

Recommendation

ITU-T Y.4222 (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

Framework of smart evacuation in a disaster or emergency in smart cities and communities

ITU-T Y-SERIES RECOMMENDATIONS

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

GLOBAL INFORMATION INFRASTRUCTURE	Y.100-Y.999
INTERNET PROTOCOL ASPECTS	Y.1000-Y.1999
NEXT GENERATION NETWORKS	Y.2000-Y.2999
FUTURE NETWORKS	Y.3000-Y.3499
CLOUD COMPUTING	Y.3500-Y.3599
BIG DATA	Y.3600-Y.3799
QUANTUM KEY DISTRIBUTION NETWORKS	Y.3800-Y.3999
INTERNET OF THINGS AND SMART CITIES AND COMMUNITIES	Y.4000-Y.4999
General	Y.4000-Y.4049
Definitions and terminologies	Y.4050-Y.4099
Requirements and use cases	Y.4100-Y.4249
Infrastructure, connectivity and networks	Y.4250-Y.4399
Frameworks, architectures and protocols	Y.4400-Y.4549
Services, applications, computation and data processing	Y.4550-Y.4699
Management, control and performance	Y.4700-Y.4799
Identification and security	Y.4800-Y.4899
Evaluation and assessment	Y.4900-Y.4999

For further details, please refer to the list of ITU-T Recommendations.

Recommendation ITU-T Y.4222

Framework of smart evacuation in a disaster or emergency in smart cities and communities

Summary

Smart evacuation facilitates effective and efficient solutions for people inside a disaster or emergency zone and for people that need to enter such a zone as part of the response. Internet of things (IoT) and smart cities and communities could be used to provide smart evacuation during a disaster or an emergency.

Recommendation ITU-T Y.4222 describes concepts and features of smart evacuation control in disaster and emergency situations. It identifies high-level requirements and information and communication technology (ICT) infrastructure for smart evacuation and provides with use cases in disaster and emergency situations.

The introduction of a smart evacuation service will allow the maintenance of the level of comfort for the population achieved in a smart city even in the event of an emergency. This is fundamental to justify the enormous material costs for the rapid development of smart cities around the world against the background of emergencies that have become more frequent globally.

History*

Edition	Recommendation	Approval	Study Group	Unique ID
1.0	ITU-T Y.4222	2025-01-15	20	11.1002/1000/15476

Keywords

Disaster, emergency, intelligent sustainable buildings, Internet of things, IoT, safety systems, SCN, sensor control network, smart cities and communities, smart evacuation.

* To access the Recommendation, type the URL <https://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, and information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

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.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents/software copyrights, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the appropriate ITU-T databases available via the ITU-T website at <https://www.itu.int/ITU-T/ipr/>.

© ITU 2025

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

Table of Contents

		Page
1	Scope	1
2	References.....	1
3	Definitions	1
	3.1 Terms defined elsewhere	1
	3.2 Terms defined in this Recommendation.....	2
4	Abbreviations and acronyms	2
5	Conventions	2
6	Introduction of smart evacuation in a disaster or an emergency situation in the context of smart cities and communities (SC&C)	3
	6.1 The different phases of a disaster or emergency	3
	6.2 Concepts and features of smart evacuation	4
7	High-level requirements for smart evacuation	6
8	ICT infrastructure for smart evacuation	7
	Appendix I – Use cases of smart evacuation in different disaster and emergency situations..	8
	I.1 Emergency inside a building	8
	I.2 Emergency outside a building	8
	Bibliography.....	10

