Towards a Holistic Approach to Validating Conceptual Models 229

Chapter X

Towards a Holistic Approach to Validating Conceptual Models

Jörg Becker, European Research Center for Information Systems (ERCIS), Germany

Björn Niehaves, European Research Center for Information Systems (ERCIS), Germany

Daniel Pfeiffer, European Research Center for Information Systems (ERCIS), Germany

Abstract

The chapter sketches a holistic approach to semantically validating conceptual models. The quality and thus the validation of conceptual models are of high economic importance. However, only little empirical work has focused on their evaluation so far. This raises the question whether a holistic approach to determining the quality of conceptual models is available yet. In order to

Copyright © 2008, IGI Global. Copyright or distributing in print or electronic forms without written permission of IGI Global is prohibited.

describe the current state of research and to expose the so far neglected research fields we develop a two dimensional framework. With the help of this framework we can identify a notable shortcoming on conceptual model evaluation. We can show that there is actually no approach that covers all aspects of the framework. Hence, we describe a procedure model that integrates different evaluation techniques. This procedure model provides a starting point to further elaborate on a holistic evaluation approach.

Introduction

Since mid of the 70's, conceptual models have been employed to facilitate and systematize the process of information systems engineering (Boman, Bubenko, Johannesson, & Wangler, 1997). A remarkable number of modeling languages and methods have been proposed aiming at a more efficient and effective software development (Mylopoulos, 1998; Söderström, Andersson, Johannesson, Perjons, & Wangler, 2002; Yair Wand, Monarchi, Parsons, & Woo, 1995). In the beginning of the 90's, accompanied by new findings in management science, the positive experiences with conceptual models were transferred from information systems engineering to organizational design. This established conceptual models as a widely-used mean for eliciting costumer requirements and documenting the project progress of a software system as well as for describing the business processes and corporate structures in an organization (Shanks, Tansley, & Weber, 2003).

The quality of conceptual models has gained an immense impact on other IT artifacts (Hevner, March, Park, & Ram, 2004; March & Smith, 1995). Software systems are often based on requirement specifications in form of conceptual models. The adequacy of these specifications with regard to the represented application domain determines the acceptability and usability of software systems (Lauesen & Vinter, 2000). An incorrect description of the application domain will lead to problems in the implemented software system and to delays in the project progress. Likewise, the success of a reorganizational models. A problem analysis based on faulty models can lead to wrong and in the end very cost intensive decisions. By this means, the quality of conceptual models has reached a high economic importance.

The scientific and practical significance of conceptual models obliges to engage in the evaluation of these artifacts. During the last years numerous research efforts have been undertaken in order to develop criteria catalogs to

Copyright © 2008, IGI Global. Copyright or distributing in print or electronic forms without written permission of IGI Global is prohibited.

21 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/towardsholistic-approach-validating-conceptual/23418

Related Content

A Correlation-Based Feature Selection and Classification Approach for Autism Spectrum Disorder

Manvi Vermaand Dinesh Kumar (2021). *International Journal of Information System Modeling and Design (pp. 51-66).*

www.irma-international.org/article/a-correlation-based-feature-selection-and-classification-approachfor-autism-spectrum-disorder/276418

Trust Based Interdependency Weighting for On-Line Risk Monitoring in Interdependent Critical Infrastructures

Filipe Caldeira, Thomas Schaberreiter, Sébastien Varrette, Edmundo Monteiro, Paulo Simões, Pascal Bouvryand Djamel Khadraoui (2013). *International Journal of Secure Software Engineering (pp. 47-69).*

www.irma-international.org/article/trust-based-interdependency-weighting-for-on-line-risk-monitoringin-interdependent-critical-infrastructures/101892

Developing Context-Aware Personal Smart Spaces

Ioanna Roussaki, Nikos Kalatzis, Nicolas Liampotis, Korbinian Frank, Efstathios D. Sykasand Miltiades Anagnostou (2012). *Handbook of Research on Mobile Software Engineering: Design, Implementation, and Emergent Applications (pp. 659-676).* www.irma-international.org/chapter/developing-context-aware-personal-smart/66491

Knowledge Application to Crossover Operators in Genetic Algorithm for Solving the Traveling Salesman Problem

Pardeep Singh, Rahul Kumar Singh, Deepa Joshiand Gourav Bathla (2022). *International Journal of Software Innovation (pp. 1-20).*

www.irma-international.org/article/knowledge-application-to-crossover-operators-in-geneticalgorithm-for-solving-the-traveling-salesman-problem/297987

What Do We Know About Buffer Overflow Detection?: A Survey on Techniques to Detect A Persistent Vulnerability

Marcos Lordello Chaim, Daniel Soares Santosand Daniela Soares Cruzes (2018). International Journal of Systems and Software Security and Protection (pp. 1-33). www.irma-international.org/article/what-do-we-know-about-buffer-overflow-detection/221929