Figure 1 – Outline of models in the standard .........................................................................13
Figure 2 – Enterprise-control system interface ......................................................................14
Figure 3 – Functional hierarchy .............................................................................................15
Figure 4 – Equipment hierarchy ............................................................................................19
Figure 5 – Functional enterprise/control model .................................................................23
Figure 6 – Areas of information exchange ............................................................................35
Figure 7 – Production capability information .......................................................................36
Figure 8 – Process segment capabilities ...............................................................................37
Figure 9 – Production information definition .........................................................................38
Figure 10 – Example of process segments ...........................................................................39
Figure 11 – Possible information overlaps ...........................................................................40
Figure 12 – Production information .....................................................................................40
Figure 13 – Segment relationships ........................................................................................42
Figure 14 – Personnel model ................................................................................................44
Figure 15 – Equipment model ................................................................................................45
Figure 16 – Material model ....................................................................................................48
Figure 17 – Process segment model .....................................................................................51
Figure 18 – Production capability model ..............................................................................53
Figure 19 – Process segment capability model .....................................................................55
Figure 20 – Current and future capacities ..........................................................................56
Figure 21 – Product definition model ...................................................................................57
Figure 22 – Production schedule model ..............................................................................60
Figure 23 – Production performance model .........................................................................64
Figure 24 – Object model inter-relations ..............................................................................68
Figure B.1 – Multiple business and production processes ......................................................78
Figure C.1 – Scope for Purdue Reference Model (PRM) for manufacturing ............................86
Figure D.1 – Assumed hierarchical computer control structure for a large manufacturing complex ..............................................................................................................................88
Figure D.2 – Assumed hierarchical computer control system structure for an industrial plant ........................................................................................................................................89
Figure D.3 – Assumed hierarchical computer control structure for an industrial company to show Level 5 and its relationship to Level 4 ........................................................................................................90
Figure D.4 – Definition of the real tasks of the hierarchical computer control system (as modified) ........................................................................................................................................94
Figure D.5 – Hierarchy arrangement of the steel plant control to show relationship of hierarchy to plant structure ..................................................................................................................99
Figure D.6 – Hierarchy arrangement of the steel plant control system as studied for energy optimization ........................................................................................................................................99
Figure D.7 – Hierarchy arrangement of the paper-mill control to show relationship of hierarchy to plant structure ..................................................................................................................99
Figure D.8 – The hierarchy control scheme as applied to a petrochemical plant ....................100
Figure D.9 – The hierarchy control scheme as applied to a pharmaceuticals plant ...............101
Figure D.10 – Computer-integrated manufacturing system (CIMS) (Cincinnati-Milicron proposal) ........................................................................................................................................101
Figure D.11 – Relationship of the several classes of functional entities which comprise the CIM reference model and computer-integrated manufacturing itself ........................................................................................................109
Figure D.12 – Major external influences as used in the data-flow model
Figure D.13 – Requirements interfacing of corporate management and staff functional
to the factory
Figure D.14 – Report interfacing to corporate management and staff functional
to the factory
Figure D.15 – Interface of government regulations, etc., to the factory
Figure D.16 – 0.0 facility model
Figure D.17 – 1.0 order processing
Figure D.18 – 2.0 production scheduling
Figure D.19 – 3.0 production control
Figure D.20 – 3.1 process support engineering
Figure D.21 – 3.2 maintenance
Figure D.22 – 3.3 operations control
Figure D.23 – 4.0 materials and energy control
Figure D.24 – 5.0 procurement
Figure D.25 – 6.0 quality assurance
Figure D.26 – 7.0 product inventory
Figure D.27 – 8.0 cost accounting
Figure D.28 – 9.0 product shipping administration
Figure F.1 – Production or manufacturing system
Figure F.2 – IDEFO actigram

Table 1 – Yourdon notation used
Table 2 – UML notation used
Table 3 – Model cross-reference
Table D.1 – Generic list of duties of all integrated information and automation systems
Table D.2 – An overall plant automation system provides
Table D.3 – Notes regarding optimization (improvement) of manufacturing efficiency
Table D.4 – Summary of duties of control computer systems
Table D.5 – Potential factors for facilitating integrated control system
development and use
Table D.6 – Required tasks of the intra-company management information system
(Level 4B of Figure D.1 or Figure D.2 or Level 5 of Figure D.3)
Table D.7 – Duties of the production scheduling and operational management level
(Levels 4A or 5A)
Table D.8 – Duties of the area level (Level 3)
Table D.9 – Duties of the supervisory level (Level 2)
Table D.10 – Duties of the control level (Level 1)
Table D.11 – Information flow model of generic production facility mini-specs
(definition of functions)
Table D.12 – Correlation of information flow tasks with the tasks
of the scheduling and control hierarchy
INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENTERPRISE-CONTROL SYSTEM INTEGRATION –

Part 1: Models and terminology

FOREWORD

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International Standard IEC 62264-1 has been developed by subcommittee 65A: System aspects, of IEC technical committee 65; Industrial-process measurement and control, and by ISO technical committee 184/SC5: Architecture, communication and integration frameworks.

This standard is based upon ANSI/ISA-95.00.01-2000, Enterprise-Control System Integration, Part 1: Models and Terminology. It is used with permission of the copyright holder, the Instrumentation, Systems and Automation Society (ISA)*. ISA encourages the use and application of its industry standards on a global basis.

This standard was submitted to the National Committees for voting under the Fast Track Procedure as the following documents:

<table>
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<tr>
<th>FDIS</th>
<th>Report on voting</th>
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<tr>
<td>65A/369/FDIS</td>
<td>65A/373/RVD</td>
</tr>
</tbody>
</table>

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table. In ISO, the standard has been approved by 10 P members out of 10 having cast a vote.

* For information on ISA standards, contact ISA at: ISA – The Instrumentation, Systems and Automation Society, PO Box 12277, Research Triangle Park, NC 27709, USA, Tel. 1+919.549.8411, URL: standards.isa.org.
This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IEC 62264 consists of the following parts under the general title Enterprise-control system integration:

- Part 1: Models and terminology
- Part 2: Object models and attributes
- Part 3: Models of manufacturing operations

The committee has decided that the contents of this publication will remain unchanged until 2006. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this standard may be issued at a later date.
INTRODUCTION

IEC 62264 is a multi-part standard that defines the interfaces between enterprise activities and control activities. This standard provides standard models and terminology for describing the interfaces between the business systems of an enterprise and its manufacturing-control systems. The models and terminology presented in this standard

a) emphasize good integration practices of control systems with enterprise systems during the entire life cycle of the systems;

b) can be used to improve existing integration capabilities of manufacturing control systems with enterprise systems; and

c) can be applied regardless of the degree of automation.

Specifically, this standard provides a standard terminology and a consistent set of concepts and models for integrating control systems with enterprise systems that will improve communications between all parties involved. Some of the benefits produced will

a) reduce users' times to reach full production levels for new products;

b) enable vendors to supply appropriate tools for implementing integration of control systems to enterprise systems;

c) enable users to better identify their needs;

d) reduce the costs of automating manufacturing processes;

e) optimize supply chains; and

f) reduce life-cycle engineering efforts.

It is not the intent of this standard to

- suggest that there is only one way of implementing integration of control systems to enterprise systems;

- force users to abandon their current methods of handling integration; or

- restrict development in the area of integration of control systems to enterprise systems.

This standard discusses the interface content between manufacturing-control functions and other enterprise functions, based upon the Purdue Reference Model for CIM (hierarchical form) as published by ISA. This standard presents a partial model or reference model as defined in ISO 15704.

The scope of this standard is limited to describing the relevant functions in the enterprise and the control domain and which objects are normally exchanged between these domains. Subsequent parts will address how these objects can be exchanged in a robust, secure, and cost-effective manner preserving the integrity of the complete system.

The intent of Clause 4 is to describe the context of the models in Clause 5 and Clause 6. It gives the criteria used to determine the scope of the manufacturing control system domain. Clause 4 does not contain the formal definitions of the models and terminology but describes the context to understand the other clauses.

The intent of Clause 5 is to describe hierarchy models of the activities involved in manufacturing-control enterprises. It presents in general terms the activities that are associated with manufacturing control and the activities that occur at the business logistics level. It also gives an equipment hierarchy model of equipment associated with manufacturing control.
The intent of Clause 6 is to describe a general model of the functions within an enterprise which are concerned with the integration of business and control. It presents, in detail, an abstract model of control functions and, in less detail, the business functions that interface to control. The purpose is to establish a common terminology for functions involved in information exchange.

The intent of Clause 7 is to state in detail the objects that make up the information streams defined in Clause 6. The purpose is to establish a common terminology for the elements of information exchanged.

Annex A defines the relationship of this standard with other related standardization work in the manufacturing area.

The intent of Annex B is to present the business reasons for the information exchange between business and control functions. The purpose is to establish a common terminology for the reason for information exchange.

Annex C discusses the rationale for multiple models.

Annex D contains selected elements from the Purdue Reference Model that may be used to place the functions described in Clauses 5 and 6 in context with the entire model.

Annex E is informative. It correlates the Purdue Reference Model to the MESA International Model.

This standard is intended for those who are

- involved in designing, building, or operating manufacturing facilities;
- responsible for specifying interfaces between manufacturing and process control systems and other systems of the business enterprise; or
- involved in designing, creating, marketing, and integrating automation products used to interface manufacturing operations and business systems.

Annex F is a discussion of systems, resources, capability, capacity, and time as used in this standard.
1 Scope

This standard describes the interface content between manufacturing control functions and other enterprise functions. The interfaces considered are the interfaces between Levels 3 and 4 of the hierarchical model defined by this standard. The goal is to reduce the risk, cost, and errors associated with implementing these interfaces.

The standard can be used to reduce the effort associated with implementing new product offerings. The goal is to have enterprise systems and control systems that inter-operate and easily integrate.

The scope of this standard is limited to
a) a presentation of the scope of the manufacturing operations and control domain;

b) a discussion of the organization of physical assets of an enterprise involved in manufacturing;

c) a listing of the functions associated with the interface between control functions and enterprise functions; and

D) a description of the information that is shared between control functions and enterprise functions.

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.

IEC 61512-1:1997, Batch control – Part 1: Models and terminology


ISO 15531-1, Industrial automation systems and integration – Industrial manufacturing management data – Part 1: General overview

ISO 15704:2000, Industrial automation systems – Requirements for enterprise-reference architectures and methodologies

1 To be published.
2 To be published.