

Recommendation

ITU-T Y.4233 (01/2025)

SERIES Y: Global information infrastructure, Internet protocol aspects, next-generation networks, Internet of Things and smart cities

Internet of things and smart cities and communities –
Requirements and use cases

**Information and communication technology
implementation framework for smart public
health emergency management in smart and
sustainable cities**

ITU-T Y-SERIES RECOMMENDATIONS

Global information infrastructure, Internet protocol aspects, next-generation networks, Internet of Things and smart cities

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Recommendation ITU-T Y.4233

Information and communication technology implementation framework for smart public health emergency management in smart and sustainable cities

Summary

Recommendation ITU-T Y.4233 specifies the information and communication technology (ICT) implementation framework of smart public health management in smart and sustainable cities (SSCs).

SSCs are capable of fostering data-driven smart applications to manage limited resources and implement them to thwart the advent of future pandemics of a similar magnitude to the COVID-19 pandemic. Linking SSCs with public health frameworks to manage future pandemics and epidemics and to the attainment of the Sustainable Development Goals (SDGs) (SDG 3: Global health, SDG 1: Poverty eradication and SDG 11: Make cities inclusive, safe, resilient, and sustainable), and to the Sendai Framework for Disaster Risk Reduction is a challenge and serves a dual purpose. With the utilization of appropriate emergency communication and public health frameworks, it will become easier to develop models to predict the spread of diseases, ascertain the source of illnesses, coordinate lockdowns, detect and report symptoms, identify viral strains and provide remote assistance as required with limited human interaction, through an infrastructure based on the Internet of things.

This Recommendation is based on the U4SSC report entitled "Smart public health emergency management and ICT implementations" (listed as U4SSC-2 in the bibliography) and its structure is as follows: it starts with an analysis of the public health context and of corresponding frameworks and returns a generic public health framework, which specifies a pandemic's lifecycle. This generic framework is then interconnected with the SSC and with city resilience. Further, it depicts with unified modelling language (UML) diagrams how this framework can be executed within the SSC environment and highlights the SSC components that play a role in this execution.

History*

Edition	Recommendation	Approval	Study Group	Unique ID
1.0	ITU-T Y.4233	2025-01-15	20	11.1002/1000/16028

Keywords

Emergency management framework, ICT implementation framework, information communication technology, pandemics, smart public health, smart sustainable cities.

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The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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Recommendation ITU-T Y.4233

Information and communication technology implementation framework for smart public health emergency management in smart and sustainable cities

1 Scope

This Recommendation introduces an ICT implementation framework for public health emergency management within the smart city ecosystem. It explores the context of public health and associates it with the city environment. The result is a generic public health framework, which can be supported in terms of information and communication technology (ICT) implementation by smart sustainable city (SSC) technologies (e.g., Internet of things (IoT), artificial intelligence (AI), data, apps and platforms), to deal with public health emergencies and to provide early responses to epidemics and pandemics. It then concludes with a smart public health framework, which is applied in the SSC, defining a pandemic's lifecycle and specifying when epidemic surveillance tools should be applied for dealing with the outbreaks.

The scope of this Recommendation includes:

- Introduction to public health and corresponding terminology;
- An analysis of the public health background;
- Association of public health with SSC and city resilience;
- Smart public health emergency management framework in SSCs;
- SSC components that are necessary for the smart public health framework.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T Y.4201] Recommendation ITU-T Y.4201 (2018), *High-level requirements and reference framework of smart city platforms*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 city [b-ITU-T Y.4900]: An urban geographical area with one (or several) local government and planning authorities.

3.1.2 city platform [ITU-T Y.4201]: A computer system or integration of computer systems that uses information and communication technologies (ICTs) to access data sources and process them to offer urban operation and services to the city.

3.1.3 Internet of things (IoT) [b-ITU-T Y.4000]: A global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies.

