



From Chaos to Integration - BBBB (Buy)

The Road to Integration A Guide to Applying the ISA-95 Standard in Manufacturing

By Bianca Scholten

Reviewed by Nick Sands

Some of the most important standards developed by ISA in the last decade are the ISA-95 standards on integration between control systems and enterprise systems. ISA-95 part 1 was published in 2000. It took many years before the any books on implementing the standard appeared. One of the first is Bianca Scholten's *The Road to Integration: A Guide to Applying the ISA-95 Standard in Manufacturing*. Scholten is a partner at Ordina, an information and communication technology consulting firm in the Netherlands and Belgium. She received her Master's degree from the University of Utrecht and is an active member of the ISA-95 committee.

Scholten first provides some background on ISA-95, which may be somewhat of a mystery to many readers. ISA-95, *Enterprise-Control System Integration* is divided into several parts. Part 1, *Models and Terminology* provides the common language for integration and the very important functional hierarchy model, which shows level 0,1, and 2 functions, including the process and control systems as described in ISA-88, the level 3 functions of manufacturing operations and control, and the level 4 functions of business planning and logistics. The focus of ISA-95 is the exchange of data between levels 3 and 4. The functional enterprise control model other models are also very important. Part 2, *Object Model Attributes* defines more details of the information flows shown in part 1. Part 3, *Activity Models of Manufacturing Operations Management* describes the activities at level 3. Part 4, *Object Models and Attributes on Manufacturing Operations Management* is in development and defines the information exchange between level 3 systems. Part 5, *Business to Manufacturing Transactions*, describes the data messages exchanged in transactions between levels 3 and 4.

After the orientation to the ISA-95 standards, Scholten illustrates how to use the ISA-95 standards as a methodology to analyze existing system interfaces. The process includes a tour, a review of business drivers, and then an examination of the functional and activity models, during which the specific needs are defined. A summary with concerns and recommendations complete the analysis. Scholten provides comments from users that have been through the analysis.

Another chapter explains how to apply the models described in the ISA-95 standards from a practical point of view. A detailed example includes the resources of personnel, equipment, material, and process segment and illustrates many points.

The final chapter reveals the structure of B2MML (Business to Manufacturing Markup Language) and its implementation, including adaptors and middleware. There is also a plan for implementing a project to implement ISA-95. There are some critical questions to answer, like ownership of the master data and the interface systems.

Scholten provides an experienced view of the benefits of following the ISA-95 standards and, importantly, an international view. She draws upon many interviews with users to keep the book grounded in reality. Scholten also adds her own style as an art historian. The ISA-95 standards will have a very significant impact on the control system environment so this practical explanation is worth buying (BBBB). *The Road to Integration* is available from ISA.org for \$95 (member price).