



**NSAI**  
Standards

Irish Standard  
I.S. EN 62656-5:2017

# Standardized product ontology register and transfer by spreadsheets - Part 5: Interface for activity description

**I.S. EN 62656-5:2017**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):*

*NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.*

*This document is based on:*

EN 62656-5:2017

*Published:*

2017-10-13

*This document was published under the authority of the NSAI and comes into effect on:*

2017-11-01

ICS number:

NOTE: If blank see CEN/CENELEC cover page

NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

## National Foreword

I.S. EN 62656-5:2017 is the adopted Irish version of the European Document EN 62656-5:2017, Standardized product ontology register and transfer by spreadsheets - Part 5: Interface for activity description

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

**Compliance with this document does not of itself confer immunity from legal obligations.**

*In line with international standards practice the decimal point is shown as a comma (,) throughout this document.*

This page is intentionally left blank

EUROPEAN STANDARD

**EN 62656-5**

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2017

---

ICS 01.040.01; 01.110

English Version

**Standardized product ontology register  
and transfer by spreadsheets -  
Part 5: Interface for activity description  
(IEC 62656-5:2017)**

Enregistrement d'ontologie de produits normalisés  
et transfert par tableurs -  
Partie 5: Interface pour la description des activités  
(IEC 62656-5:2017)

Standardisierte Übertragung und Registrierung  
von Ontologien für Produkte mittels Tabellen -  
Teil 5: Schnittstelle für die Beschreibung von Aktivitäten  
(IEC 62656-5:2017)

This European Standard was approved by CENELEC on 2017-07-24. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

---

**EN 62656-5:2017**

**European foreword**

The text of document 3D/257/CDV, future edition 1 of IEC 62656-5, prepared by SC 3D "Product properties and classes and their identification", of IEC/TC 3 "Information structures and elements, identification and marking principles, documentation and graphical symbols" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62656-5:2017.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2018-04-24
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-07-24

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

**Endorsement notice**

The text of the International Standard IEC 62656-5:2017 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated :

IEC 62656-3:2015      NOTE      Harmonized as EN 62656-3:2015 (not modified).

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61360-2	2012	Standard data element types with associated classification scheme for electric components - Part 2: EXPRESS dictionary schema	EN 61360-2	2013
IEC 61360-4	-	Standard data element types with associated classification scheme for electric components - Part 4: IEC reference collection of standard data element types and component classes	-	-
IEC 62656-1	-	Standardized product ontology register and transfer by spreadsheets - Part 1: Logical structure for data parcels	EN 62656-1	-
IEC 62264-3	2007	Enterprise-control system integration - Part 3: Activity models of manufacturing operations management	EN 62264-3	2007
ISO 13584-24	-	Industrial automation systems and integration - Parts library - Part 24: Logical resource: Logical model of supplier library	-	-
ISO 13584-42	2010	Industrial automation systems and integration - Parts library - Part 42: Description methodology: Methodology for structuring parts families	-	-

This page is intentionally left blank





**IEC 62656-5**

Edition 1.0 2017-06

# **INTERNATIONAL STANDARD**

# **NORME INTERNATIONALE**



---

**Standardized product ontology register and transfer by spreadsheets –  
Part 5: Interface for activity description**

**Enregistrement d'ontologie de produits normalisés et transfert par tableurs –  
Partie 5: Interface pour la description des activités**





## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2017 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 l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC 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.

#### IEC Catalogue - [webstore.iec.ch/catalogue](http://webstore.iec.ch/catalogue)

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

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

The advanced search enables 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 online 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 20 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

#### IEC Glossary - [std.iec.ch/glossary](http://std.iec.ch/glossary)

65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

#### IEC 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 l'IEC

La Commission Electrotechnique Internationale (IEC) 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 IEC

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

#### Catalogue IEC - [webstore.iec.ch/catalogue](http://webstore.iec.ch/catalogue)

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

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

La recherche avancée permet de trouver des publications IEC 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.

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

Restez informé sur les nouvelles publications IEC. 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 de termes électroniques et électriques. Il contient 20 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

#### Glossaire IEC - [std.iec.ch/glossary](http://std.iec.ch/glossary)

65 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

#### 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 62656-5**

Edition 1.0 2017-06

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



---

**Standardized product ontology register and transfer by spreadsheets –  
Part 5: Interface for activity description**

**Enregistrement d'ontologie de produits normalisés et transfert par tableurs –  
Partie 5: Interface pour la description des activités**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

---

ICS 01.040.01; 01.110

ISBN 978-2-8322-4369-5

**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.....	4
1 Scope.....	6
2 Normative references .....	7
3 Terms, definitions and abbreviations .....	7
3.1 Terms and definitions.....	7
3.2 Abbreviations.....	9
4 Overview .....	9
4.1 Activity described as an ontology.....	9
4.2 Use cases and key technical concepts .....	10
4.3 Relation among properties of different activities.....	14
4.4 International Concept Identifier (ICID).....	14
5 Basic structure of the PAM .....	14
5.1 Activity and arrows.....	14
5.2 Subactivities .....	15
5.2.1 General .....	15
5.2.2 Specialized activity .....	15
5.2.3 Component activity .....	15
5.3 ICOM representation.....	16
5.4 Role of the mechanism (M) in the PAM .....	16
5.5 External function call .....	17
5.6 Basic PAM notation with function symbols .....	17
5.7 Joining arrows .....	20
5.8 Forking arrows.....	21
5.9 Branching or joining of arrows.....	21
5.10 Transcendental arrows.....	22
5.10.1 General .....	22
5.10.2 Modelling incoming arrows .....	24
5.10.3 Modelling outgoing arrows .....	24
5.10.4 Modelling connections of arrows at frame boundary.....	25
5.10.5 Contracted form of representation for branching and joining arrows.....	26
5.10.6 Domain or codomain overloading for transcendent arrows .....	27
5.11 Extended semantics beyond IDEF0.....	28
5.11.1 Specialized types of activity and its icon .....	28
5.11.2 Conjunction node.....	30
5.11.3 Disjunction node.....	30
5.11.4 Complementation node .....	31
5.11.5 Selection node.....	31
5.11.6 Transformation node.....	31
5.11.7 Decision tree .....	31
5.12 Graphic properties of arrows .....	31
5.13 Arrow specialization.....	31
5.14 Delegated formula interpretation .....	32
Annex A (normative) Meta-properties for activity description .....	34
A.1 General.....	34
A.2 List of meta-properties .....	34
Annex B (informative) Description examples for the PAM.....	37

B.1	Design product.....	37
B.2	Sample IDEF0 Diagram .....	48
Annex C (informative)	Example PAM data for production operations management.....	51
	Bibliography.....	59
Figure 1	– See fine arts at Museum .....	11
Figure 2	– Production operations management (extracted from IEC 62264-3).....	12
Figure 3	– Production operations management modelled in PAM and depicted as IDEF-0 diagram .....	13
Figure 4	– Basic activity and its subcomponents .....	16
Figure 5	– Corresponding IDEF0 diagram for basic PAM notation .....	18
Figure 6	– Sample activity drawing in IDEF0 and ICOM .....	19
Figure 7	– Subactivities and arrows .....	19
Figure 8	– Joining arrow example .....	20
Figure 9	– Forking arrow example.....	22
Figure 10	– Transcendental arrows to be taken over by child nodes .....	23
Figure 11	– Transcendental arrows from the parent node .....	23
Figure 12	– IDEF0 extension for specialized activity node in the PAM.....	29
Figure 13	– An implementation example of Conjunction node in the PAM .....	30
Figure 14	– Super relation and its application for specialized activity .....	32
Figure B.1	– Class meta-class example of the PAM for “design product” activity .....	38
Figure B.2	– Property meta-class example of the PAM for “design product” activity .....	40
Figure B.3	– Relation meta-class example of the PAM for “design product” activity .....	42
Figure B.4	– IDEF0 diagram image corresponding to A-0 (frame containing A0) .....	49
Figure B.5	– IDEF0 diagram image corresponding to A0 (frame containing subactivities of A0) .....	50
Figure C.1	– Class meta-class example for production operations management defined in IEC 62264-3.....	52
Figure C.2	– Property meta-class example for production operations management defined in IEC 62264-3 .....	53
Figure C.3	– Relation meta-class example for production operations management defined in IEC 62264-3 .....	54
Figure C.4	– Autogenerated IDEF 0 A-0 (top) node for production operations management defined in IEC 62264-3 .....	57
Figure C.5	– Autogenerated IDEF A0 node for production operations management defined in IEC 62264-3 .....	58
Table 1	– Basic PAM notation for arrows .....	18
Table 2	– Extracts of relation meta-class definitions for activities.....	26
Table 3	– Contracted representation for connectivity of activities .....	28
Table 4	– Reserved keywords for formula interpretation.....	33
Table A.1	– Meta-properties of relation meta-class used for activity description .....	35

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

**STANDARDIZED PRODUCT ONTOLOGY REGISTER  
AND TRANSFER BY SPREADSHEETS –**
**Part 5: Interface for activity description****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 62656-5 has been prepared by subcommittee 3D: Product properties and classes and their identification, of IEC technical committee 3: Information structures and elements, identification and marking principles, documentation and graphical symbols.

The text of this International Standard is based on the following documents:

CDV	Report on voting
3D/257/CDV	3D/287/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

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

A list of all parts in the IEC 62656 series, published under the general title *Standardized product ontology register and transfer by spreadsheets*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.**

## STANDARDIZED PRODUCT ONTOLOGY REGISTER AND TRANSFER BY SPREADSHEETS –

### Part 5: Interface for activity description

#### 1 Scope

This part of IEC 62656 specifies a method for representing activities and relations among the activities by a tabular ontology representation, called “parcellized activity model” or PAM for short, which is a specialized use of a generic tabular ontology data model, known as the parcellized ontology model (POM) defined in Part 1 of the IEC 62656 series. The activities that can be described by this document include part or whole of an enterprise, an organization or a collection of services, a set of events or processes which interact with each other by exchanging physical or non-physical entities. This part of IEC 62656 also defines a method for uniquely identifying activities, or their homologues happenings in a certain sequence. In addition, this document identifies flows of information, objects or materials exchanged among activities, where each of the activities is represented by a class and each flow by a relation.

Consequently, this document enables characterization, classification, and identification of a set of activities as part of a normalized ontology. And this enables registering of a pattern of activities as a set of metadata and uploading it onto the IEC 61360 Common Data Dictionary (CDD), maintained as an online database of the electrotechnical concepts.

Additionally, this part of IEC 62656 provides a method to integrate ontologies of products and activities including services, in a single model. This means a product can be analyzed in its operational context for service. Such an integrated view will help people of different technical backgrounds to see and share knowledge about the extent of an enterprise that requires the products and services as indispensable resources. Such a data representation will also help analyse the key functionalities of an enterprise and its available resources, with clear definitions, limitations and interactions among them, when people are required to respond or react to a new external condition or situation in a short time frame, in particular, at an emergency or natural hazard.

Meanwhile, this part of IEC62656 does not intend to provide a detailed algorithmic description of a flow of information, timing chart of processes, or sequential ordering of events that will be necessary in a software design or programming phase of an information system that handles activities or events. These detailed specifications of the algorithms and associated construction of the data structures are left to the realm of software engineering methodology and tools where there are so many schools and styles already, such as UML (Unified Modelling Language), BPMN, SysML, DFD, IDEF, and other CASE (Computer Aided Software Engineering) tools.

This International Standard neither intends to standardize nor introduce a new method of graphic description for activities or processes. Ideally, an ontology of activities modelled by this International Standard must be expressible by a number of existing graphical presentation tools and process description languages for activities.

Nevertheless, some graphical presentations in the style of such tools or languages are helpful for making the people understand the content of the PAM, and therefore, they are used in this International Standard. In most of the cases, IDEF-0 is preferred for the purpose, because it describes both activities and flows of things among the activities, but any other choices of tools or languages can be made, wherever they are appropriate and relevant.



This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
  - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-