An Evaluation of Ontology Based Domain Analysis for Model Driven Development

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ABSTRACT

Although Domain Analysis (DA) is important for Model Driven Development (MDD), traditional DA methods are demanding and not practical in many situations. When computer games are developed, game design (problem domain) is usually decided in a gradual way within iterations where software prototypes are constructed and playtest are performed. In such a case, it is not practical to fit a heavyweight DA in the highly iterative process. Researchers indicated that vocabularies were expected to automate game design. Such vocabularies can be reused in another form in DA tasks. In this research, the authors developed an ontology and a DA procedure based on it. To evaluate them, theoretical analysis, case studies, and a user acceptance survey were used. The results indicated that the ontology met the general requirement as a domain vocabulary, and it enhanced the DA process in an expected way. Most of external potential users (46 in total) considered the ontology useful and easy to use.

Keywords: *Computer Game, Domain Analysis, Domain Specific Modeling (DSM), Game Development, Model Driven (Software) Development (MDD), Ontology, Pervasive Game*

1. INTRODUCTION

Model Driven (Software) Development (MDD) is useful to handle domain complexity, shorten software development cycle and improve software quality. The successful application of MDD relies heavily on the Domain Analysis (DA) task as it produces essential domain artifacts for MDD use. Formal DA showed good design result but the usage of formal DA methods was still limited

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tions regarding PerGO's ease of use. This was because they felt that the ease of use should be evaluated based on a common standard.

Correspondingly, we identified some possible future works. *First*, we will continue to refine PerGO by carrying out more case studies. It is not possible that one DSL can be designed once and used forever, and "a large part of its power comes from its ability to evolve" (Kelly & Tolvanen, 2008). We will try to use PerGO in more cases where various pervasiveness features are involved. *Second,* we will extend on other perspectives such as narration and sociality which are not covered at present. *Third*, we will set up a standardized MDD platform to evaluate the usage of PerGO. PerGO is designed to make domain analysis more structured and efficient. But the ultimate goal is to improve the DSL definition and the overall MDD of games. The environment may include a complete MDD approach for game development, an integrated development environment which supports the MDD approach, and several benchmark game applications. *Lastly*, after setting up the platform, we would be able to carry out more formal and quantitative evaluation (especially on the improvement on the productivity) of our ontology (and to improve it in next iterations), comparing with other approaches. Human assessment based on practical tests can be carried out more easily.

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