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Knowledge based system for software testing

Shanmuganathan Vasanthapriyan

Department of Computing & Information Systems,
Sabaragamuwa University of Sri Lanka, Sri Lanka
priyan@appsc.sab.ac.lk

Abstract
Software development is conceptually a complex, knowledge intensive and a collaborative activity, which mainly depends on knowledge and experience of the software developers. Software testing is a sub area of software engineering which is also a knowledge intensive and collaborative activity. Effective software testing activities relies on the knowledge collaboration where every software tester shares his/her knowledge or acquires knowledge from others. Finding relevant knowledge within the software testing team or within the experts inside the company is not an easy task. There is a need to represent and process knowledge in an affordable and manageable manner. In this context, principles of knowledge management are pointed out as an important means to manage software testing knowledge. The research contributes in knowledge management in software testing, especially managing the software testing knowledge. An ontology based expert system is designed to share software testing knowledge and can be used to support sharing of knowledge and learning practices in other software companies.

Keywords: Ontology based knowledge sharing, Software testing knowledge, Software testing ontology

Introduction
Software development is conceptually a complex, knowledge intensive and a collaborative activity, which mainly depends on knowledge and experience of the software developers (Vasanthapriyan et al., 2015). Software testing is a sub area of software engineering which is also a knowledge intensive and collaborative activity. Meantime, the quality of a software is very much depending on its validity (Vasanthapriyan et al., 2017). Therefore, validation and verification should be carried throughout the development. In such cases, software testers have to work with all the other software engineers who are working in the development activities. There is a need to represent and process knowledge in an affordable and manageable manner. In this context, principles of knowledge management are pointed out as an important means to manage software testing knowledge (Vasanthapriyan et al., 2017). In this way, this research makes a number of contributions in managing the software testing knowledge. An ontology based expert system is designed to share Software testing knowledge. We believe our software testing ontology can support other software organizations to improve the sharing of knowledge and learning practices.

There were many researches have been conducted for developing knowledge based systems in different domains (Vasanthapriyan et al., 2017). They have not included much on the following (a) conceptual design (b) domain coverage (c) reusing of ontologies (d) implementation of international standard (e) implementation of relationships, axioms (f) vocabulary standards (g) evaluation methodologies of ontologies and (h) implemented as expert systems (Vasanthapriyan et al., 2017). Having discovered this research gap, the study has focused its attention to develop a software testing ontology to represent information needs according to software