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SYSTEMS REFERENCE DELIVERABLE

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Use case methodology – Part 4: Best practices in use case development for IEC standardization processes and some examples for application outside standardization

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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USE CASE METHODOLOGY –

Part 4: Best practices in use case development for IEC standardization processes and some examples for application outside standardization

FOREWORD

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IEC SRD 62559-4, which is a Systems Reference Deliverable, has been prepared by IEC systems committee Smart Energy.

The text of this Systems Reference Deliverable is based on the following documents:

Draft SRD	Report on voting
SyCSmartEnergy/105/DTS	SyCSmartEnergy/114/RVDTS

Full information on the voting for the approval of this Systems Reference Deliverable can be found in the report on voting indicated in the above table.

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

A list of all parts in the IEC 62559 series, published under the general title *Use case methodology*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

0.1 General

The IEC 62559 use case template and methodology evolved from work originally performed by the Electric Power Research Institute (EPRI) as part of the IntelliGrid program. The primary purpose of that effort was to develop descriptions of existing and future power systems and their functions and requirements. In the evolution of this effort, the value of use cases as a means to accurately and completely describe the requirements for these systems and functions was demonstrated. The use case template was contributed to the IEC and this became a Publicly Available Specification (IEC PAS 62559:2008). As the best practice of use cases evolved, IEC PAS 62559:2008 was cancelled and replaced by IEC 62559-2:2015 to reflect these updates.

This methodology was originally developed as part of the IntelliGrid Architecture developed by the Electrical Power Research Institute (EPRI) as a means to implement the “IntelliGrid vision” of the automated, self-healing, and efficient power system of the future. However, the aim of IEC 62559 has changed in such a way that it is now intended to describe a methodology which is generic enough to become applicable for all domains served by IEC or other standardization bodies.

Initially, IEC 62559 was dedicated to the smart grid domain, but with the introduction of systems committees within IEC’s organizational structure, the focus was widened to allow the use of the use case methodology also for other domains like active assisted living or smart cities. This document also explains how the generic methodology of IEC 62559 can be dedicated to a certain domain by complementary standards, e.g. the IEC 62913 series for smart energy [1], [2].

0.2 Objectives of this document

As defined by the IEC, the scope of IEC systems committees like Smart Energy (SyC SE), Active Assisted Living (SyC AAL) and others is to prepare and coordinate, in co-operation with IEC technical committees and subcommittees, the development of International Standards and other deliverables with emphasis on overall system aspects of technical systems and acceptable balance between cost and quality for the users of these technical systems.

While SyC SE's main focus is on standardization in the field of smart energy in order to provide systems level standardization, coordination and guidance in the areas of smart grid and smart energy, including interaction in the areas of heat and gas, SyC SE works also on methodology and tools to support the systems approach in standardization. In this regard, SyC SE has the aim to widely consult within the whole IEC community and the broader stakeholder community to provide overall systems level value, support and guidance to the TCs and other standards development groups, both inside and outside the IEC.

This document has therefore been developed to address the following objectives:

- To develop a standard methodology for determining and defining user requirements in a consistent and comprehensive manner. Standards often address only the technical issues that are included in technical specifications; however, it is just as vital to develop standards to assist users to clearly and comprehensively define their requirements.
- To clarify the distinction between “user requirements” (the “what” as needed by domain system experts) and “technical specifications” (the “how” as technical descriptions of systems, applications, and information flows to meet the “what”). Currently this distinction is an “invisible line” so that often the “what” and the “how” are mixed together – with technology-oriented project engineers jumping directly to the “how” without fully exploring the “what” with the domain system experts.

- To emphasize the critical need to determine all user requirements first, before any commitments are made on “how” to meet those requirements. Because automation and control systems are so complex and are becoming increasingly so, if all requirements are not clearly defined first, then the premature design of systems can block or seriously hinder meeting those requirements that were not initially recognized.
- To provide a means for testing the systems once implemented to ensure that the user requirements are truly met, regardless of what standards and technologies are ultimately incorporated by the vendors.

USE CASE METHODOLOGY –

Part 4: Best practices in use case development for IEC standardization processes and some examples for application outside standardization

1 Scope

This document specifies best practices for an entity to engage in a use cases redaction process to determine and describe their user requirements for systems, based on the business needs. It complements the information in IEC TR 62559-1, IEC 62559-2 [3] and IEC 62559-3 [4] by providing users with best practices in:

- use cases drafting process,
- determining the skill sets of the people required,
- use case repository management, and
- using use cases for IEC or enterprise projects.

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviated terms

3.1 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

3.1.1
use case
specification of a set of actions performed by a system, which yields an observable result that is, typically, of value for one or more actors or other stakeholders of the system

[SOURCE: ISO/IEC 19505-2:2012, 16.3.6]

3.1.2
business use case
use case that describes how business roles interact to execute a business process

Note 1 to entry: The business processes are derived from services, i.e. business transactions, which are needed to achieve different strategic goals for an organization; e.g. for the purpose of achieving specified and measurable results/products for internal or external customers.

Note 2 to entry: Business use cases are system agnostic.

[SOURCE: IEC TR 62559-1:2019, 3.8, modified – Note 2 to entry has been added.]