PERANCANGAN SISTEM INFORMASI

Session 10 Construction and Installation

Based on System Analysis & Design 2nd Edition
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Publisher : John Wiley & Sons

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Objectives

- Be familiar with the system construction and installation process

- Understand different types of test and conversion strategies and when to use them

- Understand how to develop documentation and several techniques for managing change

- Be familiar with post installation processes

Key Definitions

- Construction is the development of all parts of the system: the software itself, documentation, and new operating procedures.

- Testing helps ensure that the system performs as outlined in the specifications.

- Documentation provides information to make the system easier to use and repair.

Key Ideas

- Transitioning to new systems involves managing change from pre-existing norms and habits.

- Change management involves:
  - Unfreezing -- loosening up peoples' habits and norms
  - Moving -- transition from old to new systems
  - Refreezing -- institutionalize and make efficient the new way of doing things

Key Ideas

- Post-implementation activities include providing:
  - System support, such as help desks
  - Systems maintenance, fixing bugs and providing improvements
  - Project assessment, learning how to improve from project experiences

MANAGING PROGRAMMING

Project Manager's Tasks During Programming

- Assigning the programmers
- Coordinating the activities
- Managing the schedule

The Programmer Paradox

- More is not always better than less!

- After the "right" number of people are assigned to a programming task, adding more people slows down rather than speeds up completion of the project.

- Projects requiring a large team should be broken into a series of independent, smaller parts.

Coordinating Activities

- Weekly (hopefully brief) meetings
- Create and follow standards
- Organize programmer's work areas
  - Development area
  - Testing area
  - Production area
- Implement change control mechanisms
- Use program log to monitor program changes

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Managing the Schedule

- Use initial time estimates as a baseline
- Revise time estimates as construction proceeds
- Fight against scope creep
- Monitor "minor" slippage
- Create risk assessment and track changing risks
- Fight the temptation to lower quality to meet unreasonable schedule demands

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Avoid Classic Mistakes

1. **Research-oriented development**

   If you use state-of-the art technology, lengthen planned time

2. **Using "low-cost" personnel**

   If using a significant number of entry level personnel, lengthen planned time

3. **Lack of code control**

   Use source code library to keep programmers from changing the same code at the same time

4. **Inadequate testing**

   Always allocate sufficient time for formal testing

DESIGNING TESTS

Testing Philosophy

- It is dangerous to test early modules without an overall testing plan

- It may be difficult to reproduce sequence of events causing an error

- Testing must be done systematically and results documented carefully

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Test Plan

<table>
<tr><td></td><td>Test Plan</td><td>Page _____ of _____</td></tr>
</table>

Program ID: _____ **Version number:** _____

Tester: _____ **Date designed:** _____ **Date conducted:** _____

Results: ☐ Passed   ☐ **Open items:**

Test ID: _____   **Requirement addressed:** _____

Objective:

Test cases

Interface ID	Data Field	Value Entered
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____

Script

Expected results/notes

Actual results/notes

14

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Categories of Testing

- ## Stub testing
  - Tests control structures before all modules are written
- ## Unit testing
  - Tests each module to assure that it performs its function
- ## Integration testing
  - Tests the interaction of modules to assure that they work together
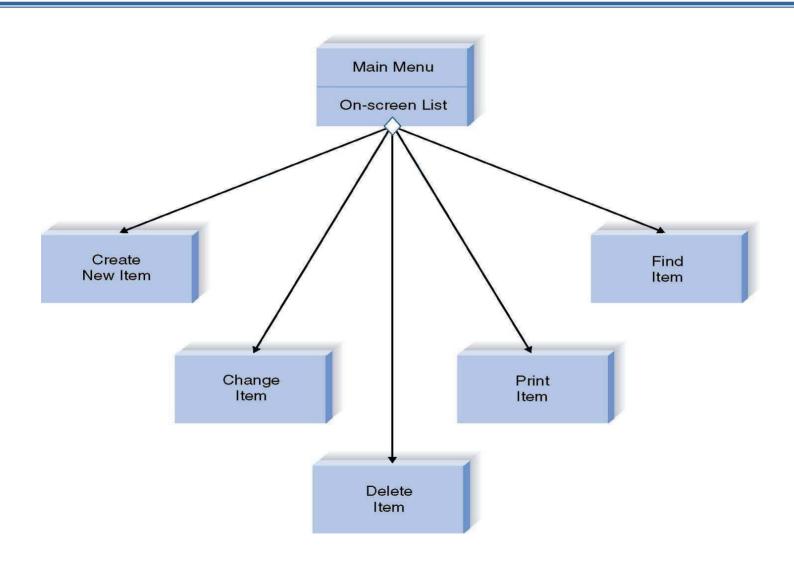- ## System testing
  - Tests to assure that the software works well as part of the overall system
- ## Acceptance testing
  - Tests to assure that the system serves organizational needs

Stub Testing

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Unit Testing

- ## Black Box Testing
  - Focuses on whether the unit meets requirements stated in specification
- ## White-Box Testing
  - Looks inside the module at actual code

Integration Testing

- **User interface testing**
  - Tests each interface function
- **Use-scenario testing**
  - Ensures that each use scenario works correctly
- **Data flow testing**
  - Tests each process in a step-by-step fashion
- **System interface testing**
  - Ensures data transfer between systems

System Testing

- Requirements Testing
  - Ensures that integration did not cause new errors
- Usability Testing
  - Tests how easy and error-free the system is in use
- Security Testing
  - Assures that security functions are handled properly
- Performance Testing
  - Assures that the system works under high volumes of activity
- Documentation Testing
  - Analysts check the accuracy of documentation

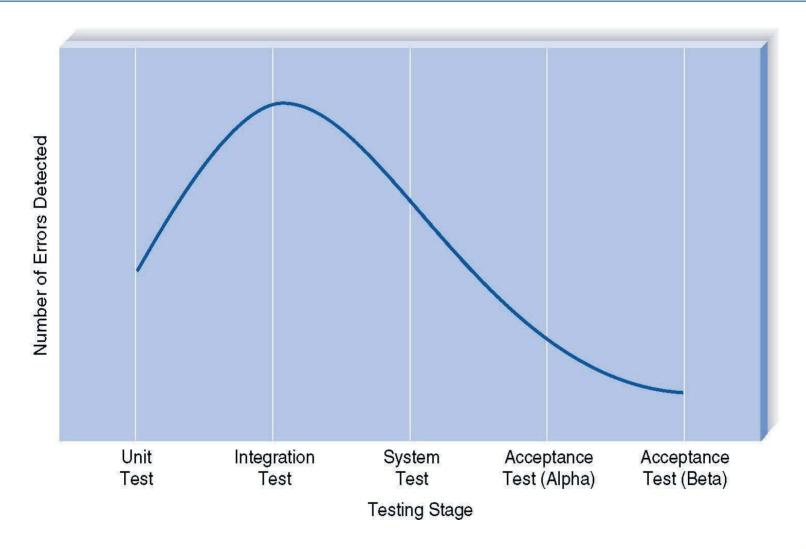# Acceptance Testing

- ## Alpha Testing
  - Performed by users to assure they accept the system; frequently repeats earlier tests
- ## Beta Testing
  - Uses real data, not test data. Actual users monitor for errors or needed improvements.

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Error Discovery Rates By Test Stage

Your Turn

- Suppose you were in charge of developing an ATM for a bank

- What elements would you include in a testing plan before putting the system into operation?

DEVELOPING DOCUMENTATION

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23

Types of Documentation

- **System Documentation**
  - Intended to help programmers and analysts understand and maintain the system after it is installed

- **User Documentation**
  - Intended to help users operate the system

Producing Documentation

- High quality documentation takes about 3 hours per page or 2 hours per screen
- The task should not be left to the end of the project
- Time required to develop and test user documentation should be built into project plan
- On-line documentation is growing in importance

Value of Online Documentation

- Searching is simplified
- Information can be presented in multiple formats
- New methods of interacting with documentation are possible (e.g., tool tips)
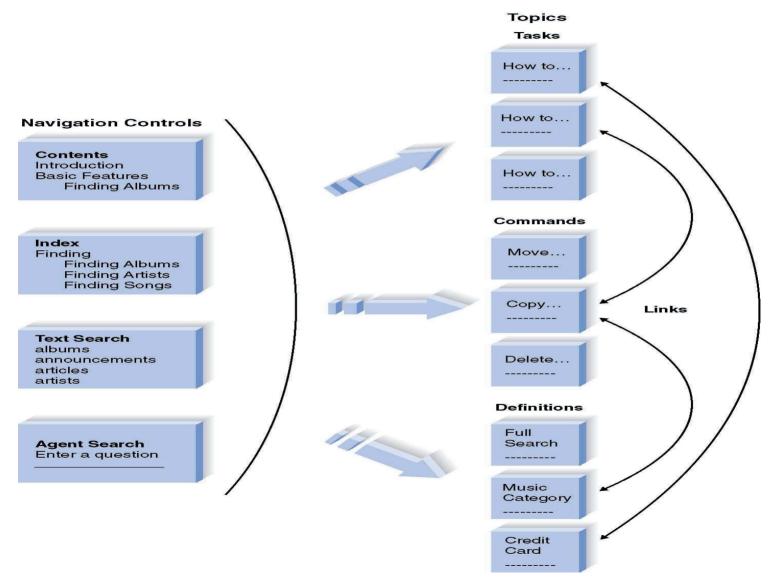- Less costly than paper documentation

Types of User Documentation

- Reference documents
- Procedures manuals
- Tutorials

Organizing Online Reference Documents

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Sources of Documentation Topics

- The commands and menus in the user interface

- Users' business tasks (what they need to <u>do</u>)
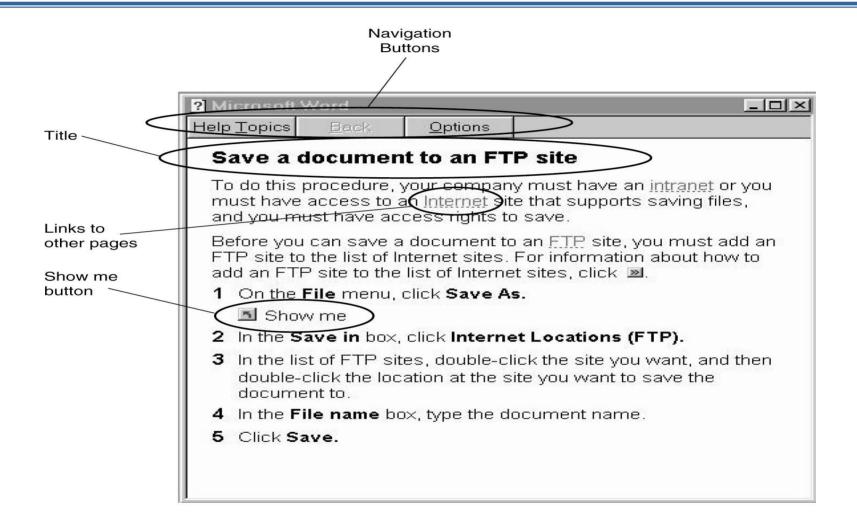
- Definitions of terms

Sources of Navigation Terms

- The commands and menus in the user interface

- Major system concepts (e.g., data entities)

- Set of tasks performed by users

- Synonyms for the items above (users don't always use our terminology).

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A Help Topic in Microsoft Word

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Guidelines for Crafting Documentation Topics

- Use the active voice
- Minimize use of "to be" verbs
- Use consistent terms
- Use simple language
- Use friendly language
- Use parallel grammatical structure
- Use steps correctly
- Use short paragraphs

Summary

- The project manager must assign tasks to programmers, assure coordination of program development and schedule code production and adjust the schedule as development continues.

- Test planning must be done carefully and a variety of methods all contribute to developing quality software.

- Documentation should begin well before the completion of coding and testing and address needs of maintenance programmers and system users.