INTERNATIONAL CONFERENCE ON
MOUNTAINS AND CLIMATE CHANGE

New perspectives in emergency mapping

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High Summit
LECCO 2013

We will talk about

- Introduction
- Post disaster response
- Existing mechanisms
- GIO-EMS
- Examples

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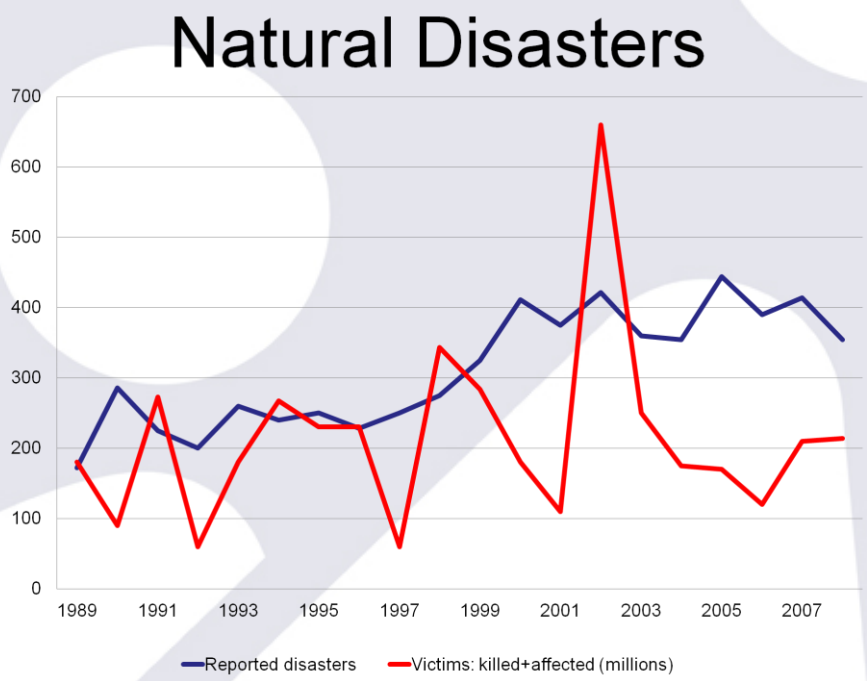
INTRODUCTION



Disasters can be defined as “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” [UNISDR, 2009].

Disasters can be classified according to their main cause, i.e. earthquakes, floods, cyclones, etc., but also whether they are “natural” disasters, or “human-made” disasters. The information collected by the Centre for Research on the Epidemiology of Disasters (CRED) at the School of Public Health of the Université Catholique de Louvain located in Brussels, Belgium, and more specifically the data stored in the EM-DAT database1, highlight that in year 2010 a total of 385 natural disasters were registered, with more than 297,000 casualties [Guha-Sapir et al., 2012]. Over 217 million people were affected worldwide and $123.9 billion of economic damages were estimated. Similar to the average over the last decade, hydrological disasters (events caused by deviations in the normal water cycle and/or overflow of bodies of water caused by wind setup,

POST DISASTER RESPONSE

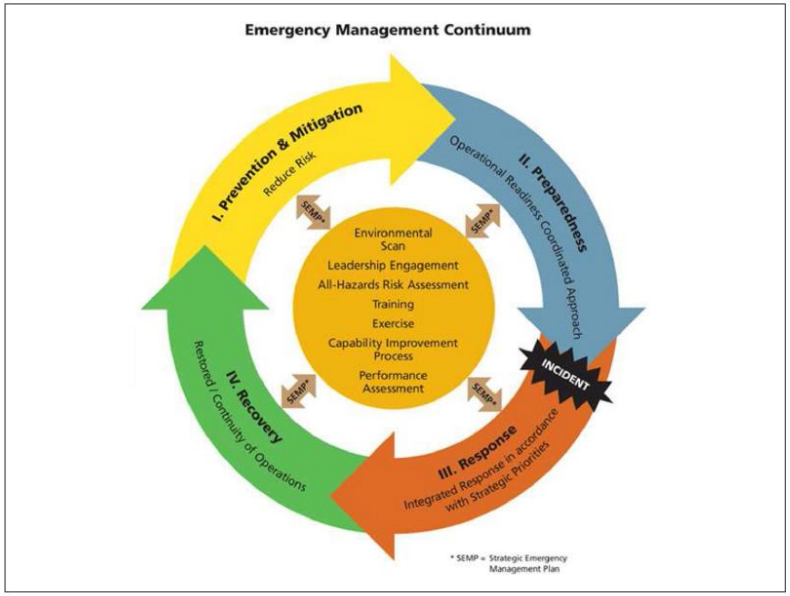


Figure 1 – The emergency management cycle.

In the post disaster response, several questions should be answered:

WHAT?
WHEN?
WHERE?
WHO?

The 3 first question should be addressed by early warning systems, while the last 2 are crucial in the early impact stage.(rapid mapping, that is the practice related to fast map production).

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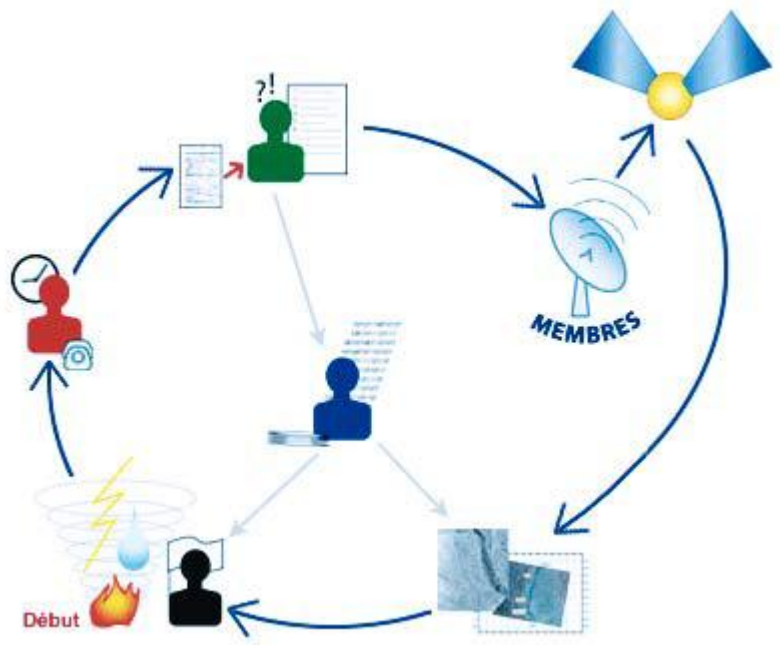
EXISTING MECHANISMS 1/3



Focusing on the early impact stage, where geomatics plays a main role in rapid mapping, several mechanisms are already active.

The **International Charter "Space and Major Disasters"** aims at providing a unified system of space data acquisition and delivery to those affected by natural or man-made disasters through Authorized Users. Each member agency has committed resources to support the provisions of the Charter and thus is helping to mitigate the effects of disasters on human life and property. Several national Space Agencies participate to the International Charter: ESA, CNES, CSA, DLR, ISRO, CONAE, JAXA, USGS, BNSC/DMCii, CNSA. The International Charter manages activations in all types of natural and manmade disasters worldwide by means of all satellite missions available through the participating Space Agencies.

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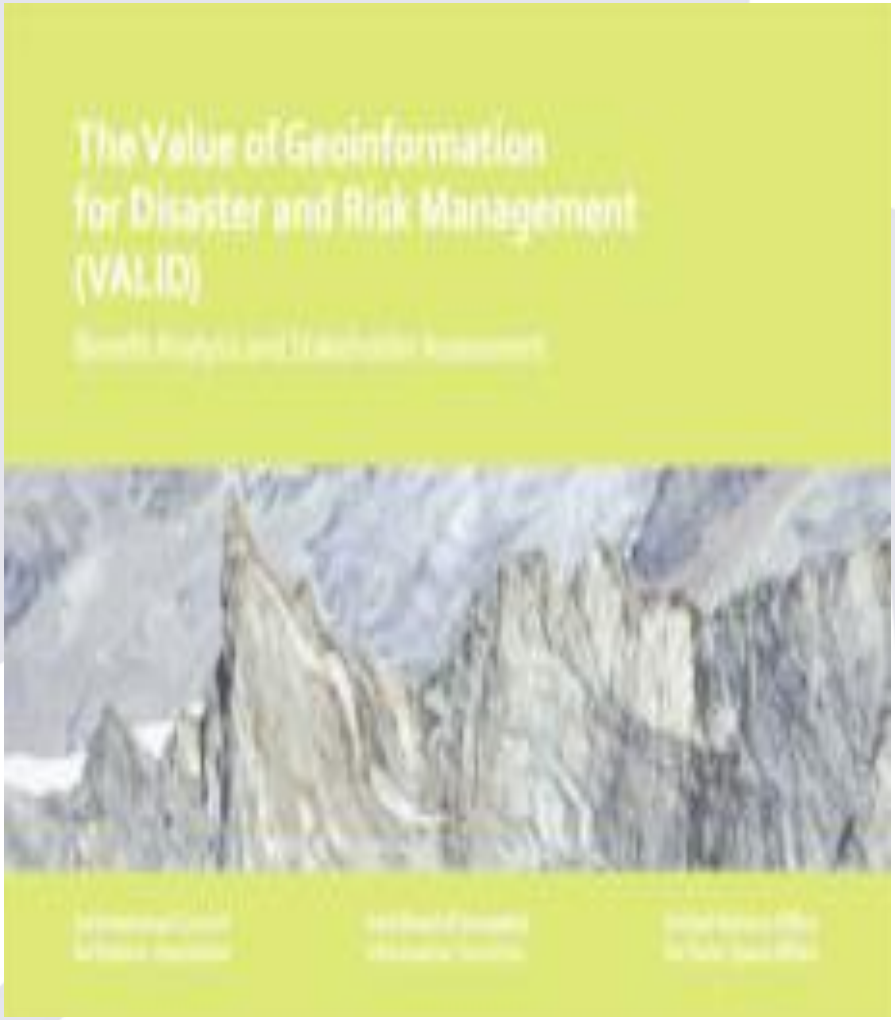
EXISTING MECHANISMS 2/3



In its resolution 61/110 of 14 December 2006 the United Nations General Assembly agreed to establish the "United Nations Platform for Space-based Information for Disaster Management and Emergency Response - **UN-SPIDER**" as a new United Nations programme, with the following mission statement: "Ensure that all countries and international and regional organizations have access to and develop the capacity to use all types of space-based information to support the full disaster management cycle".

In 2009 the UN-SPIDER Programme initiated the **SpaceAid Framework**, with the aim to:

1. Ensure that all end users are able to access these mechanisms and initiatives, on a 24/7 basis, and that they also have the capacity to use all space-based information made available to support emergency events;
2. Provide guidance to the existing mechanisms and initiatives on the end users specific requirements and also on how they could improve and extend their support;
3. Establish additional opportunities beyond what is currently available within the existing mechanisms;
4. Provide information to those interested in bringing support, in terms of space-based information and expertise, on how they could channel their contributions and to whom.

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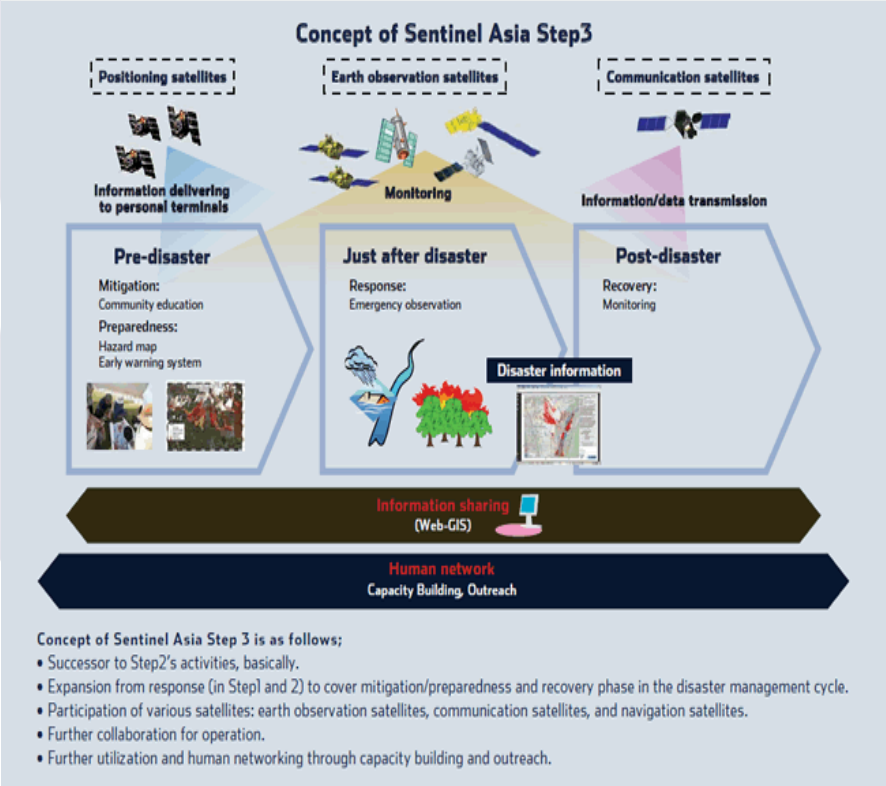
EXISTING MECHANISMS 3/3



The Sentinel Asia is a voluntary initiative led by the Asia-Pacific Regional Space Agency Forum (APRSAF) to support disaster management activities in the Asia-Pacific region by applying web GIS technologies and using space based information such as earth observation satellites data. 24 different countries are directly involved as well as a certain number of International Organizations. Two are the main activities carried out by the consortium:

1. Emergency observation by earth observation satellites in case of major disasters - Currently participating satellites are expected to be ALOS (JAXA), IRS (ISRO), THEOS (GISTDA), KOMPSAT (KARI) and others;
2. Capacity building in satellite image/data usage for disaster management – in parallel with the activities above, capacity building for technical and emergency response agencies users of the Sentinel Asia system will be undertaken, primarily under coordination by Indian Space Research Organisation (ISRO), Asian Institute of Technology (AIT) and UNESCAP in Bangkok.

GIO-EMS 1/5

European Commission GIO-EMS (GMES Initial Operation - Emergency Management Service) programme

All the previous mentioned precursor activities have been relevant sources of legacies and lessons learnt of a certain value for the actual operational implementation of the GMES (now Copernicus) Emergency Management Service in Rush mode service.

The GIO-EMS in Rush mode service aims at being the major European contribution to a global network of space based initiatives reacting to natural and man-made disasters, serving a wide range of Authorized Users active in the field of crisis management. The Authorized Users are EU Member States, the European Civil Protection Mechanism, the Commission's Directorates General (DGs) and the participating Executive Agencies, and the international humanitarian aid community..

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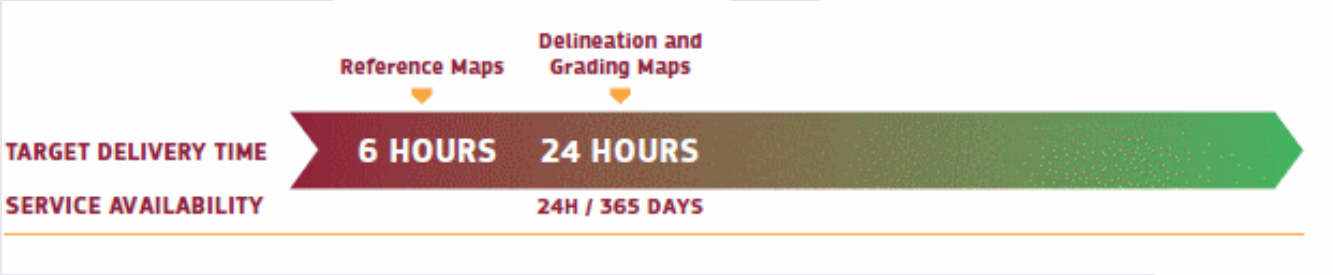
GIO-EMS 2/5

Rush mode



MAP TYPE	CONTENT	DELIV. TIME (*)
REFERENCE	**Status of the territory and assets prior to the crisis**	**Max 6h**
DELINEATION	**Assessment of the event impact and extent**	**Max 24h**
GRADING	**Assessment of the damage grade and its spatial distribution**	**Max 24h**

(*) after satellite data reception and quality acceptance.
Target delivery time from activation: 6h (reference), 24h (delineation, grading)

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GIO-EMS 3/5

Non Rush mode

MAP TYPE	CONTENT	DELIV. TIME
REFERENCE	Knowledge of the territory for prevention, preparedness, disaster risk reduction and recovery phases	Max 8 weeks after activation
PRE DISASTER MAPS	Up-to-date thematic pre-disaster information products	
POST DISASTER MAPS	Post disaster situation mapping products beyond the immediate response phase	

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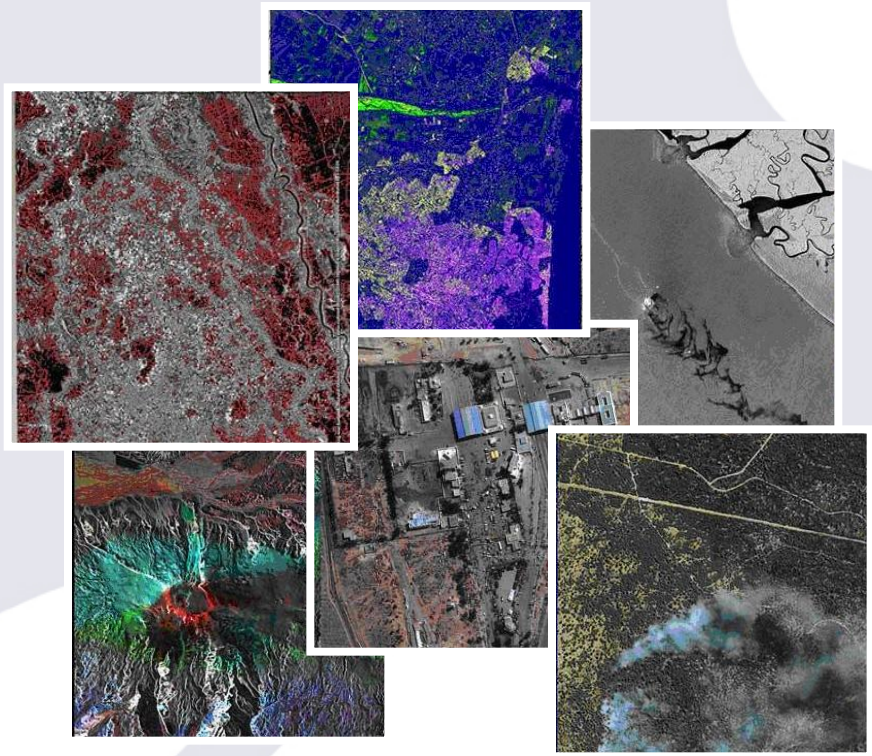
GIO-EMS 4/5



The service is active on:

- **Floods**
- **Earthquakes**
- **Landslides**
- **Fires**
- **Severe storms**
- **Volcanoes**
- **Technological disaster**
- **Humanitarian crisis**
- **Tsunamis**

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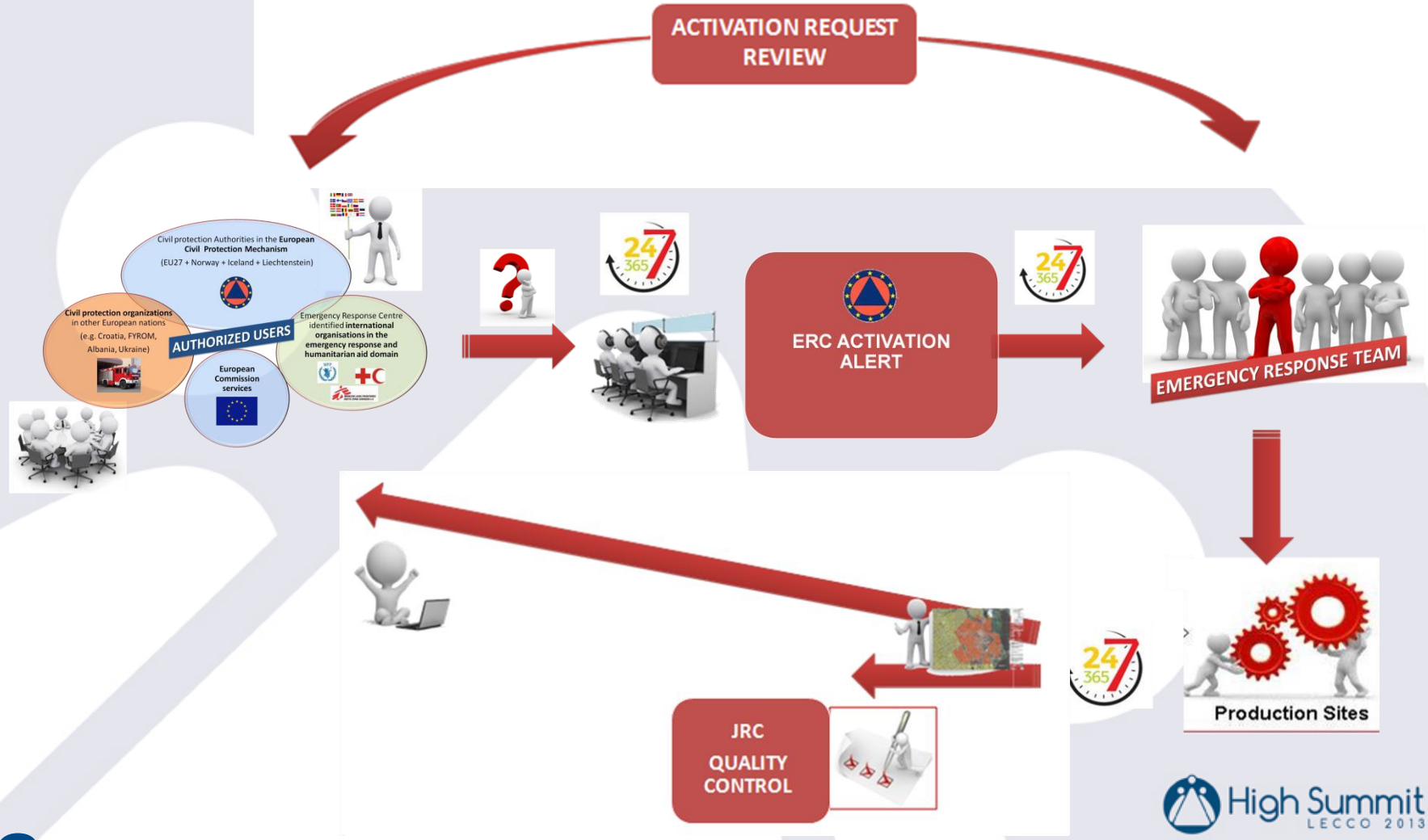
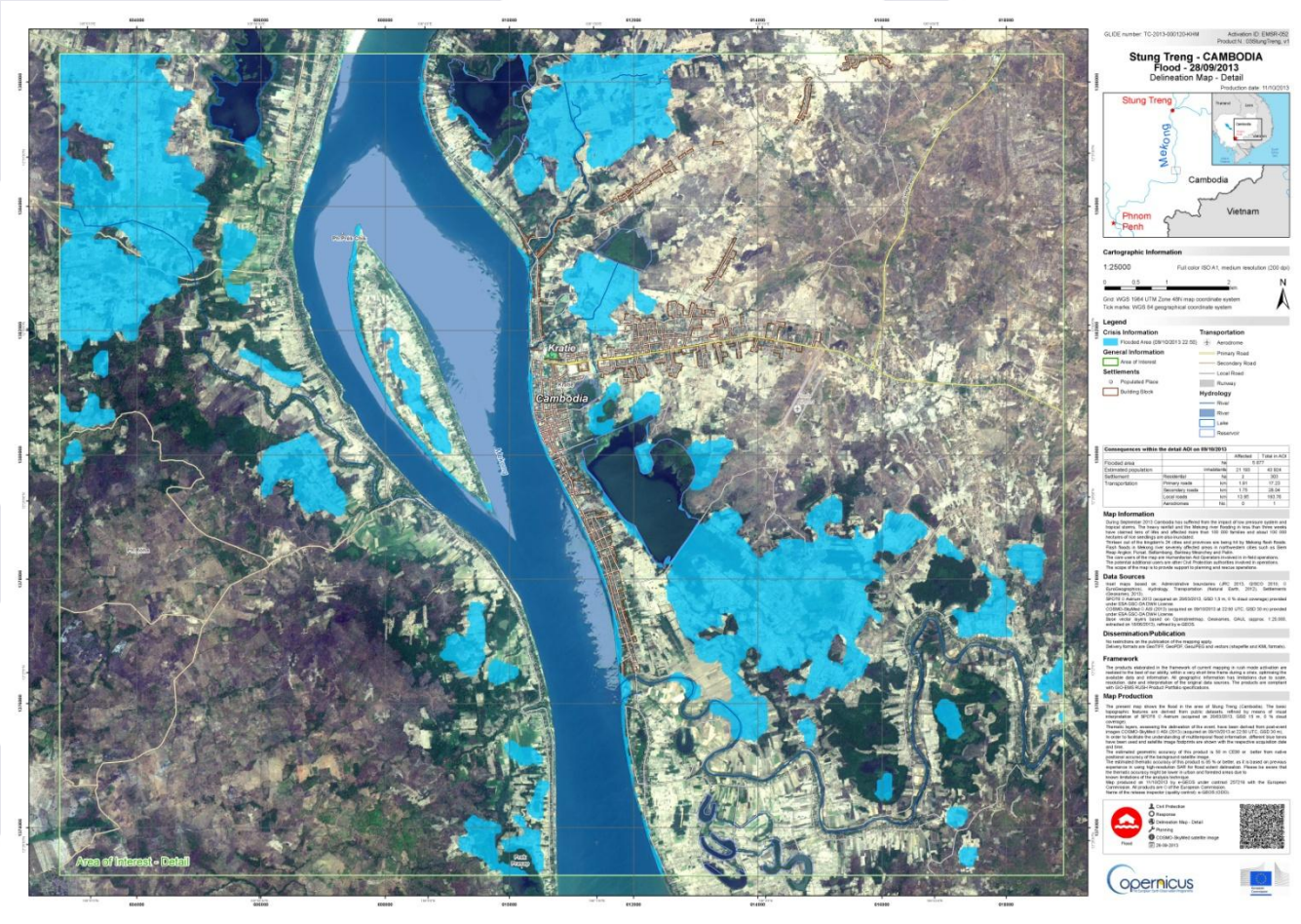
GIO-EMS 5/5


ACTIVATION REQUEST REVIEW
Civil protection Authorities in the European Civil Protection Mechanism
(EU27 + Norway + Iceland + Liechtenstein)
Civil protection organizations in other European nations
(e.g. Croatia, FYROM, Albania, Ukraine)
AUTHORIZED USERS
European Commission services
Emergency Response Centre identified international organisations in the emergency response and humanitarian aid domain
24 365 7
ERC ACTIVATION ALERT
EMERGENCY RESPONSE TEAM
Production Sites
JRC
QUALITY CONTROL

Examples: reference maps

Examples: delineation maps



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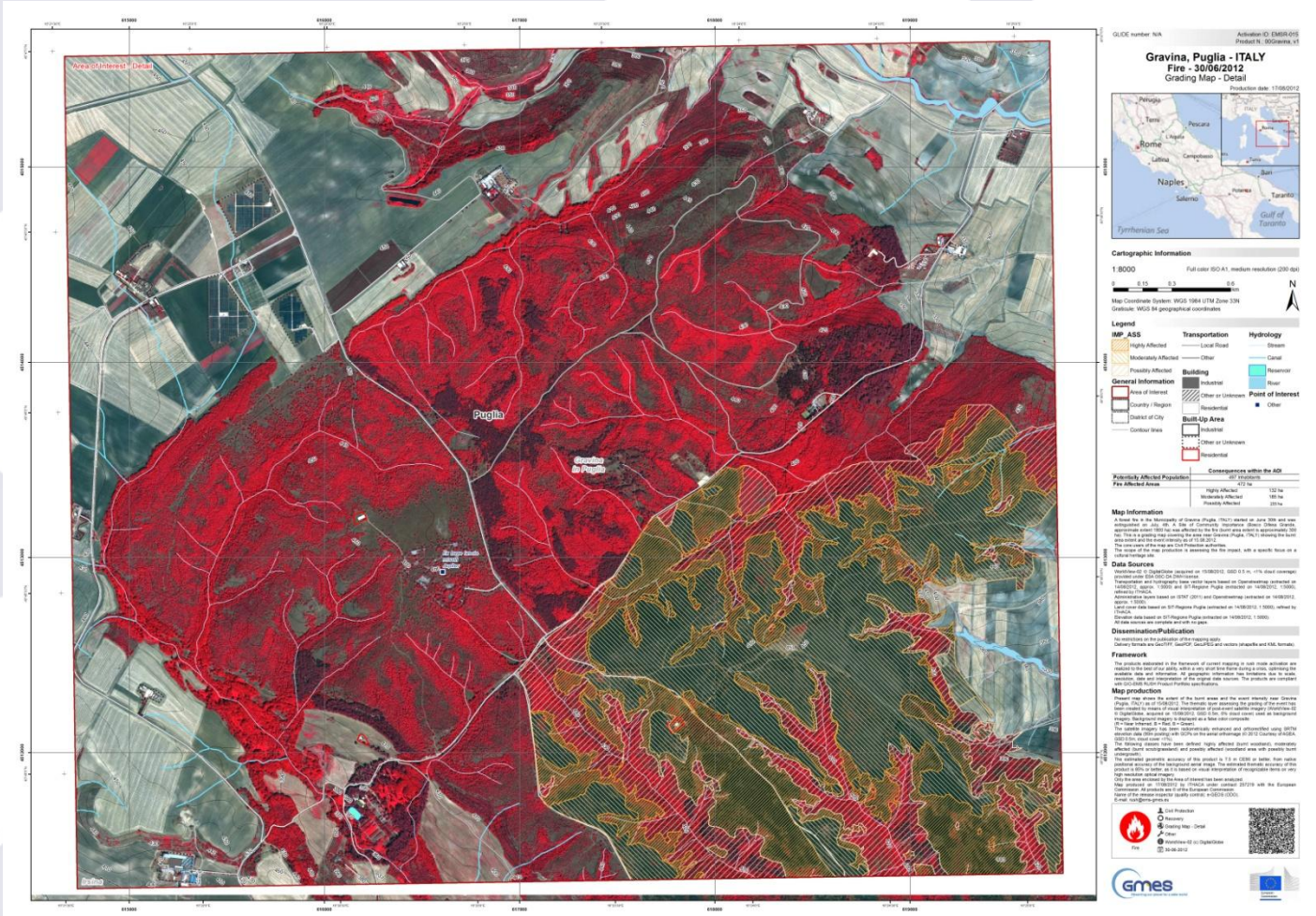
Examples: grading maps



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NEW PERSPECTIVES IN EMERGENCY MAPPING

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