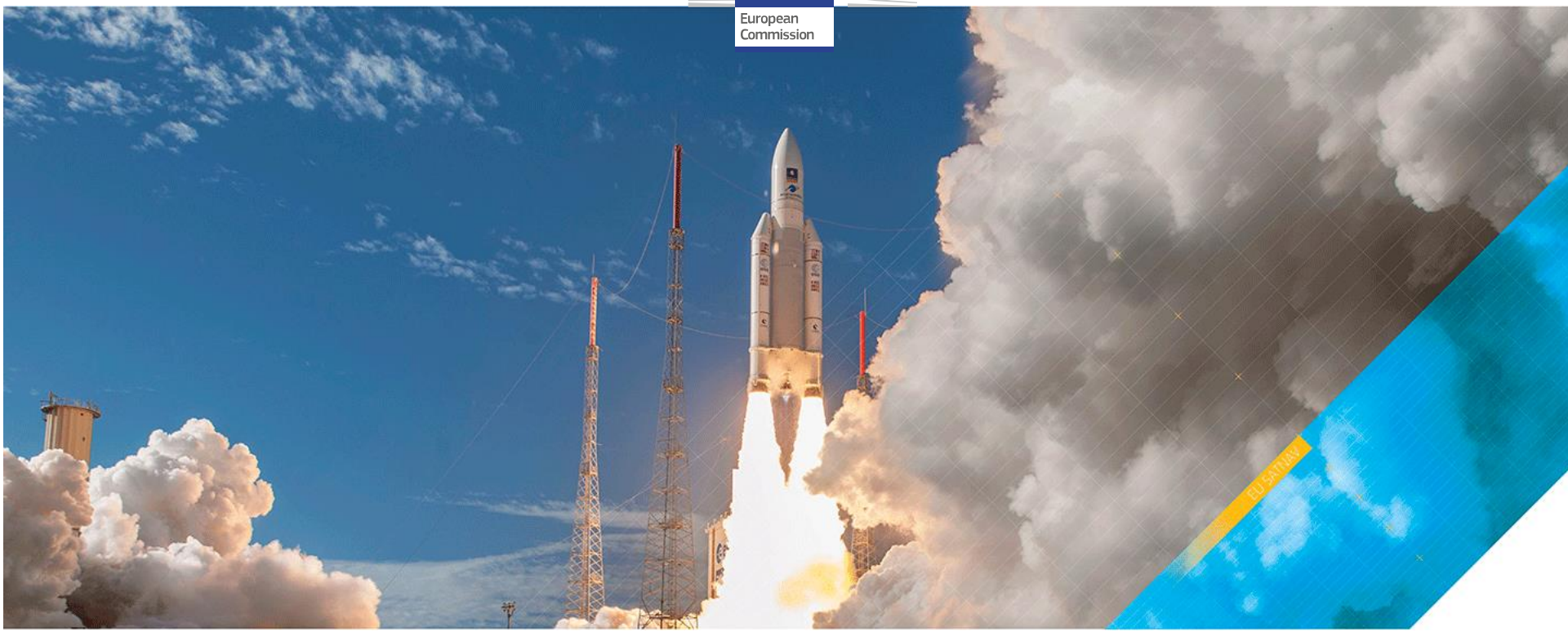

Natural Disasters and Emergency Response Session

The Galileo Emergency Warning Service

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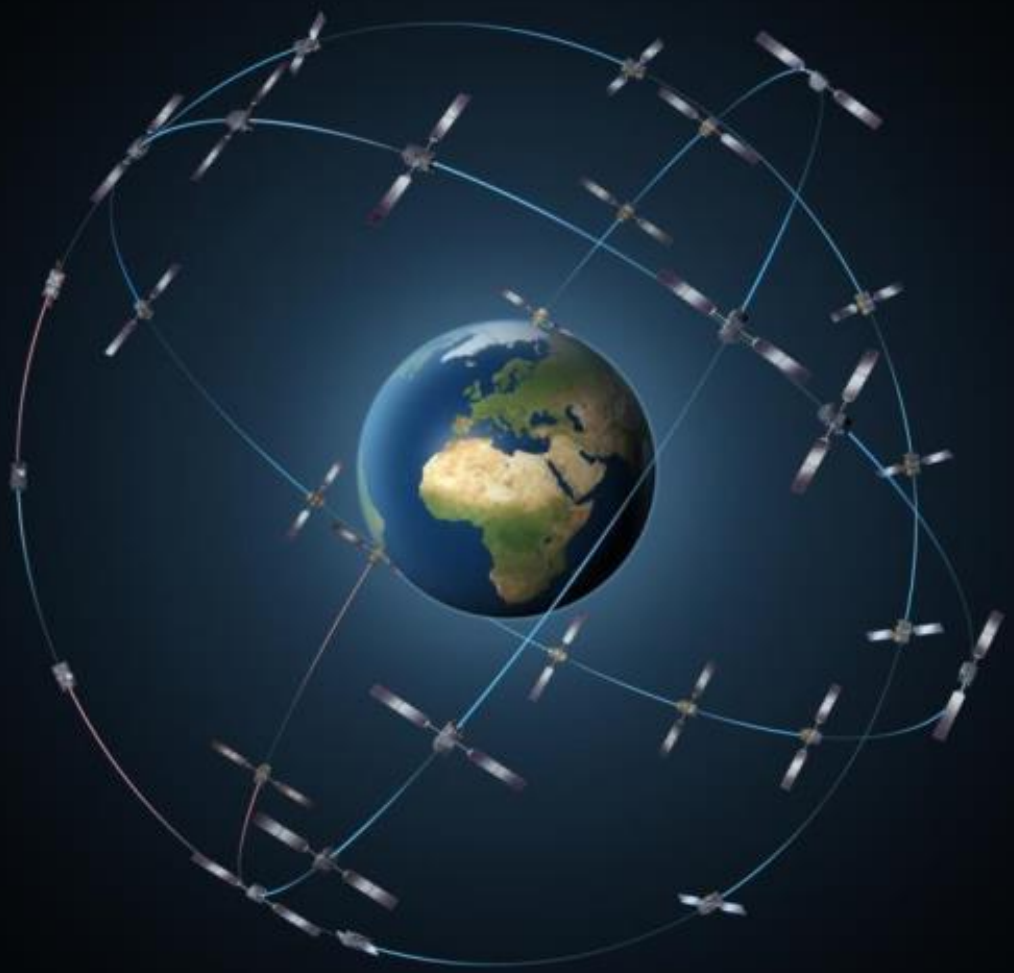
User Consultation Platform - WebEX, 1 December 2020

GALILEO: THE EU GLOBAL SATELLITE NAVIGATION SYSTEM



24 satellites in orbit around the Earth
Global coverage, 24/7
Broadcast of signals allowing Positioning, Navigation and Timing

Regulatory Framework –Early Warning Systems

Global trend to develop Disaster Risk Reduction technologies:

- United Nations' Sendai Framework for Disaster Risk Reduction: "*Substantially increase the availability of and access to **multi-hazard early warning systems** and disaster risk information and assessments to people by 2030*"

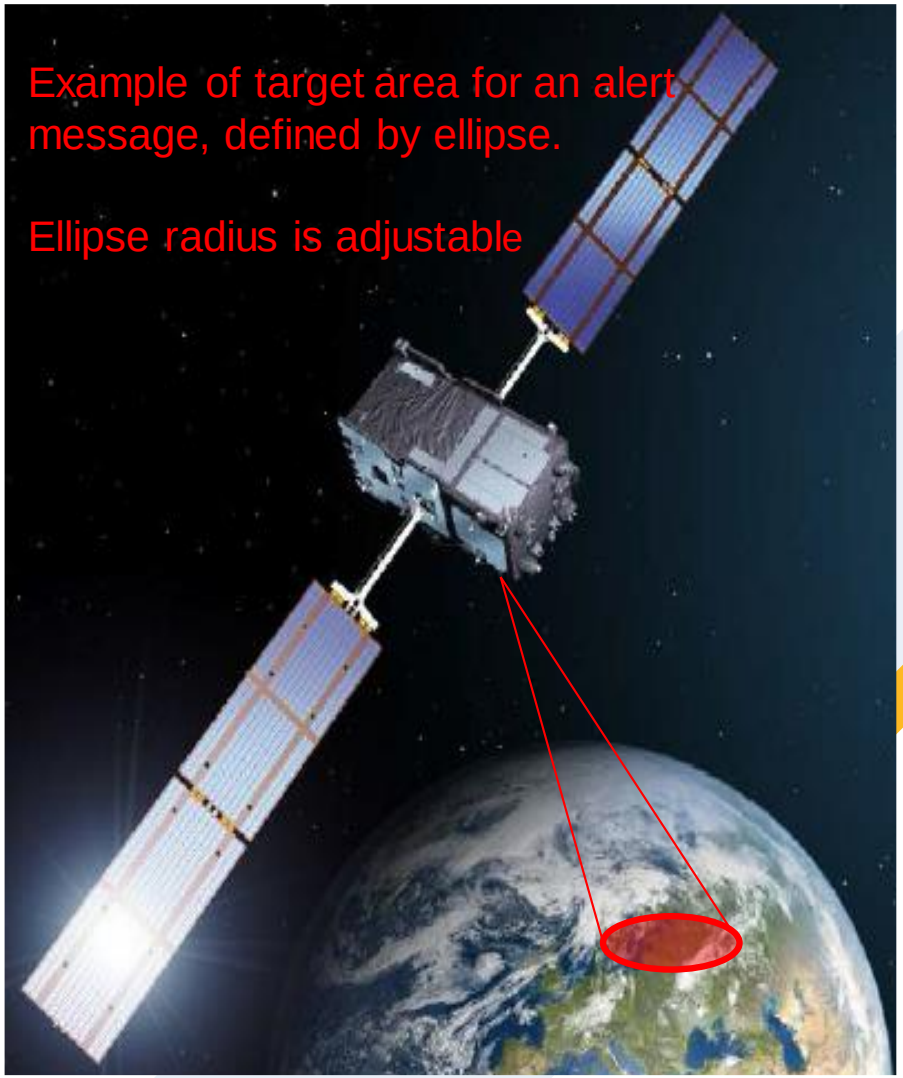
- World Meteorological Organization – 2020 State of Climate Services report (13 October 2020), confirms the importance of ***early warning systems*** for disaster prevention and risk reduction

- **The European Commission is introducing a new service in Galileo: the Emergency Warning service.**
  - Purpose: Alerting the population on case of a looming disaster (fire, storm, floods, tsunamis, volcano, industrial…)

GALILEO – Emergency Warning Service (1)

Key Features

- Global coverage
- No ‘mobile’ connection required
- Resilience to ground destruction
- Multi-hazard (tornadoes, earthquakes, nuclear disaster or industrial disaster, terrorist attacks, …)
- On-demand broadcast of an alert message + associated guidance
- Complementary to existing systems
- Reach out population in a timely manner (2-3 minutes), whatever the size of the area
- Geo-location information encoded in the message to target only the relevant population
- Relevant population targeted by means of ***an ellipse.***



GALILEO – Emergency Warning Service (2)

GALILEO –Emergency Warning Service (3)

EWS is NOT designed to replace any existing system. It has also intrinsic limitations:

- no free text, no indoor penetration !

EWS has advantages of its own:

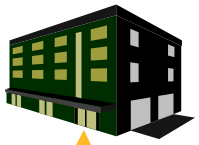
- Global coverage, timely delivery of alert (~1 minute)
- The service is available when nothing else remains (destruction/saturation of traditional alert systems)
- No specific user device required: directly compatible with smartphones and receivers (hand-held, car navigators, etc)

EWS is a satellite capacity offered to EU Member States as a dissemination means.

CONCEPT OF OPERATIONS

National Emergency Centre

DECISION



CAP / XML

Galileo Emergency Service Interface

EWS Message Bit level

Civil protection

Galileo Ground Segment

Population

The service is realised by three components:

MS Civil Protection Authorities

Galileo

Users

MESSAGE FORMAT

Emergency Alert Message is coded on 122 bits for transmission in the Galileo signal

- Message Type: Alert/Update/Test/Cancel
- Country ID: ID of the country from which the alert is issued.
- Provider ID: National agency raising the alert
- Ref ID: unique identifier for the messages sent
- Event Category: Tsunami, Forest Fire, pandemic, volcano, storm, etc
- Severity: minor/moderate/severe/extreme
- Event Onset: Day/Hour/Minute
- Duration: in hours, from < 0.25 h to 48 h
- Target Area: 2D ellipse, with radius from 0,5 km to 11000 km

- Guidance Library: library of instructions to be used
- Instructions: Generic instructions taken from library (256 individual instructions)

- Additional information for message customization

BUILDING THE SERVICE (1)

In Spring 2020, EC prepared a roadmap identifying the activities to be carried out to bring EWS concept to maturity.

- ❑ All 3 programme actors (EC, GSA, ESA) involved.

Activities relate to:

- ❑ Stabilization of requirement with MS
- ❑ Improvement of message format
- ❑ Dialogue with user segment (mobile manufacturers)
- ❑ Service provision and operational concept
- ❑ Architecture trade-offs

Service consolidation:
Several open points remain

Internal milestones are foreseen in 2021 (Q1 and Q3) as a rendez-vous between Galileo programmes actors* to take stock of the findings and allow trade-offs.

*: EC, ESA, GSA

BUILDING THE SERVICE (2)

- **This User Consultation Platform allows the Galileo Programme to progress on the consolidation of the EWS service, and to prepare for the introduction of the service in the Galileo infrastructure.**

- **Your feedback on the questions distributed last week is essential.**

1. **Any questions on the EWS service concept ?**

2. **Feedback and discussion**

QUESTIONS TO THE USERS (1)

1. How do you perceive the usage of the satellite-based Galileo-EWS in your Member States:

- ❑ Fully integrated with the existing alert systems (alert messages are sent simultaneously over all existing channels, including Galileo-EWS)
- ❑ Partly integrated with the existing alert systems (Galileo-EWS messages are sent in complement and with less priority than traditional alert system)
- ❑ Galileo-EWS is used only in exceptional cases, when nothing else remains (destruction or saturation of traditional alert system) or in absence of other means (remote areas).

2. According to this intended usage, how many emergency situations in your country would require an alert broadcast using Galileo-EWS per year ?

- ❑ <5
- ❑ 5<x<10
- ❑ 11<x<50
- ❑ 50<x<100
- ❑ >100

QUESTIONS TO THE USERS (2)

3. In order to manage a given crisis and inform the population, how many different messages (messages with a different content) are usually sent to the population:

- ❑ <2
- ❑ 2<x<5
- ❑ > 5

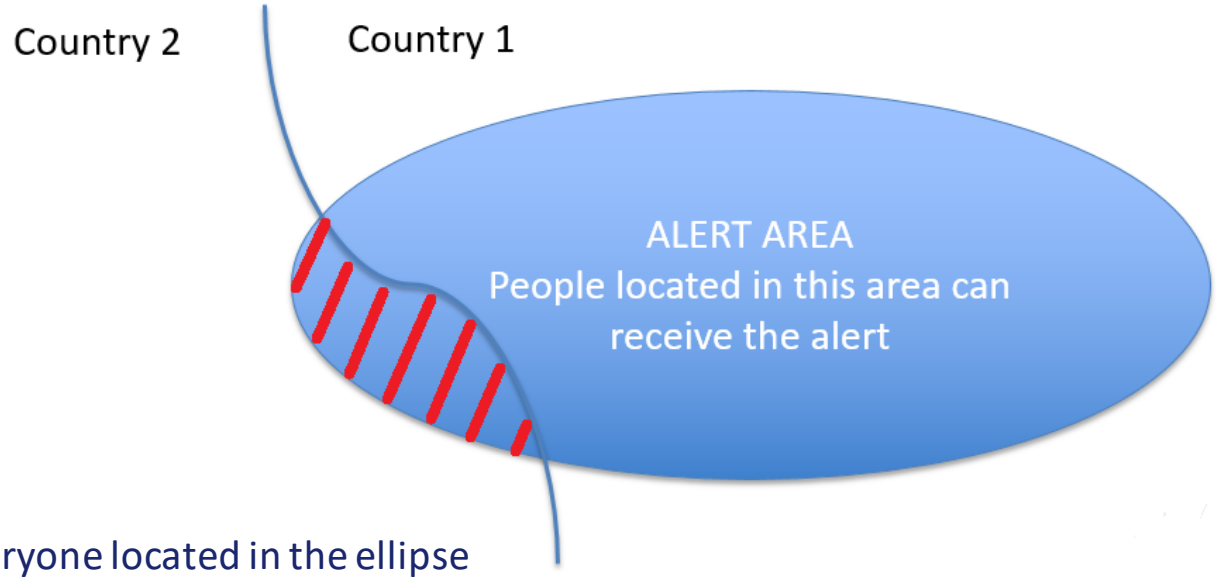
4. Do your national alert systems use authenticity and integrity techniques for the emergency message to be broadcast?

Note: Authenticity ensures that the message is coming from a trusted source. Integrity ensures that the message has not been corrupted in the transmission chain.

QUESTIONS TO THE USERS (3)

5. What is your preferred approach in case of cross-border effects, as alerts are visible across borders, but can be filtered out?

Country 1 sends an alert request to Galileo
Targetted area overlaps with country 2 jurisdiction



- Option 1: everyone located in the ellipse
- Option 2: people located in the ellipse AND being in Country 1 (i.e. excluding people located in Country 2)
- Option 3: only the Country 1 receivers located in Country 1 (i.e. excluding the roaming mobiles located in Country 1)
- Option 4: all Country 1 receivers located in the ellipse (i.e. including the roaming mobiles located in Country 2).

THANK YOU

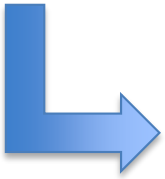
http://ec.europa.eu/galileo

BACK-UP SLIDES

http://ec.europa.eu/galileo

The new EU Space regulation 2021-2027

- Article 44: The services provided by Galileo shall comprise […] an emergency service (ES), which shall be free of charge for users, and broadcast, through emitting signals, warnings regarding natural disasters or other emergencies in particular areas; it shall be provided in cooperation with Member States national civil protection authorities, where appropriate;



= The Galileo - Emergency Warning Service