SYSTEM ANALYSIS AND DESIGN

SECP1013-08
TECHNOLOGY & INFORMATION SYSTEM

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

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LEARNING OUTCOMES

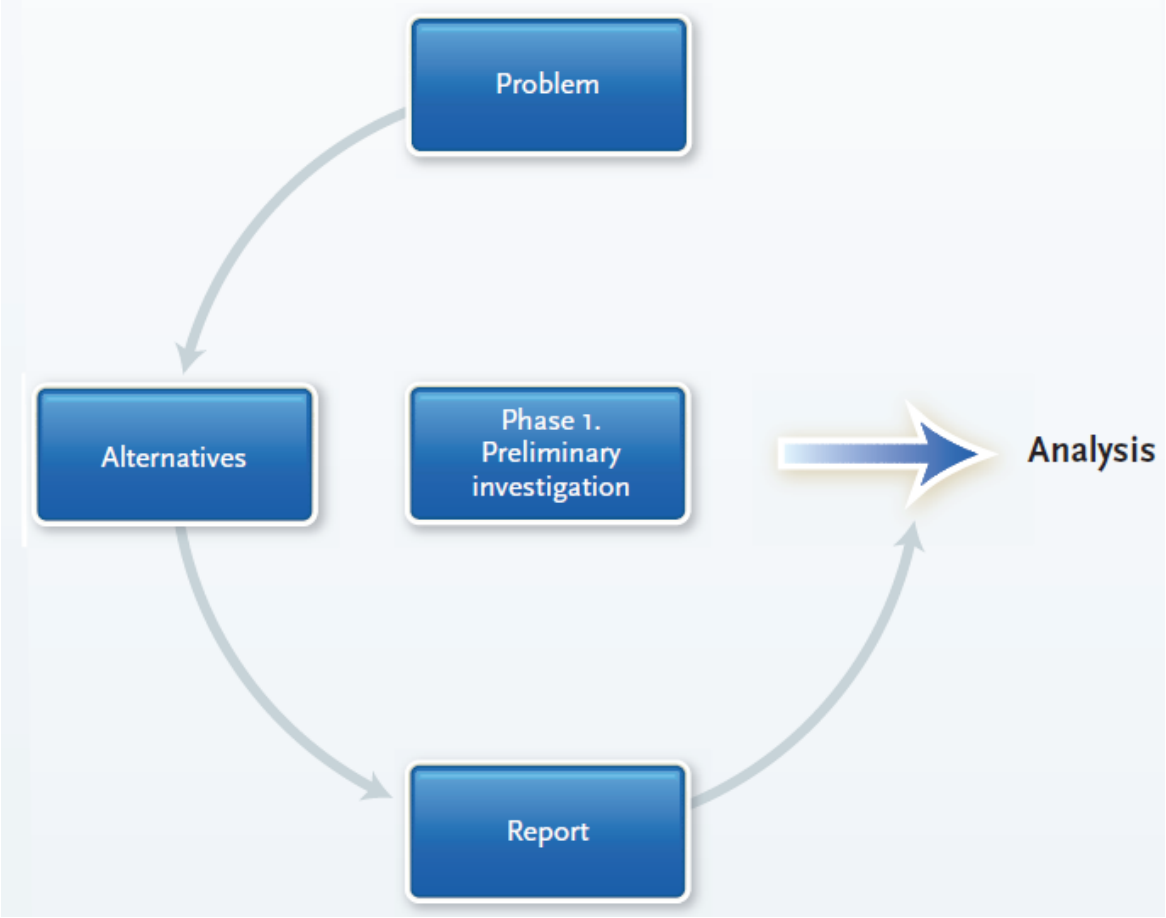
- Describe the **six phases** of the systems life cycle.
- Identify **information needs** and formulate possible solutions.
- Analyze existing information systems and **evaluate the feasibility** of alternative systems.
- Identify, acquire, and test **new system software and hardware**.
- **Switch** from an existing information system **to a new one** with minimal risk.
- Perform **system audits** and periodic **evaluations**.
- Describe prototyping and **rapid applications development**.

SYSTEM ANALYSIS AND DESIGN

- A system is a collection of activities and elements organized to accomplish a goal. Systems analysis and design is a six-phase problem-solving procedure that makes up the systems life cycle.

PHASE 1 : PRELIMINARY INVESTIGATION

The preliminary investigation determines the need for a new information system. It is typically requested by an end user or a manager. Three tasks are performed during this phase.



PHASE 1 : PRELIMINARY INVESTIGATION

Defining the Problem

The current information system is examined to determine who needs what information, when the information is needed, and why it is needed.

Suggesting Alternative Systems

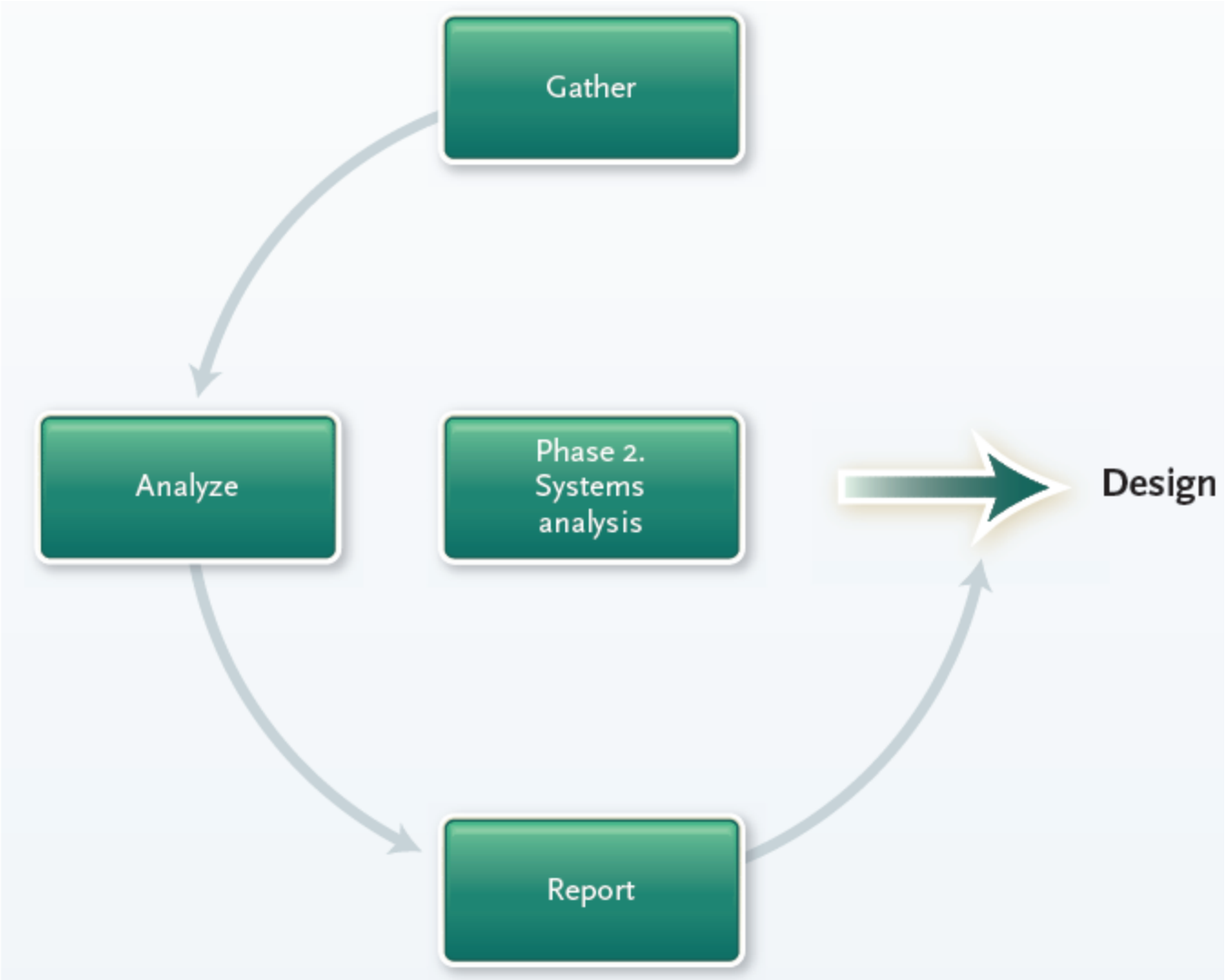
Some possible alternative systems are suggested. Based on interviews and observations made in defining the problem, alternative information systems are identified.

Preparing a Short Report

To document and communicate the findings of Phase 1, preliminary investigation, a short report is prepared and presented to management.

PHASE 2 : SYSTEMS ANALYSIS

Data is collected about the present system. The focus is on determining the requirements for a new system. Three tasks of this phase are gathering data, analyzing the data, and documenting the analysis.



PHASE 2 : SYSTEMS ANALYSIS

Gathering Data

Via observation, interviews, questionnaires, and looking at documents. One helpful document is the organization chart, which shows a company's levels of management.

Analyzing Data

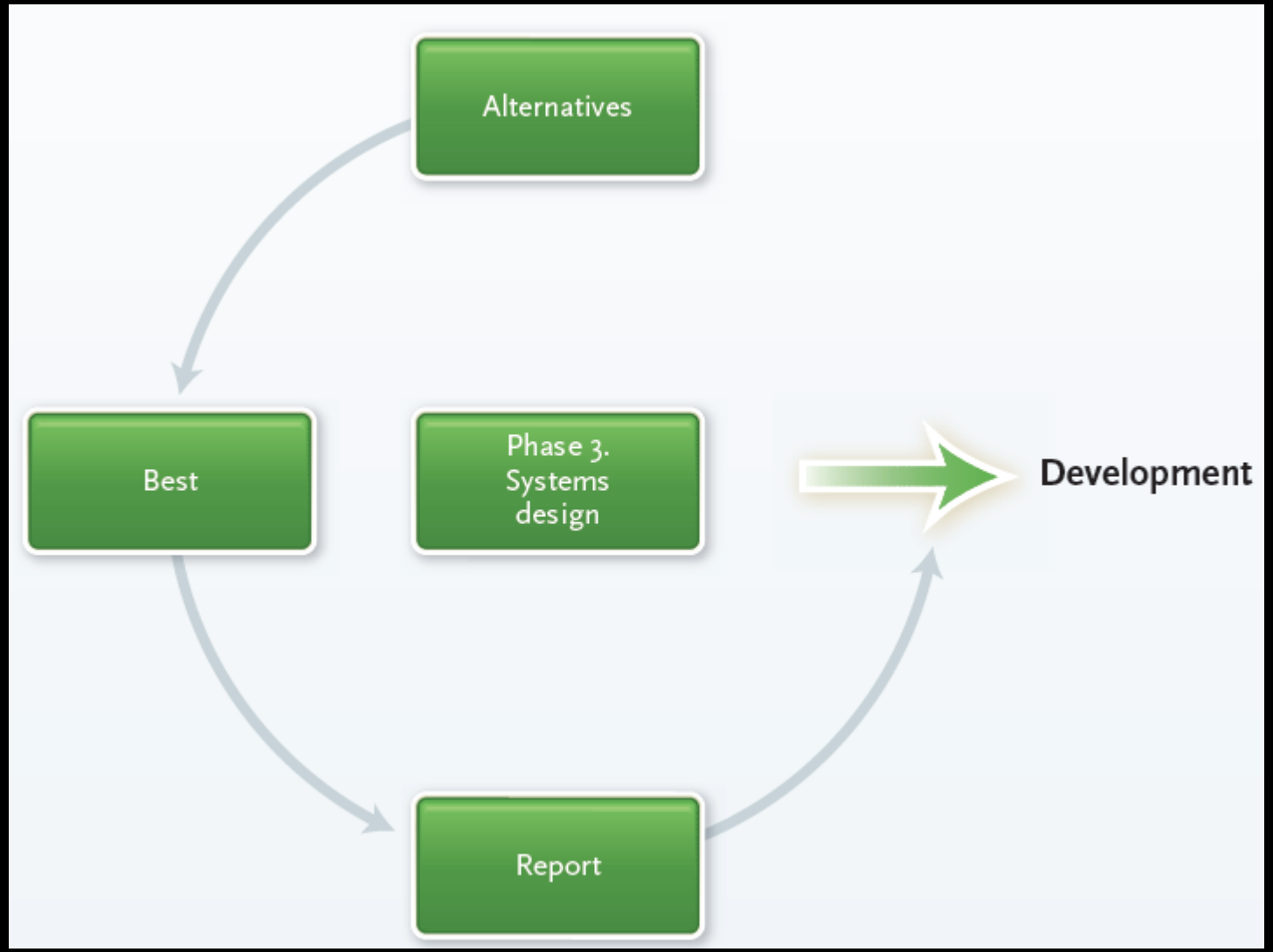
Top-down analysis, grid charts, and system flowcharts.

Documenting System Analysis

To document and communicate the findings of Phase 2, a systems analysis report is prepared for higher management.

PHASE 3 : SYSTEMS DESIGN

- In the systems design phase, a new or alternative information system is designed. This phase consists of three tasks.



PHASE 3 : SYSTEMS DESIGN

Designing Alternative Systems

- Economic feasibility - cost versus benefits
- Technical feasibility - hardware and software reliability
- Operational feasibility—will the system work within the organization?

Selecting the Best System

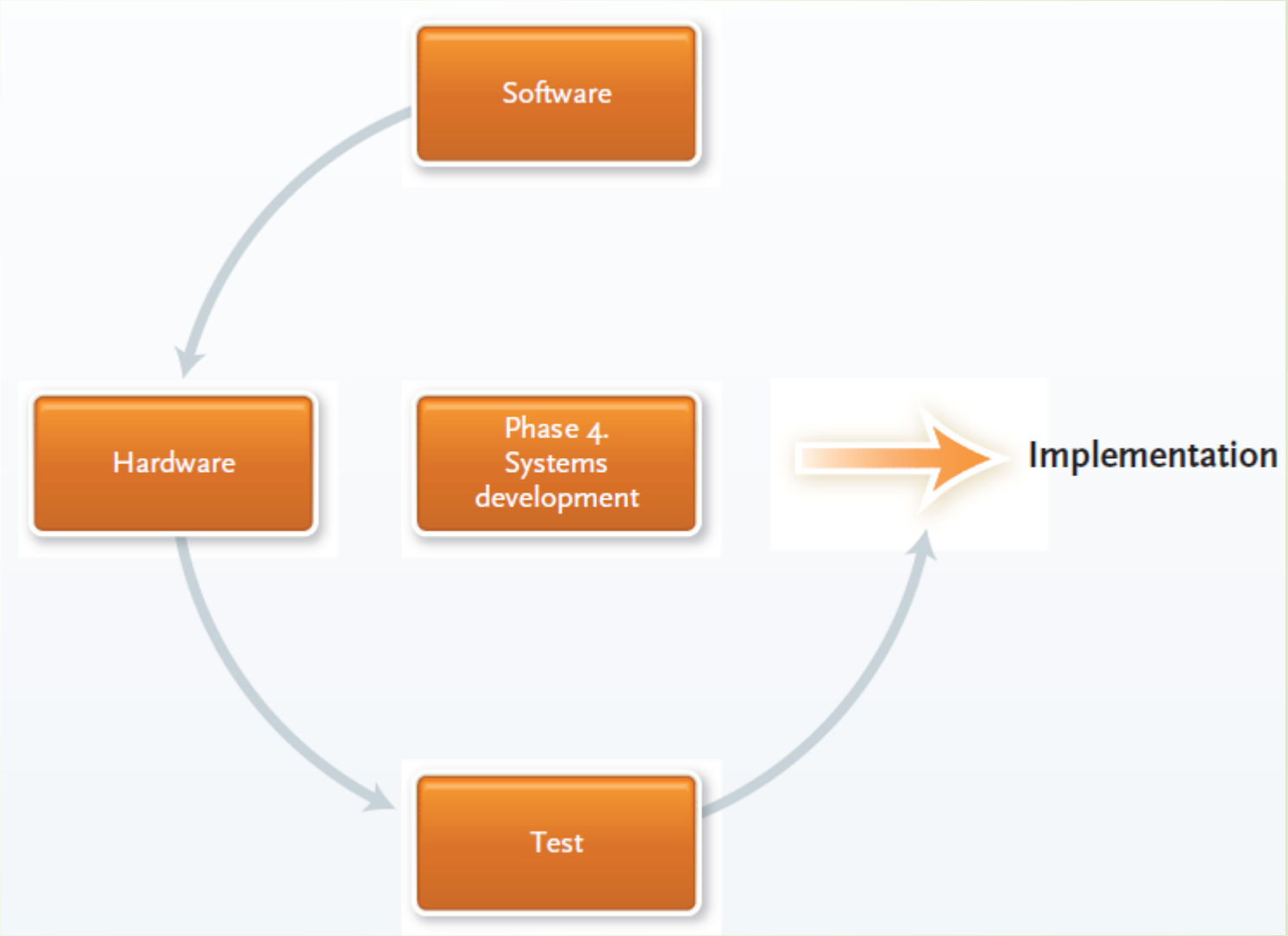
- Will the system fit into an overall information system?
- Will the system be flexible enough to be modified as needed in the future?
- Will it be secure against unauthorized use?
- Will the system's benefits exceed its costs?

Writing the Report

- To document and communicate the findings of Phase 3, a systems design report is prepared for higher management.

PHASE 4 : SYSTEMS DEVELOPEMENT

- In the systems development phase, software and hardware are acquired and tested.



PHASE 4 : SYSTEMS DEVELOPEMENT

Acquiring Software

- Purchasing off-the-shelf packaged software and designing custom programs.

Acquiring Hardware

- Consideration for future company growth, existing networks, communication capabilities, and training.

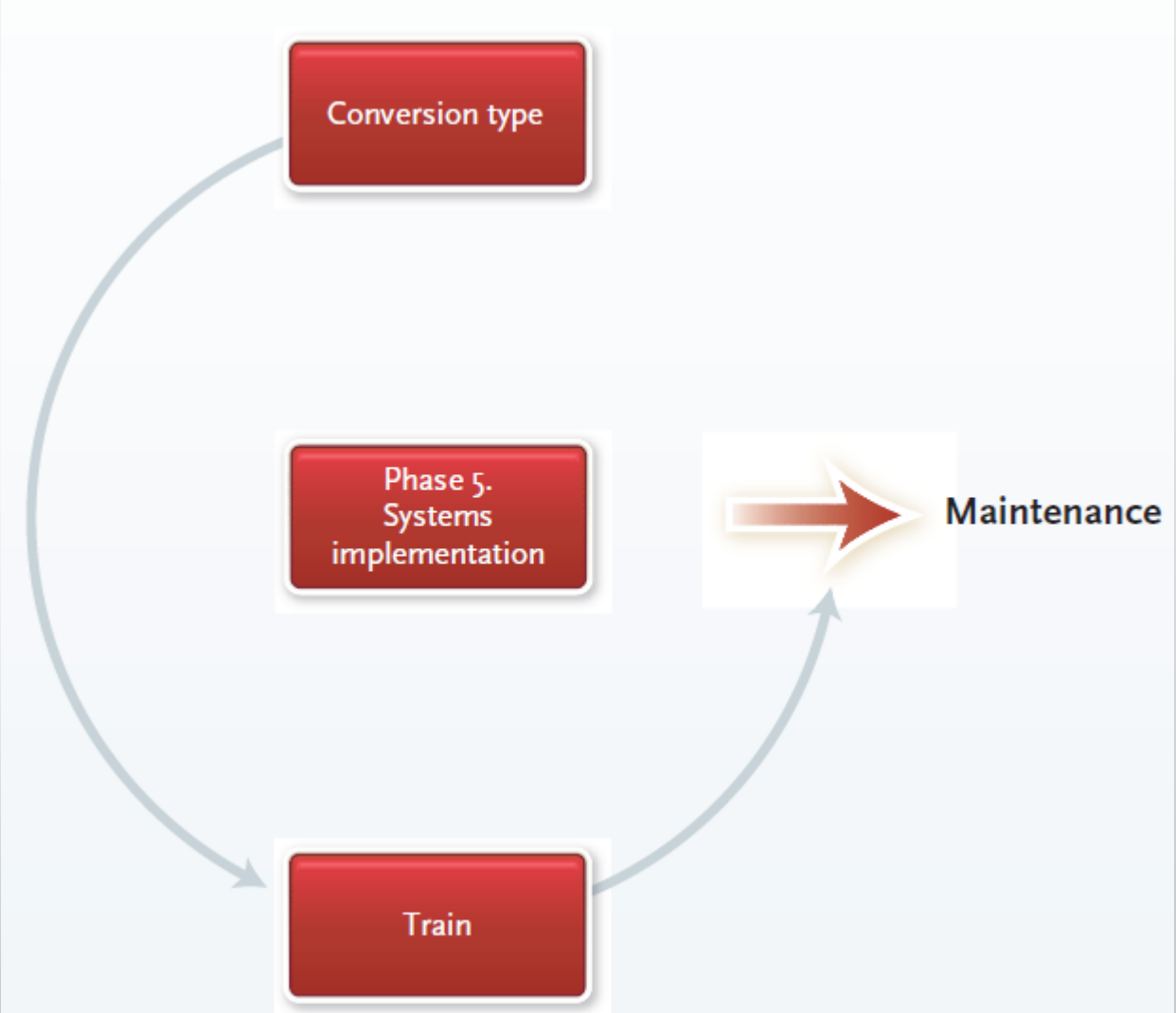
Testing the New System

- Using sample data, the new system is tested. This step can take several months for a complex system.

PHASE 5 : SYSTEMS IMPLEMENTATION

Also known as conversion

- Converting from the old system to the new one
- Training people to use the new system
- Types of conversion approaches include:
- Direct
- Parallel
- Pilot
- Phased



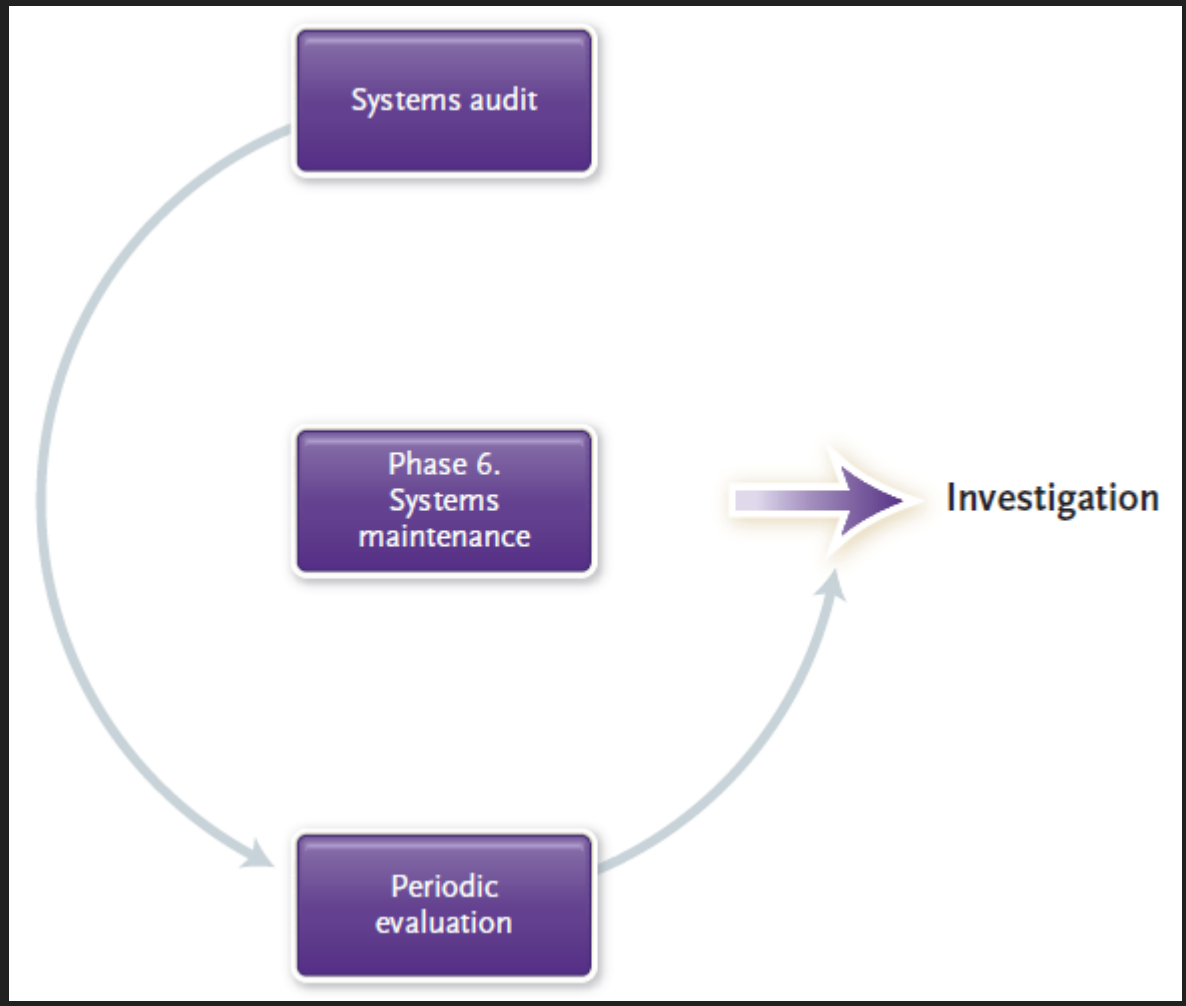
PHASE 6 : SYSTEMS MAINTENANCE

- **Systems Audit**

Once the system is operational, the systems analyst performs a systems audit by comparing the new system to its original design specifications.

- **Periodic Evaluation**

The new system is periodically evaluated to ensure that it is operating efficiently.



Prototyping and Rapid Applications Development

- **Prototyping**

Build a model or prototype that can be modified before the actual system is installed. Typically, the development time for prototyping is shorter; however, it can be more difficult to manage the project and to control costs.

- **Rapid Applications Development**

Powerful development software, small specialized teams, and highly trained personnel. Typically, the development costs more. However, the time is much less and the quality is often better.