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Internet of things (IoT) — Interoperability for IoT systems

Part 2: Transport interoperability

AS ISO/IEC 21823.2:2021

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Australian Academy of Technological Sciences and Engineering
Australian Communications and Media Authority
Australian Communications Consumer Action Network
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Australian Information Industry Association
Australian Smart Communities Association
Communications Alliance
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Internet of things (IoT) — Interoperability for IoT systems

Part 2: Transport interoperability

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Preface

This Standard was prepared by the Standards Australia Committee IT-042, Internet of Things and Related Technologies.

The objective of this document is to specify a framework and requirements for transport interoperability, in order to enable the construction of IoT systems with information exchange, peer-to-peer connectivity and seamless communication both between different IoT systems and also among entities within an IoT system. This document specifies —

(a) transport interoperability interfaces and requirements between IoT systems; and

(b) transport interoperability interfaces and requirements within an IoT system.

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FOREWORD

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International Standard ISO/IEC 21823-2 was prepared by subcommittee 41: Internet of Things and related technologies, of ISO/IEC joint technical committee 1: Information technology.

The list of all currently available parts of the ISO/IEC 21823 series, under the general title *Internet of Things (IoT) - Interoperability for IoT systems*, can be found on the IEC and ISO websites.

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

FDIS	Report on voting
JTC1-SC41/138/FDIS	JTC1-SC41/153/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.

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INTRODUCTION

Internet of Things (IoT) systems involve communications among different entities. This applies to connections between different IoT systems. It also applies to the many connections that exist within IoT systems. The various entities and their connections are described in ISO/IEC 30141.

The ISO/IEC 21823 series addresses issues that relate to interoperability of the communications between IoT systems entities, both between different IoT systems and within a single IoT system. ISO/IEC 21823-1 describes a general framework for interoperability for IoT systems. This includes a facet model for interoperability which includes five facets of interoperability: transport; syntactic; semantic; behavioural; policy. This document (ISO/IEC 21823-2) addresses the transport interoperability for IoT systems. The semantic facet of interoperability will be addressed in a future International Standard (ISO/IEC 21823-3). The potential other parts address the syntactic facet, the behavioural facet and the policy facet of interoperability.

As described in ISO/IEC 30141, IoT systems have multiple different types of networks connecting the various system entities – network connectivity, addressing the transport facet of the interoperability model, is thus of great importance in the description of interoperability for IoT systems. The different networks need to be combined to provide the necessary network connectivity between entities which are attached to each of the networks – in short, to enable those entities to be interoperable. An example are the centralized applications and services which need to receive data from remote sensors, or issue commands to remote actuators.

Network connectivity is the name given to the methods by which the various networks in an IoT system are connected to one another. This document specifies a framework and requirements for transport interoperability, in order to enable the construction of IoT systems with information exchange, peer-to-peer connectivity and seamless communication both between different IoT systems and also among entities within an IoT system.

To provide seamless communication and interaction between and within networks, it is important to solve network level interoperability issues in IoT systems. There are four types of networks in IoT systems, including user networks, service network, access network and proximity network, which are defined in ISO/IEC 30141 and used in ISO/IEC 21823-1. The relationship and interface among these networks for supporting networks interoperability need to be specified.

For this purpose, this document focuses on network connectivity, which is the precondition of interoperability in IoT systems.

INTERNET OF THINGS (IoT) – INTEROPERABILITY FOR IoT SYSTEMS –

Part 2: Transport interoperability

1 Scope

This part of IEC 21823 specifies a framework and requirements for transport interoperability in order to enable the construction of IoT systems with information exchange, peer-to-peer connectivity and seamless communication both between different IoT systems and also among entities within an IoT system. This document specifies:

- transport interoperability interfaces and requirements between IoT systems;
- transport interoperability interfaces and requirements within an IoT system.

2 Normative references

ISO/IEC 20924, *Internet of Things (IoT) – Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 20924 and the following apply.

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

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

3.1
network connectivity
ability to exchange information as bits and bytes, assuming that the information exchange infrastructure is established and the underlying networks and protocols are unambiguously defined

[SOURCE: IIC:PUB:G5:V1.01:PB:20180228. The Industrial Internet of Things Volume G5: Connectivity Framework]

3.2
transport interoperability
interoperability where information exchange uses an established communication infrastructure between the participating systems

Note 1 to entry: System means IoT system

Note 2 to entry: IoT device, IoT gateway, sensor and actuator are considered as a system.

[SOURCE: ISO/IEC 19941:2017, 3.1.3]