Chapter 4
FME Technique for Reduced Method Rejection

S. B. Goyal
City University, Malaysia

ABSTRACT

In situational method engineering (SME), there are two core intentions that method engineers look for: 1) a set method engineering goal that is the kind of method needed and 2) a method allowing him to satisfy this goal. This chapter can capture method engineering's goal using a generic process model (GPM) that guides the method engineering in the definition of his project method engineering goal and in the selection approach that best allows him to achieve it. The authors wish to move to functional method engineering so as to explore the context of method engineering/situational method engineering more fully based on functional and non-functional method situation. The implications of the approach on CAME tool design are considered and illustrated through a running example.

INTRODUCTION

Method Engineering, ME is the discipline of developing information systems development methods. Initially, it was thought that a universal method (Saeki M. & Wenyin K., 1994) that was capable of addressing the needs of all information system development projects could be defined. However, this view was rejected (Hoef, Rob, Rolf & Vincent 1997), (Karlsson F. & Ågerfalk P J, 2004). Since project needs vary with projects and projects vary in their characteristics, development of methods may require specific adaptations (Anat & Iris, 2011). Therefore, an engineering technique for this is required. The area of Situational Method Engineering, SME was developed to build methods for specific development situations. Situational Method Engineering, SME, assumes the existence of a method base from which method components could be retrieved and assembled to form the desired method (Xavier, Jolita, Anna, Alberto, David, Jesús, Sergi, Marc, Norbert, Alberto, Angelo, 2018).

The assembly process has been illustrated in (Brinkkemper, Saeki & Harmsen 1998) where state chart and object models have been assembled together to form a new method.

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Ralyte (Ralyté, Rébecca & Rolland, 2003) proposed a two-step goal oriented SME process: first, a method engineering, ME, goal is established, second, assembly based method engineering task is carried out by eliciting ME intentions. Prakash (Prakash, Srivastava, Gupta & Arora, 2007) proposed a three stage SME process: intention matching, architecture matching, and method implementation matching.

The situation of SME can be conceptualized in many ways, as descriptors (Rolland & Prakash, 1996), contingency factors (Slooten & Brinkkemper, 1993; Lemmen & Punter, 1994; Swede & Vliet 1994; Slooten 1995), project factors (Harmsen, Brinkkemper, Han Oei, 1994), situation factors (Harmsen, Lubbers I. & Wijers 1995), context type (Deneckere, Elena & Bruno 2010) and project type (Bucher, Klesse, Kurpjuweit &Winter 2007), (Bucher & Winter 2008). Table I summarizes the proposals made by different authors for the notion of a situation.

In spite of the large number of proposals that exist, there is some dissatisfaction with the notion of situation. Bucher (Bucher, Klesse, Kurpjuweit &Winter, 2007) is concerned about the poor understanding of the notion of a situation. According to (Borner R., 2010), there is need to find a way to reduce the number of possible situations.

The authors first observe that almost all situation characteristics in Table 1 relate to project/method implementational aspects. These do not directly define the characteristics of the needed method but are the factors that influence the successful use of a method. The chapter propose here the introduction of factors that directly affect method selection from a technical viewpoint.

Motivated by information systems that have functional and non-functional aspects, the authors see a situation as having functional and non-functional aspects. The former relates to the tasks that a method must carry out whereas the latter relates to the project/method implementational environment issues that the methods must be sensitive to. A complete resolution to the SME problem shall occur when both functional and non-functional situational aspects are addressed. Consequently, the authors propose the move shown in figure 1.

The figure shows that a method is located in a situation. On the left-hand side, is the current proposal where the situation is non-functional in nature whereas on the right-hand side, the method is situated in its functional and non-functional aspects.

Evidently, the interesting question is the use of functional characteristics in building situated methods. The authors refer to the handling of functional aspects as Functional Method Engineering, FME.

This chapter proposes method as a function to meet the functional characteristics of a situation. From the notion of a function, the authors see that the important factors to be considered are input, output and process. Additionally, the actors who interact with the method and the immediate application environment in which the method component fits are also needed. The chapters treat these as functional situation characteristics. Once method components have been selected by matching functional needs, then these are to be assembled together. We propose a functional assembly process by which appropriate functional components are assembled together to realize the larger method function.

To obtain the notion of ‘method as a function’, the authors introduce the idea of functional method. The top-level function of a method is decomposed, which yields a nested structure reflecting the functional properties of the desired method. Functional methods and components are available in one part of our two parts of the method repository.

A functional method needs to be implemented. Since, it is a class of methods, it can be implemented in several ways. Every implementation is a definition of internal features and their connection to yield the desired functionality. Method implementations are available in the second part of the repository.