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

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FOREWORD

ISA-95 is 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 per the following:

- Clause 4 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 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
- Annex D is informative. It defines the pattern for verbs.
- Annex E is informative. It defines the general rules used for identifying nouns from object models.

As currently envisioned, ISA-95 consists of the following standards under the general title Enterprise-Control System Integration:

– Part 1: Models and Terminology
– Part 2: Objects and Attributes for Enterprise-Control System Integration
– Part 3: Activity Models of Manufacturing Operations Management
– Part 4: Objects and Attributes for Manufacturing Operations Management Integration
– Part 5: Business-to-Manufacturing Transactions
– Part 6: Messaging Service Model
– Part 7: Alias Service Model
– Part 8: Profiles
– Part 9: Common Operations Management Events

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INTRODUCTION

This Part 5 standard in the ISA-95 series is based on the use of ISA-95 abstract models previously defined in ISA-95 Part 2 and ISA-95 Part 4, combined with verbs to define a transaction model 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. 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 Part 5 is the interface between enterprise/business systems and manufacturing systems.

This standard defines transactions that are exchanged between Level 4 and Level 3, and within Level 3 as defined in the object models of ISA-95 Part 2 and ISA-95 Part 4. Models are introduced which 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 part of ISA-95 has the intent of providing insight into the level of work required to construct transactional exchanges.

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1 Scope

This Part 5 standard in the ISA-95 series 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 of ISA-95 is consistent with the ISA-95.00.02 and ISA-95.00.04 object model attributes. This standard also defines transactions that specify how to exchange the objects defined in ISA-95.00.02, ISA-95.00.04 and this standard. Other uses of the transaction model are not defined in this standard.

The models covered in this standard are:

– Hierarchy Scope Model
– Personnel Model
– Equipment Model
– Physical Asset Model
– Material Model
– Process Segment Model
– Operational Location Model
– Operations Event Model
– Operations Capability Model
– Operations Definition Model
– Operations Schedule Model
– Operations Performance Model
– Resource Relationship Network Model
– Work Capability Model
– Work Definition Model
– Work Schedule Model
– Job List Model
– Work Performance Model
– Workflow Specification Model
– Work Calendar Model
– Work Record Model
– Work Alert Model

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 19501-1, *Information Technology – Unified Modeling Language (UML) – Part 1: Specification*

ANSI/ISA-95.00.01-2010, *Enterprise-control system integration – Part 1: Models and terminology*

ANSI/ISA-95.00.02-2018, *Enterprise-control system integration – Part 2: Objects and attributes for enterprise-control system integration*