

# Modellistica Medica

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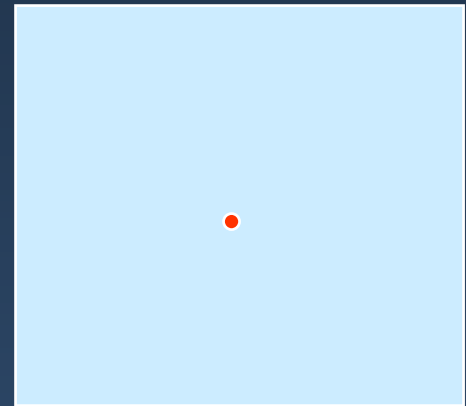
# Lezione 4

Case study

Software process

# The problem to study

- A radioactive source inside a box of water
- We want to study the energy deposit in the water



# What do we do?

# Inception

- The early stage of a project
- Is it worth investing into this project?
- Getting a first rough idea of what is to be done

# A vision of the project

- Who are the stakeholders?
- What are their essential needs?
- Are there any major constraints?

# Risks

- The funds to buy the PC where to develop the project may be available later than the expected date
- The most expert developer could take 2 months off trekking in Patagonia
- The Hospital is thinking about buying sources of a different isotope
- The physics model of the radioactive decay in the simulation system may be not accurate enough for our needs



Can we avoid them?

Can we minimize the damage?

# Software development plan

- How long would it take roughly?
- What resources are needed?
- How many iterations would be reasonable?



# The software process

- What process model do we adopt?
- Documentation and deployment of the process for the project
  - Based on the organization's process framework

# Tools

- CVS
- GNUmake
- Rational Rose
- Code Wizard
- ...

# Configuration management

- A repository for the project at least...

# Milestone

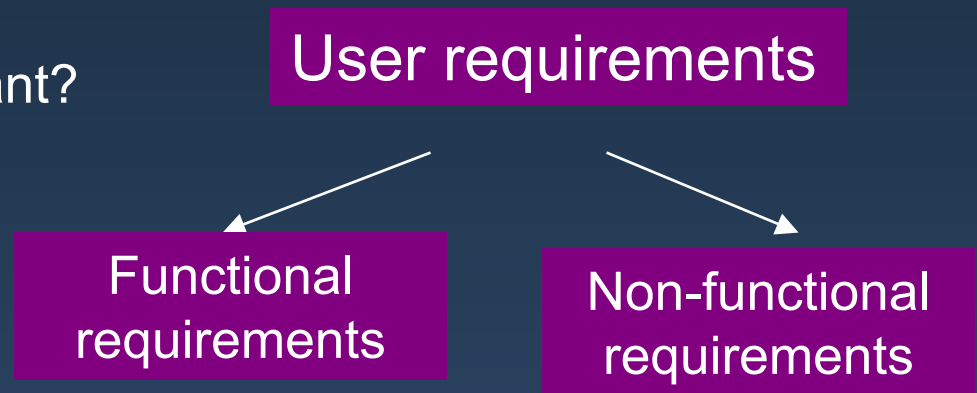
- OK, it is worthwhile working on this project

# Elaboration

- Getting a solid idea of what we want to do
- The same issues as in the inception phase revisited
  - But now the emphasis is on stability, rather than feasibility
- A prototype could be a helpful playground
  - To exercise idea and verify that we understand the problems
  - To show something concrete to the stakeholders, on which they can express their opinion, give suggestions etc.

# Understanding the scope of the problem

- What do the software users want?



- Often users don't know what they want from the software
  - But they have some idea of what they do

Use cases

# Documenting the basics

- Use case model
- Architecture
- Baseline design model
- Prototype
- Iteration plan
- Guidelines

# Milestone

- OK, we have a clear idea of what we want to do
- OK, we know how to do it
- OK, we have the tools needed to do the work
- OK, we have a reasonable work plan



# Construction

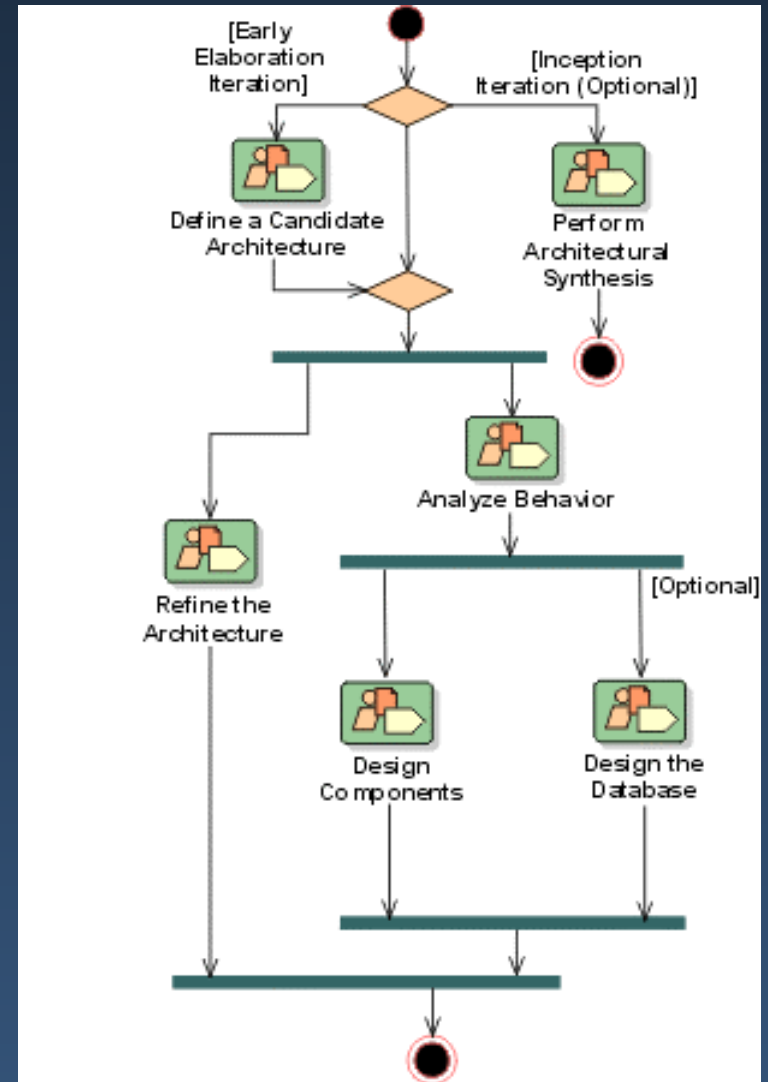
- Now we have to do the work...
- We have something preliminary built in the previous phases
- We work on it to bring it to maturity

# Several areas (disciplines) of work

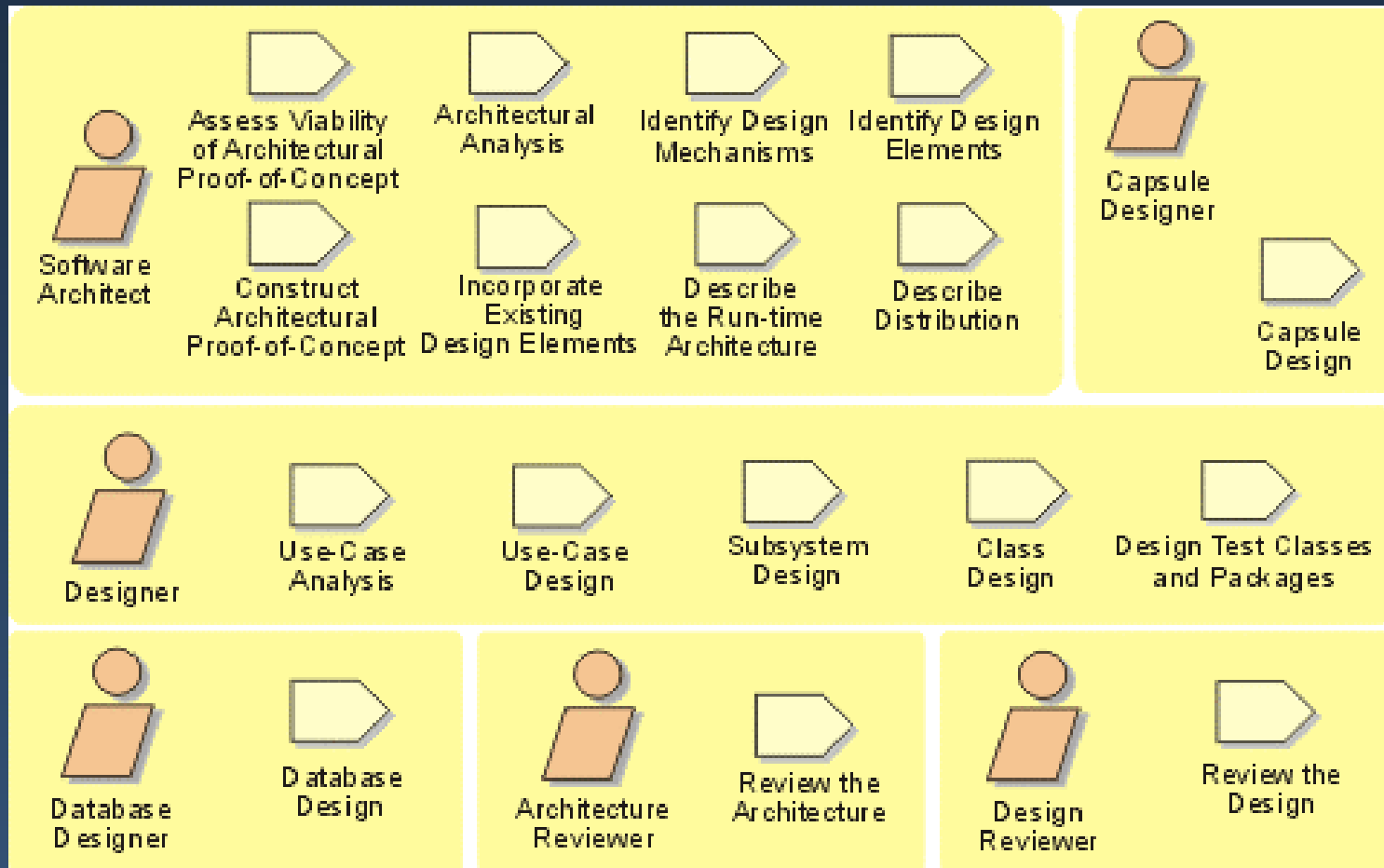
- Requirements
- Analysis & Design
- Implementation
- Test
- Deployment
  
- Environment
- Project Management
- Configuration & Change Management

# Each one with a series of logically connected actions

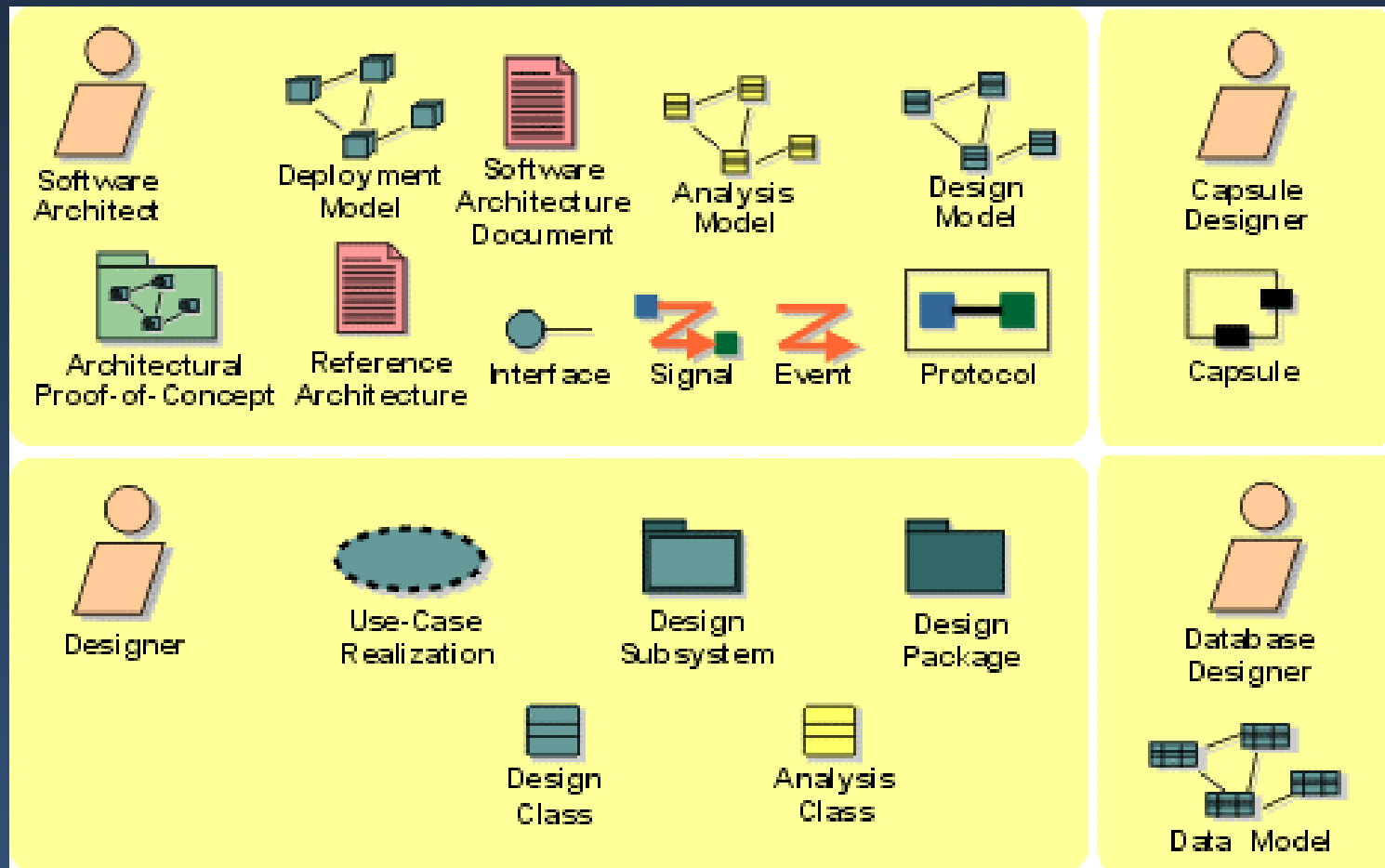
For instance,  
analysis and design



# Many activities and roles



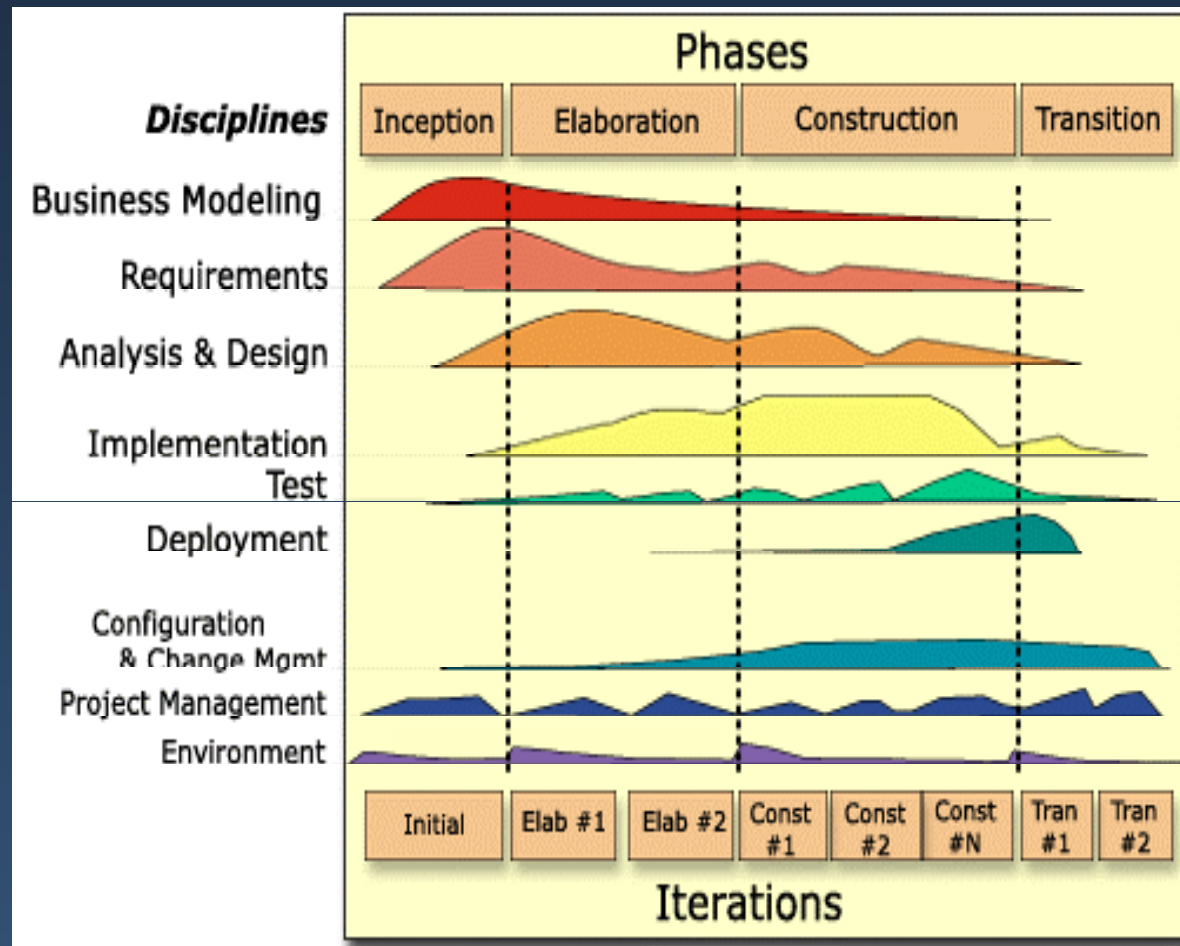
# Many products



# Things change...

- While we are implementing the system, the Boss comes to our office, and tells us that:
  - The source is not I, it is Ir
  - We could also evaluate what would happen in Iron, not only in water
  - He also wants a nice colour picture of the tracks in water

# Iterative and incremental software process



# Milestone

- We have a reasonable beta version
  - We can verify if it works fine
  - Does it satisfy the other people involved? (boss, doctors, users?)



# Transition

- We have built our system
- Now it's time for fine-tuning...
- ...and to get ready for delivering the software
  - Code
  - User documentation
  - Training material

# Milestone

- We release the product
- ...a bottle of Champagne

# The end?

Well, not necessarily...

The telephone rings...

It's doctor X, he doesn't know how to visualize the set-up...



User Support