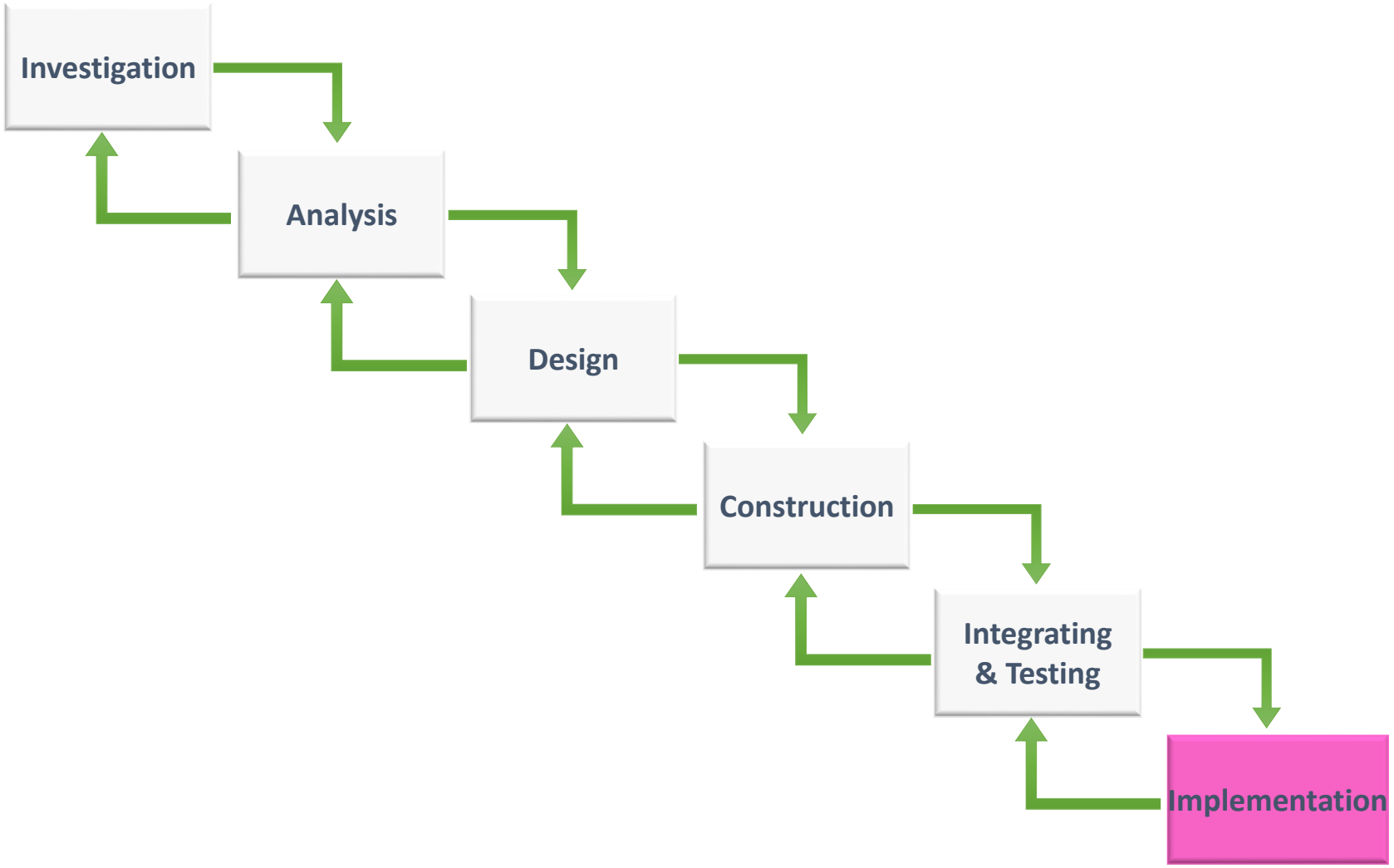

CHAPTER
12
System Acquisition and Development
SOFTWARE
PROGRAM
APPLICATION
LICENSE
IMPLEMENTATION
TESTING
CODE
SECURITY
DESIGN
GUI
BUG
COMMERCIAL
COMPILER
FAILURE
DEBUGGER
LIBRARY
INTERNET
QUALITY
UTILITY
METHODOLOGY
INTERPRETER
FIRMWARE
DRIVER
LINKER
LOGIC
IDE
OPEN-SOURCE
DOCUMENTATION
RELIABILITY
DEVELOPMENT
ENGINEERING
PROCEDURE
ASSEMBLER
LANGUAGE
INSTRUCTION


Investigation
Analysis
Design
Construction
Integrating & Testing
Implementation

Implementation

A number of steps are involved in system implementation. These are outlined next and discussed in the following sections.

1. User preparation
2. Site preparation
3. Installation
4. Cutover

1. User Preparation

User preparation is the process of readying managers, decision makers, employees, system users, and stakeholders to accept and use the new system

2. Site Preparation

Site Preparation : A location for the hardware associated with the new system needs to be prepared. For a small system, site preparation can be as simple as rearranging the furniture in an office to make room for a computer. The computer and associated hardware in a larger system might require special wiring, air conditioning, or construction. A special floor, for example, might have to be built and cables placed under it to connect the various computer components, and a new security system might be needed to protect the equipment. The project team needs to consider the amount of site preparation that may be necessary and build sufficient lead time into the schedule to allow for it.

3.Installation

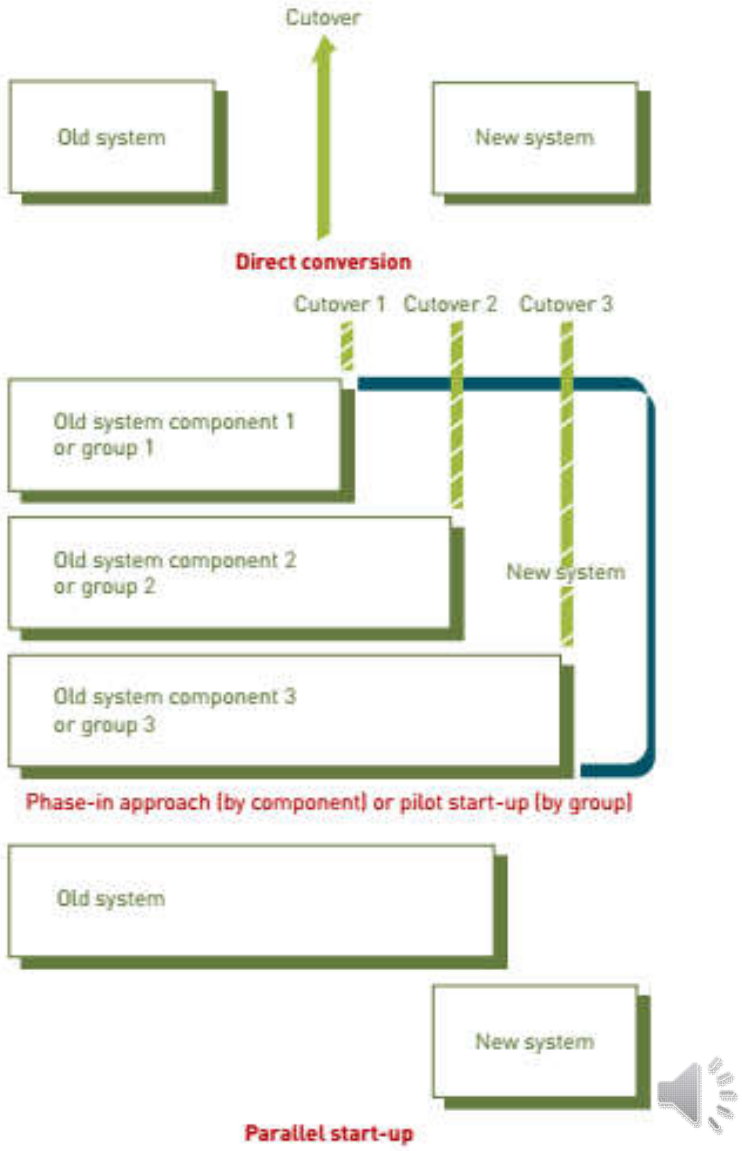
Installation is the process of physically placing the computer equipment on the site and making it operational. Although normally the manufacturer is responsible for installing computer equipment, someone from the organization (usually the IS manager) should oversee the process, making sure that all equipment specified in the contract is installed at the proper location. After the system is installed, the manufacturer performs several tests to ensure that the equipment is operating as it should.

4. Cutover

Cutover is the process of switching from an old information system to a replacement system. Cutover is critical to the success of the organization; if not done properly, the results can be disastrous.

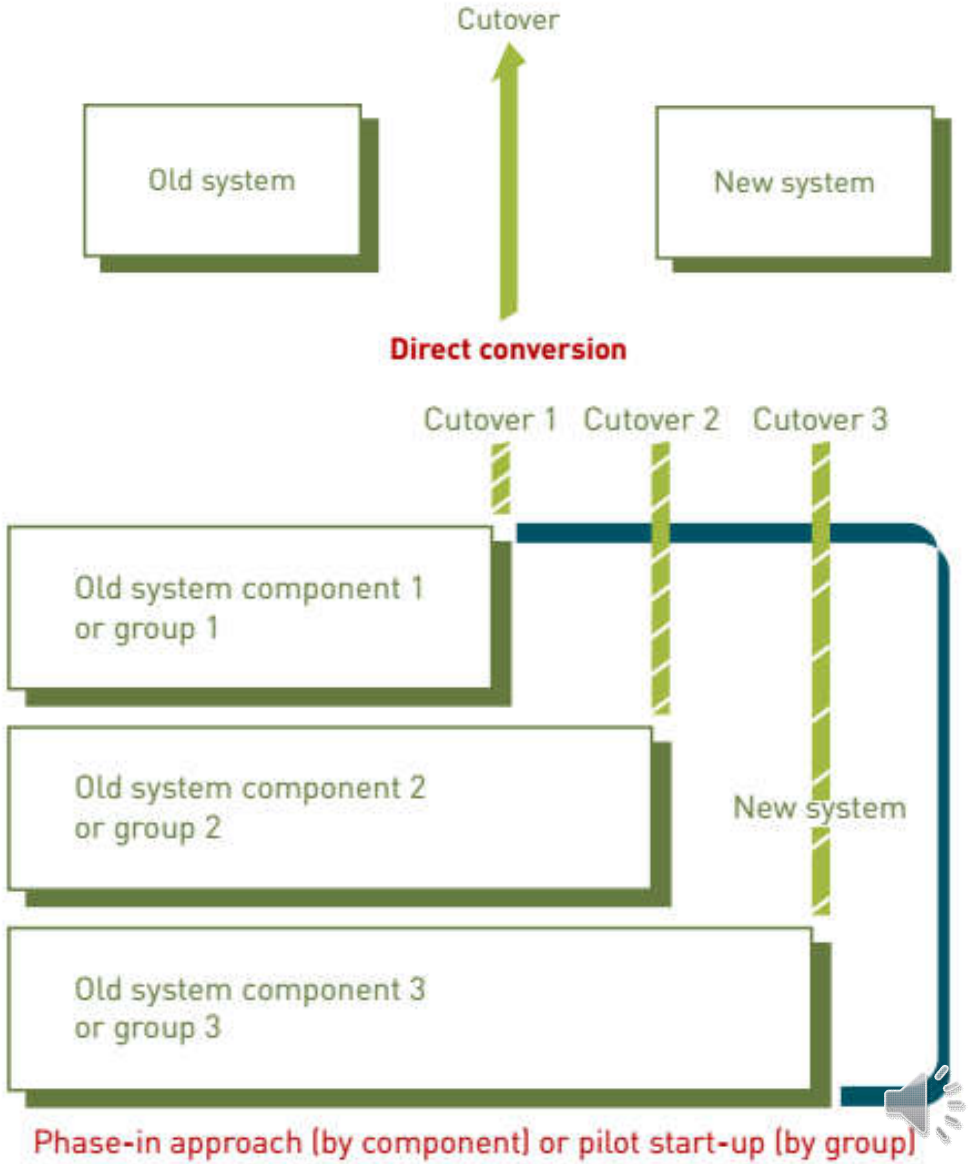
System cutover strategies. Organizations can follow one of several cutover strategies:

Direct conversion, Phase-in approach, Pilot start-up, or Parallel start-up.



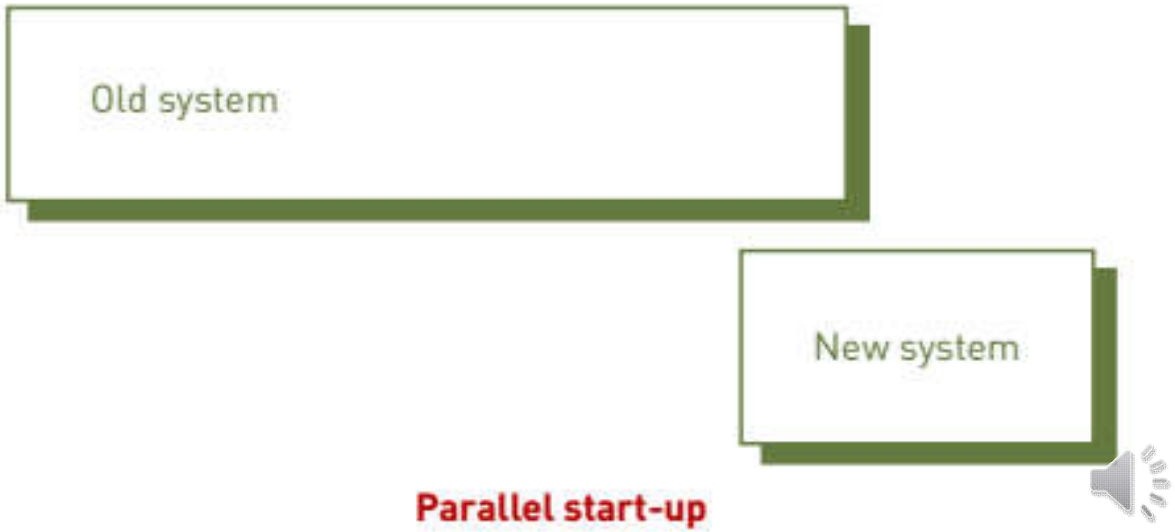
- **Direct Conversion**: A cutover strategy that involves stopping the old system and starting the new system on a given date; also called plunge or direct cutover.

- **Phase-in Approach**: A cutover strategy that involves slowly replacing components of the old system with those of the new one; this process is repeated for each application until the new system is running every application and performing as expected; also called a piecemeal approach.



- **Pilot start-up**: A cutover strategy that involves running the complete new system for one group of users rather than for all users.

- **Parallel start-up**: A cutover strategy that involves running both the old and new systems for a period of time and closely comparing the output of the new system with the output of the old system; any differences are reconciled. When users are comfortable that the new system is working correctly, the old system is eliminated.



Parallel start-up

System Operation and Maintenance

The steps involved in system operation and maintenance are:

1. Operation
2. Maintenance
3. Disposal

System Operation involves the use of a new or modified system under all kinds of operating conditions. Getting the most out of a new or modified system during its operation is the most important aspect of system operations for many organizations.

Monitoring: Is the process of measuring system performance by tracking the number of errors encountered, the amount of memory required, the amount of processing or CPU time needed, and other performance indicators. If a particular system is not performing as expected, it should be modified or a new system should be developed or acquired . System performance products can measure all components of an information system, including hardware, software, database, and network systems.

System Review: Is the process of analyzing a system to make sure it is operating as intended. System review often compares the performance and benefits of the system as it was designed with the actual performance and benefits of the system in operation.

Maintenance

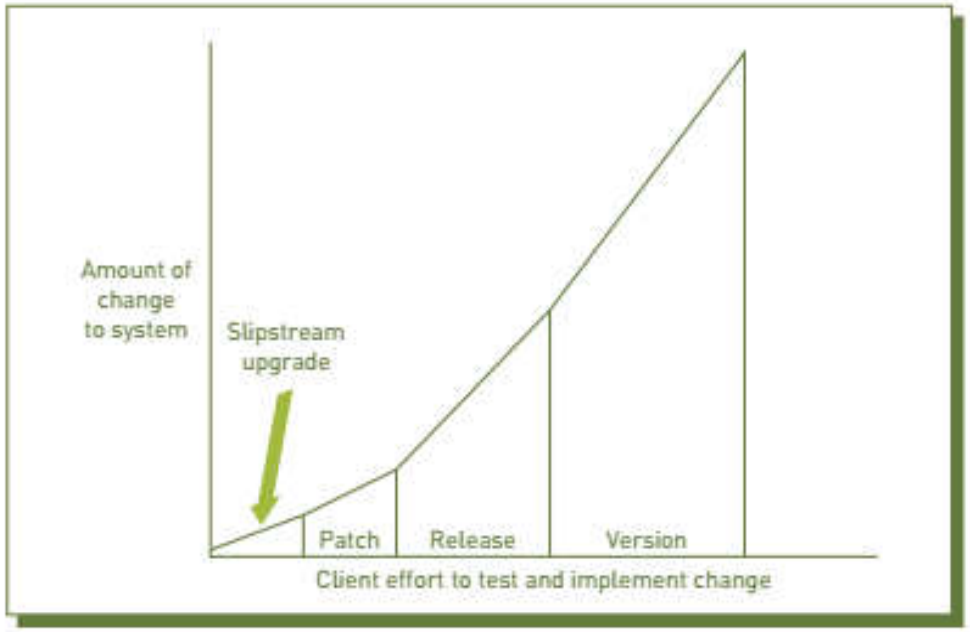
System Maintenance is a stage of system development that involves changing and enhancing the system to make it more useful in achieving user and organizational goals. Reasons for program maintenance include the following:

- Poor system performance, such as slow response time for frequent transactions
- Changes in business processes
- Changes in the needs of system stakeholders, users, and managers
- Bugs or errors in the program
- Technical and hardware problems
- Corporate mergers and acquisitions
- Changes in government regulations
- Changes in the operating system or hardware on which the application runs

The maintenance process can be especially difficult for older software. A legacy system is an old system, which might have cost millions of dollars to develop, patch, and modify over the years. The maintenance costs for legacy systems can become quite expensive, and, at some point, it becomes more cost effective to switch to new programs and applications than to repair and maintain the legacy system.

System-maintenance efforts

This chart shows the relative amount of change and effort associated to test and implement slipstream upgrades, patches, releases, and versions



Slipstream Upgrade: A minor system upgrade-typically a code adjustment or minor bug fix; it usually requires recompiling all the code, and in so doing, it can create entirely new bugs.

Patch: A minor system change to correct a problem or make a small enhancement; it is usually an addition to an existing program.

Release: A significant program change that often requires changes in the documentation of the software.

Version: A major program change, typically encompassing many new features

Disposal

System Disposal: A stage of system development that involves those activities that ensure the orderly dissolution of the system, including disposing of all equipment in an environmentally friendly manner, closing out contracts, and safely migrating information from the system to another system or archiving it in accordance with applicable records management policies.
The steps involved in system disposal

1. Communicate intent.
2. Terminate contracts.
3. Make backups of data.
4. Delete sensitive data.
5. Dispose of hardware.

Communicate Intent A memo communicating the intent to terminate the information system should be distributed to all key stakeholders, months in advance of the actual shutdown. This ensures that everyone is aware of the shutdown and allows time for them to convert to the new system or process replacing the terminated system. For example, the Microsoft Windows XP operating system was released in 2001. Microsoft announced in September 2007 that it would end support of this popular operating system in April 2014.

Terminate Contracts The various vendors who provide hardware, software, or services associated with the information system must be notified well in advance to avoid any penalty fees associated with abrupt termination of a contract.

Make Backups of Data Prior to deleting files associated with the system, backup copies of data must be made according to the organization's records management policies.

Delete Sensitive Data Extreme care must be taken to remove customer, employee, financial, and company-sensitive data from all computer hardware and storage devices before disposing of it. When a file is deleted, the bits and pieces of the file physically stay on a computer hard drive until they are overwritten, and they can be retrieved with a data recovery program. To remove data from a hard drive permanently, the hard drive needs to be wiped clean. The program used should overwrite or wipe the hard drive several times. An alternative is to remove the hard drive and physically destroy it.

Dispose of Hardware After backing up and then removing data from drives, members of the project team can dispose of obsolete or damaged computer hardware. Governments, environmental agencies, and leading hardware manufacturers are attempting to reduce hazardous materials in electronic products; however, some hardware components still contain materials that are toxic to the environment. Responsible disposal techniques should be used regardless of whether the hardware is sold, given away, or discarded. Many computer hardware manufacturers including Dell and HP have developed programs to assist their customers in disposing of old equipment.