MI0A112T - Ingénierie du logiciel avancé

Tableau de bord / Cours / S2 - MI0A112T

Modern Requirements and Business Analysis
2 - Requirements Engineering in a Nutshell

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UE 1002 – Spécification des exigences

https://bit.ly/jmbruel

@SmartModelTeam

https://github.com/smart-researchteam

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SM@RT

IRIT

Official reference:

https://iris.univ-tlse2.fr/course/view.php?id=3645

How to cite:

Jean-Michel Bruel, “Cours Ingénierie des Exigences – Master ICE”. Toulouse, 2024.

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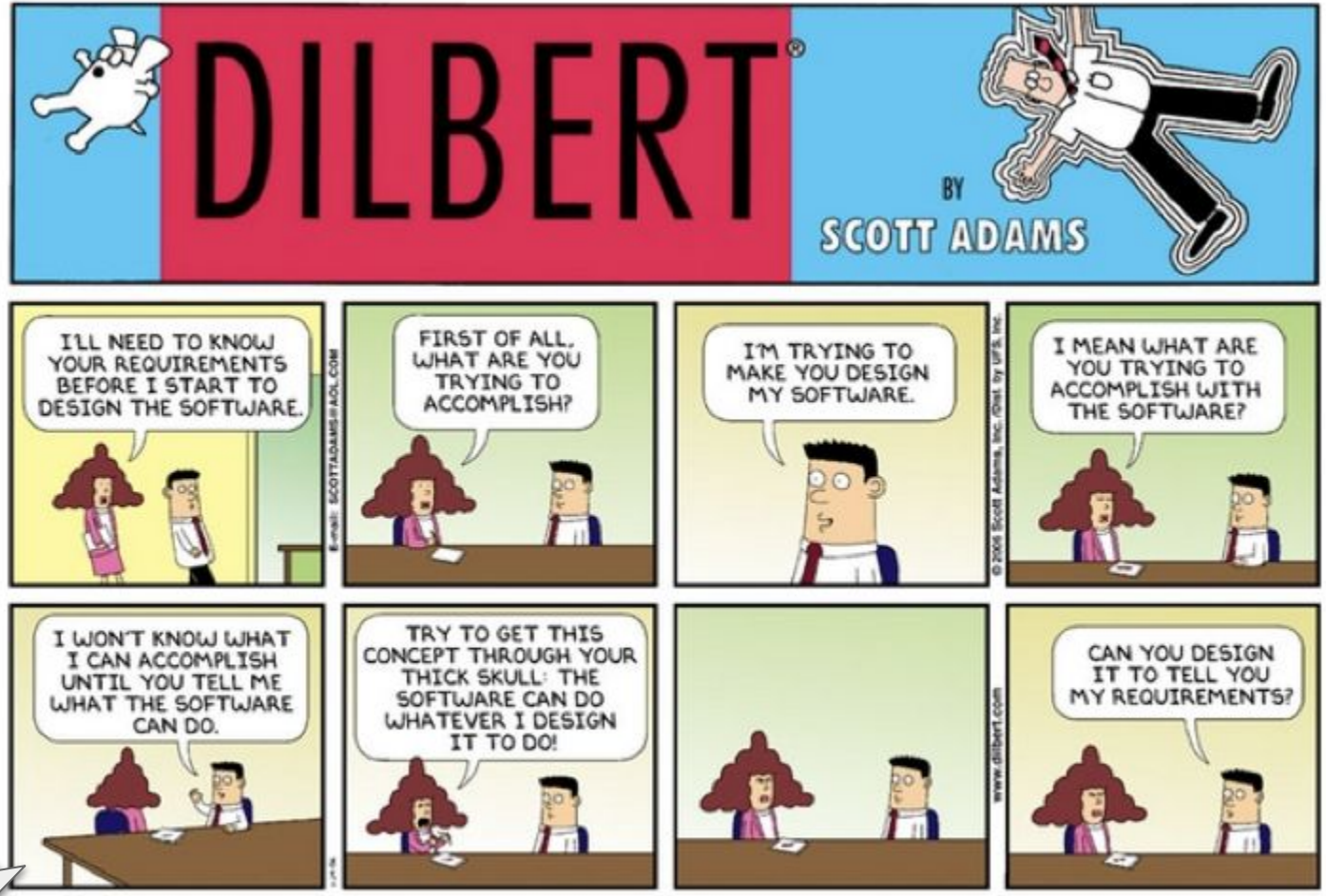
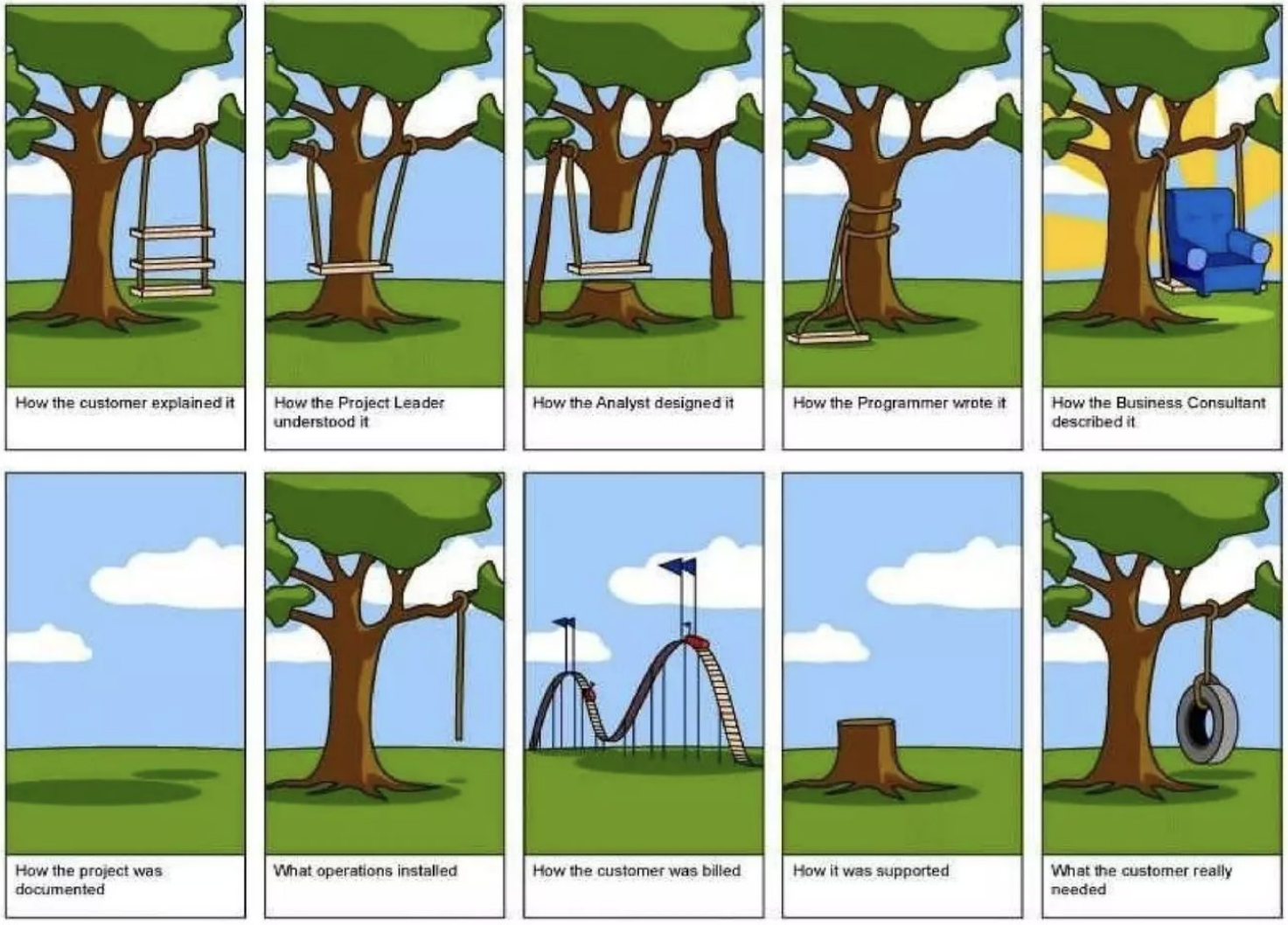
Outline

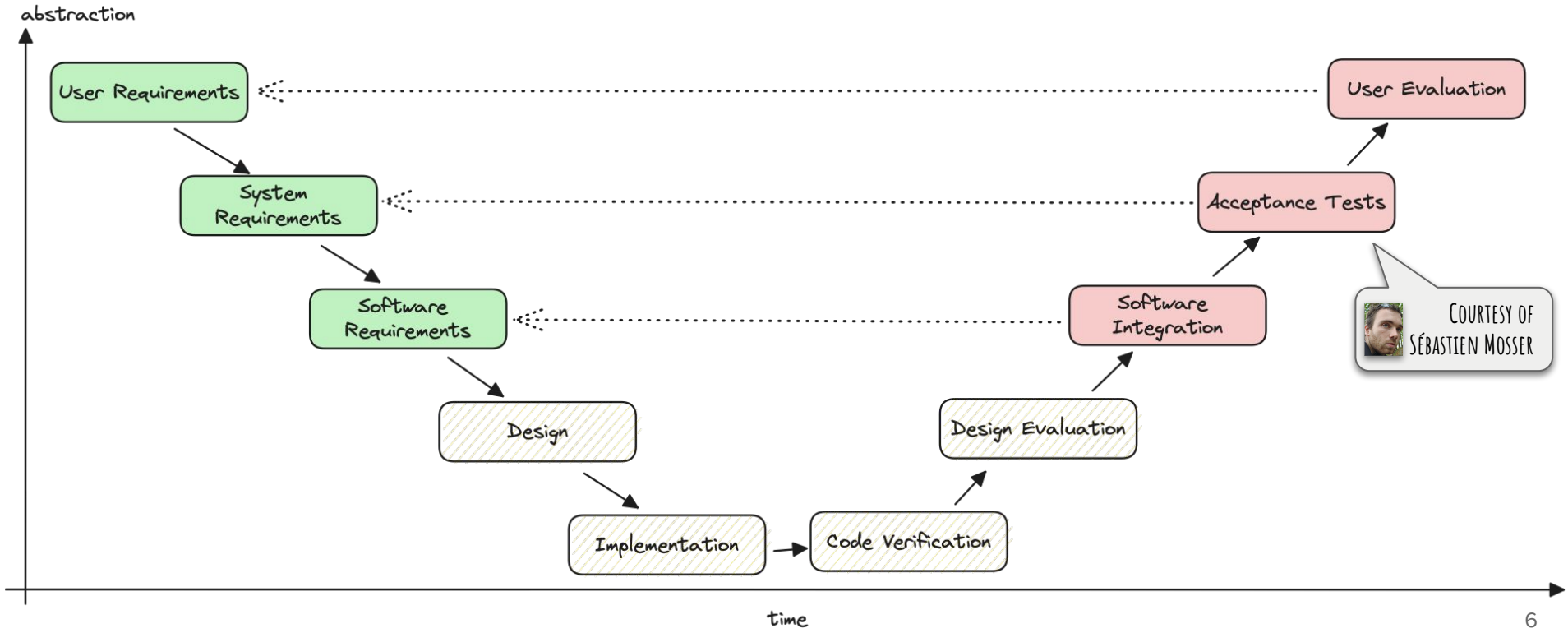
- (22/04) 4h - Introduction to RE
- (24/04) 4h - Practical aspects
- (29/04) 4h - PEGS approach / Reqs taxonomy
- (02/05) 4h - Introduction to STIMULUS
- (02/05) 2h - Tooling / Practice
- (06/05) 2h - PEGS approach / Reqs taxonomy
- (07/05) 6h - Project #phase1
- (15/05) 4h - Project #phase2
- (17/05) 3h - Project presentation / Feedback



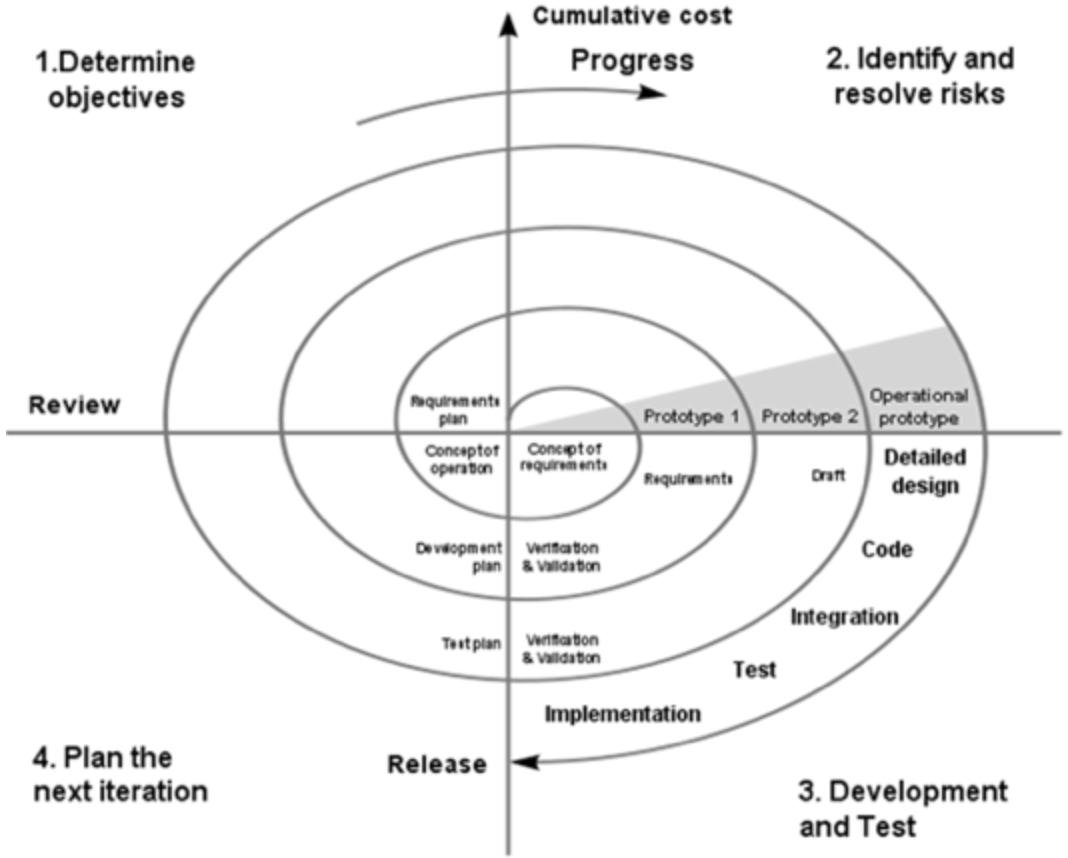
Courtesy of P.-J. Charrel


How the customer explained it
How the Project Leader understood it
How the Analyst designed it
How the Programmer wrote it
How the Business Consultant described it
How the project was documented
What operations installed
How the customer was billed
How it was supported
What the customer really needed

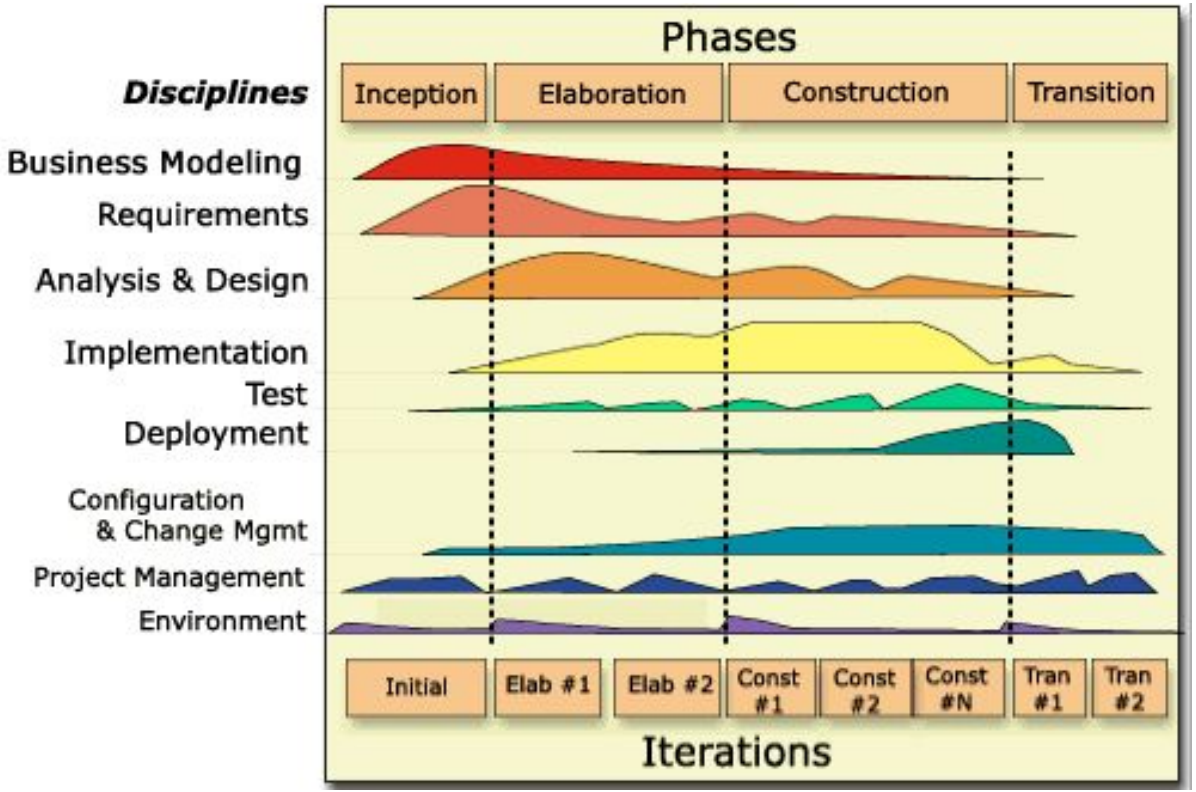
The “V” cycle


abstraction
User Requirements
System Requirements
Software Requirements
Design
Implementation
Code Verification
Design Evaluation
Software Integration
Acceptance Tests
User Evaluation
Courtesy of Sébastien Mosser
time

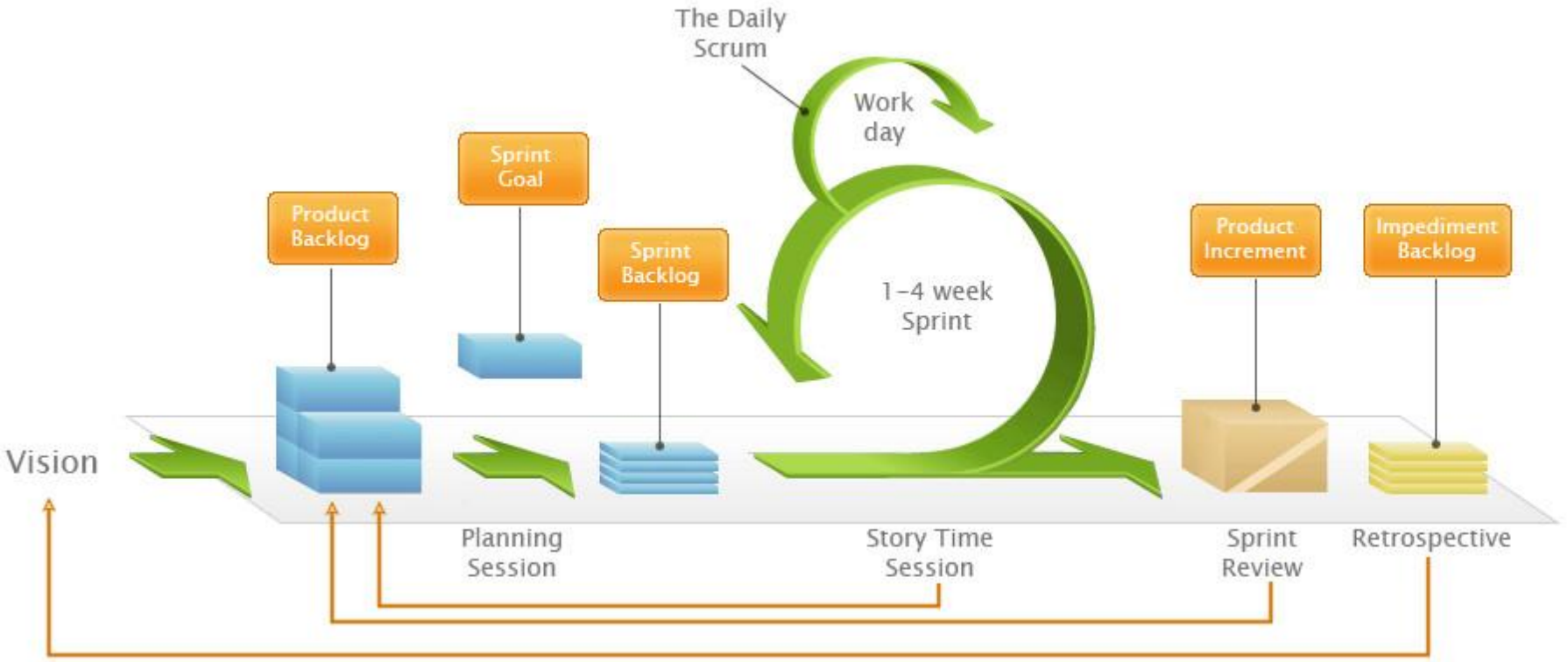
The "Spiral" model



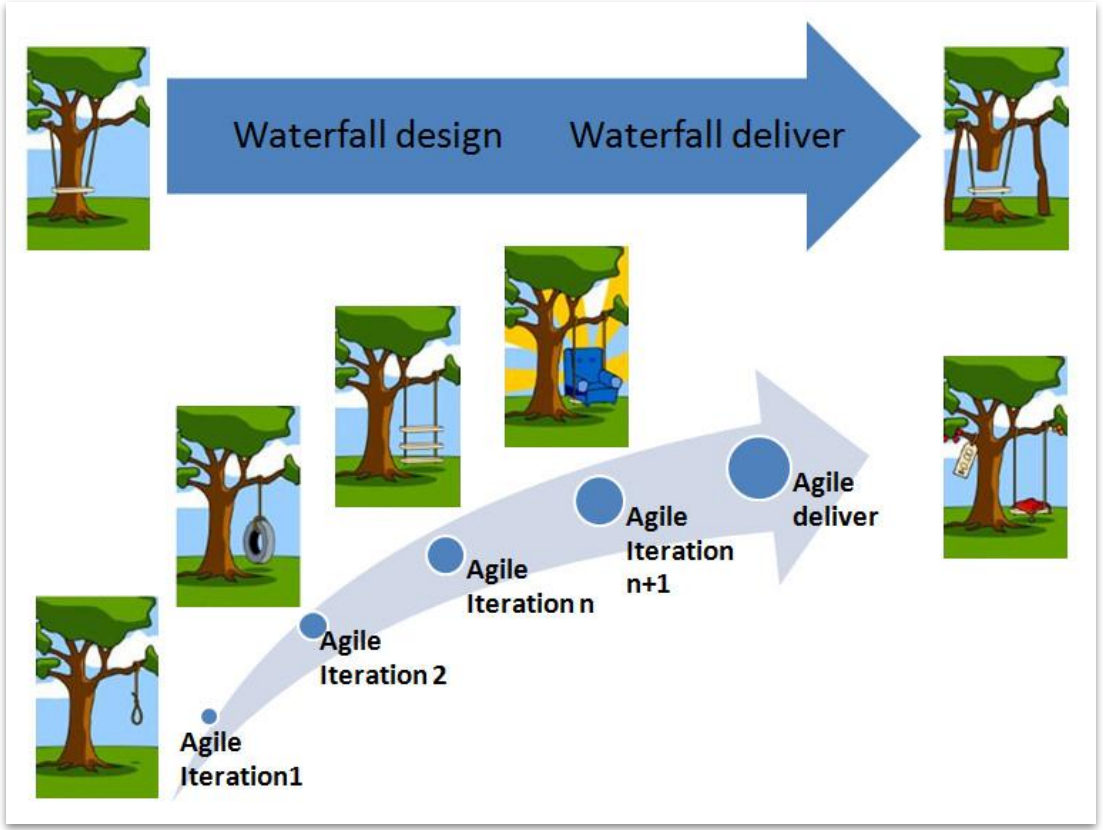
The "RUP" model (Rational Unified Process)



The Agile approach



Still need requirements



https://www.linkedin.com/pulse/waterfall-v-agile-ian-mitchell/

IEEE/SWEBOK/ISO definition of a Requirement

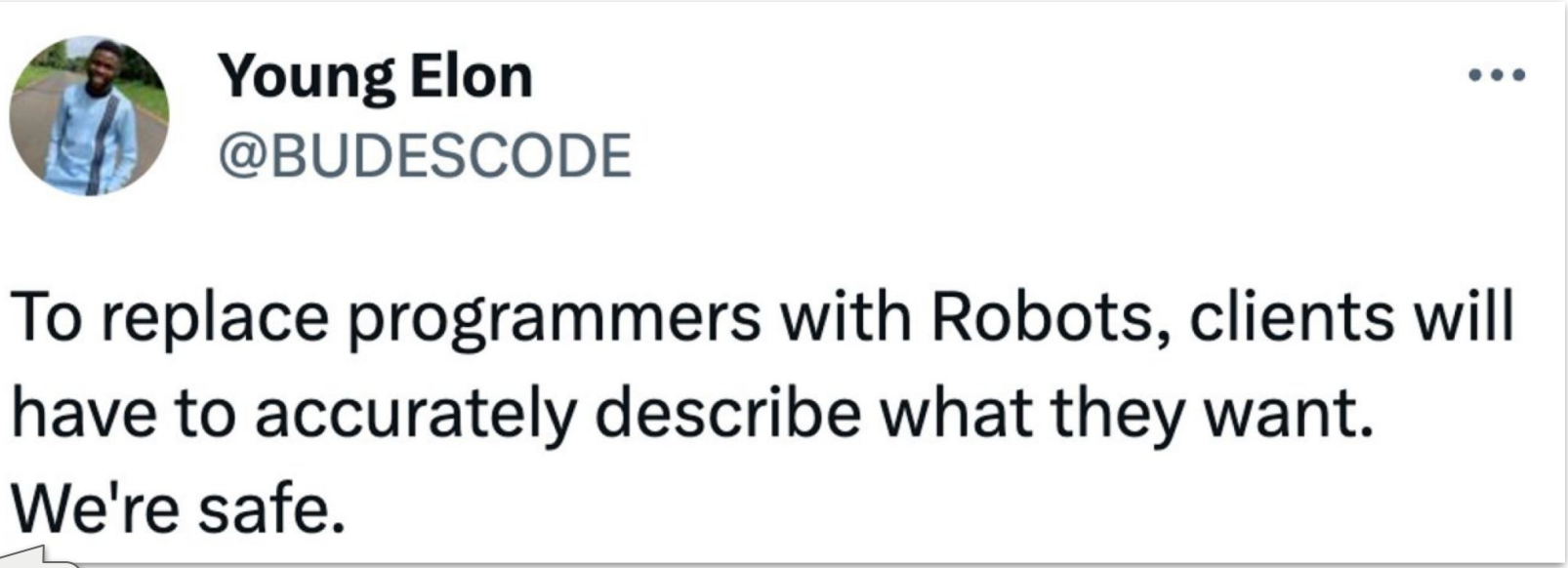
“A **1.1 Definition of a Software Requirement**

At its most basic, a software requirement is a property that must be exhibited by something in order to solve some problem in the real world. It may aim to automate part of a task for someone to support the business processes of an organization, to correct shortcomings of existing software, or to control a device—to name just a few of the many problems for which software solutions are possible. The ways in which users, business processes, and devices function are typically complex. By extension, therefore, the requirements on particular software are typically a complex combination from various people at different levels of an organization, and who are in one way or another involved or connected with this feature from the environment in which the software will operate.

”

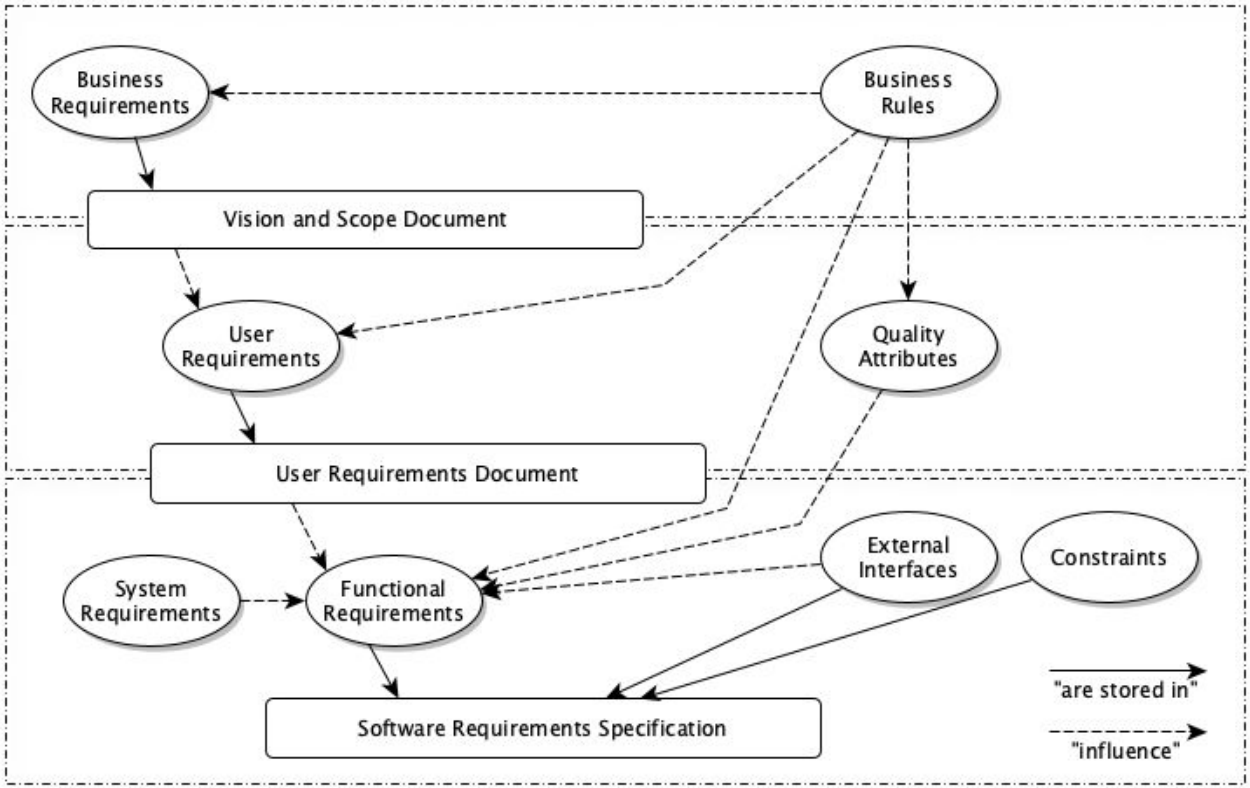
http://swebokwiki.org/Chapter_1:_Software_Requirements

What are requirements?



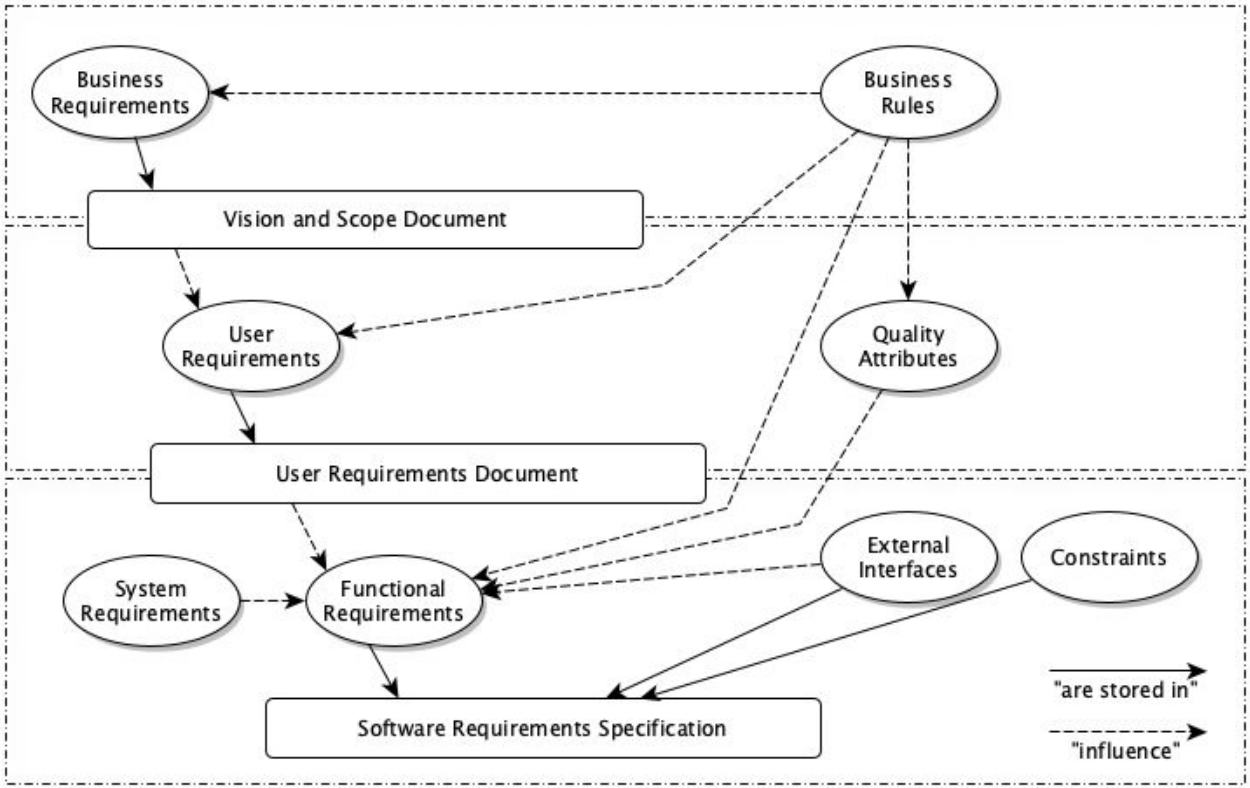
What are requirements?

[Wiegers & Beatty 2013]



What are requirements?

[Wiegers & Beatty 2013]



What are requirements?

“References”:

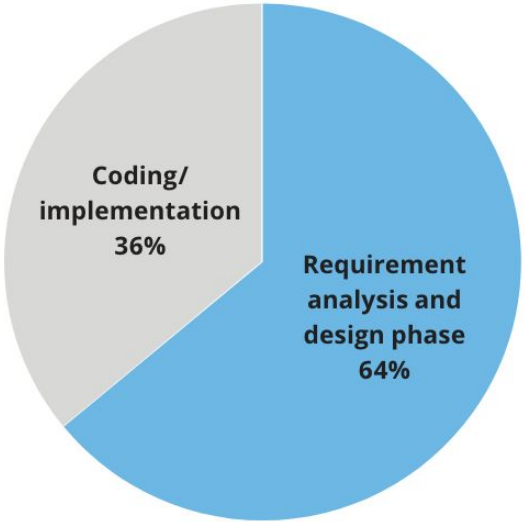
- **Klaus Pohl**, Requirements Engineering Fundamentals, IREB,2nd ed., 2015
- **Karl E. Wiegers**, Software Requirements, Microsoft Press, 2nd ed., 2003
- **Axel van Lamsweerde**, Requirements Engineering: From System Goals to UML Models to Software Specifications, 2009
- **Ian Sommerville, Pete Sawyer**, Requirements Engineering: A Good Practice Guide, 1997

Why does it matters?

[01/2022]

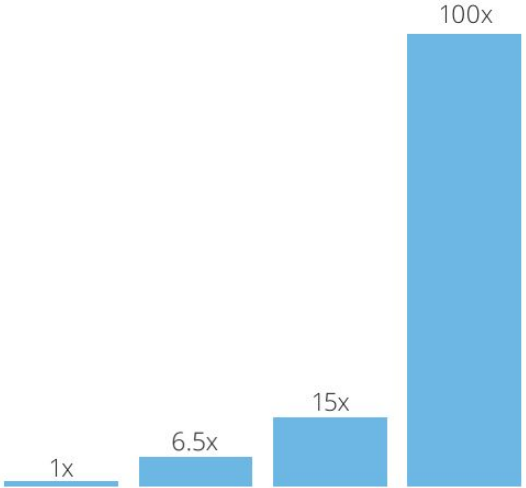
Origin of software defects
(Source: Crosstalk, the Journal of defence software engineering)

Figure 1



Relative costs to fix software defects
(Source: IBM systems sciences institute)

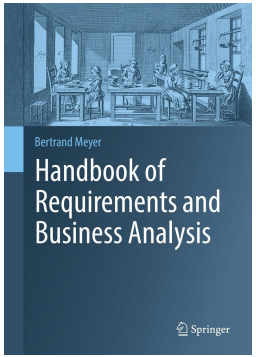
Figure 2



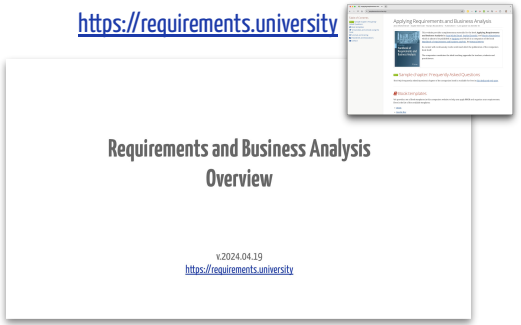
Phase/stage of the S/W development in which the defect is found

https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/technology/deloitte-uk-your-bad-requirements-are-costing-you-money.pdf

Let's move to PEGS Handbook



https://requirements.university



0. Preface
1. Requirements: Basic concepts and definitions
2. Requirements: General principles
3. Standard plan for requirements
4. Requirements quality and verification
5. How to write requirements
6. How to gather requirements
7. Scenarios: use cases, user stories
8. Object-oriented requirements
9. Benefiting from formal methods
10. Abstract data types
11. Are my requirements complete?
12. Requirements in the software lifecycle

- Covered
- Overview
- Not covered

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Discussions time

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