Systems Development Life Cycle

- The Analysis Phase

- Introduction to process modelling

What is the System Development Cycle?

What is an information system (IS)?

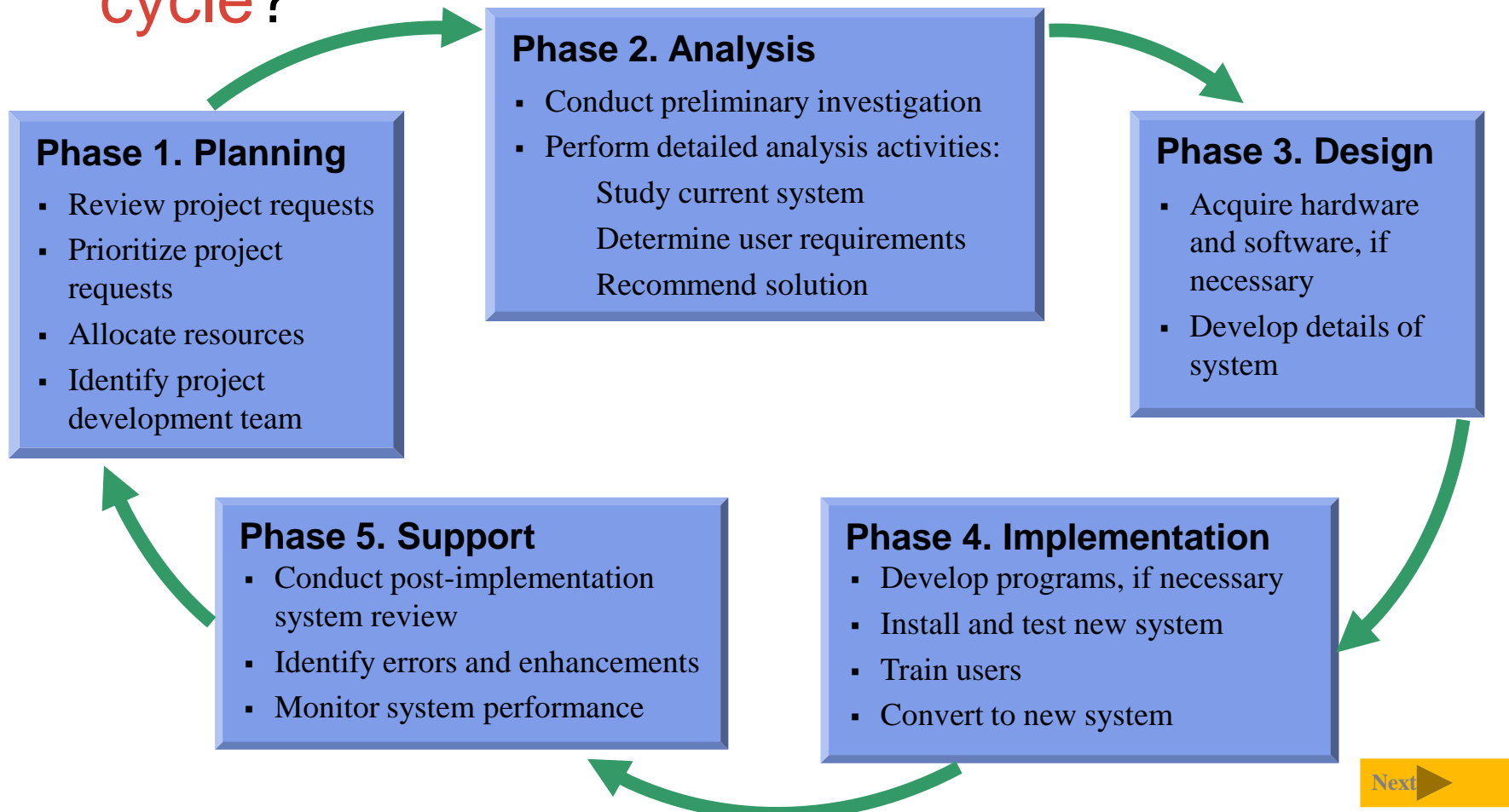Hardware, software, data, people, and procedures that work together to produce quality information

System—Set of components that interact to achieve common goal

Businesses use many types of systems

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What is the System Development Cycle?

What are the phases of the system development cycle?

Phase 1. Planning
- Review project requests
- Prioritize project requests
- Allocate resources
- Identify project development team

Phase 2. Analysis
- Conduct preliminary investigation
- Perform detailed analysis activities:
  - Study current system
  - Determine user requirements
  - Recommend solution

Phase 3. Design
- Acquire hardware and software, if necessary
- Develop details of system

Phase 4. Implementation
- Develop programs, if necessary
- Install and test new system
- Train users
- Convert to new system

Phase 5. Support
- Conduct post-implementation system review
- Identify errors and enhancements
- Monitor system performance

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What is the System Development Cycle?

What are guidelines for system development?
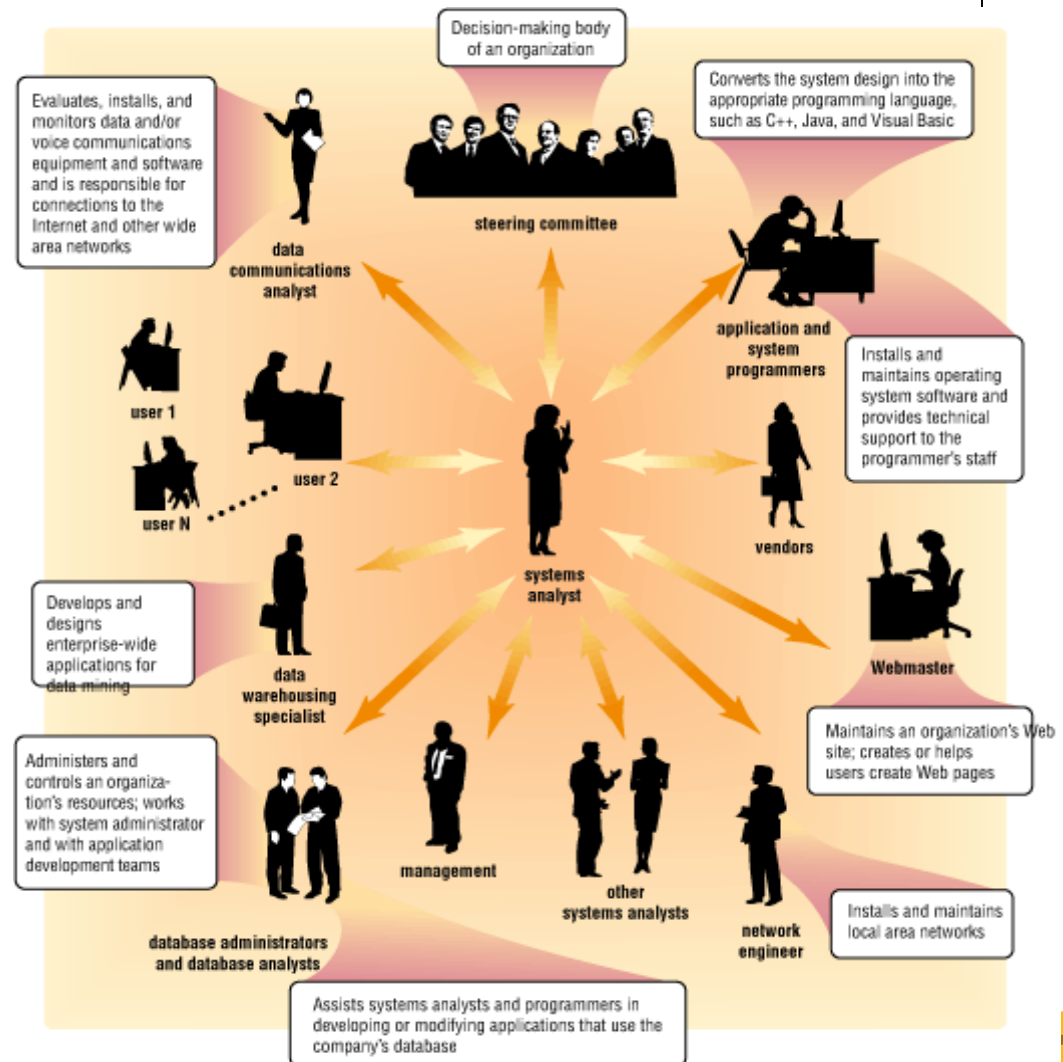
Arrange tasks into phases

Involve users (anyone for whom system is being built)

Develop clearly defined standards (procedures company expects employees to follow)

What is the System Development Cycle?

Who participates in the system development life cycle?

What is the System Development Cycle?

What is a systems analyst?

Responsible for designing and developing information system

Liaison between users and IT professionals

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What is the System Development Cycle?

What is the project team?

Formed to work on project from beginning to end

Consists of users, systems analyst, and other IT professionals

Project leader—one member of the team who manages and controls project budget and schedule

What is the System Development Cycle?

What is project management?

➢ **Process of planning, scheduling, and controlling activities during system development cycle**

➢ **Project leader** **identifies elements for project**

Goal, objectives, and expectations, collectively called scope	**Required activities**	**Time estimates for each activity**
Cost estimates for each activity	**Order of activities**	**Activities that can take place at same time**

What is the System Development Cycle?

What is a Gantt chart?

➢ **Popular tool used to plan and schedule time relationships among project activities**

ID	Task Name	Duration	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1	Planning	2w	1/20	2/1						
2	Analysis	12w		2/8			5/10			
3	Design	12w			3/20			6/15		
4	Implementation	3w						6/16		8/9

What is the System Development Cycle?

What is project management software?

➢ **Program (such as Microsoft Office Project 2003) used by project leaders to plan, schedule, and control projects**
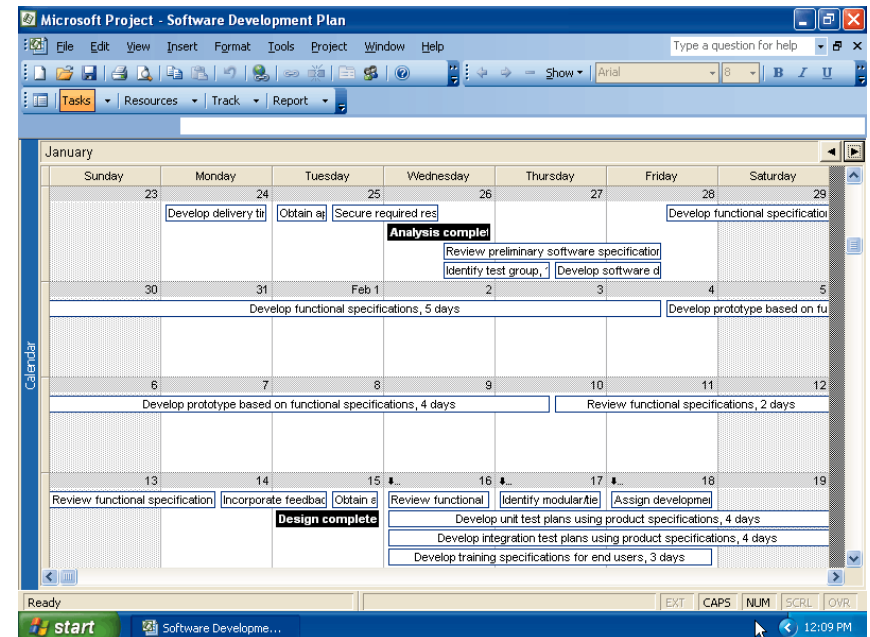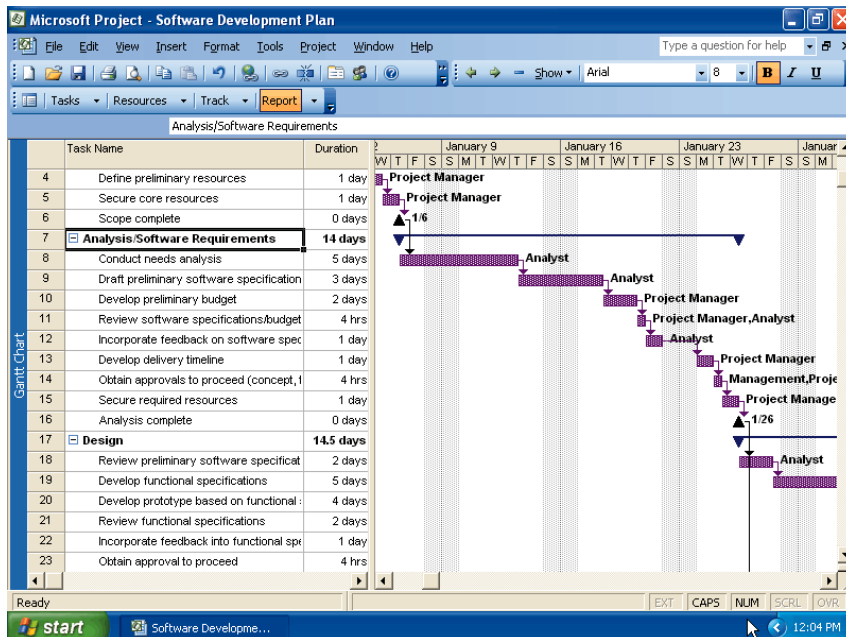
What is the System Development Cycle?

What is feasibility?

Measure of how suitable system development will be to the company

Four feasibility tests:

Operational feasibility

Schedule feasibility

Economic feasibility (also called cost/benefit feasibility)

Technical feasibility
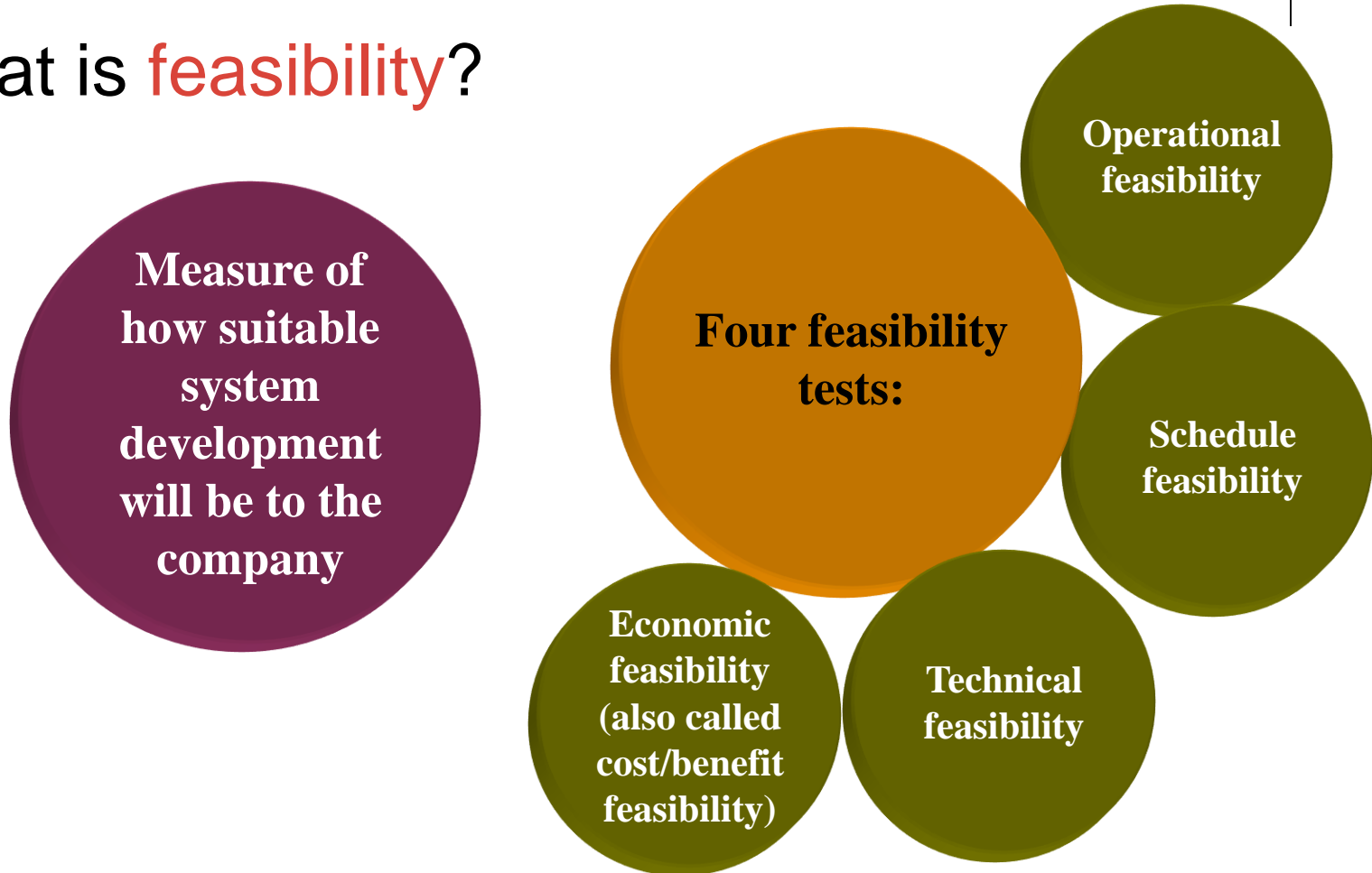
What is the System Development Cycle?

What is documentation?

Collection and summarization of data and information

Includes reports, diagrams, programs, and other deliverables

Project notebook contains all documentation for single project

What is the System Development Cycle?

What are six data and information gathering techniques?

➢ **Review documentation**

➢ **Observe**

➢ **Questionnaire**

➢ **Interview**

➢ **Joint-application design (JAD) session**

➢ **Research**

Next ▶

What Initiates the System Development Cycle?

What are some reasons to create or modify an information system?

To correct problem in existing system	**To improve existing system**
Outside group may mandate change	**Competition can lead to change**

What Initiates the System Development Cycle?
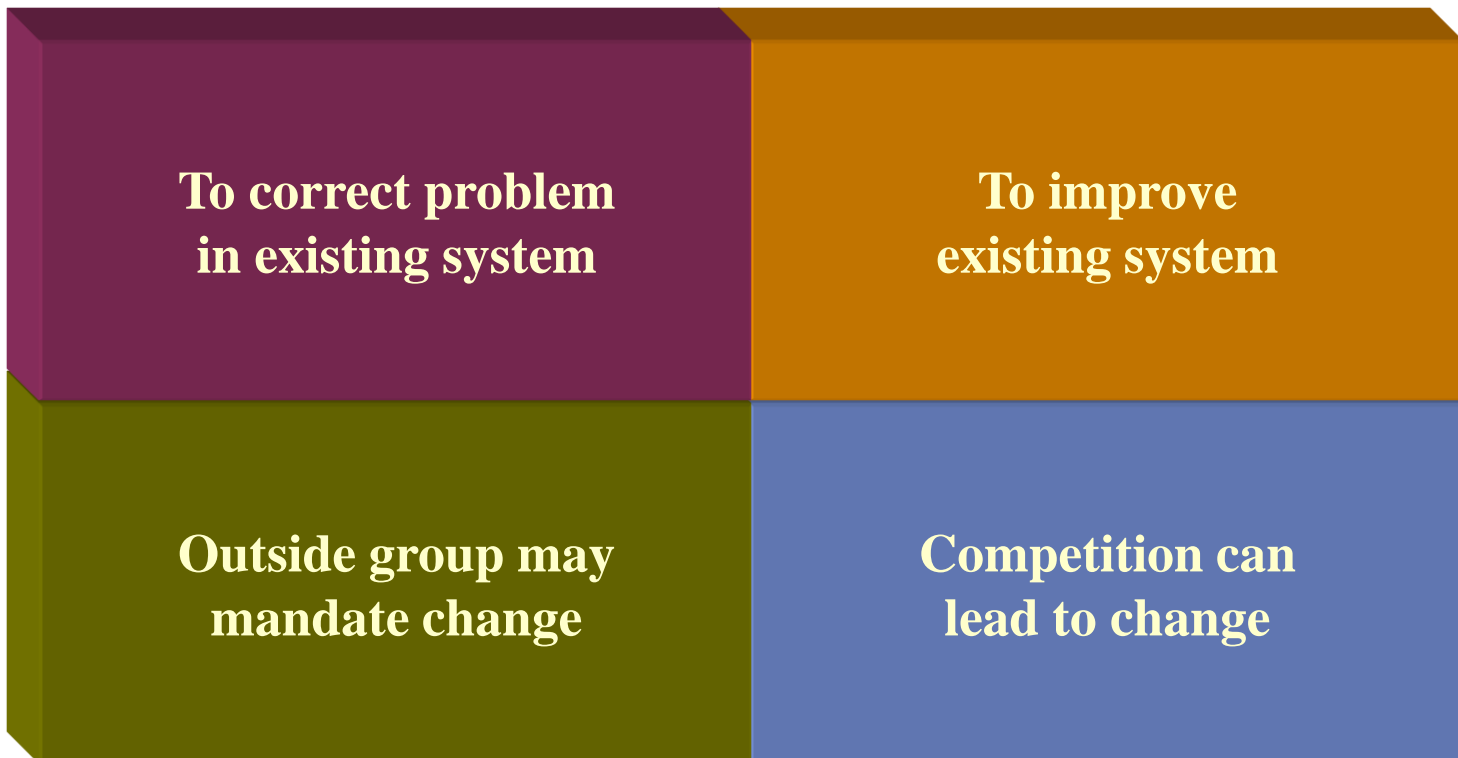
What is a request for system services?

➢ **Formal request for new or modified information system**

   ▪ Also called project request

Planning Phase

What is the planning phase?

Begins when steering committee receives project request

Steering committee—decision-making body for the company

Function of committee:

Review and approve project requests

Prioritize project requests

Allocate resources

Form project development team for each approved project

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Analysis Phase

What is the analysis phase?

Conduct preliminary investigation, also called feasibility study

Perform detailed analysis
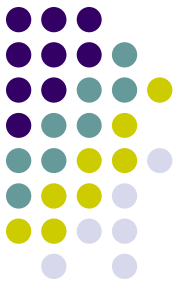
Analysis Phase

What is the preliminary investigation?

➢ **Determine exact nature of problem or improvement and whether it is worth pursuing**

■ Findings are presented in feasibility report, also known as a feasibility study

Analysis Phase

What is detailed analysis?

1. Study how current system works

2. Determine user's wants, needs, and requirements

3. Recommend solution

Sometimes called logical design
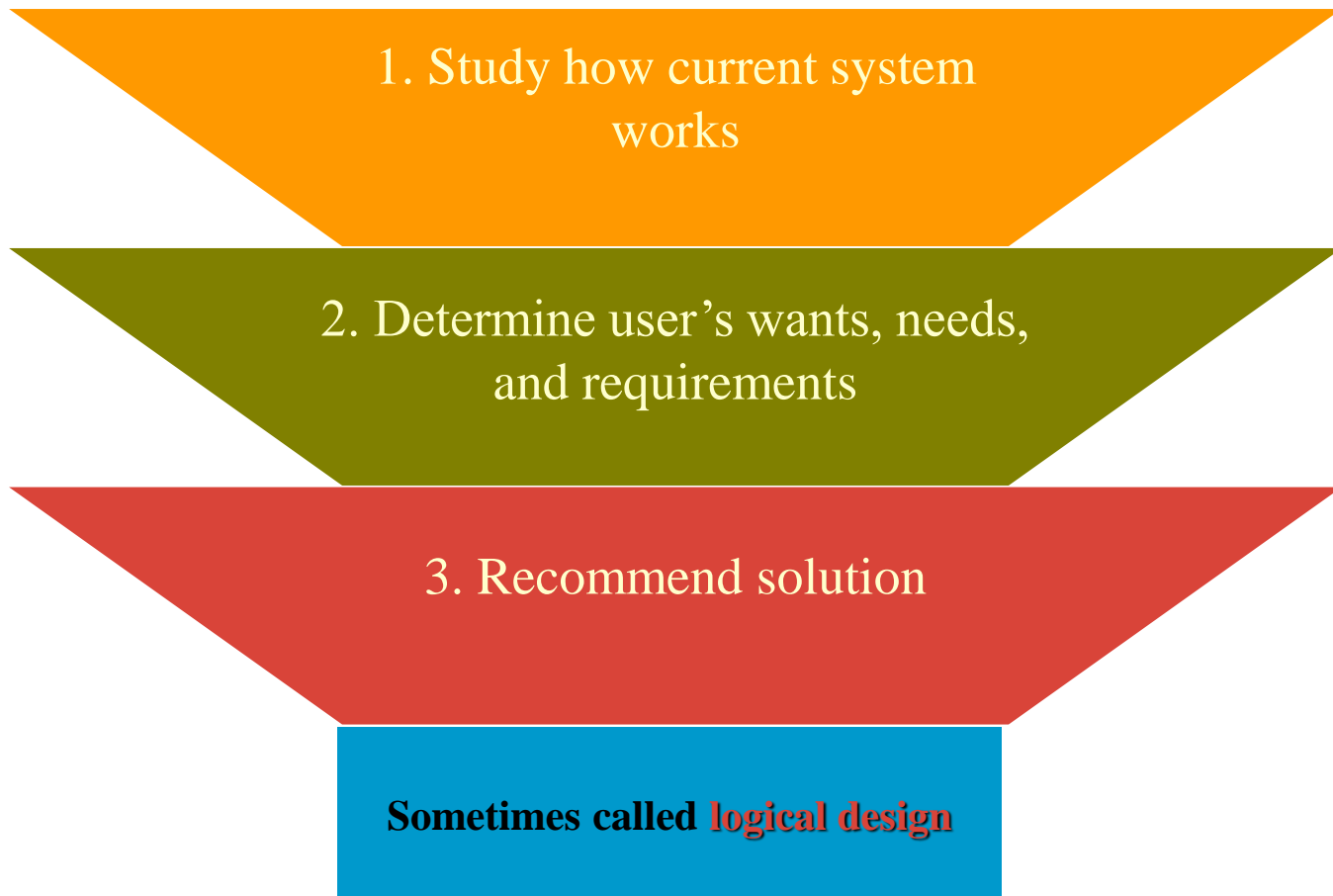
Analysis Phase

What is process modeling?

Technique that describes processes that transform inputs into outputs
Also called structured analysis and design

Three tools used for process modeling

Entity-relationship diagrams

Data flow diagrams

Project dictionary

Next ▶

Analysis Phase

What is an entity-relationship diagram (ERD)?

➢ **Tool that graphically shows connections between entities in system**
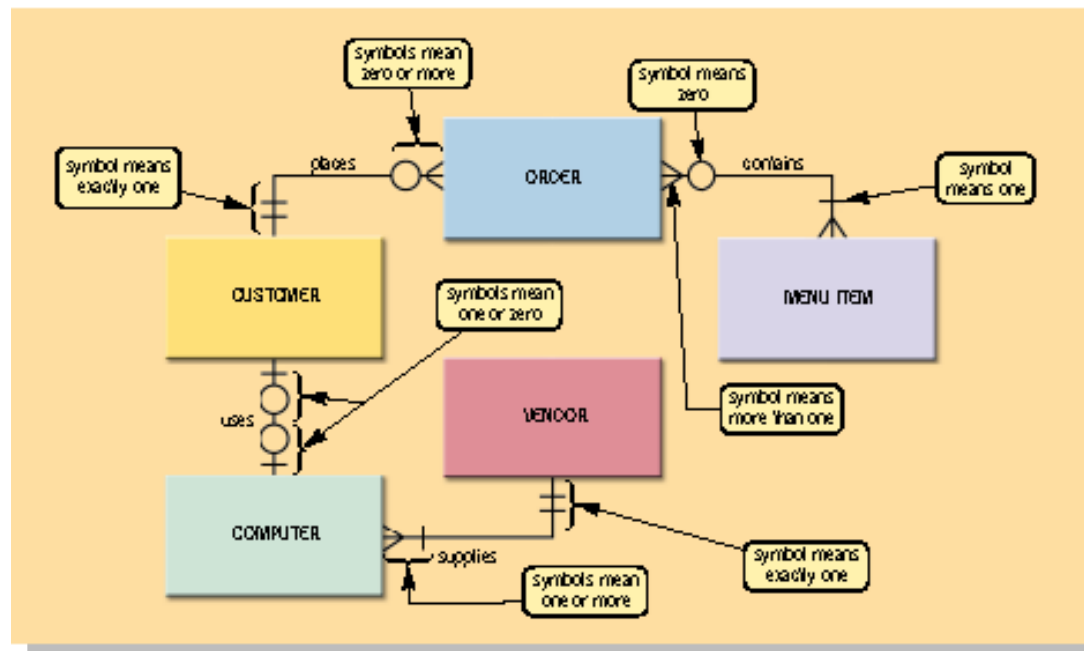
Analysis Phase

What is a data flow diagram (DFD)?

➤ **Tool that graphically shows flow of data in system**
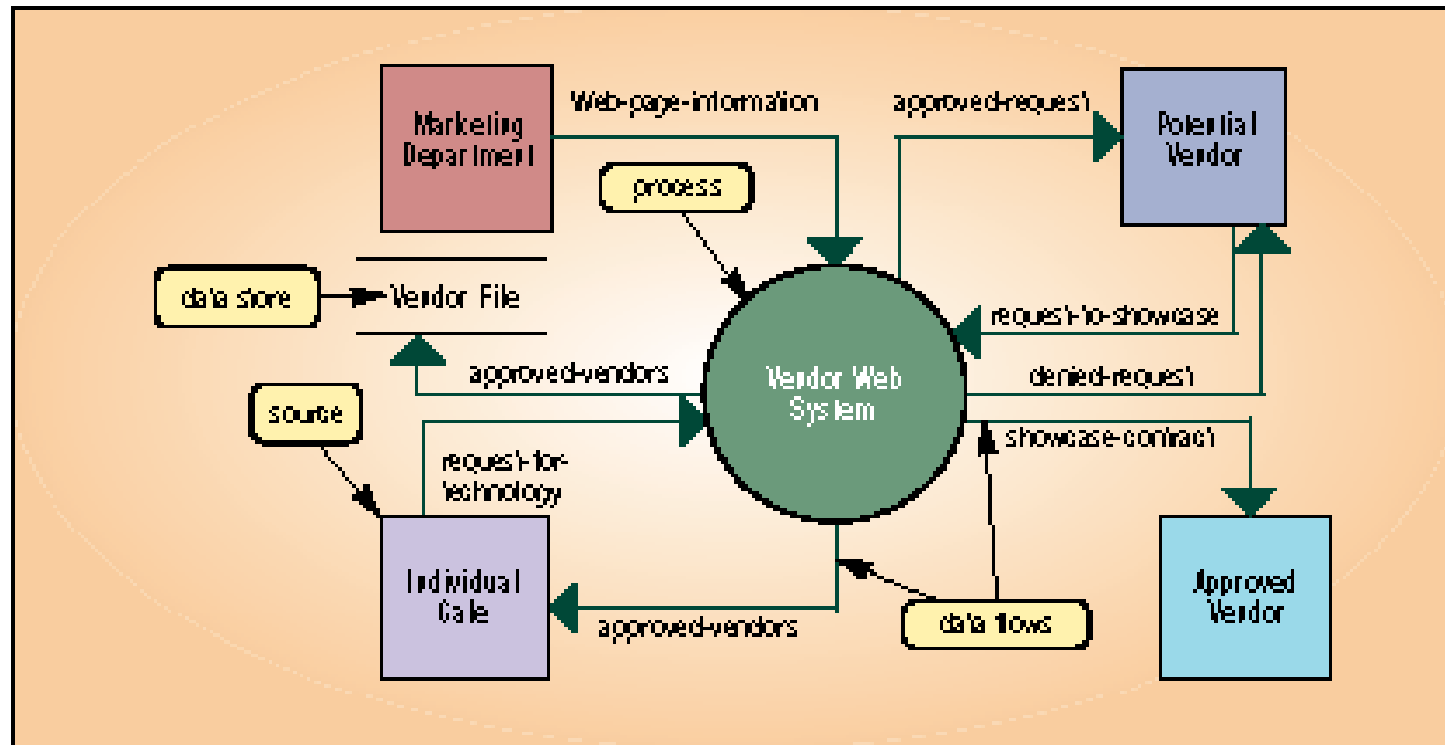
Analysis Phase

What is a project dictionary?

Contains all the documentation and deliverables of project	Helps keep track of huge amount of details in system	Variety of techniques to enter items in project dictionary

Structured English

Decision tables

Decision trees

Data dictionary

Next ▶

Analysis Phase

What is Structured English?

➢ **Used to explain details of process in project dictionary**

UPLOADING VENDOR INFORMATION

For each item containing vendor information, perform the following steps:

    If the item is not a computer file then

        Use the scanner to convert it into a file format.

    Copy the file into the Vendor Information folder on the hard disk.

Zip all new files in the Vendor Information folder into a single file.

Save the zipped file in a Web folder.

E-mail the Webmaster with the name of the zipped file.

Analysis Phase

What is a decision table?

➢ **Lists variety of conditions and actions that correspond to each condition**

	1	2	3	4	5	6	7	8
Background check results (S = Satisfactory, U = Unsatisfactory)	S	S	S	S	U	U	U	U
References furnished?	Y	Y	N	N	Y	Y	N	N
Passed credit check?	Y	N	Y	N	Y	N	Y	N
Vendor approved	X							
Vendor not approved		X			X	X	X	X
Waiting for additional information			X	X				

Analysis Phase

What is a decision tree?

➢ **Shows conditions and actions graphically**
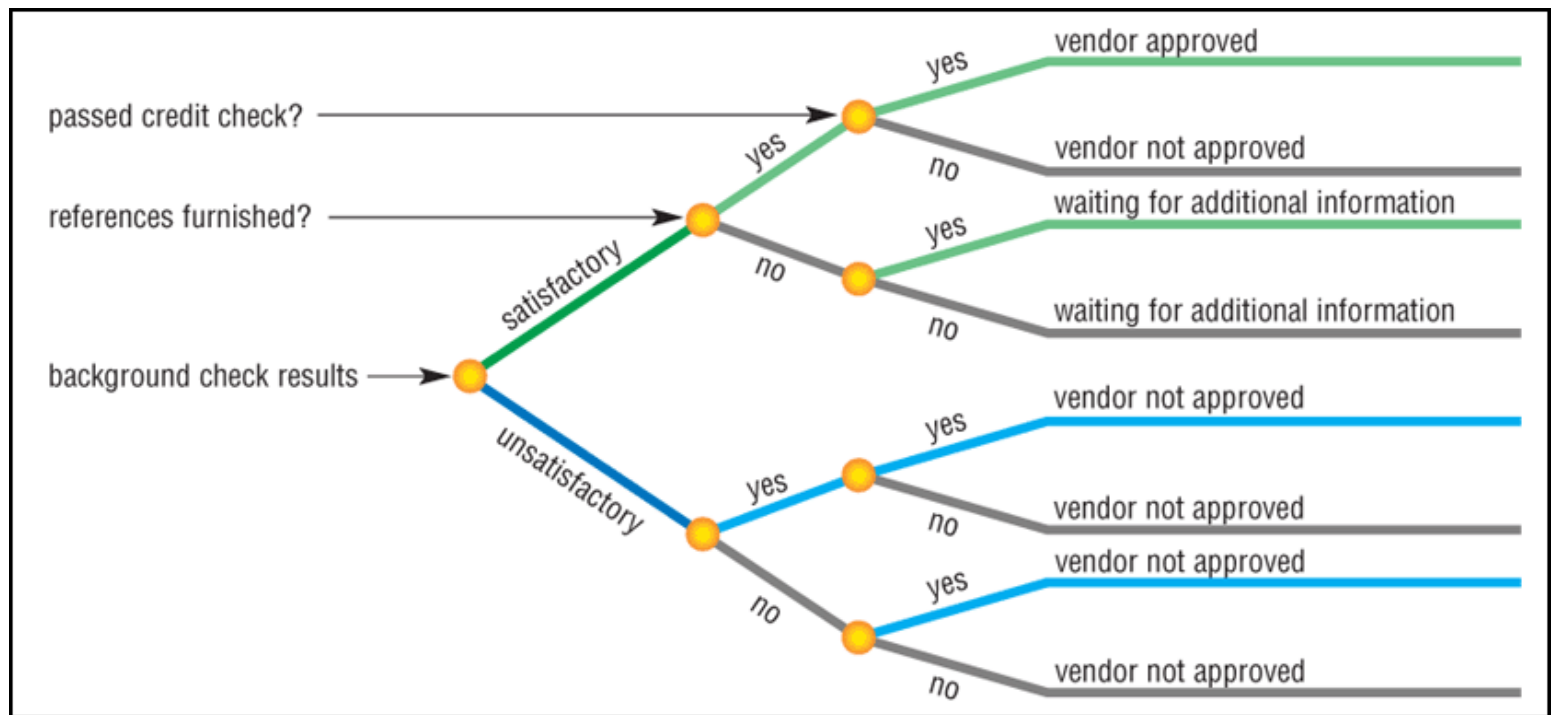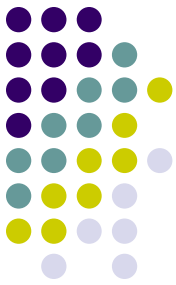
Analysis Phase

What is a data dictionary?

➢ **Stores name, description, and other details about each data item**

Date: 12/29/2006   Project: **WEB STOP CAFE**   Page: 11
Time: 10:36:28 AM

Detailed Listing -- Alphabetically
All Entries -- Data Flow Diagrams

Vendor ID   Data Element
Vendor File::Vendor ID
    Description:
        A unique identification number assigned to each vendor.
    Alias:
        Vendor Code
    Values & Meanings:
        Required element
        Cannot be blank
        May not be duplicated
    Data element attributes
        Storage Type: Char
        Length: 4
        Display Format: AAAA
        Null Type: NotNull
    Location:
        File -->   Vendor File
    Date Last Altered: 12/29   *Date Created:* 12/29

Analysis Phase

What is object modeling?

Combines data with the processes that act on data into single unit called an object

Object—an item that can contain both data and procedures that read or manipulate the data

Sometimes called object-oriented (OO) analysis and design

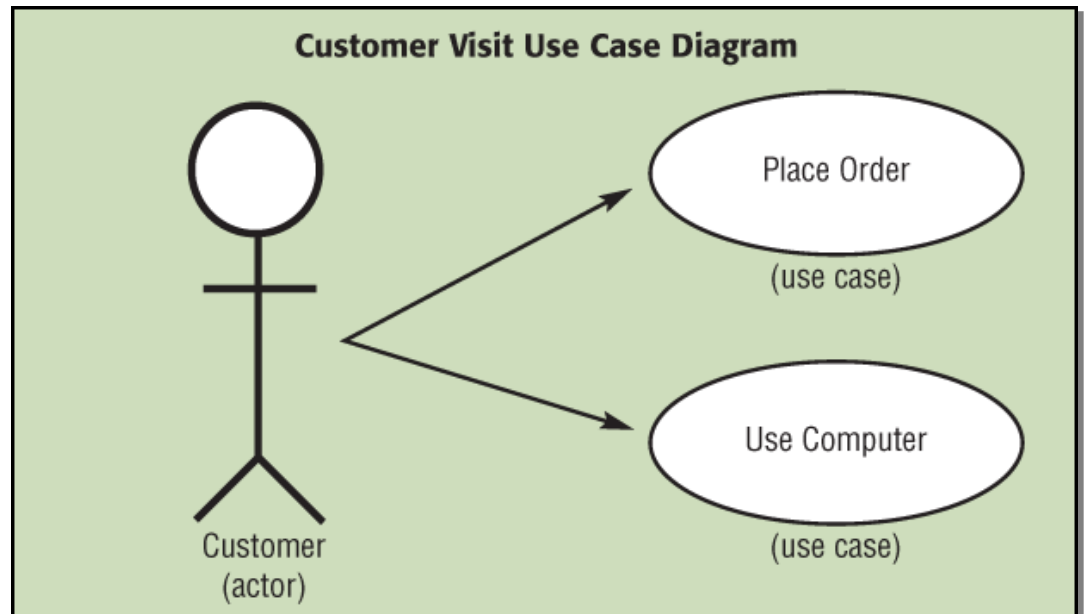Uses Unified Modeling Language (UML)—graphical tool for documenting system

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Analysis Phase

What is a use case diagram?

➢ **Graphically shows how actors interact with information system**

- ▪ **Actor**—user or other entity
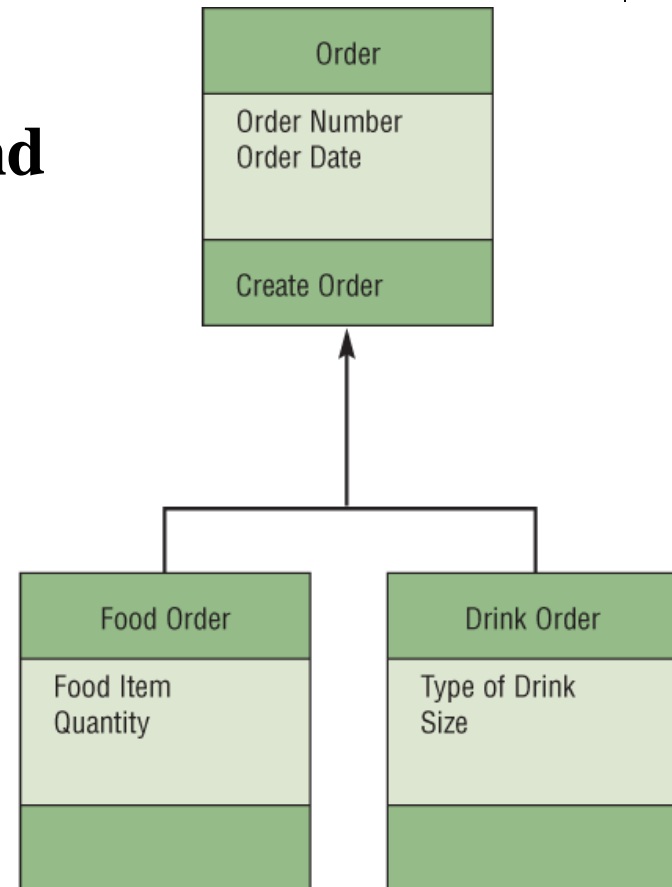
- ▪ **Use case**—function that actor can perform

Customer Visit Use Case Diagram

Place Order (use case)

Use Computer (use case)

Customer (actor)

Analysis Phase

What is a class diagram?

➢ **Graphically shows classes and subclasses in system**

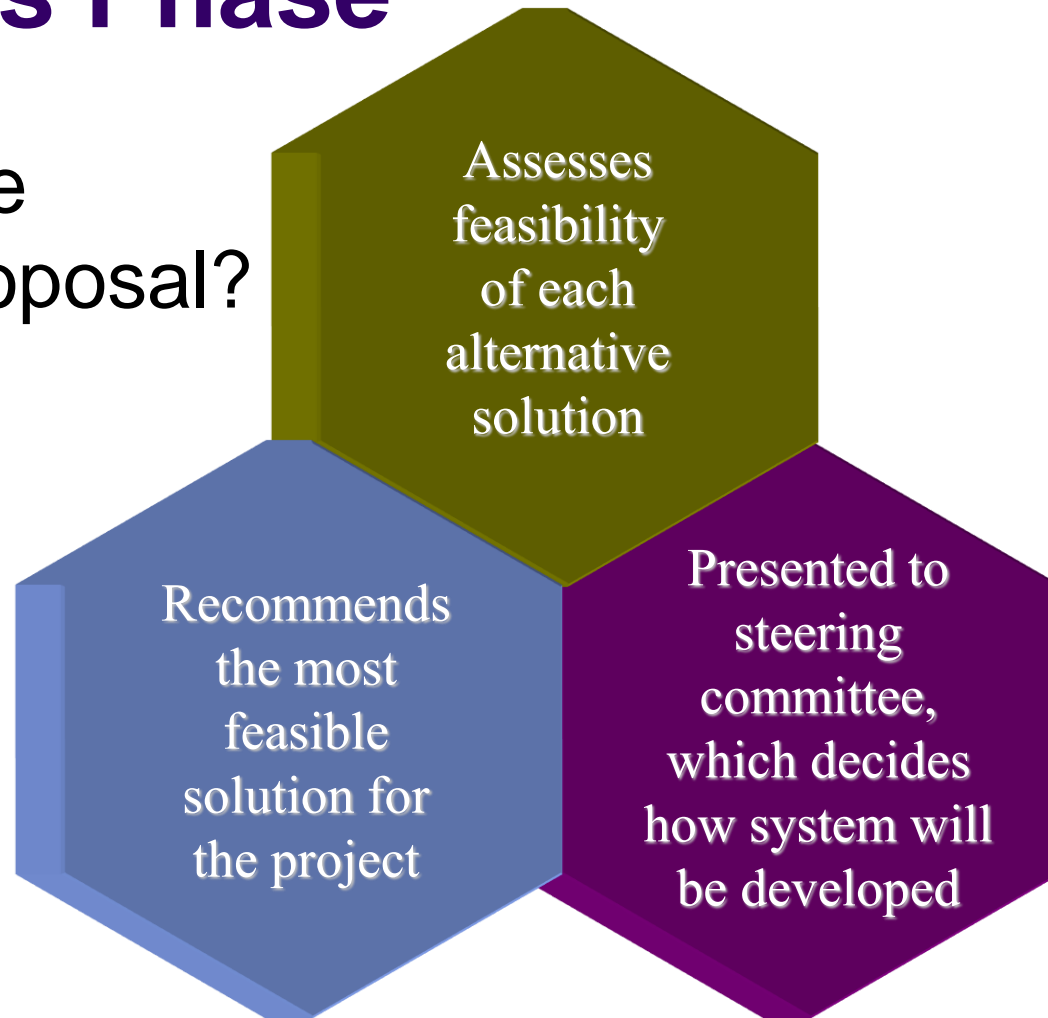 ■ Class is group of objects—Can have lower levels called subclasses

Analysis Phase

What is the
system proposal?

Assesses
feasibility
of each
alternative
solution

Recommends
the most
feasible
solution for
the project

Presented to
steering
committee,
which decides
how system will
be developed

Analysis Phase

What are possible software solutions?

Buy packaged software—prewritten software available for purchase

Write own custom software—software developed at user's request

Outsource—have outside source develop software

Horizontal market software—meets needs of many companies

Vertical market software—designed for particular industry

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