

Recommendation

ITU-T F.760.3 (03/2025)

SERIES F: Non-telephone telecommunication services

Multimedia services

Metadata for disaster information presentation with human factors

ITU-T F-SERIES RECOMMENDATIONS
Non-telephone telecommunication services

TELEGRAPH SERVICE	F.1-F.109
Operating methods for the international public telegram service	F.1-F.19
The gentex network	F.20-F.29
Message switching	F.30-F.39
The international telemesssage service	F.40-F.58
The international telex service	F.59-F.89
Statistics and publications on international telegraph services	F.90-F.99
Scheduled and leased communication services	F.100-F.104
Phototelegraph service	F.105-F.109
MOBILE SERVICE	F.110-F.159
Mobile services and multideestination satellite services	F.110-F.159
TELEMATIC SERVICES	F.160-F.399
Public facsimile service	F.160-F.199
Teletex service	F.200-F.299
Videotex service	F.300-F.349
General provisions for telematic services	F.350-F.399
MESSAGE HANDLING SERVICES	F.400-F.499
DIRECTORY SERVICES	F.500-F.549
DOCUMENT COMMUNICATION	F.550-F.599
Document communication	F.550-F.579
Programming communication interfaces	F.580-F.599
DATA TRANSMISSION SERVICES	F.600-F.699
MULTIMEDIA SERVICES	F.700-F.799
ISDN SERVICES	F.800-F.849
UNIVERSAL PERSONAL TELECOMMUNICATION	F.850-F.899
ACCESSIBILITY AND HUMAN FACTORS	F.900-F.999

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

Recommendation ITU-T F.760.3

Metadata for disaster information presentation with human factors

Summary

Recommendation ITU-T F.760.3 specifies metadata for presenting disaster information (MDI), encompassing both natural and social disaster information. It defines the metadata elements and data types required to deliver disaster information-based services, incorporating human factors to enhance the effectiveness of information presentation.

The disaster classification system is divided into natural and social disaster systems depending on the cause of the disaster. Natural disasters are again largely classified into 5 categories, including weather, sluice, climate, geology, and astronomical phenomena, and each category is further classified into subcategories, and metadata for a total of 21 types of disasters is defined. Non-natural disasters are again largely classified into 10 categories, including fire, explosion, collapse, traffic, chemical/biological/radiological, environmental pollution, nation-based system, paralysis, epidemic, disease, safety, etc., and each category is further classified into subcategories, and metadata for a total of 40 types of disasters is defined.

Such metadata for disaster information will enable the systematic collection and storage of disaster information, which will not only activate the provision of various disaster information-based services, but also be used to prevent disasters or minimize human and material damage by analysing the collected disaster information.

History *

Edition	Recommendation	Approval	Study Group	Unique ID
1.0	ITU-T F.760.3	2025-03-16	21	11.1002/1000/16245

Keywords

Disaster information presentation, metadata, natural disaster, social disaster.

* 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.....	1
4	Abbreviations and acronyms	1
5	Conventions	2
6	Introduction	2
7	Disaster classification system.....	2
	7.1 Natural disaster classification.....	3
	7.2 Social disaster classification.....	3
8	Metadata for presenting natural disaster information with human factors	5
	8.1 Metadata for presenting weather disaster information with human factors ...	5
	8.2 Metadata for presenting sluice disaster information with human factors.....	9
	8.3 Metadata for presenting climate disaster information with human factors	11
	8.4 Metadata for presenting geology disaster information with human factors ...	12
	8.5 Metadata for presenting astronomical phenomena disaster information with human factors	14
9	Metadata for presenting social disaster information.....	15
	9.1 Metadata for presenting fire disaster information with human factors	15
	9.2 Metadata for explosion disaster information presentation with human factors	16
	9.3 Metadata for collapse disaster information presentation with human factors	17
	9.4 Metadata for traffic disaster information presentation with human factors ...	18
	9.5 Metadata for presenting chemical, biological and radiological disaster information with human factors	20
	9.6 Metadata for presenting environmental pollution disaster information with human factors	24
	9.7 Metadata for nation-based system paralysis disaster information presentation with human factors.....	26
	9.8 Metadata for epidemic disease disaster information presentation with human factors	30
	9.9 Metadata for presenting safety disaster information with human factors	33
	9.10 Metadata for presenting other disaster information with human factors.....	35
	Bibliography.....	38

Recommendation ITU-T F.760.3

Metadata for disaster information presentation with human factors

1 Scope

This Recommendation specifies metadata for presenting disaster information, including both natural and social disaster information.

The scope of this Recommendation includes:

- Overview of disaster information presentation with human factors
- Metadata for the natural disaster information presentation
- Metadata for the social disaster information presentation.

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.

None.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 common alerting protocol [b-ITU-T X.1303]: A simple but general format for exchanging all-hazard emergency alerts and public warnings over all kinds of networks.

3.1.2 disaster [b-UNISDR], [b-ITU-T FG-DR&NRR]: A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

3.2 Terms defined in this Recommendation

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

CAP	Common Alerting Protocol
M	Mandatory
ND	Natural Disaster
O	Optional
SD	Social Disaster

5 **Conventions**

None.

6 **Introduction**

Because disasters can cause enormous damage to people's lives, bodies, property, or nations, countries have established systems for delivering disaster information. These disasters can be divided into natural and non-natural disasters. The first are caused by natural phenomena such as typhoons, floods, heavy rains, earthquakes, and heavy snow. The second type of disasters have a man-made/technical origin (i.e., caused by human activities/intervention such as fire, explosion, traffic accidents, chemical, biological, radiological accidents, environmental pollution accident, etc.), socio-technical origin (i.e., caused by impacts on social infrastructure such as energy, communications, transportation, finance, medical, and water supply), and other human-related origin (e.g., damage caused by the spread of infectious diseases or livestock epidemics). Hereinafter in this Recommendation the second type of disaster is referred to as a social disaster.

In the event of a disaster, the facts are delivered through broadcasting or communication networks. Disaster broadcasting provides relevant information through the broadcasting or communication network when such a disaster occurs or is expected to occur. As a result, disaster broadcasting can reduce the damage by providing information necessary for evacuation, rescue, and recovery in the event of a disaster.

Figure 1 shows a typical disaster alerting delivery system. The disaster alerting issuer issues a disaster alerting message based on the common alerting protocol (CAP). The disaster alerting delivery authority converts the received CAP message according to the receiving terminal and delivers it to the disaster alerting receiving terminal. Once a disaster alerting message is sent, people can receive a disaster alerting message through various receivers such as TV, radio, smartphone, Internet, and digital signage.

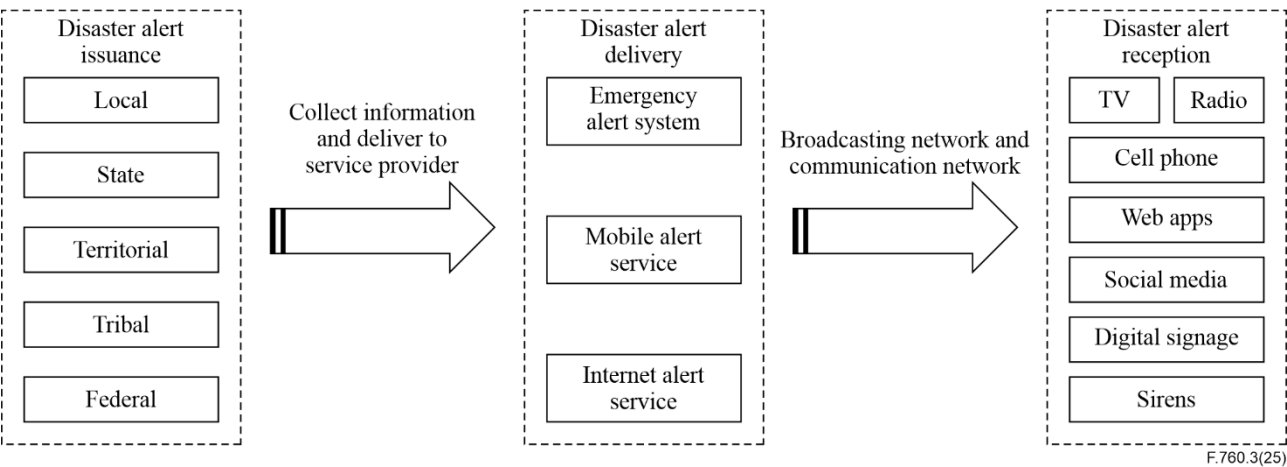


Figure 1 – Typical disaster alerting delivery system

Metadata for disaster information presentation may include the type of disaster, location of occurrence, time of occurrence, intensity, and magnitude of disaster damage. However, specific metadata components vary depending on the type of disaster.

7 **Disaster classification system**

This clause addresses the disaster classification system.

7.1 Natural disaster classification

The classification code for displaying each classification item is composed of two digits of the English alphabet meaning main category and two digits each representing middle category and sub-category. In the main category, 'ND' represents natural disaster. The middle and sub-categories can be numbered from 01 to 99. Table 1 shows the items and codes for each category.

Table 1 – Categories for natural disaster

Main category	Main category code	Middle category	Middle category code	Sub-category	Sub-category code
Natural disaster	ND	Weather	ND-01	Typhoon	ND-01-01
				Heavy snow	ND-01-02
				Downpour	ND-01-03
				Dust storm	ND-01-04
				Fine dust	ND-01-05
				Strong wind	ND-01-06
				Thunderstroke	ND-01-07
				Hail	ND-01-08
		Sluice	ND-02	Green algae	ND-02-01
				Red tide	ND-02-02
				High seas	ND-02-03
				Tsunami	ND-02-04
				Floods	ND-02-05
		Climate	ND-03	Drought	ND-03-01
				Heat wave	ND-03-02
				Cold wave	ND-03-03
		Geology	ND-04	Earthquake	ND-04-01
				Landslide	ND-04-02
				Volcano	ND-04-03
		Astronomical phenomena	ND-05	Space object crash	ND-05-01
		Astronomical phenomena	ND-05	Space radio	ND-05-02

7.2 Social disaster classification

The classification code for displaying each classification item is composed of two digits of the English alphabet meaning main category and two digits each representing middle category and sub-category. In the main category, 'SD' represents social disaster. The middle and sub-categories can be numbered from 01 to 99. Table 2 shows the items and codes for each category.

Table 2 – Categories for social disaster

Main category	Main category code	Middle category	Middle category code	Sub-category	Sub-category code
Social disaster	SD	Fire	SD-01	Fire accident	SD-01-01
				Forest fire	SD-01-02
		Explosion	SD-02	Explosion accident	SD-02-01
		Collapse	SD-03	Steep slope collapse accident	SD-03-01
				Dam collapse accident	SD-03-02
				Facility collapse accident	SD-03-03
		Traffic	SD-04	Road traffic accident	SD-04-01
				Railroad accident	SD-04-02
				Aircraft accident	SD-04-03
				Marine ship accident	SD-04-04
		CBR	SD-05	Radiation leakage accident	SD-05-01
				Nuclear facility accident in neighbouring countries	SD-05-02
				Radioactive leakage accident	SD-05-03
				Biological material accident	SD-05-04
				Chemical accident	SD-05-05
		Environmental pollution	SD-06	Air pollution accident	SD-06-01
				Water pollution accident	SD-06-02
				Soil pollution accident	SD-06-03
				Marine pollution accident	SD-06-04
		Nation-based system paralysis	SD-07	Transportation infrastructure accident	SD-07-01
				Financial infrastructure accident	SD-07-02
				Health care infrastructure accident	SD-07-03
				Drinking water infrastructure accident	SD-07-04
				Energy infrastructure accident	SD-07-05
				Information and communications infrastructure accident	SD-07-06
				Important government facility accident	SD-07-07
				Environmental infrastructure accident	SD-07-08

Table 2 – Categories for social disaster

Main category	Main category code	Middle category	Middle category code	Sub-category	Sub-category code
		Epidemic disease	SD-08	Livestock epidemic diseases	SD-08-01
				Pets epidemic diseases	SD-08-02
				Zoonotic epidemic diseases	SD-08-03
				Human epidemic diseases	SD-08-04
		Safety	SD-09	Home safety accident	SD-09-01
				Public safety accident	SD-09-02
				Crime safety accident	SD-09-03
				Industrial safety accident	SD-09-04
				School safety accident	SD-09-05
		Etc.	SD-10	Cultural heritage accident	SD-10-01
				Wartime disaster	SD-10-02
				Terrorism	SD-10-03
				Overseas disaster	SD-10-04

8 Metadata for presenting natural disaster information with human factors

This clause addresses metadata for presenting natural disaster information.

8.1 Metadata for presenting weather disaster information with human factors

This clause addresses metadata for presenting weather disaster information.

8.1.1 Typhoons

Table 3 shows the metadata for presenting typhoon disaster information.

Table 3 – Metadata for presenting typhoon disaster information

Element	Description	Datatype	Mandatory (M) or Optional (O)
DisasterType	Identifies the type of disaster.	xs:string	M
OccurrenceTime	Describes the time of typhoons occurrence.	xs:time	M
CenterLocationLatitude	Describes the centre location of latitude.	xs:float	M
CenterLocationLongitude	Describes the centre location of longitude.	xs:float	M
CenterAtmospherPressure	Describes the centre atmosphere pressure.	xs:float	M
MaxWindSpeed	Describes the maximal wind speed as per second or per hour.	xs:float	M
StrongWindRadius	Describes the radius of the strong wind.	xs:string	M
Strength	Describes the strength of the typhoon.	xs:string	M

Table 3 – Metadata for presenting typhoon disaster information

Element	Description	Datatype	Mandatory (M) or Optional (O)
Magnitude	Describes the magnitude of the typhoon.	xs:integer	M
Direction	Describes the direction of movement.	xs:string	M
Speed	Describes the speed of movement.	xs:float	M

8.1.2 Heavy snowfall

Table 4 shows the metadata for presenting heavy snowfall disaster information.

Table 4 – Metadata for presenting heavy snowfall disaster information

Element	Description	Data type	Mandatory or Optional
DisasterType	Identifies the type of disaster.	xs:string	M
AlertType	Describes the type of alerting disaster. The type can be snowfall warning or intensive snowfall warning.	xs:string	M
IssuingTime	Describes the time of issuing disaster.	xs:time	M
EstimatedSnowfall	Describes the estimated amount of the snowfall.	xs:integer	M
InfluenceArea	Describes the area within the influence of heavy snowfall.	xs:string	M
Instruction	Describes the instructions to be followed in case of having trouble because of heavy snowfall.	xs:string	O

8.1.3 Downpour

Table 5 shows the metadata for presenting downpour disaster information.

Table 5 – Metadata for presenting downpour disaster information

Element	Description	Data type	Mandatory or Optional
DisasterType	Identifies the type of disaster.	xs:string	M
SpecialNoticePeriod	Describes period during which special warnings such as downpour advisories and warnings were issued.	xs:string	M
ExpectedPrecipitation	Describes the amount of rain estimated by counting in advance (mm).	xs:integer	M
CurrentPrecipitation	Describes amount of rain at the current time (mm).	xs:integer	M
TotalPrecipitation	Describes total amount of rain from the time it rained to the present (mm).	xs:integer	M
TrafficControlZone	Describes areas where traffic is temporarily suspended due to downpour.	xs:string	M

8.1.4 Dust storm

Table 6 shows the metadata for presenting dust storm disaster information.

Table 6 – Metadata for presenting dust storm disaster information

Element	Description	Data type	Mandatory or Optional
DisasterType	Identifies the type of disaster.	xs:string	M
DustConcentration	Describes the amount of dust distributed in the air ($\mu\text{g}/\text{m}^3$).	xs:integer	M
WarningLevel	Describes the environmental level, which is one of three levels based on the degree of dust pollution in the air. The level can be 'Top', 'Middle' or 'Bottom'.	xs:integer	M
SpecialNoticePeriod	Describes the period during which special warnings, such as dust advisories and warnings, were issued.	xs:string	M

8.1.5 Fine dust

Table 7 shows the metadata for presenting fine dust storm disaster information.

Table 7 – Metadata for presenting fine dust disaster information

Element	Description	Data type	Mandatory or Optional
DisasterType	Identifies the type of disaster.	xs:string	M
DustConcentration	Describes the amount of dust distributed in the air ($\mu\text{g}/\text{m}^3$).	xs:integer	M
WarningLevel	Describes the environmental level, which is one of three levels based on the degree of fine dust pollution in the air. The level can be 'Top', 'Middle' and 'Bottom'.	xs:integer	M
SpecialNoticePeriod	Describes the period during which special warnings such as fine dust advisories and warnings were issued	xs:string	M

8.1.6 Strong wind

Table 8 shows the metadata for presenting strong wind disaster information.

Table 8 – Metadata for presenting strong wind disaster information

Element	Description	Data type	Mandatory or Optional
DisasterType	Identifies the type of disaster.	xs:string	M
OccurrenceTime	Describes the time of strong wind occurrence.	xs:time	M
MaximumWindSpeed (m/s)	Describes the maximum speed of strong winds in second (m/s).	xs:integer	M

Table 8 – Metadata for presenting strong wind disaster information

Element	Description	Data type	Mandatory or Optional
MaximumWindSpeed (km/h)	Describes the maximum speed of strong winds in hour (km/h).	xs:integer	M
StrongWindRadius	Describes the wind radius (km).	xs:integer	M
Strength	Describe the strength of strong wind.	xs:integer	M
Magnitude	Describes the magnitude of strong wind.	xs:integer	M

8.1.7 Thunderstroke

Table 9 shows the metadata for presenting thunderstroke disaster information.

Table 9 – Metadata for presenting thunderstroke disaster information

Element	Description	Data type	Mandatory or Optional
DisasterType	Identifies the type of disaster.	xs:string	M
OccurrenceTime	Describes the time of thunderstroke occurrence.	xs:time	M
OccurrenceLocation	Describes the location of thunderstroke occurrence.	xs:string	M
Shelter	Describes a safe place or location in the event of a thunderstroke.	xs:string	M
LossOfLife	Describes the scale of personal injury or death caused by thunderstroke.	xs:integer	O
PropertyDamage	Describes the scale of property or economic damage caused by thunderstroke.	xs:integer	O

8.1.8 Hail

Table 10 shows the metadata for presenting hail disaster information.

Table 10 – Metadata for presenting hail disaster information

Element	Description	Data type	Mandatory or Optional
DisasterType	Identifies the type of disaster.	xs:string	M
OccurrenceTime	Describes the time of hail occurrence.	xs:time	M
OccurrenceLocation	Describes the location of hail occurrence.	xs:string	M
Shelter	Describes a safe place or location in the event of a hail.	xs:string	M
LossOfLife	Describes the scale of personal injury or death caused by hail.	xs:integer	O
PropertyDamage	Describes the scale of property or economic damage caused by hail.	xs:integer	O