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Enterprise modelling and architecture — Constructs for enterprise modelling

Modélisation et architecture d'entreprise — Constructions pour la modélisation d'entreprise

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Contents

Page

Foreword ... **vi**
Introduction ... **viii**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Abbreviated terms ... **11**
4.1 General ... 11
4.2 Construct-specific ... 11
5 Representations, relationships, roles and common concepts ... **12**
5.1 Modelling language constructs, purpose and applicability ... 12
5.2 Dimensions of enterprise models ... 13
5.2.1 Dimension of genericity ... 13
5.2.2 Dimension of enterprise model phase ... 13
5.2.3 Dimension of enterprise model views ... 13
5.3 Construct representation ... 13
5.4 Common structure for modelling language constructs ... 14
5.5 Template for modelling language constructs ... 14
5.6 Referential integrity ... 15
5.7 Representation of attributes ... 17
5.8 Notation used to describe template contents ... 17
5.9 Support for modelling phases ... 18
5.10 Representation of relationships ... 19
5.11 Specializations ... 19
5.12 Complementary concepts ... 20
6 Conceptual structure ... **20**
6.1 The four-component model ... 20
6.2 Meta-model component ... 21
6.3 Core component ... 22
6.4 Derivations component ... 24
6.5 Views component ... 25
7 Core constructs ... **26**
7.1 Domain ... 26
7.1.1 Purpose ... 26
7.1.2 Description ... 26
7.1.3 Usage ... 26
7.1.4 Construct template for Domain ... 26
7.2 Business Process ... 28
7.2.1 Purpose ... 28
7.2.2 Description ... 28
7.2.3 Usage ... 29
7.2.4 Construct template for Business Process ... 29
7.2.5 Behavioural rules ... 30
7.3 Enterprise Activity ... 31
7.3.1 Purpose ... 31
7.3.2 Description ... 31
7.3.3 Usage ... 31
7.3.4 Construct template for Enterprise Activity ... 32
7.4 Service ... 34
7.4.1 Purpose ... 34
7.4.2 Description ... 34
7.4.3 Usage ... 34
7.4.4 Construct template for Service ... 35

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7.5 Event 37
7.5.1 Purpose 37
7.5.2 Description 37
7.5.3 Usage 37
7.5.4 Construct template for Event 37
7.6 Enterprise Object 38
7.6.1 Purpose 38
7.6.2 Description 38
7.6.3 Usage 38
7.6.4 Construct template for Enterprise Object 39
7.7 Enterprise Object View (Object View) 40
7.7.1 Purpose 40
7.7.2 Description 40
7.7.3 Usage 40
7.7.4 Construct template for Object View 40
7.8 Organizational Unit 41
7.8.1 Purpose 41
7.8.2 Description 41
7.8.3 Usage 41
7.8.4 Construct template for Organizational Unit 42
7.9 Decision Centre 43
7.9.1 Purpose 43
7.9.2 Description 43
7.9.3 Usage 43
7.9.4 Construct template for Decision Centre 43
7.10 Role 45
7.10.1 Purpose 45
7.10.2 Description 45
7.10.3 Usage 45
7.10.4 Construct template for Role 45
7.11 Product 46
7.11.1 Purpose 46
7.11.2 Description 46
7.11.3 Usage 46
7.11.4 Construct template for Product 47
7.12 Order 48
7.12.1 Purpose 48
7.12.2 Description 48
7.12.3 Usage 48
7.12.4 Construct template for Order 49
7.13 Resource 50
7.13.1 Purpose 50
7.13.2 Description 50
7.13.3 Usage 51
7.13.4 Construct template for Resource 51
7.14 Capability 53
7.14.1 Purpose 53
7.14.2 Description 53
7.14.3 Usage 53
7.14.4 Construct template for Capability 53
7.15 Performance Indicator 54
7.15.1 Purpose 54
7.15.2 Description 54
7.15.3 Usage 55
7.15.4 Construct template for Performance Indicator 55
7.16 Template attributes for core constructs 56

8 Derived constructs 57
8.1 Overview 57

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8.2 Derivations for a manufacturing-oriented enterprise 58
8.2.1 Purpose 58
8.2.2 Use of core constructs 58
8.2.3 Manufacturing derivations and core constructs 59
8.3 Derivations for a service-oriented enterprise 61
8.3.1 Purpose 61
8.3.2 Service system suppliers 61
8.3.3 Use of core constructs 61
8.3.4 Service derivations and core constructs 62
8.4 Derived constructs 63
8.4.1 Organizational Role 63
8.4.2 Operational Role 64
8.4.3 Person Profile 65
8.4.4 Stakeholder 67
8.4.5 User 68
8.4.6 Co-provider 69
8.4.7 Functionality 69

Annex A (normative) **Behavioural rules — Detailed description and syntax** **71**

Annex B (informative) **Model views** **85**

Bibliography **110**

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 184, *Automation systems and integration*, Subcommittee SC 5, *Interoperability, integration, and architectures for enterprise systems and automation applications*.

This second edition cancels and replaces the first edition (ISO 19440:2007), which has been technically revised.

The main changes compared to the previous edition are as follows:

— updates to the terms and definitions to address latest practice and harmonize with ISO 15704 and ISO/IEC/IEEE 42010;

— reorganization of the material into four components (metamodel, core constructs, specializations and model views), as described in 6.1;

— separation of the constructs into a slightly smaller number of core constructs in 6.3 and Clause 7, and specializations thereof (which can be extended by a model user) in Clause 8;

— introduction of a Service construct as a core construct, with specializations in 8.3 to address servitization;

— expansion of the Decision View in Clause B.4 and introduction of a new Collaboration View in Clause B.5 to demonstrate extensibility, i.e. use in other application domains;

— renaming of the construct property ‘descriptive’ as ‘attribute’;

— introduction of a Role core construct as a generalization of Organizational Role, Operational Role and Person Profile;

— introduction of a Performance Indicator core construct to support operational monitoring and process improvement;

— allowing an Enterprise Activity to be decomposable into sub-activities;

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— elimination of Functional Entity to reduce the number of core constructs and replacing it by 'active Resource';

— insertion (in Clause A.1) of new text explaining why and how behavioural rules need to be constrained;

— deletion of annexes which will be included in a future Technical Report on typical usages of identification and usage of constructs in each model phase.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

This document defines the generic concepts that are required to enable the creation of enterprise models for industrial and other businesses and to provide support for the use of frameworks by industrial and other enterprises. This document builds upon ISO 19439 and defines and details a set of conformant user-oriented modelling language constructs for manufacturing and related services, which provide common semantics and enable the unification of models developed by different stakeholders in the various phases of model development. Such models are aimed at model-based support of operational decision-making and can be employed for model-based operation monitoring and control.

The modelling language constructs defined in this document can be specialized or assembled or both specialized and assembled into structures for specific purposes, for example for an industry or enterprise sector or for a distinct kind of enterprise concern such as maintenance. In turn, such structures and generic modelling language constructs can be used for developing distinct models for a specific enterprise.

The general requirements that determine the characteristics of the core constructs necessary for computer-supported modelling of enterprises are

a) the provision of an explicit model of Business Processes, with their dynamics, functions, information, resources, relationships and organizational responsibilities,

b) sufficient detailing and qualification of enterprise components to allow the creation of a model for a specific enterprise,

c) support for management of change, and

d) end-user-oriented representation to enable operational use.

NOTE All Unified Modelling Language (UML) class model figures are computer-generated scalable vector graphics (SVG). All generalization-specialization relationships in those class models are coloured red for increased clarity. Figures B.10 and B.11 are line drawings.

The names of terms representing core constructs (see Clause 7) and derived constructs (see Clause 8) are capitalized throughout this document to aid the reader in distinguishing them from general usages of the same term, specifically in order to distinguish the constructs Capability, Domain, Enterprise Activity, Event and Resource from general usage of capability, domain (or enterprise domain), enterprise activity, event and resource.

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Enterprise modelling and architecture — Constructs for enterprise modelling

IMPORTANT — The electronic file of this document contains colours which are considered to be useful for the correct understanding of the document. Users should therefore consider printing this document using a colour printer.

1 Scope

This document identifies and specifies constructs necessary for users that model enterprises in conformance with ISO 19439.

This document focuses on, but is not restricted to, engineering and the integration of manufacturing and related services in the enterprise. The constructs enable the description of structure and functioning of an enterprise for use in configuring or implementing in different application domains. This document specifies an implementation framework in Clause 6 to map model constructs into such domains.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
aggregation
<enterprise modelling> process of, or result of, combining *modelling language constructs* (3.50) and other *model* (3.49) *components* (3.9) into a *whole entity* (3.35)

Note 1 to entry: Modelling language constructs and other model components can be part of more than one aggregation.

Note 2 to entry: Both Part-of and Consists-of are used in the aggregation *relationships* (3.64) described in 7.16.

3.2
attribute
piece of information stating a property of an *entity* (3.35)

[SOURCE: ISO 19439:2006, 3.2]

3.3
behavioural rule
<enterprise modelling> description of the logical sequencing *relationships* (3.64) of constituent activities used in the specification of *Business Process* (3.4) and *Service* (3.71) behaviour

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3.4
Business Process
<enterprise modelling> *construct* (3.12) that represents a partially ordered set of Business Processes, Services and Enterprise Activities that when executed, achieves some desired end-result in pursuit of a given objective of an *enterprise* (3.27) or a part of an enterprise

3.5
capability
<general> ability to perform a specified activity

3.6
Capability
<enterprise modelling> *specialization* (3.73) of the *Enterprise Object* (3.33) *construct* (3.12) that represents the collection of *capability* (3.5) characteristics [expressed as capability *attributes* (3.2)] of either a *Resource* (3.67) (its provided Capability) or an *Enterprise Activity* (3.28) (its required Capability)

3.7
class
abstraction representing and encapsulating properties, *relationships* (3.64) and behaviour, which distinguish a collection of similar phenomena

Note 1 to entry: Class is used in a very general sense without any connotation for implementation or for use with a specific methodology.

3.8
complementary concept
conceptual representation that is not itself a *construct* (3.12), but that has a distinct significance and semantics for the purposes of enterprise modelling

Note 1 to entry: Many *construct templates* (3.14) use complementary concepts, which are listed in 5.12.

3.9
component
<system> *entity* (3.35), with discrete structure within a *system* (3.75), which interacts with other components of the system, thereby contributing to the system properties and characteristics

[SOURCE: ISO 19439:2006, 3.6, modified – The words “at the lowest level” have been deleted after “contributing”.]

3.10
concept definition phase
enterprise model phase (3.31) that defines the business concepts of an *enterprise domain* (3.29) to be employed in realizing its business objectives and its operation, including the necessary enterprise domain inputs and outputs

[SOURCE: ISO 19439:2006, 3.7, modified – The word “phase” has been added to the term.]

3.11
constraint
restriction or limitation or condition placed upon a *system* (3.75) that originates from inside or outside the system under consideration

[SOURCE: ISO 19439:2006, 3.8]

3.12
construct
<enterprise modelling> abstraction devised as an element of a modelling language to represent a generic concept in the *Domain* (3.24)

Note 1 to entry: This document addresses the domain of manufacturing, related services and collaborating enterprises.

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3.13
construct label
literal string defined for each *construct template* (3.14), identifying the kind of *construct* (3.12)

Note 1 to entry: Construct labels are listed in 4.2.

3.14
construct template
common structure that allows the identification and description of distinct *modelling language constructs* (3.50) and the assignment of their properties

3.15
Co-provider
<enterprise modelling> *derived construct* (3.22), a *specialization* (3.73) of *Role* (3.69), which represents a person or an organization associated with another in providing a *Service* (3.71)

3.16
core construct
<enterprise modelling> dominant *construct* (3.12) that is distinguished from normal usage of the term by capitalizing the first letter of each word

Note 1 to entry: Core constructs are explained in Clause 7.

EXAMPLE *Domain* (3.24); *Business Process* (3.4); *Enterprise Activity* (3.28); *Service* (3.71); *Event* (3.36); *Enterprise Object* (3.33); *Enterprise Object View* (3.34); *Organizational Unit* (3.55); *Decision Centre* (3.17); *Role* (3.69); *Product* (3.63); *Order* (3.53); *Capability* (3.6); *Performance Indicator* (3.59).

3.17
Decision Centre
<enterprise modelling> *specialization* (3.73) of the *Enterprise Object* (3.33) *construct* (3.12) that represents a set of decision-making activities that are characterized by having the same time horizon and planning period and belonging to the same kind of *decision function category* (3.18)

Note 1 to entry: The terminology used to describe aspects of Decision Centre is found in CEN/TS 14818, which defines (time) horizon as "the part of the future taken into account by a decision, i.e. the horizon is six months when a decision is taken on a time interval of six months" and (planning) period as "the time that passes between a decision and when this decision shall be re-evaluated".

3.18
decision function category
<enterprise modelling> set of decision activities or *Decision Centres* (3.17) handling the same kinds of decision-making activities and concerning the same kinds of subjects

EXAMPLE Manage resources; manage products; plan production.

3.19
declarative rule
set of objectives and *constraints* (3.11), possibly combined with a set of requirements expressed as text

Note 1 to entry: Declarative rules can be imposed on *Business Processes* (3.4) and *Services* (3.71).

3.20
decommission definition phase
enterprise model phase (3.31) that defines the final state of a decommissioned operational *system* (3.75), all its *components* (3.9) for a specific *enterprise domain* (3.29) and the processes employed to conduct the decommissioning, so enabling reuse or disposition of those components

[SOURCE: ISO 19439:2006, 3.11, modified – The word "phase" has been added to the term, and the word "particular" has been replaced with "specific" in the definition.]

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3.21
derivation
<enterprise modelling> process of elaborating *enterprise models* (3.30) at successive *enterprise model phases* (3.31) from the *models* (3.49) established at preceding phases, reusing the available contents and extending them according to the needs expressed for a model phase

3.22
derived construct
<enterprise modelling> *construct* (3.12) that is specialized from an *Enterprise Object* (3.33) and that is distinguished from normal usage of the term by capitalizing the first letter of each word

Note 1 to entry: Derived constructs are explained in Clause 8.

EXAMPLE *Organizational Role* (3.54); *Operational Role* (3.52); *Person Profile* (3.61); *Stakeholder* (3.74); *User* (3.76); *Co-provider* (3.15); *Functionality* (3.40).

3.23
design specification phase
enterprise model phase (3.31) that specifies the *Business Processes* (3.4), together with *Enterprise Activities* (3.28) and rules, that are to be performed to achieve the requirements

[SOURCE: ISO 19439:2006, 3.13, modified – The word "phase" has been added to the term, the words "Business Processes" have been capitalized and the word "capabilities" has been replaced with "Enterprise Activities".]

3.24
Domain
<enterprise modelling> *construct* (3.12) that represents the portion of an *enterprise* (3.27) to be modelled providing for identification of the relevant information

3.25
domain identification phase
enterprise model phase (3.31) that identifies the *enterprise domain* (3.29) to be modelled with respect to its business objectives, the enterprise domain inputs and outputs and their respective origins and destinations

[SOURCE: ISO 19439:2006, 3.15, modified – The word "phase" has been added to the term.]

3.26
domain operation phase
enterprise model phase (3.31) that encompasses the operational use of the *Domain* (3.24) *model* (3.49)

[SOURCE: ISO 19439:2006, 3.16, modified – The word "phase" has been added to the term.]

3.27
enterprise
<enterprise modelling> human undertaking or venture that has definite *mission* (3.48), goals and objectives to offer products or *services* (3.70), or to achieve a desired project outcome or business outcome

3.28
Enterprise Activity
<enterprise modelling> *construct* (3.12) that represents all or some part of the most detailed extent of enterprise functionality required by *Business Process* (3.4) objectives, that defines the task or tasks to undertake and that identifies the inputs needed for its execution and the outputs created as a result

Note 1 to entry: The necessary inputs and *resources* (3.66) are identified in the Enterprise Activity template.

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3.29
enterprise domain
part of the *enterprise* (3.27) with a given set of business objectives and *constraints* (3.11) for this *enterprise model* (3.30)

Note 1 to entry: In this document, "enterprise domain" is abbreviated to "domain" whenever it is used as a qualifier in such terms as "domain identification phase" and "domain model". Other usages of "domain" have the normal dictionary meaning.

3.30
enterprise model
representation of an *enterprise* (3.27) as well as *entities* (3.35) within an enterprise, their interrelationships, their decomposition and detailing to the extent necessary to convey what the enterprise intends to accomplish and how it operates

Note 1 to entry: An enterprise model, which is used to improve the effectiveness and efficiency of the enterprise, identifies and specifies essential *components* (3.9) and elements to any necessary extent of detail, including any subsystems and constituent *models* (3.49) of the enterprise, e.g. an enterprise architecture model.

[SOURCE: ISO 15704:2019, 3.6]

3.31
enterprise model phase
life cycle (3.45) phase of an *enterprise model* (3.30)

[SOURCE: ISO 19439:2006, 3.24]

3.32
enterprise model view
model view
view
selective perception or representation of an *enterprise model* (3.30) that emphasizes some distinct aspect and disregards others

[SOURCE: ISO 19439:2006, 3.25, modified – The additional terms "model view" and "view" have been added, and the word "particular" has been replaced with "distinct" in the definition.]

3.33
Enterprise Object
<enterprise modelling> *construct* (3.12) that represents information in the *enterprise* (3.27) describing a generalized or a real or an abstract *entity* (3.35) conceptualized as being a whole

Note 1 to entry: All other constructs in this document represent entities that have specific semantics requiring distinct properties and additional descriptions.

[SOURCE: ISO 19439:2006, 3.27, modified – The term "Enterprise Object" has been capitalized, the field "<enterprise modelling>" has been added, the words "piece of information in the enterprise domain that describes" have been replaced with "construct that represents information in the enterprise describing", the words "which can be" have been deleted before "conceptualized" and Note 1 to entry has been added.]

3.34
Enterprise Object View
Object View
<enterprise modelling> *construct* (3.12) that represents a collection of *attributes* (3.2) selected from an *Enterprise Object* (3.33) for some distinct purpose

Note 1 to entry: The collection is defined by a selection of attributes and possibly *constraints* (3.11) on those attributes.

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3.35
entity
concrete or abstract thing in the *Domain* (3.24) under consideration

[SOURCE: ISO 15704:2019, 3.8]

3.36
Event
<enterprise modelling> *construct* (3.12) that represents a solicited or unsolicited fact indicating a state change in the *enterprise* (3.27) or its environment

Note 1 to entry: An event can be associated with an Object View containing information related to the Event.

3.37
exception
<enterprise modelling> *Event* (3.36) that is raised as the result of either an abnormal termination of a previously initiated *Business Process* (3.4), *Enterprise Activity* (3.28) or *Service* (3.71), or by a special external mechanism such as a watchdog timer

3.38
function view
<enterprise modelling> *enterprise model view* (3.32) that enables the representation and modification of the processes of the *enterprise* (3.27), their functionalities, behaviours, inputs and outputs

[SOURCE: ISO 19439:2006, 3.32, modified – The field "<enterprise modelling>" has been added.]

3.39
functional category
grouping of *entities* (3.35) for expression of a common purpose or *capability* (3.5)

3.40
Functionality
<enterprise modelling> *derived construct* (3.22), a *specialization* (3.73) of *Role* (3.69), which represents some aspect of what a product or *service* (3.70) can or cannot do for a *User* (3.76)

3.41
generalization
specific concept modified for a more general content, use or purpose, or act of removing or modifying detail from a specific concept to produce a generalization thereof

Note 1 to entry: Generalization is the inverse of *specialization* (3.73).

[SOURCE: ISO 19439:2006, 3.34]

3.42
implementation description phase
enterprise model phase (3.31) that describes the final set of processes, *resources* (3.66) and rules implemented to achieve the desired operational performance for execution of the *Business Processes* (3.4), *Services* (3.71) and *Enterprise Activities* (3.28) specified in the *design specification phase* (3.23)

[SOURCE: ISO 19439:2006, 3.38, modified – The word "phase" has been added to the term, the words "Business Processes" and "Enterprise Activities" have been capitalized and the word "Services" has been added.]

3.43
information view
<enterprise modelling> *enterprise model view* (3.32) that enables the representation and modification of the enterprise information as identified in the *function view* (3.38)

Note 1 to entry: The information view is articulated as a structure containing *Enterprise Objects* (3.33) that represent the information-related *entities* (3.35) of the enterprise [organization, *resources* (3.66) and information].

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[SOURCE: ISO 19439:2006, 3.40, modified – The field "<enterprise modelling>" has been added and Note 1 to entry has been modified.]

3.44
integrity rule
statement in the *requirements definition phase* (3.65) concerning restrictions on information to ensure conformity to real-world reality

Note 1 to entry: Integrity rules are used to define restrictions in terms of *constraints* (3.11) on *attributes* (3.2) of *Enterprise Objects* (3.33).

3.45
life cycle
set of distinguishable *life cycle phases* (3.46) and steps within phases which an *entity* (3.35) goes through from its creation until it ceases to exist

[SOURCE: ISO 19439:2006, 3.42, modified – The word "phases" has been replaced with "life cycle phases".]

3.46
life cycle phase
distinguishable phases of development of an *entity* (3.35)

[SOURCE: ISO 19439:2006, 3.43, modified – The words "stage of development in the life cycle" have been replaced with "distinguishable phases of development".]

3.47
meta-model
description of modelling elements for use in constructing *models* (3.49) pertaining to a domain

Note 1 to entry: A meta-model is always relative to the model in which its modelling elements appear.

3.48
mission
<enterprise> characterization of the effect that an *enterprise* (3.27) expects to achieve through the fulfilment of functional requests for products or *services* (3.70)

3.49
model
abstract description of an *entity* (3.35) in any form (including mathematical, physical, symbolic, graphical, or descriptive) that presents certain aspects of that entity

[SOURCE: ISO 19439:2006, 3.47, modified – The words "abstract description of reality" have been replaced with "abstract description of an entity" and "presents a certain aspect" has been replaced with "presents certain aspects".]

3.50
modelling language construct
<enterprise modelling> textual or graphical part of a modelling language devised to represent, in an orderly way, the diverse information on common properties and elements of a collection of *distinct enterprise entities* (3.35)

3.51
occurrence
<enterprise modelling> single, actual realization of a *modelling language construct* (3.50) that represents a distinct *entity* (3.35) in the real world at the time the *model* (3.49) is used

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3.52
Operational Role
<enterprise modelling> *derived construct* (3.22), a *specialization* (3.73) of *Role* (3.69), which represents a distinct set of operational tasks and the relevant human skills required to perform those operational tasks

3.53
Order
<enterprise modelling> *specialization* (3.73) of the *Enterprise Object* (3.33) *construct* (3.12) that represents all kinds of commissioning and control in the company or organization that are necessary to deliver a product to meet a customer, legal or environmental requirement

Note 1 to entry: This includes the information for order management/administration and planning and control of *Business Processes* (3.4) in an *enterprise* (3.27).

3.54
Organizational Role
<enterprise modelling> *derived construct* (3.22) of *Role* (3.69) that represents the distinct set of organizational tasks and the skill profile required to serve and fulfil the defined organizational responsibilities, consisting of a list of predefined or user-defined human organizational skills

3.55
Organizational Unit
<enterprise modelling> *specialization* (3.72) of the *Enterprise Object* (3.33) *construct* (3.12) that represents an *entity* (3.35) of the organizational structure of an *enterprise* (3.27), which is described by *attributes* (3.2) of the organization and *relationships* (3.64) to both lower and higher-level organizational entities

EXAMPLE Department; division.

3.56
organization view
<enterprise modelling> *enterprise model view* (3.32) that enables the representation and modification of the organizational and decisional structure of the *enterprise* (3.27) and the responsibilities and authorities of the persons and *Organizational Units* (3.55) and *Decision Centres* (3.17) within the enterprise

[SOURCE: ISO 19439:2006, 3.52, modified – The field "<enterprise modelling>" has been added and the words "individuals and organizational units" have been replaced with "persons and Organizational Units and Decision Centres".]

3.57
partial model
model (3.49) used as a reference model in a specific kind of industry segment or industrial activity

Note 1 to entry: A partial model is comprised of *modelling language constructs* (3.50) or other partial models. Partial models also enable a modeller to reuse already existing models built for other *Domains* (3.24).

[SOURCE: ISO 19439:2006, 3.54, modified – The words "specific type" have been replaced with "specific kind".]

3.58
performance indicator
<general> metric or measure for assessing the achievement of an objective

3.59
Performance Indicator
<enterprise modelling> *specialization* (3.73) of the *Enterprise Object* (3.33) *construct* (3.12) that represents a set of *performance indicators* (3.58) by which the completion of processes and the realization of goals can be assessed

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3.60
perspective
<enterprise modelling> orientation of a stakeholder or *model* (3.49) user relative to an identified *Domain* (3.24)

Note 1 to entry: A stakeholder's orientation can be formed by stakeholder concerns, as well as by their training, experience, cultural background, and their motivations.

[SOURCE: ISO 15704:2019, 3.19, modified – The field "<enterprise modelling>" has been added.]

3.61
Person Profile
<enterprise modelling> *derived construct* (3.22), a *specialization* (3.73) of *Role* (3.69), which represents a set of personal skills and responsibilities essential for one or more of an *Organizational Role* (3.54) or an *Operational Role* (3.52), and that a person provides

Note 1 to entry: A Person Profile can be assigned to more than one person and conversely a person can fulfil more than one Person Profile for more than one *Organizational Unit* (3.55) or *Enterprise Activity* (3.28).

3.62
processable model
model (3.49) with specified syntax and semantics that can be processed by a computer for analysis, simulation or execution

3.63
Product
<enterprise modelling> *specialization* (3.73) of the *Enterprise Object* (3.33) *construct* (3.12) that represents the technical information for management/administration and for planning production of an enterprise product

Note 1 to entry: Relevant technical information can be product history, e.g. characteristics, versions or test and qualification data.

3.64
relationship
association between two or more *entities* (3.35) that is significant for some intended purpose

3.65
requirements definition phase
enterprise model phase (3.31) that defines the enterprise operations needed to achieve enterprise objectives and the conditions necessary to enable those operations, both being without reference to implementation options or implementation decisions

[SOURCE: ISO 19439:2006, 3.59, modified – The word "phase" has been added to the term, the words "operations needed" have been replaced with "enterprise operations needed".]

3.66
resource
<general> *enterprise entity* (3.35) that provides some or all of the *capabilities* (3.5) required to execute an *Enterprise Activity* (3.28)

Note 1 to entry: In this document, resource is used in the *system* (3.75) theory sense of entities that provide capabilities required by the system and are an essential part of the system itself. The resource description includes the identification and description of consumables (such as energy, air, coolant) that are required to be present in sufficient quantities to operate the resource and material process inputs that are required by the various activities (such as raw materials, parts and assemblies). These inputs are identified in the *function view* (3.38), described in the *information view* (3.43), and have the associated management responsibilities identified in the *organization view* (3.56).

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3.67
Resource
<enterprise modelling> *specialization* (3.73) of the *Enterprise Object* (3.33) *construct* (3.12) that represents the provided *resources* (3.66) available to execute an *Enterprise Activity* (3.28)

Note 1 to entry: The Resource construct does not include human resources.

[SOURCE: ISO 19439:2006, 3.60, modified – The term has been capitalized, the field "<enterprise modelling>" has been added, the words "enterprise entity that provides some or all of the capabilities required to execute an enterprise activity" have been replaced with "specialization of the Enterprise Object construct that represents the provided resources available to execute an Enterprise Activity" and Note 1 to entry has been modified.]

3.68
resource view
<enterprise modelling> *enterprise model view* (3.32) that enables the representation and modification of enterprise *resources* (3.66) and roles

Note 1 to entry: The resource view is articulated as a structure containing *Enterprise Objects* (3.33) representing the set of resources required to execute enterprise operations.

[SOURCE: ISO 19439:2006, 3.61, modified – The field "<enterprise modelling>" has been added, the words "enterprise resources" have been replaced with "enterprise resources and roles" and Note 1 to entry has been added.]

3.69
Role
<enterprise modelling> *specialization* (3.73) of *Enterprise Object* (3.33) that represents the role of a person or thing in a specific context

3.70
service
<general> functionality resulting from interaction between a supplier (provider) and a *User* (3.76), often in the context of a supplied product in use by the User

3.71
Service
<enterprise modelling> *construct* (3.12) that represents a *service* (3.70)

3.72
servitization
process in a manufacturing *enterprise* (3.27) to augment products with *services* (3.70) to satisfy *User* (3.76) needs

3.73
specialization
general concept modified for a more limited extent, specific use or purpose, or the act of adding or modifying details to a general concept to produce a specialization thereof

Note 1 to entry: Specialization is the inverse of *generalization* (3.41).

Note 2 to entry: When referring to a *class* (3.7), specialization involves the construction of subclasses within a class for a distinct purpose, where the members of each subclass have one or more characteristics [*attributes* (3.2), *relationships* (3.64), behaviour or semantics] in common which are not shared by all other members of the class. When referring to a *model* (3.49), it refers to the progression from generic concepts to *partial models* (3.57) and particular models.

[SOURCE: ISO 19439:2006, 3.62, modified – Note 2 to entry has been added.]

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3.74
Stakeholder
<enterprise modelling> *derived construct* (3.22) of *Role* (3.69) that represents an individual, team, *Organizational Unit* (3.55), or *class* (3.7) thereof, having concerns relative to their *perspective* (3.60) about an *enterprise* (3.27)

Note 1 to entry: Typical enterprise stakeholders include enterprise owners, enterprise customers, and enterprise employees responsible for receiving or delivering either products or *services* (3.70), and those persons or Organizations partnering with the enterprise to achieve its *mission* (3.48).

3.75
system
collection of items arranged and interacting for a given purpose

3.76
User
<enterprise modelling> *derived construct* (3.22), a *specialization* (3.73) of *Role* (3.70), which represents the interests and characteristics of an *entity* (3.35) using a product or *service* (3.70)

4 Abbreviated terms

4.1 General

EBNF	Extended Backus-Naur Form
GRAI	Graphes à Résultats et Activités Interreliés (Graphs of Interrelated Results and Activities)
HTTP	HyperText Transfer Protocol
ICT	Information and Communication Technology
UML	Unified Modelling Language
XML	eXtensible Markup Language

4.2 Construct-specific

BP	Business Process
BRS	Behavioural Rule Set
CA	Capability
CODM	Collaboration Domain
COPR	Co-provider
COPT	Collaboration Point
CPRT	Collaborating Partner
DA	Decision Activity
DC	Decision Centre
DECN	Decision
DFRM	Decision Frame

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