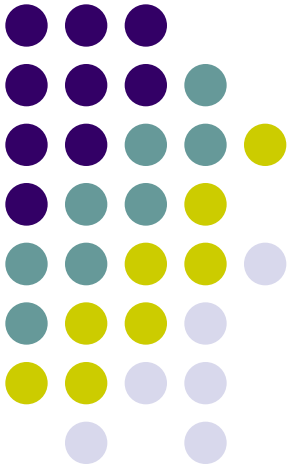
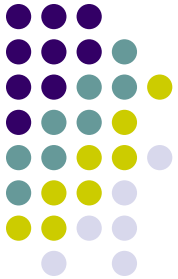
Fakultas Informatika

Prodi S1 Teknik Informatika

Mata Kuliah:
RPL-Analisis Kebutuhan

“REQUIREMENT TYPES”





Three types of requirements:

1. Functional requirements
2. Quality requirements (non-functional requirements)
3. Constraints

Definition:

- *Functional requirements*

  Requirement concerning a result of behavior that shall be provided by a function of the system.

- *Quality requirements (*non-functional requirements)

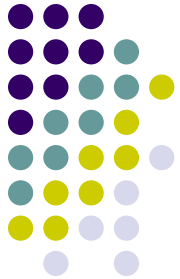
  Requirement that pertains to a quality concern that is not covered by functional requirements.

- *Constraints*

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

"Untuk pemahaman praktis, sangat disarankan untuk konsentrasi ke FR dan NFR"
(Yp)

Klaus Pohl & Chris Rupp, Requirement Engineering Fundamentals, 2nd Edition, 2015. Rocky Nook Inc..

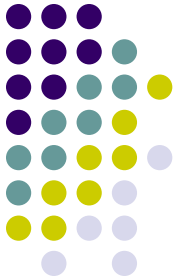


Functional Requirements define the functionality that the system to be developed offers. Usually, these requirements are divided into functional requirements, behavioral requirements, and data requirements

Example: ATM SW Requirements

Functional requirements:

- The ATM system shall check the validity of the inserted ATM card
- The ATM system shall validate the PIN number entered by the customer.
- The ATM system shall dispense no more than $250 against any ATM card in 24-hour period.

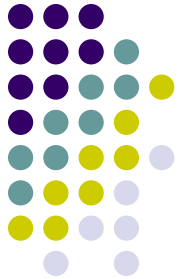


Quality requirements define desired qualities of the system to be developed and often influence the system architecture more than functional requirements do. Typically, quality requirements are about the performance, availability, dependability, scalability, or portability of a system. **Requirements of this type are frequently classified as Non-Functional Requirements.**

Example: ATM SW Requirements

Non-functional requirements:

- The ATM system shall be written in C++.
- The ATM system shall communicate with the bank using 256-bit encryption.
- The ATM system shall validate and ATM card in three seconds or less.
- The ATM system shall validate a PIN number in three seconds or less



Constraints cannot be influenced by the team members. Requirements of this type can constrain the system itself or the development process . In contrast to functional and quality requirements, constraints are not implemented, they are adhered to because they merely limit the solution space available during the development process.

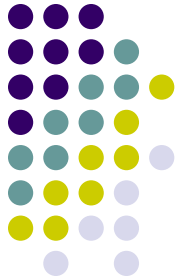
- Requirements of this type can constrain the system itself.

  example: The system shall be implemented using web services.

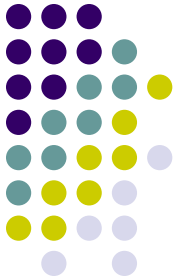
- The development process.

  example: The system shall be available on the market no later than the second quarter of 2012.

Klaus Pohl & Chris Rupp, Requirement Engineering Fundamentals, 2nd Edition, 2015. Rocky Nook Inc..

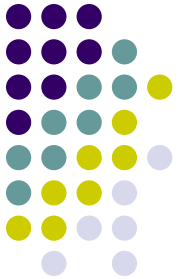


Practical understanding…



What is a Requirement?

- ✓ A statement of
  - what the system must do
  - characteristics the system must have
- ✓ Focus is on business user needs
- ✓ Requirements will change over time
  - as project moves
    - from analysis
    - to design
    - to implementation

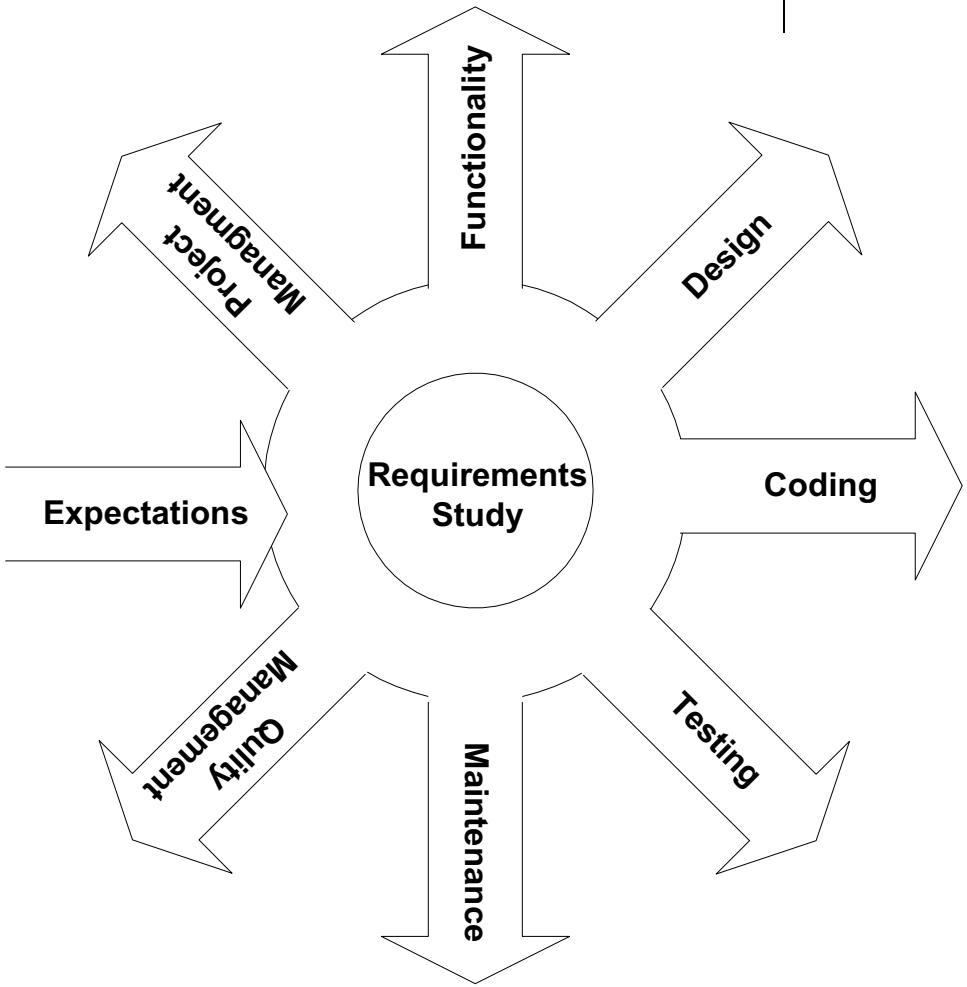


Importance of Requirements

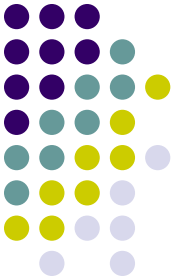
- ✓ Discovering what the stakeholders
  - want the system to do.
- ✓ Failure here will cause project failure
- ✓ Lack of user involvement
  - is a major cause of project failure
- ✓ Requirement should
  - drive the rest of system development

Requirements: The Crossroad

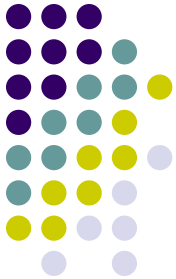
- ✓ Requirements study is the crossroad
- ✓ All other project practices
  - are directed by the requirements



Defining Requirements



- ✓ Specification of
  - "what" should be implemented
  - not "how"
- ✓ Functional and Non-functional requirements
  - Functional requirements:
    - What behavior system should offer
  - Non-functional requirements :
    - A specific property of the system
    - A constraint on the system
- ✓ It is easier to include some "how",
  - but it must be mostly "what"
- ✓ Produce SRS Document
  - the System Requirements Specification



Functional Requirements

Functional Requirement	Description	Examples
Process-oriented	A process the system must perform; a process the system must do	■ The system must allow registered customers to review their own order history for the past three years ■ The system must check incoming customer orders for inventory availability ■ The system must change customer status to 'inactive' after three years of inactivity
Information-oriented	Information the system must contain	■ The system must retain customer order history for three years ■ The system must include real-time inventory levels at all warehouses ■ The system must include budgeted sales and expense amounts for current year and three previous years.

Nonfunctional Requirements

Nonfunctional Requirement	Description	Examples
Operational	The physical and technical environments in which the system will operate	■ The system can run on handheld devices ■ The system should be able to integrate with the existing inventory system ■ The system should be able to work on any Web browser
Performance	The speed, capacity, and reliability of the system	■ Any interaction between the user and the system should not exceed 2 seconds ■ The system downloads new status parameters within 5 minutes of a change ■ The system should be available for use 24 hours per day, 365 days per year ■ The system supports 300 simultaneous users from 9–11 A.M.; 150 simultaneous users at all other times
Security	Who has authorized access to the system under what circumstances	■ Only direct managers can see personnel records of staff ■ Customers can see their order history only during business hours ■ The system includes all available safeguards from viruses, worms, Trojan Horses, etc.
Cultural and Political	Cultural, political factors and legal requirements that affect the system	■ The system should be able to distinguish between United States and European currency ■ Company policy says that we only buy computers from Dell ■ Country managers are permitted to authorize custom user interfaces within their units ■ Personal information is protected in compliance with the Data Protection Act

Sample Requirements Definition

Functional Requirements

1. Weather Station Inputs
- 1.1 System accepts Weather Station Readings transmitted from Remote Weather Stations
- 1.2 System supports new Remote Weather Stations when added by engineers
- 1.3 System accepts changes to Remote Weather Stations when made by engineers

2. Road De-icing
- 2.1 System produces road de-icing schedule
- 2.2 System records all roads that have been treated
- 2.3 System receives road condition information from road sensors
- 2.4 System produces updated road de-icing schedule using road treatment and road sensors data

etc.

Nonfunctional Requirements

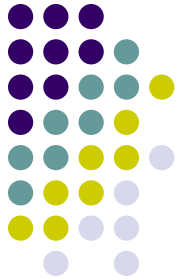
1. Operational
- 1.1 The system must be useable by a worker standing outside in cold, wet weather
- 1.2 The system must be useable in dim lighting
- 1.3 The system must interface with applications running on Remote Weather Stations

2. Performance
- 2.1 The system polls road sensors every 10 seconds
- 2.2 Road temperature readings will be accurate to within + –2°Centigrade
- 2.3 The system achieves 99% uptime

2. Security
- 3.1 The system ensures that road treatment reports are from authorized truck drivers only

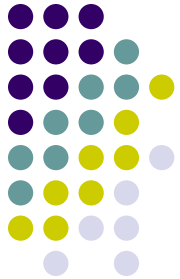
2. Cultural, Political and Legal
- 4.1 The system uses Remote Weather Stations produced by ABC Company
- 4.2 The system must accept US and European road numbering systems

Source: Adapted from Volere Requirements Specification Template, the Atlantic Systems Guild Ltd.



Latihan / Diskusi

- Berdasarkan suatu topik, lakukan pembahasan untuk membuat FR dan NFR.
- Lakukan analisis terhadap FR dan NFR tsb.



End of session