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Enterprise-Control System Integration
Part 5: Business-to-Manufacturing Transactions

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Enterprise-Control System Integration Part 5: Business-to-Manufacturing Transactions

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Part 5: Business-to-Manufacturing Transactions

FOREWORD

This standard is Part 5 of a multi-part series of standards that defines enterprise-to-control system integration. This Part 5 standard defines the transactions to interface business and manufacturing activities.

Clause 4 of this standard is normative. It describes the transaction models and messages used.

Clause 5 is normative. It describes the verbs used in the messages.

Clause 6 is normative. It defines the message nouns, the structure of the nouns, the verbs used with the nouns, and the rules for the verbs.

Clause 7 is normative. It describes the requirements for declarations about completeness, compliance, and conformance to the standard.

Annex A of this standard is informative. It contains examples of sequences of transactions used to coordinate selected business activities.

Annex B is informative. It contains a series of questions and answers regarding the use of the standard.

Annex C is informative. It contains references to documents used in the generation of this standard.

As currently envisioned, the ANSI/ISA-95 series consists of the following parts under the general title, Enterprise-Control System Integration:

- Part 1: Models and terminology (published 2000)
- Part 2: Object model attributes (published 2001)
- Part 3: Models of manufacturing operations management (published 2005)
- Part 4: Object models and attributes of manufacturing operations management (in development at the time of publication of this Part 5 standard)
- Part 5: Business to manufacturing transactions (published 2007)
- Part 6: Manufacturing operations management transactions (in development at the time of publication of this Part 5 standard)

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INTRODUCTION

This Part 5 standard is based on the use of ISA-95 abstract models previously defined in the ISA-95 Part 1 and Part 2 standards, combined with OAGi verbs to define transaction models for information exchange. It is recognized that other, non-ISA-95 Part 5 transaction protocols are possible and are not deemed invalid as a result of this standard. Transactions occur at all levels within the enterprise and between enterprise partners, and are related to both required and actual activities, but the focus of this standard is the interface between enterprise/business systems and manufacturing systems. This standard defines business-to-manufacturing transactions and manufacturing-to-business transactions that may be used in relation to the objects that are exchanged between Level 4 and Level 3, as defined in the object models of the Part 1 and Part 2 standards. Models are introduced that provide descriptions of the transactions and explanations of the required transaction processing behavior. Technology-specific implementations to provide this behavior are not defined in this standard. This standard has the intent of providing insight into the level of work required to construct information messages in business-to-manufacturing transactions.

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1 Scope

This ISA-95 Part 5 standard defines transactions in terms of information exchanges between applications performing business and manufacturing activities associated with Levels 3 and 4. The exchanges are intended to enable information collection, retrieval, transfer and storage in support of enterprise-control system integration. This Part 5 standard is consistent with the Part 1 models and terminology and Part 2 object model attributes. This standard defines transactions that specify how to exchange the objects defined in Part 1 Clause 7 and Part 2.

The models covered in this standard are: Personnel Model, Equipment Model, Maintenance Model, Material Model, Process Segment Model, Production Capability Model, Product Definition Model, Production Schedule Model, and Production Performance Model.

2 Normative references

The following normative documents contain provisions, which through reference in this text constitute provisions of this standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid normative documents.

— ANSI/ISA 95.00.01-2000, Enterprise-Control System Integration Part 1: Models and Terminology (referred to as “Part 1” in this standard)

— ANSI/ISA 95.00.02-2001, Enterprise-Control System Integration Part 2: Object Model Attributes (referred to as “Part 2” in this standard)

— ANSI/ISA 95.00.03-2005, Enterprise-Control System Integration Part 3: Activity Models of Manufacturing Operations Management (referred to as “Part 3” in this standard)

— ISO/IEC 19501-1:2005, Information Technology – Open Distributed Processing – Unified Modeling Language (UML) Version 1.4.2

— IEC 62264-1:2003, Enterprise-Control System Integration – Part 1: Models and Terminology

— IEC 62264-2: 2004, Enterprise-Control Systems Integration – Part 2: Object Model Attributes

3 Definitions

3.1 message:
a structured information unit conveyed in a one-way transfer of data from one sending application to one or more receiving applications.

3.2 noun:
one of two parts in the content of a message, a noun represents one or more objects, as defined in the Part 1 and Part 2 object models

3.3 transaction:
a sequence of related messages that are exchanged among applications performing Level 3 or Level 4 activities

3.4 verb:
one of two parts in the content of a message, a verb defines the action to be performed, or the response to a request