Chapter X

Methodology Evaluation Framework for Component-Based System Development

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ABSTRACT
Components are already prominent in the implementation and deployment of advanced distributed information systems. Part and parcel of this development are the effective Component Based Development (CBD) methodology encompassing methods, tools, and techniques that effectively target the existing component based technology. Current CBD methodologies lack a comprehensive component based concept structure. They handle components mainly at the implementation and deployment phases still, which are heavily
influenced by UML notations. In this paper, a presentation is made of an evaluation framework which highlights the extent to which a methodology is component-oriented. Current CBD methods and approaches do not provide full support for various component concepts. Therefore, a CBD method sample was evaluated using the framework’s concepts and requirements. CBD method improvements are proposed based on the evaluation. The improved approach suggests the use of the standard RM-ODP as an underlying framework, to provide consistent, systematic, and integrated CBD methodology engineering support throughout the lifecycle.

INTRODUCTION
Today, organizations are intensively looking for a way to make effective use of technology opportunities for conducting their business. They are constantly under pressure from ever-changing demands in business and technology. There are many impact factors responsible for the current state of an enterprise. The Internet is one of the main factors contributing to the new “digital economy,” for crossing the borders of organizations towards virtual enterprises. At the same time the need for tighter integration of various types of information inside an enterprise, such as financial, geographical, and multimedia data, and the need to establish complex enterprise information warehouses is rising. Last but not least, there is the new technology of wireless communication, providing unlimited mobility for users, information, and applications. Combining this with geographical location-awareness allows e-business to generate a wealth of new opportunities.

The evolving demands in the business environment in turn demand immediate changes in the corresponding Information and Communication Technology (ICT) solutions, and at the same time, new ICT opportunities must be rapidly adapted to the way of conducting business. The effective solutions for managing these complexity-adaptability parameters have been widely recognized as a crucial factor in the modern business world and have become an important differentiator among competing organizations.

These technology, business and organizational requirements have resulted in a growing interest in research communities and industry in component-based development (CBD) (Brown & Wallnau, 1998). CBD provides organizations with an approach to building scalable solutions that are flexible, manageable, and able to accommodate ever-changing demands in a cost-effective and a timely manner (Butler Group, 1998). Using a CBD approach, the system development phases are reduced to selection, reconfiguration, adaptation, assembling, and deployment of
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