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

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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references	6
3 Terms and definitions	6
4 Abbreviated terms	7
5 Use cases	7
5.1 General.....	7
5.2 Conceptual model of a use case	8
6 Use case projects	9
6.1 Purpose	9
6.2 Examples of use case projects.....	9
6.2.1 Study project	9
6.2.2 Guidance project	9
6.2.3 Business project.....	10
6.2.4 Business expectation project	10
6.2.5 System project.....	11
7 Use case templates	12
7.1 Purpose	12
7.2 Conceptual model of use case template.....	12
7.3 Template description.....	13
7.3.1 Overall structure	13
7.3.2 Description blocks	14
7.3.3 Predefined fields.....	15
7.3.4 Instructions.....	16
7.3.5 Samples	16
8 Use case project plans	19
8.1 Purpose	19
8.2 Use case initiative governance process	20
8.3 Template development process.....	20
8.4 Template maintenance process.....	21
8.5 Use case development process.....	22
8.6 Use case maintenance process.....	22
Annex A (informative) Examples of use case projects	24
A.1 Overview.....	24
A.2 IoT.....	25
A.3 Digital twins	26
A.4 Artificial intelligence.....	28
A.5 Privacy of consumer goods and services	29
Bibliography.....	31
Figure 1 – Conceptual model of use case	8
Figure 2 – Purpose of study use case	9
Figure 3 – Purpose of guidance use case	10
Figure 4 – Purpose of business case	10

Figure 5 – Purpose of expectation use case..... 11

Figure 6 – Purpose of system use case 11

Figure 7 – Conceptual model of system use case 12

Figure 8 – Conceptual model of a use case template 13

Figure 9 – Structure of use case template 14

Figure 10 – Description block example..... 14

Figure 11 – Categorized description block example 15

Figure 12 – Structure of a sample 17

Figure A.1 – Rationale for a repository of use cases 24

Table 1 – Examples of definitions of the concept of use case in standards.....8

Table 2 – Examples of vocabulary 13

Table 3 – Examples of predefined fields..... 16

Table 4 – Examples of instructions 16

Table 5 – Examples of free text 17

Table 6 – Examples of well-formed sentences 18

Table 7 – Example of machine-readable diagram..... 19

Table 8 – Use case initiative governance process 20

Table 9 – Template development process 21

Table 10 – Template maintenance process 22

Table 11 – Use case development process 22

Table 12 – Use case maintenance process 23

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FOREWORD

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

Draft	Report on voting
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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.

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

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.