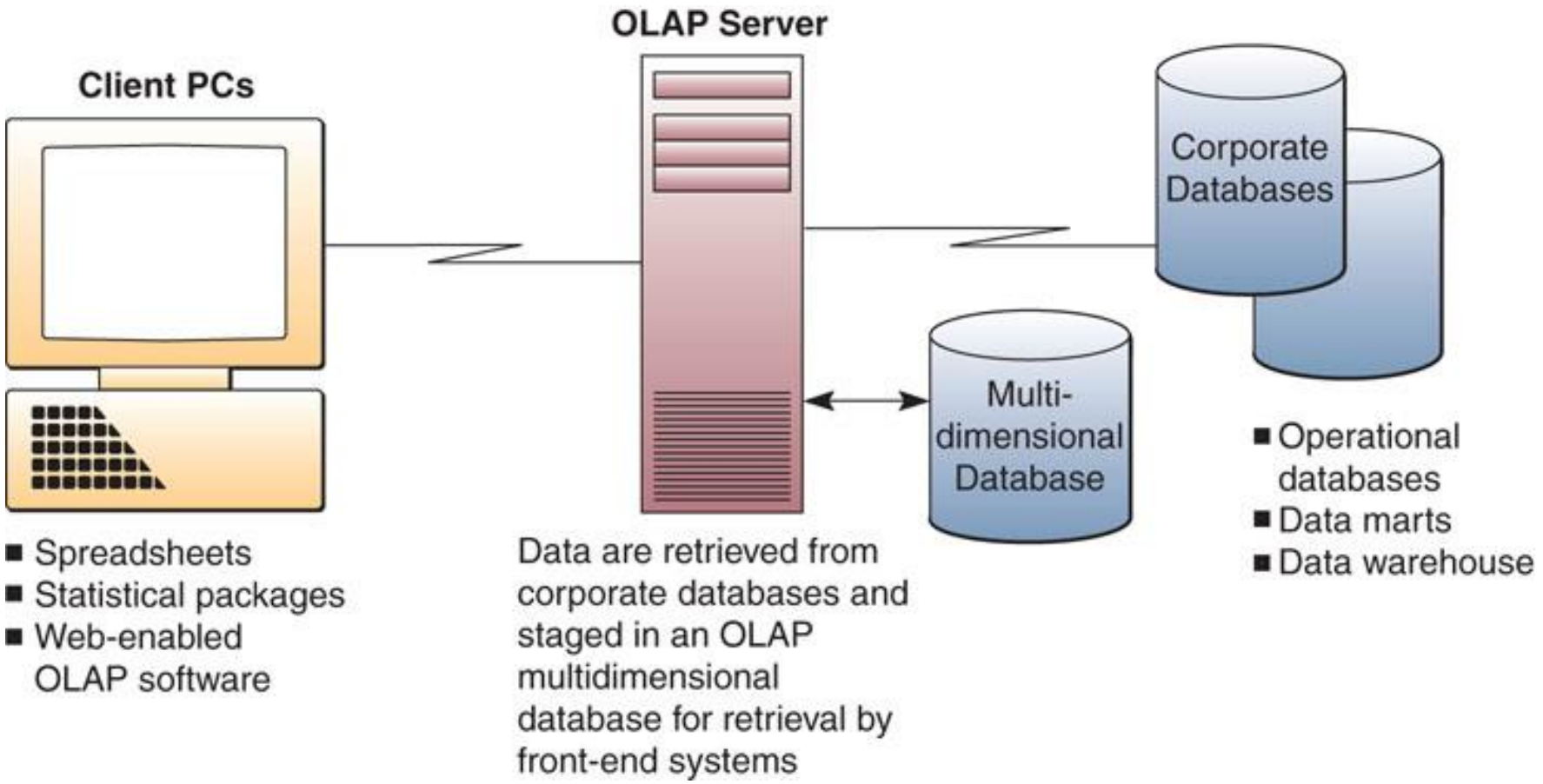
DSS Components



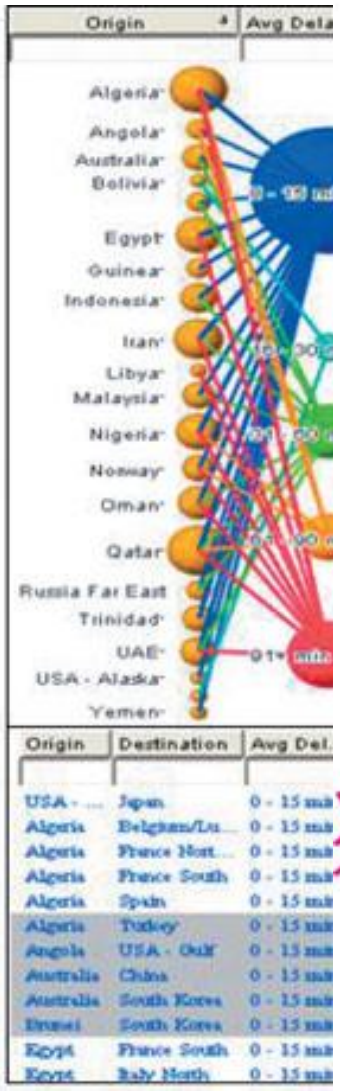
Management Information Systems

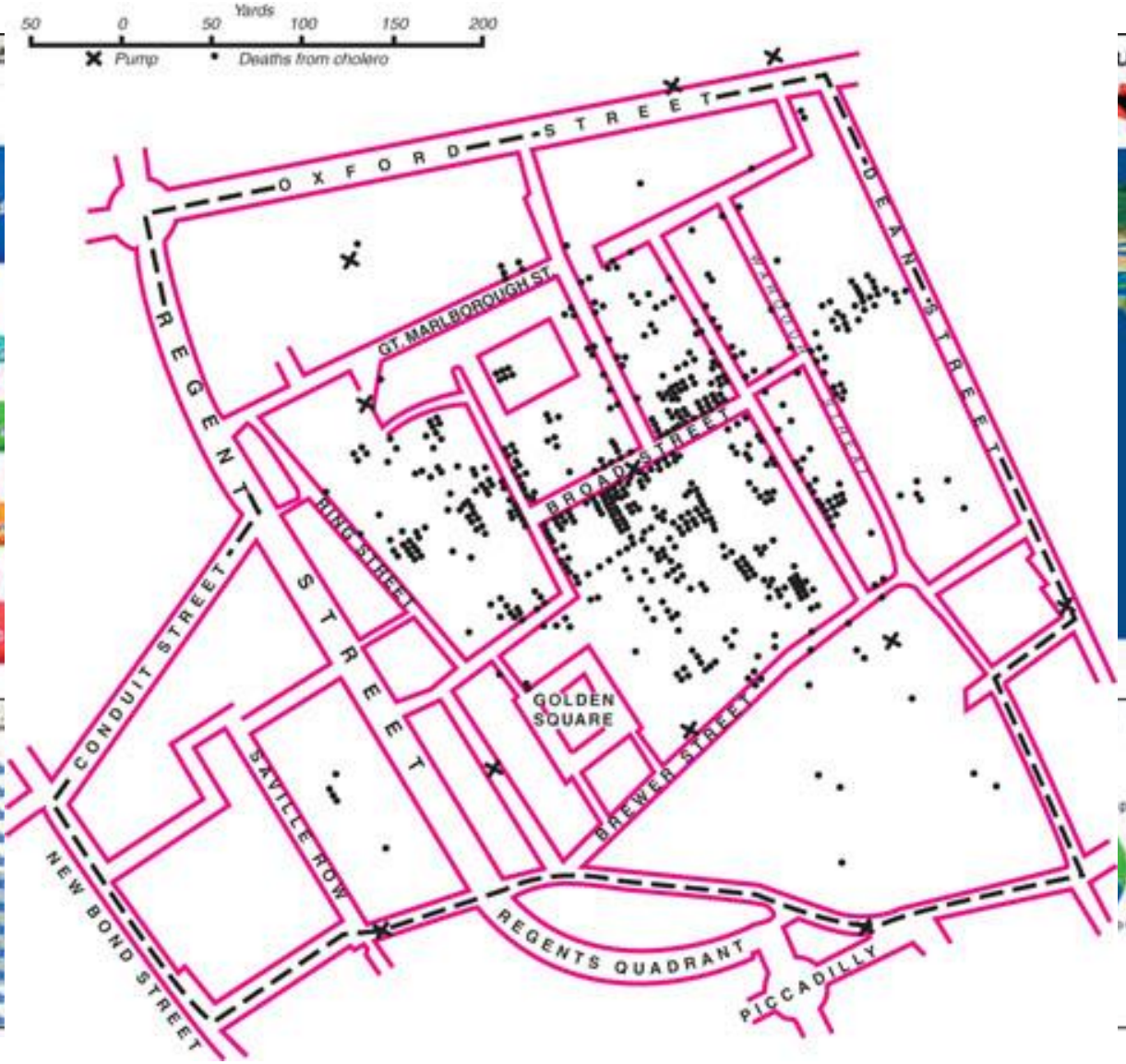


Online Analytical Processing



GIS and DVS Systems





Data Visualization

Data visualization is the presentation of data in a pictorial or graphical format.

Benefits:

- Helps in data cleaning by identifying incorrect and missing values
- Helps in selection of most influential variables for analysis
- Helps in merging the data as part of data reduction process
- Helps in identifying areas that need special attention or improvement
- Helps in predicting behavior
- Helps in presenting the data in aggregated format with a provision to drill to the last level
- Helps in identifying the factors that influence customer behavior
- Help in understanding the product mix
- Helps in predicting sales volumes

Using Decision Support Systems

Type of Analytical Modeling	Activities and Examples
What-if analysis	Observing how changes to selected variables affect other variables. *Example:* What if we cut advertising by 10 percent? What would happen to sales?
Sensitivity analysis	Observing how repeated changes to a single variable affect other variables. *Example:* Let's cut advertising by $100 repeatedly so we can see its relationship to sales.
Goal-seeking analysis	Making repeated changes to selected variables until a chosen variable reaches a target value. *Example:* Let's try increases in advertising until sales reach $1 million.
Optimization analysis	Finding an optimum value for selected variables, given certain constraints. *Example:* What's the best amount of advertising to have, given our budget and choice of media?

Data Mining

Provides decision support through knowledge discovery

- Analyzes vast stores of historical business data
- Looks for patterns, trends, and correlations
- Goal is to improve business performance

Types of analysis

- Regression
- Decision tree
- Neural network
- Cluster detection
- Market basket analysis

Market Basket Analysis

One of the most common uses for data mining

- Determines what products customers purchase together with other products

Other uses

- Cross Selling
- Product Placement
- Affinity Promotion
- Survey Analysis
- Fraud Detection
- Analyze Customer Behavior