

# Chapter 18: Systems Implementation and Development Tools

## Conversion

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## Conversion Tasks

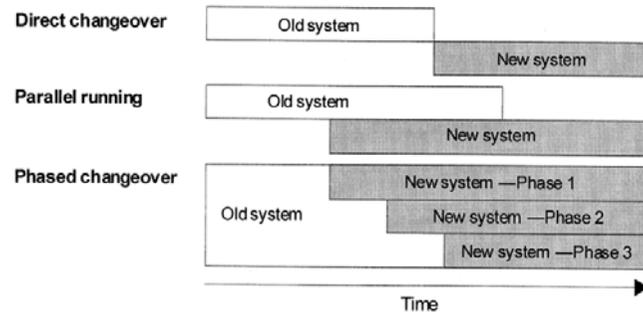
- To ensure a smooth and successful implementation, users must be familiar with the features of the system, operators must know how to make the system function properly, and the conversion itself must go off smoothly.
- Conversion includes the creation of all required files and database, establishing a backup copies, and converting tested programs to operating status.
- Data conversion is a central part of a system conversion regardless whether the preceding system was manual or computer-based.
- The data conversion must be carefully planned and also cross-checked to see that it is done right.

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## Data Conversion Methods

- There are four strategies, the choice of which is dictated by the given situation
  - ◆ Parallel Systems
  - ◆ Direct Cutover
  - ◆ Pilot System
  - ◆ Phase-in of System (Phase Changeover)



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## Data Conversion Methods – Parallel Systems

- The new system is operated side-by-side with the old one to ensure that data will not be lost if a problem arises.
  - ◆ A safe and conservative conversion approach
  - ◆ Running both old and new systems for a period of time
  - ◆ The output of the new system is compared closely with the output of the old system and any difference reconciled
  - ◆ When users are comfortable that the new system is working properly, the old system is eliminated
  - ◆ Very expensive, additional staff is required.

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## Data Conversion Methods – Direct Cutover

- Conversion takes place all at once, rapidly (perhaps overnight). This method of conversion requires much more careful and detailed planning than the other alternatives.
  - ◆ This method of conversion require much more careful and detailed planning than the other alternatives.
  - ◆ A risky conversion approach in which the new system completely replaces the old one on an appointed day.
  - ◆ Involves stopping the old system and starting the new system on a specific date.
  - ◆ High potential for problems and errors.
  - ◆ Less costly if no problem, otherwise more costly.

## Data Conversion Methods – Pilot System

- Only a small piece of the business is converted to the new system. The rest of the old system remains in place for the time being.
  - ◆ Involves running the new system for one group of uses rather than all users
  - ◆ When the pilot system runs without problems then it is rolled out to the other users

## Data Conversion Methods – Phase-in of System

- The new one gradually over time replaces the old system. This allows an organization to begin taking advantage of the newly developed support tool while retaining flexibility to cope with any deficiencies.
  - ◆ Piecemeal approach
  - ◆ Components of the new system are slowly phased in while components of old system are slowly phased out
  - ◆ Allows the organization to being taking advantage of the newly developed support tools while retaining flexibility to cope with any deficiencies
  - ◆ When everyone is confident that the new system is performing as expected, then the old system is completely phased out

## Systems Implementation and Development Tools

### Training

## Classroom Training

- Classroom training involves a live instructor conducting training for students.



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## Advantages

- Classroom training has several strong advantages over other forms of training, which do not use live instructors.
  - ◆ Feedback is immediate when the problems occur.
  - ◆ Both the Learners and the teachers can ask questions to gauge the group's understanding.
  - ◆ The teaching can be tailored to the learners by adding company-specific examples or job-specific examples.
  - ◆ The classroom is a familiar and acceptable environment for most people.

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## Disadvantages

- On the negative side, classroom instruction also has a number of strong disadvantages.
  - ◆ It is usually more expensive than mediated training without instructors.
  - ◆ Training facilities are expensive, particular, if hands-on computer training is to be done.
  - ◆ Users have to wait until a class starts to get the training they need.
  - ◆ Teaching quality can vary considerably from course to course.

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## Internal vs. External Training

- If the company decides to sponsor training, the next step is to decide whether to do it internally or whether to contract the training out to external vendors.

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## Advantages of Internal Training

- Many firms use internal training because it has several important advantages.
  - ◆ There is greater control over quality. If there are quality problems, these can be overcome. With external training, there is less control over quality.
  - ◆ Courses can be tailored to the corporation by including company-specific information.

## Advantages of External Training

- External vendors offer a number of advantages over internal training.
  - ◆ If internal training is done in geographically decentralized organizations, the use of external vendors can provide cheaper local training when popular application software packages or the basic use of the computer are to be taught.
  - ◆ Unless a firm has a very large training program, external training will be less expensive.
  - ◆ For popular software packages or basic machine use, external vendors will offer courses almost continuously, whereas internal programs may offer these courses less frequently.

## Summary

	Advantages	Disadvantages
<b>Classroom Training</b>	<ul style="list-style-type: none"> <li>■ Feedback is immediate</li> <li>■ Learners can ask questions</li> <li>■ Teacher can ask questions</li> <li>■ Teaching can be tailored to suit the person</li> <li>■ Familiar and acceptable environment for most people</li> </ul>	<ul style="list-style-type: none"> <li>■ Usually more expensive</li> <li>■ Need time to wait for class to commence</li> <li>■ Quality of teacher can vary</li> </ul>
<b>Internal Training</b>	<ul style="list-style-type: none"> <li>■ Greater control for quality</li> <li>■ Course can be tailored to suit need</li> </ul>	<ul style="list-style-type: none"> <li>■ Can be very costly</li> <li>■ Need time to develop proper training</li> </ul>
<b>External Training</b>	<ul style="list-style-type: none"> <li>■ Cheaper local training</li> <li>■ Variety of training courses</li> <li>■ Continuous training program</li> </ul>	<ul style="list-style-type: none"> <li>■ Less control over quality</li> </ul>

## Systems Implementation and Development Tools

### Computer Aided Software Engineering

## Development Tools

- **Computer Aided Software Engineering (CASE)** is the use of computer technology to help improve application systems development.
- The earliest CASE tools were used to create flowcharts and data flow diagrams.
- Later versions of CASE allowed computer professionals to create complete and detailed specifications and to later generate structured program code.
- The CASE software can then generate a detailed documentation package for easy maintenance.

## Features of CASE

- CASE consists of a set of workstation-based software tools designed to support application developers.
- The activities that most CASE tools include are described below.
  - ◆ Draw Descriptive Diagrams
  - ◆ Maintain Data Dictionary
  - ◆ Design Display Screens
  - ◆ Design Output Layouts

## Features of CASE – Draw Descriptive Diagrams

- Diagramming tools provide the developer with the ability to draw various types of diagrams like data flow diagram, flowcharts, etc.
- Making modifications to diagrams is much faster with this tool.

## Features of CASE – Maintain Data Dictionary

- This is used to store and validate definitions of data items used in the system.
- It also records the programs or tables where each data item is used.

## Features of CASE – Design Display Screens

- CASE is used to quickly create screen designs and to generate the code based on this design.
- These can be reused in other applications.
- Screen intensity, use of reverse letters and inclusion of underlining are all easily specified.

## Features of CASE – Design Output Layouts

- As with screen designs, CASE tools can also be used to design report layouts.
- Consistency between reports can be achieved by starting with one standard template.

## Benefits of CASE

- What are the benefits of using CASE?
  - ◆ Development time is shortened
  - ◆ Development standards can be enforced.
  - ◆ Data Dictionary is automatically produced

## Benefits of CASE – Development Time is Shortened

- With automated tools, the effort required to complete each task is lessened.
  - ◆ For example, instead of drawing data flow diagrams by hand, it can be done with CASE.

## **Benefits of CASE – Development Standards can be Enforced**

- Standards define the rules for certain development decisions.
- Having these standards embedded in software ensures it is more consistently performed.
  - ◆ For example, an organization may have standards regarding the naming convention of data fields or the diagramming method.

## **Benefits of CASE – Data Dictionary is Automatically Produced**

- There is no need to review the entire system to ensure that the data dictionary is complete and consistent if each data field is defined in the data dictionary at its point of creation.

## **Limitations of CASE**

- Does not support the full SDLC
  - ◆ CASE software is not able to support the full development life cycle.
  - ◆ The design to code transformation is not fully automated, and results in much analyst and the programmer effort anyway.

## **Systems Implementation and Development Tools**

Documentation

## Documentation

- There are two types of documentation
  - ◆ User Documentation
  - ◆ Operations Documentation

## User Documentation

- The first type of documentation is the **User Manual**, also known as the **User Guide**.
- The user manual contains screen and report layouts, with explanation of how to use a transaction, or read a report.
- It also has other features like a list of error conditions and how to correct error.
- The user manual should be referred to by the user who has a question or a problem about the system before he or she refers to the IT person supporting the application.

## Operations Documentation

- The operations section of an IT department has to operate the system after it has been implemented.
- This group needs information on normal operating procedures and on how to respond to errors.
- The **Operations Manual** will contain information about starting and shutting down the system, plus details about how to run the batch jobs.
- For each batch job, a complete systems flowchart that shows the input required, the files necessary, and any printed output must be documented.
- It is important for operators to know possible error conditions and how to respond to them.

## Importance of Documentation

- This particularly so if there is a deadline approaching and if the tasks are behind schedule.
- Documentation must be treated as part of the complete package of deliverables.
- Why is documentation important ?
  - ◆ Manage the Project
  - ◆ Obtain Consensus

## Manage the Project

- Documentation is a tool used to manage the development process. This is done in a few ways.
  - ◆ It is used to review tasks which have been completed or which are going to be done.
  - ◆ It is used to monitor progress and take corrective action.
  - ◆ It is used to make decisions on future tasks.
  - ◆ It is the tools used to manage the development process, to control its activities and plan future steps.

## Obtain Consensus

- In any complex task involving many parties, there is always a possibility of misunderstanding.
- The agreement should be documented and a copy sent to all parties involved for feedback and agreement. While this does not guarantee that there will not be any miscommunication, it does minimize it.