

# Software Specification and Design - Week 1

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A bit about process

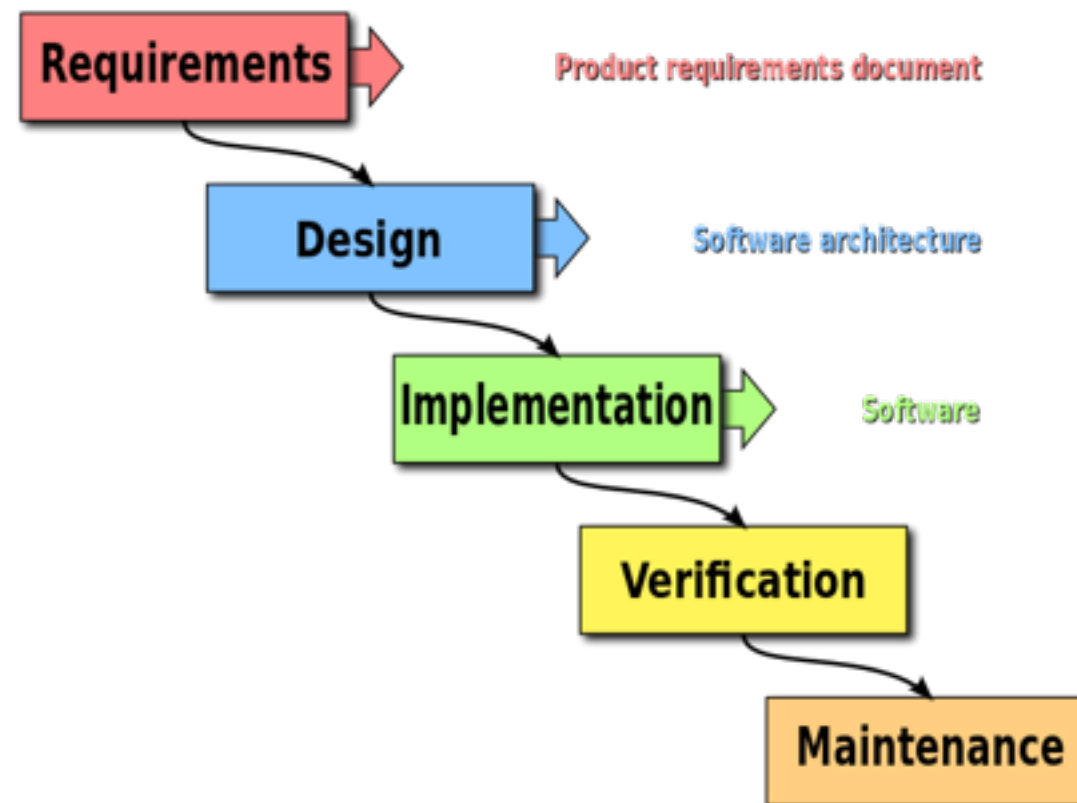
# Topics

- Waterfall model
- Iterative & evolutionary development
- Agile
- UP, RUP

# Waterfall model

- Sequential
- Borrowed from construction industries
- Define most of requirements at the beginning
- Advantages and disadvantages?

# Waterfall model (2)



[http://en.wikipedia.org/wiki/Waterfall\\_model](http://en.wikipedia.org/wiki/Waterfall_model)

# Waterfall model (3) - Problems

- Users often don't know what they actually want.
- It's often too late to go back
- Requirements change ~ 25% - 50%
- The bigger project, the more change

# Waterfall model (4) - When to use

- If the requirements are well known, clear and fixed.  
(Not likely, but possible)
- You have enough expertise
- Fix contracts/deliver date/budget

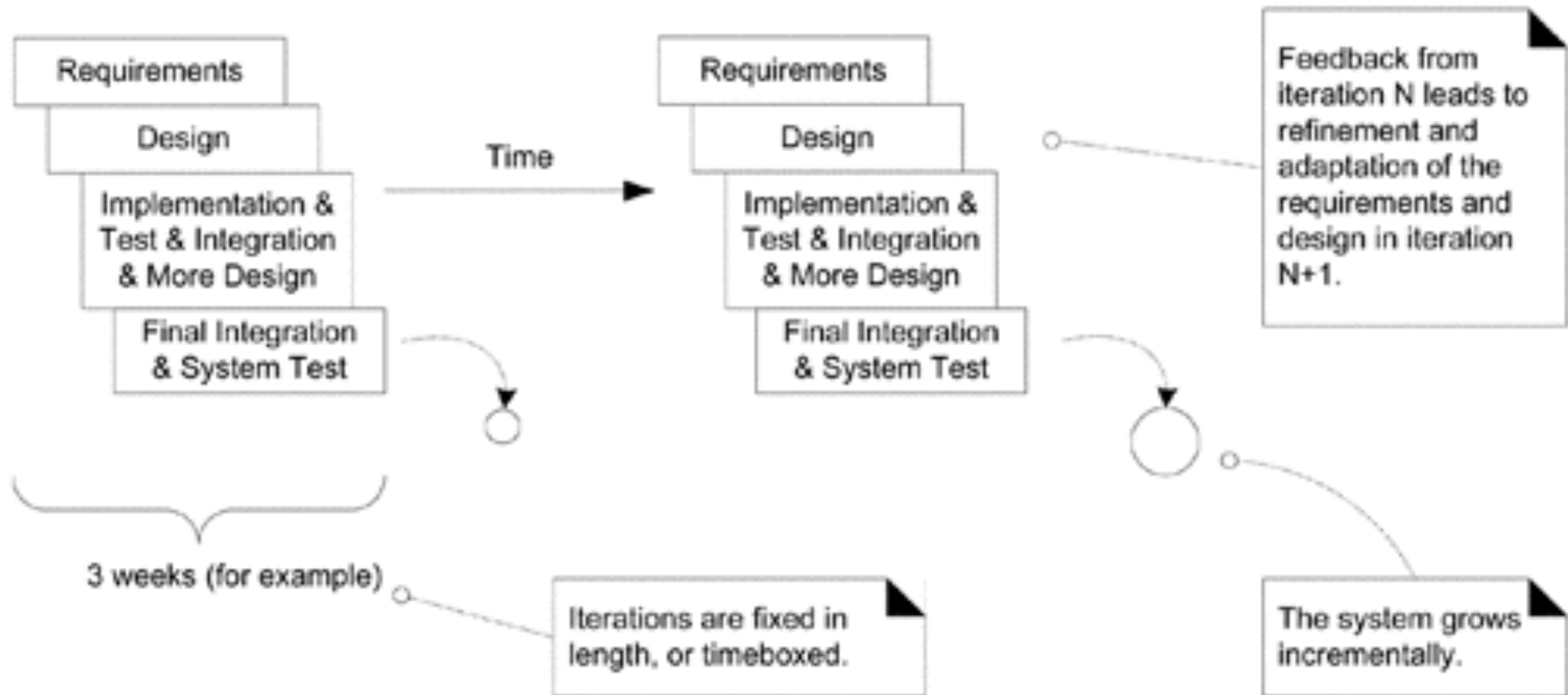
# Iterative and Evolutionary Development

- Iterations
- Each can be thought as a mini project
- The system grows over time
- Iterative and Incremental development  
(The names gave different meanings for different people)



# Iterative and Evolutionary

## 2 – ITERATIVE, EVOLUTIONARY, AND AGILE



# Iterative and Evolutionary Development (3) - Nature

- Embrace change
- Early iterations are far from the true path of the system
- In late iterations, significant change is rare (But can occur)

# Iterative and Evolutionary Development (4) - Benefits

- Less project failure
- Early visible progress
- Early feedback
- Reduce complexity

# Agile

- It's impossible to exactly define Agile
- Scrum, XP, Kanban

# Agile Manifesto

Individuals and interactions

over processes and tools

Working software

over comprehensive documentation

Customer collaboration

over contract negotiation

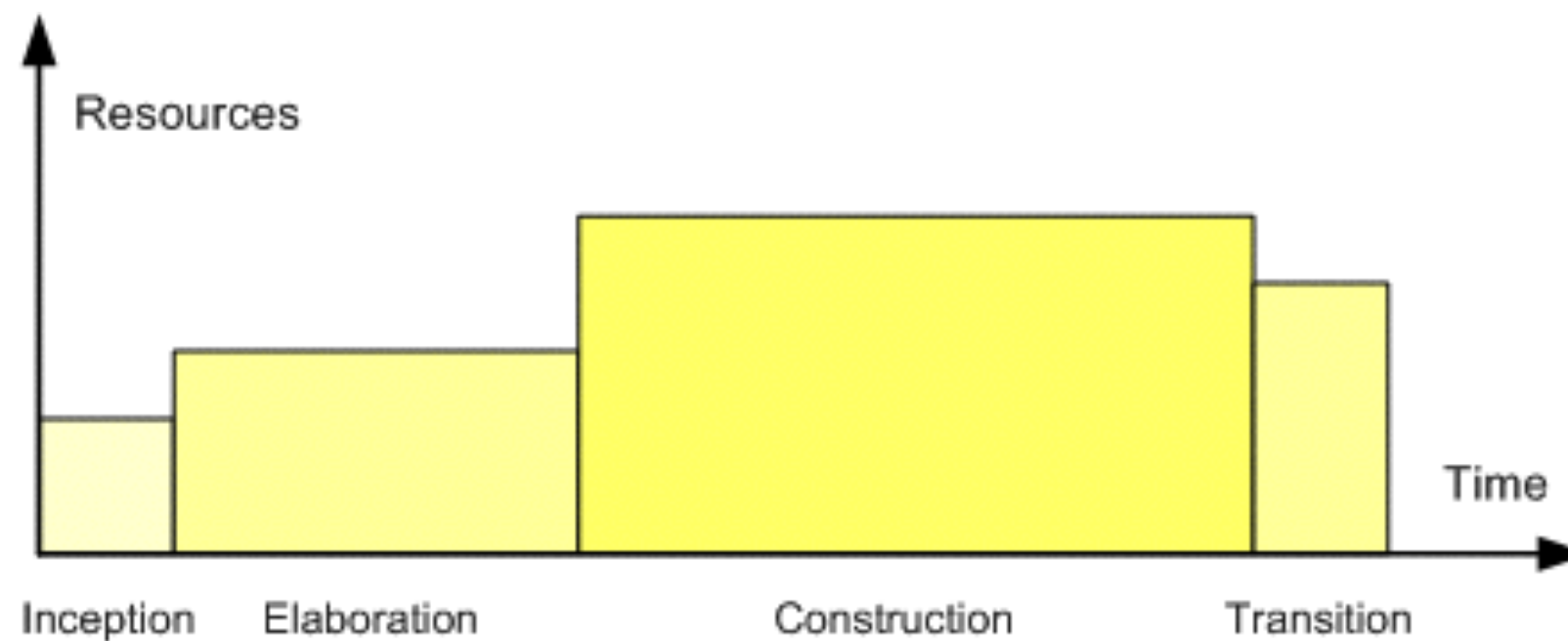
Responding to change

over following a plan

# Unified Process

- Customizable development framework
- Iterative and incremental process
- Divided into 4 phases
  - Inception
  - Elaboration
  - Construction
  - Transition

# Unified Process



From Wikipedia

# Unified Process - Inception

- Business cases
- Scope
- Some use cases
- Usually very short



# Unified Process - Elaboration

- Divided into iterations
- Majority of requirements
- Some more use cases
- Some more diagrams
- The core parts of the project are Implemented

# Unified Process - Construction

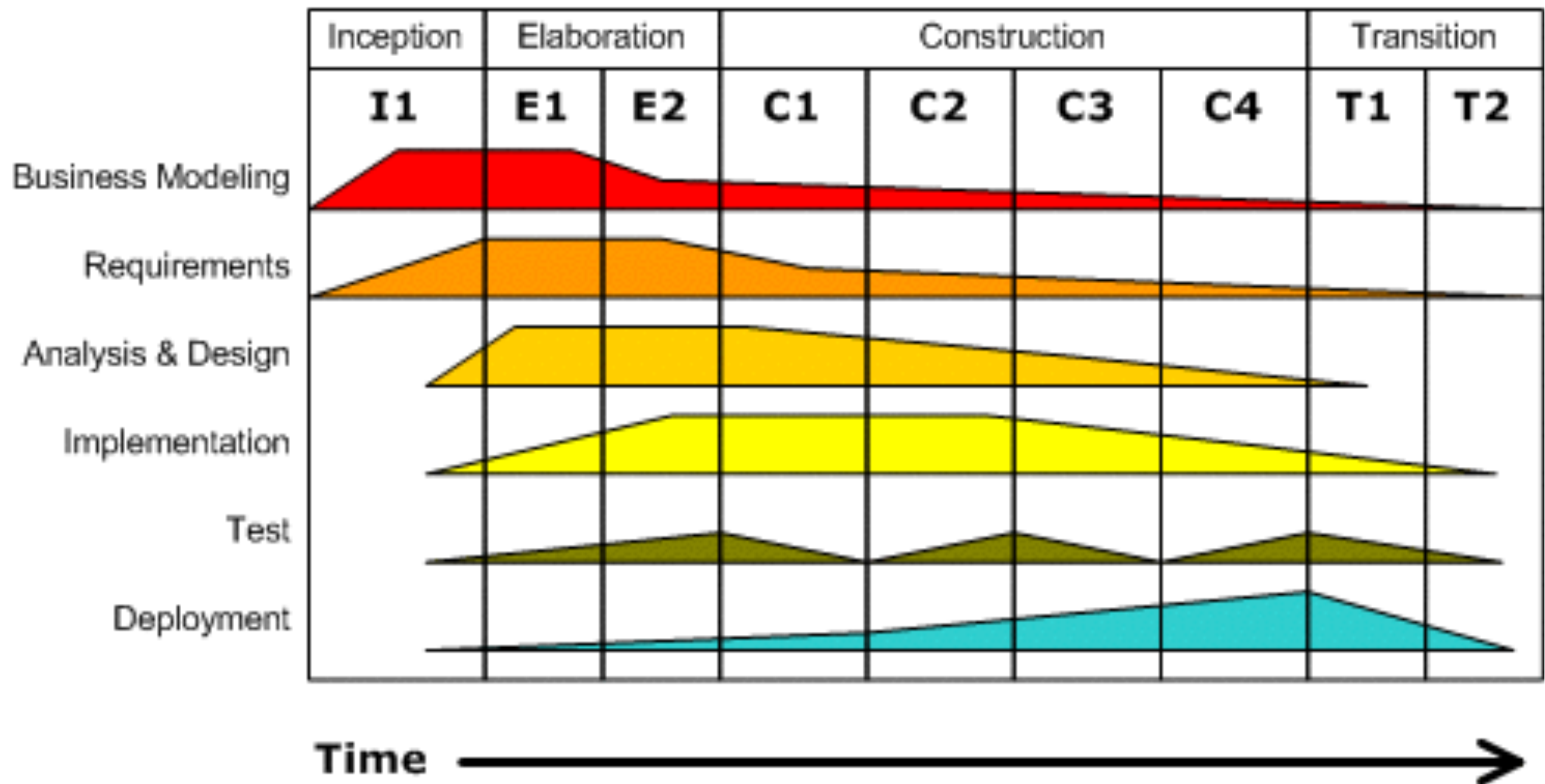
- Divided into iterations
- Build the software
- Lot's of code

# Unified Process - Transition

- From development to production
- Beta testing
- Training

## Iterative Development

Business value is delivered incrementally in time-boxed cross-discipline iterations.



From Wikipedia