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# Terms and definitions

The Internet of Media Things and Wearables (IoMT & W) is the collection of interfaces, protocols and associated media-related information representations that enable advanced services and applications based on human to device and device to device interaction, in physical and virtual environments. Information refers to data sensed and processed by a device, and/or communicated to a human or another device.

## Internet of Media Things and Wearable terms

**audio:**anything related to sound in terms of receiving, transmitting or reproducing or its specific frequency

**camera:**a special form of an image capture device that senses and captures photo-optical signals

**display:** the visual representation of the output of an electronic device; the portion of an electronic device that shows this representation, as a screen, lens, or reticle.

**gesture**: a movement or position of the hand, arm, body, head, or face that is expressive of an idea, opinion, emotion, etc.

**haptics**: an input or output device that senses the body's movements by means of physical contact with the user

**image capture device**: a device which is capable of sensing and capturing acoustic, electrical or photo-optical signals of a physical entity that can be converted into an image

**Internet of Media Things (IoMT)**: a special subset of IoT where information resources are limited to media

**IoMT Device**: an IoT Device that contains more than one MThing

**IoMT System (MSystem)**: an IoT system whose main functionality is related to media processing

[**loudspeaker**](http://www.dictionary.com/browse/loudspeaker): an electroacoustic device, that is connected as a component in an audio system, generating audible acoustic wave

**media**: datathat can be rendered, including audio, video, text, graphics, images, haptic and tactile information; these data can be timed or non-timed

**Media Thing (MThing)**: a Thing capable of sensing, acquiring, actuating, or processing of media or metadata

**microphone**: an entity capable of capture and transform acoustic waves into changes in electric currents or voltage, used in recording or transmitting sound

**Media Wearable (MWearable)**:an MThing intended to be located near, on or in an organism

**motion**: the action or process of moving or of changing place or position; movement.

**Natural User Interface (NUI):** a system for human-computer interaction that the user operates through intuitive actions related to natural, everyday human behavior

**presentation:** an act of producing human recognizable output of rendered media

## Internet of Things terms

**actuator:** a component which conveys digital information to effect a change of some property of a physical entity

**capability:** characteristic or property of an entity that can be used to describe its state, appearance, or other aspects

EXAMPLE: An entity type, address information, telephone number, a privilege, a MAC address, a domain name are possible attributes [SOURCE: ISO/IEC 24760-1:2011, 3.1.3]

**component:** a modular, deployable, and replaceable part of a system that encapsulates implementations [SOURCE: ISO/TS 19104:2008, B.50]. Note 1: a component may expose or use interfaces (local or on a network) to interact with other entities. A Component which exposes or uses network interfaces is called an Endpoint. Note 2: see also “functional component”: that specialization of the component concept is consistent with this definition except that it is not deployable, as it is a part of a logical architecture and not part of an implementation architecture.

**conceptual model:** common structure and definitions for describing the concepts and relationships within an IoT system [SOURCE: ISO/IEC 20006-1:2014, 4.8, modified]

**digital entity:** any computational or data element of an IT-based system; it may exist as a service based in a data centre or cloud, or a network element or a gateway

**digital user:** a non-human user of the IoT system; it includes automation services that act on behalf of human users

**discovery:** a service to find unknown resources/entities/services based on a rough specification of the desired result. It may be utilized by a human or another service; credentials for authorization are considered when executing the discovery [SOURCE: IoT-A]

**electronic textile:** fabrics or textile-based electronic devices and components

**entity:** anything (physical or non-physical) having a distinct existence

**human user:** an IoT user

**identifier:** information that unambiguously distinguishes one entity from another one in a given identity context.

**identity:** characteristics determining who or what a person or thing is

**information:** structured data

**in-body electronics:** electronic devices and components intended to be located internal to an organism

**Internet of Things (IoT):** an infrastructure of interconnected objects, people, systems and information resources together with intelligent services to allow them to process information of the physical and the virtual world and react

**interface:** shared boundary between two functional components, defined by various characteristics pertaining to the functions, physical interconnections, signal exchanges, and other characteristics, as appropriate [SOURCE: ISO/IEC 13066-1:2011, 2.15, modified]

**interface device:** a hardware component or system of components that allows a human being to interact with a computer, a telephone system, or other electronic information system [SOURCE: http://whatis.techtarget.com/definition/interface-device-IDF]

**IoT Device:** a component that can be a single or a combination of the following elements:

- Sensors, which provide information about the Physical Entity

- Tags, which are used to identify Physical Entities

- Actuators, which can modify the physical state of a Physical Entity [IOT-A,RERUM].

Note 1: An IoT device can be either attached to or embedded inside a Physical Entity, or monitor a Physical Entity in its vicinity. [Short OED] Note 2: Several IoT specifications have used the term Device for this concept. However, the term Device in the English dictionary has a much broader context, which is why this RA introduces IoT as a more specific concept

**IoT Domain:** set of entities which in an IoT context have similar characteristics and share the same rules

**IoT Gateway:** a forwarding device enabling the connections between the sensing or actuating subsystem in the real environment and other subsystems or networks

**IoT system:** a system that is comprised of functions that provide the system the capabilities for identification, sensing, actuation, communication, and management, and applications and services to a user [SOURCE: Internet of Things: A Hands on Approach, Bahga & Madisetti, 2014]

**IoT User:** an entity that is interested in interacting with a physical or virtual entity

local storage: special type of resource that contains information about one or only a few entities in the vicinity of a device [SOURCE: IoT-A]

**network:** an entity that connects endpoints, sources to destinations, and may itself act as a value added element in the IoT system or services.

**near-body electronics:** electronic devices and components intended to be located near an organism where it does not contact the external surface of the organism directly;

**network interface:** set of operations accessible on a network, that characterizes the behaviour of an endpoint

**on-body electronics:** electronic devices and components intended to be located on an organism where it contacts the external surface of the organism directly; a device or component can be near-body or on-body electronics depending on the usage and the contact situation.

**on-device resource:** resource hosted inside a Device and enabling access to the Device and thus to the related Physical Entity [SOURCE: IoT-A]

**process:** to carry out operations on data

**physical entity:** a thing that is discrete, identifiable, and observable, and having material existence in real world

**reference architecture:** description of common features, common vocabulary, guidelines, interrelations and interactions among the entities, and a template for an IoT architecture

**resource:** any element of a data processing system needed to perform required operations [SOURCE: ISO/IEC 2382-1:1993, 01.01.23]

**sensor:** device that observes and measures a physical property of a natural phenomenon or man-made process and converts that measurement into a signal; Note: Signal can be electrical, chemical, etc [SOURCE: ISO 29182-2:2013, 2.1.5]

**service:** service is a distinct part of the functionality that is provided by an entity through interfaces [ISO/TR 14252:1996].

**service operator:** one who owns administration rights on the services it provides and/or on the entities it owns, is able to negotiate partnership with equivalent counterparts and define polices specifying how a service can be accessed by users

**service provider:** abstract representation of all entities that provide a service to peer service users
[SOURCE: ISO/IEC 2382-26:1993, 26.03.10]

[**storage**](http://www.dictionary.com/browse/storage)**:** the capacity of a digital entity to store information subject to recall or the components of a digital entity in which such information is stored

**Thing:** any entity that can communicate with other entities

**user:** a human or any digital entity that is interested in interacting with a particular physical object

**visual media:** product featuring moving images, with or without audio, that is recorded and saved digitally

**visual:** perceptible by the sense of sight

**virtual entity:** a discrete software, firmware, or data, e.g., computing device/system or virtual data storage, that performs a task or tasks. It is a digital representation of a physical entity

**virtual user:** a digital user

**wearable smart devices:** electronic devices and components intended to be located near, on or in an organism that have intelligent functionality and/or may be a part of an intelligent system via connectivity

# Requirements for Internet of Media Things and Wearables

The term “Shall appropriately” shall be interpreted in this document as meaning “is mandatory if the entity supports that capability”.

## Data Sensing and Acquisition Requirements

|  |  |
| --- | --- |
| **No.** | **Requirements** |
| SA.1 | Shall be able to represent the list of supported media sensing or acquisition capabilities  |
| SA.1' | Shall appropriately be able to represent the description of supported media sensing or acquisition capabilities |
| SA.2 | Shall be able to represent the list of available media sensing or acquisition capabilities  |
| SA.2' | Shall appropriately be able to represent the description of available media sensing or acquisition capabilities |
| SA.3 | Shall appropriately represent sensed or acquired media and/or metadata  |

## Data Processing Requirements

|  |  |
| --- | --- |
| **No.** | **Requirements** |
| PR.1 | Shall be able to represent the list of supported processes for media and/or metadata |
| PR.1' | Shall appropriately be able to represent the description of supported processes for media and/or metadata |
| PR.2 | Shall be able to represent the list of available processes for media and/or metadata |
| PR.2' | Shall appropriately be able to represent the description of available processes for media and/or metadata |
| PR.3 | Shall appropriately support processing of sensed and/or acquired media and/or metadata  |
| PR.4 | Shall appropriately support processing of control and/or context data |
| PR.5 | Shall represent the list of processes applied to sensed and/or acquired media and/or metadata  |
| PR.5' | Shall appropriately represent the description of processes applied to sensed and/or acquired media and/or metadata  |

## Timing Requirements

|  |  |
| --- | --- |
| **No.** | **Requirements** |
| TI.1 | Shall be able to represent time information related to media data and/or metadata |

## Actuation Requirements

|  |  |
| --- | --- |
| **No.** | **Requirements** |
| AC.1 | Shall appropriately represent data used to effect a change of some property of a physical entity |
| AC.2 | Shall appropriately support the generation and representation of control data |
| AC.3 | Shall represent the list of control data |
| AC.3' | Shall appropriately represent the description of control data |

## Communication Requirements

|  |  |
| --- | --- |
| **No.** | **Requirements** |
| CM.1 | Shall support data representation for identification  |
| CM.2 | Shall support data representation for describing services such as discovery, search and retrieval |
| CM.3 | Shall appropriately support communication of sensed and/or acquired media and/or metadata  |
| CM.4 | Shall appropriately support communication of control and/or context data  |
| CM.5 | Shall appropriately support generation and exposure of metadata related to capabilities to support services such as discovery, search and retrieval |
| CM.6 | Shall support data representation for communicating task and sub-task description |

## Rendering and Presentation Requirements

|  |  |
| --- | --- |
| **No.** | **Requirements** |
| RP.1 | Shall be able to represent the list of rendering capabilities |
| RP.1' | Shall be able to represent the description of rendering capabilities |
| RP.2 | Shall appropriately support rendering of sensed and/or acquired media and/or metadata |
| RP.3 | Shall appropriately support presentation of rendered media  |

## Storage Requirements

|  |  |
| --- | --- |
| **No.** | **Requirements** |
| ST.1 | Shall be able to represent the list of supported storage capabilities |
| ST.1' | Shall be able to describe the supported storage capabilities |
| ST.2 | Shall be able to represent the list of available storage capabilities |
| ST.2' | Shall be able to describe the available storage capabilities |
| ST.3 | Shall appropriately support storing of sensed and/or acquired media and/or metadata |

## Security and Privacy Requirements

|  |  |
| --- | --- |
| **No.** | **Requirements** |
| SP.1 | Shall be able to represent the list of supported security mechanisms such as access control, authentication, encryption etc. |
| SP.1' | Shall be able to describe the supported security mechanisms such as access control, authentication, encryption etc. |
| SP.2 | Shall be able to represent the list of available security mechanisms such as access control, authentication, encryption etc. |
| SP.2' | Shall be able to describe the available security mechanisms such as access control, authentication, encryption etc. |
| SP.3 | Shall be able to represent the list of supported privacy mechanisms such as management of PII (Personally Identifiable Information) |
| SP.3' | Shall be able to describe the supported privacy mechanisms such as management of PII (Personally Identifiable Information) |
| SP.4 | Shall be able to represent the list of available privacy mechanisms such as management of PII (Personally Identifiable Information) |
| SP.4' | Shall be able to describe the available privacy mechanisms such as management of PII (Personally Identifiable Information) |

##

## System Aggregation Requirements

|  |  |
| --- | --- |
| **No.** | **Requirements** |
| SY.1 | Shall be able to represent the list of internal MThings that can be exposed |
| SY.1' | Shall be able to represent capabilities of internal MThings that can be exposed |
| SY.2 | Shall be able to represent the list of internal MThings that are available |
| SY.2' | Shall be able to represent capabilities of internal MThings that are available |
| SY.3 | Should be able to represent the list of functionalities of the system |
| SY.3' | Should be able to describe information specific to a functionality of the system |
| SY.4 | Should be able to support usage of information specific to a functionality of other systems  |