

INTRODUCTION

This Part 3 standard shows activity models and data flows for manufacturing information that enables enterprise-control system integration. The modelled activities operate between Level 4 logistics and planning functions and Level 2 manual and automated process control functions. The models are consistent with the object models given in ANSI/ISA-95.00.02-2010 (IEC 62264-2 Mod), ANSI/ISA-95.00.04-2012, and the Level 3 (manufacturing operations and control) definitions.

The goal of the standard is to reduce the risks, costs and errors associated with implementing enterprise systems and manufacturing operations systems in such a way that they inter-operate and easily integrate. The standard may also be used to reduce the effort associated with implementing new product offerings.

This standard provides models and terminology for defining the activities of manufacturing operations management. The models and terminology defined in this standard are intended:

- to emphasize the good practices of manufacturing operations;
- to be used to improve existing manufacturing operations systems; and
- to be applied regardless of the degree of automation.

Some potential benefits produced when applying this standard may include:

- reducing the time to reach full production levels for new products;
- enabling vendors to supply appropriate tools for manufacturing operations;
- enabling more uniform and consistent identification of manufacturing needs;
- reducing the cost of automating manufacturing processes;
- optimizing supply chains; and
- improving efficiency in life-cycle engineering efforts.

It is not the intent of this part of the standard to

- suggest that there is only one way of implementing manufacturing operations;
- force users to abandon their current way of handling manufacturing operations;
- restrict development in the area of manufacturing operations; or
- restrict use only to manufacturing industries.

Changes from ANSI/ISA 95.00.03-2005 to this version are:

1. The document is based on the IEC/ISO 62264-3 version. This is the IEC version of ISA-95 Part 3 and includes additional changes made by the IEC SC65E and ISO TC 184 SC5 Joint Working Group (JWG 5).
2. Clause 4.1 *Manufacturing Operations Management* was moved to Part 1 and therefore was removed from Part 3.
3. Clause 4.2 *Functional hierarchy* was moved to Part 1 and therefore was removed from Part 3.
4. Clause 4.4 *Criterion for defining activities below Level 4* was moved to Part 1 and therefore was removed from Part 3.
5. Clause 4.5 *Categories of production information* was moved to Part 1 and therefore was removed from Part 3.

6. Clause 4.6 *Manufacturing operations information* was moved to Part 1 and therefore was removed from Part 3.
7. Clause 5.3 *Expanded equipment hierarchy model* was moved to Part 1 and therefore was removed from Part 3.
8. Clause 5.4 *Expanded decision hierarchy model* was removed from Part 3. The corresponding section was removed from Part 1 and replaced with a reference to ISO-15704 Industrial automation systems.
9. Annex A (informative) *Other enterprise activities affecting manufacturing operations* was moved to Part 1 and therefore was removed from Part 3.
10. Annex D (informative) *Associated standards* was moved to Part 1 and therefore was removed from Part 3.
11. Annex F (informative) *Applying the decision hierarchy model to manufacturing operations management* was removed from Part 3. The corresponding section was removed from Part 1 and replaced with a reference to ISO-15704 Industrial automation systems.
12. Annex G (informative) *Mapping PSLX ontology to manufacturing operations management* was removed from Part 3. The committee felt that this section is more appropriate as a PSLX white paper or TR.
13. The names for data were changed to match the Part 4 standard names. These name changes were made in all figures and in the text. The following data names were changed or added:
 - a. *Detailed Production Schedule* changed to *Work Schedule*
 - b. *Production Dispatch List* changed to *Job list*
 - c. *Production Work Order* changed to *Job Order*
 - d. *Work Order* changed to *Job Order*
 - e. *Detailed Maintenance Schedule* changed to *Work Schedule*
 - f. *Detailed Inventory Schedule* changed to *Work Schedule*
 - g. The addition of *Work Masters* as objects that define how work is to be done.

ENTERPRISE-CONTROL SYSTEM INTEGRATION –

Part 3: Activity models of manufacturing operations management

1 Scope

This Part 3 standard in the ISA-95 series defines activity models of manufacturing operations management that enable enterprise system to control system integration. The activities defined in this part of the standard are consistent with the object models definitions given in ANSI/ISA-95.00.02-2010 (IEC 62264-2 Mod) and ANSI/ISA-95.00.04-2012. The modelled activities operate between business planning and logistics functions, defined as the Level 4 functions and the process control functions, defined as the Level 2 functions of ANSI/ISA-95.00.01-2010 (IEC 62264-1 Mod). The scope of this standard is limited to:

- a model of the activities associated with manufacturing operations management, Level 3 functions; and
- an identification of some of the data exchanged between Level 3 activities.

2 Normative references

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

- ANSI/ISA-95.00.01-2010 (IEC 62264-1 Mod), Enterprise-Control System Integration - Part 1: Models and Terminology
- ANSI/ISA-95.00.02-2010 (IEC 62264-2 Mod), Enterprise-Control System Integration - Part 2: Object Model Attributes
- ANSI/ISA-95.00.04-2012, Enterprise-Control System Integration - Part 4: Objects and Attributes for Manufacturing Operations Management Integration
- ANSI/ISA-88.00.01-2010, Batch Control - Part 1: Models and Terminology
- ISA-88.00.02-2001, Batch Control - Part 2: Data Structures and Guidelines for Languages
- IEC 61512-1:1997, Batch control - Part 1: Models and terminology
- IEC 61512-2:2001, Batch control - Part 2: Data structures and guidelines for languages

3 Terms, definitions and abbreviations

For the purposes of this document, the following terms and definitions apply.

3.1 Terms and definitions

3.1.1

finite capacity scheduling

scheduling methodology where work is scheduled for a set of manufacturing resources, in such a way that no capacity scheduled exceeds the capacity available

3.1.2

inventory operations management

activities within Level 3 of a manufacturing facility which coordinate, direct, manage and track inventory and material movement within manufacturing operations