

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Enterprise-control system integration –  
Part 2: Objects and attributes for enterprise-control system integration**  
(standards.iteh.ai)

**Intégration des systèmes entreprise-contrôle –  
Partie 2: Objets et attributs pour l'intégration des systèmes de commande  
d'entreprise**

ITEL STANDARD PREVIEW  
IEC 62264-2:2013  
<https://standards.iteh.ai/catalog/standards/sis/0d7a2081-1da-4220-9902-1f1036991a46/iec-62264-2-2013>





## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2013 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.

If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.

Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

### About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

### About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

#### Useful links:

IEC publications search - [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

The advanced search enables you to find IEC publications by a variety of criteria (reference number, text, technical committee,...).

It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Stay up to date on all new IEC publications. Just Published details all new publications released. Available on-line and also once a month by email.

Electropedia - [www.electropedia.org](http://www.electropedia.org)

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary (IEV) on-line.

Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [csc@iec.ch](mailto:csc@iec.ch).

### A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

### A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

#### Liens utiles:

Recherche de publications CEI - [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

La recherche avancée vous permet de trouver des publications CEI en utilisant différents critères (numéro de référence, texte, comité d'études,...).

Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

Just Published CEI - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Restez informé sur les nouvelles publications de la CEI. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - [www.electropedia.org](http://www.electropedia.org)

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (VEI) en ligne.

Service Clients - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: [csc@iec.ch](mailto:csc@iec.ch).



IEC 62264-2

Edition 2.0 2013-06

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Enterprise-control system integration –  
Part 2: Objects and attributes for enterprise-control system integration**

**Intégration des systèmes entreprise-contrôle –  
Partie 2: Objets et attributs pour l'intégration des systèmes de commande  
d'entreprise**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE **XH**  
CODE PRIX

ICS 25.040.40; 35.240.50

ISBN 978-2-83220-833-5

**Warning! Make sure that you obtained this publication from an authorized distributor.  
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

## CONTENTS

FOREWORD.....	9
INTRODUCTION.....	11
1 Scope.....	12
2 Normative references .....	12
3 Terms, definitions and abbreviations .....	12
3.1 Terms and definitions .....	12
3.2 Abbreviations .....	13
4 Production operations models and generic operations models.....	13
4.1 Information models.....	13
4.2 General modeling information.....	15
4.3 Extensibility of attributes through properties .....	15
4.4 Object model structure .....	16
4.5 Explanation of tables.....	16
4.5.1 Tables of attributes.....	16
4.5.2 Object identification.....	16
4.5.3 Data types.....	17
4.5.4 Presentation of examples .....	17
4.5.5 References to resources.....	18
4.5.6 Object relationships.....	19
4.6 Relationship of models.....	19
4.7 Hierarchy scope .....	20
4.8 Value types.....	20
4.8.1 Value use .....	20
4.8.2 Value syntax.....	21
4.8.3 Simple value types .....	21
4.8.4 Unit of measure .....	22
4.8.5 Array value types.....	22
4.8.6 Range value types.....	22
4.8.7 Series value types .....	22
4.8.8 Structured value types.....	22
5 Common object models .....	23
5.1 Personnel information .....	23
5.1.1 Personnel model.....	23
5.1.2 Personnel class .....	24
5.1.3 Personnel class property .....	24
5.1.4 Person.....	25
5.1.5 Person property.....	26
5.1.6 Qualification test specification .....	27
5.1.7 Qualification test result.....	28
5.2 Role based equipment information .....	29
5.2.1 Role based equipment model.....	29
5.2.2 Equipment class .....	30
5.2.3 Equipment class property .....	31
5.2.4 Equipment.....	32
5.2.5 Equipment property .....	32
5.2.6 Equipment capability test specification .....	33

5.2.7	Equipment capability test result .....	34
5.3	Physical asset information .....	35
5.3.1	Physical asset model .....	35
5.3.2	Physical asset .....	36
5.3.3	Physical asset property .....	37
5.3.4	Physical asset class .....	37
5.3.5	Physical asset class property.....	38
5.3.6	Physical asset capability test specification.....	38
5.3.7	Physical asset capability test result .....	39
5.3.8	Equipment asset mapping.....	40
5.4	Material information.....	40
5.4.1	Material model.....	40
5.4.2	Material class .....	41
5.4.3	Material class property .....	42
5.4.4	Material definition .....	43
5.4.5	Material definition property .....	44
5.4.6	Material lot .....	45
5.4.7	Material lot property.....	47
5.4.8	Material subplot.....	47
5.4.9	Material test specification .....	49
5.4.10	Material test result.....	50
5.4.11	Assemblies.....	51
5.5	Process segment information .....	52
5.5.1	Process segment model .....	52
5.5.2	Process segment.....	53
5.5.3	Personnel segment specification.....	54
5.5.4	Personnel segment specification property.....	55
5.5.5	Equipment segment specification.....	56
5.5.6	Equipment segment specification property.....	56
5.5.7	Material segment specification.....	57
5.5.8	Material segment specification property.....	59
5.5.9	Physical asset segment specification.....	59
5.5.10	Physical asset segment specification property .....	60
5.5.11	Process segment parameter .....	61
5.5.12	Process segment dependency .....	61
5.6	Containers, tools and software .....	63
5.6.1	Containers.....	63
5.6.2	Tools .....	63
5.6.3	Software.....	63
6	Operations management information .....	63
6.1	Operations definition information .....	63
6.1.1	Operations definition model .....	63
6.1.2	Operations definition .....	64
6.1.3	Operations material bill.....	65
6.1.4	Operations material bill item .....	66
6.1.5	Operations segment .....	67
6.1.6	Parameter specification .....	68
6.1.7	Personnel specification.....	69

6.1.8	Personnel specification property	70
6.1.9	Equipment specification	71
6.1.10	Equipment specification property	72
6.1.11	Physical asset specification	73
6.1.12	Physical asset specification property	74
6.1.13	Material specification	75
6.1.14	Material specification property	76
6.1.15	Operations segment dependency	77
6.2	Operations schedule information	77
6.2.1	Operations schedule model	77
6.2.2	Operations schedule	78
6.2.3	Operations request	80
6.2.4	Segment requirement	81
6.2.5	Segment parameter	82
6.2.6	Personnel requirement	83
6.2.7	Personnel requirement property	84
6.2.8	Equipment requirement	85
6.2.9	Equipment requirement property	86
6.2.10	Physical asset requirement	87
6.2.11	Physical asset requirement property	89
6.2.12	Material requirement	89
6.2.13	Material requirement property	91
6.2.14	Requested segment response	92
6.3	Operations performance information	92
6.3.1	Operations performance model	92
6.3.2	Operations performance	93
6.3.3	Operations response	94
6.3.4	Segment response	95
6.3.5	Segment data	96
6.3.6	Personnel actual	97
6.3.7	Personnel actual property	98
6.3.8	Equipment actual	99
6.3.9	Equipment actual property	100
6.3.10	Physical asset actual	101
6.3.11	Physical asset actual property	102
6.3.12	Material actual	103
6.3.13	Material actual property	105
6.4	Operations capability information	105
6.4.1	Operations capability model	105
6.4.2	Operations capability	106
6.4.3	Personnel capability	107
6.4.4	Personnel capability property	109
6.4.5	Equipment capability	109
6.4.6	Equipment capability property	110
6.4.7	Physical asset capability	111
6.4.8	Physical asset capability property	112
6.4.9	Material capability	113
6.4.10	Material capability property	115
6.5	Process segment capability information	116

iTech STANDARD PREVIEW  
(standards.iteh.ai)

IEC 62264-2:2013

<https://standards.iteh.ai/catalog/standards/sist/0d7a268f-31da-4220-99b2-1f030971a464/iec-62264-2-2013>

6.5.1	Process segment capability model .....	116
6.5.2	Process segment capability .....	117
7	Object model inter-relationships .....	118
8	List of objects .....	120
9	Compliance .....	123
Annex A (normative)	Production specific information.....	124
Annex B (informative)	Use and examples.....	132
Annex C (informative)	Example data sets.....	140
Annex D (informative)	Questions and answers about object use .....	148
Annex E (informative)	Logical information flows .....	162
Bibliography	.....	165
Figure 1	– Production operations management information models .....	14
Figure 2	– Operations information models for operations management .....	15
Figure 3	– Detailed resource relationship in models .....	18
Figure 4	– Hierarchy scope model.....	20
Figure 5	– Personnel model .....	24
Figure 6	– Role based equipment model .....	30
Figure 7	– Physical asset model .....	35
Figure 8	– Physical asset and equipment relationship .....	36
Figure 9	– Material model .....	41
Figure 10	– Example of a material with an assembly .....	52
Figure 11	– Process segment model .....	53
Figure 12	– Segment dependency examples .....	62
Figure 13	– Operations definition model.....	64
Figure 14	– Operations schedule model .....	78
Figure 15	– Operations performance model .....	92
Figure 16	– Operations capability Model .....	106
Figure 17	– Process segment capability object model .....	116
Figure 18	– Object model inter-relationships .....	118
Figure A.1	– Product definition model .....	124
Figure A.2	– Production schedule model .....	127
Figure A.3	– Production performance model .....	129
Figure A.4	– Production capability model .....	131
Figure B.1	– Personnel model.....	133
Figure B.2	– Instances of a person class .....	134
Figure B.3	– UML model for class and class properties .....	134
Figure B.4	– Class property .....	135
Figure B.5	– Instances of a person properties .....	135
Figure B.6	– Instances of person and person properties .....	135
Figure B.7	– XML schema for a person object.....	138
Figure B.8	– XML schema for person properties.....	138
Figure B.9	– Example of person and person property.....	139



Figure B.10 – Example of person class information .....	139
Figure B.11 – Adaptor to map different property IDs and values .....	139
Figure D.1 – Class and property IDs used to identify elements .....	151
Figure D.2 – A property defining overlapping subsets of the capability .....	152
Figure D.3 – Routing for a product .....	153
Figure D.4 – Routing with co-products and material dependencies .....	154
Figure D.5 – Product and process capability relationships .....	155
Figure D.6 – Time-based dependencies .....	156
Figure D.7 – Mixed operation example .....	160
Figure E.1 – Enterprise to manufacturing system logical information flows .....	163
Figure E.2 – Logical information flows among multiple systems .....	164
Table 1 – UML notation used .....	16
Table 2 – Example table .....	17
Table 3 – Attributes of hierarchy scope .....	20
Table 4 – Commonly used CCTS types for exchange .....	21
Table 5 – Attributes of personnel class .....	24
Table 6 – Attributes of personnel class property .....	25
Table 7 – Attributes of person .....	26
Table 8 – Attributes of person property .....	27
Table 9 – Attributes of qualification test specification .....	28
Table 10 – Attributes of qualification test result .....	29
Table 11 – Attributes of equipment class .....	31
Table 12 – Attributes of equipment class property .....	31
Table 13 – Attributes of equipment .....	32
Table 14 – Attributes of equipment property .....	33
Table 15 – Attributes of equipment capability test specification .....	34
Table 16 – Attributes of equipment capability test result .....	34
Table 17 – Attributes of physical asset .....	36
Table 18 – Attributes of physical asset property .....	37
Table 19 – Attributes of physical asset class .....	38
Table 20 – Attributes of physical asset class property .....	38
Table 21 – Attributes of physical asset capability test specification .....	39
Table 22 – Attributes of physical asset capability test result .....	40
Table 23 – Attributes of equipment asset mapping .....	40
Table 24 – Attributes of material class .....	42
Table 25 – Attributes of material class property .....	43
Table 26 – Attributes of material definition .....	44
Table 27 – Attributes of material definition property .....	45
Table 28 – Attributes of material lot .....	46
Table 29 – Attributes of material lot property .....	47
Table 30 – Attributes of material subplot .....	49
Table 31 – Attributes of material test specification .....	50



Table 32 – Attributes of material test result .....	51
Table 33 – Attributes of process segment .....	54
Table 34 – Attributes of personnel segment specification .....	55
Table 35 – Attributes of personnel segment specification property .....	56
Table 36 – Attributes of equipment segment specification .....	56
Table 37 – Attributes of equipment segment specification property .....	57
Table 38 – Attributes of material segment specification .....	58
Table 39 – Attributes of material segment specification property .....	59
Table 40 – Attributes of physical asset segment specification .....	60
Table 41 – Attributes of physical asset segment specification property .....	60
Table 42 – Attributes of process segment parameter .....	61
Table 43 – Attributes of process segment dependency .....	62
Table 44 – Attributes of operations definition .....	65
Table 45 – Attributes of operations material bill .....	66
Table 46 – Attributes of operations material bill item .....	67
Table 47 – Attributes of operations segment .....	68
Table 48 – Attributes of parameter specification .....	69
Table 49 – Attributes of personnel specification .....	70
Table 50 – Attributes of personnel specification property .....	71
Table 51 – Attributes of equipment specification .....	72
Table 52 – Attributes of equipment specification property .....	73
Table 53 – Attributes of physical asset specification .....	74
Table 54 – Attributes of physical asset specification property .....	74
Table 55 – Attributes of material specification .....	75
Table 56 – Attributes of material specification property .....	76
Table 57 – Attributes of operations segment dependency .....	77
Table 58 – Attributes of operations schedule .....	79
Table 59 – Attributes of operations request .....	80
Table 60 – Attributes of segment requirement .....	82
Table 61 – Attributes of segment parameter .....	83
Table 62 – Attributes of personnel requirement .....	84
Table 63 – Attributes of personnel requirement property .....	85
Table 64 – Attributes of equipment requirement .....	86
Table 65 – Attributes of equipment requirement property .....	87
Table 66 – Attributes of physical asset requirement .....	88
Table 67 – Attributes of physical asset requirement property .....	89
Table 68 – Attributes of material requirement .....	90
Table 69 – Attributes of material requirement property .....	91
Table 70 – Attributes of operations performance .....	93
Table 71 – Attributes of operations response .....	94
Table 72 – Attributes of segment response .....	96
Table 73 – Attributes of segment data .....	97
Table 74 – Attributes of personnel actual .....	98

Table 75 – Attributes of personnel actual property .....	99
Table 76 – Attributes of equipment actual .....	100
Table 77 – Attributes of equipment actual property .....	101
Table 78 – Attributes of physical asset actual .....	102
Table 79 – Attributes of physical asset actual property.....	103
Table 80 – Attributes of material actual .....	104
Table 81 – Attributes of material actual property .....	105
Table 82 – Attributes of operations capability.....	107
Table 83 – Attributes of personnel capability.....	108
Table 84 – Attributes of personnel capability property .....	109
Table 85 – Attributes of equipment capability.....	110
Table 86 – Attributes of equipment capability property .....	111
Table 87 – Attributes of physical asset capability .....	112
Table 88 – Attributes of physical asset capability property .....	113
Table 89 – Attributes of material capability.....	114
Table 90 – Attributes of material capability property.....	115
Table 91 – Attributes of process segment capability.....	117
Table 92 – Model cross-reference (1 of 2) .....	119
Table 93 – Common resource objects (1 of 4).....	120
Table B.1 – Attributes of person.....	133
Table B.2 – Database structure for person.....	136
Table B.3 – Database structure for person property.....	136
Table B.4 – Database for person with data.....	137
Table B.5 – Database for person property with data.....	137
Table D.1 – Definition of segment types.....	150
Table D.2 – Examples of materials and equipment.....	158
Table D.3 – Equipment and physical assets.....	158

STANDARD PREVIEW

(standards.iteh.ai)

IEC 62264-2:2013

<https://standards.iteh.ai/catalog/standards/sist/0d7a268f-31da-4220-99b2-1105391a464c/iec-62264-2-2013>

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ENTERPRISE-CONTROL SYSTEM INTEGRATION –****Part 2: Objects and attributes for enterprise-control system integration**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62264-2 has been developed by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation, and by ISO technical committee 184/SC5: Interoperability, integration and architectures for enterprise systems and automation applications. It is published as a double logo standard.

This standard is based upon ANSI/ISA-95.00.02-2010, Enterprise-Control System Integration, Part 2: Objects and attributes for Enterprise-Control System Integration. 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 second edition cancels and replaces the first edition published in 2004. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) update of the first edition;
- b) addition of object models for exchange information used in manufacturing operations management activities, instead of just production operations management activities. The added object models were physical asset, operations definition, operations schedule, operations performance, and operations capability.
- c) displacement of the production specific object models in Annex A;
- d) displacement of the UML object models that were in IEC 62264-1:2003 into this standard so that the object models and the associated attribute tables were available in the same document;
- e) addition of the Hierarchy scope object definition to replace the Location attribute used in the previous edition;
- f) addition of a value type section to define the exchange of non-simple value types;
- g) definition of simple value types were defined using the ISO 15000-5.

The text of this standard is based on the following documents of IEC:

FDIS	Report on voting
65E/290/FDIS	65E/317/RVD

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 members out of 10 having cast a vote.

iTech STANDARD PREVIEW  
(standards.iteh.ai)

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62264 series, published under the general title *Enterprise control system integration* can be found on the IEC website.

IEC 62264-3:2013  
<https://standards.iteh.ai/catalog/standards/sist/0d7a268f-31da-4220-99b2-1f1036991a46/iec-62264-2-2013>

In this publication, the following print types are used:

– *attributes: in italic type.*

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

## INTRODUCTION

This part of IEC 62264 further defines formal object models for exchange information described in IEC 62264-1 using UML object models, tables of attributes, and examples. The models and terminology defined in this part of IEC 62264:

- 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 capability of manufacturing control systems with enterprise systems; and
- c) can be applied regardless of the degree of automation.

Specifically, this part of IEC 62264 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. Benefits produced will:

- a) reduce the user's time 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 cost of automating manufacturing processes;
- e) optimize supply chains; and
- f) reduce life-cycle engineering efforts.

This standard may be used to reduce the effort associated with implementing new product offerings. The goal is to have enterprise systems and control systems that interoperate and easily integrate.

[IEC 62264-2:2013](https://standards.iteh.ai/catalog/standards/sist/0d7a268f-31da-4220-99b2-11f036991a46/iec-62264-2-2013)

It is not the intent of the standards to:

- a) suggest that there is only one way of implementing integration of control systems to enterprise systems;
- b) force users to abandon their current way of handling integration; or
- c) restrict development in the area of integration of control systems to enterprise systems.

## ENTERPRISE-CONTROL SYSTEM INTEGRATION –

### Part 2: Objects and attributes for enterprise-control system integration

#### 1 Scope

This part of IEC 62264 specifies generic interface content exchanged between manufacturing control functions and other enterprise functions. The interface considered is between Level 3 manufacturing systems and Level 4 business systems in the hierarchical model defined in IEC 62264-1. The goal is to reduce the risk, cost, and errors associated with implementing the interface.

Since this standard covers many domains, and there are many different standards in those domains, the semantics of this standard are described at a level intended to enable the other standards to be mapped to these semantics. To this end this standard defines a set of elements contained in the generic interface, together with a mechanism for extending those elements for implementations.

The scope of IEC 62264-2 is limited to the definition of object models and attributes of the exchanged information defined in IEC 62264-1.

This part of IEC 62264 standard does not define attributes to represent the object relationships.

#### 2 Normative references

<https://standards.iteh.ai/catalog/standards/sist/0d7a268f-31da-4220-99b2-1f1036991a46/iec-62264-2-2013>  
IEC 62264-2:2013

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.

IEC 62264-1, *Enterprise-control system integration – Part 1: Models and terminology*

ISO/IEC 19501, *Information technology – Open Distributed Processing – Unified Modeling Language (UML) Version 1.4.2*

#### 3 Terms, definitions and abbreviations

##### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62264-1, as well as the following apply.

###### 3.1.1

###### equipment class

grouping of role based equipment with similar characteristics

###### 3.1.2

###### event

representation of a solicited or unsolicited fact indicating a state change in the enterprise

**3.1.3****location**

scope of exchanged information as identified by an element of the equipment hierarchy

EXAMPLE There can be an agreement to only supply an “Area” name for exchanged information, because the site and enterprise are implicitly defined through the messaging system

**3.1.4****material class**

grouping of materials with similar characteristics

**3.1.5****material lot**

uniquely identifiable amount of a material

Note 1 to entry: It describes the actual or planned total quantity or amount of material available, its current state, and its specific property values.

**3.1.6****material definition**

definition of the properties for a substance

Note 1 to entry: This includes material that can be identified as raw, intermediate, final material, or consumable.

**3.1.7****material subplot**

uniquely identifiable subset of a material lot

Note 1 to entry: This can be a single item.

**3.1.8****personnel class**

grouping of persons with similar characteristics

[IEC 62264-2:2013](https://standards.iteh.ai/catalog/standards/sist/0d7a268f-31da-4220-99b2-2f2c811c-62264-2-2013)

<https://standards.iteh.ai/catalog/standards/sist/0d7a268f-31da-4220-99b2-2f2c811c-62264-2-2013>

**3.1.9****product**

desired output or by-product of the processes of an enterprise

Note 1 to entry: A product can be an intermediate product or end product from a business perspective.

Note 2 to entry: Also defined in ISO 10303-1 as: a substance produced by a natural or artificial process.

**3.1.10****property**

implementation specific characteristic of an entity

**3.2 Abbreviations**

For purposes of this standard the following abbreviations apply.

**MOM** Manufacturing Operations Management

**UML** Unified Modeling Language

**4 Production operations models and generic operations models****4.1 Information models**

Common objects used in information exchange that relate to personnel, equipment, physical assets, and material are defined in Clause 5.