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SYSTEMS REFERENCE DELIVERABLE

colour inside

Smart city standards inventory and mapping – Part 4: Guidance on standards for public health emergencies

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SMART CITY STANDARDS INVENTORY AND MAPPING –

Part 4: Guidance on standards for public health emergencies

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This document contains an attached file that is cited in Clause 4. This file can be downloaded from https://www.iec.ch/sycsmartcities/supportingdocuments.

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

Draft	Report on voting
SyCSmartCities/318/DTS	SyCSmartCities/330/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 63233 series, published under the general title *Smart city standards inventory and mapping*, 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- withdrawn, or
- revised.

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INTRODUCTION

Public health emergencies (PHE) refer to major infectious disease outbreaks, mass diseases of unknown causes, major food and occupational poisonings, and other events that seriously affect public health that occur suddenly and cause or can cause serious damage to public health. The International Health Regulations came into force in 2007 to manage global health emergency measures. The purpose and scope of the "Regulations" is to prevent, resist and control the international spread of diseases, and to provide public health response measures in an appropriate way to address public health risks while avoiding unnecessary interference with international traffic and trade. At 20:30 local time on 30 January 2020, World Health Organization (WHO) Director-General Tan Desai announced in Geneva that a new coronavirus pneumonia epidemic constituted a "PHEIC" (Public Health Emergency of International Concern). This PHEIC impacted each aspect of cities and each person's life all over the world. Cities including managers and citizens took necessary actions to protect life and health and tried to carry on normal life and work. In this process, standards played an important role.

This document gives guidance on identifying and mapping standards for public health emergencies following the methodology of IEC SRD 63233-1:2022.

A database with structured PHE relevant standards (see 4.2) is given for easy view by users for epidemic prevention and control of public health emergencies, deployment of medical facilities and equipment and maintaining city service continuity. The PHE standard catalogue structure is aligned with that in IEC SRD 63233-2:2023.

SMART CITY STANDARDS INVENTORY AND MAPPING –

Part 4: Guidance on standards for public health emergencies

1 Scope

This part of IEC SRD 63233 provides guidance on public health emergencies (PHE) standards inventory and mapping following the methodology in IEC SRD 63233-1. It guides the identification and categorization of relevant standards for epidemic prevention and control, and a database with catalogued standards is also given for easy use by cities.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC SRD 63233-1:2022, *Smart city standards inventory and mapping – Part 1: Methodology*

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:

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

3.1
event
occurrence or change of a particular set of circumstances

Note 1 to entry: An event can be one or more occurrences, and can have several causes and several consequences.

Note 2 to entry: An event can also be something that is expected which does not happen, or something that is not expected which does happen.

Note 3 to entry: An event can be a risk source.

[SOURCE: ISO 31000:2018, 3.5]

3.2
emergency
sudden, urgent, usually unexpected occurrence or event requiring immediate action

Note 1 to entry: An emergency is usually a disruption or condition that can often be anticipated or prepared for, but seldom exactly foreseen.

[SOURCE: ISO 22300:2021, 3.1.87]

3.3
emergency management
overall approach for preventing emergencies and managing those that occur

Note 1 to entry: In general, emergency management utilizes a risk management approach to prevention, preparedness, response, and recovery before, during and after potentially destabilizing events and/or disruptions.

[SOURCE: ISO 22300:2021, 3.1.88]

3.4
facility
plant, machinery, property, building, transportation units at sea/land/airport, and other items of infrastructure or plant and related systems that have a distinct and quantifiable business function of service

Note 1 to entry: A facility can have formal boundaries as defined by, for example, legislation.

[SOURCE: ISO 22300:2021, 3.1.105]

4 PHE standards inventory

4.1 Standards identification

4.1.1 Guiding principles

Public health emergencies are not the norm in cities and have significant specificity, but they impact nearly all systems in a city. For identifying standards relevant to PHE, the following two principles are considered: one is derived from consideration of the time-dimension as city evolution and another is concerned with PHE stakeholders.

– Principle 1: Covering life cycle of PHE and individual infection

  As a class of emergencies, public health emergencies follow the life cycle of events from occurrence to development to recovery. Responding to and handling events can also be divided into prevention, preparation, response, and recovery stages accordingly. Individual infection also has an evolutionary life cycle, usually mainly for prevention; if exposed to the virus, it will go through various stages from infection to recovery. Therefore, when developing PHE standards, it is important to consider the time principle of the life cycle. Not only the occurrence, development and recovery cycle of public health emergencies, but also the cycle from individual infection to recovery shall be considered.

– Principle 2: PHE management involving stakeholders and their activities

  Public health emergencies involve public safety and need response and disposition from the city government, hospitals, other organizations, and individuals. Furthermore, good management of public health emergencies involves smart elements such as data and supporting technologies and their interoperability.

A basic structure for PHE standards inventory (Figure 1) can be derived from these two principles, which will be used in 4.1.3.

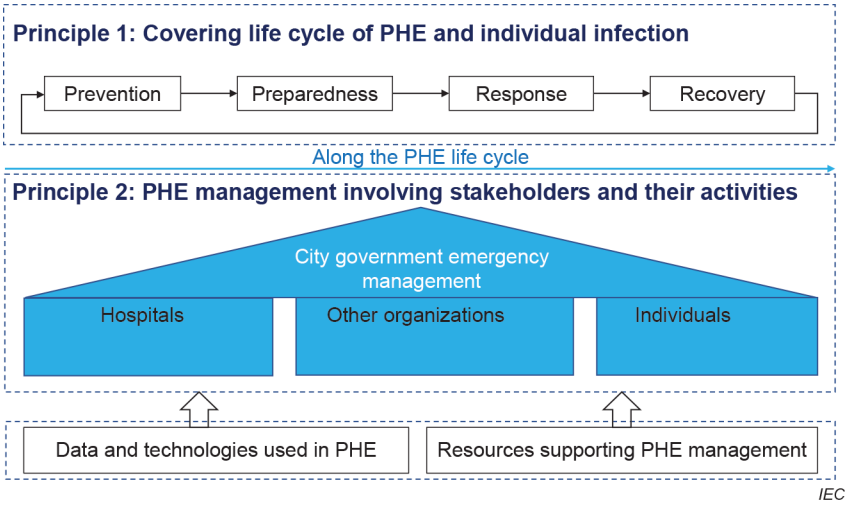

Figure 1 – A basic structure for PHE standards inventory

4.1.2 Criteria for PHE standards

PHE is categorized in the public safety system in a city. According to the criteria for smart city standards in 5.1.2 of IEC SRD 63233-1:2022, those standards supporting PHE response and disposition should be included in PHE standards, and the standards included in 5.1.2 c) "Smart city cross boundary service exchange standards" and relevant to PHE will be specifically identified as PHE standards.

4.1.3 Using given methods to identify PHE standards

Both methods in 5.1.3 and 5.1.4 of IEC SRD 63233-1:2022 are used for identifying PHE standards.

Based on Figure 1, Table A.1 and Table A.2 in Annex A are organized for identifying standards related to PHE using correlation analysis method.

PHEs impact nearly all systems in a city which facilitate the use case based method in 5.1.4 of IEC SRD 63233-1:2022 used for standards identification. In the IEC SRD 63347 series, ISO/TR 37112, IEC SRD 63273-1 and projects from IEC SyC AAL and ISO/IEC JTC 1 that are under development for or relevant to PHE, use cases for management of PHE are collected and analysed. These use cases include

– "foreseeing and preventing contagion network",
– "public health emergency management supported by a health code system",
– "using RPA (robotic process automation) technology to assist reporting in public health emergency management",
– "New York: assessment of the situation, including forecasts",
– "emergency support system and seamless service using sensor",
– "applying CIM (city information modelling) in emergency management and rescue",
– "public health emergency scenario", and
– use cases for PHEs data model.

From these use cases, the stakeholders who will retrieve standards related to PHE and their activities are identified in scenarios of PHE in Table 1. With the stakeholders' concerns, standardization aspects can be derived.

Table 1 – Stakeholders and their activities, concerns, and standardization areas

Stakeholder	Activities	Concerns	Standardization areas
Citizen	Reside in a city. Live in a community. Own health code. Take public transport. Drive private transport. Take infectious disease testing. Inquire about testing result. Work in an organization. Study at or graduate from a school, university or college. Eat at a restaurant, café or canteen.	Safe and secure living space	Effective health and safety guarantee policies and individual protection guidance
Visitor	Travel from a city to another city.	Whether a public health event occurred in the passing area or there are confirmed cases	Local mutual recognition of individual health information and individual privacy protection.
Isolated individual	Isolate in a hotel or community.	Basic living security and the time required for isolation	Privacy protection, external communication, and other issues
Patient	Has disease. Has disease symptom. See doctor at a clinic or hospital. Be hospitalized. Take medicine. Take medical examination. Take medical operation. Schedule a medical appointment. Use medical insurance. Pay medical bills.	Treatment effect and cost	The treatment process from illness to recovery
Government	Manage subordinate organizations. Provide government services. Publish law, policy or measure.	Comprehensive ability to respond to emergencies	The government's emergency management capacity and the coordinated management between different regions