Universitas **Esa Unggul**

Smart, Creative and Entrepreneurial

CCA220-Analisis dan Perancangan system Informasi

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Prodi Teknik Informatika dan Sistem Informasi - Fakultas Ilmu Komputer

Chapter 2
Understanding Organizational Style and Its Impact on Information Systems

Systems Analysis and Design

Kendall & Kendall

Sixth Edition

Major Topics

- Organizational environment
- Nature of systems
- Context-level data flow diagram
- Entity-relationship diagram
- Levels of management
- Organizational culture

Organizations

- Organizations are composed of interrelated and interdependent subsystems.

- System and subsystem boundaries and environments impact on information system analysis and design.

Organizational Environment

- Community environment
  - Geographical
  - Demographics (education, income)
- Economic environment
  - Market factors
  - Competition
- Political environment
  - State and local government

Open and Closed Systems

Systems are described as either

- Open
  - Free-flowing information.
  - Output from one system becomes input to another.
- Closed with restricted access to information
  - Limited by numerous rules.
  - Information on a need to know basis.

Virtual Organizations

- A virtual organization has parts of the organization in different physical locations.

- Computer networks and communications technology are used to work on projects.

Virtual Organization Advantages

Advantages of a virtual organization are:

- Reduced costs of physical facilities.
- More rapid response to customer needs.
- Flexibility for employees to care for children or aging parents.
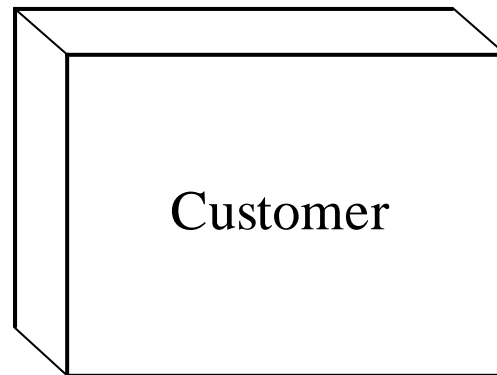
Enterprise Resource Planning

- Enterprise Resource Planning (ERP) describes an integrated organizational information system.

- The software helps the flow of information between the functional areas within the organization.

Context-Level Data Flow Diagram (DFD)

- A context-level data flow diagram is an important tool for showing data used and information produced by a system.

- It provides an overview of the setting or environment the system exists within: which entities supply and receive data/information.
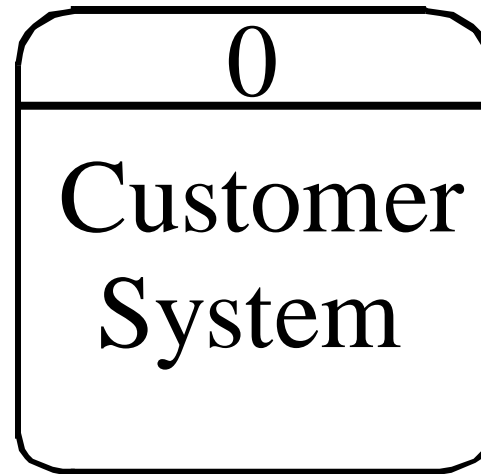
Context-Level DFD Symbols

- Entity, a person, group, department, or system that supplies or receives information.

- It is labeled with a noun.

Customer

Context-Level DFD Symbols (Continued)

- Process, representing the entire system.
- It is given the number 0.

0

Customer System

Context-Level DFD Symbols (Continued)

- Data flow, represented by an arrow.
- It shows information that passes to or from the process.
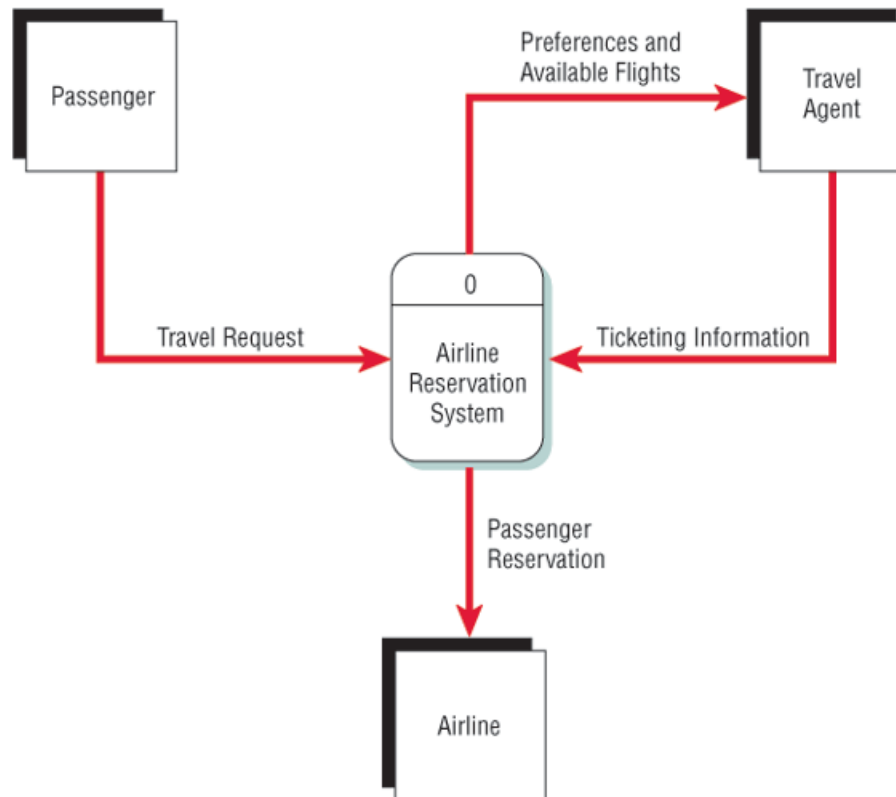- Data flow is labeled with a noun.

Travel Request

Passenger Reservation

Data Flow Example

Figure 2.5
A context-level data flow diagram for an airline reservation system.

Entity-Relationship Diagrams (E-R Diagrams)

- Entity-relationship diagrams help the analyst understand the organizational system and the data stored by the organization.

- Symbols are used to represent entities and relationships.

Entities

There are three types of entities:

- Fundamental entity, describing a person, place, or thing.

- Associative entity, linking entities.

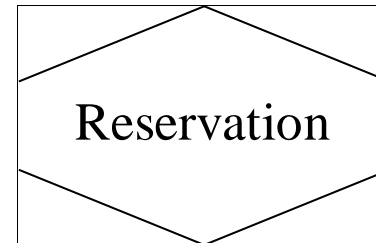- Attributive entity, to describe attributes and repeating groups.

Fundamental Entity

- Describes a person, place, or thing.
- Symbol is a rectangle.

Patron

Associative Entity

- Joins two entities.
- Can only exist between two entities.
- Symbol is a diamond inside a rectangle.
- Also called a:
  - Gerund.
  - Junction.
  - Intersection.
  - Concatenated entity.

Reservation

Attributive Entity

- Describes attributes and repeating groups.
- Symbol is an oval in a rectangle.

Performance

Relationships

- Relationships show how the entities are connected.
- There are three types of relationships:
  - One to one.
  - One to many.
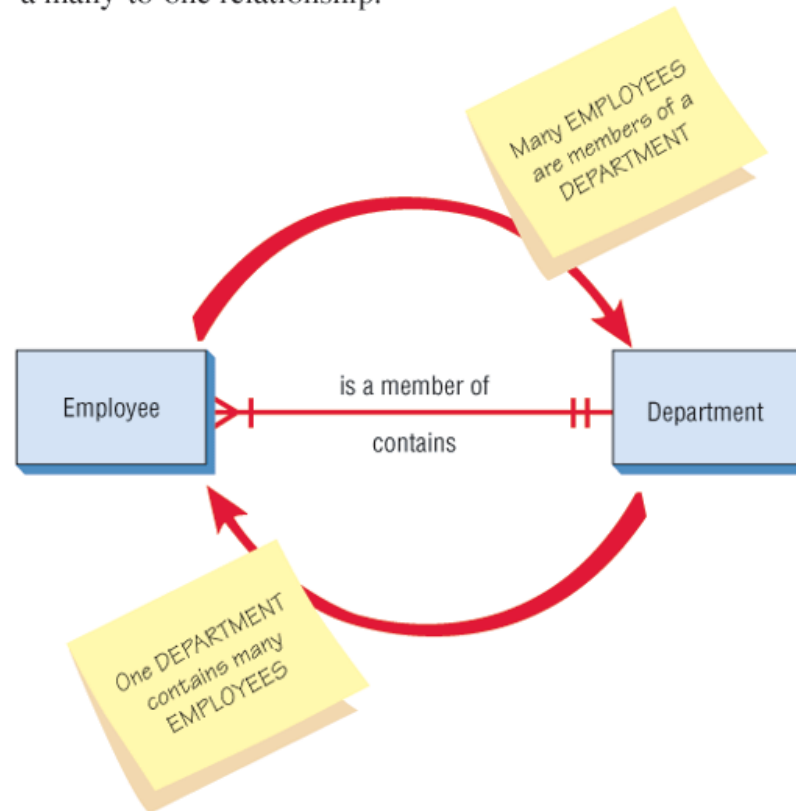 - Many to many.
- Relationship lines are labeled.

Relationship Notation

- One is indicated by a short vertical line.
- Many is indicated by a crows foot.

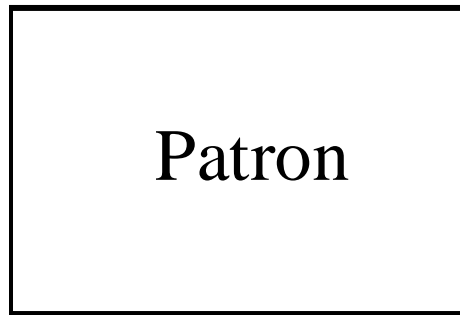# Entity Relationship Example

Figure 2.7 An entity-relationship diagram showing a many-to-one relationship.

Many EMPLOYEES are members of a DEPARTMENT

Employee — is a member of / contains — Department

One DEPARTMENT contains many EMPLOYEES

Attributes

Data attributes may be added to the diagram.

Patron

Patron Name
Patron address
Patron phone
Patron credit card

Creating Entity-Relationship Diagrams

Steps used to create E-R diagrams:

- List the entities in the organization.

- Choose key entities to narrow the scope of the problem.

- Identify what the primary entity should be.

- Confirm the results of the above through data gathering.

Levels of Management

Figure 2.13 Management in organizations exists on three horizontal levels: operational control, managerial planning and control, and strategic management.

Strategic Management

Managerial Planning and Control

Operational Control

Managerial Control

- The three levels of managerial control are:
  - Operations management.
  - Middle management.
  - Strategic management.

Operations Management

- Make decisions using predetermined rules that have predictable outcomes make decisions.

- Oversee the operating details of the organization.

- dependent on internal information.

Middle Management

- Make short-term planning and control decisions about resources and organizational objectives.
- Decisions may be partly operational and partly strategic.
- Decisions are dependent on internal information, both historical and prediction oriented.

Strategic Management

- Look outward from the organization to the future.
- Make decisions that will guide middle and operations managers.
- Work in highly uncertain decision-making environment.
- Define the organization as a whole.
- Often make one-time decisions.

Managerial Levels

Each of the three levels of management have:

- Different organization structure.
- Leadership style.
- Technological considerations.
- Organization culture.
- Human interaction.
- All carry implications for the analysis and design of information systems.

Organizational Culture

- Organizations have cultures and subcultures.
- Learn from verbal and nonverbal symbolism.

Verbal Symbolism

Using language to convey:

- Myths.
- Metaphors.
- Visions.
- Humor.

Nonverbal Symbolism

- Shared artifacts
  - Trophies, etc.
- Rites and rituals
  - Promotions
  - Birthdays, etc.
- Clothing worn
- Office placement and decorations