Chapter 3
Model-Driven Applications: Using Model-Driven Mechanism to Bridge the Gap between Business and IT

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ABSTRACT
How to bridge the gap between business and Information Technology (IT) has always been a critical issue for both the developers and IT managers. The individualized, differentiated demands by different customers and situations, the constantly changing in both business and IT are great challenges to the applications for enterprises. In this chapter, the authors respectively discuss the left side (computer) in software engineering, with Object-Orientation (OO), Model-Driven Engineering (MDE), Domain-Driven Development (DDD), Agile, etc., and the right side (the business) in Enterprise Engineering (EE) with Enterprise Modeling (EM), and Enterprise Architecture (EA) of the gap. It is shown there are some fundamental problems, such as the transforming barrier between analysis and design model, the entanglement of business change and development process, and the limitation to the enterprise engineering approaches such as EA by IT. Our solution is concentrated on the middle, the inevitable model as a mediator between human, computer, and the real world. The authors introduce Model-Driven Application (MDApp), which is based on Model-Driven Mechanism (MDM), operated on the evolutionary model of the target thing at runtime; it is able to largely avoid the transforming barrier and remove the entanglement. Thus, the architecture for Enterprise Model Driven Application (EMDA) is emerged, which is able to strongly support EE and adapts to the business changing at runtime.

1. INTRODUCTION
The context of this chapter is the applications of Information Technology (IT), mainly, the software which supports the comprehensive operations (business and management) of an enterprise, i.e., the “applications for enterprises” or “enterprise (business) applications”; another conventional name is Information System (IS). For many software developers, “enterprise applications” means a series of technical characteristics, but our focus on the demand, the applying targets and objec-

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Model-Driven Applications

In this chapter, we focus on the role of models for the problem-solving by human with computer, and targeted at the relationship between a certain computer system and the outside world—the people and physical or abstract entities, their states, activities and events—especially in dynamic way at runtime. We start to demonstrate at the inevitable way to connect human, computer, and the real world: models and modeling. And then, around them, have some review on the two side of the gap (see Figure 1), respectively in software engineering and enterprise engineering. Based on the discussions, the Model-Driven Application (MDApp) is introduced, which is based on the principle we called Model-Driven Mechanism (MDM); further, the architecture of Enterprise Model Driven Application (EMDA) is presented.

2. TWO SIDES OF THE GAP AND INEVITABLE MODEL

2.1. Model as Mediator between Computer, Real World, and Human

No matter what challenges the business-IT gap bring us, there is only one of core issue, that is, how to utilize computer to solve the real world problem we faced. Regardless of the means, to solve any problem, we must first know what fact there—by model. This principle is not only suit-
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