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SYSTEMS REFERENCE DELIVERABLE

colour inside

Smart city use case collection and analysis – City information modelling – Part 1: High-level analysis

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

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

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SMART CITY USE CASE COLLECTION AND ANALYSIS – CITY INFORMATION MODELLING –

Part 1: High-level analysis

FOREWORD

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IEC SRD 63273-1 has been prepared by IEC systems committee Smart Cities: Electrotechnical aspects of Smart Cities. It is a Systems Reference Deliverable.

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

Draft	Report on voting
SyCSmartCities/290/DTS	SyCSmartCities/299/RVDTS

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 Systems Reference Deliverable 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 ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC SRD 63273 series, published under the general title *Smart city use case collection and analysis – City information modelling*, can be found on the IEC website.

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

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- withdrawn,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

IMPORTANT – The "colour inside" logo on the cover page of this document 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

The IEC SRD 63273 series aims to scope out the requirements of city information modelling standards by collecting and analysing its use cases. Specifically, the IEC SRD 63273 series achieves the objectives of:

a) identifying the key application areas and stakeholders;

b) developing user stories and clarifying the relationship among these stakeholders;

c) collecting and analysing use cases of city information modelling; and

d) scoping out the requirements for city information modelling standards and providing recommendations to IEC regarding urban planning and management.

In this document, application areas refer to the deployment-oriented categories that focus on deploying city information modelling to fulfil a particular purpose.

The IEC SRD 63273 series provides useful information on understanding of city information modelling for standardization committees in IEC and other standards development organizations (SDOs) by:

1) promoting the collaboration and systems thinking regarding city information modelling standards;

2) contributing multiple domain-specific use cases for smart cities; and

3) supporting IEC in fostering the development of standards in the field of electrotechnology to help with the integration, interoperability, resiliency and effectiveness of city systems.

The IEC SRD 63273 series adopts a multi-step approach to generate and collect the use case of city information modelling.

Step I – High-level analysis: The first step aims to generate the list of application areas of city information modelling for a high-level analysis. Needs statements, objectives, current practices, gaps, and scenarios (rationale for applying city information modelling in a specific application area) are investigated for the description of each application area. In addition, the ecosystem, which includes the list of stakeholders and the relationship among the stakeholders, is examined in each application area before developing user stories and use cases.

Step II – User story: The second step aims to develop a list of significant user stories based on the corresponding application area. In each corresponding area, one user story is generated for one specific stakeholder which has been identified in Step I. Each user story follows the same template, which includes one stakeholder (as a specific type of user), a specific situation (when), a goal (I want to), and a reason (so that).

Step III – Use case: The third step aims to develop use cases for a specific application area according to the list of user stories that have been generated in Step II. One user story in Step II can be expanded to be at least one use case. The organization of use cases follows the IEC short use case template (IEC TR 62559-1:2019, IEC 62559-2:2015 and IEC 62559-3:2017), which includes the name of the use case, scope/objective, narrative and list of actors.

Step IV – Use case database establishment and integrative analysis: This step is to establish the use case database of city information modelling and conduct integrative analysis of these use cases.

Step V – City information modelling standard gaps and requirements: This last step is to identify the standard gaps for city information modelling and requirements of the family of city information modelling standards.

The IEC SRD 63273 series contains two parts:

- IEC SRD 63273-1, Smart city use case collection and analysis – City information modelling – Part 1: High-level analysis
- IEC SRD 63273-2, Smart city use case collection and analysis – City information modelling – Part 2: Use case analysis

The scopes of the two parts are defined below.

Part 1 explains how the work of city information modelling use case collection and analysis address sustainable development goals, provides a brief overview of city information modelling, and identifies the key application areas and stakeholders of city information modelling.

Part 2 develops the list of user stories and the database of use cases, conducts integrative analysis of the use cases, scopes out the requirements of city information modelling standards and provides recommendations for IEC and other standards development organizations (SDOs) regarding urban planning and management.

In addition, according to the up-to-date understanding, urban digital twins are also used for describing such technology and solution for smart cities. Urban digital twins indicate the digital twins at the urban scale to enable transformation in how cities are planned, built and managed to deliver better services to make the urban environment more liveable, inclusive, safe, resilient and sustainable. Therefore, the application areas, stakeholders, user stories and use cases of city information modelling, which are identified and developed in the IEC SRD 63273 series, are also applied to urban digital twins to a great extent.

SMART CITY USE CASE COLLECTION AND ANALYSIS – CITY INFORMATION MODELLING –

Part 1: High-level analysis

1 Scope

This part of IEC SRD 63273 explains how the work of city information modelling use case collection and analysis address sustainable development goals, provides a brief overview of city information modelling, identifies the key application areas of city information modelling, and determines the stakeholders and the relationships among them in these application areas.

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
city information modelling
CIM
development of digital representations and simulations of a city made up of large quantities of geospatial data, often including real-time data, which enable better city planning and management

Note 1 to entry: The geospatial data are provided using an integration of building information modelling (BIM) and geographic information systems (GIS).

Note 2 to entry: The real-time data are obtained through extensive use of IoT sensors within the city.

Note 3 to entry: City information modelling involves handling large amounts of big data, which are generally brought together using cloud computing.

Note 4 to entry: Artificial intelligence is often used to generate and evaluate different scenarios using city information modelling data to help manage the city better.

3.1.2
stakeholder
individual, team, organization (IEV 831-01-14), or classes thereof, having an interest in a system (IEV 831-01-21)

Note 1 to entry: Usually a stakeholder can affect or is affected by the organization or the activity.

[SOURCE: IEC 60050-741:2020, 741-01-30, modified – The original Note 1 to entry has been replaced.]