

Development Process

Chapter 5C

In this Lecture you will Learn:

- About the Unified Software Development Process
- How phases relate to workflows in an iterative life cycle
- An approach to system development
- Major activities in the development process

Unified Software Development Process

- Developed by the team that created UML
 - ◆ Uses the UML notation throughout the process
- Embodies best practice in system development
- Adopts an iterative approach with 4 main phases
 - ◆ Supports an iterative and incremental process
- Different tasks are captured in a series of workflows
 - ◆ Decomposes a large process into controlled iterations (mini projects)

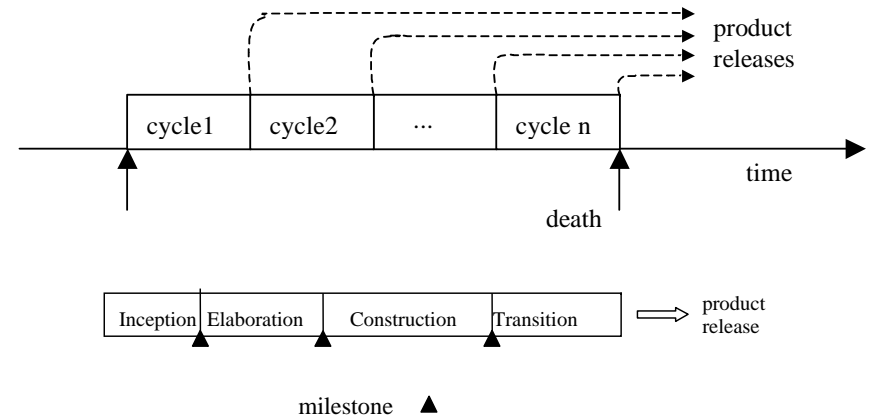
Best Practice

- Iterative and incremental development
- Component-based development
- Requirements-driven development
- Configurability
- Architecture-centrism
- Visual modelling techniques

Four Phases

- **Inception** is concerned with determining the scope and purpose of the project
- **Elaboration** focuses requirements capture and determining the structure of the system
- **Construction**'s main aim is to build the software system
- **Transition** deals with product installation and rollout

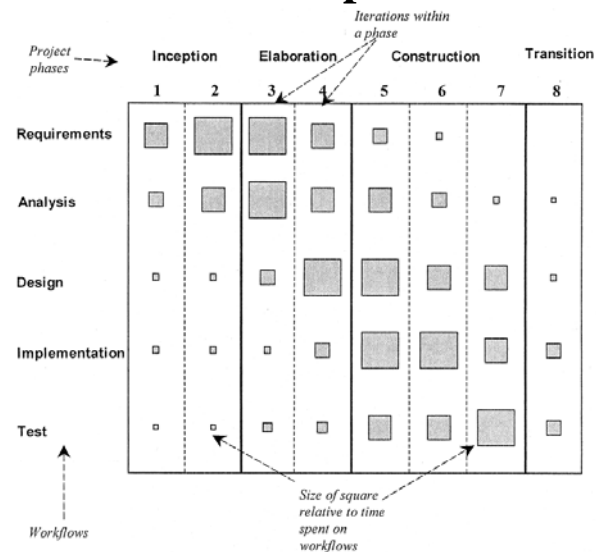
Cycles and Phases of a Cycle



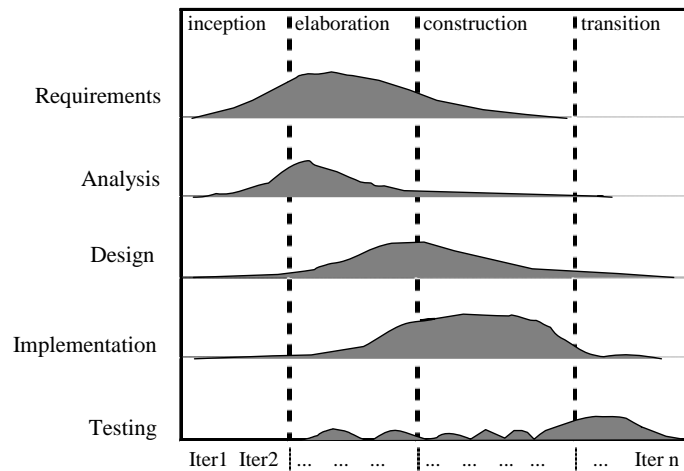
Phases, Workflows and Iterations

- Within each phase activities are grouped into workflows
- The balance of effort spent in each workflow varies from phase to phase
- Within phases there may be more than one iteration

Phases and Workflows in the Unified Software Development Process



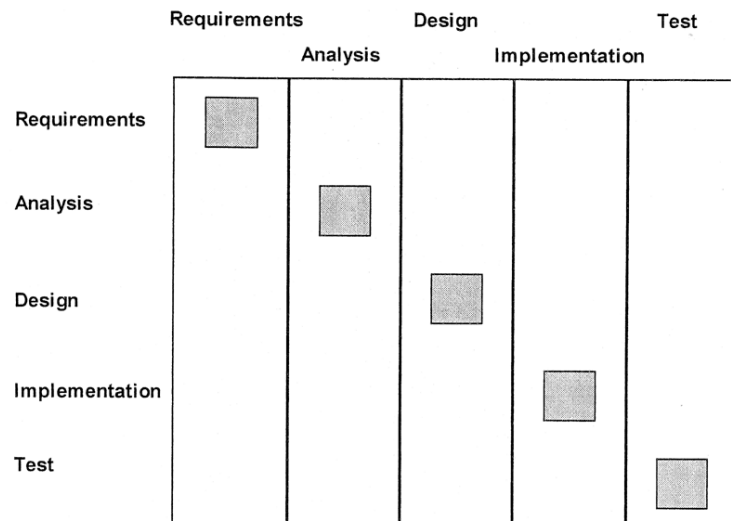
Distribution of Workflows over Phases



Difference from Waterfall Life Cycle

- In a waterfall life cycle project the phases and the workflows are linked together
- In the Requirements phase, only Requirements workflow activities are carried out
- All Requirements activity should be completed before work starts on Analysis
- In an iterative life cycle project it is recognised that some Requirements work will be happening alongside Analysis work

Phases and Activities in a Simplified Waterfall Process

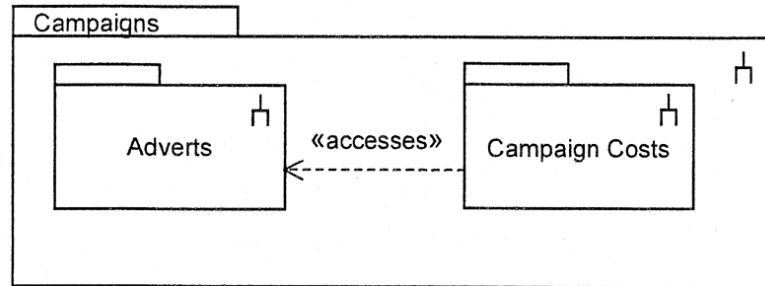


Major Activities of the Development Process

Activity	Techniques	Key Deliverables
Requirements Capture and Modelling	Requirements Elicitation Use Case Modelling Prototyping	Use Case Model Requirements List Prototypes Glossary

Initial System Architecture

- An initial system architecture may be developed to help guide subsequent steps during the development process. This initial architecture will be refined and adjusted as the development process

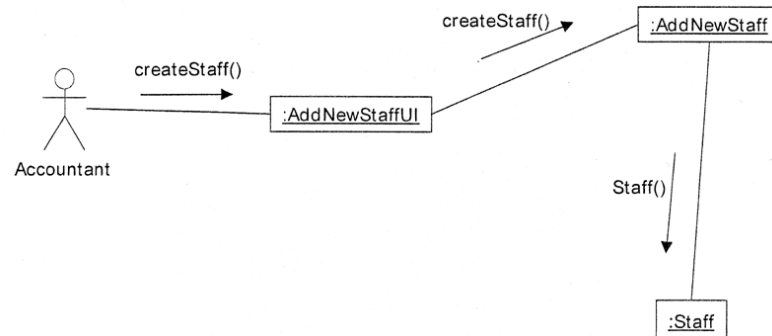


Major Activities of the Development Process

Activity	Techniques	Key Deliverables
Requirements Analysis	Collaboration Diagrams Class and Object Models Analysis Modelling	Analysis Models

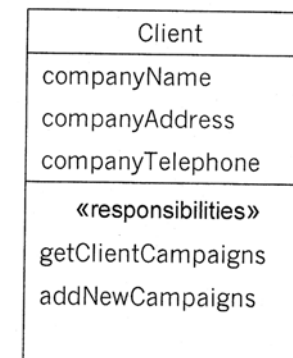
Collaboration Diagram

- Collaboration Diagram are used to model the object interaction.



Analysis Class Diagram

- The models for use case are then integrated to produce an analysis class diagram

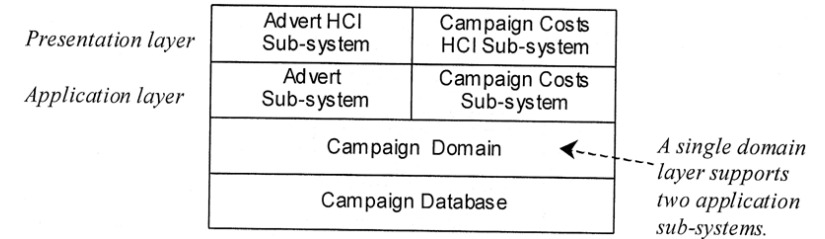


Major Activities of the Development Process

Activity	Techniques	Key Deliverables
System Design	Deployment Modelling Component Modelling Package Modelling Architectural Modelling	Overview Design and Implementation Architecture

System Architecture Diagram

- At this stage various decision concerning the design process are made including the further specification of a suitable system architecture.

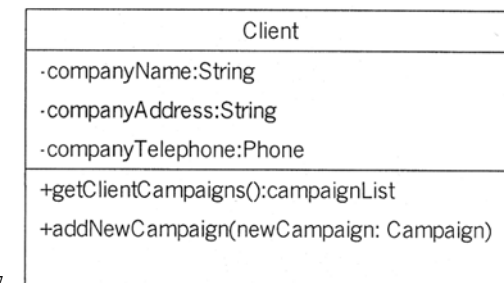


Major Activities of the Development Process

Activity	Techniques	Key Deliverables
Class Design	Class and Object Modelling Interaction Modelling State Modelling Design Patterns	Design Models

Design Class Diagram

- The separate models are integrated to produce a detail design class diagram.
- Design class have attributes and operations specified to replace the less specific responsibility that may have been identified by the analysis activity.



Major Activities of the Development Process

Activity	Techniques	Key Deliverables
User Interface Design	Class and Object Modelling Interaction Modelling State Modelling Package Modelling Prototyping Design Patterns	Design Models with Interface Specification

Major Activities of the Development Process

Activity	Techniques	Key Deliverables
Data Management Design	Class and Object Modelling Interaction Modelling State Modelling Package Modelling Design Patterns	Design Models with Database Specification

Major Activities of the Development Process

Activity	Techniques	Key Deliverables
Construction	Programming Component Re-use Database DDL Programming Idioms	Constructed System Documentation

Major Activities of the Development Process

Activity	Techniques	Key Deliverables
Testing	Programming Test Procedures	Tested System

Major Activities of the Development Process

Activity	Techniques	Key Deliverables
Implementation		Installed System

Class Exercise

- What is the difference between the Unified Software Development Process and the waterfall life cycle in the relationship between activities and phases?