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Internet of things (IoT) and digital twin – Best practices for use case projects

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INTERNET OF THINGS (IoT) AND DIGITAL TWIN – BEST PRACTICES FOR USE CASE PROJECTS

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ISO/IEC TR 30194 has been prepared by subcommittee 41: Internet of Things and Digital Twin, of ISO/IEC joint technical committee 1: Information technology. It is a Technical Report.

The text of this Technical Report is based on the following documents:

Draft	Report on voting
JTC1-SC41/457/DTR	JTC1-SC41/465/RVDTR

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 Technical Report 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

The concept of use cases was introduced in the 1980s in system engineering by Ivar Jacobson [1][1] to enable the capture and specification of the requirements of a system, using textual, structural, and visual modelling techniques. The practice of providing use cases has been widely used at research level [2]. It has been nearly systematically used at standardization level as shown in the following examples:

– methodology for use cases from IEC 62559 [3], [4], [5];
– use cases in the ambient assisted living (AAL) domain [6];
– use cases in the big data domain [7], including three iterations from NIST [8], [9], [10];
– use cases in the IoT domain [11];
– use cases in the AI domain [12], including a companion standard on security and privacy [13];
– use cases in the digital twin domain [14];
– use cases in the blockchain domain [15];
– use cases on privacy-by-design in the consumer domain [16];

This document describes best practices for use case projects. It is structured as follows:

– Clause 5 provides an introduction on existing definitions (5.1), and specifies a conceptual model of use cases.
– Clause 6 explains the purpose of use case projects (6.1), and provides examples of use case projects (6.2).
– Clause 7 explains the purpose of use case templates (7.1), providing a conceptual model of a use case template (7.2), and describing the content of a template: description blocks, predefined fields, instructions, and samples (7.3).
– Clause 8 explains the purpose of use case project plans (8.1), covering the use case initiative governance process (8.2), the template development process (8.3), the template maintenance process (8.4), the use case development process (8.5), and the use case maintenance process (8.6).
– Annex A provides examples of use case projects on IoT (Clause A.2), digital twins (Clause A.3), artificial intelligence (Clause A.4), and privacy for consumer goods and services (Clause A.5).

Figure 1 to Figure 9 use the Unified Modelling Language (UML) diagrams notation.

[1] Numbers in square brackets refer to the Bibliography.

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1 Scope

This document describes best practices for use case projects in terms of projects, templates and plans, with the objective to improve the consistency of content across different use case projects and enable sharing of knowledge between projects. A long-term goal is to foster interoperability between tools supporting the collection and maintenance of use cases.

This document is intended for developers of use case projects, including in the context of standardization.

The document can be used to complement existing methodology standards such as IEC 62559 [3], [4], [5].

2 Normative references

There are no normative references in this document.