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Revised Selected Papers

IIBC
IPACT

Mobile-Assisted Pronunciation Training based on Mispronunciation Association Rule / 100
Jinhyuk Jo, Jaesung Lee, Dae-Won Kim

A Robust Cloud Service Processing for Healthcare Big Data System / 104
Seung-Hyun Lee, Min-Sun Lee, Dong-Ryeol Shin

PHR (Personal Healthcare Record) Platform in Smart Healthcare Service / 106
Seung-Hyun Lee, Dong-Ryeol Shin

Application of Bond Valence Method to Estimate the Valence Charge Distribution in the Metal-to-Oxygen Bonding Spheres in Perovskites / 108
Hoang Nam Nhat, Dinh Van Chau, Dinh Van Thuong, Nguyen Thi Hang

SoundSource Localization for User Content Creation using Eigen Value Ratio and Correlation of Channels from Mixed Stereo Signal / 109
Chai-Jong Song, Chang-Mo Yang, Sung-Ju Park, Taek-Jin Han, Hochong Park

Web-based Multi-view 3D Real-time Display System / 113
Jung-Hwan Ko

Improve Energy Efficiency SEP for Wireless Sensor Networks / 114
Young-Il Song, WooSuk LEE, SeaYoung Park, Yong Min Kim, Noriyuki Iwane, Kyedong Jung, Jong-Yong Lee

Cooperation System based on Social for Business Process in Cloud / 115
Seok-Jae Moon, Chi-Gon Hwang, Jong-Yong Lee, Kye-Dong Jung

A Study on DBaaS System for Healthcare Information Data Integration in Cloud Environment / 117
Kwang-Cheol Lee, Sungbin Park, Yean-Woo Jung, Yan-Sheng Zhang, Jong-Yong Lee, Kye-Dong Jung

Improving Test Maturity Level for Test Organization Based on TPI next / 119
Kidu Kim and R. Young Chul Kim

Energy Aware based Multi-path Routing Protocol / 122
Seongsoo Cho, Seong Ro Lee, Jong-Yong Lee

Correlation Function Design for Unambiguous CBOC(6,1,1/11) Signal Tracking / 124
Keunhong Chae, Seong Ro lee, Seokho Yoon

Automatic Translator to Bi-directly Interchange XMI with XML on Model Transformation for Heterogeneous Smartphone UIs / 129
Hyun Seung Son, R. Young Chul Kim

Wideband Meanderline Bandstop Filter for X-band Application / 132
Bhanu Shrestha, Nam-Young Kim

Improving Test Maturity Level for Test Organization Based on TPI next

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Abstract

In this paper, we propose a method to improve testing capabilities with TMMi based on TPI next. We found another test activities on the testing organization evaluated with the TPI next through our mapping mechanism between TMMi and TPI next. In this study, we propose a method to improve the test maturity through improving the necessary test activity for the organization with verified test process.

Keywords: *TMM(Test Maturity Model), TMMi(Test Maturity Model integration), TPI(Test Process Improvement), TPI(Test Process Improvement) next*

1. Introduction

As traditional industry and the IT industry are converging, the software is used in people's lives largely. People want to use high quality software. Therefore, a software development organization has been tried to find a method to improve software quality for the users' needs. A Common way to develop high-quality software is to test software completely. But it is not possible to perform the complete test. Another way to improve the software quality is using related test models. When applying the related test model, the quality of the software organization is improving. In our previous research, we studied ways to improve the software quality using related test models. We enhance the previous research (1) which improves test process using TMMi or TPI next, and propose a method to improve test maturity through the mapping of TMMi and TPI Next.

2. Related works

TPI next (2) begins from TPI (3), which has been developed for improving test processes by Sogeti, a subsidiary of the Cap Gemini Group in 1997. TPI Next provides two more elements: the Improvement suggestions and the Enablers. Improvement suggestions focus on the test process itself. Enablers provide a better understanding of the explicit correlation between testing and the adjacent software development lifecycle.

TMMi (4) came from TMM (5)(6), which was developed by Illinois Institute Technology (IIT, CR Carlson, Ilene. Burnstein) to compensate for the testing activities in CMM (7). TMMi was developed as an integrated model of CMMi, TPI in conventional, TMM. Table 1 shows the comparison between these models.

Table 1 Comparison between the models

Model	TPI	TPI next	TMM	TMMi
Organization	Sogeti	Sogeti	IIT	TMMi Foundation

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Type	Maturity model	Maturity model	Maturity model	Maturity model
Year	1997	2010	1996	2010
Levels	14	4	5	5
Key Area	20	16	14	16
Reference Model	-	TPI, ISTQB	CMM	TMM, CMMI, TPI, ISTQB
Evaluation Type	Checklist	Checklist	Questionnaire	Questionnaire
Evaluation Object	Test process level	Test process level	Test execution level	Test execution level & Test process level
Feature	Test process oriented	Business-driven approach	Weak test process evaluation	Partial test process improvement

3. Improving Test Maturity Level for Test Organization Based on TPI next

We have been studying the mapping between test process models and Test Maturity Model since 2005. We checked the possibility of mapping between the TMMi and TPI Next, and improve the test process capabilities using TPI Next (8). We proposed test method for improving the process organization acquired TMMi in "Comparison between different maturity model", 2014 (9), and mapped the elements of TMMi and TPI Next. The mapping is conducted in the following three steps:

Step 1: Identify the comparative items for mapping between models
Step 2: Extract the mapping rules
Step 3: Define the process method for the associative and analyzing result

In step 1, the mapping object was TMMi and TPI Next. Previously we mapped two model based on TMMi, and also map two model based on TPI next in this study. Table 2 shows the mapping rules in step 2. The process method is defined according to the mapping process in Table 2

Table 2. Mapping Rule

Correlation score	Analysis result	Mapping process
0	No relation	Exclude from the common elements
1~2	Little relation	Exclude from the common elements
3	Same relation	Include in the common elements
4~5	High relation	Include in the common elements

Figure 1 shows correlation analysis process (TPI Next -> TMMi) using mapping rules. We derived, scored and processed common elements in each step. If needed, we add the elements to complement test maturity of test organization using "Vitamin Basket Rule".

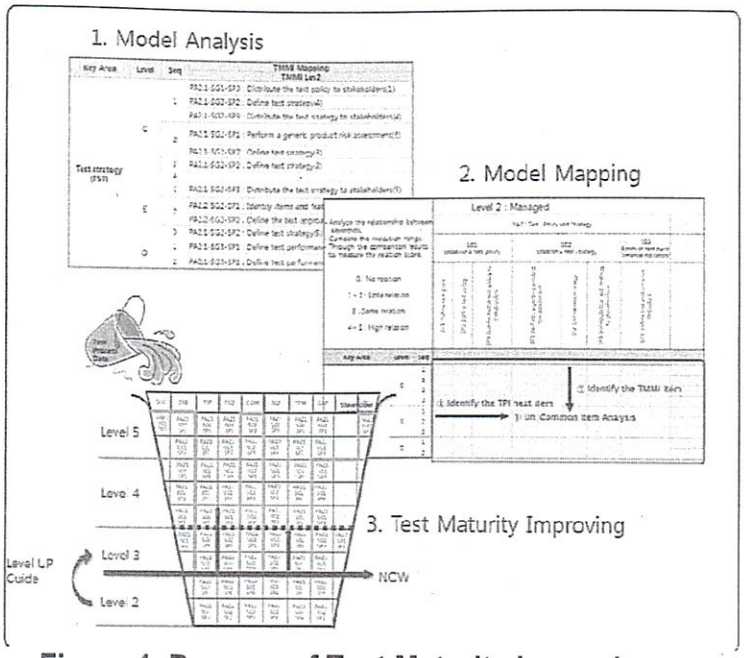

Figure 1. Process of Test Maturity Improving

4. Conclusion

In this study, we propose a method to improve the test maturity using enhancing test process model. The needed test activities in the organization with TPI Next evaluation can be acquired from TMMi mapping. Those activities will improve the test maturity of the organization. However, we have been mapping parts of TPI Next and TMMi. In the future study, we will map the all level of TPI Next and TMMi.

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