

EXPLANATION FOR A COMMON



EMERGENCY WARNING SERVICES MESSAGE (DRAFT version)



 **Cabinet Office**
National Space Policy Secretariat



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European Commission and National Space Policy Secretariat, Cabinet Office, Japan
Frédéric Domps, European Commission
Yasuhiko KAWAZU, Cabinet Office, Japan



★ **Compliant with ITU recommendations**

"ITU EWS type messages can be covered under Radio Regulation Article 4.4, which allows non-allocated transmissions (such as basic messaging) provided they do not impact the allocated radio services (navigation)."

★ **QZSS DC-Report**

Signal	Service Name	Center freq.	Modulation	Bit Rate
L1S	Sub-meter Level Augmentation Service (SLAS)	1575.42MHz	BPSK	250bps
	DC Report Service			

DC-R data is using the margin area of Sub meter Augmentation service (SLAS) message area.

DC report data send to one message per 4 seconds. (Other timing is used for SLAS)

★ **Galileo Emergency Warning Service**

Signal	Service Name	Centre Freq.	Modulation	Bit Rate
E1B	Open Service	1575,42 Mhz	CBOC	125 bps
	Emergency Warning Service			128 bits / 30 sec
E5B	Open Service	1207,14 Mhz	AltBOC	125 bps
	Emergency Warning Service			128 bits / 30 sec



★ QZSS DC-Report Interface Control Document:

★ Message Type 43:

- ★ Japan Meteorological Agency Prevention Information
- ★ Disaster area identified by location encoding (Tsunami zones, Prefectures...)

★ Message Type 44:

- ★ DC Report (Other organisation)
- ★ **Data available for broadcast: 184 Bits**

★ Galileo EWS ICD:

- ★ Broadcast of messages from authorised civil protection I/Fs
- ★ Disaster location identified by area localisation (Lat/Long, Ellipse parameters)
- ★ **Data: 120 bits**

**GALILEO and QZSS can broadcast the SAME type of
120 BITS EWS MESSAGE !**

Common Message: User Requirements:



- ★ Message is based on user requirements (civil protection agencies/ worldwide...)
 - ★ The message must cover many types of events (terrorist attacks/tsunamis/...)
 - ★ The message is addressed to the public
 - ★ The message must support multilingualism
 - ★ The message must rely on existing standards
 - ★ The message must be resilient to malicious attacks
 - ★ The message must be easy to understand for the final user, and include:
 - ★ Time
 - ★ Location
 - ★ Type of event
 - ★ Guidance / instructions
 - ★ Ideally, two different instructions zones per target area

**ALL THESE REQUIREMENTS SHOULD BE IMPLEMENTED WITHIN
A 120 BITS EWS MESSAGE**



EWS MESSAGE: 120 BITS

18 Bits	7 Bits	20 Bits	8 Bits	46 Bits	21 Bits
Identifier	Event	Chronology	Guidance	Target Area	Specific Settings

★ Message Identifier:

- ★ 1. Message type: 3 bits
- ★ 2. Country ID: 9 bits
- ★ 3. Provider ID: 6 bits

★ Event: Total 7 bits

- ★ 4. Event Category: 2 bits
- ★ 5. Event Sub-Category: 3 bits
- ★ 6. Severity: 2 bits

★ Chronology: Total 20 bits

- ★ 7. Event Onset: 16 bits (UTC)
- ★ 8. Expected Duration: 4 bits

★ Guidance to react: 8 bits

- ★ 9. Guidance Library: 2 bits
- ★ 10. Response Type: 3 bits
- ★ 11. Instruction: 3 bits

★ Target Area: 46 bits

★ Specific settings: 21 Bits

Common Message Definition: Example



★ Message Identifier

★ 1. Message type: 3 bits

Code	Identifier
000	Initial Alert
001	Update 1
010	Update 2
011	Update N > 2
100	Training
101	Test
110	Cancel
111	False Alert

★ 2. Country ID: 3 bits + 6 bits (64 countries/states per continent)

Code	Continent
000	EU countries
001	Europe
010	North America
011	South America
100	Africa
101	Asia
110	Oceania
111	International organisation

★ 3. Provider ID: 6 bits: 64 possibilities per country



The most challenging data field definition: Target Area

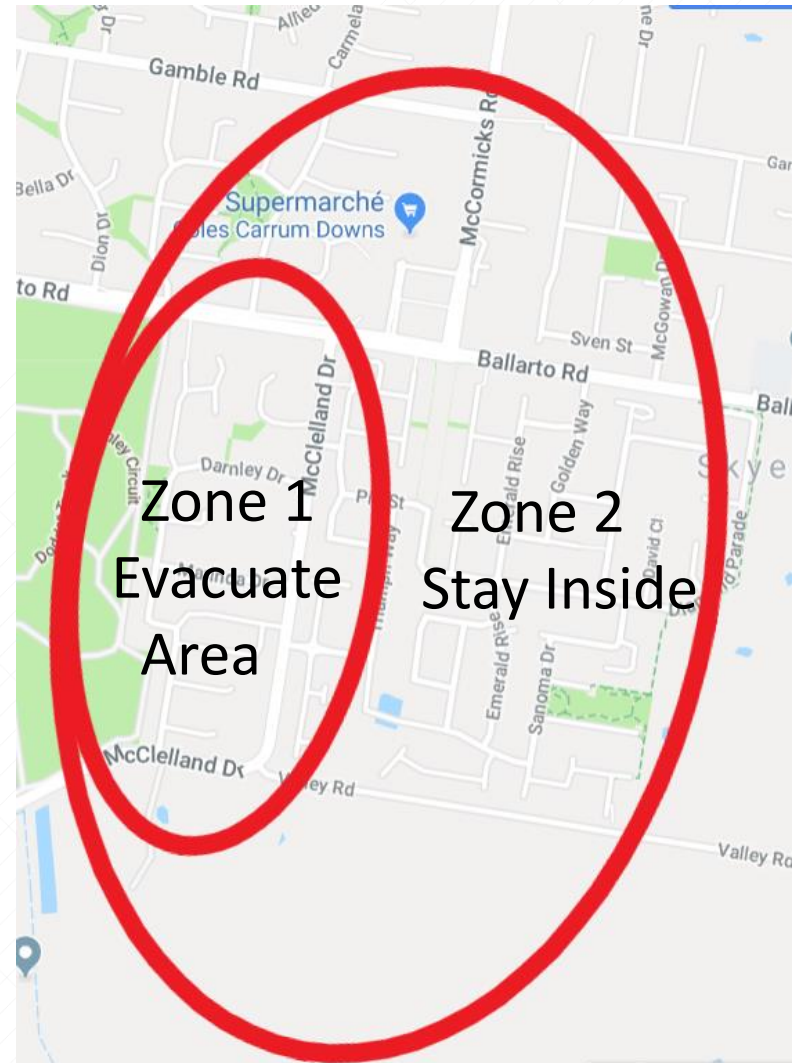
- ★ Attempt at defining a target area which:
 - ★ Fits any type of event (challenging)
 - ★ Anywhere on the planet
 - ★ Consumes a limited number of bits of our EWS message

- ★ Proposal to use an ellipse shape defined with:
 - ★ Lat/Long for the centre of the ellipse (31 bits)
 - ★ Semi-major / Semi-minor axis length (4 bits / 4 bits)
 - ★ Azimuth of the semi-major axis (7 bits)

- ★ Possibility to define within the same target areas (user requirement)
 - ★ Two zones
 - ★ Two different instructions

Two zones in one Target Area

★ Use of Specific Settings: 21 Bits out of 120 Bits



Zone 1
Evacuate
Area

Zone 2
Stay Inside

Common Message: What's Next



- ★ This message definition is a DRAFT
 - ★ Ideally to be discussed with all EWS/GNSS providers

- ★ More work needs to be done, in particular:
 - ★ Target area definition
 - ★ 1 zone / 2 zones / N zones...
 - ★ Instructions / guidance library

- ★ Joint / common operational concept
 - ★ Operational Interfaces
 - ★ Operational standards
 - ★ Use of standard for Input Data
 - ★ CAP format (or a derivation of CAP/XML)

**Frédéric Doms, European Commission
Yasuhiko KAWAZU, Cabinet Office, Japan**

THANK YOU

