PXL – Digital
421280 Software Analysis

Introduction

Week 01 – period 01

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Content

- The essential software requirement
- **What are requirements?**
- **Levels and types of requirements**
- Best practices: international standards – ISO
- SMART requirements
- Best practices: JIRA - EPICS - USER STORIES
- Requirements development and management
- Brief history of requirements methods & modeling
- The role of the analyst + recap case
- Questions & Answers

What are requirements?
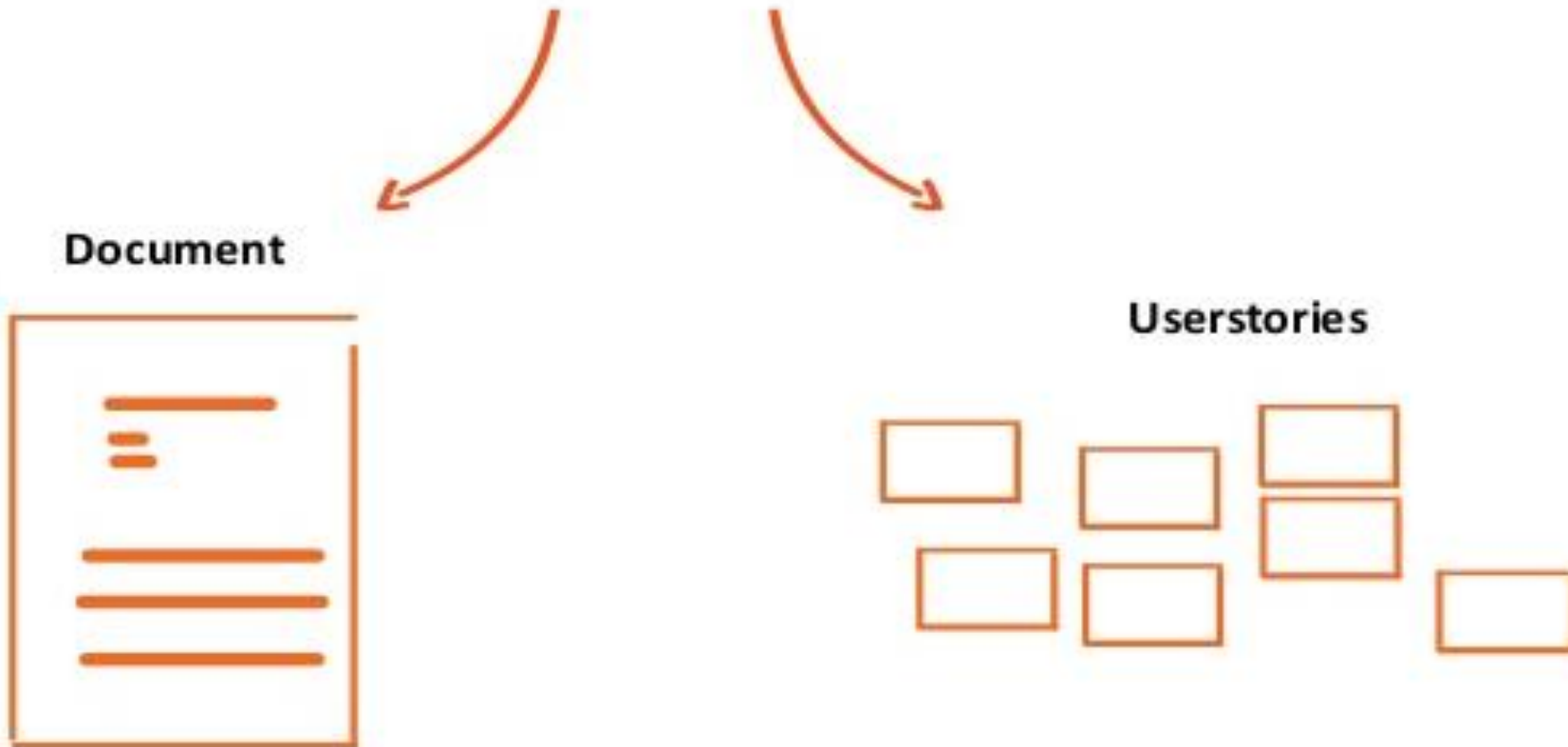
What are requirements?

What are requirements?

Requirements are a specification of what should be implemented. They are descriptions of how the system should behave, or of a system property or attribute. They may be a constraint on the development process of the system.

Don't assume that all your project stakeholders share a common notion of what requirements are. Establish definitions up front so that you're all talking about the same things.

What are requirements?

They are a little bit something like a contract
between the stakeholder and the project manager !

Document

Userstories

What are requirements?

Conditions or capabilities needed by a user/stakeholder to solve problem or achieve an objective

Scope : the sum of the products, services and results to be provided as a project

Project Scope :
the work that must be performed to deliver a product, service or result with the specified features and functions

Product Scope :
the features and functions that characterize the product, service or result

What are requirements?

- According to IEEE$^{(*)}$ a requirement is

  A. a condition or capability needed by a user to solve a problem or achieve an objective

  B. a condition or capability that must be met or possessed by a system or system component to satisfy a contract, standard, specification, or other formally imposed documents

  C. a documented representation of a condition or capability as in (A) or (B)

(*) IEEE = Institute of Electrical and Electronics Engineers
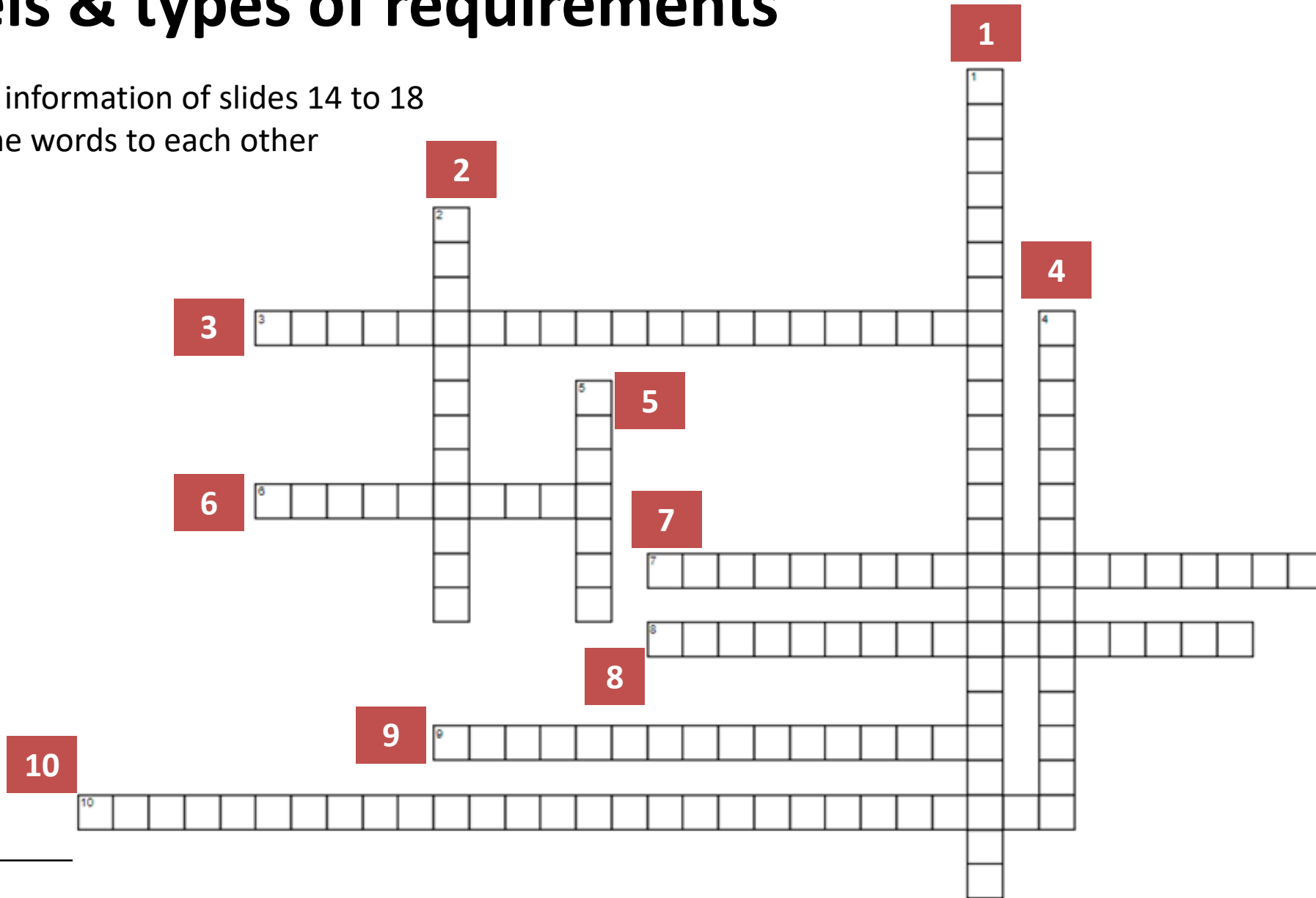
Levels & types of requirements

Levels & types of requirements

- Three kinds of requirements

  - ***Functional requirement***:

    - defines a function that has to be offered by the system to be created or one of its components

  - ***Quality requirement***:

    - defines a qualitative property that the system
      to be created or one of its functions has to offer

  - ***Constraint***:

    - A requirement that limits the solution space
      beyond what is necessary for meeting the given functional requirements and quality requirements.

Non-functional requirements

Levels & types of requirements

Use the information of slides 14 to 18
Write the words to each other

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Levels & types of requirements

- Words to use
  - User requirement
  - Business requirement
  - Constraint
  - Nonfunctional requirement
  - System requirement
  - Functional requirement
  - Quality attribute
  - Feature
  - External interface requirement
  - Business rule

Levels & types of requirements

ACROSS

3) A description of a behavior that a system will exhibit under specific conditions

6) A restriction that is imposed on the choices available to the developer for the design and construction of a product

7) A high-level business objective of the organization that builds a product or of a customer who procures it

8) A top-level requirement for a product that contains multiple subsystems, which could be all software or software and hardware

Levels & types of requirements

ACROSS (continued)

9) A kind of nonfunctional requirement that describes a service or performance characteristic of a product

10) A description of a connection between a software system and a user, another software system, or a hardware device
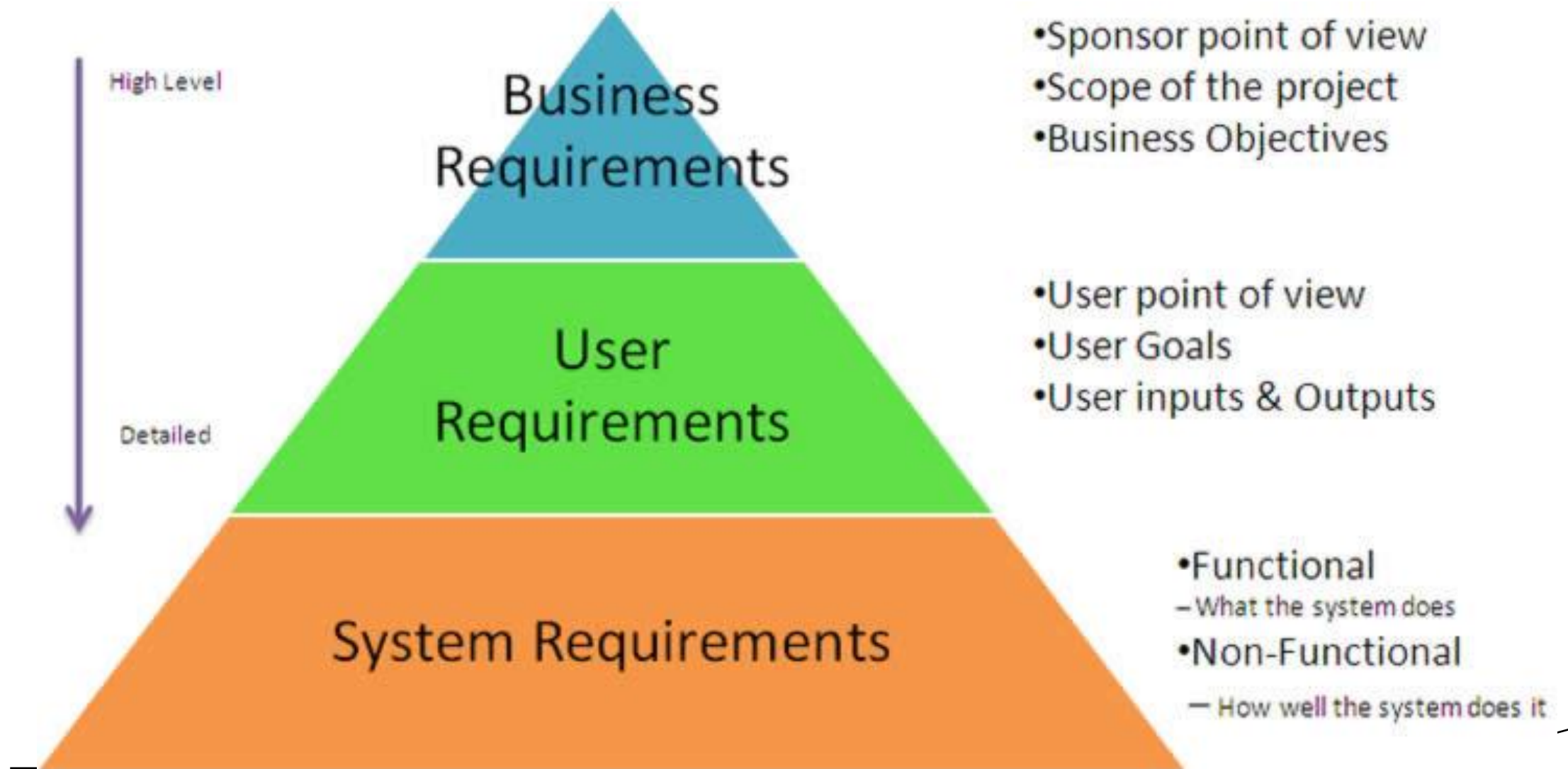
DOWN

1) A description of a property or characteristic that a system must exhibit or a constraint that it must respect

Levels & types of requirements

DOWN (continued)

2) A policy, guideline, standard, or regulation that defines or constrains some aspect of the business. Not a software requirement in itself, but the origin of several types of software requirements

4) A goal or task that specific classes of users must be able to perform with a system, or a desired product attribute

5) One or more logically related system capabilities that provide value to a user and are described by a set of functional requirements

Levels & types of requirements

High Level → **Detailed**

- Business Requirements
- User Requirements
- System Requirements

•Sponsor point of view
•Scope of the project
•Business Objectives

•User point of view
•User Goals
•User inputs & Outputs

•Functional
– What the system does
•Non-Functional
– How well the system does it

Levels & types of requirements

There is not one solution!

- Levels and types of requirements

  – User Requirements Specification

    The user shall be able to …

  – System Requirements Specification

    The product shall …

  – Detailed Requirements Specification

    Are these still requirements ?

  – Many different supporting diagram and modeling techniques

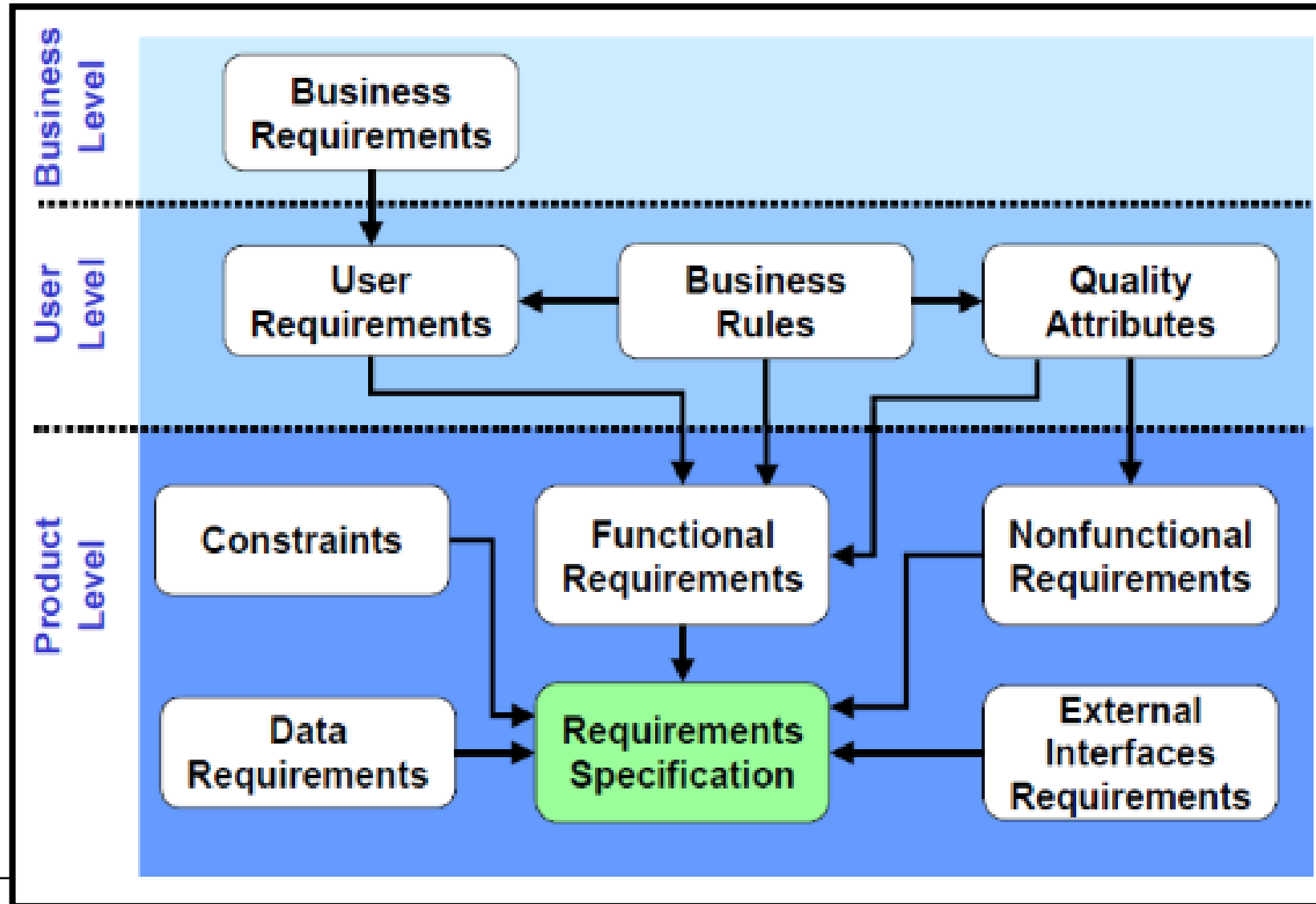# Levels & types of requirements

- Typical levels

  - User requirements - problem domain

    - Stakeholder's view

      - State what the stakeholders want to achieve through use of the system.
      - Avoid reference to any particular solution.

  - System requirements - solution domain

    - Analyst's view

      - State abstractly how the system will meet the stakeholder requirements.
      - Avoid reference to any particular design.

Levels & types of requirements
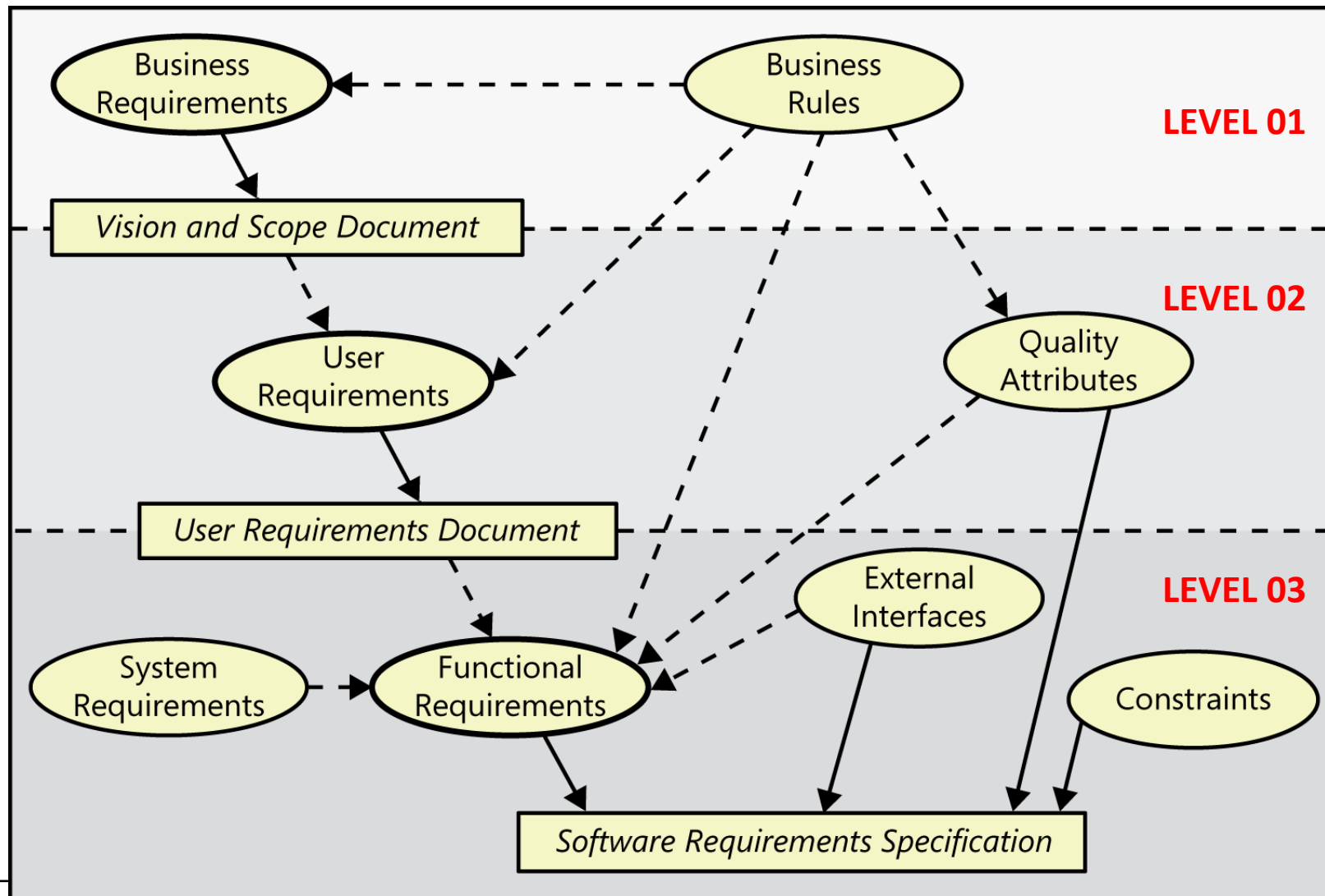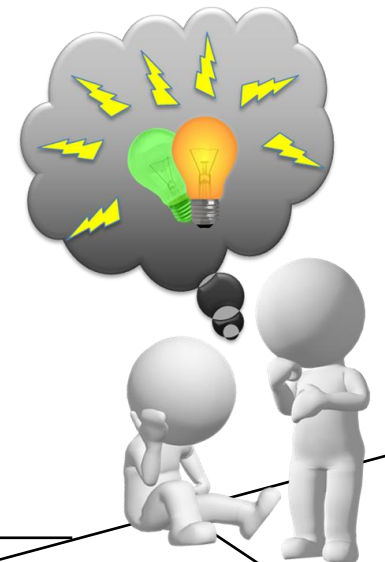
Levels & types of requirements

Levels & types of requirements

- Bad/good requirements – why?

  1. We need to be able to respond to a code red incident anywhere on the planet within 24 hours.

  2. The system shall validate and accept credit cards and cashier's checks. High priority.

  3. The system shall process all mouse clicks very fast to ensure user's do not have to wait

  4. I want the system to automatically calculate sales taxes based on relevant sales tax laws.

  5. The website visitor won't need to click more than once to get to the order page from any other page on the site.

Levels & types of requirements

- Bad/good requirements – why?

    6. The user must have Adobe Acrobat installed.

    7. Sales needs to be able to see which contracts will be expiring within the upcoming 90 days.

    8. The clerk enters basic loss information specific to the claim line
       The system confirms that there are no existing, possibly competing claims and assigns a claim number. The clerk confirms they are finished; the system saves and triggers acknowledgement
       to be sent to the agent.

Questions & answers