

Recommendation

ITU-T Y.4226 (08/2024)

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

Functional framework and requirements for disaster monitoring systems

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

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Recommendation ITU-T Y.4226

Functional framework and requirements for disaster monitoring systems

Summary

Recommendation ITU-T Y.4226 provides an overview of a disaster monitoring system (DMS) for Smart Sustainable Cities (SSC) and identifies requirements and functional framework of the DMS.

History *

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Introduction

Smart sustainable cities (SSCs) aim at improving the quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that cities can meet the needs of present and future generations with respect to economic, social and environmental aspects. However, there are still great challenges faced by SSCs, such as disasters. Monitoring and responding to disasters in a timely manner is of great significance to the reduction of casualties and economic losses.

Disaster monitoring system (DMS) for SSCs is designed to support smart city platform (SCP) by the discovery of suitable sensor(s) from a set of registered sensors with distinct sensing capabilities. It also provides the list of sensors discovered to SCP, which will conduct collaborative monitoring for disasters.

Recommendation ITU-T Y.4226

Functional framework and requirements for disaster monitoring systems

1 Scope

This Recommendation identifies requirements and functional framework of disaster monitoring system (DMS) for SSCs.

In particular, the scope of this Recommendation includes:

- Overview of the DMS for SSCs;
- Requirements of DMS for SSCs;
- Functional framework of DMS for SSCs.

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.4200] Recommendation ITU-T Y.4200 (2018), *Requirements for the interoperability of smart city platforms*.
- [ITU-T Y.4201] Recommendation ITU-T Y.4201 (2018), *High-level requirements and reference framework of smart city platforms*.
- [ITU-T Y.4216] Recommendation ITU-T Y.4216 (2022), *Requirements of sensing and data collection system for city infrastructure*.
- [ITU-T Y.4705] Recommendation ITU-T Y.4705 (2024), *Metadata model of sensing capability for disaster monitoring systems*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 sensor [b-ITU-T Y.4105]: An electronic device that senses a physical condition or chemical compound and delivers an electronic signal proportional to the observed characteristic.

3.1.2 sensing and data collection system [ITU-T Y.4216]: A system that monitors the status and collects information on different kinds of city infrastructures, controls and manages the sensing devices attached to those city infrastructures and provide corresponding information to the smart city platform (SCP).

NOTE – The corresponding information includes sensed information and information about the sensor itself.

3.1.3 smart city platform (SCP) [ITU-T Y.4201]: A city platform that offers direct integration of city platforms and systems, or through open interfaces between city platforms and third parties, in order to offer urban operation and services supporting the functioning of city services, as well as efficiency, performance, security and scalability.



3.1.4 sensor network [b-ITU-T Y.4105]: A network comprised of interconnected sensor nodes exchanging sensed data by wired or wireless communication.

3.1.5 smart sustainable city [b-ITU-T Y.4900]: A smart sustainable city is an innovative city that uses information and communication technologies and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social, cultural and environmental aspects.

3.1.6 thing [b-ITU-T Y.4000]: With regard to the Internet of things, this is an object of the physical world (physical things) or the information world (virtual things), which is capable of being identified and integrated into communication networks.

3.2 Terms defined in this Recommendation

This Recommendation defines or uses the following terms:

3.2.1 disaster monitoring system (DMS): A collaborative monitoring scheme for disaster monitoring that is composed by registering sensors with different sensing capabilities, discovering appropriate sensors from a set of registered sensors, and aggregating all or part of the appropriate sensors.

3.2.2 disaster representation: Digital representation of disaster.

3.2.3 sensing capability: The ability of a sensor to perceive a specific characteristic of a physical thing.

3.2.4 sensing capability representation: Digital representation of the sensing capability of a sensor.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

DMS	Disaster Monitoring System
DRS	Disaster-Related Sensor
GF	General Function
LGF	List Generation Function
MF	Match Function
RF	Registry Function
SCP	Smart City Platform
SDCS	Sensing and Data Collection System
SSC	Smart Sustainable City

5 Conventions

In this Recommendation:

- The expression "is required" indicates a requirement which must be strictly followed and from which no deviation is permitted if conformance to this Recommendation is to be claimed.
- The expression "is recommended" indicates a requirement which is recommended but which is not absolutely required. Thus, this requirement need not be present to claim conformance with this Recommendation.