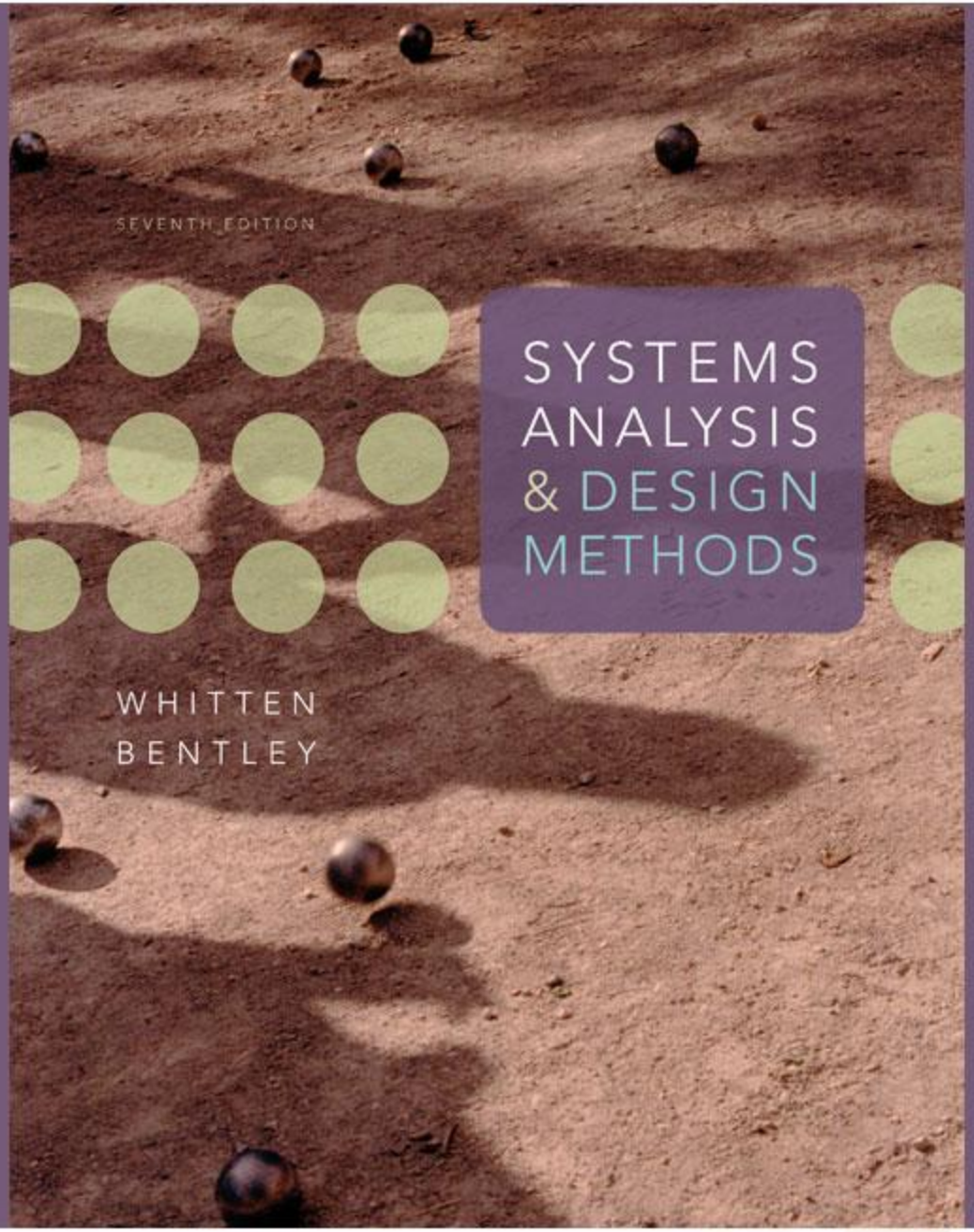
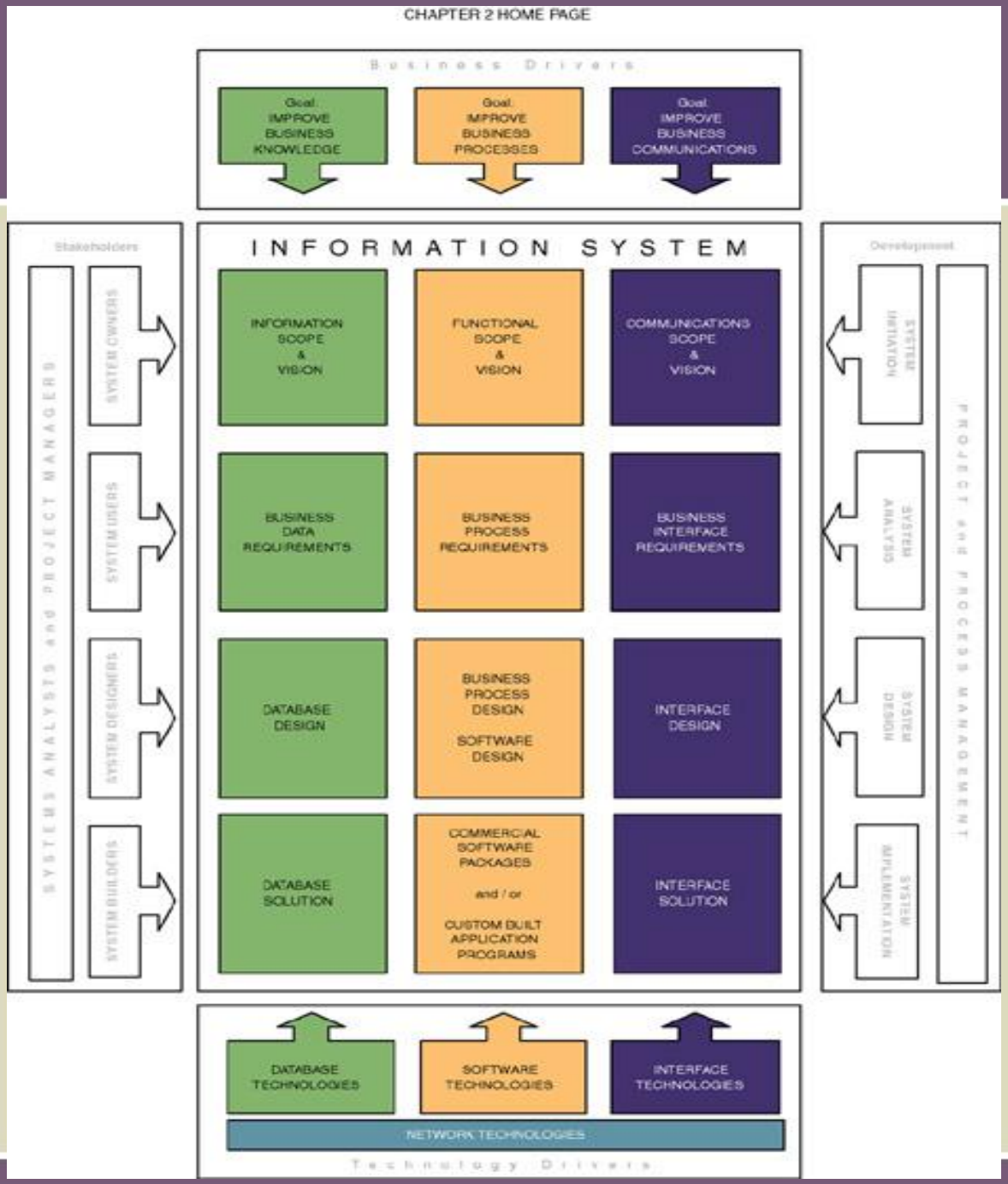

SEVENTH EDITION
SYSTEMS ANALYSIS & DESIGN METHODS
WHITTEN
BENTLEY

Objectives

- Differentiate between *front*- and *back-office* information systems.
- 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.
- Identify three technologies that provide system designers and builders with a perspective of an information system.
- Identify three areas of focus for an information system

Objectives (cont.)

- 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.


CHAPTER 2 HOME PAGE
Business Drivers
Goal:
IMPROVE
BUSINESS
KNOWLEDGE
Goal:
IMPROVE
BUSINESS
PROCESSES
Goal:
IMPROVE
BUSINESS
COMMUNICATIONS
Stakeholders
SYSTEMS ANALYSTS and PROJECT MANAGERS
SYSTEM OWNERS
SYSTEM USERS
SYSTEM DESIGNERS
SYSTEM BUILDERS
INFORMATION SYSTEM
INFORMATION
SCOPE
&
VISION
FUNCTIONAL
SCOPE
&
VISION
COMMUNICATIONS
SCOPE
&
VISION
BUSINESS
DATA
REQUIREMENTS
BUSINESS
PROCESS
REQUIREMENTS
BUSINESS
INTERFACE
REQUIREMENTS
DATABASE
DESIGN
BUSINESS
PROCESS
DESIGN
SOFTWARE
DESIGN
INTERFACE
DESIGN
DATABASE
SOLUTION
COMMERCIAL
SOFTWARE
PACKAGES
and / or
CUSTOM BUILT
APPLICATION
PROGRAMS
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SYSTEM
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SYSTEM
ANALYSIS
SYSTEM
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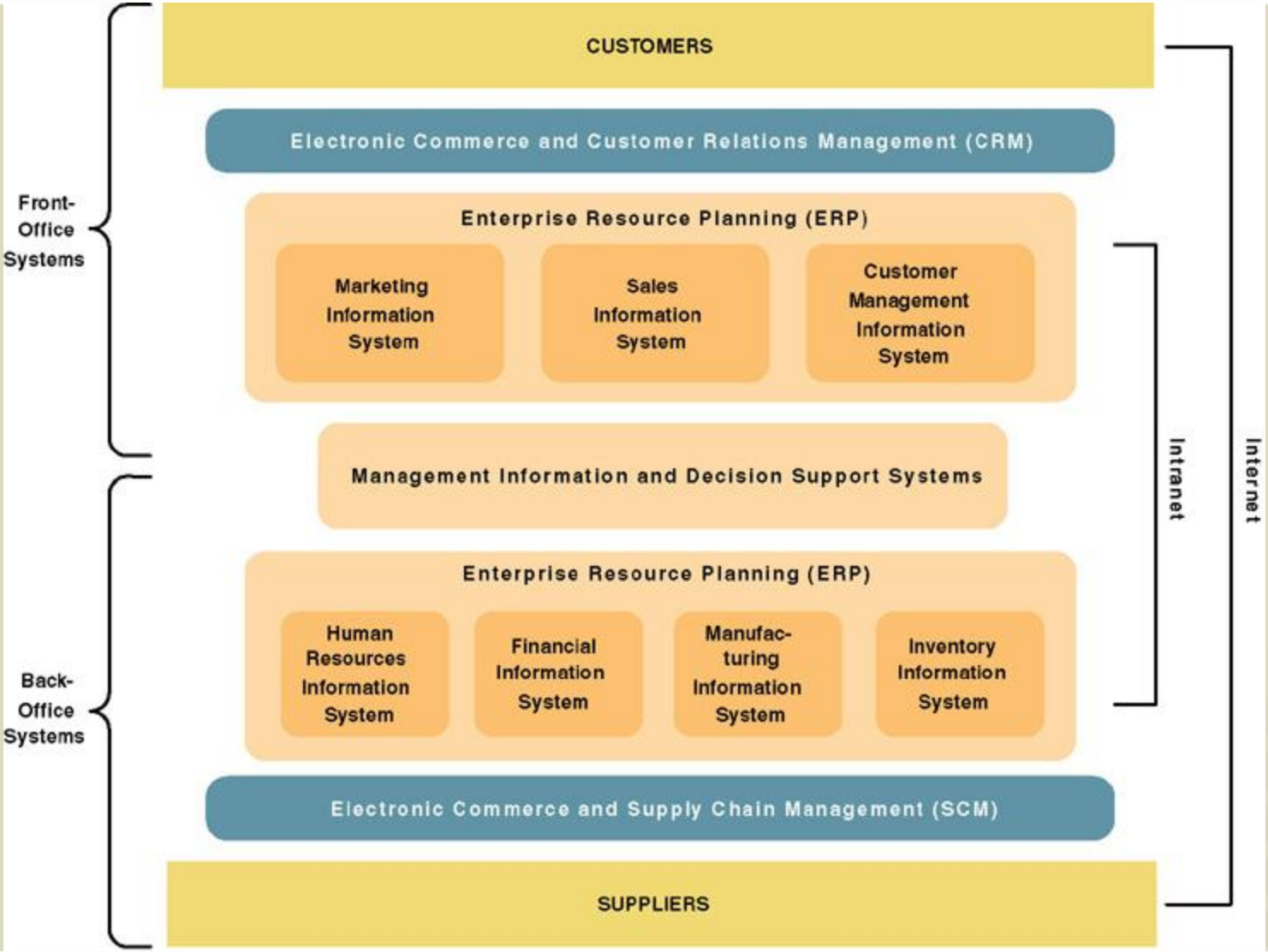
SYSTEM
IMPLEMENTATION
PROJECT and PROCESS MANAGEMENT
DATABASE
TECHNOLOGIES
SOFTWARE
TECHNOLOGIES
INTERFACE
TECHNOLOGIES
NETWORK TECHNOLOGIES
Technology Drivers

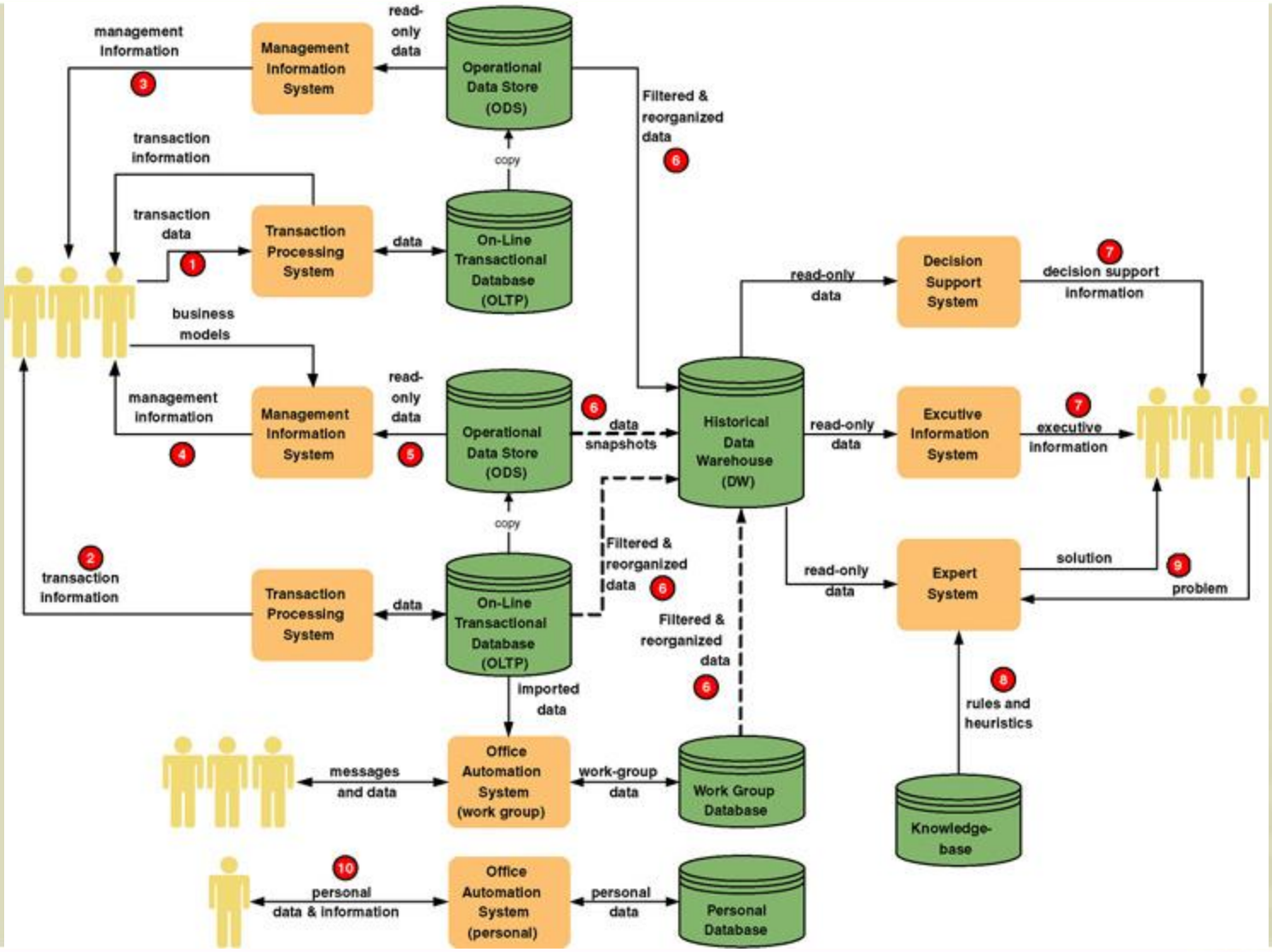
Front- and Back-Office Information Systems

- **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



Information Systems Architecture

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

High-Level Goals of System Owners and System Users

- Improve business knowledge
- Improve business processes and services
- Improve business communication and people collaboration

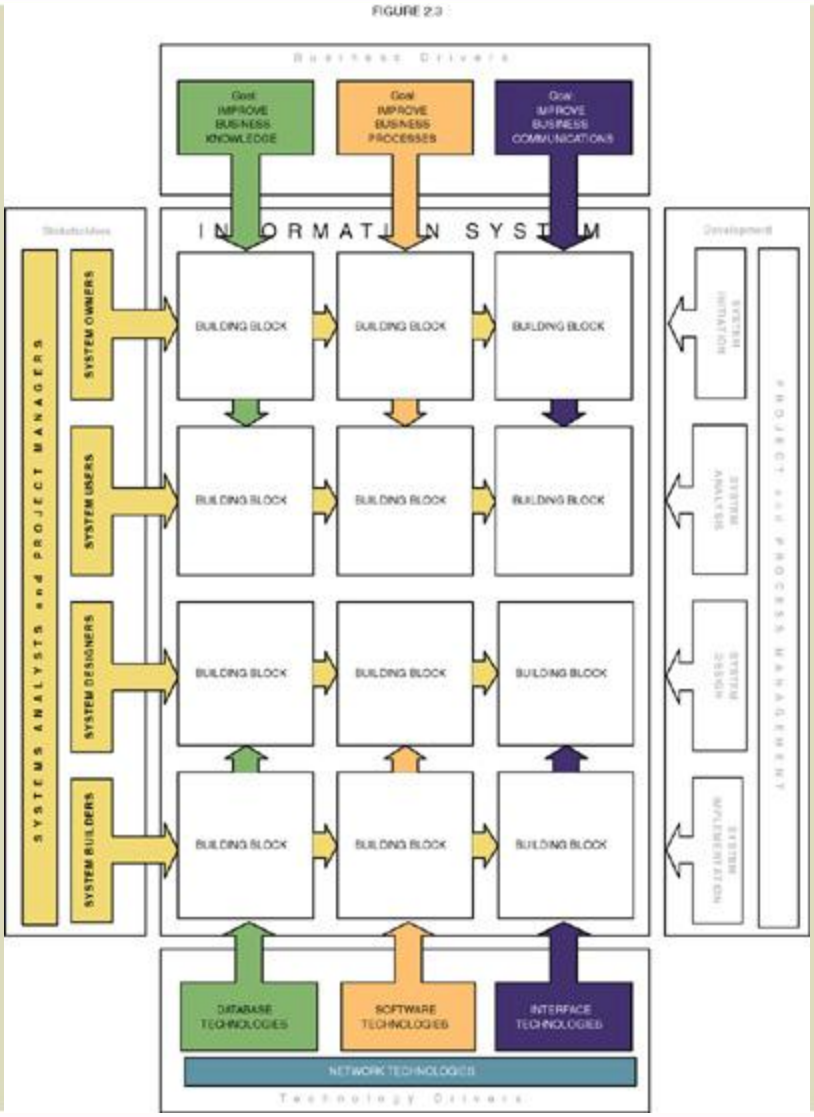
Technology Perspectives of System Designers & System Builders

- Database technologies that support business accumulation and use of business knowledge
- Software technologies that automate and support business processes and services
- Interface technologies that support business communication and collaboration

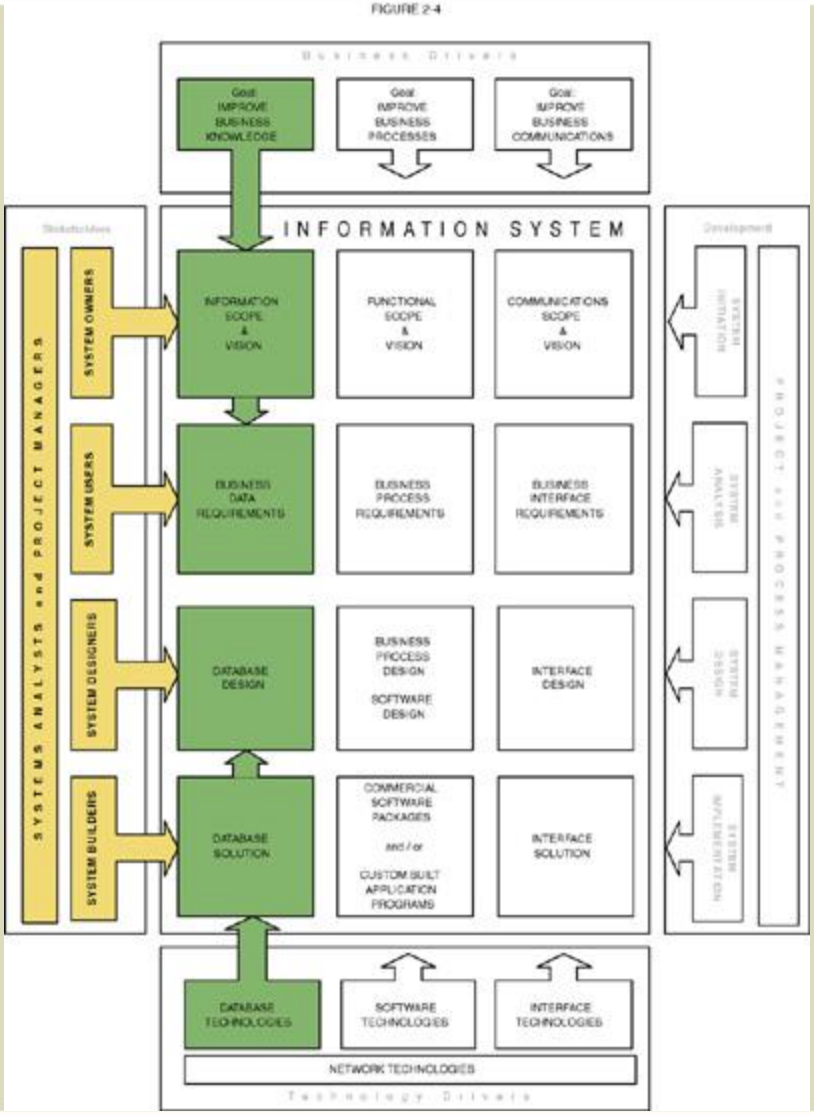
Focuses for Information Systems

- **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.

Information System Building Blocks



KNOWLEDGE Building Blocks



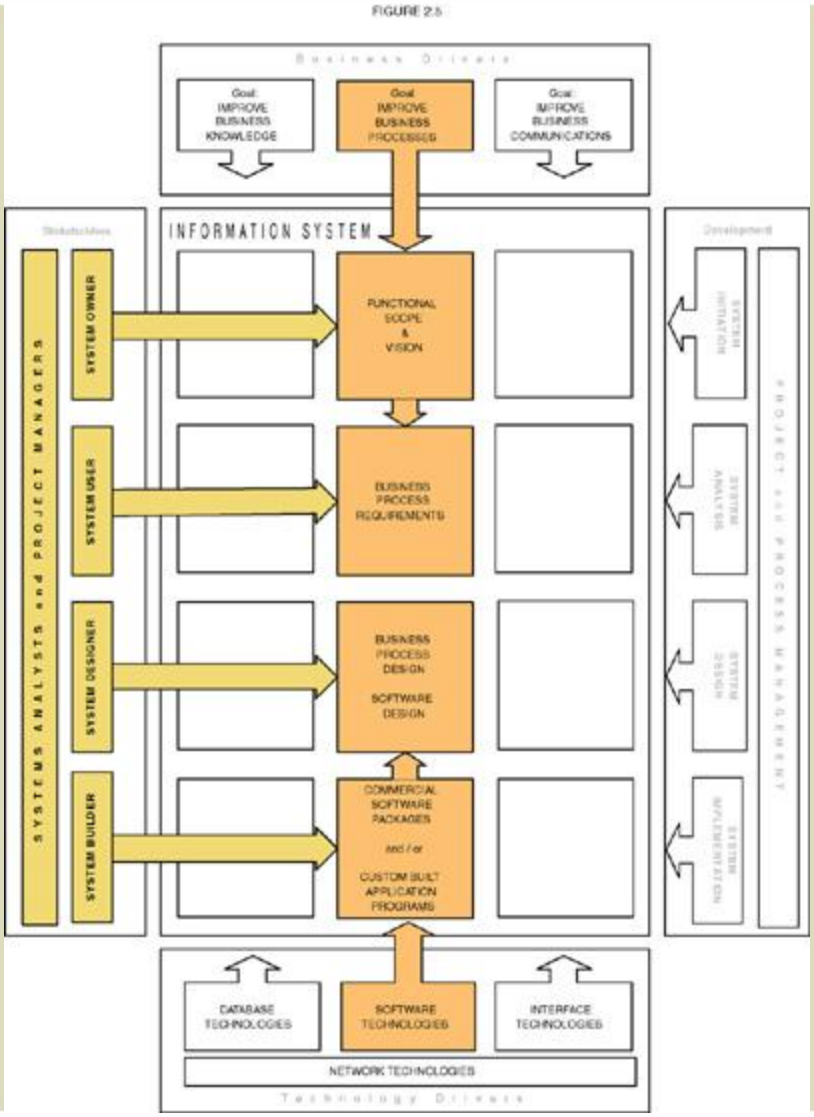
Views of KNOWLEDGE

- System owners' view
  - Interested not in raw data but in information that adds new business knowledge and helps managers make decisions.
  - Business entities and business rules.
- System users' view
  - View data as something recorded on forms, stored in file cabinets, recorded in books and spreadsheets, or stored on computer.
  - Focus on business issues as they pertain to data.
  - **Data requirement** – a representation of users' data in terms of entities, attributes, relationships, and rules independent of data technology.

Views of KNOWLEDGE (cont.)

- 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

PROCESS Building Blocks



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.

Views of PROCESS (cont.)

- 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.
  - **Procedure** – a step-by-step set of instructions and logic for accomplishing a business process.
  - **Work flow** – the flow of transactions through business processes to ensure appropriate checks and approvals are implemented.

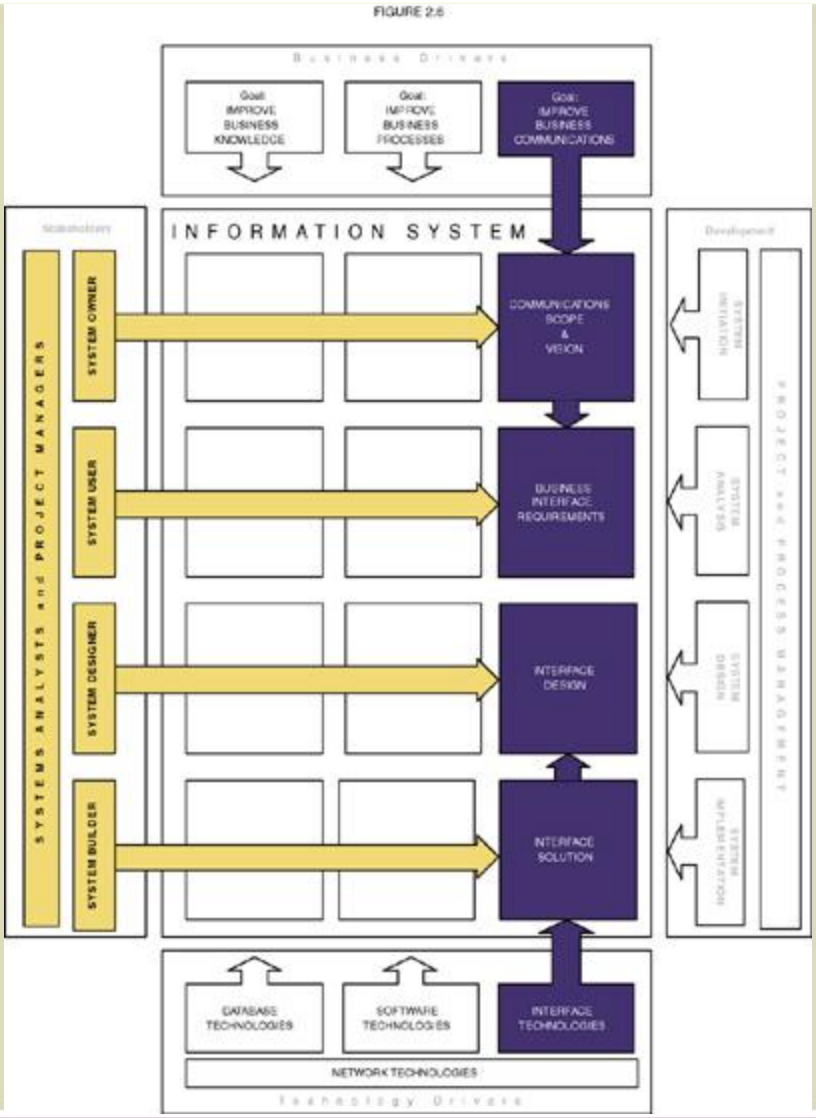
Views of PROCESS (cont.)

- 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.

Views of PROCESS (cont.)

- 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.

COMMUNICATION Building Blocks



Views of COMMUNICATION

- System owners' view
  - 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.

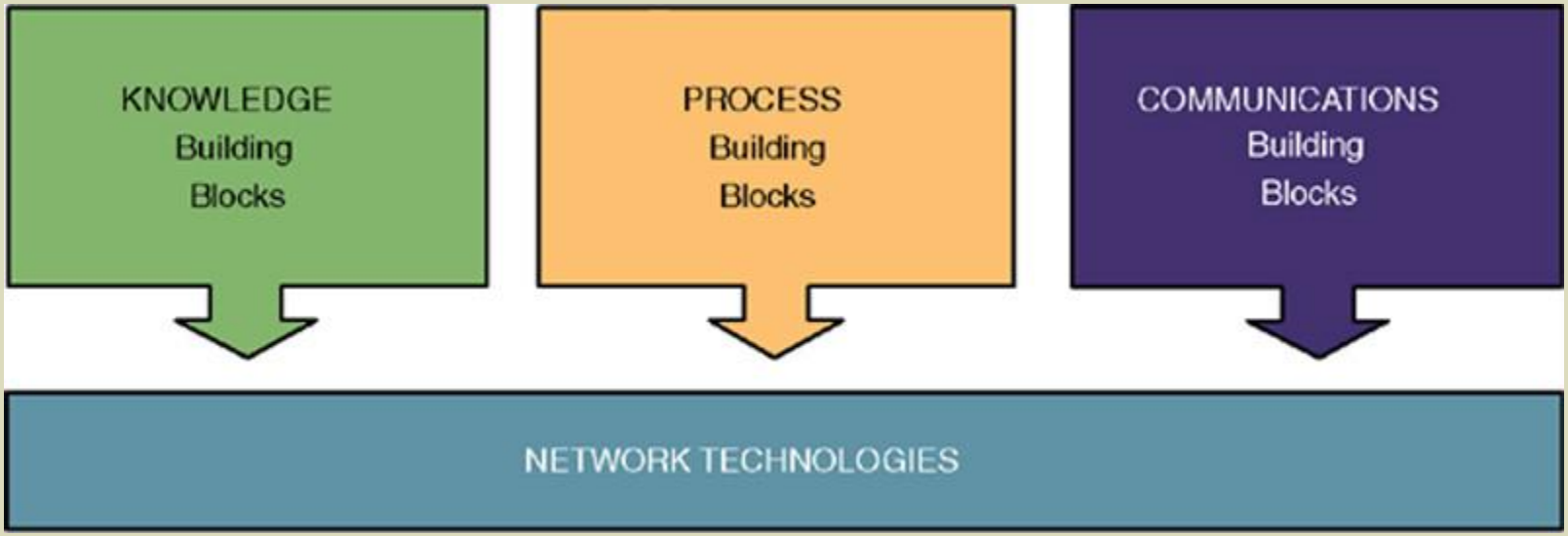
Views of COMMUNICATION (cont.)

- System designers' view
  - Concerned with the technical design of both the user and the system-to-system communication interfaces.
  - **Interface specifications** – technical designs that document how system users are to interact with a system and how a system interacts with other systems.
  - **User dialogue** – a specification of how the user moves from window to window or page to page, interacting with the application programs to perform useful work.

Views of COMMUNICATION (cont.)

- System builders' view
  - Concerned with the construction, installation, testing and implementation of user and system-to-system interface solutions.
  - **Middleware** – utility software that allows application software and systems software that utilize differing technologies to interoperate.

Network Technologies and the IS Building Blocks



Clean-layering approach allows any one building block to be replaced with another while having little or no impact on the other building blocks