



**International
Standard**

ISO 37176

**Smart community infrastructure —
Responsiveness assessment and
maturity model**

*Infrastructures urbaines intelligentes — Evaluation de la
conformité et modèle de maturité*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 268, *Sustainable cities and communities*, Subcommittee SC 1, *Smart community infrastructures*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Residents play the leading role in the long-term development of communities. With the rapid development of information technology (IT), the satisfaction of individuals' needs matters most in the long-term development of communities. Only when the needs of residents are fully and rapidly met can people's quality of life be truly improved. For such a process, the rapid response from the community to the residents is an essential component to measure the residents' satisfaction with the community, which makes new demands on the responsiveness of the community infrastructure.

ISO 37153 describes a community infrastructure maturity model (CIMM) and a standardized approach for the assessment and improvement using the CIMM. However, ISO 37153 assesses the community infrastructure, which does not focus on the importance of the interaction between residents and community. At the same time, responsiveness is an important quality of community infrastructure, which has not been focused on in existing standards.

This document describes a maturity assessment model for the responsiveness of community infrastructure to measure whether the localised infrastructure is sufficiently adaptable to support changing needs. The maturity assessment model takes into consideration the assessment domain and assessment categories to evaluate the responsiveness of the community infrastructure. In this way, the degree of community responsiveness can be known and used to promote the building of a more responsive community. The community can make a rapid response to the residents' needs by the agile responsiveness of the community infrastructure. The essence of achieving the responsiveness of the community is to enhance the interaction between the residents and the community.

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Smart community infrastructure — Responsiveness assessment and maturity model

1 Scope

This document describes a maturity assessment model to evaluate the degree of responsiveness of the smart community infrastructure with different maturity levels.

This document provides the assessment domain (e.g. governance infrastructure, health infrastructure), categories (e.g. availability, affordability, safety and security, quality of service), and the criteria of maturity levels to assess the responsiveness to promote the interaction between the residents and the community by satisfying residents' needs.

This document:

- clarifies the assessment domain associated with residents' needs in the community;
- provides users with standardized assessment categories to measure the degree of responsiveness of the smart community infrastructure.

This document is intended to be used by providers and operators of community infrastructure, community planners and government decision-makers.

This document applies to all types of communities, regardless of their geographical location and size.

2 Normative references

There are no normative references in this document.

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3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

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

3.1

community

group of people with an arrangement of responsibilities, activities and relationships

Note 1 to entry: In many, but not all, contexts, a community has a defined geographical boundary.

Note 2 to entry: A city is a type of community.

[SOURCE: ISO 37100:2016, 3.2.2]

3.2

responsive community infrastructure

community infrastructure that is built for making rapid and effective responses to residents' increasingly diversified needs

3.3

maturity model

model derived from one or more specified process assessment model(s) that identifies the process sets associated with the levels in a specified scale of organizational process maturity

Note 1 to entry: The maturity model for the VSE profiles is defined in ISO/IEC/TR 29110-3-1:2015, Annex A.

[SOURCE: ISO/IEC 33001:2015, 3.3.7, modified — Note 1 to entry has been added]

3.4

community infrastructure maturity model

CIMM

maturity model applied to community infrastructure, which defines maturity levels in order to assess the level of maturity of community infrastructure

[SOURCE: ISO 37153:2024, 3.5]

3.5

process

series of actions or events taking place in a defined manner leading to the accomplishment of an expected result

Note 1 to entry: “Defined” in this context does not necessarily mean documented. A defined process includes, but is not limited to, adaptive means.

[SOURCE: ISO/IEC 15944-1:2011, 3.53, modified — Note 1 to entry has been added]

4 Framework

Users include people or citizens of the community and industry or enterprises. People or citizens of the community are one of the major users of community infrastructures. Industries or enterprises which have or plan to have activities in the community are another major type of users of community infrastructures. Therefore, their perspectives are essential to identify community infrastructure performance metrics. Users should follow a concrete process to assess the maturity of the community infrastructure. Faced with residents' various needs, the requirements for community infrastructure are growing. The community infrastructure should be equipped with responsive characteristics to make a rapid and effective response to residents. Therefore, the inherent characteristics are utilized to assess the responsiveness maturity of the community infrastructure. Five different levels which represent different responsiveness levels are assigned to community infrastructure. [Figure 1](#) shows the whole process of the maturity model.

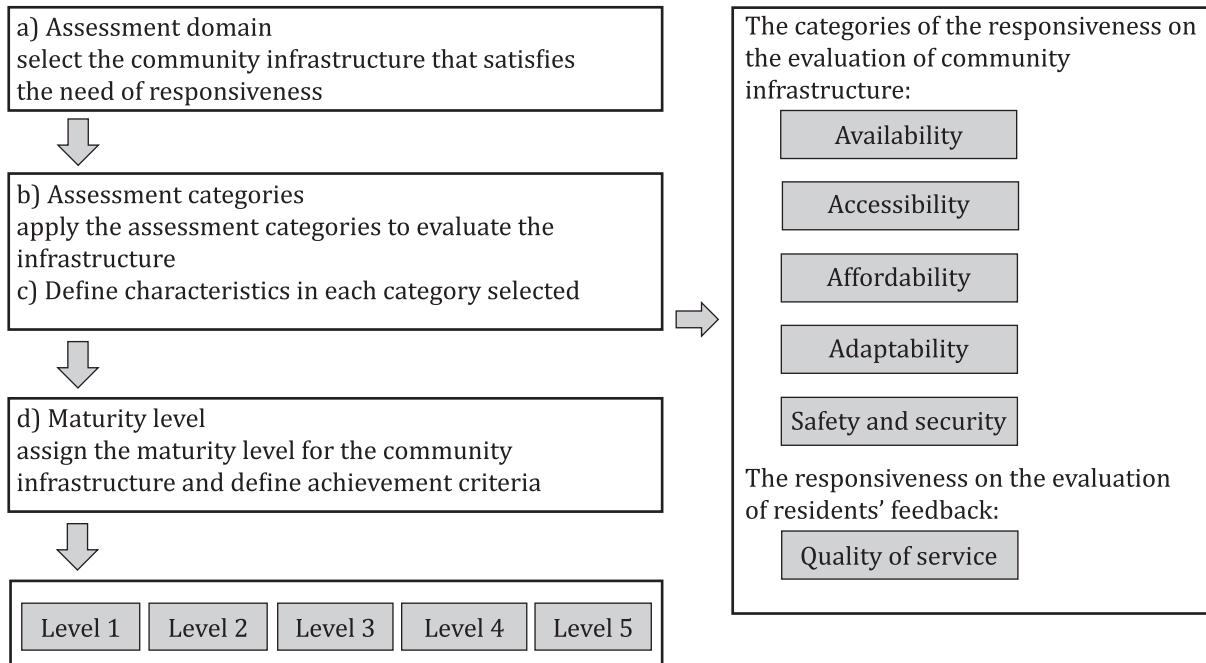


Figure 1 — Framework of the responsiveness assessment and maturity model for community infrastructure

5 Assessment categories

5.1 General

Users should follow the concrete assessment categories to measure the maturity level of the community infrastructure, and the descriptions of each category are essential.

To assess the responsiveness of the community infrastructure by assessment categories, users should:

- comprehensively consider seven categories of the community infrastructure, including the availability, accessibility, affordability, the safety and security, the quality of service and adaptability;
- evaluate the responsiveness of the community infrastructure by assessing these seven categories on each community infrastructure.

5.2 Definition of the assessment categories

Assessment categories refer to concrete indicators that are used to comprehensively measure the responsiveness of the community infrastructure. Users should define five assessment categories of the maturity model for each assessment domain on its attribute. Each requirement for the community infrastructure can be divided into six categories to measure the responsiveness of the community infrastructure.

The assessment categories for each assessment domain are shown in [Table 1](#).

Table 1 — Assessment categories for each assessment domain in maturity model

| Domain | Categories | Relevant supporting documents |
|---------------------------|---------------------|--|
| Governance infrastructure | Availability | <ul style="list-style-type: none"> — ISO 37120, ISO 37122 and ISO 37123 provide guidance on how to evaluate the indicators of governance. — ISO 37151 provides guidance on evaluating the availability for residents, including temporal coverage, area coverage, population coverage and stability. |
| | Accessibility | <ul style="list-style-type: none"> — ISO 37120, ISO 37122 and ISO 37123 provide guidance on how to evaluate the indicators of governance. — ISO 37151 provides guidance on evaluating the capability of being accessed and used by a wide range of people. |
| | Affordability | <ul style="list-style-type: none"> — ISO 37120, ISO 37122 and ISO 37123 provide guidance on how to evaluate the indicators of governance. — ISO 37151 provides guidance on evaluating the cost of the infrastructure on governance. |
| | Safety and security | <ul style="list-style-type: none"> — ISO 37120, ISO 37122 and ISO 37123 provide guidance on how to evaluate the indicators of governance. — ISO 37151 provides guidance on evaluating the safety, cyber security and data privacy, and physical security. |
| | Quality of service | <ul style="list-style-type: none"> — ISO 37120, ISO 37122 and ISO 37123 provide guidance on how to evaluate the indicators of governance. — ISO 37151 provides guidance on evaluating the service capacity, easy procedures to understand and use, proper invoicing, community infrastructure-specific qualities and the provision of information. |
| | Adaptability | <ul style="list-style-type: none"> — ISO 37120, ISO 37122 and ISO 37123 provide guidance on how to evaluate the indicators of governance. — ISO 20887 provides guidance on evaluating the capability of adapting to changing needs. |
| Health infrastructure | Availability | <ul style="list-style-type: none"> — ISO 37120, ISO 37122 and ISO 37123 provide guidance on how to evaluate the indicators of health. — ISO 37151 provides guidance on evaluating the availability for residents, including temporal coverage, area coverage, population coverage and stability. |
| | Accessibility | <ul style="list-style-type: none"> — ISO 37120, ISO 37122 and ISO 37123 provide guidance on how to evaluate the indicators of health. — ISO 37151 provides guidance on evaluating the capability of being accessed and used by a wide range of people. |
| | Affordability | <ul style="list-style-type: none"> — ISO 37120, ISO 37122 and ISO 37123 provide guidance on how to evaluate the indicators of health. — ISO 37151 provides guidance on evaluating the cost on the infrastructure on health. |
| | Safety and security | <ul style="list-style-type: none"> — ISO 37120, ISO 37122 and ISO 37123 provide guidance on how to evaluate the indicators of health. — ISO 37151 provides guidance on evaluating the safety, cyber security and data privacy, and physical security. |
| | Quality of service | <ul style="list-style-type: none"> — ISO 37120, ISO 37122 and ISO 37123 provide guidance on how to evaluate the indicators of health. — ISO 37151 provides guidance on evaluating the service capacity, easy procedure to understand and use, proper invoicing, community infrastructure-specific qualities and provision of information. |
| | Adaptability | <ul style="list-style-type: none"> — ISO 37120, ISO 37122 and ISO 37123 provide guidance on how to evaluate the indicators of health. — ISO 20887 provides guidance on evaluating the capability of adapting to changing needs. |

NOTE The categories of availability, accessibility, affordability, safety and security, and quality of service refer to ISO 37151. The category of adaptability refers to ISO 20887.