

Requirements Engineering

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Derived from Roger S. Pressman, *Software Engineering: A Practitioner's Approach*, 6th Edition, McGraw-Hill, 2005

Requirements Engineering

- To understand the problem before start solving
- Establishes a sound foundation for design and construction
- Must be adapted to the needs of processes, projects, products, and people

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**Requirements Engineering
Tasks**

- Inception
- Elicitation
- Elaboration
- Negotiation
- Specification
- Validation
- Management

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Inception

- Identifying the Stakeholders
 - Whom should I talk to?
 - Who requests for this work?
 - Who will use the solution?
 - Whom does this work affect?
- Recognize the different perspectives
 - มองดี งาม ม
- Collaboration is the goal
- Asking the right questions

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Inception: Getting to know

- Knowing the Stakeholder
- Identifying the measurable benefits and drawbacks
- Determine the alternatives

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Inception: Understanding

- How the good and bad outputs are characterized?
- What is the problem we are solving?
- What is the environments, situations, or conditions of the usage of the solutions?
- What are the constraints and opportunities?

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Inception: Measurement

- Do we ask the right person?
- Are the answers official?
- Are the question relevant?
- Too many questions?
- Who else should I ask?
- What other things should we know?

Elicitation

- Defining the scope
- Understanding the problems
- Ever-changing requirements

Elicitation

- Stakeholders and software engineers work together
 - to identify the problems
 - to propose the solutions
 - to negotiate the differences
 - to specify the preliminary solution requirements

Elicitation

- What are the objectives of the systems or products?
- What is to be accomplished?
- What role do the systems or products has for the business?
- How the systems or products to be used?

Quality Function Deployment

- Quality function deployment (QFD) translates the needs of the customer into technical requirements for software
 - Normal requirements
 - Expected requirements
 - Exciting requirements

Quality Function Deployment

- function deployment determines the value of each required function
- information deployment identifies data and events
- task deployment examines the behavior

Elicitation: Work products

- Needs and feasibility
- Scope of the systems or products
- List of stakeholders
- Description of technical environment
- List of requirements and the constraints
- Usage scenarios → Use Cases
- Prototypes

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Elaboration

- Developing a refined technical model of functions, features, and constraints
- Building analysis models
 - Scenario-based elements
 - Class-based elements
 - Behavior elements
 - Flow-oriented elements

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Negotiation

- Reconciling the conflicting requirements
- Analyzing risks
- Win-win

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Specification

- The final product of the requirements engineering

Validation

- Examines the specification to ensure unambiguity and consistency and conform to the standard

Requirements Management

- Help identify, control, and track requirements and changes
- Develop the traceability
