PD ISO/IEC TR 22417:2017

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Information technology - Internet of things (IOT) - IOT use cases

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee IOT/1/-/1, Internet of Things - Architecture.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Published by BSI Standards Limited 2018

ISBN 978 0 580 97462 5

ICS 35.020; 35.110; 35.240.01

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This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 January 2018.

Amendments/corrigenda issued since publication

Date	Text affected

ISO/IEC TR 22417

Edition 1.0 2017-11

TECHNICAL REPORT

colour inside

Information technology – Internet of things (IOT) – IOT use cases

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 35.020; 35.240; 35.110

ISBN 978-2-8322-4989-5

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INFORMATION TECHNOLOGY – INTERNET OF THINGS (IOT) – IOT USE CASES

FOREWORD

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ISO/IEC TR 22417, which is a Technical Report, was prepared by subcommittee 41: Internet of Things and related technologies, of ISO/IEC joint technical committee 1: Information technology.

This Technical Report has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the second title page.

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

INTRODUCTION

This document captures the results of a use case input process that began with the call for contributions of IoT (Internet of Things) use cases in 2015-05. The current document reflects contributions and discussions by ISO/IEC JTC 1 experts and liaison members, JTC 1 national mirror committees, and user organizations. This document also contains material gathered from reports, IoT research projects and group output from the JTC 1 working group on the Internet of Things meetings in September 2015 (Ottawa), January 2016 (Shanghai) and May 2016 (Berlin).

In total 25 IoT use cases were submitted by the end of July 2016. To start the project, the working group members were requested to submit use cases using the provided template. The use case submissions consisted of the title of the use case, a description and the origin of the use case. Contributors did not always provide information for all the fields of the template and did not necessarily revise their input when a modified use case template was introduced.

The use case template helped to group and categorize the use cases according to the identified IoT requirements and experience of users. Understanding the application of IoT systems made it easier to identify categories and highlight use case commonalities. Where multiple use cases fall in the same category and had overlapping items, they were consolidated into one section or extended use case. All selected use cases have real-world validity. Gaps were filled by adding extra use cases and future developments were also considered. Functional requirements were extracted from the use cases and have assisted in the development of the IoT Reference Architecture. There is a natural mapping from the user experience based use cases to the clustered technical use cases, where specific technical and functional requirements are expressed. Collecting the use cases allowed the working group to assess the general applicability of the IoT reference architecture in ISO/IEC 30141 to current IoT applications.

Experts from the following national committees, liaison organizations and research projects contributed use cases on IoT: Canada, China, Japan, UK, JTC 1/SC 27, JTC 1/SC 29, ISO/TC 184, and the Vicinity Project.

Technological advances have enormous potential to make the society more efficient and digitally inclusive and IoT implementations are demonstrating convergence of information and communications technology and their widespread application.

The target audience for this document includes:

- IoT service users who can understand how their IoT requirements are considered by an IoT service provider;
- IoT service providers who can learn about users IoT needs, and can also learn how to operate active assisted living systems;
- IoT application developers who can develop IoT applications according to the needs of the IoT service users;
- controllable equipment and ICT device manufacturers who want to know what the IoT interface requirements are;
- administrations and government authorities that have to act as IoT service users and IoT regulators.

INFORMATION TECHNOLOGY – INTERNET OF THINGS (IOT) – IOT USE CASES

1 Scope

This document identifies IoT scenarios and use cases based on real-world applications and requirements. This document comprises 25 use cases for Internet of Things submitted to the ISO/IEC JTC 1 working group on the Internet of Things between June 2015 and July 2016. Use cases are a well-known tool for expressing requirements at a high level and demonstrating their real-life relevance. The use cases provide a practical context for considerations on interoperability and standards based on user experience. Use cases clarify where existing standards can be applied and highlight where standardization work is needed.

An objective of this document is to assist in the identification of potential areas for standardization in the IoT environment to ensure ease of operation and interoperability.

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:

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

3.1
actor
entity that communicates and interacts

Note 1 to entry: These actors can include IoT devices, actuators, sensors, users, software applications, systems, databases.

3.2
use case
specification of a sequence of actions, including variants, that a system (or other entity) can perform, interacting with actors of the system

[SOURCE: ISO 14813-5:2010, B.1.160]

3.3
IoT use case
description of a hypothetically possible situation where IoT concepts, products and services may be specified as a set of actions associated with actors in an IoT system, which yields an observable result that is, typically, of value for one or more actors or other stakeholders of the system

Note 1 to entry: The aim is to pictorially describe a field of problems in a way that the artificial situation makes IoT approaches to solutions evident in their temporal, spatial as well as technical dimension.