Systems Analysis and design - 2

Slide Adapted from:

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(Modern Systems Analysis and Design, 7th Edition, **Pearson Prentice Hall)**

Chapter 12

Designing Distributed and Internet Systems

Learning Objectives

- ✓ Define the key terms: client/server architecture, local area network LAN, distributed database, and middleware.
- ✓ Distinguish between file server and client/server environments and contrast how each is used in a LAN.
- ✓ Describe alternative designs for distributed systems and their trade-offs.
- ✓ Describe how standards shape the design of Internet-based systems.

Learning Objectives (Cont.)

- ✓ Describe options for ensuring Internet design consistency.
- ✓ Describe how site management issues can influence customer loyalty and trustworthiness as well as system security.
- ✓ Discuss issues related to managing online data, including context development, online transaction processing (OLTP), online analytical processing (OLAP), and data warehousing.

Designing Distributed and Internet Systems

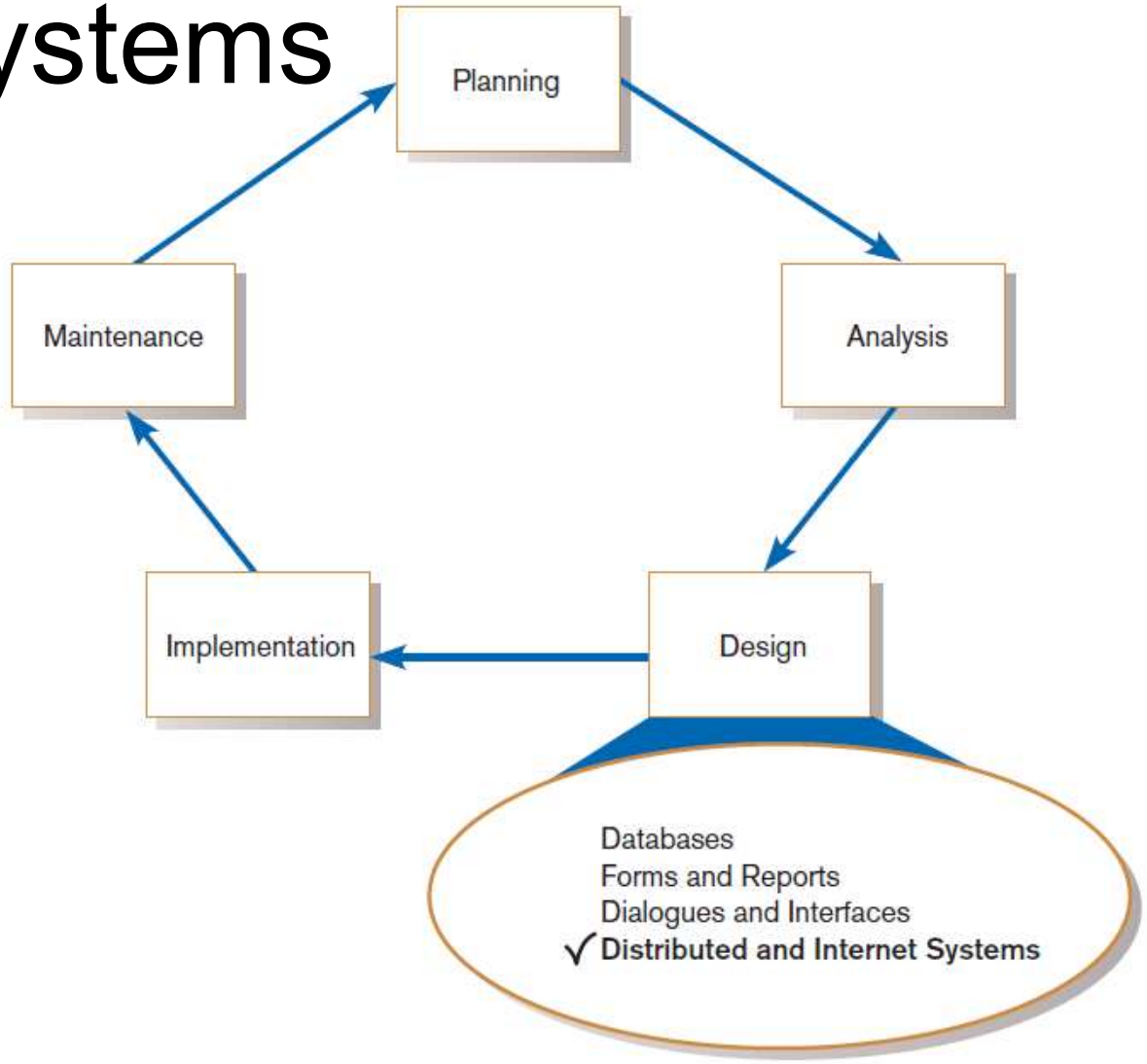


FIGURE 12-1
Systems development life cycle (SDLC)

The Process of Designing Distributed and Internet Systems

- This process is similar to designing single-location systems.
- Due to multi-location deployment, numerous design issues must be considered.
- There is more opportunity for failure due to number of components.
- Main issues involve ensuring reliability, availability, survivability, performance.

Deliverables and Outcome

- Document that consolidates system design information:
  - Description of each site
  - Description of data usage for each site
  - Description of business process for each site
  - Contrasts of alternative IS architectures for site, data and processing needs of each site

Designing Distributed Systems

- Distributed systems use:
  - LAN-based file server architecture.
  - Client/server architecture.

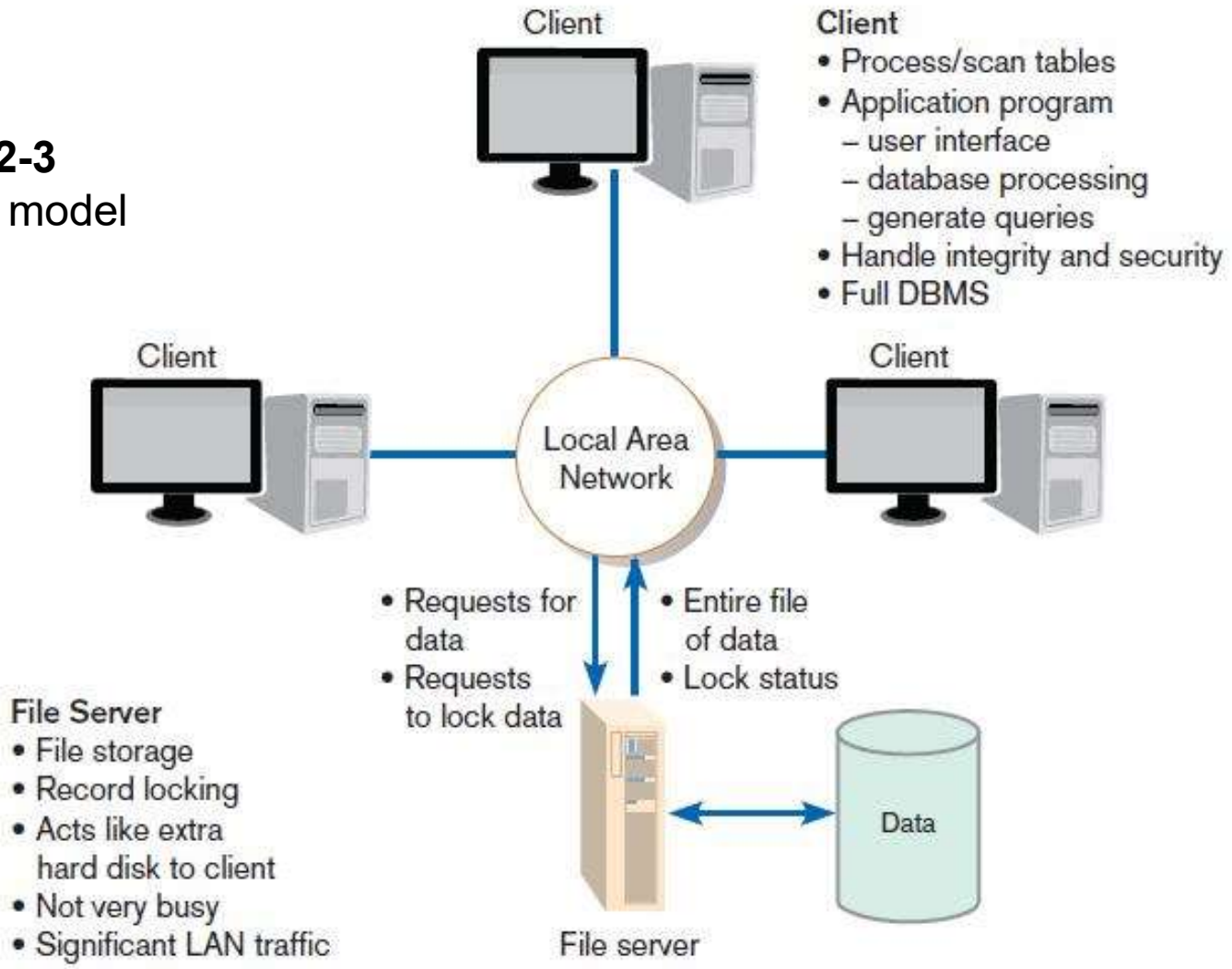
Designing Systems for Local Area Networks (LANs)

- **LAN**: the cabling, hardware, and software used to connect workstations, computers, and file servers located in a confined geographical area
  - Typically within one building or campus

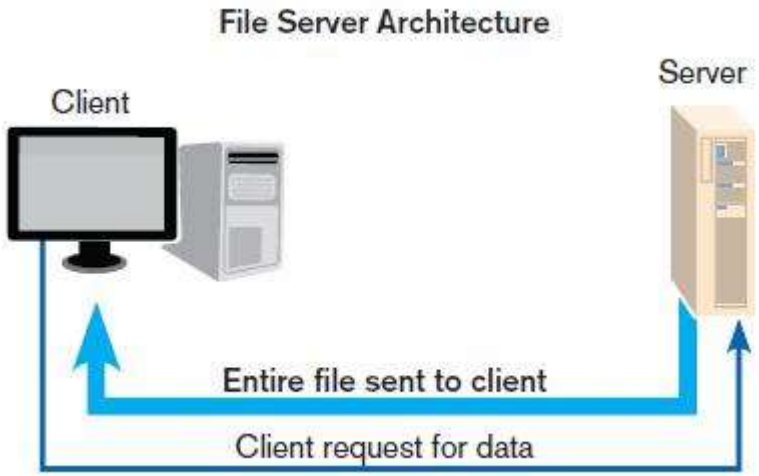
File Servers

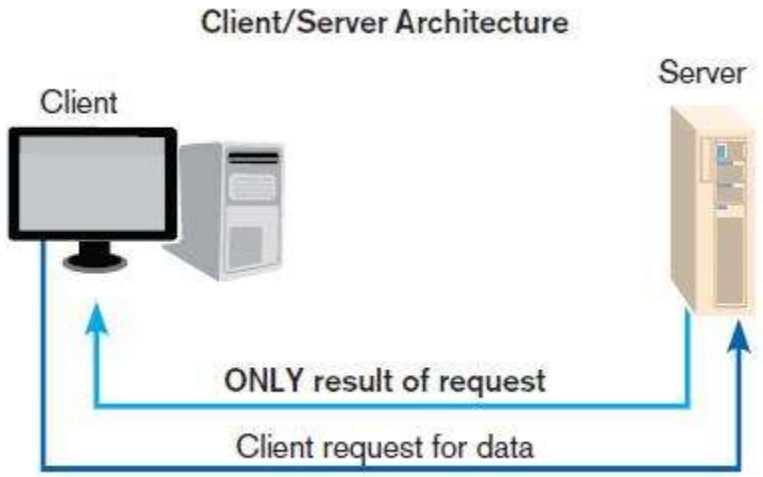
- **File server**: a device that manages file operations and is shared by each client PC attached to a LAN

FIGURE 12-3
File server model



File Server vs. Client/Server





Designing Systems for a Client/Server Architecture (Cont.)

- **Application program interface** (**API**): software building blocks that are used to ensure that common system capabilities, such as user interfaces and printing, as well as modules are standardized to facilitate data exchange between clients and servers
  - Common API interface can be used by any kind of DBMS (MySQL, Sybase, or Oracle)

FIGURE 12-8
Thin clients used to access the Internet

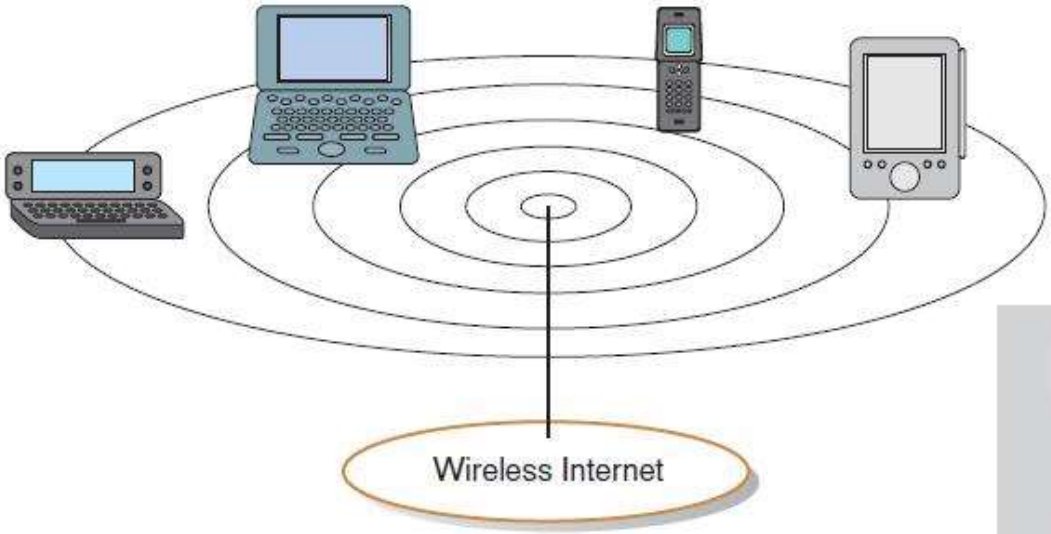


FIGURE 12-9
Thin clients typically have a limited screen size.
(*Source:* tele52 / Shutterstock)

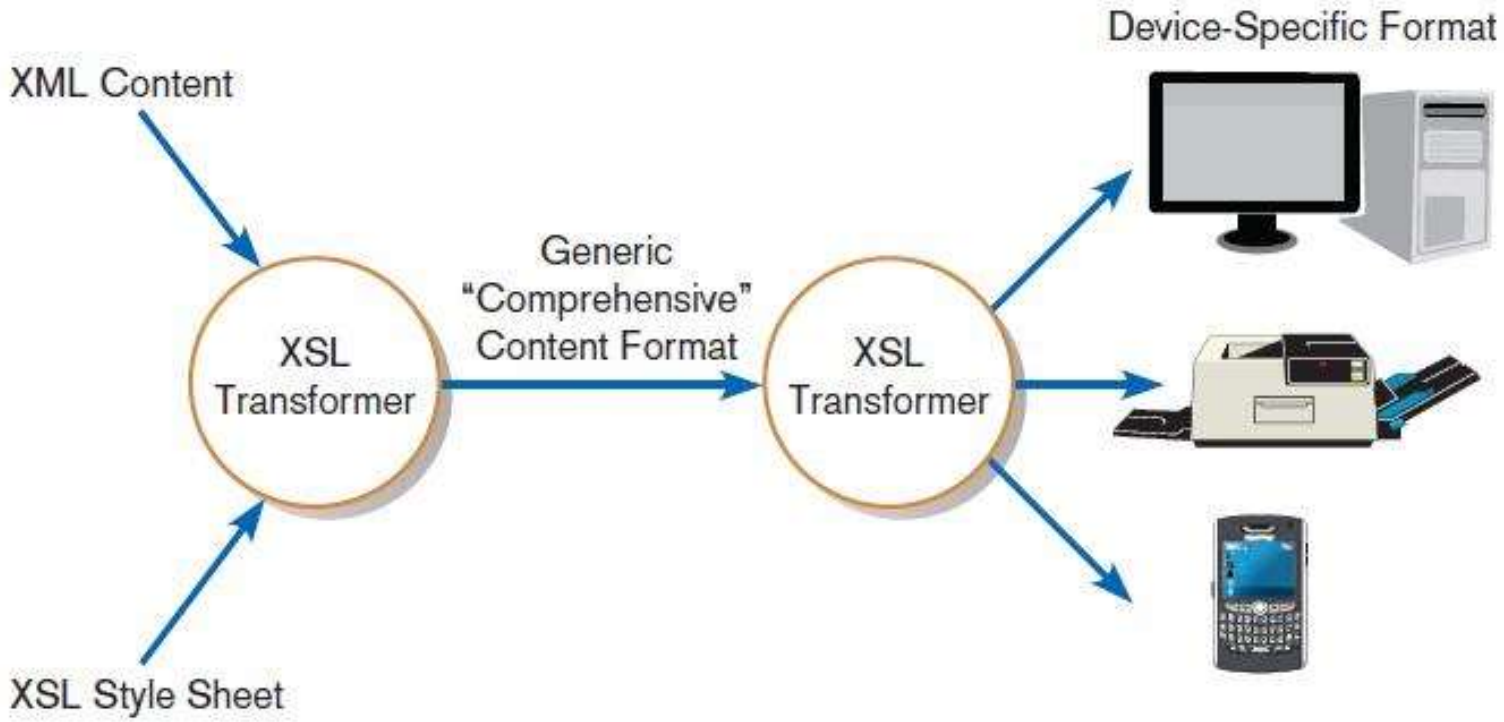


FIGURE 12-11
Combining XML data with XSL style sheet to format content

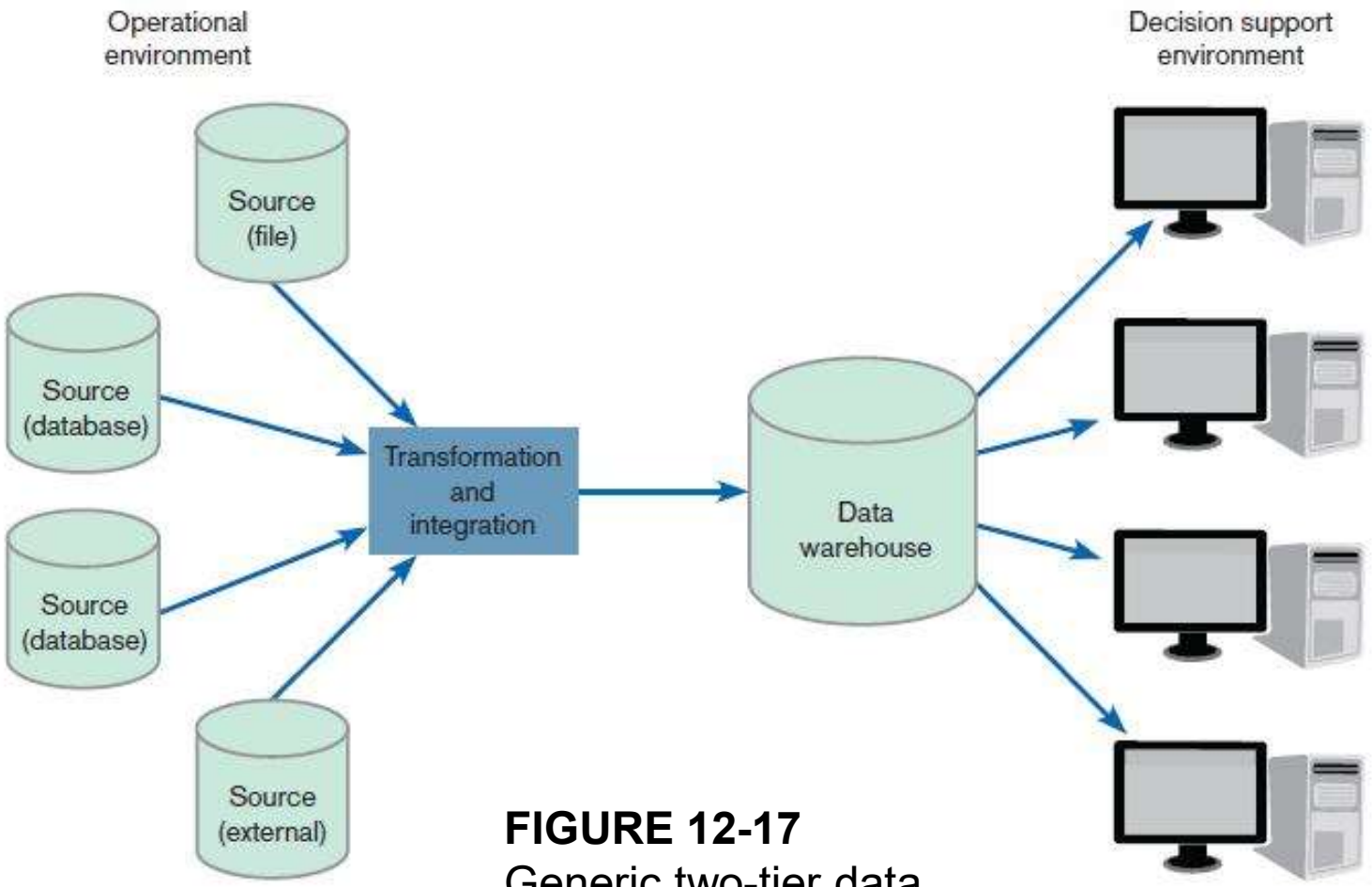


FIGURE 12-17
Generic two-tier data warehouse architecture

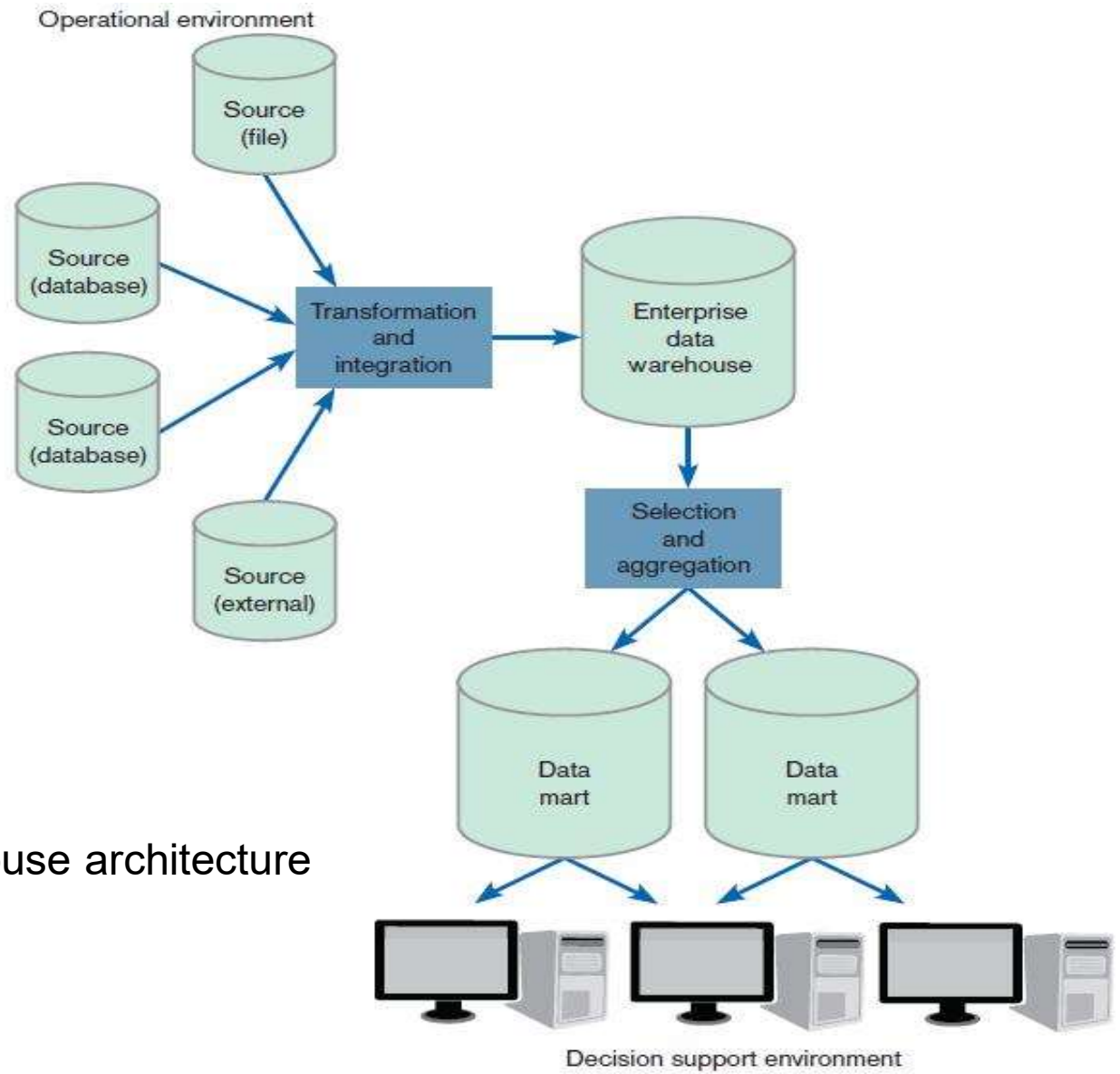


FIGURE 12-18
Three-tier warehouse architecture

Summary

- In this chapter you learned how to:
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