

# Systems Analysis & Design



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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.

# Managing Programming



- ☑ Assigning Programmers
- ☑ Coordinating Activities
- ☑ Managing the Schedule

# Coordinating Activities



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

# Avoid Implementation Mistakes .....such as...



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

# Designing Tests



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

# 1. Unit or Class Tests



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

## 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

# 3. System Tests



- ☑ Requirements
- ☑ Usability
- ☑ Security
- ☑ Performance
- ☑ Documentation

# 4. Acceptance Testing



- ✓ Alpha

- Conducted by users to ensure they accept the system

- ✓ Beta

- Users use real data, not test data

# 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

# 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

# Designing Documentation Structure




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

# 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

# Installation

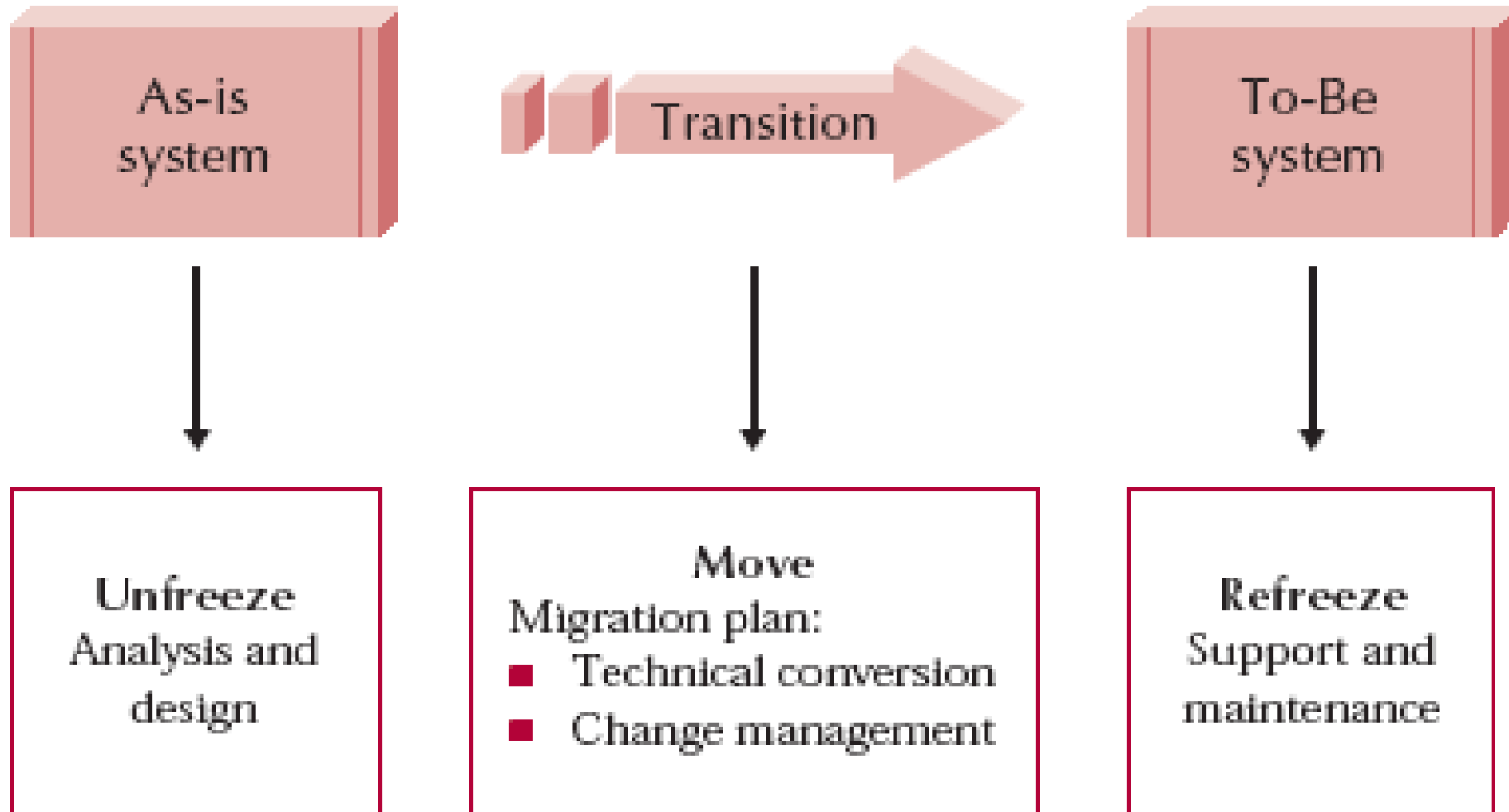
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- Be familiar with the system installation process.
  - Understand different types of conversion strategies and when to use them.
  - Understand several techniques for managing change.
  - Be familiar with post-installation processes.

# 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

# Implementing Change



# CONVERSION



# 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

# 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

# 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

# CHANGE MANAGEMENT

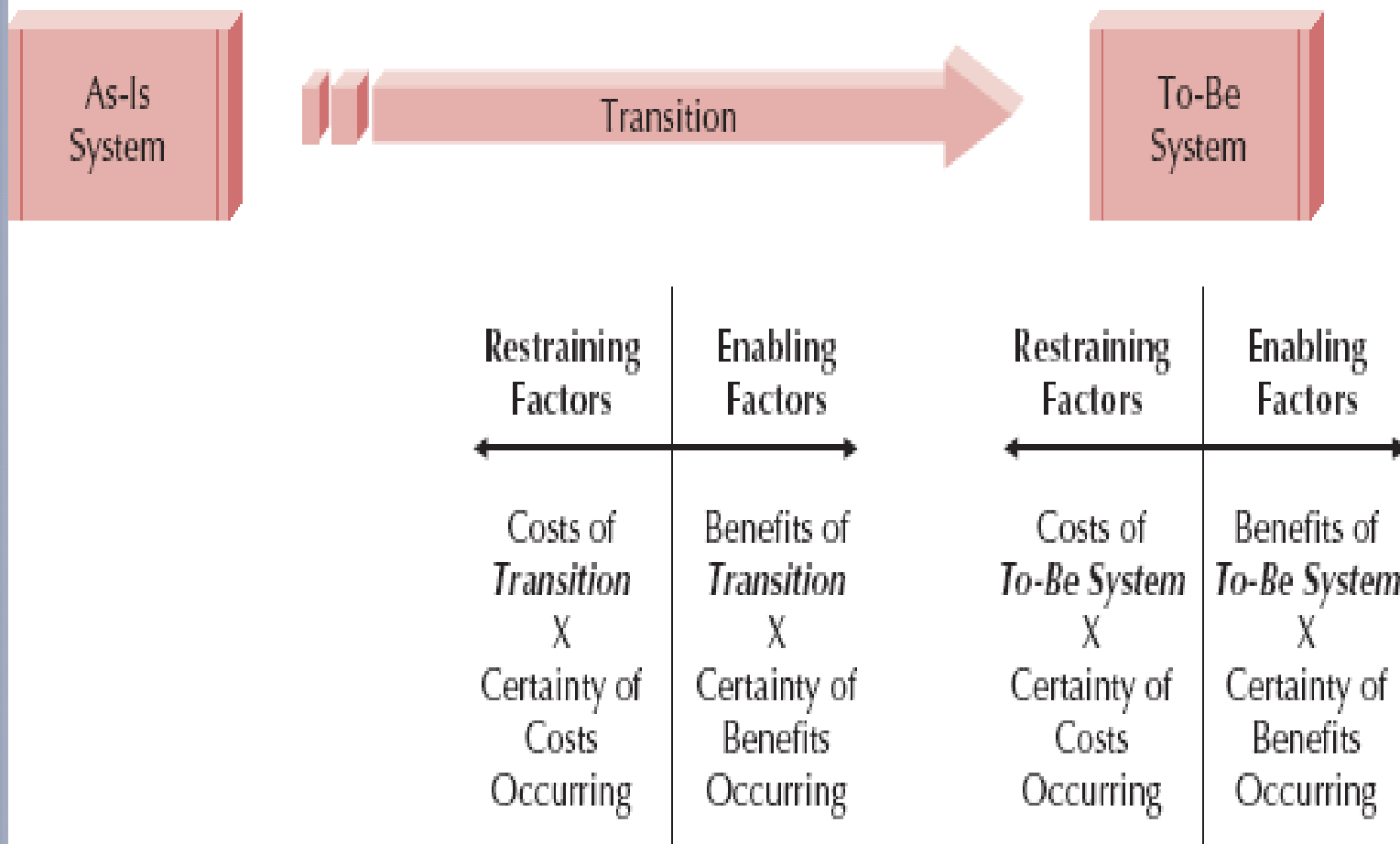


# Understanding Resistance to Change



- ❑ 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

# Costs and Benefits of Change



# 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

# POST-IMPLEMENTATION ACTIVITIES



# 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



# 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

# System Maintenance



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

# Sources of Change Requests



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

# 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

# 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

# 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