



An Assessment Model for Simplified Test Maturity Model(TMM)

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1. Research Motivation

- The importance of SW is increasing to use many fields for convergence SW development.
- The SW quality is very important as a crucial factor in many fields, specially, in automobile and aviation industries.
- However, incidents from the insensibility of SW quality have big damages, e.g. the Toyota incident in 2008.
- Convergence SW is directly related with human, property, and data damages in our society, which is the reason why SW quality should be enhanced.

To get the competitive assurance of SW industry, It needs to guarantee high quality SW.

1. Research Motivation

- To develop high quality SW, test teams are very important for quality control and testing.
- SW quality and testing are increasingly important, but Still exist problems as below.

The Problems in Korea

- Keep Low Quality of SW
- Still have Small companies
- Have strong preference for foreign SW
- Lack of investment in quality due to poor finance
- Difficulties in employing(hiring) test experts

- ❖ **To develop high quality SW, it is necessary to organize a team in charge of SW test and quality, and to continue the quality control and testing.**

1. Research Motivation

- To enhance the quality of SW, it is important to systematically develop SW products, and procedurally test SW products.
- Currently, many local companies adapt SW quality assessment models widely used across the world, e.g. CMMi or TMMi.
- But, many companies in Korea do not use such models.
 - Have two reasons why
 - ① lack of skilled human resources.
 - ② requires lots of time, and expenses related to assessment and consulting.
- These issues are blocking to local small companies from using assessment models.

❖ **Thus, we need to develop a simplified TMM, that is, Korea test maturity model(TMM) for our local SW industry and developers in our suitable environment.**

Our idea

- ❖ **We concerns to develop an assessment method for the Simplified TMM.**
 - **We suggest an assessment method to help establish an assessment procedure.**
 - **We analyzes the simplified TMM in comparison to the previous model.(CMMi, TMMi)**

2. Related Works

- ❖ As one way of SW quality enhancement and improvement, it is highly important to have certification of assessment model.
- ❖ Currently, many models are available for SW quality certification.
- ❖ These models have different to required levels and objectives.

Goal	Model
Improving test teams	<ul style="list-style-type: none">• TMM(Test Maturity Model)• TMMi(Test Maturity Model Integration)
Improving test processes	<ul style="list-style-type: none">• TPI(Test Process Improvement)• TPI Next(Test Process Improvement Next)
Assessing development teams' competencies	<ul style="list-style-type: none">• CMM(Capability Maturity Model)• CMMI(Capability Maturity Model Integration)
Measuring development processes	<ul style="list-style-type: none">• SP(Software Process)

[Objectives of Certification Models]

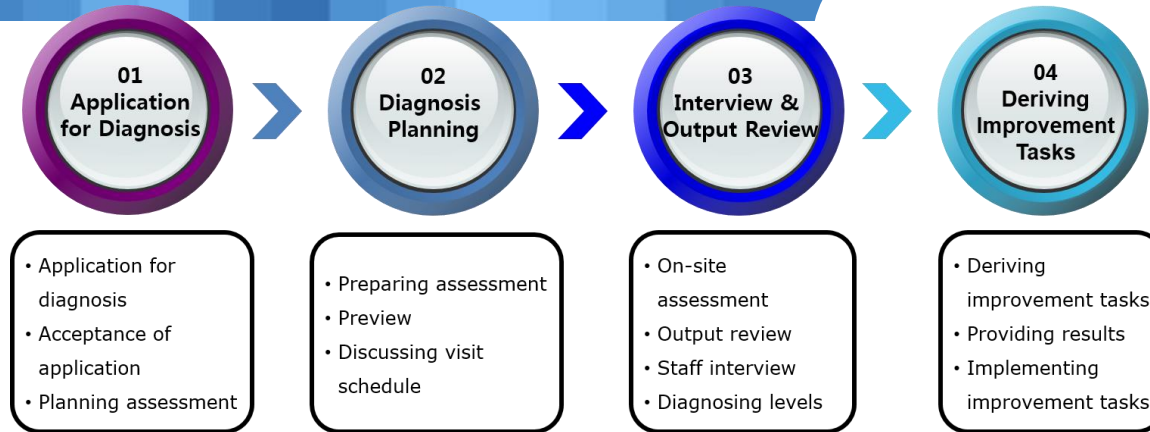
3. The Assessment Model for Simplified TMM

- ❖ We suggest an assessment model for the Simplified TMM, that is, Korean style' s test maturity model.
- ❖ This model will target local small companies in Korea.
 - ① Due to the small scale of local SW industry and development organizations, most companies have difficulties in applying the existing certification models because of time, cost, and labor.
 - ② As quite a few companies do not have in-house test teams, We should easily to apply with the Korea test maturity model to local companies.



- Our Method
 - focus on how to simplify TMM, and then apply the Korea test maturity model to small companies, such as the simplified procedure and outputs.

1) Assessment Procedure



▪ Our Simplified Procedure

: Application for Diagnosis, Diagnosis Planning, Interview & Output Review, Deriving Improvement Tasks

▪ 01. Application for Diagnosis

- Once a company applies for a test maturity assessment, the diagnosis organization accepts the application and plans the assessment.

▪ 02. Diagnosis Planning

- The diagnosis organization prepares to diagnose the applicant's test maturity and discusses the visit schedule with the company.
- The company should submit the requested data to the diagnosis organization.

1) Assessment Procedure

▪ 03. Interview & Output Review

- The assessors diagnose the company's test maturity via onsite assessment.
- Assessors analyze the data submitted by the company, identify any missing data, and interview the company's staff to diagnose its test maturity level of the company.
- Upon completion of assessment, assessors derive improvement tasks, and submit the assessment results to the diagnosis organization.

▪ 04. Deriving Improvement Tasks

- The diagnosis organization prepares a final report based on the data received, and sends the report to the company.
- The company implements the improvement tasks proposed by the diagnosis organization based on the final results.

2) Assessment method

Stepwise Activities and Outputs of An Assessment Model

Step	Activities	Outputs
Application for diagnosis	<ul style="list-style-type: none"> • Acceptance of application • Diagnosis planning • Target project selection 	<ul style="list-style-type: none"> • Application form • Diagnosis plan
Diagnosis planning	<ul style="list-style-type: none"> • Requesting relevant organizational chart • Requesting selection of staff in charge • Discussing interview schedule • Preliminary questionnaire survey • Selecting assessment level • Discussing visit schedule • Organizing an assessment team 	<ul style="list-style-type: none"> • Data for assessment • Organizational chart • Staff in charge • Preliminary survey • Assessment level • Diagnosis plan
Interview & output review	<ul style="list-style-type: none"> • Reviewing preliminary survey • Interviewing staff in charge • Reviewing related documents • Preparing assessment results 	<ul style="list-style-type: none"> • Preliminary survey • Interview form • Output per level • Summary of assessment results
Deriving improvement tasks	<ul style="list-style-type: none"> • Analyzing interview and questionnaire survey • Analyzing document review results • Reporting diagnosis results 	<ul style="list-style-type: none"> • Deriving improvement results • Assessment result report

2) Assessment Method

- To assess the Korean test Maturity model, we need the method, major activities and outputs in each step.

❖ Step 1 : Application for Diagnosis

- To apply for the diagnosis, the company fills the application form provided by the diagnosis organization.
- The diagnosis organization plans the diagnosis based on the submitted application form.

❖ Step 2 : Diagnosis Planning

- Method: To plan the diagnosis, The company and the diagnosis organization can discuss the diagnosis plan through phone calls, emails or visits.
- Major Activities
 - ① The assessors reviews the company's organizational chart and selects the assessment levels.
 - ② The diagnosis organization selects the target projects and staff in charge to discuss the interview schedule.
 - ③ The staffs conduct the preliminary questionnaire survey.
- Outputs: The diagnosis plan

2) Assessment Method

❖ Step 3 : Interview & Output Review

- Method: Assessors visit the company.
- Major Activities
 - ① Assessors visit the company to interview the staff in charge and review the related documents.
 - ② They review the preliminary questionnaire survey results to diagnose the level of the company.
- Outputs: The summary of assessment results

❖ Step 4 : Deriving Improvement Tasks

- Method: Assessors review the data analyzed by the company and derive improvement tasks.
- Major Activities
 - ① The assessors analyze the staff interview and questionnaire survey results as well as the document review results.
- Outputs: The report on improvement tasks derived and assessment results, The final report

3) Determining Maturity Levels

- The existing model assessment gives score on each item, and performs activities to make up for any missing parts.
 - But, In Korea,
 - SW should be developed within a short time frame in Korea.
 - Most local companies are small and lack in supports because of time, labor, and cost.
- ⇒ Therefore, The Korean test maturity model determines the maturity of essential practices with either Pass or Fail.
- Unlike the existing models, the Korean test maturity model does not score to each item.
- ⇒ This model is to shorten the time for diagnosis compared with the existing models.

4) Comparison With Existing Models

- The below table compares SW maturity assessment models, i.e. CMMI, TMMi and the Simplified Korean test maturity model.
 - developed for local small and medium enterprises
 - simplifies the assessment items.
 - focuses on SW testing.
- Why we develop Korean TMM?
 - 1. Simplify and easily apply this model to assess the company.
 - 2. Reduce time, and cost.

Model	CMMI	TMMi	Simplified TMM
Year of development	1991	2008	Under development
Developer	SEI	TMMi Foundation	TTA/Hongik University
Model type	System Engineering, SW development and maintenance process	SW Test	SW Test
Maturity level	Assessment of organization-level maturity & respective process area	Organization-level maturity assessment	Organization-level maturity assessment
Process Area	5	5	5
Method	25	16	7(developed up to level 2~3)
Procedure	SCAMPI-based assessment	Questionnaire, interview and official/unofficial assessment	Questionnaire, interview and on-site assessment
Characteristics	SCAMPI-based assessment of corporate competency	Assessment of test maturity via official/unofficial assessment	Assessment of test maturity in compliance with assessment procedure
Certification target	SW Process	SW Test Process	SW Test Process

4. Conclusion & Future Works

✓ Conclusion

- This paper proposes an assessment method of a Simplified TMM suitable for local SW development environment.
- The problems
 - The environment of local SW industry is unfavorable, and the development organizations are mostly small. Thus, it is difficult to apply the existing certification models.
 - Also, quite a few companies do not have in-house test teams.
- The proposed assessment method was developed to mention this issue.
- To develop the assessment method,
 - ① This paper discusses the conditions of local SW industry and development organizations
 - ② The method of implementing the assessment method is established.
 - ③ Based on the implementation method, the assessment procedure and method for the Simplified TMM is developed.
- The proposed assessment method
 - is applicable to local Small Companies as it allows for their conditions, and expected to reduce cost and labor as well as to shorten the time spent on the assessment compared with the existing model.

4. Conclusion & Future Works

✓ Future Works

- The assessment methods should deal with the details of assessors.
- Furthermore, the developed model need be applied to real companies so as to rectify any defects.

Thank You