Modern Systems Analysis and Design

Chapter 2

The Origins of Software

Learning Objectives

- ✓ Explain **outsourcing**.
- ✓ Describe **six different sources of software**.
- ✓ Discuss how to **evaluate off-the-shelf software**.
- ✓ Explain reuse and **its role in software development**.

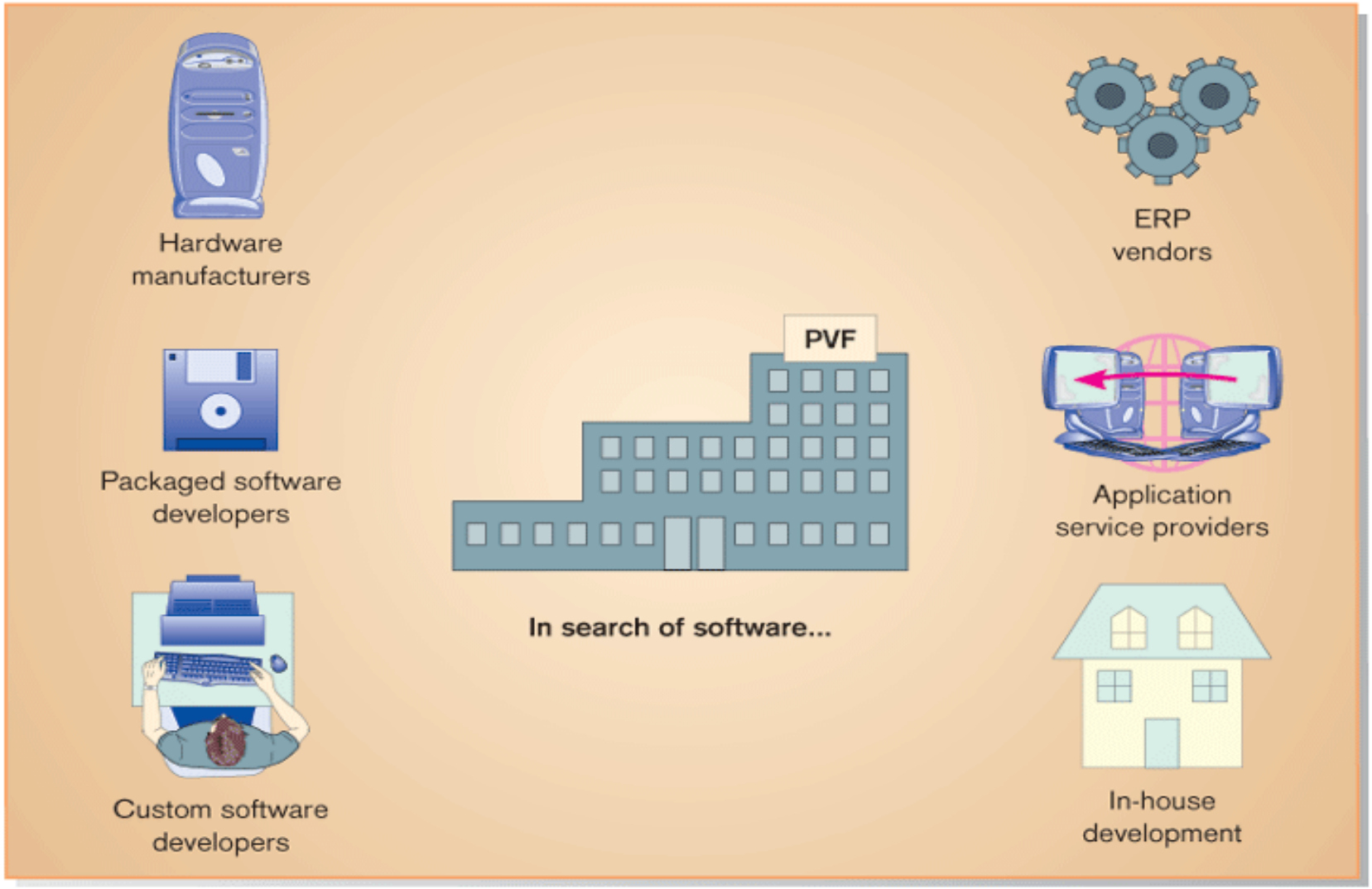
System Acquisition: Outsourcing

- Turning over responsibility of some or all of an **organization's information systems applications and operations** to an **outside firm**

- Reasons to outsource
  - **Cost**-effective
  - Take advantage of **economies of scale**
  - Free up **internal resources**
  - **Reduce time** to market
  - Increase **process efficiencies**
  - System development is a **non-core activity** for the organization

Sources of Application Software

Figure 2-1 Sources of application software



Hardware Manufacturers

- **IBM** is the leader in software sales and services.
- **Hardware manufacturers** tend to **focus on system software and utilities.**

Packaged Software Producers

- **Microsoft** is the leader in **prepackaged software production**.
- Prepackaged software is **off-the-shelf** software.
- Often, prepackaged software is turnkey software (i.e. **not customizable**).

Criteria for Choosing Off-the-Shelf Software

- Cost
- Functionality
- Vendor support
- Viability of vendor
- Flexibility
- Documentation
- Response time
- Ease of installation

Custom Software Producers

- Firms like **Accenture** and **EDS** are leading custom **software producers**.
- Consulting firms **develop software to meet the client's specific requirements**.
- Consulting firms are usually called when the client company **does not have in-house expertise or manpower available to develop the system**.

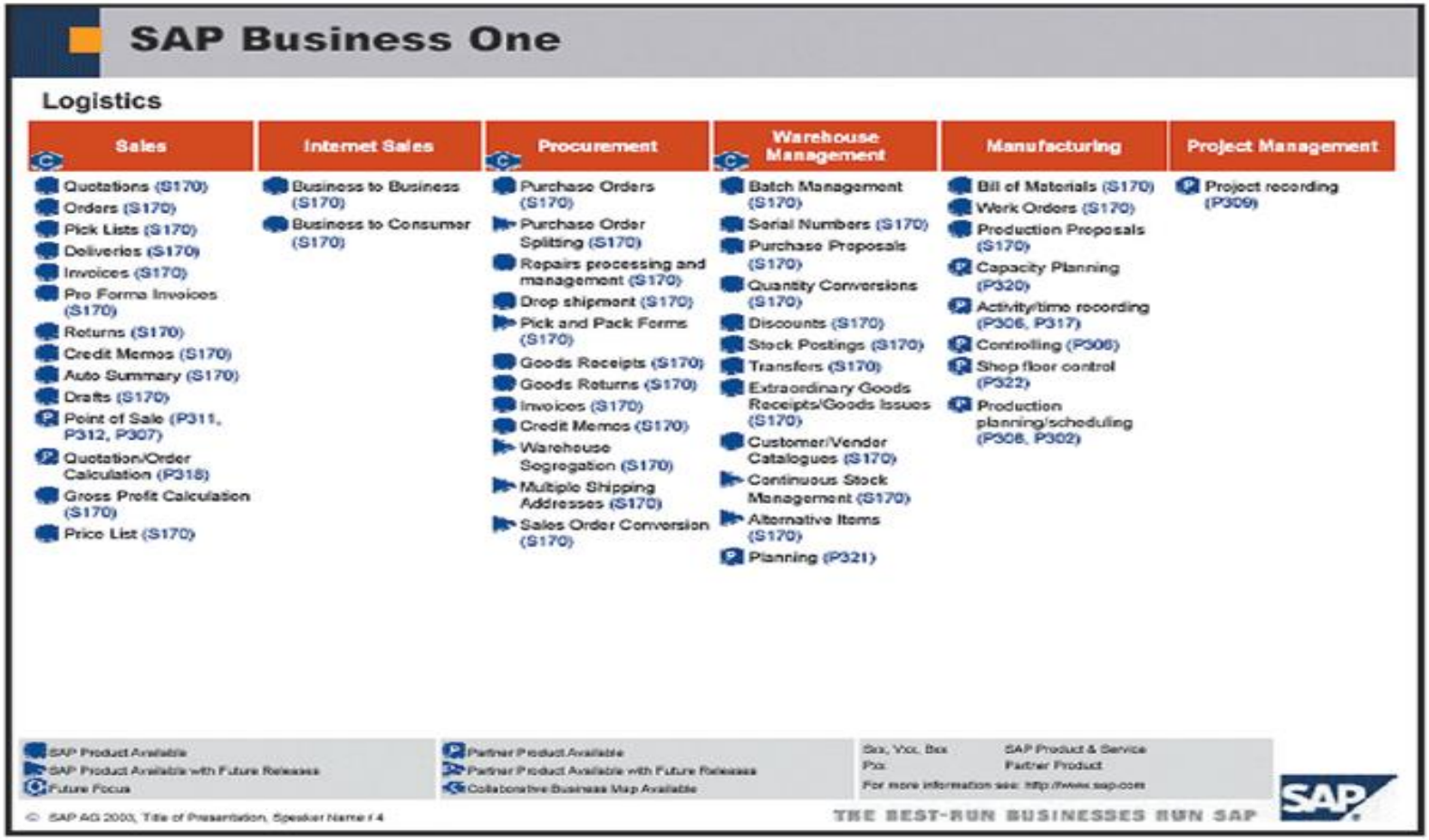
Enterprise Solutions Software

- ***Enterprise Resource Planning (ERP)*** systems that **integrate individual traditional business functions** into modules enabling a single seamless transaction to cut across functional boundaries.

- **SAP AG** is the leading vendor of **ERP systems**.

ERP System Example

Figure 2-3 Logistics applications available in SAP Business One



Source: SAP Business One Solution Map, edition 6.5, used by permission of SAP AG, all rights reserved.

Application Service Providers

- **ASP**: an organization that **hosts and runs computer applications for other companies**, typically on a **per-use or license basis**.

In-House Development

- If **sufficient system development expertise** with the chosen platform exists in-house, then some or all of the system can be developed by the organization's own staff.

- Often, there are a **variety of sources used**, with **in-house staff** playing a role as well as **consultants or ERP vendors**.

Table 2-3 Comparison of Six Different Sources of Software Components

Producers	*Source of Application Software?*	*When to Go to This Type of Organization for Software*	*Internal Staffing Requirements*
Hardware manufacturers	Generally not	For system software and utilities	Varies
Packaged software producers	Yes	When supported task is generic	Some IS and user staff to define requirements and evaluate packages
Custom software producers	Yes	When task requires custom support and system can't be built internally	Internal staff may be needed, depending on application
Application service providers	Yes	When supported task is generic, or buying and installing the system locally would be too expensive, or for instant access to an application	Ideally, none
Enterprisewide solutions	Yes	For complete systems that have cross-functional boundaries	Some internal staff necessary, but mostly need consultants
In-house developers	Yes	When resources and staff are available and system must be built from scratch	Internal staff necessary, though staff size may vary

Validating Purchased Software Information

- Use a variety of information sources:
  - Vendor's proposal
  - Running software through a series of tests
  - Feedback from other users of the vendor's product
  - Independent software testing services
  - Articles in trade publications

What is an RFP?

- ***Request for Proposal***: a document provided to vendors to ask them to propose hardware and software products or services that will meet the requirements of a new information system.

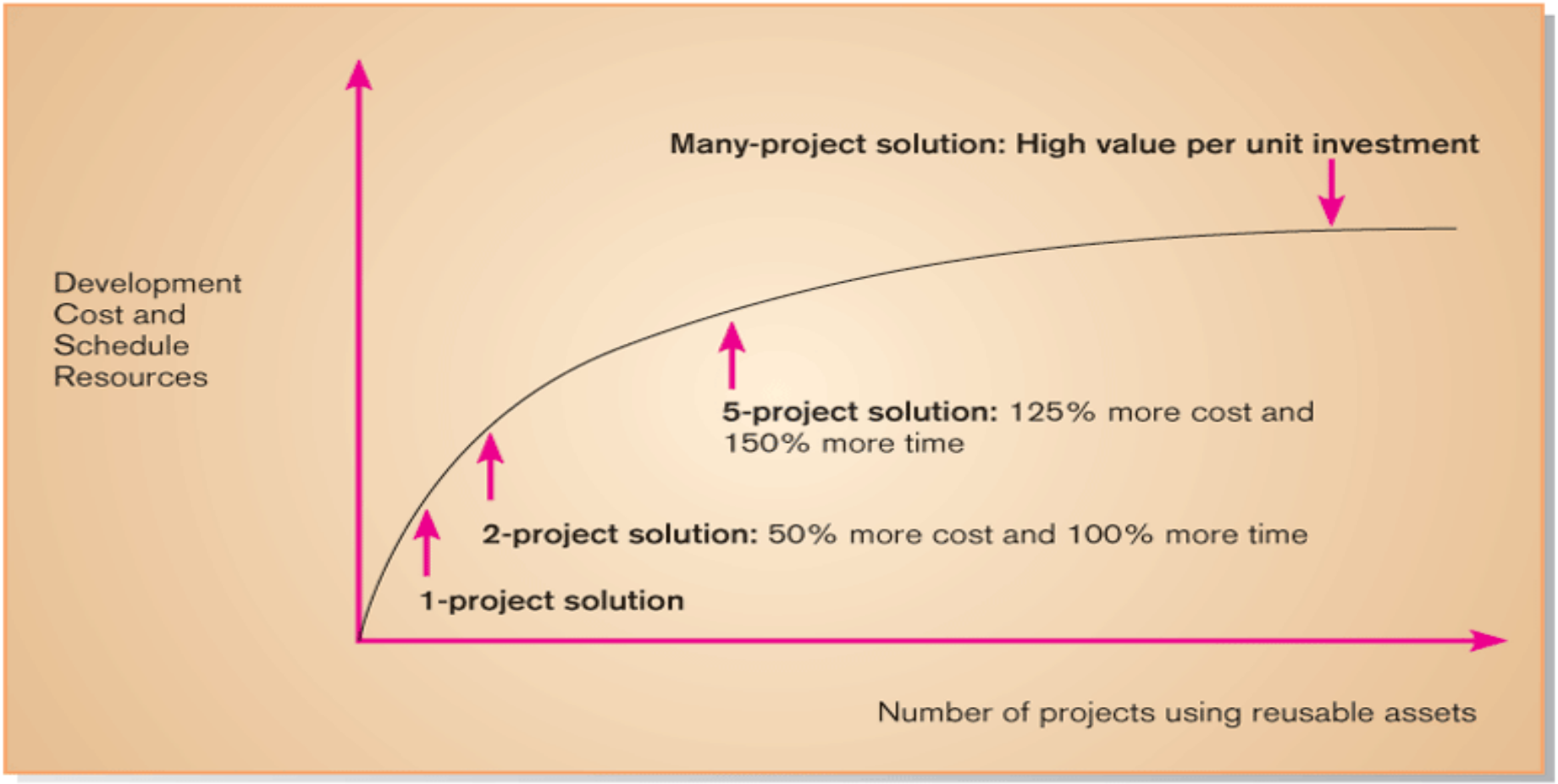
- Based on **vendor bids**, analyst selects best candidates.

Reuse

- The use of previously written software resources in new applications
- Primary enabling technologies:
  - **Object-oriented development**
    - Object class encapsulates data and behavior of common organizational entities (e.g. employees)
  - **Component-based development**
    - Components can be single objects or functional groupings of objects

Costs and Benefits of Reuse

Figure 2-4 Investments necessary to achieve reusable components



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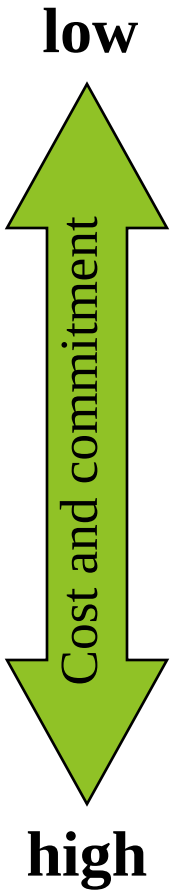
Approaches to Reuse



- ***Ad hoc:*** individual, unplanned use
- ***Facilitated:*** use informally managed and disseminated by expert guru evangelists
- ***Managed:*** organizationally enforced reuse policies and practices
- ***Designed:*** reusable components developed and maintained in-house

Summary

- In this chapter you learned how to:
  - ✓ Explain outsourcing.
  - ✓ Describe six different sources of software.
  - ✓ Discuss how to evaluate off-the-shelf software.
  - ✓ Explain reuse and its role in software development.