IEC TR 63283-1

Edition 1.0 2022-03

TECHNICAL REPORT

Industrial-process measurement, control and automation – Smart manufacturing – Part 1: Terms and definitions

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IEC TR 63283-1:2022-03(en)

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Industrial-process measurement, control and automation – Smart manufacturing –
Part 1: Terms and definitions

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 25.040.40

ISBN 978-2-8322-1086-0

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INDUSTRIAL-PROCESS MEASUREMENT, CONTROL AND AUTOMATION – SMART MANUFACTURING –

Part 1: Terms and definitions

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The text of this Technical Report is based on the following documents:

Draft	Report on voting
65/863/DTR	65/904/RVDTR

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Report is English.

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This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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INTRODUCTION

This document presents a vocabulary for terms that can become relevant within the scope of Smart Manufacturing. It is not intended to be a vocabulary for Smart Manufacturing, but it includes more than the terms from the other parts of this series.

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INDUSTRIAL-PROCESS MEASUREMENT, CONTROL AND AUTOMATION – SMART MANUFACTURING –

Part 1: Terms and definitions

1 Scope

The scope of this document is to compile a comprehensive collection of base terminology with compatible terms that can become relevant within the scope of Smart Manufacturing. Most of these terms refer to existing definitions in the domain of industrial-process measurement, control and automation and its various subdomains. When multiple similar definitions exist for the exact same term in different standards, this document contains only the preferred definition in the context of Smart Manufacturing. Whenever the existing definitions are not compatible with other terms in this document or when the definition does not fit into the broader scope of Smart Manufacturing, new or modified definitions are given.

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

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

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

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
<X> template
specification of the common features of a collection of <X>s in sufficient detail that an <X> can be instantiated using it in its appropriate context

Note 1 to entry: <X> can be anything that has a type.

[SOURCE: ISO 15745-1:2003, 3.33, modified – "in its appropriate context" added to definition]

3.1.2
access
ability and means to communicate with or otherwise interact with a system in order to use system resources

Note 1 to entry: Access may involve physical access (authorization to be allowed physically in an area, possession of a physical key lock, PIN code, or access card or biometric attributes that allow access) or logical access (authorization to log in to a system and application, through a combination of logical and physical means).

[SOURCE: IEC TS 62443-1-1:2009, 3.2.1]

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3.1.3
access control
protection of system resources against unauthorized access; a process by which use of system resources is regulated according to a security policy and is permitted by only authorized entities (users, programs, processes, or other systems) according to that policy

[SOURCE: IEC TS 62443-1-1:2009, 3.2.2]

3.1.4
accountability
property of a system (including all of its system resources) that ensures the actions of a system entity may be traced uniquely to that entity, which can be held responsible for its actions

[SOURCE: IEC TS 62443-1-1:2009, 3.2.3]

3.1.5
action
something which happens

Note 1 to entry: Every action of interest for modelling purposes is associated with at least one object (see ISO/IEC 10746-2).

[SOURCE: ISO 15745-1:2003, 3.1]

3.1.6
activity
group of tasks that are classified as having a common objective

[SOURCE: IEC 62264-1:2013, 3.1.1]

3.1.7
actor
entity that communicates and interacts

Note 1 to entry: These actors can include people, software applications, systems, databases, and even the power system itself.

[SOURCE: IEC 62559-2:2015, 3.2]

3.1.8
actuating drive
physical unit used for driving mechanically actuated final controlling elements

Note 1 to entry: Examples of actuating drives are electric, hydraulic or pneumatic actuating drives, diaphragm systems or piston actuators.

Note 2 to entry: No actuating drive is required for a final controlling element if the manipulated variable at the controller output is capable of directly influencing the mass flow or energy flow, i.e. without any mechanical intermediate variable quantity.

[SOURCE: IEC 60050-351:2013, 351-56-16]

3.1.9
actuator
functional unit that receives a signal to drive the final controlling element from its output variable

Note 1 to entry: If the final controlling element is mechanically actuated, it is controlled via an actuating drive. The actuator drives the actuating drive in this case.

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[SOURCE: IEC 60050-351:2013, 351-49-07, modified – "generates the manipulated variable" changed to "receives a signal", "of the controlling element", example and figures removed from definition]

3.1.10
adaptive design
interoperability with assistive technology

3.1.11
administrator
user role whose responsibilities include controlling access to and implementing security policies for a system

3.1.12
administration shell
virtual digital and active representation of an Industrie 4.0 component in the Industrie 4.0 system

[SOURCE: IEC PAS 63088:2017, 3.1, modified – "Industrie" added twice, note to entry deleted]

3.1.13
aggregation
<UML> special form of association that specifies a whole-part relationship between the aggregate (whole) and a component part

[SOURCE: ISO 15745-1:2003, 3.3]

3.1.14
alarm
audible and/or visible means of indicating to the operator an equipment malfunction, process deviation, or abnormal condition requiring a timely response

[SOURCE: IEC 62682:2014, 3.1.7]

3.1.15
algorithm
completely determined finite sequence of instructions by which the values of the output variables may be calculated from the values of the input variables

Note 1 to entry: The behaviour of a system with discrete-value input and output variables (for example a switching system) may be described completely by an algorithm. For a system with continuous-value and continuous-time input and output variables the algorithm is given by or derived from the mathematical relationship between the input and output variables.

[SOURCE: IEC 60050-351:2013, 351-42-27]

3.1.16
allocation
form of coordination control that assigns a resource to an entity

3.1.17
applicable property
data element for the computer-sensible description of a property, a relation or a class

3.1.18
application
<software> software functional element specific to the solution of a problem in industrial-process measurement and control

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Note 1 to entry: An application may be distributed among resources, and may communicate with other applications.

[SOURCE: IEC TR 62390:2005, 3.1.2]

3.1.19
application
<general> ordered set of processes, performed by a set of resources, coordinated by a set of interactions intended to accomplish a definite objective

[SOURCE: ISO 18435-1:2009, 3.2]

3.1.20
application programming interface
API
standard set of documented and supported routines that expose operating system programming interfaces and services to applications

Note 1 to entry: An API is usually a source code interface that an operating system, library, or service provides to support requests made by computer programs.

[SOURCE: ISO/IEC TR 13066-2:2016, 2.1, modified – Example deleted]

3.1.21
arbitration
coordination control that determines how a resource should be allocated when there are more requests for the resource than can be accommodated at one time

[SOURCE: IEC 61512-1:1997, 3.2]

3.1.22
architecture
fundamental concepts or properties of a system in its environment embodied in its elements, relationships, and in the principles of its design and evolution

[SOURCE: IEC PAS 63088:2017, 3.2]

3.1.23
area
physical, geographical or logical grouping of resources determined by the site

EXAMPLE It can contain process cells, production units, production lines, and storage zones.

[SOURCE: IEC 62264-1:2013, 3.1.2]

3.1.24
artificial Intelligence
AI
<engineered system> set of methods or automated entities that together build, optimize and apply a model so that the system can, for a given set of predefined tasks, compute predictions, recommendations, or decisions

Note 1 to entry: AI systems are designed to operate with varying levels of automation.

Note 2 to entry: Predictions can refer to various kinds of data analysis or production (including translating text, creating synthetic images or diagnosing a previous power failure). It does not imply anteriority.

[SOURCE: ISO/IEC 22989:__, 3.1.2]

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3.1.25
artificial intelligence
<discipline> study of theories, mechanisms, developments and applications related to artificial intelligence <engineered system> (3.1.24)

[SOURCE: ISO/IEC 22989:__, 3.1.3]

3.1.26
asset
entity owned by or under the custodial duties of an organization, which has either a perceived or actual value to the organization

3.1.27
Asset Administration Shell
AAS
standardized digital representation of an asset

[SOURCE: IEC 63278-1:__, 3.1.2]

3.1.28
association
cooperative relationship between system entities, usually for the purpose of transferring information between them

[SOURCE: IEC TS 62443-1-1:2009, 3.2.7]

3.1.29
assurance
attribute of a system that provides grounds for having confidence that the system operates in such a way that the system security policy is enforced

[SOURCE: IEC TS 62443-1-1:2009, 3.2.8]

3.1.30
attack
assault on a system that derives from an intelligent threat – i.e., an intelligent act that is a deliberate attempt (especially in the sense of a method or technique) to evade security services and violate the security policy of a system

Note 1 to entry: There are different commonly recognized classes of attack:

a) An "active attack" attempts to alter system resources or affect their operation.

b) A "passive attack" attempts to learn or make use of information from the system but does not affect system resources.

c) An "inside attack" is an attack initiated by an entity inside the security perimeter (an "insider") – i.e., an entity that is authorized to access system resources but uses them in a way not approved by those who granted the authorization.

d) An "outside attack" is initiated from outside the perimeter, by an unauthorized or illegitimate user of the system (including an insider attacking from outside the security perimeter). Potential outside attackers range from amateur pranksters to organized criminals, international terrorists, and hostile governments.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.9]

3.1.31
attribute
property or characteristic of an entity

[SOURCE: IEC TR 62390:2005, 3.1.3]

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3.1.32
audit
independent review and examination of records and activities to assess the adequacy of system controls, to ensure compliance with established policies and operational procedures, and to recommend necessary changes in controls, policies, or procedures

Note 1 to entry: There are three forms of audit

a) External audits are conducted by parties who are not employees or contractors of the organization.

b) Internal audit are conducted by a separate organizational unit dedicated to internal auditing.

c) Controls self-assessments are conducted by peer members of the process automation function.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.11]

3.1.33
audit log
traceable record that requires a higher level of integrity protection than provided by typical event logs

Note 1 to entry: Audit logs are used to protect against claims that repudiate responsibility for an action.

3.1.34
augmented reality
accumulation of information, e.g. pictures, from the real world, with additional digital information

3.1.35
authenticate
verify the identity of a user, user device, or other entity, or the integrity of data stored, transmitted, or otherwise exposed to unauthorized modification in an information system, or to establish the validity of a transmission

[SOURCE: IEC TS 62443-1-1:2009, 3.2.12]

3.1.36
authentication
security measure designed to establish the validity of a transmission, message, or originator, or a means of verifying an individual's authorization to receive specific categories of information

[SOURCE: IEC TS 62443-1-1:2009, 3.2.13]

3.1.37
authorization
right or permission that is granted to a system entity to access a system resource

[SOURCE: IEC TS 62443-1-1:2009, 3.2.14]

3.1.38
automated vehicle
mobile device that includes a control system allowing it to operate either autonomously or under remote control

[SOURCE: IEC TS 62443-1-1:2009, 3.2.15]

3.1.39
automation
conversion of processes or equipment to automatic operation, or the results of the conversion

[SOURCE: ISO/IEC 2382:2015, 2121284, modified − Note 1 and Note 2 removed]

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3.1.40
automation object
physical or logical entity in the automated system

Note 1 to entry: An example of an automation object is an automation component, a valve or a signal.

[SOURCE: IEC 62714-1:2018, 3.1.2]

3.1.41
autonomous
operating without direct human intervention

3.1.42
availability
ability of an item to be in a state to perform a required function under given conditions at a given instant or over a given time interval, assuming that the required external resources are provided

Note 1 to entry: This ability depends on the combined aspects of the reliability performance, the maintainability performance and the maintenance support performance.

Note 2 to entry: Required external resources, other than maintenance resources do not affect the availability performance of the item.

Note 3 to entry: In French the term "disponibilité" is also used in the sense of "instantaneous availability".

[SOURCE: IEC TS 62443-1-1:2009, 3.2.16, modified – "(performance)" removed]

3.1.43
available capacity
portion of the production capacity that can be attained but is not committed to current or future production

[SOURCE: IEC 62264-1:2013, 3.1.3]

3.1.44
backward compatability
downward compatability
fulfilment by a new component of all the specified requirements of the compatibility profile of its predecessor

[SOURCE: IEC 62890:2020, 3.1.2]

3.1.45
base specification
reference document containing information that is referenced by a profile

[SOURCE: ISO 15745-1:2003, 3.6]

3.1.46
basic control
control that is dedicated to establishing and maintaining a specific state of equipment or process condition

Note 1 to entry: Basic control may include regulatory control, interlocking, monitoring, exception handling, and discrete or sequential control.

[SOURCE: IEC 61512-1:1997, 3.4]

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3.1.47
batch
(1) material that is being produced or that has been produced by a single execution of a batch process

(2) entity that represents the production of a material at any point in the process

Note 1 to entry: Batch means both the material made by and during the process and also an entity that represents the production of that material. Batch is used as an abstract contraction of the words "the production of a batch."

[SOURCE: IEC 61512-1:1997, 3.5]

3.1.48
batch control
control activities and control functions that provide a means to process finite quantities of input materials by subjecting them to an ordered set of processing activities over a finite period of time using one or more pieces of equipment

[SOURCE: IEC 61512-1:1997, 3.6]

3.1.49
batch history
all execution information collected pertaining to the production of a single batch, and may include common (non-batch specific) information

[SOURCE: IEC 61512-4:2009, 3.1]

3.1.50
batch process
process that leads to the production of finite quantities of material by subjecting quantities of input materials to an ordered set of processing activities over a finite period of time using one or more pieces of equipment

[SOURCE: IEC 61512-1:1997, 3.7]

3.1.51
batch production
production process where products or components are produced in batches and where each separate batch consists of a number of the same products or components

[SOURCE: DIN EN 14943:2006-03]

3.1.52
batch production record
subset of the execution and business information that is retained based upon business requirements identified by the batch production record specification

Note 1 to entry: This information could include the recipe procedural element execution information, both specific equipment information, operator comments, batch-related alarms, elements related to the definition of a batch (such as control recipe, master recipe, site and/or general recipe, batch schedule information), and information important to the batch (such as training logs, maintenance records, and environmental conditions).

[SOURCE: IEC 61512-4:2009, 3.2]

3.1.53
batch schedule
list of batches to be produced in a specific process cell

Note 1 to entry: The batch schedule typically contains such information as what to produce, how much to produce, when or in what order the batches are needed, and what equipment to use.

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[SOURCE: IEC 61512-1:1997, 3.8]

3.1.54
behaviour
observable activities of a component via its effect on its environment and/or through its measurable attributes

[SOURCE: ISO 18435-1:2009, 3.3]

3.1.55
big data
data sets that are too large or complex to be dealt with by traditional data-processiong application software

3.1.56
bill of material
listing of all the subassemblies, parts, and/or materials that are used in the production of a product including the quantity of each material required to make a product

Note 1 to entry: The term product can refer to a finished product or an intermediate product.

[SOURCE: IEC 62264-1:2013, 3.1.4]

3.1.57
bill of resources
list of resources needed to produce a product

Note 1 to entry: It is also a listing of the key resources required to manufacture a product, organized as segments of production and is often used to predict the impact of activity changes in the master production schedule on the supply of resources.

Note 2 to entry: The bill of resources does not normally include the consumables.

[SOURCE: IEC 62264-1:2013, 3.1.5]

3.1.58
border
edge or boundary of a physical or logical security zone

[SOURCE: IEC TS 62443-1-1:2009, 3.2.17]

3.1.59
botnet
collection of software robots, or bots, which run autonomously

Note 1 to entry: A botnet's originator can control the group remotely, possibly for nefarious purposes.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.18]

3.1.60
boundary
software, hardware, or other physical barrier that limits access to a system or part of a system

[SOURCE: IEC TS 62443-1-1:2009, 3.2.19]

3.1.61
building block
recipe entity that exists in a library

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[SOURCE: IEC 61512-2:2001, 3.2]

3.1.62
business process segment
identification of personnel, equipment, physical assets, and material resources with specific capabilities needed for a segment of production, independent of any particular product at the level of detail required to support business processes that may also be independent of any particular product

Note 1 to entry: The business process segment synonym is included to reflect the business process oriented aspects of the process segment.

[SOURCE: IEC 62264-1:2013, 3.1.26]

3.1.63
capability
ability to perform actions

[SOURCE: IEC 62264-1:2013, 3.1.6]

3.1.64
capability assessment
evaluation of the ability or capacity of a manufacturing asset to provide a resource to the system

[SOURCE: ISO 18435-1:2009, 3.4]

3.1.65
capacity
measure of the ability to take action as an aspect of a capability

EXAMPLE Measures of the production rates, flow rates, mass or volume.

[SOURCE: IEC 62264-1:2013, 3.1.7]

3.1.66
cardinality
pattern defining the number of times a concept reoccurs within a description

[SOURCE: IEC 61360-1:2017, 3.1.3]

3.1.67
cells
lower-level elements that perform manufacturing, field device control, or vehicle functions

Note 1 to entry: Entities at this level may be connected together by an area control network and may contain information systems related to the operations performed in that entity.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.68]

3.1.68
channel
specific communication link established within a communication conduit

[SOURCE: IEC TS 62443-1-1:2009, 3.2.20]

3.1.69
characteristic
distinguishing feature

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Note 1 to entry: A characteristic can be inherent or assigned.

Note 2 to entry: A characteristic can be qualitative or quantitative.

[SOURCE: IEC 61360-1:2017, 3.1.4]

3.1.70
choreography between services
(self-organizing) interaction between service users in the context of higher-level specifications

[SOURCE: VDI-Statusreport – Industrie 4.0 Begriff / Terms 2019]

3.1.71
ciphertext
data that has been transformed by encryption so that its semantic information content (i.e., its meaning) is no longer intelligible or directly available

[SOURCE: IEC TS 62443-1-1:2009, 3.2.21]

3.1.72
class
<of products> abstraction of a set of similar products

Note 1 to entry: A product that complies with the abstraction defined by a class is called a class member.

Note 2 to entry: A class is an intentional concept that can take different extensional meanings in different contexts.

EXAMPLE The set of products used by a particular enterprise and the set of all ISO-standardized products are two examples of contexts. In these two contexts (the particular enterprise and ISO), the set of products that are considered as members of the single ball bearing class can be different, in particular because employees of each enterprise ignore a number of existing single ball bearing products.

Note 3 to entry: Classes are structured by class inclusion relationships.

Note 4 to entry: A class of products is a general concept as defined in ISO 1087:2019. Thus, it is advisable that the rules defined in ISO 704 be used for defining the designation and definition attributes of classes of products.

Note 5 to entry: In the context of the ISO 13584 series, a class is either a characterization class, associated with properties and usable for characterizing products, or a categorization class, not associated with properties and not usable for characterizing products.

[SOURCE: IEC 61360-1:2017, 3.1.6, modified – "ISO 1087-1" changed to "ISO 1087:2019"]

3.1.73
class
description of a set of objects that share the same specifications of features, constraints, and semantics

[SOURCE: ISO/IEC 19505-1: 2012, 11.4.2, modified – "a class describes" changed to "description of"]

3.1.74
classification
systematic division of a set of items into subsets that share the same specifications of features, constraints, and semantics

3.1.75
classifier
<UML> mechanism that describes behavioural and structural features

Note 1 to entry: Classifiers include interfaces, classes, data types, and components.

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[SOURCE: ISO 15745-1:2003, 3.8]

3.1.76
classifying property
property applicable for a particular class, having a value list whose values define the subclasses of the class

[SOURCE: IEC 61360-1:2017, 3.1.7]

3.1.77
client
device or application receiving or requesting services or information from a server application

[SOURCE: IEC TS 62443-1-1:2009, 3.2.22]

3.1.78
closed-loop control
process whereby one variable (quantity), namely the controlled variable is continuously measured, compared with another variable (quantity), namely the reference variable, and influenced in such a manner as to adjust the reference variable

Note 1 to entry: Characteristic for closed-loop control is the closed action in which the controlled variable continuously influences itself in the action path of the closed loop.

[SOURCE: IEC 6050-351:2013, 351-47-01, modified – Parenthesis around "quantity" deleted (twice), "or sequentially" deleted from the definition and from the Note to entry]

3.1.79
cloud computing
paradigm for enabling network access to a scalable and elastic pool of shareable physical or virtual resources with self-service provisioning and administration on-demand

Note 1 to entry: Examples of resources include servers, operating systems, networks, software, applications, and storage equipment.

[SOURCE: IEC 60050-741:2020, 741-01-07]

3.1.80
cloud service
one or more capabilities offered via *cloud computing* (3.1.79) invoked using a defined interface.

[SOURCE: ISO/IEC 17788:2014, 3.2.8]

3.1.81
committed capacity
portion of the production capacity that is currently in use or is scheduled for use

[SOURCE: IEC 62264-1:2013, 3.1.8]

3.1.82
common resource
resource that can provide services to more than one requester

Note 1 to entry: Common resources are identified as either exclusive-use resources or shared-use resources.

[SOURCE: IEC 61512-1:1997, 3.9]

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3.1.83
communication network profile
representation of the integration aspects of a communication network supported by a networked device

EXAMPLE Examples of integration aspects are communication object types and the associated operating relationships (client-server, producer-consumer, etc.), services and attributes for the object types, data types for the object types and services, and encoding rules used.

[SOURCE: ISO 15745-1:2003, 3.9]

3.1.84
communication path
logical connection between a source and one or more destinations, which could be devices, physical processes, data items, commands, or programmatic interfaces

Note 1 to entry: The communication path is not limited to wired or wireless networks, but includes other means of communication such as memory, procedure calls, state of physical plant, portable mediums, and human interactions.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.23]

3.1.85
communication security
measures that implement and assure security services in a communication system, particularly those that provide data confidentiality and data integrity and that authenticate communicating entities

Note 1 to entry: This phrase is usually understood to include cryptographic algorithms and key management methods and processes, devices that implement them, and the life-cycle management of keying material and devices. However, cryptographic algorithms and key management methods and processes may not be applicable to some control system applications.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.24, modified − item b) deleted]

3.1.86
communication stack
layered set of software modules between the application and the hardware that provides various functions to encode, encrypt and format a message for sending, and to decode, decrypt and unpack a message that was received

[SOURCE: IEC TR 62541-1:2020, 3.1.9]

3.1.87
communication system
arrangement of hardware, software, and propagation media to allow the transfer of messages from one application to another

[SOURCE: IEC TS 62443-1-1:2009, 3.2.25]

3.1.88
compatibility
ability of a new component to satisfy the requirement profile of an original component

[SOURCE: IEC 62890:2020, 3.1.4, modified – circular definition of "compatibility" revised]

3.1.89
compatibility profile
list of all compatibility requirements of a system, or a component of a system, dependent on application specifics

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[SOURCE: IEC 62890:2020, 3.1.6]

3.1.90
compliance
relation between two specifications, A and B, that holds when specification A makes requirements which are all fulfilled by specification B (when B complies with A)

[SOURCE: ISO 15745-1:2003, 3.10]

3.1.91
component
entity within a system, which fulfills a defined sub-function

3.1.92
compromise
unauthorized disclosure, modification, substitution, or use of information (including plain text cryptographic keys and other critical security parameters)

[SOURCE: IEC TS 62443-1-1:2009, 3.2.26]

3.1.93
computer-sensible form
specific representation of information allowing processing of the information content by means of a computer

[SOURCE: IEC 61360-1:2017, 3.1.10, modified – changed "an electronic computer" into "a computer"]

3.1.94
concept
unit of knowledge created by a unique combination of characteristics

[SOURCE: IEC 61360-1:2017, 3.1.8]

3.1.95
concept dictionary
collection of entries that allows lookup by concept identifier

Note 1 to entry: There are standardized dictionaries (e.g. IEC CDD), consortium dictionaries (e.g. eOTD®[1] and ECLASS®[2]), supplier dictionaries and DF dictionaries.

[SOURCE: IEC 62832-1:2020, 3.1.5, modified – "concept dictionary" deleted in the definition]

3.1.96
concept dictionary entry
definition of a concept containing, at a minimum, an unambiguous concept identifier, a preferred name, and a description

[SOURCE: IEC 62832-1:2020, 3.1.6]

[1] eOTD® is the registered trademark of a product supplied by ECCMA (Electronic Commerce Code Management Association). This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named.

[2] ECLASS® is the registered trademark of a product supplied by the ECLASS e.V. association. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named.

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3.1.97
conduit
logical grouping of communication assets that protects the security of the channels it contains

Note 1 to entry: This is analogous to the way that a physical conduit protects cables from physical damage.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.27]

3.1.98
confidentiality
assurance that information is not disclosed to unauthorized individuals, processes, or devices

[SOURCE: IEC TS 62443-1-1:2009, 3.2.28]

3.1.99
configuration
<of a system or device> selecting functional units, assigning their locations and defining their interconnections

[SOURCE: IEC 61804-2:2018, 3.1.12]

3.1.100
consumables
resources that are not individually accounted for in specific production requests, not normally included in bills of material, or not lot tracked

[SOURCE: IEC 62264-1:2013, 3.1.9]

3.1.101
continuous production
production that is running at a steady rate

[SOURCE: ISO 2859-3:2005, 3.1.1, modified – "running" added and Note deleted]

3.1.102
control application
type of (manufacturing) application that monitors availability, identifies the conditions of manufacturing assets and provides other applications with such information in order to accomplish a manufacturing production objective

[SOURCE: ISO 18435-1:2009, 3.6, modified – Introduced the parentheses around "manufacturing" and replaced the "and" after "availability" with a comma]

3.1.103
control center
central location used to operate a set of assets

Note 1 to entry: Infrastructure industries typically use one or more control centers to supervise or coordinate their operations. If there are multiple control centers (for example, a backup center at a separate site), they are typically connected together via a wide area network. The control center contains the SCADA system, host computers and associated operator display devices plus ancillary information systems such as an historian.

Note 2 to entry: In some industries the term "control room" may be more commonly used.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.29]

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3.1.104
control equipment
class that includes distributed control systems, programmable logic controllers, SCADA systems, associated operator interface consoles, field sensing and final control equipment used to manage and control the process

[SOURCE: IEC TS 62443-1-1:2009, 3.2.30, modified – Note deleted, "control devices" changed to "final control equipment"]

3.1.105
control module
lowest level grouping of equipment in the physical model that can carry out basic control

Note 1 to entry: This term applies to both the physical equipment and the equipment entity.

[SOURCE: IEC 61512-1:1997, 3.10]

3.1.106
control network
time-critical network that is typically connected to equipment that controls physical processes

Note 1 to entry: The control network can be subdivided into zones and there can be multiple separate control networks within one company or site.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.31]

3.1.107
control recipe
type of recipe which, through its execution, defines the manufacture of a single batch of a specific product

[SOURCE: IEC 61512-1:1997, 3.11]

3.1.108
coordination control
type of control that directs, initiates, and/or modifies the execution of procedural control and the utilization of equipment entities

[SOURCE: IEC 61512-1:1997, 3.12]

3.1.109
core model
reference model of basic concepts and contexts which concern a general aspect of systems

[SOURCE: VDI-Statusreport – Industrie 4.0 Begriff / Terms 2019]

3.1.110
corrective maintenance
maintenance carried out after fault detection to effect restoration

[SOURCE: IEC 60050-192:2015, 192-06-06, modified – Note 1 to entry deleted]

3.1.111
cost
value of impact to an organization or person that can be measured

[SOURCE: IEC TS 62443-1-1:2009, 3.2.32]

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3.1.112
countermeasure
action, device, procedure, or technique that reduces a threat, a vulnerability, or an attack by eliminating or preventing it, by minimizing the harm it can cause, or by discovering and reporting it so that corrective action can be taken

Note 1 to entry: The term "control" is also used to describe this concept in some contexts. The term countermeasure has been chosen for this document to avoid confusion with the term "control" in the context of process control.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.33]

3.1.113
cryptographic algorithm
well-defined computational procedure that takes variable inputs, which may include cryptographic keys, and produces an output

[SOURCE: ISO/IEC 19790:2012, 3.20]

3.1.114
cryptographic key
input parameter that varies the transformation performed by a cryptographic algorithm

Note 1 to entry: Usually shortened to "key".

[SOURCE: IEC TS 62443-1-1:2009, 3.2.35]

3.1.115
cyber-physical production system
CPPS
CPS which is used in production

[SOURCE: VDI-Statusreport – Industrie 4.0 Begriff / Terms 2019]

3.1.116
cyber-physical system
CPS
system which links real (physical) objects and processes with information-processing (virtual) objects and processes via open, in some cases global, and constantly interconnected information networks

Note 1 to entry: A CPS optionally uses services available locally or remotely, has human-machine interfaces, and offers the possibility of dynamic adaptation of the system at runtime.

[SOURCE: VDI-Statusreport – Industrie 4.0 Begriff / Terms 2019]

3.1.117
cybersecurity
actions required to preclude unauthorized use of, denial of service to, modifications to, disclosure of, loss of revenue from, or destruction of critical systems or informational assets

Note 1 to entry: The objective is to reduce the risk of causing personal injury or endangering public health, losing public or consumer confidence, disclosing sensitive assets, failing to protect business assets or failing to comply with regulations. These concepts are applied to any system in the production process and include both stand-alone and networked components. Communications between systems may be either through internal messaging or by any human or machine interfaces that authenticate, operate, control, or exchange data with any of these control systems. Cybersecurity includes the concepts of identification, authentication, accountability, authorization, availability, and privacy.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.36]

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3.1.118
data
reinterpretable representation of information in a formalized manner suitable for communication, interpretation or processing

[SOURCE: IEC TR 62390:2005, 3.1.5]

3.1.119
data compatibility
fulfilment of requirements from a functional view of a compatibility profile related to the specific data type and data format by a component

[SOURCE: IEC 62890:2020, 3.1.9, modified – "functional aspects related to data type and format of a compatiblity profile" changed to "requirements from a functional view of a compatibility profile related to the specific data type and data format"]

3.1.120
data confidentiality
property that information is not made available or disclosed to any unauthorized system entity, including unauthorized individuals, entities, or processes

[SOURCE: IEC TS 62443-1-1:2009, 3.2.37]

3.1.121
data connection
association established between functional units for conveyance of data

[SOURCE: IEC 61804-2:2018, 3.1.14]

3.1.122
data element
pair consisting of the identifier of a data element type and a corresponding value

3.1.123
data element relationship
relationship between data element types or between data elements in a given context

[SOURCE: IEC 62832-1:2020, 3.1.8]

3.1.124
data element type
unit of data for which the identification, description and permissible values have been specified according to a data specification

[SOURCE: IEC 62832-1:2020, 3.1.9]

3.1.125
data historian
capability of a system to permanently collect operating information of that system

[SOURCE: ISO 18435-1:2009, 3.8, modified – "permanently" added to the definition]

3.1.126
data integrity
property that data has not been changed, destroyed, or lost in an unauthorized or accidental manner

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Note 1 to entry: This term deals with constancy of and confidence in data values, not with the information that the values represent or the trustworthiness of the source of the values.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.38]

3.1.127
data specification
rules for describing items belonging to a particular class using entries from a concept dictionary and reference to a specific formal syntax

EXAMPLE An ISO/TS 22745-30 compliant identification guide, ISO 13584-511 are data specifications.

[SOURCE: IEC 62832-1:2020, 3.1.10, modified – ISO 8000-2 removed from the example]

3.1.128
data type
set of values together with a set of permitted operations

[SOURCE: IEC 61804-2:2018, 3.1.17]

3.1.129
data quality
degree to which a set of inherent characteristics of data fulfils requirements

Note 1 to entry: The principles of data quality involves:

- data being fit for purpose; i.e., the decision in which the data is used;
- having the right data, in the right place, at the right time;
- meeting agreed customer requirements for the data;
- preventing the recurrence of data defects by improving processes to prevent repetition and eliminate wasted effort.

[SOURCE: ISO 8000-2:2020, 3.8.1, modified – Note 1 to entry changed]

3.1.130
decryption
process of changing cipher text into plain text using a cryptographic algorithm and key

[SOURCE: IEC TS 62443-1-1:2009, 3.2.39]

3.1.131
defence in depth
provision of multiple security protections, especially in layers, with the intent to delay if not prevent an attack

Note 1 to entry: Defence in depth implies layers of security and detection, even on single systems, and provides the following features:

- attackers are faced with breaking through or bypassing each layer without being detected;
- a flaw in one layer can be mitigated by capabilities in other layers;
- a system security becomes a set of layers within the overall network security.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.40]

3.1.132
delivery release
end of the manufacturing preparation process after which series production can begin

[SOURCE: IEC 62890:2020, 3.1.10, modified – Note 1 to entry deleted]

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3.1.133
demilitarized zone
perimeter network segment that is logically inserted between internal and external networks

Note 1 to entry: The purpose of a demilitarized zone is to enforce the internal network’s policy for external information exchange and to provide external, untrusted sources with restricted access to releasable information while shielding the internal network from outside attacks.

Note 2 to entry: In the context of industrial automation and control systems, the term "internal network" is typically applied to the network or segment that is the primary focus of protection. For example, a control network could be considered "internal" when connected to an "external" business network.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.41]

3.1.134
denial of service
prevention or interruption of authorized access to a system resource or the delaying of system operations and functions

Note 1 to entry: In the context of industrial automation and control systems, denial of service can refer to loss of process function, not just loss of data communications.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.42]

3.1.135
detailed production schedule
organized and structured collection of production work orders and sequencing involved in the production of one or more products

3.1.136
development phase
phase of the product life cycle which begins with the decision to develop a product type and ends with delivery release of the product type

[SOURCE: IEC 62890:2020, 3.1.11]

3.1.137
device
independent physical entity capable of performing one or more specified functions in a particular context and delimited by its interfaces

[SOURCE: IEC 61804-2:2018, 3.1.18]

3.1.138
device management application
application whose primary function is the management of multiple resources within a device

[SOURCE: IEC 61804-2:2018, 3.1.20]

3.1.139
device profile
representation of a device in terms of its parameters, parameter assemblies and behaviour according to a device model that describes the data and behaviour of the device as viewed through a network, independent from any network technology

Note 1 to entry: The mapping onto a given network technology is the task of the communication profile.

[SOURCE: IEC TR 62390:2005, 3.1.9, modified − Note 1 removed, Note 2 changed to Note 1]

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3.1.140
field device
device that performs control, actuating and/or sensing functions

3.1.141
diagnostics application
type of (manufacturing) application that monitors and checks the continued availability of manufacturing assets, and notifies the other (manufacturing) applications of any conditions or constraints on such availability

[SOURCE: ISO 18435-1:2009, 3.7, modified – Introduced the parentheses around "manufacturing"]

3.1.142
Digital Factory
digital representation of a production system

Note 1 to entry: A Digital Factory can represent an existing or planned production system.

Note 2 to entry: The representation of a production system can include representation of PS assets and representation of roles.

[SOURCE: IEC 62832-1:2020, 3.1.19]

3.1.143
digital signature
result of a cryptographic transformation of data which, when properly implemented, provides the services of origin authentication, data integrity, and signer non-repudiation

[SOURCE: IEC TS 62443-1-1:2009, 3.2.43]

3.1.144
direct influence
environmental influence resulting from actual product production by direct operation of manufacturing equipment

[SOURCE: IEC TR 62837:2013, 3.7.1]

3.1.145
discrete manufacturing
method of manufacturing where products are manufactured in a non-continuous manner, e.g. automobiles, appliances, computers

[SOURCE: DIN EN 14943:2006-03]

3.1.146
disposal
recycling or removal of a product instance following the time in use, as the last phase of the life time, with respect to regulations

[SOURCE: IEC 62890:2020, 3.1.12, modified – "and disposal or recycling" replaced by "as the last phase of the life time, with respect to regulations"]

3.1.147
distributed control system
DCS
type of control system in which the system elements are dispersed but operated in a coupled manner

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Note 1 to entry: Distributed control systems may have shorter coupling time constants than those typically found in SCADA systems.

Note 2 to entry: Distributed control systems are commonly associated with continuous processes such as electric power generation, oil and gas refining, chemical, pharmaceutical and paper manufacture, as well as discrete processes such as automobile and other goods manufacture, packaging, and warehousing.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.44]

3.1.148
domain
environment or context that is defined by a security policy, security model, or security architecture to include a set of system resources and the set of system entities that have the right to access the resources

[SOURCE: IEC TS 62443-1-1:2009, 3.2.45]

3.1.149
dynamic testing
executing software and/or operating hardware in a controlled and systematic way, so as to demonstrate the presence of the required behaviour and the absence of unwanted behavior

3.1.150
eavesdropping
monitoring or recording of communicated information by unauthorized parties

[SOURCE: IEC TS 62443-1-1:2009, 3.2.46]

3.1.151
electronic device description
EDD
data collection containing the device parameter(s), their dependencies, their graphical representation and a description of the data sets which are transferred

Note 1 to entry: The electronic device description is created using the electronic device description language (EDDL).

[SOURCE: IEC 61804-2:2018, 3.1.25]

3.1.152
edge
boundary between pertinent digital and physical entities, delineated by networked sensors and actuators

[SOURCE: ISO/IEC TR 30164:2020, 3.1]

3.1.153
edge computing
distributed computing that takes place at or near the edge, where the nearness is defined by the system's requirements

[SOURCE: ISO/IEC TR 30164:2020, 3.2]

3.1.154
electronic device description language
EDDL
methodology for describing parameter(s) of an automation system component

[SOURCE: IEC 61804-2:2018, 3.1.24]

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3.1.155
embedded systems
devices with built-in microprocessors for signal processing for predetermined tasks

3.1.156
encryption
cryptographic transformation of plain text into ciphertext that conceals the data’s original meaning to prevent it from being known or used

Note 1 to entry: If the transformation is reversible, the corresponding reversal process is called "decryption," which is a transformation that restores encrypted data to its original state.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.47]

3.1.157
end of product sales
discontinuation of a product
end of all active sales activities for a product

[SOURCE: IEC 62890:2020, 3.1.13, modified – Note to entry removed, "discontinuation of a product" added as synonym, "product" added to the term]

3.1.158
end of production
point of time when instances of a product type are no longer produced

[SOURCE: IEC 62890:2020, 3.1.15]

3.1.159
end of service
end of all service activities for a product type

[SOURCE: IEC 62890:2020, 3.1.14]

3.1.160
energy baseline
quantitative reference(s) providing a basis for comparison of energy performance

Note 1 to entry: An energy baseline reflects a specified period of time.

Note 2 to entry: An energy baseline can be normalized using variables affecting energy use and/or consumption such as production level, degree days (outdoor temperature), etc.

Note 3 to entry: Energy baseline is also used for calculation of energy savings, as a reference before and after implementation of energy performance improvement actions.

[SOURCE: IEC TR 62837:2013, 3.2.1]

3.1.161
energy demand
necessary supply capacity for the projected level of energy use

Note 1 to entry: When considering future trends, energy demand is often used in the sense of potential energy consumption.

Note 2 to entry: Energy demand is often used in the context of supply-demand interaction where demand is not given but dependent on external factors such as energy prices.

[SOURCE: IEC TR 62837:2013, 3.2.3]

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3.1.162
energy efficiency
ratio between an output of performance, service, goods or energy, and an input of energy

Note 1 to entry: Both input and output have to be clearly specified in quantity and quality, and be measurable.

Note 2 to entry: Examples are conversion efficiency, energy required/energy used, output/input, theoretical energy used to operate/energy used to operate.

[SOURCE: IEC TR 62837:2013, 3.3.1]

3.1.163
energy managed unit
EMU
unit of asset for energy management, identified by an energy related functional partitioning

[SOURCE: IEC TR 62837:2013, 3.5.3]

3.1.164
energy performance
measurable results related to energy efficiency, energy use and energy consumption

Note 1 to entry: In the context of energy management systems, results can be measured against the organization's energy policy, objectives, targets and other energy performance requirements.

Note 2 to entry: Energy performance is one component of the performance of the energy management system.

[SOURCE: IEC TR 62837:2013, 3.4.1]

3.1.165
energy performance indicator
EnPI
quantitative value or measure of energy performance as defined by the organization

Note 1 to entry: EnPIs could be expressed as a simple metric, ratio or a more complex model.

[SOURCE: IEC TR 62837:2013, 3.4.2]

3.1.166
energy saving
reduction of energy consumption following implementation of energy efficiency improvement action(s)

Note 1 to entry: The reduction is obtained by comparison against the baseline taking into account all adjustment factors.

Note 2 to entry: Energy savings can be potential following an assessment or actual after implementing an action(s).

[SOURCE: IEC TR 62837:2013, 3.2.5]

3.1.167
enterprise
one or more organizations sharing a definite mission, goals and objectives which provides an output such as a product or service

[SOURCE: IEC 62264-1:2013, 3.1.10]

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3.1.168
enterprise system
collection of information technology elements (i.e., hardware, software and services) installed with the intent to facilitate an organization’s business process or processes (administrative or project)

[SOURCE: IEC TS 62443-1-1:2009, 3.2.49]

3.1.169
entity
thing (physical or non-physical) having a distinct existence

[SOURCE: ISO/IEC 20924:2021, 3.1.18]

3.1.170
equipment
one or more entities that perform a certain function

3.1.171
Ethernet
a carrier sense, multiple access collision detect (CSMA/CD) local area network protocol standard as defined in IEEE 802.3 and later revisions and additions to IEEE 802

[SOURCE: IEC 61162-450:2018, 3.6, modified − Note 1 to entry deleted]

3.1.172
exception
event that causes suspension of normal execution

[SOURCE: IEC 61804-2:2018, 3.1.32]

3.1.173
exception handling
functions that deal with plant or process contingencies and other events which occur outside the normal or desired behaviour of batch control

[SOURCE: IEC 61512-1:1997, 3.21]

3.1.174
exchange table
database table that is used to exchange batch-related information between systems

[SOURCE: IEC 61512-2:2001, 3.4]

3.1.175
exclusive-use resource
common resource that only one user can use at any given time

[SOURCE: IEC 61512-1:1997, 3.22]

3.1.176
execution
process of carrying out a sequence of operations specified by an algorithm

[SOURCE: IEC TR 62390:2005, 3.1.11]

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3.1.177
feature
aspect of an item that can be captured by a class structure and set of properties and that cannot exist independently of the item

[SOURCE: IEC 61360-1:2017, 3.1.14]

3.1.178
field I/O network
communication links (wired or wireless) that connects sensors and actuators to the control equipment

[SOURCE: IEC TS 62443-1-1:2009, 3.2.51]

3.1.179
final controlling element
functional unit forming part of the controlled system and arranged at its input, driven by the manipulated variable and manipulating the mass flow or energy flow

Note 1 to entry: If the final controlling element is mechanically actuated, an additional actuator (positioner) is used in some cases.

Note 2 to entry: The output variable of the final controlling equipment is usually not free from feedback. The interface between the actuator and the final controlling element should therefore be selected in such a way that the manipulated variable is not affected by feedback from the final controlling element.

Note 3 to entry: Variable frequency drives (VFD) are also frequently used as final control elements.

[SOURCE: IEC 60050-351:2013, 351-49-08, modified – Figures deleted and Note 3 to entry modified]

3.1.180
final controlling equipment
functional unit that consists of an actuator and a final controlling element

[SOURCE: IEC 60050-351:2013, 351-49-09, modified – Figures and Note 1 to entry deleted]

3.1.181
finished goods
final materials on which all processing and production is completed

[SOURCE: IEC 62264-1:2013, 3.1.12]

3.1.182
finished goods waiver
approval for deviation from normal product specifications

[SOURCE: IEC 62264-1:2013, 3.1.13]

3.1.183
finite capacity scheduling
scheduling methodology where work is scheduled for production equipment, in such a way that no production equipment capacity requirement exceeds the capacity available to the production equipment

[SOURCE: IEC 62264-3:2016, 3.1.1]

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3.1.184
firewall
inter-network connection device that restricts data communication traffic between two connected networks

[SOURCE: IEC TS 62443-1-1:2009, 3.2.52, modified – Note deleted]

3.1.185
formula
category of recipe information that includes process inputs, process parameters and process outputs

[SOURCE: IEC 61512-1:1997, 3.23]

3.1.186
full compatibility
fulfillment of all requirements of the compatibility profile from the function, construction, location, and performance view by a component

3.1.187
function
intended purpose of an entity or its characteristic action

[SOURCE: IEC 61804-2:2018, 3.1.33]

3.1.188
functional requirement
specification of a behaviour that a solution or part of a solution shall perform

3.1.189
function block
function block instance
software functional unit comprising an single, named copy of a data structure and associated operations specified by a corresponding FB type

Note 1 to entry: Typical operations of a FB include modification of the values of the data in its associated data structure.

[SOURCE: IEC 61804-2:2018, 3.1.35, modified – "individual" changed to "single"]

3.1.190
function chart
graphic description tool with symbolic representation of sequential control systems

Note 1 to entry: The symbolic representation of steps, commands, transitions and directed links is based on input and output Boolean variables and also on internal state variables and binary delay elements.

Note 2 to entry: The elements, rules and basic structures for function charts are given in IEC 60848.

[SOURCE: IEC 60050-351:2013, 351-53-08, modified – Word "tool" added in the definition and Note 2 to entry slightly shortened]

3.1.191
function compatibility
fulfilment of all requirements of the compatibility profile from the functional view by a component

[SOURCE: IEC 62890:2020, 3.1.17, modified – "functional aspects of a compatibility profile" changed to "all requirements of the compatibility profile", and "from the functional view" added]

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3.1.192
functional element
entity of software or software combined with hardware, capable of accomplishing a specified function of a device

Note 1 to entry: A functional element has an interface, associations to other functional elements and functions.

Note 2 to entry: A functional element can be made out of function block(s), object(s) or parameter list(s).

[SOURCE: IEC TR 62390:2005, 3.1.12]

3.1.193
functional safety
part of the overall safety that depends on functional and physical units operating correctly in response to their inputs

[SOURCE: IEC 60050-351: 351-57-06, modified – Note 1 to entry deleted]

3.1.194
functional unit
entity of hardware or software, or both, capable of accomplishing a specified purpose

[SOURCE: IEC 61804-2:2018, 3.1.34]

3.1.195
gateway
network component that acts as a linking element between different communication network types and/or protocols

Note 1 to entry: In OSI-conforming communication networks, a gateway operates on Layer 4 up to layer 7. It allows networks based on completely different protocols to communicate with each other and possibly provides additional functionality.

3.1.196
general recipe
type of recipe that expresses equipment and site-independent processing requirements

[SOURCE: IEC 61512-1:1997, 3.24]

3.1.197
generalization
<UML> taxonomic relationship between a more general element and a more specific element

Note 1 to entry: The more specific element is fully consistent with the more general element and contains additional information. An instance of the more specific element may be used where the more general element is allowed.

[SOURCE: ISO 15745-1:2003, 3.17]

3.1.198
geographic site
subset of an enterprise’s physical, geographic, or logical group of assets

Note 1 to entry: A geographic site may contain areas, manufacturing lines, process cells, process units, control centers, and vehicles and may be connected to other sites by a wide area network.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.54]

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3.1.199
guard
gateway that is interposed between two networks (or computers or other information systems) operating at different security levels (one network is usually more secure than the other) and is trusted to mediate all information transfers between the two networks, either to ensure that no sensitive information from the more secure network is disclosed to the less secure network, or to protect the integrity of data on the more secure network

[SOURCE: IEC TS 62443-1-1:2009, 3.2.55]

3.1.200
hardware
physical equipment, as opposed to programs, procedures, rules and associated documentation

[SOURCE: IEC 61804-2:2018, 3.1.37]

3.1.201
harm
injury or damage to the health of people, or damage to property or the environment

[SOURCE: ISO/IEC GUIDE 51:2014, 3.1]

3.1.202
hazard
potential source of harm

[SOURCE: ISO/IEC GUIDE 51:2014, 3.2]

3.1.203
hazardous event
event that can cause harm

[SOURCE: ISO/IEC GUIDE 51:2014, 3.3]

3.1.204
header
information about the purpose, source and version of the recipe such as recipe and product identification, creator, and issue date.

[SOURCE: IEC 61512-1:1997, 3.25]

3.1.205
horizontal integration
integration within a functional/organizational hierarchical level across system boundaries

[SOURCE: VDI-Statusreport – Industrie 4.0 Begriff / Terms 2019]

3.1.206
host
computer that is attached to a communication sub-network or inter-network and can use services provided by the network to exchange data with other attached systems

[SOURCE: IEC TS 62443-1-1:2009, 3.2.56]

3.1.207
human profile
representation of the integration aspects of a person

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EXAMPLES: Examples of integration aspects are level of responsibility, level of competency, availability.

[SOURCE: ISO 15745-1:2003, 3.18]

3.1.208
identifier
ID
information that unambiguously distinguishes one entity from other entities in a given identity context

[SOURCE: IEC 60050-741: 2020, 741-01-21]

3.1.209
impact
evaluated consequence of a particular event

Note 1 to entry: Impact may be expressed in terms of numbers of injuries and/or fatalities, extent of environmental damage and/or magnitude of losses such as property damage, material loss, loss of intellectual property, lost production, market share loss, and recovery costs.

3.1.210
implementation phase
development phase in which the hardware and software of a system become operational

[SOURCE: IEC 61804-2:2018, 3.1.38, modified – added "implementation" to the term defined]

3.1.211
incident
event that is not part of the expected operation of a system or service that causes, or may cause, an interruption to, or a reduction in, the quality of the service provided by the control system

3.1.212
intelligent features
characteristics, such as deduction and analysis, in addition to those needed to achieve scheduled functions and tasks

EXAMPLE For example, as to intelligent products, identified aspects of intelligent features with and devices include perception and sensing, interconnection, diagnosis and maintenance, adaptive optimization, information services, interactive cooperation, artificial intelligence.

3.1.213
independent equipment
equipment that possesses both of the following characteristics:

1) the ability to perform its required function is unaffected by the operation or failure of other equipment;

2) the ability to perform its function is unaffected by the occurrence of the effects resulting from the postulated initiating event for which it is required to function

Note 1 to entry: Means to achieve independence in the design are electrical isolation, physical separation and communications independence.

[SOURCE: IEC 61513:2011, 3.31]

3.1.214
industrial automation and control systems
IACS
collection of personnel, hardware, and software that can affect or influence the safe, secure, and reliable operation of an industrial process

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Note 1 to entry: These systems include, but are not limited to:

– industrial control systems, including distributed control systems (DCSs), programmable logic controllers (PLCs), remote terminal units (RTUs), intelligent electronic devices, supervisory control and data acquisition (SCADA), networked electronic sensing and control, and monitoring and diagnostic systems. (In this context, process control systems include basic process control system and safety-instrumented system (SIS) functions, whether they are physically separate or integrated.)

– associated information systems such as advanced or multivariable control, online optimizers, dedicated equipment monitors, graphical interfaces, process historians, manufacturing execution systems, and plant information management systems.

– associated internal, human, network, or machine interfaces used to provide control, safety, and manufacturing operations functionality to continuous, batch, discrete, and other processes.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.57]

3.1.215
information
structured data that are endowed with meaning and purpose

Note 1 to entry: Information is data that have been shaped into a form that is meaningful and useful to human beings.

[SOURCE: IEC 60050-741: 2020, 741-01-500]

3.1.216
information model
formal model of a bounded set of facts, concepts or instructions to meet a specified requirement

3.1.217
information object
well-defined piece of information, definition, or specification which requires a name in order to identify its use in communication

[SOURCE: IEC 61360-1:2017, 3.1.15]

3.1.218
information world
digital world
cyber world
ideas, concepts, algorithms, models and entirety of representations of physical objects and people in the virtual environment

Note 1 to entry: The framework for considering each entirety needs to be defined.

Note 2 to entry: The elements of the information world can be semantically related to each other.

Note 3 to entry: Consider information world, cyber world, virtual world and digital world to be synonymus

[SOURCE: IEC PAS 63088:2017, 3.7, modified − Note 3 to entry added]

3.1.219
inherently safe design
measures taken to eliminate hazards and/or to reduce risks by changing the design or operating characteristics of the product or system

[SOURCE: ISO/IEC GUIDE 51:2014, 3.5]

3.1.220
initial risk
risk before controls or countermeasures have been applied

[SOURCE: IEC TS 62443-1-1:2009, 3.2.58]

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3.1.221
input
product, material or energy flow that enters a unit process

[SOURCE: IEC TR 62837:2013, 3.7.3]

3.1.222
input data
data transferred from an external source into a device, resource or functional element

[SOURCE: IEC TR 62390:2005, 3.1.14]

3.1.223
input variable
variable whose value is supplied by a data input, and which may be used in one or more operations of a FB

Note 1 to entry: An input parameter of a FB, as defined in IEC 61131-3, is an input variable.

[SOURCE: IEC 61804-2:2018, 3.1.40]

3.1.224
insider
trusted person, employee, contractor, or supplier who has information that is not generally known to the public

[SOURCE: IEC TS 62443-1-1:2009, 3.2.59]

3.1.225
instance
concrete, clearly identifiable entity of a certain type

3.1.226
instance
<software> functional element comprising an individual, named copy of a data structure and associated operations specified by a corresponding functional element type

[SOURCE: IEC TR 62390:2005, 3.1.15]

3.1.227
instance name
identifier associated with and designating an instance

[SOURCE: IEC 61804-2:2018, 3.1.42]

3.1.228
instantiation
creation of an instance of a specified type

[SOURCE: IEC 61804-2:2018, 3.1.43]

3.1.229
integration
process of assembling software and/or hardware items, according to the architectural and design specification, and testing the integrated unit

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3.1.230
integrity
quality of a system reflecting the logical correctness and reliability of the operating system, the logical completeness of the hardware and software implementing the protection mechanisms, and the consistency of the data structures and occurrence of the stored data

Note 1 to entry: In a formal security mode, integrity is often interpreted more narrowly to mean protection against unauthorized modification or destruction of information.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.60]

3.1.231
intended use
use in accordance with information provided with a product or system, or, in the absence of such information, by generally understood patterns of usage

[SOURCE: ISO/IEC GUIDE 51:2014, 3.6]

3.1.232
interaction
transaction involving multiple resources to accomplish some part of a system's function

EXAMPLE Examples include coordination, collaboration, cooperation, unwitting assistance, witting non-interference, and even competition.

[SOURCE: ISO 18435-1:2009, 3.10]

3.1.233
interception
sniffing
capture and disclosure of message contents or use of traffic analysis to compromise the confidentiality of a communication system based on message destination or origin, frequency or length of transmission, and other communication attributes

[SOURCE: IEC TS 62443-1-1:2009, 3.2.61]

3.1.234
interface
shared boundary between two entities defined by functional characteristics, signal characteristics, or other characteristics as appropriate

[SOURCE: IEC 61800-7-1: 2015, 3.2.15]

3.1.235
intermediate database
intermediate data storage system between source and target tool

[SOURCE: IEC 62424:2016, 3.19]

3.1.236
internal variable
variable whose value is used or modified by one or more operations of a FB but is not supplied by a data input or to a data output

[SOURCE: IEC 61804-2:2018, 3.1.47]

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3.1.237
Internet of Things
IoT
infrastructure of interconnected entities, people, systems and information resources together with services which processes and reacts to information from the physical world and virtual world

[SOURCE: ISO/IEC 20924:2021, 3.2.4]

3.1.238
Industrial Internet of Things
IIoT
service driven industrial ecosystem based on the network interconnection, data interoperability and system interoperability of industrial resources, to realize the flexible configuration of the manufacturing of materials, the on-demand execution of the manufacturing process, the rational optimization of the manufacturing process and the rapid adaptation of the manufacturing environment, and to achieve the efficient utilization of the resources

3.1.239
interoperability
capability of two or more entities to exchange items in accordance with a set of rules and mechanisms implemented by an interface in each entity, in order to perform their respective tasks

Note 1 to entry: Examples of entities include devices, equipment, machines, people, processes, applications, software units, systems and enterprises.

Note 2 to entry: Examples of items include information, material, energy, control, assets and ideas.

[SOURCE: ISO 18435-1:2009, 3.12]

3.1.240
intrusion
unauthorized act of compromising a system

[SOURCE: IEC TS 62443-1-1:2009, 3.2.63]

3.1.241
intrusion detection
security service that monitors and analyzes system events for the purpose of finding, and providing real-time or near real-time warning of, attempts to access system resources in an unauthorized manner

[SOURCE: IEC TS 62443-1-1:2009, 3.2.64]

3.1.242
invocation
process of initiating the execution of the sequence of operations specified in an algorithm

[SOURCE: IEC 61804-2:2018, 3.1.50]

3.1.243
IP address
address of a host computer used in the Internet Protocol

[SOURCE: IEC 60050-732:2010, 732-07-06, modified – Notes deleted]

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3.1.244
job list
production dispatch list
collection of job orders for one or more work centers and/or resources for a specific time frame

Note 1 to entry: This may take the form of job orders for the set-up instructions for machines, operating conditions for continuous processes, material movement instructions, or batches to be started in a batch system.

Note 1 to entry: Job lists are applicable to all operations management areas, such as maintenance, quality test and inventory.

[SOURCE: IEC 62264-3:2016, 3.1.3, modified – "production displatch list" added as synonym]

3.1.245
job order
production work order
unit of scheduled work that is dispatched for execution

[SOURCE: IEC 62264-4:2015, 3.1.3, modified – "production work order" added as synonym]

3.1.246
job response
information on the result of execution of a job order

[SOURCE: IEC 62264-4:2015, 3.1.4]

3.1.247
job response list
collection of job responses for one or more work centers and/or resources for a specific time frame

[SOURCE: IEC 62264-4:2015, 3.1.5]

3.1.248
key management
process of handling and controlling cryptographic keys and related material (such as initialization values) during their life cycle in a cryptographic system, including ordering, generating, distributing, storing, loading, escrowing, archiving, auditing, and destroying the keys and related material

[SOURCE: IEC TS 62443-1-1:2009, 3.2.67]

3.1.249
key performance indicator
KPI
quantifiable level of achieving a critical objective

Note 1 to entry: The KPIs are derived directly from, or through an aggregation function of, physical measurements, data and/or other KPIs.

[SOURCE: ISO 22400-1:2014, 2.1.5]

3.1.250
last-time buy
strategy in which instances of an abandoned product type are purchased before end of sales

[SOURCE: IEC 62890:2020, 3.1.19]

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3.1.251
level of compatibility
degree of fulfillment of the requirements described in the compatibility profile

[SOURCE: IEC 62890:2020, 3.1.20, modified – added "degree of"]

3.1.252
life cycle
set of distinguishable phases and steps within phases that an entity goes through from its creation until it ceases to exist

[SOURCE: IEC TR 63319:__, 3.1.2]

3.1.253
life time
length of time from the end of the creation of a product instance to the end of disposal

[SOURCE: IEC 62890:2020, 3.1.21]

3.1.254
life-cycle excellence
holistic approach to managing changing conditions to ensure technical, application specific and economic robustness of the life-cycle management for products (components and systems)

[SOURCE: IEC 62890:2020, 3.1.24, modified – Added "(components and sytems)"]

3.1.255
life-cycle management
methods and activities for the planning, realization and maintenance of products for the life cycle of types and the life time of instances

[SOURCE: IEC 62890:2020, 3.1.25]

3.1.256
life-cycle management strategy
strategy for applying life-cycle management methods to ensure the availability of a system throughout the time in use

[SOURCE: IEC 62890:2020, 3.1.26]

3.1.257
limiting value
greatest or smallest admissible value of a quantity in a specification of a component, device, equipment, or system beyond which it will be damaged resulting in permanent unwanted changes of functional or physical characteristics influencing its performance

[SOURCE: IEC 61360-1:2017, 3.1.17, modified – "beyond which it incurs damage" replaced by beyond which it will be damaged"]

3.1.258
link
object that specifies the connection between two other objects (for example, the connection between recipe entities or between recipe entities and transitions)

[SOURCE: IEC 61512-2:2001, 3.5]

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3.1.259
load shedding
process of deliberately disconnecting preselected loads from a power system in response to an abnormal condition in order to maintain the integrity of the remainder of the system

[SOURCE: IEC TR 62837:2013, 3.3.6]

3.1.260
local area network
LAN
computer network located on a user's premises within a limited geographical area

Note 1 to entry: Communication within a local area network is not subject to external regulations; however, communication across the network boundry may be subject to some form of regulation.

[SOURCE: IEC 60050-732:2010, 732-01-04]

3.1.261
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

[SOURCE: IEC 62264-2:2013, 3.1.3]

3.1.262
lot
unique amount of material having a set of common traits

Note 1 to entry: Some examples of common traits are material source, the master recipe used to produce the material and distinct physical properties.

[SOURCE: IEC 61512-1:1997, 3.28]

3.1.263
lot size one
small quantity ('one') of goods ordered for delivery on a specific date or manufactured in a single production run

3.1.264
lines, units, cells
lower-level elements that perform manufacturing, field device control, or vehicle functions

Note 1 to entry: Entities at this level may be connected together by an area control network and may contain information systems related to the operations performed in that entity.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.68]

3.1.265
Machine to Machine
M2M
exchange of information between networked devices without the manual assistance of humans

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3.1.266
maintenance application
type of manufacturing application that manages the reconfiguration, removal, replacement or repair of the manufacturing assets, and notifies the other manufacturing applications of such activities

[SOURCE: ISO 18435-1:2009, 3.13]

3.1.267
malicious code
programs or code written for the purpose of gathering information about systems or users, destroying system data, providing a foothold for further intrusion into a system, falsifying system data and reports, or providing time-consuming irritation to system operations and maintenance personnel

Note 1 to entry: Malicious code attacks can take the form of viruses, worms, Trojan horses, or other automated exploits.

Note 2 to entry: Malicious code is also often referred to as "malware".

[SOURCE: IEC TS 62443-1-1:2009, 3.2.70]

3.1.268
managed energy efficiency
improvement of energy efficiency by systematic automated production management

[SOURCE: IEC TR 62837:2013, 3.3.7, modified – "energy management" replaced by "automated production management"]

3.1.269
manufacturing
all life-cycle activities and procedures involved in the design, production, and support of manufacturing systems and of manufactured products

3.1.270
manufacturing application
set of manufacturing processes, related resources and information exchange involved in the manufacture of a product or the provision of a service

[SOURCE: ISO 18435-1:2009, 3.14]

3.1.271
manufacturing facility
site, or area within a site, that includes the resources within the site or area and includes the activities associated with the use of the resources

[SOURCE: IEC 62264-1:2013, 3.1.20]

3.1.272
manufacturing operations management
MOM
activities within Level 3 of a manufacturing facility that coordinate the personnel, equipment and material in manufacturing

[SOURCE: IEC 62264-1:2013, 3.1.22]

3.1.273
manufacturing performance
ability of a manufacturing system to achieve the intended results

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3.1.274
manufacturing process
set of processes involving a flow and/or transformation of material, information, energy, control, or any other element in a manufacturing area

[SOURCE: ISO 18435-1:2009, 3.16, modified – "in manufacturing" deleted]

3.1.275
manufacturing support system
system which is used for providing the necessary other resource to a manufacturing system

[SOURCE: IEC TR 62837:2013, 3.7.4]

3.1.276
mapping
set of values having defined correspondence with the quantities or values of another set

[SOURCE: IEC 61804-2:2018, 3.1.53]

3.1.277
master data
data held by an organization that describes the entities that are both independent and fundamental for that organization and that it needs to reference in order to perform its transactions

3.1.278
master recipe
type of recipe that accounts for equipment capabilities and may include process cell-specific information.

[SOURCE: IEC 61512-1:1997, 3.29]

3.1.279
material
matter used in manufacturing the product

EXAMPLE: Raw materials, consumables, catalysts.

[SOURCE: ISO 15745-1:2003, 3.22]

3.1.280
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.

[SOURCE: IEC 62264-2:2013, 3.1.6]

3.1.281
material sublot
uniquely identifiable subset of a material lot

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

[SOURCE: IEC 62264-2:2013, 3.1.7]

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3.1.282
maximum value
max
upper bound of a range of values in which the said value is meaningful

[SOURCE: IEC 61360-1:2017, 3.1.19, modified – Example and note deleted]

3.1.283
measurand
particular quantity subject to measurement

[SOURCE: IEC 62714-2:2015, 3.1.3]

3.1.284
medium code
abbreviation and identifier for the fluid running through a process

[SOURCE: IEC 62424:2016, 3.21, modified – "pipe" deleted]

3.1.285
manufacturing execution system
MES
production control system with real-time processing

3.1.286
message
structured information unit conveyed in a one-way transfer of data between one sending application to one or more receiving applications

[SOURCE: IEC 62264-5:2016, 3.1.3]

3.1.287
method
implementation of an operation, which specifies the algorithm or procedure associated with an operation

[SOURCE: IEC TR 62390:2005, 3.1.17]

3.1.288
migration
partial replacement of a component within an existing system configuration or extension of such configuration to modify functionality or technolgy

3.1.289
minimum value
min
lower bound of a range of values in which the said value is meaningful

[SOURCE: IEC 61360-1:2017, 3.1.18, modified – Example and Note 1 to entry deleted]

3.1.290
mode
the manner in which the transition of sequential functions are carried out within a procedural element or the accessibility for manipulating the states of equipment entities manually or by other types of control.

[SOURCE: IEC 61512-1:1997, 3.30]

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3.1.291
model
representation of a real world process, device, or concept

[SOURCE: IEC 61804-2:2018, 3.1.54]

3.1.292
name
term which, in a given naming context, refers to an entity

[SOURCE: ISO 15745-1:2003, 3.25]

3.1.293
neutral database
vendor independent data storage system

[SOURCE: IEC 62424:2016, 3.23]

3.1.294
nominal value
nom
value of a quantity used to designate and identify a component, device, equipment, or system

3.1.295
non-quantitative property
property that identifies or describes an object by means of codes, abbreviations, names, references or descriptions

EXAMPLE Typical information content of non-quantitative properties is items such as codes, abbreviations, names, references, or descriptions.

[SOURCE: IEC 61360-1:2017, 3.1.21]

3.1.296
nonrepudiation
security service that provides protection against false denial of involvement in a communication

[SOURCE: IEC TS 62443-1-1:2009, 3.2.72]

3.1.297
obsolete product
not available product from the original producer to the original specification

[SOURCE: IEC 62890:2020, 3.1.29]

3.1.298
ontology
explicit and consensual specification of concepts of an application domain independent of any use of these concepts

[SOURCE: ISO 18435-3:2015, 3.1]

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3.1.299
operations segment
identification of personnel, equipment, physical assets, and material resources required to complete an operational step for a specific operations definition

[SOURCE: IEC 62264-1:2013, 3.1.25]

3.1.300
optimal control
type of control for which the performance index reaches a largest or smallest value under specified conditions

3.1.301
optimize
design a process or act upon a process such that the performance criterion used for evaluating the process states for a given task assumes a value either as large as possible or as small as possible within given limitations

[SOURCE: IEC 60050-351:2013, 351-43-14, modified – Note 1 to entry deleted]

3.1.302
orchestration of services
flexible connection of individual services for a defined purpose

[SOURCE: VDI-Statusreport – Industrie 4.0 Begriff / Terms 2019]

3.1.303
output
product, material or energy flow that leaves a unit process

[SOURCE: IEC TR 62837:2013, 3.7.5]

3.1.304
output data
data originating in a device, resource or functional element and transferred from them to external systems

[SOURCE: IEC TR 62390:2005, 3.1.21]

3.1.305
output variable
variable whose value is established by one or more operations of a FB, and is supplied to a data output

Note 1 to entry: An output parameter of a FB, as defined in IEC 61131-3, is an output variable.

[SOURCE: IEC 61804-2:2018, 3.1.56]

3.1.306
outsider
person or group not trusted with inside access, who may or may not be known to the targeted organization

Note 1 to entry: Outsiders may or may not have been insiders at one time.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.74]

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3.1.307
parameter
property that describes the setting state of a system

Note 1 to entry: Parameters are properties carrying property magnitudes that are typically only changeable by an external setting. They are not changeable by internal system dynamics.

[SOURCE: DIN SPEC 92000:2020, 3.1.17]

3.1.308
peak shaving
process in an electrical system intended not to exceed a maximum overall energy demand

Note 1 to entry: Peak shaving can be obtained by planning of energy needs within the manufacturing system or load shedding or autonomous energy production.

[SOURCE: IEC TR 62837:2013, 3.3.8]

3.1.309
penetration
successful unauthorized access to a protected system resource

[SOURCE: IEC TS 62443-1-1:2009, 3.2.75]

3.1.310
personnel and environmental protection
the control activity that

- prevents events from occurring that would cause the process to react in a manner that would jeopardize personnel safety and/or harm the environment; and/or
- takes additional measures, such as starting standby equipment, to prevent an abnormal condition from proceeding to a more undesirable state that would jeopardize personnel safety and/or harm the environment.

[SOURCE: IEC 61512-1:1997, 3.33]

3.1.311
phase
lowest level of procedural element in the procedural control model

[SOURCE: IEC 61512-1:1997, 3.34]

3.1.312
phishing
type of security attack that lures victims to reveal information, by presenting a forged message to lure the recipient to a web site that looks like it is associated with a legitimate source

[SOURCE: IEC TS 62443-1-1:2009, 3.2.76, modified – "email" changed to "message"]

3.1.313
physical world
all actually existing objects and people

Note 1 to entry: The real world is the same as the physical world.

Note 2 to entry: Loaded or stored software is part of the physical world.

Note 3 to entry: The framework for considering each entirety needs to be defined.

[SOURCE: IEC PAS 63088:2017, 3.10]

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3.1.314
plain text
unencoded data that is input to, and transformed by an encryption process, or that is output by a decryption process

[SOURCE: IEC TS 62443-1-1:2009, 3.2.77]

3.1.315
planned time
planned duration of a specific time period

EXAMPLE The intended duration of an operation or a resource state according to the planning.

[SOURCE: ISO 22400-2:2014, 2.2]

3.1.316
plant topology
hierarchical structure of a plant, visualizable as object tree

[SOURCE: IEC 62714-1:2018, 3.1.20]

3.1.317
product life cycle management
PLM
management and use of all the information generated throughout the life cycle of a product

3.1.318
plug & work
setting up, modification or termination of interoperation between two or more involved parties with minimal effort

Note 1 to entry: The interoperability of those involved is assumed.

Note 2 to entry: The minimum effort can vary depending on the state of the art.

Note 3 to entry: Plug & play and plug & produce are synonyms or similar terms.

[SOURCE: VDI-Statusreport – Industrie 4.0 Begriff / Terms 2019]

3.1.319
polymorphism
pattern that allows substitution of a single concept in the same context by a different more specific (specialized) concept

Note 1 to entry: A specialised polymorphic block can replace a more generic one in the same context.

Note 2 to entry: A polymorphic operator (control property) can act in selecting between various specialisations.

[SOURCE: IEC 61360-1:2017, 3.1.22]

3.1.320
preventive maintenance
maintenance carried out to mitigate degradation and reduce the probability of failure

Note 1 to entry: See also condition-based maintenance (192-06-07), and scheduled maintenance (192-06-12).

[SOURCE: IEC 60050-192:2015, 192-06-05]

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3.1.321
primary energy
energy that has not been subjected to any conversion process

Note 1 to entry: Primary energy includes non-renewable energy and renewable energy. The sum of primary energy from all energy sources may be called total primary energy.

[SOURCE: IEC TR 62837:2013, 3.1.5]

3.1.322
privilege
authorization or set of authorizations to perform specific functions, especially in the context of a computer operating system

EXAMPLE Functions that are controlled through the use of privilege include acknowledging alarms, changing setpoints, modifying control algorithms.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.78]

3.1.323
procedural control
control that directs equipment-oriented actions to take place in an ordered sequence in order to carry out some process-oriented task

[SOURCE: IEC 61512-1:1997, 3.35]

3.1.324
procedural element
building block for procedural control that is defined by the procedural control model

[SOURCE: IEC 61512-1:1997, 3.36]

3.1.325
procedure
strategy for carrying out a process

Note 1 to entry: In general, this refers to the strategy for making a batch within a process cell. It may also refer to a process that does not result in the production of a product, such as a clean-in-place procedure.

[SOURCE: IEC 61512-1:1997, 3.37]

3.1.326
procedure function chart
graphical representation of a recipe procedure that specifies the processing order for recipe procedural elements

[SOURCE: IEC 61512-2:2001, 3.6]

3.1.327
process
set of activities performed with a set of resources to realize an objective within a specified timeline

[SOURCE: ISO 22400-1:2014, 2.1.8]

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3.1.328
process action
minor processing activities that are combined to make up a process operation

Note 1 to entry: Process actions are the lowest level of processing activity within the process model.

[SOURCE: IEC 61512-1:1997, 3.39]

3.1.329
process cell
logical grouping of equipment that includes the equipment required for production of one or more batches. It defines the span of logical control of one set of process equipment within an area

Note 1 to entry: This term applies to both the physical equipment and the equipment entity.

[SOURCE: IEC 61512-1:1997, 3.40]

3.1.330
process control
control activity that includes the functions needed to provide sequential, regulatory and discrete control, and to gather and display data

[SOURCE: IEC 61512-1:1997, 3.41, modified – "control" deleted]

3.1.331
process control function
function to work on process variables quantities, which is composed of basic functions of process control, specific to units of the plant

Note 1 to entry: In addition to process control functions associated with specific control levels, there can also be process control functions that link input and output variables across several control levels. For instance, a process control function in the feedback path with the controlled variable as input variable and the manipulated variable as output variable, describes the action path from the sensor via the controller to the final controlling element. Another process control function connects the operator with the indicators for the process variables. In view of the diversity of definitions of process control functions, standardization is not appropriate at this time.

[SOURCE: IEC 60050-351:2013, 351-55-16]

3.1.332
process input
identification and quantity of a raw material or other resource required to make a product

[SOURCE: IEC 61512-1:1997, 3.42]

3.1.333
process management
control activity that includes the control functions needed to manage batch production within a process cell

[SOURCE: IEC 61512-1:1997, 3.43]

3.1.334
process operation
major processing activity that usually results in a chemical or physical change in the material being processed and that is defined without consideration of the actual target equipment configuration

[SOURCE: IEC 61512-1:1997, 3.44]

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3.1.335
process output
identification and quantity of material or energy expected to result from one execution of a control recipe

[SOURCE: IEC 61512-1:1997, 3.45]

3.1.336
process parameter
information that is needed to manufacture a material but does not fall into the classification of process input or process output

Note 1 to entry: Examples of process parameter information are temperature, pressure and time.

[SOURCE: IEC 61512-1:1997, 3.46]

3.1.337
process segment
identification of personnel, equipment, physical assets, and material resources with specific capabilities needed for a segment of production, independent of any particular product at the level of detail required to support business processes that may also be independent of any particular product

Note 1 to entry: The business process segment synonym is included to reflect the business process oriented aspects of the process segment.

[SOURCE: IEC 62264-1:2013, 3.1.26]

3.1.338
process stage
part of a process that operates independently and that results in a planned sequence of chemical or physical changes in the material being processed

[SOURCE: IEC 61512-1:1997, 3.47, modified – "usually" and "from other process stages" removed]

3.1.339
processing function
function in a process

Note 1 to entry: A processing function serves a control module according to IEC 61512-1:1997, 3.10 and 5.2.2.4.

[SOURCE: IEC 62424:2016, 3.34]

3.1.340
producer
company which develops a product type, maintains it during the life cycle and manufactures instances of this type

[SOURCE: IEC 62890:2020, 3.1.30]

3.1.341
product
result of labour or of a natural or industrial process

[SOURCE: IEC 61360-1:2017, 3.1.23]

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3.1.342
product abandonment
end of all deliveries and service for a product

3.1.343
product definition
identification of personnel, equipment, physical assets, and material resources, production rules and scheduling required to create a product which includes a reference to a bill of materials, a product production rule, and a bill of resources

[SOURCE: IEC 62264-1:2013, 3.1.28]

3.1.344
product segment
identification of personnel, equipment, physical asset, and material resources required of a process segment to complete a production step for a specific product

[SOURCE: IEC 62264-1:2013, 3.1.29]

3.1.345
production capability
capability of resources to perform production and the capacity of those resources

EXAMPLE 1 Includes the collection of personnel, equipment, material, and process segment capabilities.

EXAMPLE 2 Includes the sum total of the current committed, available, and unattainable capacity of the production facility.

EXAMPLE 3 Includes the highest sustainable output rate that could be achieved for a given product mix, raw materials, worker effort, plant, and equipment.

[SOURCE: IEC 62264-1:2013, 3.1.30]

3.1.346
production control
collection of functions that manage all production within a site or area

[SOURCE: IEC 62264-1:2013, 3.1.31]

3.1.347
production line
collection of equipment dedicated to the manufacture of a specific number of products or product families

Note 1 to entry: A production line is a type of work center.

[SOURCE: IEC 62264-1:2013, 3.1.32]

3.1.348
production rules
information used to instruct a manufacturing operation how to produce a product

[SOURCE: IEC 62264-1:2013, 3.1.34]

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3.1.349
production segment
sequence of process segments and product segments

Note 1 to entry: See IEC 62264-2.

[SOURCE: ISO 18435-1:2009, 3.20]

3.1.350
production system
system intended for production of goods

Note 1 to entry: The concept of production system includes spare parts.

Note 2 to entry: The concept of production system does not encompass the whole manufacturing facility. It excludes in particular the supporting infrastructure (such as building, power distribution, lighting, ventilation). It also excludes financial assets, human resources, raw process materials, energy, work pieces in process, end products.

Note 3 to entry: Production systems can support different types of production processes (continuous, batch, or discrete).

[SOURCE: IEC 62832-1:2020, 3.1.24]

3.1.351
production unit
collection of equipment that converts, separates, or reacts one or more feedstocks to produce intermediate or final products

Note 1 to entry: A production unit is a type of work center.

[SOURCE: IEC 62264-1:2013, 3.1.35]

3.1.352
profile
<automation> set of one or more base specifications and/or sub-profiles, and, where applicable, the identification of chosen classes, conforming subsets, options and parameters of those base specifications, or sub-profiles necessary to accomplish a particular function, activity, or relationship

[SOURCE: ISO 15745-1:2003, 3.28]

3.1.353
property
data element type
defined parameter suitable for the description and differentiation of objects

Note 1 to entry: A property describes one characteristic of a given object.

Note 2 to entry: A property can have attributes such as code, version, and revision.

Note 3 to entry: The specification of a property can include predefined choices of values.

[SOURCE: IEC 61360-1:2017, 3.1.24]

3.1.354
proprietary database
vendor specific data storage system, with syntax and/or semantic not complying to any standard

[SOURCE: IEC 62424:2016, 3.35]

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3.1.355
protocol
set of formal rules describing how to exchange data between entities

3.1.356
public key certificate
set of data that uniquely identifies an entity, contains the entity's public key, and is digitally signed by a trusted party, thereby binding the public key to the entity

3.1.357
quantitative property
property with a numerical value representing a physical quantity, a quantity of information or a count of objects

[SOURCE: IEC 61360-1:2017, 3.1.25]

3.1.358
quantity
property of a phenomenon, body, or substance, where the property has a magnitude that can be expressed by means of a number and a reference

Note 1 to entry: The generic concept "quantity" can be divided into several levels of specific concepts.

[SOURCE: IEC 61360-1:2017, 3.1.26, modified – amended the Note to entry]

3.1.359
reasonably foreseeable misuse
use of a product or system in a way not intended by the supplier, but which can result from readily predictable human behaviour

Note 1 to entry: Readily predictable human behaviour includes the behaviour of all types of users, e.g. the elderly, children and persons with disabilities. For more information, see ISO 10377.

Note 2 to entry: In the context of consumer safety, the term "reasonably foreseeable use" is increasingly used as a synonym for both "intended use" and "reasonably foreseeable misuse".

[SOURCE: ISO/IEC GUIDE 51:2014, 3.7]

3.1.360
recipe
necessary set of information that uniquely defines the production requirements for a specific product.

Note 1 to entry: There are four types of recipes defined in this document: general, site, master and control.

[SOURCE: IEC 61512-1:1997, 3.48]

3.1.361
recipe element
structural entity that is used to represent recipe entities and symbols, except transitions and directed links, that are used in procedure function charts

[SOURCE: IEC 61512-2:2001, 3.7]

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3.1.362
recipe entity
combination of a procedural element with an associated recipe information (for example, header, formula, equipment requirements, other information)

Note 1 to entry: General, site, master and control recipes are also recipe entities.

[SOURCE: IEC 61512-2:2001, 3.8, modified – Second sentence changed to a Note to entry]

3.1.363
recipe management
control activity that includes the control functions needed to create, store and maintain general, site and master recipes

[SOURCE: IEC 61512-1:1997, 3.49]

3.1.364
re-design
life-cycle management strategy in which a new version of a product type is developed which typically fulfills or exceeds the specification, and therefore the compatibility profile, of a previous type

[SOURCE: IEC 62890:2020, 3.1.35]

3.1.365
reference architecture
architecture description that provides a proven template solution when developing or validating an architecture for a particular solution

[SOURCE: IEC 60050-741:2020, 741-01-27]

3.1.366
reference designation
identifier of a specific object formed with respect to the system of which the object is a constituent, based on one or more aspects of that system

Note 1 to entry: Terms "object", "aspect" and "system" are also defined in IEC 81346-1:2009, respectively at 3.1, 3.3 and 3.2.

[SOURCE: IEC 62424:2016, 3.37]

3.1.367
reference model
model that is generally used and recognized as being suitable (has recommendation character) for deriving specific models

[SOURCE: IEC PAS 63088:2017, 3.12]

3.1.368
reference time
base timeline used for time constrained models, corresponding to the planned maximum time interval available for production and maintenance tasks

EXAMPLE: A calendar day with 24 hours; a week.

[SOURCE: ISO 22400-2:2014, 2.1, modified – "constrained" added]

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3.1.369
relation
aspect or quality that connects two or more things or parts as being or belonging together

[SOURCE: IEC 61360-1:2017, 3.1.27]

3.1.370
releases
emissions to air and discharges to water and soil

[SOURCE: IEC TR 62837:2013, 3.7.8]

3.1.371
reliability
ability of a system to perform a required function under stated conditions for a specified period of time

[SOURCE: IEC TS 62443-1-1:2009, 3.2.82]

3.1.372
remote access
use of systems that are inside the perimeter of the security zone being addressed from a different geographical location with the same rights as when physically present at the location

Note 1 to entry: The exact definition of "remote" can vary according to the situation. For example, access may come from a location that is remote to the specific zone, but still within the boundaries of a company or organization. This might represent a lower risk than access that originates from a location that is remote and outside of a company's boundaries.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.83]

3.1.373
remote client
asset outside the control network that is temporarily or permanently connected to a host inside the control network via a communication link in order to directly or indirectly access parts of the control equipment on the control network

[SOURCE: IEC TS 62443-1-1:2009, 3.2.84]

3.1.374
repudiation
denial by one of the entities involved in a communication of having participated in all or part of the communication

[SOURCE: IEC TS 62443-1-1:2009, 3.2.85]

3.1.375
requirement
provision that conveys criteria to be fulfilled

[SOURCE: ISO/IEC Guide 2:2004, 7.5]

3.1.376
residual risk
remaining risk after the safety/security controls or countermeasures have been applied

[SOURCE: IEC TS 62443-1-1:2009, 3.2.86, modified – Added "safety"]

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3.1.377
resilience
ability of an IACS organization, process entity or system, to resist being affected by disruptions

3.1.378
resource
asset that is utilized or consumed during the execution of a process

Note 1 to entry: Resources may include diverse entities such as personnel, facilities, capital equipment, tools, and utilities such as power, water, fuel and communication infrastructures.

Note 2 to entry: Resources may be reusable, renewable or consumable.

3.1.379
resource management application
application whose primary function is the management of a single resource

[SOURCE: IEC 61804-2:2018, 3.1.62]

3.1.380
resource relationship network
one or more expressions of a relationship between two or more resources

[SOURCE: IEC 62264-4:2015, 3.1.6]

3.1.381
revision
defined status of a software or hardware, including all of its integrated components, which is explicitly identified

Note 1 to entry: The explicit identifier is typically a revision number.

Note 2 to entry: All revisions should be unique.

[SOURCE: IEC 62890:2020, 3.1.37, modified − "by a revision number" deleted and Notes to entry added]

3.1.382
risk
combination of the probability of occurrence of harm and the severity of that harm

3.1.383
risk analysis
systematic use of available information to identify hazards and to estimate the risk

[SOURCE: ISO/IEC GUIDE 51:2014, 3.10]

3.1.384
risk assessment
process that systematically identifies potential vulnerabilities to valuable system resources and threats to those resources, quantifies loss exposures and consequences based on probability of occurrence, and (optionally) recommends how to allocate resources to countermeasures to minimize total exposure

Note 1 to entry: Types of resources include physical, logical and human.

Note 2 to entry: Risk assessments are often combined with vulnerability assessments to identify vulnerabilities and quantify the associated risk. They are carried out initially and periodically to reflect changes in the organization's risk tolerance, vulnerabilities, procedures, personnel and technological changes.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.88]

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3.1.385
risk evaluation
procedure based on the risk analysis to determine whether tolerable risk has been exceeded

[SOURCE: ISO/IEC GUIDE 51:2014, 3.12]

3.1.386
risk management
process of identifying and applying countermeasures commensurate with the value of the assets protected, based on a risk assessment

[SOURCE: IEC TS 62443-1-1:2009, 3.2.89]

3.1.387
risk mitigation controls
combination of countermeasures and business continuity plans to manage risk

[SOURCE: IEC TS 62443-1-1:2009, 3.2.90, modified – "to manage risk" added]

3.1.388
risk reduction measure
protective measure
action or means to eliminate hazards or reduce risks

EXAMPLE Inherently safe design; protective devices; personal protective equipment; information for use and installation; organization of work; training; application of equipment; supervision.

[SOURCE: ISO/IEC GUIDE 51:2014, 3.13]

3.1.389
risk tolerance level
level of residual risk that is acceptable to an organization

[SOURCE: IEC TS 62443-1-1:2009, 3.2.91]

3.1.390
robot
industrial robot
automatically controlled, reprogrammable, multipurpose manipulator, programmable in three or more axes, which can be either fixed in place or mobile for use in industrial automation applications

[SOURCE: IEC 62714-2:2015, 3.1.1]

3.1.391
robustness
capability of a system to continue to fulfill its function under changing conditions

[SOURCE: IEC 62890:2020, 3.1.38]

3.1.392
role
set of characteristics that distinguish a resource’s ability to exhibit a set of required behaviours

[SOURCE: ISO 18435-1:2009, 3.22]

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3.1.393
router
network component that establishes a path through one or more computer networks and forwards packets

Note 1 to entry: In OSI conforming computer networks, a router operates at the network layer.

[SOURCE: IEC 60050-732: 2010, 732-01-18, modified – "functional unit" replaced by "network component"]

3.1.394
safety
freedom from risk which is not tolerable

3.1.395
safety integrity level
discrete level (one out of four levels) for specifying the safety integrity requirements of the safety-instrumented functions to be allocated to the safety-instrumented systems

Note 1 to entry: Safety integrity level 4 has the highest level of safety integrity; safety integrity level 1 has the lowest.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.96]

3.1.396
safety network
network that connects safety-instrumented systems for the communication of safety-related information

[SOURCE: IEC TS 62443-1-1:2009, 3.2.97]

3.1.397
safety-instrumented system
system used to implement one or more safety-instrumented functions

Note 1 to entry: A safety-instrumented system is composed of any combination of sensor(s), logic solver(s), and actuator(s).

[SOURCE: IEC TS 62443-1-1:2009, 3.2.95]

3.1.398
secret
condition of information being protected from being known by any system entities except those intended to know it

[SOURCE: IEC TS 62443-1-1:2009, 3.2.98]

3.1.399
security
a) measures taken to protect a system

b) condition of a system that results from the establishment and maintenance of measures to protect the system

c) condition of system resources being free from unauthorized access and from unauthorized or accidental change, destruction, or loss

d) capability of a computer-based system to provide adequate confidence that unauthorized persons and systems can neither modify the software and its data nor gain access to the system functions, and yet to ensure that this is not denied to authorized persons and systems

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e) prevention of illegal or unwanted penetration of, or interference with the proper and intended operation of an industrial automation and control system

Note 1 to entry: Measures can be controls related to physical security (controlling physical access to computing assets) or logical security (capability to login to a given system and application).

[SOURCE: IEC TS 62443-1-1:2009, 3.2.99]

3.1.400
security architecture
plan and set of principles describing the security services that a system is required to provide to meet the needs of its users, the system elements required to implement the services, and the performance levels required in the elements to deal with the threat environment

Note 1 to entry: In this context, security architecture would be an architecture to protect the control network from intentional or unintentional security events.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.100]

3.1.401
security audit
independent review and examination of a system's records and activities to determine the adequacy of system controls, ensure compliance with established security policy and procedures, detect breaches in security services, and recommend any changes that are indicated for countermeasures

[SOURCE: IEC TS 62443-1-1:2009, 3.2.101]

3.1.402
security control
action, device, procedure, or technique that reduces a threat, a vulnerability, or an attack by eliminating or preventing it, by minimizing the harm it can cause, or by discovering and reporting it so that corrective action can be taken

Note 1 to entry: The term countermeasure has been chosen for this document to avoid confusion with the term "control" in the context of process control.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.103, modified – Different Note]

3.1.403
security components
assets such as firewalls, authentication modules, or encryption software used to improve the security performance of an industrial automation and control system

[SOURCE: IEC TS 62443-1-1:2009, 3.2.102]

3.1.404
security event
occurrence in a system that is relevant to the security of the system

[SOURCE: IEC TS 62443-1-1:2009, 3.2.104]

3.1.405
security function
function of a zone or conduit to prevent unauthorized electronic intervention that can impact or influence the normal functioning of devices and systems within the zone or conduit

[SOURCE: IEC TS 62443-1-1:2009, 3.2.105]

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3.1.406
security intrusion
security event or a combination of multiple security events, that constitutes a security incident in which an intruder gains, or attempts to gain, access to a system (or system resource) without having authorization to do so

[SOURCE: IEC TS 62443-1-1:2009, 3.2.107]

3.1.407
security level
level corresponding to the required effectiveness of countermeasures and inherent security properties of devices and systems for a zone or conduit based on assessment of risk for the zone or conduit

Note 1 to entry: There are four levels with 1 being lowest and 4 highest.

SL 1 – Prevent the unauthorized disclosure of information via eavesdropping or casual exposure.

SL 2 – Prevent the unauthorized disclosure of information to an entity actively searching for it using simple means with low resources, generic skills and low motivation.

SL 3 – Prevent the unauthorized disclosure of information to an entity actively searching for it using sophisticated means with moderate resources, IACS specific skills and moderate motivation.

SL 4 – Prevent the unauthorized disclosure of information to an entity actively searching for it using sophisticated means with extended resources, IACS specific skills and high motivation.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.108, modified – Note to entry added]

3.1.408
security objective
aspect of security whose purpose is to use certain mitigation measures, such as confidentiality, integrity, availability, user authenticity, access authorization, accountability, etc.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.109]

3.1.409
security performance
program’s compliance, completeness of measures to provide specific threat protection, post-compromise analysis, review of changing business requirements, new threat and vulnerability information, and periodic audit of control systems to ensure security measures remain effective and appropriate

Note 1 to entry: Tests, audits, tools, measures, or other methods are required to evaluate security practice performance.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.111]

3.1.410
security perimeter
boundary (logical or physical) of the domain in which a security policy or security architecture applies, i.e., the boundary of the space in which security services protect system resources

[SOURCE: IEC TS 62443-1-1:2009, 3.2.110]

3.1.411
security policy
set of rules that specify or regulate how a system or organization provides security services to protect its assets

[SOURCE: IEC TS 62443-1-1:2009, 3.2.112]

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3.1.412
security procedures
definitions stating exactly how practices are implemented and executed

Note 1 to entry: Security procedures are implemented through personnel training and actions using currently available and installed technology.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.113]

3.1.413
security program
combination of all aspects of managing security, ranging from the definition and communication of policies through implementation of best industry practices, ongoing operation and auditing

[SOURCE: IEC TS 62443-1-1:2009, 3.2.114]

3.1.414
security services
mechanisms used to provide confidentiality, data integrity, authentication, or no repudiation of information

[SOURCE: IEC TS 62443-1-1:2009, 3.2.115]

3.1.415
security violation
act or event that disobeys or otherwise breaches security policy through an intrusion or the actions of a well-meaning insider

[SOURCE: IEC TS 62443-1-1:2009, 3.2.116]

3.1.416
security zone
grouping of logical or physical assets that share common security requirements

Note 1 to entry: All unqualified uses of the term "zone" in this document should be assumed to refer to a security zone.

Note 2 to entry: A zone has a clear border with other zones. The security policy of a zone is typically enforced by a combination of mechanisms both at the zone edge and within the zone. Zones can be hierarchical in the sense that they can be comprised of a collection of sub-zones.

[SOURCE: IEC TS 62443-1-1:2009, 3.2.117]

3.1.417
self-checking
built-in facility for detecting errors in its own function

[SOURCE: IEC 60050-192:2015, 192-10-10]

3.1.418
self-recoverability
ability to recover from a failure, without external action

[SOURCE: IEC 60050-192:2015, 192-01-26, modified – Note 1 to entry deleted]

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3.1.419
self-testing
built-in test facility for assessing internal system status

[SOURCE: IEC 60050-192:2015, 192-10-11, modified – Note 1 to entry deleted]

3.1.420
sensing element
functional unit that senses the effect of a measured variable at its input and places a corresponding measurement signal at its output

Note 1 to entry: The corresponding physical unit is named sensor or detecting device.

Note 2 to entry: Examples of sensors are

a) thermocouple

b) foil strain gauge

c) pH electrode.

[SOURCE: IEC 60050-351:2013, 351-56-26, modified – New Note 1 to entry, Examples restructured into Note 2 to entry]

3.1.421
sensor
unit that detects objects or obstacles in its monitoring range or that is affected by a measurand and which provides an electrical signal or data representing the detection or the measurement

EXAMPLE Limit switch, proximity sensor, pressure transmitter, vibration transducer, strain gauge, photo detector.

[SOURCE: IEC 62714-2:2015, 3.1.2]

3.1.422
server
device or application that provides information or services to client applications and devices

[SOURCE: IEC TS 62443-1-1:2009, 3.2.119]

3.1.423
service
distinct part of the functionality that is provided by an entity through interfaces

[SOURCE: IEC 60050-741:2020,741-01-28]

3.1.424
service provider
organization or part of an organization that manages and delivers a service or services to the customer

Note 1 to entry: In the definition "organization" means "person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives

3.1.425
service orientation
paradigm which enables the straightforward exchange, addition or removal of loosely coupled services

3.1.426
shared-use resource
common resource that can be used by more than one user at a time

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[SOURCE: IEC 61512-1:1997, 3.54]

3.1.427
signal compatibility
level of compatibility from the function view of the compatibility profile related to signal acquisition and processing

[SOURCE: IEC 62890:2020, 3.1.42]

3.1.428
site
identified physical, geographical, and/or logical component grouping of a manufacturing enterprise

[SOURCE: IEC 62264-1:2013, 3.1.39]

3.1.429
site recipe
type of recipe that is site-specific

[SOURCE: IEC 61512-1:1997, 3.56, modified – Note deleted]

3.1.430
situation
large number of dynamic objects that change state in time and space and engage each other into complex spatio-temporal relationships.

3.1.431
situation management
synergistic goal-directed process of:

(a) sensing and information collection,

(b) perceiving and recognizing situations,

(c) analyzing past situations and predicting future situations, and

(d) reasoning, planning and implementing actions so that desired goal situation is reached within some pre-defined constraints

3.1.432
smart
capable of some independent action

3.1.433
smart factory
factory whose degree of integration has reached a level which makes self-organizing functions possible in production and in associated business processes relating to production

Note 1 to entry: The virtual representation of the factory makes intelligent decisions possible. The aim is to increase efficiency, effectiveness, flexibility and/or adaptability.

[SOURCE: VDI-Statusreport – Industrie 4.0 Begriff / Terms 2019]

3.1.434
smart manufacturing
manufacturing that improves its performance aspects with integrated and intelligent use of processes and resources in cyber, physical and human spheres to create and deliver products and services, which also collaborates with other domains within enterprises' value chains

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Note 1 to entry: Performance aspects include agility, efficiency, safety, security, sustainability or any other performance indicators identified by the enterprise.

Note 2 to entry: In addition to manufacturing, other enterprise domains can include engineering, logistics, marketing, procurement, sales or any other domains identified by the enterprise.

3.1.435
smart product
produced or manufactured (intermediate) product which in a smart factory delivers the (outward) communication capability to network and to interact intelligently with other production participants

Note 1 to entry: The product is a produced or manufactured article or semi-finished product.

Note 2 to entry: A digital image is part of the product intelligence and can be localized on the product itself but also spatially separate from it.

Note 3 to entry: Unique identification and product-related information makes it possible for the product to be linked to the smart factory.

[SOURCE: VDI-Statusreport – Industrie 4.0 Begriff / Terms 2019]

3.1.436
smart production
dramatic increases in production from how an entity engages with supply chains, applies collaborative leadership methods, works across disciplines and systems, and how production uses data and integrated technologies for accelerated improvements.

Note 1 to entry: Adaption of the ISO TMB SAG working definition of what a Smart City should be: "Productivity": the ratio of work product to work effort. ISO/IEC 20926:2009.

3.1.437
software
intellectual creation comprising the programs, procedures, rules and any associated documentation pertaining to the operation of a system

[SOURCE: IEC 61804-2:2018, 3.1.64]

3.1.438
software compatibility
level of compatibility from the function view of the compatibility profile related to software

[SOURCE: IEC 62890:2020, 3.1.43]

3.1.439
source database
data storage system of the source tool

[SOURCE: IEC 62424:2016, 3.40]

3.1.440
specific energy consumption
energy consumption per physical unit of output

EXAMPLE Gigajoule (GJ) per ton of steel, Btu/ton of product, annual kWh per m^2.

[SOURCE: IEC TR 62837:2013, 3.3.10]

3.1.441
spoof
pretending to be an authorized user and performing an unauthorized action

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