An Evaluation Template for Expert Review of Maturity Models

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Abstract. This paper describes an evaluation template for expert review of maturity models. The template addresses the different aspects involved in assessing both the construct and instruments of maturity models. It was produced via an extensive literature review of principles of design, development and evaluation of maturity models. This template can be beneficial to creators of maturity models since it provides them with a road map of the issues involved in evaluating maturity models via expert reviewers. The results of the expert evaluation can lead to the evolution of the maturity model into a number of subsequent versions.

Keywords: Maturity Models, Expert Review, Evaluation, Assessment.

1 Introduction

Maturity Models are normative reference models [5] that embrace the assumption of predictable evolution and change patterns. The main purpose of maturity models is to assess the current situation in order to evaluate the strengths and weaknesses and then prioritize and plan for improvement [5]. This is achieved via evolutionary successive stages or levels that signify step by step patterns of evolution and change designating the desirable or current organisational capabilities against a specific class of entities [3,7]. Those maturity levels form a path from initial state to maturity that can describe logical, anticipated, or desired evolution and change path(s) [3,1]. Although maturity models represent assessment tools yet maturity models are also subject to evaluation and improvement activities [4]. Maturity model assessment focus on comprehending and enhancing the process under investigation whereas the evaluation focus is to understand and improve the maturity model itself [4].

The purpose of this paper is to propose a template for maturity model evaluation that can be utilised by expert reviewers as a checklist for evaluating maturity model constructs and instruments. The result of the expert evaluation can lead to the evolution of the maturity model into a number of subsequent versions.

The rest of this paper is structured as follows: section 2 discusses maturity model components. Section 3 discusses the evaluation methods of maturity models. Section 4 discusses the proposed evaluation template. Section 4, presents the planned evaluation and section 5 discusses the conclusion.

2   Maturity Model Components (Instruments)

Maturity models are composed of three components; first, **Reference Model:** a set of dimensions that represent fundamental elements that should be examined in an assessment. The results of the assessment can help organisations assess their current status and identify weaknesses and strengths in order to pinpoint improvement areas. Second, **Performance Scale:** that helps the assessors to rate organisational performance in regards to the examined elements included in the reference model. Third, **Assessment Procedure:** that provides guidance to assessors and is composed of a maturity recording sheet, maturity levels performance rating, and typical quotes.

3   Evaluation of Maturity Models

A systematic mapping study on maturity models' evaluation and assessment proposed three types of maturity model evaluation [4]. First, **Author Evaluation:** that is conducted via the maturity model authors who evaluate the maturity model's processes for its intended use or compare it with other similar maturity models. Second, **Domain Expert Evaluation:** this evaluation occurs via experts in the type of process that the maturity model intends to improve, but who were not involved in the maturity model development. This evaluation is usually performed via surveys, interviews, or simulated assignments. Third, **Practical Setting Evaluation:** this evaluation involves using the maturity model in practical settings. This method is considered to be the most costly, however, the evaluation results is used to analyse and improve both the examined process and the maturity model [4].

4   Evaluation Form for Domain Expert Evaluation of Maturity Models

Maturity model testing should focus on two aspects: the model's construct and the model instruments [2]. Maturity model constructs should be tested for completeness, simplicity, understandability, ease of use, operationality, efficiency and impact on the environment and users [6]. Whereas the model instruments need to be tested for validity and reliability [6]. Maturity models should also possess a number of qualities, for example, flexibility, understandability, implement-ability, correctness, and relevance [8]. Maturity models should be tested to ensure the presence of those qualities as well.

There is an absence of a study that provides concrete guidance on how expert reviewers can conduct evaluations of maturity models and what aspects of the maturity model constructs and instruments needs to be examined during that evaluation. Based on extensive literature review of principles of design, development and evaluation of maturity models an evaluation form was designed in order to evaluate the various aspects related to expert review of maturity model construct and instruments.

Figure 1 shows the proposed domain expert evaluation form.

Maturity Model Domain Expert Evaluation Forms

Expert Information					
Date					
Name (Optional)					
Organization/Institute					
Position					
Email					
Criteria	**Strongly Disagree**	**Slightly Disagree**	**Neither Disagree Nor Agree**	**Slightly Agree**	**Strongly Agree**
Maturity Levels					
The maturity levels are sufficient to represent, all maturation stages of the domain (Sufficiency)					
There is no overlap detected between descriptions of maturity levels (Accuracy)					
Processes and Practices					
The processes and practices are relevant to the domain (Relevance)					
Processes and practices cover all aspects impacting/ involved in the domain (Comprehensiveness)					
Processes and practices are clearly distinct (Mutual Exclusion)					
Processes and practices are correctly assigned to their respective maturity level (Accuracy)					
Maturity Model					
Understandability					
The maturity levels are understandable					
The assessment guidelines are understandable					
The documentation is understandable					
Ease of Use					
The scoring scheme is easy to use					
The assessment guidelines are easy to use					
The documentation is easy to use					
Usefulness and Practicality					
The maturity model is useful conducting assessments					
The maturity model is practical for use in industry					

Q1. Would you add any maturity levels? If so please explain what and why?

Q2. Would you update the maturity level description? If so please explain what and why?

Q3. Would you add any processes or practices? If so please explain what and why?

Q4. Would you remove any of the processes or practices? If so please explain what and why?

Q5. Would you redefine/update any of the processes or practices? If so please explain what and why?

Q6. Would you suggest any updates or improvements related to the scoring scheme? If so please explain what and why?

Q7. Would you suggest any updates or improvement related to the assessment guidelines? If so please explain what and why?

Q8. Would you like to elaborate on any of your answers?

Q9. Could the model be made more useful? How?

Q10. Could the model be made more practical? How?

Fig. 1. Maturity Model Domain Expert Evaluation Forms

5   Testing

The testing phase for the proposed template for expert review of maturity models will involve inviting a set of maturity model domain experts to evaluate the proposed template. The domain expert evaluation process will include a number of steps: choosing domain experts, inviting them to take place in the evaluation, evaluating the template by maturity model expert reviewers and then the results of the evaluation will lead to the evolution of the template into subsequent versions as a result of the experts feedback. The selection of the expert panel occurred via preparing a preliminary list of potential candidates who are experts in the development, design, and evaluation of maturity models.

6   Conclusions

This paper reported on the development of a template for evaluating the constructs and instruments of maturity models via expert reviewers. This template provides maturity models creators with a road map of issues involved in evaluating maturity models via expert reviewers. The results of the expert evaluation can lead to the evolution of the maturity model into a number of subsequent improved versions. The changes to the model's maturity levels, key practices, scoring scheme as a result of the evaluation and the reasons behind these changes should be recorded and analysed.

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