ISO/IEC 30187

Edition 1.0 2026-05

INTERNATIONAL STANDARD

Internet of Things (IoT) - Evaluation indicators for IoT systems

ICS 35.020

ISBN 978-2-8327-1239-9

ISO/IEC 30187: 2026-05(en)

THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2026 ISO/IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

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

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

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, …). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD 3
INTRODUCTION 4
1 Scope 5
2 Normative references 5
3 Terms and definitions 5
4 Framework of indicator scheme 6
4.1 Indicator scheme classification 6
4.2 System architecture indicators 6
4.3 System functional indicators 6
4.4 System quality indicators 7
5 System architecture indicators and measurable guidelines 9
5.1 System management 9
5.2 Compatibility and interoperability 10
6 System functional indicators and measurable guidelines 11
6.1 General function 11
6.2 Sensing control 12
6.3 Service support 13
6.4 Resource exchange 14
6.5 Operation and maintenance control 15
6.6 User system 16
7 System quality indicators and measurable guidelines 16
7.1 Trustworthiness 16
7.2 Information security 17
7.3 Privacy protection 18
7.4 Reliability 18
7.5 Resilience 19
7.6 Physical security 19
Annex A (informative) Example of use case and associated IoT evaluation indicators 20
A.1 Overview 20
A.2 Evaluation methods and processes 20
A.2.1 Evaluation methods 20
A.2.2 Evaluation processes 20
A.3 Evaluation results 20
Annex B (informative) Example of evaluation indicators profile 24
Bibliography 25

Figure 1 – System architecture indicators 6
Figure 2 – System functional indicators 7
Figure 3 – System quality indicators 8

Table 1 – System management indicators and measurable guidelines 9
Table 2 – Compatibility and interoperability indicators and measurable guidelines 10
Table 3 – General function indicators and measurable guidelines 11
Table 4 – Sensing control indicators and measurable guidelines 12

Table 5 – Service support indicators and measurable guidelines 13
Table 6 – Resource exchange indicators and measurable guidelines 14
Table 7 – Operation and maintenance control indicators and measurable guidelines 15
Table 8 – User system indicators and measurable guidelines 16
Table 9 – Trustworthiness indicators and measurable guidelines 16
Table 10 – Information security indicators and measurable guidelines 17
Table 11 – Privacy protection indicators and measurable guidelines 18
Table 12 – Reliability indicators and measurable guidelines 18
Table 13 – Resilience indicators and measurable guidelines 19
Table 14 – Physical security indicators and measurable guidelines 19
Table A.1 – Evaluation records of vehicle recognition parking IoT system 21
Table B.1 – Evaluation standards in other industries 24

Internet of Things (IoT) - Evaluation indicators for IoT systems

FOREWORD

1) ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.
2) The formal decisions or agreements of IEC and ISO on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC and ISO National bodies.
3) IEC and ISO documents have the form of recommendations for international use and are accepted by IEC and ISO National bodies in that sense. While all reasonable efforts are made to ensure that the technical content of IEC and ISO documents is accurate, IEC and ISO cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC and ISO National bodies undertake to apply IEC and ISO documents transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC and ISO document and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC and ISO do not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC and ISO marks of conformity. IEC and ISO are not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this document.
7) No liability shall attach to IEC and ISO or their directors, employees, servants or agents including individual experts and members of its technical committees and IEC and ISO National bodies for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this ISO/IEC document or any other IEC and ISO documents.
8) Attention is drawn to the Normative references cited in this document. Use of the referenced publications is indispensable for the correct application of this document.
9) IEC and ISO draw attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC and ISO take no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC and ISO had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch and www.iso.org/patents. IEC and ISO shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 30187 has been prepared by subcommittee 41: Internet of Things and Digital Twin, of ISO/IEC Joint Technical Committee 1: Information technology. It is an International Standard.

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

Draft	Report on voting
JTC1-SC41/584/FDIS	JTC1-SC41/602/RVD

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 International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1, and the ISO/IEC Directives, JTC 1 Supplement available at www.iec.ch/members_experts/refdocs and www.iso.org/directives.

INTRODUCTION

System evaluation is a method used to review and select newly developed or rebuilt systems through systematic analysis, considering aspects such as technology, economy, society, and ecology. The system evaluation is carried out according to predetermined system objectives. The purpose is to evaluate the most suitable solution for the application or use case.

An IoT system evaluation usually includes the following steps:

– defining the system of interest and the associated environment,
– reviewing existing relevant standards to set appropriate minimum requirements,
– determining the evaluation items and the resulting list of indicators,
– determining the observable items and collecting relevant information,
– determining the methods and criteria for evaluation, and
– conducting the evaluation.

The conclusion of the evaluation indicator scheme is the basis of the system evaluation process, which can provide evaluation criteria for the objective IoT systems.

IoT systems are being widely used in energy, agriculture, manufacturing, finance, environmental protection and other industries. To identify the advantages and disadvantages among IoT systems, it is important to develop a standard to help users to select appropriate indicators when evaluating the performance of targeted systems.

The set of evaluation indicators described in this document can be considered as a profile, which can be used for the evaluation of IoT systems in the planning phase, the real-time monitoring phase, or the phase after deployment. The specification of other profiles depends on the system that is evaluated. For instance, if an IoT system includes artificial intelligence or digital twin capabilities, additional indicators can be added. Likewise, if an IoT system corresponds to a vertical domain (e.g. health, manufacturing, energy), additional indicators can be added.

1 Scope

This document specifies the evaluation indicators for IoT systems.

This document is applicable to the compilation of the evaluation indicators for IoT systems in specific industries.

NOTE The indicators identified in this document are typical indicators but are not a comprehensive list; and conversely, not every indicator listed applies to every IoT system.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

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

3.1
IoT system
system providing functionalities of IoT

Note 1 to entry: An IoT system can include, but not be limited to, IoT devices, IoT gateways, sensors, and actuators.

[SOURCE: ISO/IEC 20924:2024 [1], 3.2.15]

3.2
indicator
measure that provides an estimate or evaluation of specified attributes derived from a model with respect to defined information needs

[SOURCE: ISO/IEC/IEEE 15939:2017 [2], 3.10]

3.3
indicator scheme
collection including catalogued indicator defined by common features

Note 1 to entry: The indicator scheme is a systematic and coherent set of indicators that reflects the entire evaluation object.

3.4
criteria
rules on which a judgment or decision can be based, or by which a product, service, result, or process can be evaluated

[SOURCE: ISO/IEC/IEEE 15289:2019 [3], 3.1.6]