Chapter Two  Information System Building Blocks

- Differentiate between front- and back-office information systems.
- Describe the different classes of information system applications (transaction processing, management information, decision support, expert, communication and collaboration, and office automation systems) and how they interoperate to supplement one another.
- Describe the role of information systems architecture in systems development.
- Identify three high-level goals that provide system owners and system users with a perspective of an information system.
- Name three goal-oriented perspectives for any information system.
- Identify three technologies that provide system designers and builders with a perspective of an information system.
- Describe four building blocks of the KNOWLEDGE goal for an information system.
- Describe four building blocks of the PROCESS goal for an information system.
- Describe four building blocks of the COMMUNICATIONS goal for an information system.
- Describe the role of network technologies as it relates to Knowledge, Processes, and Communications building blocks.

Front - and Back-Office Information Systems

- Front-office information systems support business functions that extend out to the organization’s customers (or constituents).
  - Marketing
  - Sales
  - Customer management
- Back-office information systems support internal business operations of an organization, as well as reach out to suppliers (of materials, equipment, supplies, and services).
  - Human resources
  - Financial management
  - Manufacturing
  - Inventory control

A Federation of Information Systems

Information System Applications

A transaction processing system (TPS) is an information system that captures and processes data about business transactions.

A management information system (MIS) is an information system that provides for management-oriented reporting based on transaction processing and operations of the organization.

A decision support system (DSS) is an information system that either helps to identify decision making opportunities or provides information to help make decisions.
An Executive Information System (EIS) is an information system designed for top-level managers that integrates data from all over the organization into "at-a-glance" graphical indicators and controls.

An expert system is an information system that captures the expertise of workers and then simulates that expertise to the benefit of nonexperts.

A communications and collaboration system is an information system that enables more effective communications between workers, partners, customers, and suppliers to enhance their ability to collaborate.

An office automation system is an information system that supports the wide range of business office activities that provide for improved work flow between workers.

Information systems architecture - a unifying framework into which various stakeholders with different perspectives can organize and view the fundamental building blocks of information systems.

- Knowledge — the raw material used to create useful information.
- Process — the activities (including management) that carry out the mission of the business.
- Communication — how the system interfaces with its users and other information systems.
Views of KNOWLEDGE

• System owners’ view
  – Interested not in raw data but in information that adds new business knowledge and information that help managers make intelligent decisions.
  – Business entities and business rules.

• System users’ view
  – View data as something recorded on forms, stored in file cabinets, recorded in books and binders, organized into spreadsheets, or stored in computer files and databases.
  – Tend to focus on the business issues as they pertain to the data.
  – Data requirement – a representation of users’ data in terms of entities, attributes, relationships, and rules independent of data technology.

• System designers’ view
  – Data structures, database schemas, fields, indexes, and constraints of particular database management system (DBMS).

• System builders’ view
  – SQL
  – DBMS or other data technologies

Views of PROCESS

• System owners’ view
  – Concerned with high-level processes called business functions.
  – Business function – a group of related processes that support the business. Functions can be decomposed into other subfunctions and eventually into processes that do specific tasks.
  – A cross-functional information system – a system that supports relevant business processes from several business functions without regard to traditional organizational boundaries such as divisions, departments, centers, and offices.

• System users’ view
  – Concerned with work that must be performed to provide the appropriate responses to business events.
  – Business processes – activities that respond to business events.
  – Process requirements – a user’s expectation of the processing requirements for a business process and its information systems.
  – Policy – a set of rules that govern a business process.
  – Work flow – the flow of transactions through business processes to ensure appropriate checks and approvals are implemented.

• System designers’ view
  – Concerned with which processes to automate and how to automate them
  – Constrained by limitations of application development technologies being used
  – Software specifications – the technical design of business processes to be automated or supported by computer programs to be written by system builders.

• System builders’ view
  – Concerned with programming logic that implements automated processes
  – Application program – a language-based, machine-readable representation of what a software process is supposed to do, or how a software process is supposed to accomplish its task.
  – Prototyping – a technique for quickly building a functioning, but incomplete model of the information system using rapid application development tools.
• System owners’ view
  – Concerned with communications scope of an information system.
    • Who (which business units, employees, customers, and partners) must interact with the system?
    • Where are these business units, employees, customers, and partners located?
    • What other information systems will the system have to interface with?

• System users’ view
  – Concerned with the information system’s inputs and outputs.

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