This book is part of a series of three complementary books (Figure P.1). The series addresses the pivotal issue of providing automated support for attaining business process resilience and information systems agility with little or no recurring manual intervention.

The first two books, *Agile Systems with Reusable Patterns of Business Knowledge: A Component Based Approach* and *Creating Agile Business Systems with Reusable Knowledge*, were published by Artech House Press, Norwood, MA in October 2005 and Cambridge University Press, Cambridge, UK, in January 2007, respectively. The series as a whole addresses the basic organization of knowledge and how an integrated knowledge repository can be created from its shared components. This book, which is the final book of the series, addresses business rules and processes.

In terms of content, *Creating Agile Business Systems with Reusable Knowledge* developed the semantics of Pattern and the concepts of Measurability, Distinction, Rules, Value, and Constraint, which are the basis of all knowledge. This book summarizes that foundation in Chapter IV and then builds upon it in subsequent chapters to provide additional depth. It addresses to a greater extent the components from which business rules and business processes are assembled and demonstrates how these components can automate reasoning and even some kinds of innovation. Each book is self-contained and may be read independently of the others.

*Figure P.1. Reusing business knowledge: The three books*
The patterns that will be described in the following chapters facilitate the design of resilient services, business processes, and information systems. These patterns will also facilitate development of tools that can automate the design of “self aware” business services and adaptive information systems. The Semantic Web is a vision of the future, in which the World Wide Web operates on the plane of meanings. It envisions a future in which automation processes and integrates a World Wide Web of information based on the meanings of individual items of data. The patterns of information in this series of books describe meanings. These patterns do not need the Web to exist. However, they can be the cornerstone of the Semantic Web.

The purpose of the semantics of knowledge we develop in this book is to normalize business rules and knowledge in order to reduce chaotic interactions and unintended side effects under the pressure of continual and rapid changes in scope, objectives, perspectives, and functionality. This book focuses on the concepts and models that integrate ontology, measurability, business rules, and business processes. The intent of this book is to anchor this integration in a cogent, overarching, nonstochastic model of knowledge and to demonstrate how such a model will result in agile and adaptable processes and information systems. Human, perceptual, and organizational issues, governance, and change management were addressed in the first book (Mitra & Gupta, 2005). This latest book discusses the risks associated with information quality and discusses processes for managing risks associated with violation of constraints.

The long-term success of business is increasingly dependent on its underlying resilience and agility. Most analysis, methodologies, and traditional business process engineering practices place emphasis on operational efficiency and net profits at the expense of innovation and agility. However, innovation, agility, and coordination of information in support of value, from customers’ perspectives, are paramount in the global knowledge economy. In such an environment, research and processes that transcend departmental, corporate, and even national boundaries drive global excellence; innovation is not only supreme but is also made routine. This series of three books is tailored to support such an environment. The series demonstrates how new learning may be absorbed by flexible processes and information systems, which can be aligned automatically in lock step.

The series supports the stated intent of the Object Management Group (OMG) to drive towards semantic integration of business rules, ontology, processes, and services in support of service orientation and self-aware business processes. The OMG has published its SBVR standard for business rules and is close to completing the BPDM model for business processes, which it eventually intends to integrate with SBVR. The Metamodel of Knowledge, in this series of books, supports OMG’s strategy by integrating the semantics that define business rules, business processes, reasoning, and shared knowledge.

Read on to see how this can be done and discover the inhuman patterns of machine reasoning that will surprise you at the nexus of knowledge, process, and information.