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Internet of things (IoT) – Vocabulary

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

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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INTERNET OF THINGS (IoT) – VOCABULARY

FOREWORD

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International Standard ISO/IEC 20924 has been prepared by subcommittee 41: Internet of Things and related technologies, of ISO/IEC joint technical committee 1: Information technology.

This second edition cancels and replaces the first edition published in 2018. This edition constitutes a technical revision.

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

a) addition of new terms (safety, wearable device, data acquisition functional system, transport interoperability, etc) which are used in other ISO/IEC IoT related standards;

b) update of some definitions (data, data store, discovery service, etc.) to align with current usage in other IoT standards.

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

FDIS	Report on voting
JTC1-SC41/195/FDIS	JTC1-SC41/209/RVD

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

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

INTERNET OF THINGS (IoT) – VOCABULARY

1 Scope

This document provides a definition of Internet of Things along with a set of terms and definitions. This document is a terminology foundation for the Internet of Things.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

ISO and IEC maintain terminological 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 General terms

3.1.1
address
<*endpoint*> value that can be used to identify an *endpoint*, which can designate the originating source or destination of *data* being transmitted

3.1.2
application
software designed to fulfil a particular purpose

[SOURCE: ISO/IEC 24713-2:2008, 4.1, modified – "program or piece of" has been removed from the beginning of the definition.]

3.1.3
architecture
<system> set of 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: ISO/IEC/IEEE 42010:2011, 3.2, modified – "set of" has been added to the beginning of the definition.]

3.1.4
asset
entity that has value and is either owned by or under the custody of an individual, an organization, a government, or other groups

3.1.5
availability
property of being accessible and usable upon demand by an authorized *entity*

Note 1 to entry: *IoT systems* can include both *human users* and service components as "authorized entities".

[SOURCE: ISO/IEC 27000:2018, 3.7]

3.1.6
characteristic
abstraction of a property of an *entity* or of a set of entities

[SOURCE: ISO 18104:2014, 3.1.4]

3.1.7
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

[SOURCE: ISO/IEC 17788:2014, 3.2.5]

3.1.8
cloud service
one or more capabilities offered via *cloud computing* invoked using a defined *interface*

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

3.1.9
cloud service provider
party which makes *cloud services* available

[SOURCE: ISO/IEC 17788:2014, 3.2.15]

3.1.10
compliance
conformance to rules, such as those defined by a law, a regulation, a standard, or a policy

3.1.11
component
modular, deployable, and replaceable part of a system

[SOURCE: ISO 14813-5:2010, B.1.31, modified – "that encapsulates implementation and exposes a set of interfaces" has been deleted from the end of the definition.]

3.1.12
confidentiality
property that information is not made available or disclosed to unauthorized individuals, entities, or processes

[SOURCE: ISO/IEC 27000:2018, 3.10]

3.1.13
data
symbol or symbols represented in a digital and formalized manner suitable for communication, storage, interpretation or processing

3.1.14
data store
persistent repository for digital data

Note 1 to entry: A *data store* can be accessed by a single entity or shared by multiple entities via a *network* or other connection.

3.1.15
digital entity
computational element and/or data element

Note 1 to entry: A digital entity can exist in several forms, including a *cloud service* or as a *service* in a data centre, or as a *network* element or as an IoT gateway.

3.1.16
discovery service
service to find resources, entities or services based on a specification of the desired target

Note 1 to entry: A discovery service can be used by a *human user* or a digital user.

3.1.17
endpoint
component that exposes or uses one or more *network interfaces*

3.1.18
entity
thing (physical or non-physical) having a distinct existence

[SOURCE: ISO/IEC 15459-3:2014, 3.1]

3.1.19
functional component
functional building block needed to engage in an activity, backed by an implementation

Note 1 to entry: See also "*component*", which is a superset containing all functional components and other types of *component* that are deployable.

[SOURCE: ISO/IEC 17789:2014, 3.2.3, modified – Note 1 to entry has been added.]

3.1.20
human user
natural person who uses a system

3.1.21
identifier
information that unambiguously distinguishes one *entity* from other entities in a given *identity context*

3.1.22
identity context
environment where an *entity* can be sufficiently identified by a certain set of its attributes and values

3.1.23
information
data that within a certain context has a particular meaning

3.1.24
interface
shared boundary between two functional *components*, defined by various *characteristics* pertaining to the functions, physical interconnections, signal exchanges, and other *characteristics*

[SOURCE: ISO/IEC 13066-1:2011, 2.15, modified – In the definition, "units" has been replaced by "*components*"; ", as appropriate" has been deleted from the end of the definition.]

3.1.25
interoperability
ability of two or more systems or *applications* to exchange information and to mutually use the information that has been exchanged

[SOURCE: ISO/IEC 17788:2014, 3.1.5]

3.1.26
network
infrastructure that connects a set of *endpoints*, enabling communication of *data* between the digital entities reachable through them

3.1.27
physical entity
entity in the physical world that can be the subject of sensing and/or actuating

3.1.28
reference architecture
architecture framework used as a template when developing or validating an architecture description for a particular solution

3.1.29
safety
state in which the risk of harm (to persons) or damage is limited to an acceptable level

[SOURCE: ISO 21101:2014, 3.34]

3.1.30
service
distinct functionality that is provided by an *entity* through *interfaces*

[SOURCE: ISO/IEC TR 14252:1996, 2.2.2.46, modified – In the definition, "part of the functionality" has been replaced by "functionality" and "on one side of an interface to an entity on the other side of the interface" has been replaced by "through *interfaces*".]

3.1.31
service provider
organization that manages and delivers a service or services to customers

[SOURCE: ISO/IEC 20000-10:2018, 3.2.24]

3.1.32
stakeholder
individual, team, organization, or classes thereof, having an interest in a system

[SOURCE: ISO/IEC/IEEE 42010:2011, 3.10]

3.1.33
tag
human- or machine-readable mark, or digital identity used to communicate information about an *entity*

Note 1 to entry: A tag can contain information that can be read by sensors to aid in identification of the *physical entity*.

3.1.34
trustworthiness
ability to meet stakeholder expectations in a demonstrable, verifiable and measurable way

Note 1 to entry: Depending on the context or sector, and also on the specific product or service, data, and technology used, different characteristics apply and need verification to ensure stakeholders' expectations are met.

Note 2 to entry: Characteristics of trustworthiness include, for instance, reliability, availability, resilience, security, privacy, safety, accountability, transparency, integrity, authenticity, quality, usability and accuracy.

Note 3 to entry: Trustworthiness is an attribute that can be applied to services, products, technology, data and information as well as, in the context of governance, to organizations.

3.1.35
virtual entity
digital entity that represents a *physical entity*

3.1.36
wearable device
electronic device intended to be located near to, on or in a body

Note 1 to entry: Wearable devices often have a variety of sensing abilities, but limited power capacity constraining communication and data processing abilities. As critical devices of the IoT, it is considered that the communication between wearable devices and a network might not require any human intervention. Wearable devices include electronic devices usable by humans, animals, and other organisms.

3.2 Internet of Things specific terms

3.2.1
actuator
<*Internet of Things*> *IoT device* that changes one or more properties of a *physical entity* in response to an input

Note 1 to entry: The change can be nonmechanical in nature.

3.2.2
data acquisition functional system
<*Internet of Things*> system for gathering required *data* from a group of sensors, and assembling them into messages for delivery to a *component*

3.2.3
digital user
digital entity that uses an IoT system

Note 1 to entry: Digital user includes automation services that act on behalf of human users.

3.2.4
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