

Association for Information Systems AIS Electronic Library (AISeL)

AMCIS 1998 Proceedings

Americas Conference on Information Systems
(AMCIS)

December 1998

Variations in Reuse Success of Software Projects Developed with Systematic Software Reuse Methodologies

Marcus Rothenberger
Arizona State University Tempe

Follow this and additional works at: <http://aisel.aisnet.org/amcis1998>

Recommended Citation

Rothenberger, Marcus, "Variations in Reuse Success of Software Projects Developed with Systematic Software Reuse Methodologies" (1998). *AMCIS 1998 Proceedings*. 425.
<http://aisel.aisnet.org/amcis1998/425>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 1998 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Variations in Reuse Success of Software Projects Developed with Systematic Software Reuse Methodologies

Marcus A. Rothenberger
Arizona State University, Tempe

Research Motivation

Systematic reuse of previously written code is a way to increase software development productivity as well as the quality of the software (Gaffney Jr. and Durek 1989; Banker and Kauffman 1991; Chen and Lee 1993; Basili, Briand et al. 1996). A firm investing in a reuse methodology for its software development needs to monitor the benefit obtained from reuse. Only if the benefit from reusing components is higher than the cost of implementing and maintaining the reuse driven development methodology, the approach can be considered successful.

Business software projects are dealing with a complex subject domain. One approach to facilitate the retrieval of reusable software components in complex subject domains is the use of an enterprise-level model. Projects developed with a potentially successful reuse methodology such as the enterprise-level model approach, vary greatly in terms of reuse achieved. This research explores the factors that contribute to the variations in reuse success across projects that have been developed using the same systematic reuse methodology.

First Research Question

Can we assess a reuse rate in an enterprise-level software development context that represents the percentage of development effort reused?

The reuse rate is an necessary factor for the assessment of the value of the reuse method to a software development firm. It is essential to assess the reuse rate to monitor the success of the software reuse methodology. The literature has not established how to calculate the reuse rate in an enterprise-level model driven software development environment, yet. The purpose of answering this research question is to explore if the reuse rate can be calculated in such an environment and to present an approach for developing the measure.

We answer this question by establishing an approach to a metric for the measurement of reuse in a generic enterprise-level model context and to use this approach to create a specific metric for a company.

Second Research Question

What are the factors that affect reuse success of software projects developed in an enterprise-level model context and how do they affect reuse success?

We are conducting an in-depth case study on a single client of the subject company that employs an enterprise-level model for reuse facilitation to identify the factors that influence project reuse success. Success is measured in terms of reuse rate achieved in each project.

The relationship between the factors and the reuse success of each project is explored. Identifying the factors that influence project success in a systematic reuse development environment will allow software development firms to better target reuse investments. Previous research has focused on the critical success factors of reuse methodologies on an organizational level. However, sound methodologies may not be able to achieve their full potential because of factors inhibiting project success. Those factors have widely been ignored so far.

Third Research Question

To what extent are the factors identified for the enterprise-level model driven reuse context valid for other systematic reuse methodologies?

We are conducting a large scale survey to generalize the results of the field study. This part of the dissertation research consists of surveying software development organizations to empirically test the results and explore if the same factors determine reuse success in other companies employing different reuse methodologies. Our hypothesis is that the factors identified as influencing project reuse success in an enterprise-level model environment are generalizable to software development firms that employ other methods of systematic reuse.

We shall identify companies that have some form of systematic reuse methodology in place and ask developers to identify one successful and one unsuccessful reuse project. For both project we shall ask the developers' assessment for each of the factors previously identified. The assessments will consist of perceptual (Likert) scales. We shall also ask the developers to estimate the reuse percentage achieved for the projects. Analyzing the correlation between the factors and the project success will allow us to conclude to what extent the previous results are generally applicable.

References

References are available from the author.