Introduction to Information Systems Development
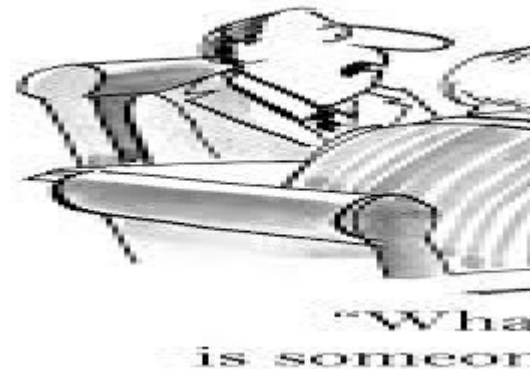
Learning Objectives

- Systems development life cycle
- Team roles & skill sets
- The Unified Process

Introduction

- Why do we need a formal process?
  - Failures occur (too) often
  - Creating systems is not intuitive
  - Projects are late, over budget or delivered with fewer features than planned

"Wha... is someon...

Introduction

- The System Analyst is the key person
  - Designs a system to add value
  - Must understand the business processes
  - Job is rewarding, yet challenging
  - Requires specific skill sets

THEY TRIED TO MAKE THE ANALYSIS MANUAL MORE PALATABLE BY MAKING IT INTO A POP-UP BOOK.

The SDLC Process

- The process consists of four phases

- Each phase consists of a series of steps

- Each phase is documented (deliverables)

- Phases are executed sequentially, incrementally, iteratively or in some other pattern

Questions to be Answered

- ## Planning phase
  - Why should we build this system?
  - What value does it provide?
  - How long will it take to build?

- ## Analysis phase
  - Who will use it?
  - What should the system do for us?
  - Where & when will it be used?

- ## Design phase
  - How should we build it?

- ## The Implementation Phase

SDLC: The Planning Phase

1. Project Initiation
   - Develop/receive a system reques
   - Conduct a feasibility analysis
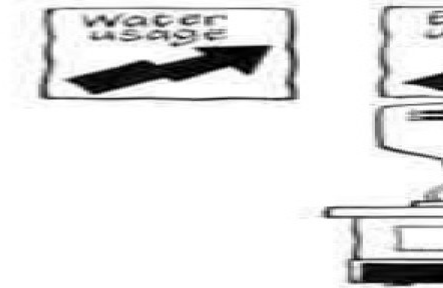
2. Project Management
   - Develop the work plan
   - Staff the project
   - Monitor & control the project

SDLC: The Analysis Phase

1. Develop an analysis strategy
   - Model the current system
   - Formulate the new system

2. Gather the requirements
   - Develop a system concept
   - Create a business model to represent:
     - Business data
     - Business processes

3. Develop a system proposal

SDLC: The Design Phase

1. Develop a design strategy

2. Design architecture and interfaces

3. Develop databases and file specifications

4. Develop the program design to specify:

   - What programs to write

   - What each program will do

SDLC: The Implementation Phase

1. Construct the system
   - Build it (write the programming code)
   - Test it
2. Install system
   - Train the users
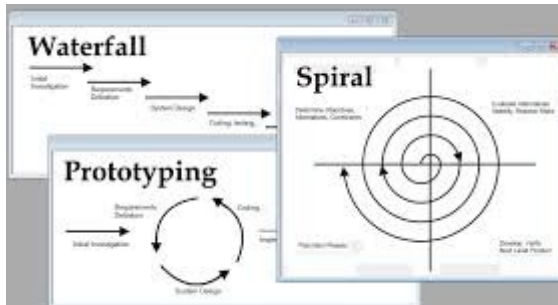3. Support the system (maintenance)

SDLC Roles

SDLC: Methodologies

- Methodology: a formalized approach to implementing the SDLC

- Categories
  - Process oriented
  - Data centered
  - Object-oriented
  - Structured
  - Rapid action development
  - Agile development

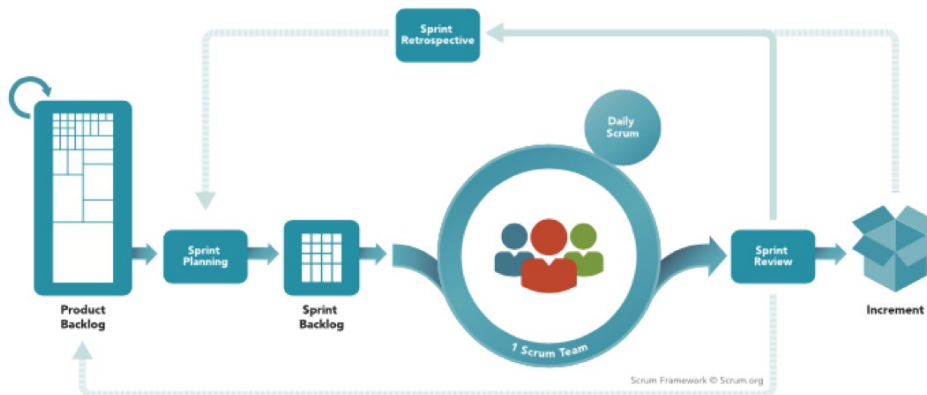# Classes of Methodologies

- Structured Development
  - Waterfall Development
  - Parallel Development

- Rapid Application Development
  - Phased
  - Prototyping

SCRUM FRAMEWORK

- Agile Development
  - eXtreme Programming
  - SCRUM

The Systems Analyst: Skills

- Agents of change
  - Identify ways to improve the organization
 - Motivate & train others

- Skills needed:
  - Technical: must understand the technology
  - Business: must know the business processes
  - Analytical: must be able to solve problems
  - Communications: technical & non-technical audiences
  - Interpersonal: leadership & management
  - Ethics: deal fairly and protect confidential information

The Systems Analyst: Roles

- **Business Analyst** → Focuses on the business issues
- **Systems Analyst** → Focuses on the IS issues
- **Infrastructure Analyst** → Focuses on the technical issues
- **Change Management Analyst** → Focuses on the people and management issues
- **Project Manager** → Ensures that the project is completed on time and within budget
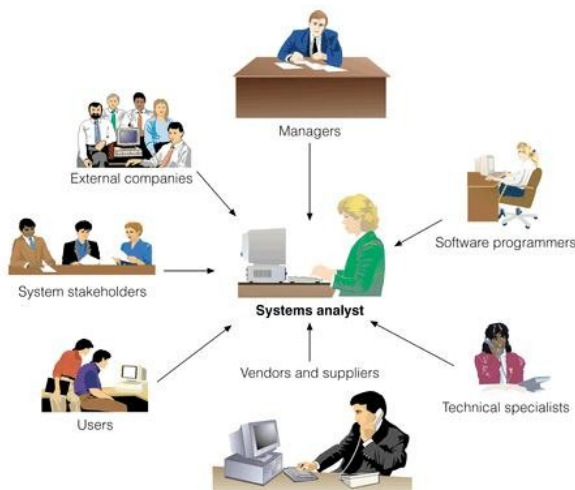
The Unified Process

- A specific methodology that maps out when and how to use the various UML techniques for object-oriented analysis and design

- A two-dimensional process consisting of phases and workflows
  - Phases are time periods in development
  - Workflows are the tasks that occur in each phase
  - Activities in both phases & workflows will overlap

The Unified Process
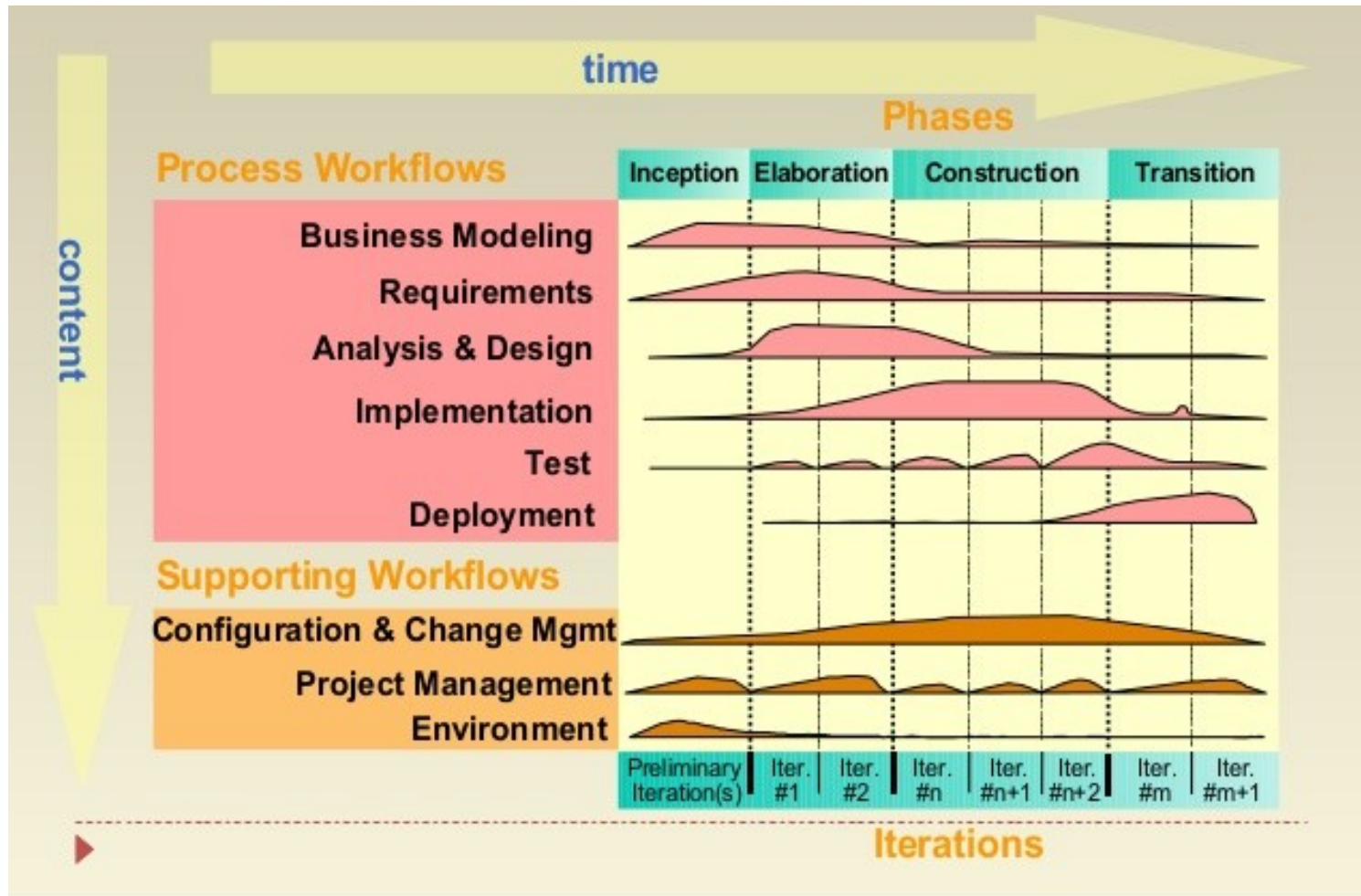
Unified Process Phases

- **Inception**
  - Feasibility analyses performed
  - Workflows vary but focus is on business modeling & requirements gathering

- **Elaboration**
  - Heavy focus on analysis & design
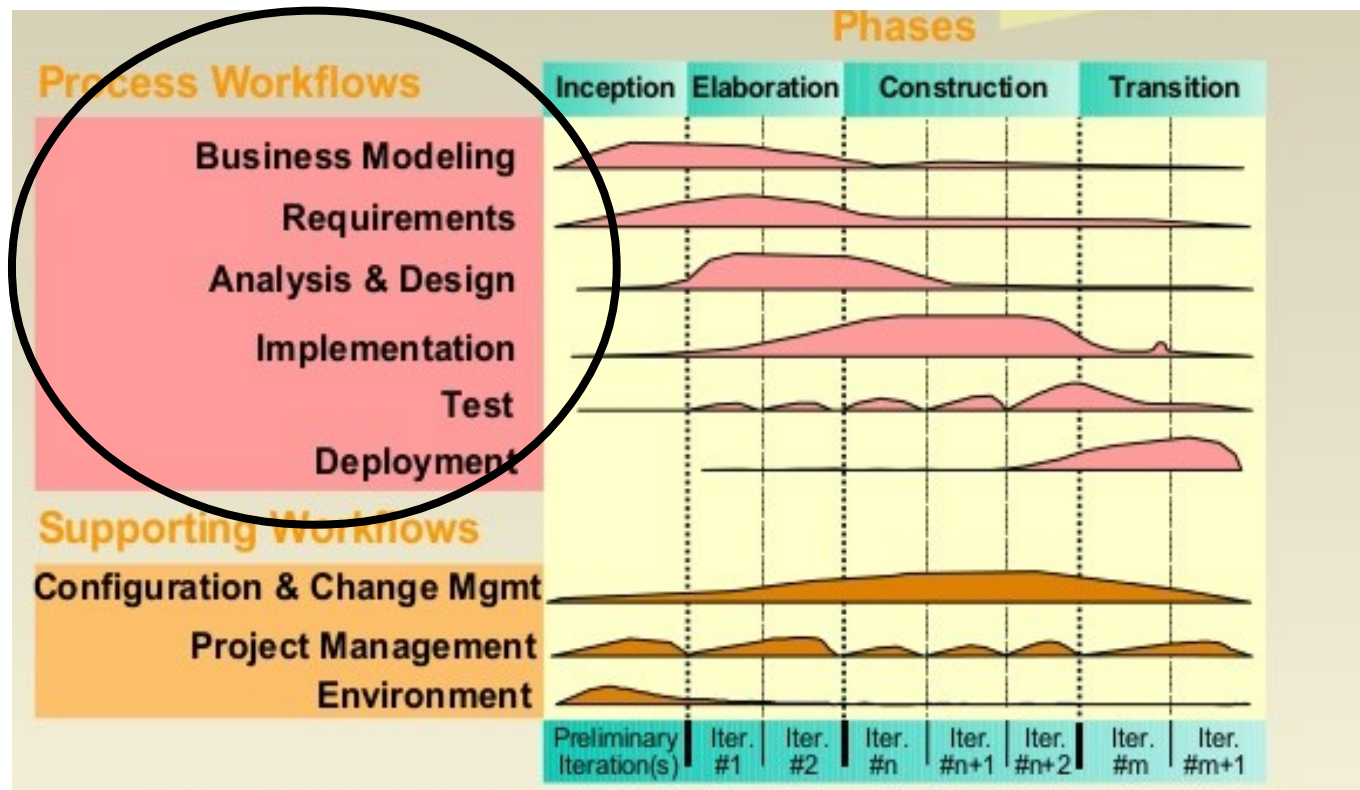 - Other workflows may be included

- **Construction:**
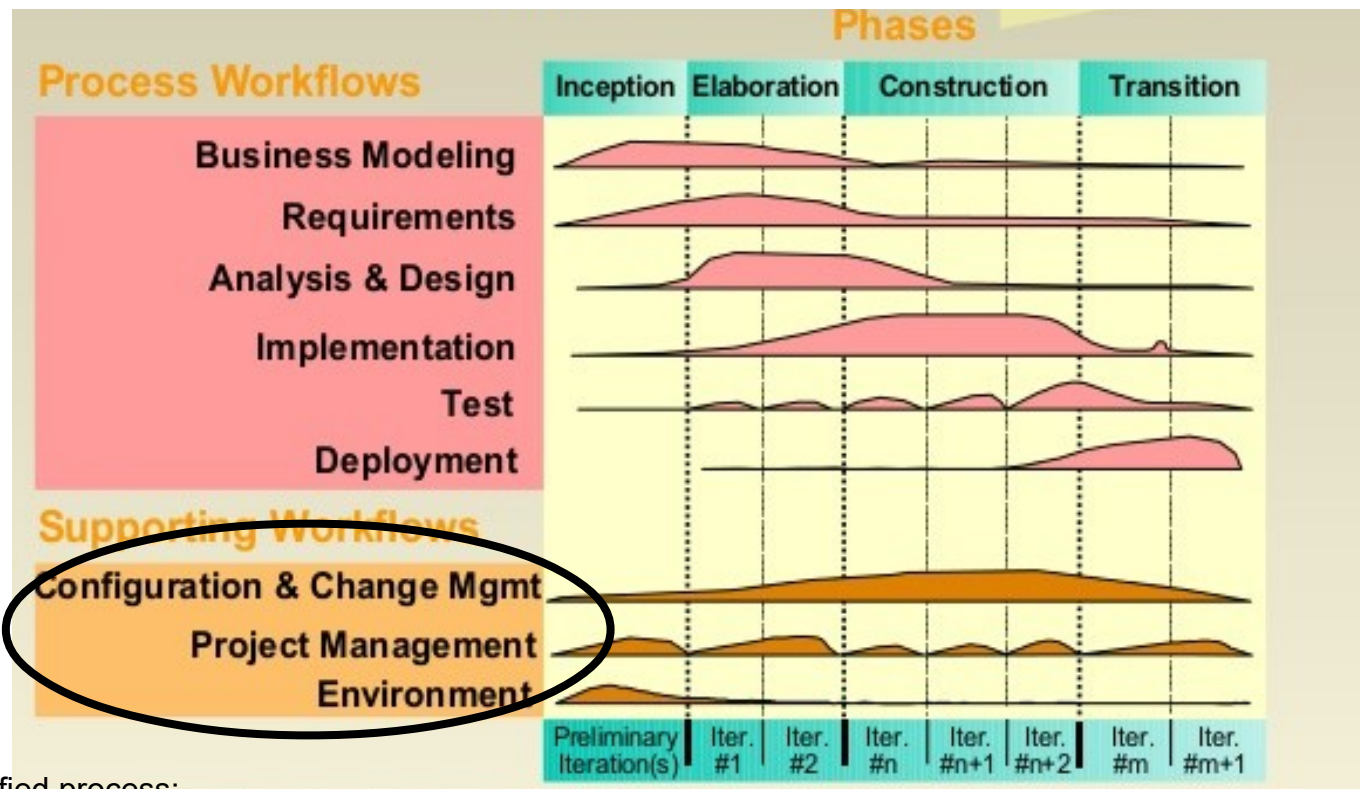 - Focus on programming (implementation)

- **Transition**
  - Focus on testing & deployment

Process Workflows

Supporting Workflows

the *enhanced* unified process:
- Operations and support*
- Infrastructure management*

Extensions to the Unified Process

- The Unified Process does not include explictly:
  - Staffing
  - Budgeting
  - Contract management
  - Maintenance
  - Operations
  - Support
  - Cross- or inter-project issues

Summary

- All systems development projects follow essentially the same process, called the system development life cycle (SDLC)

- System development methodologies are formalized approaches to implementing SDLCs

- The systems analyst needs a variety of skills and plays a number of different roles

- The Unified Process is a two-dimensional systems development process described with a set of phases and workflows

Bibliography

- Dennis, Wixom, & Tegarden Systems (2015) Analysis and Design with UML, 5th Edition John Wiley & Sons, Inc