

Systems Analysis & Design

CS183 Spring Semester 2008

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Course Textbook:

Systems Analysis and Design With UML 2.0 An Object-Oriented Approach, Second Edition

Chapter 14: Construction

Chapter 15:
Installation and Operations

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Key Concepts

- Be familiar with the system construction process.
- Understand different types of tests and when to use
- Understand how to develop documentation.

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Managing Programming

- Assigning Programmers
- Coordinating Activities
- Managing the Schedule

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Coordinating Activities

- Regular Project Meetings
- Follow standards
 - File naming (eg. version control)
 - Forms to be completed
 - Programming guidelines
- Coordinate traceability of implementation to requirements

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Avoid Implementation Mistakessuch as...

- Research-oriented development
- Using low-cost personnel
- Lack of code control
- Inadequate testing

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Designing Tests

1. Unit tests
2. Integration tests
3. System tests
4. Acceptance tests

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1. Unit or Class Tests

- Focus on a *single* unit – the *class*
 - Black-box Testing
 - White-box Testing

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2. Integration Tests

- How a *set of classes* work together
- Classes pass unit tests first
- Interface testing
- Use-Case Testing
- Interaction Testing
- System Interface Testing

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3. System Tests

- Requirements
- Usability
- Security
- Performance
- Documentation

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4. Acceptance Testing

- Alpha
 - Conducted by users to ensure they accept the system
- Beta
 - Users use real data, not test data

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Developing Documentation

- System Documentation
 - Produced by systems analysis and design process
 - Automate documentation for classes and methods
- User Documentation
 - User Manuals
 - Training Manuals
 - Online Help Systems

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Online Documentation Strengths

- Facilitates searching
- Same information can be presented in different formats
- Provide interaction with users using links or "tool-tips"
- Less expensive to distribute

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Designing Documentation Structure

- Table of Contents
- Navigation Controls lead user to Documentation topics
- How to perform certain tasks
- Definitions of important terms

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Develop User Documentation

- Reference Documents for web interface and system management components
 - Help topics
- Documentation Component
 - Table of Contents
 - Index
 - Find or search
 - Links to definitions

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Installation

- Be familiar with the system installation process.
- Understand different types of conversion strategies and when to use them.
- Understand several techniques for managing change.
- Be familiar with post-installation processes.

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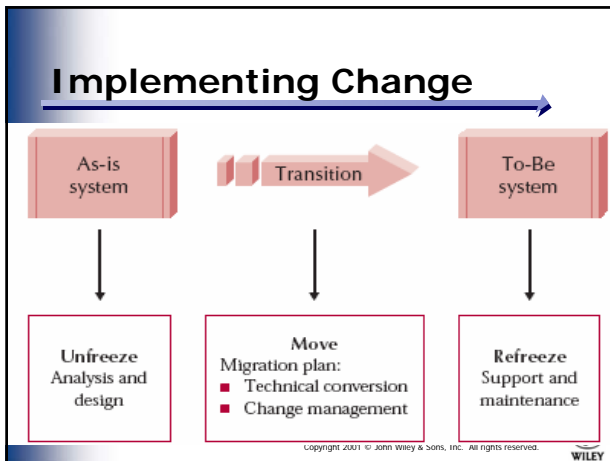
Key Ideas

- 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

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CONVERSION

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- ## Conversion Styles
- **Direct conversion**
 - The new system instantly replaces the old
 - **Parallel conversion**
 - For a time both old and new systems are used. The old is abandoned when the new is proven fully capable
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- ## Conversion Location
- **Pilot conversion**
 - One or more locations are converted to work out bugs before extending to other locations
 - **Phased conversion**
 - Locations are converted in sets
 - **Simultaneous conversion**
 - All locations are converted at the same time
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- ## Conversion Modules
- **Whole system conversion**
 - All modules converted in one step
 - **Modular conversion**
 - When modules are loosely associated, they can be converted one at a time
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CHANGE MANAGEMENT

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Understanding Resistance to Change

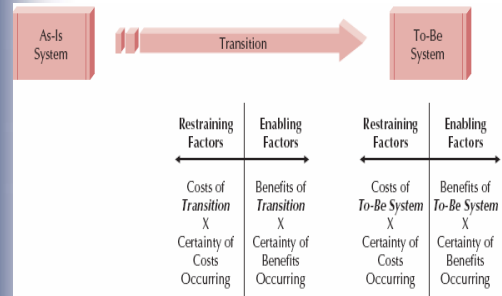
- What is good for the organization, is not necessarily good for the individuals who work there
- Cost versus benefit of transition as well as of to-be system
- Adapting to new work processes requires effort, for which there may be no additional compensation

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Costs and Benefits of Change



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Training

- Every new system requires new skills
- New skills may involve use of the technology itself
- New skills may be needed to handle the changed business processes

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POST-IMPLEMENTATION ACTIVITIES

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Institutionalization of the System

- Provide support
 - Assistance in using the system
- Provide maintenance
 - Repair or fix discovered bugs or errors
 - Add minor enhancements to provide added value
- Assess the project
 - Analyze what was done well
 - Discover what activities need improvement in the future



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Types of System Support

- On-demand training at time of user need
- Online support
 - Frequently asked questions (FAQ)
- Help desk
 - Phone service for known issues
 - Level 2 Support

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System Maintenance

- System maintenance is the process of refining the system to make sure it continues to meet business needs

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Sources of Change Requests

- Operations group problem reports (bugs)
- User requested enhancements
- Other system development projects
- Changes in underlying systems
- Organization strategy changes

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Summary (Construction)

- Assign programmers and coordinate their activities
- Plan for the testing of all aspects of the application
- Write the documentation for both the systems side and the user aspect

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Summary (Installation)

- **Conversion** is the technical process of replacing the old system with the new one. Designers select the method, timing, and location of the conversion process.
- **Change management** is aimed at helping system users to adopt the new system and use it productively

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Summary (Operations)

- **Post implementation activities** provide on-going support to users, include training people to use the system and provide participants in the development process the opportunity to learn and grow from their experiences

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