IT Entrepreneurship and Management

Day 2 Requirement specification

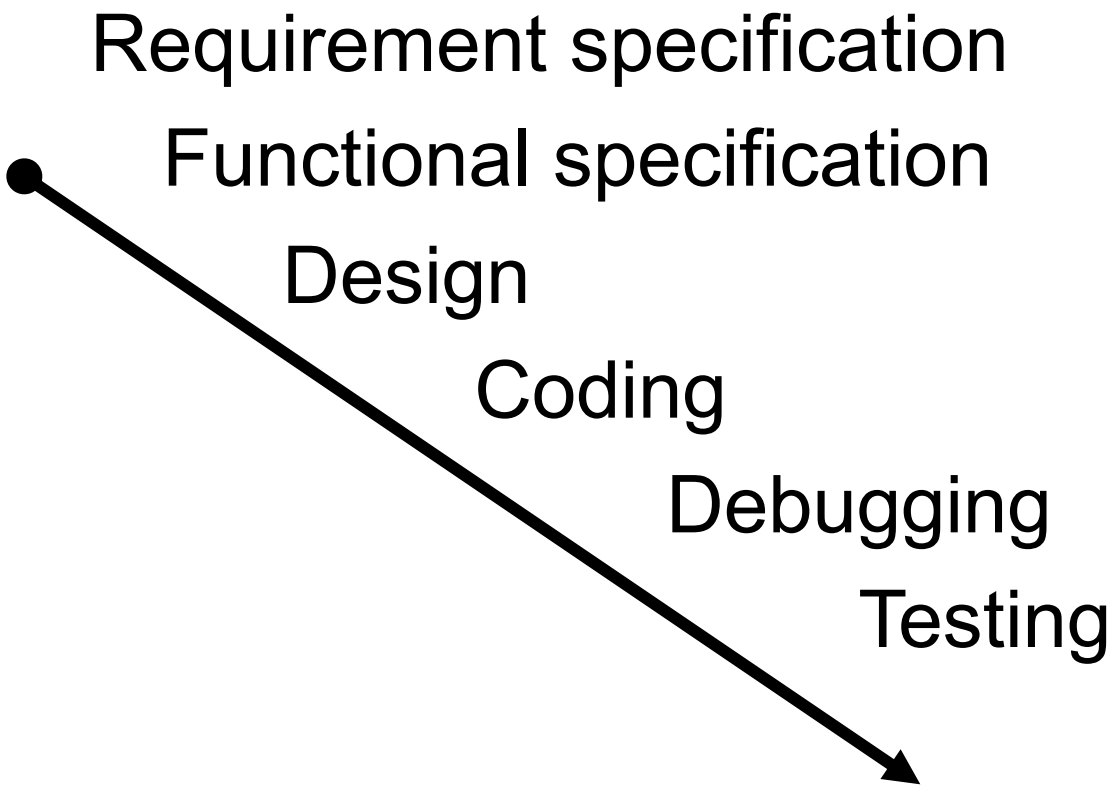
Charoen Vongchumyen

Email : charoen.vo@kmitl.ac.th

2/2023

Thank to Tsuneo Yamaura

Waterfall model



Life cycle of software development

What's Engineering?

Engineering is the way to make things again and again

Like cook book recipe

Development process

Goal of software engineering

- Quicker → Schedule
  - Better → Quality
    - Cheaper → Cost

CMM

- American standard for development process
- Capability Maturity Model → From Carnegie melon University
- 5 Level, 1 is lowest
  5 is Top

CMM

Level 1 : Company have no development process.

No design, No document, All in their brain

Level 2 : Company has written Eng. Recipe, Development process (Some project)

CMM

Level 3 : Development process spread all over the company (U.S. government required)

Level 4 : Engineer in project measure quality of project (error, MTBF, cost, schedule)

Level 5 : They can guide the project to better way

CMM level in U.S. and India

(20 – 30 from 6,000 companies are level 5)

(5,000 from 6,000 companies are level 4)

(500 from 6,000 companies are level 3)

(200 from 6,000 companies are level 2)

(100 from 6,000 companies are level 1)

CMM in the real world

- India has the most level 5 but plenty of bugs
- CMM → say about the process not the players are good or not
- Level 5 but should see their outcome

CMM in restaurant

- In restaurant, CMM level 5 have great cook book but, if they use un-experience chef, It is not Oishi!!

- But in restaurant level 1, No cook book but use top chef, how to cook is in his brain, So go food come out.

Development methodology

No general model methodology, Have to choose each time project start

- Structure development
- Object oriented
- Etc.

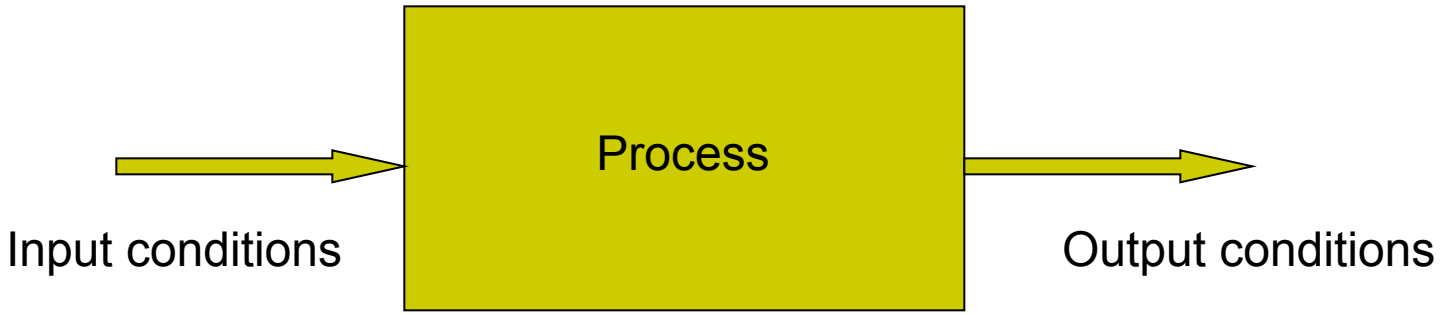
Depend on Budget, Man power, Time, Prj size

Requirement specification

- Like operation manual

  What is input, process and output

  like cell phone manual, how to use it?



Real world project

- 50% unsuccessful projects
- 50% Semi-successful

  10% Successful and satisfy the Cost, Schedule and Quality

So, Why project fails????????

Why project fails?

- Requirement is not fired.

  48% all moving, not stable

  How to deal with it?

  1. Separate contractor each step.
  2. Req. Spec. sight and change are charge

Why project fails?

- Misestimation (Under estimation) 47%
  1. Quality — Plenty of bugs
  2. Cost — 20 – 50 % over budget
  3. Schedule — 100% delay

Too optimistic!!

Three ashes

"If we can't build SW in conditions,

So pick up some important function"

Must be

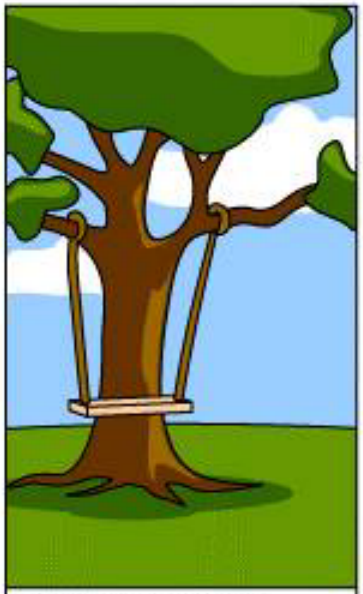
Should be

Desired

Like put priority
on injured soldier
in hospital
who will be
taken care first

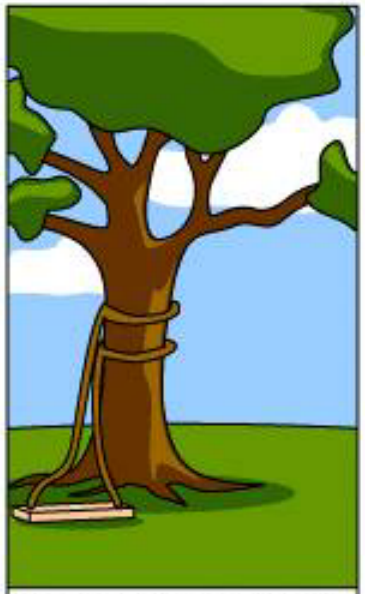
20% modules = 80% functions

How the customer explained it



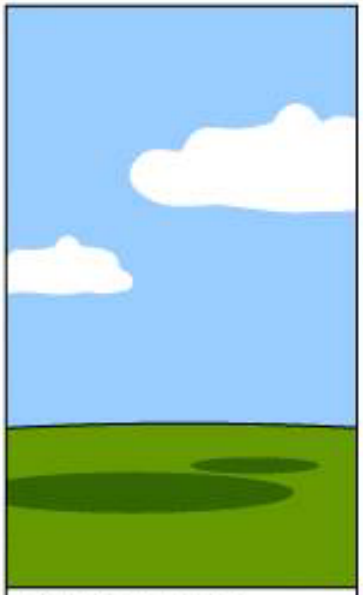
How the Project Leader understood it

How the Analyst designed it

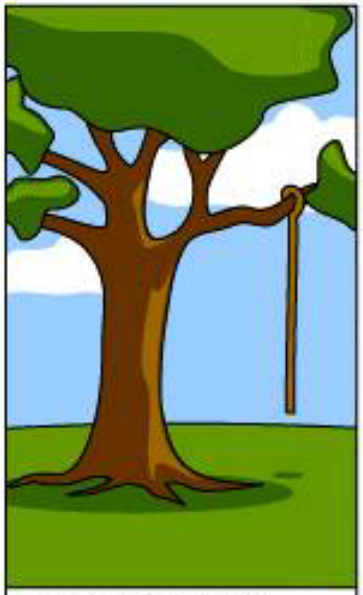


How the Programmer wrote it

How the Business Consultant described it

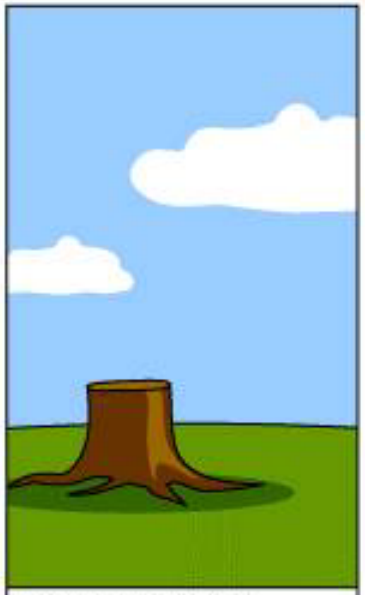


How the project was documented



What operations installed

How the customer was billed

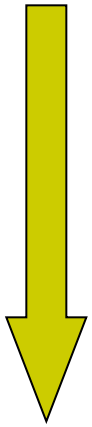


How it was supported

What the customer really needed

Cost of phases

- 8% Requirement and function specification
- 5% Design
- 7% Coding
- 5% Debugging
- 7% Testing
- 60% Maintenance



1st version

2nd version

2 – 5 years past style and from now on

Type of maintenance

- 20% Corrective maintenance (bugs fix)
- 60% Enhancement (Add more functions)
- 20% Adaptive maintenance (Make I work on some OS different, Environment → Porting)

Difficulty of Req. Spec

- Ambiguous (Doubt)
- Incomplete
- Contradictory
- Difficult to understand

Short practice
(Group of 3)

Rock, paper, scissor **เป่ายิ้งฉุบ**

Jan-ken-pon



Software Engineering

- The word “Software engineering” was born in 1968, NATO conference.
- Just word, No development process. Then the function , procedure was created.

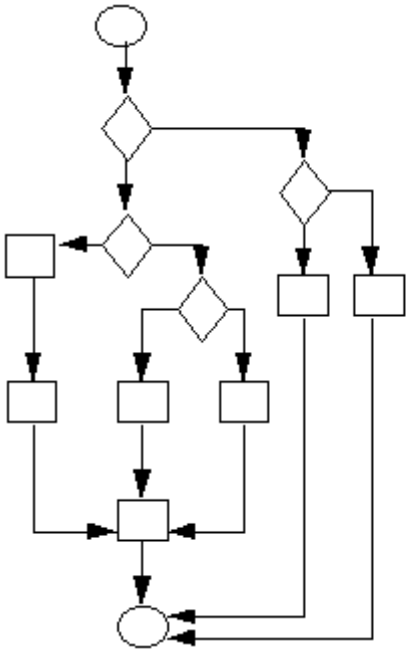
CASE = Computer Aid Software Engineering (tool)

Software Metric

- 1978, The first of software metric paper was released.

“If you can’t measure, You can’t control ”

Cyclomatic number



Measure complexity of project

$$C = E - N + 2P$$

E = Arch,
N = Node,
P = 1,
C = Complexity

- Don’t work for real life
- Just close area

Software Metric

Measure something of software

- Metrics after the fact (why you spend so much money, Why delay)

  Do after coding (such as Baseball, why we loose the game)

- Metrics before the fact

  Do before coding (In Baseball, Whose gonna be next putter)

Conclusion

SW metric Is the measurement sth in SW to meet quality control

Such as the test cases and bugs

“You can’t manage what you can’t measure”

Group exercise

Enter the length of sides

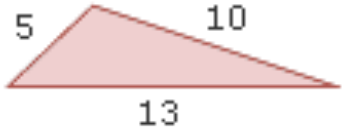
Side 1

Side 2

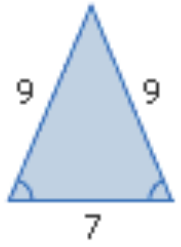
Side 3

Result

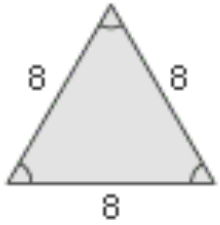
Enter



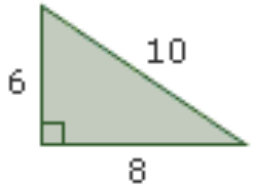
scalene triangle



isosceles triangle



equilateral triangle



right triangle

Define hours you spend, person (man-power) and measure your result