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DVB Disaster Monitor

Augustin Sobol, M.Sc., Pramacom Prague, Ltd., Jaroslav Jansa, Ph.D., Immobiliser Central Europe, Ltd., Kamil Knotek, VIPRON, Ltd.

Czech Republic

Project Backgrounds



The underlying idea of the project is to create a communication and localization system providing complete communication including transfer of graphical and navigation data between the control infrastructure and the teams operating in the field in case of big disasters and crises whether of natural origin (flooding, forest fires, earthquake and landslides) or caused intentionally (terrorist attacks).

The system is elaborated down to the information subsystem of every member of the operating troops. Its name can be traced down to the prevalent DVB-class technologies, particularly upcoming DVB-SH and DVB-S2, which have brought many new functionalities to the solution.

System design is based on the following principles:

Fundamental communication infrastructure is based on DVB systems, particularly DVB-S2 and DVB-SH, which remain practically intact during any catastrophic events.

- The system utilizes PMR networks (TETRAPOL or TETRA technologies) which are at the base of most backbone communication infrastructures of emergency and security systems in many EU countries.
- Additionally, the system utilizes the state-of-the-art GNSS technologies: GPS and EGNOS now, GALILEO from 2014 on.
- Standard cellular networks GSM/GPRS are used as well, considering also LTE from 2015 on.
- Last mile technologies are represented by WiMax and long-range RFID (mobile version).
- Field network MosSenNet, developed by PRAMACOM, and global ICSMD (International Charter Space and Major Disasters) system are used as information sources.
- Mobile network of eCall “after market” units, developed by consortium lead by Immobiliser Central Europe, Ltd. for “ad-hoc” additional information
- Position monitoring system and monitoring of physiological parameters of the rescue team members based on state-of-the-art telematics and telemedicine products are integral part of the system, too.

Project Goals & Reasoning



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One should assume that due to the disaster:

- Local communication infrastructure is damaged;
- Remaining communication networks are overloaded;
- External means of communication cannot be included into local networks in acceptably short time;
- Power blackouts occur.

The goals of the proposed DVB Disaster Monitor are:

- Fast deployment of communication infrastructure to be used by the rescue teams and crisis management staff;
- Assessment of the disaster scope, contamination, etc.;
- Coordination of team activities in the field;
- Obtaining information about the real situation from sensors in the field and from satellite pictures;
- Delivery of this information into vehicles and to the members of rescue teams;
- Communication with safe or foreign areas for coordination of humanitarian and security aid, etc.

Project technical description

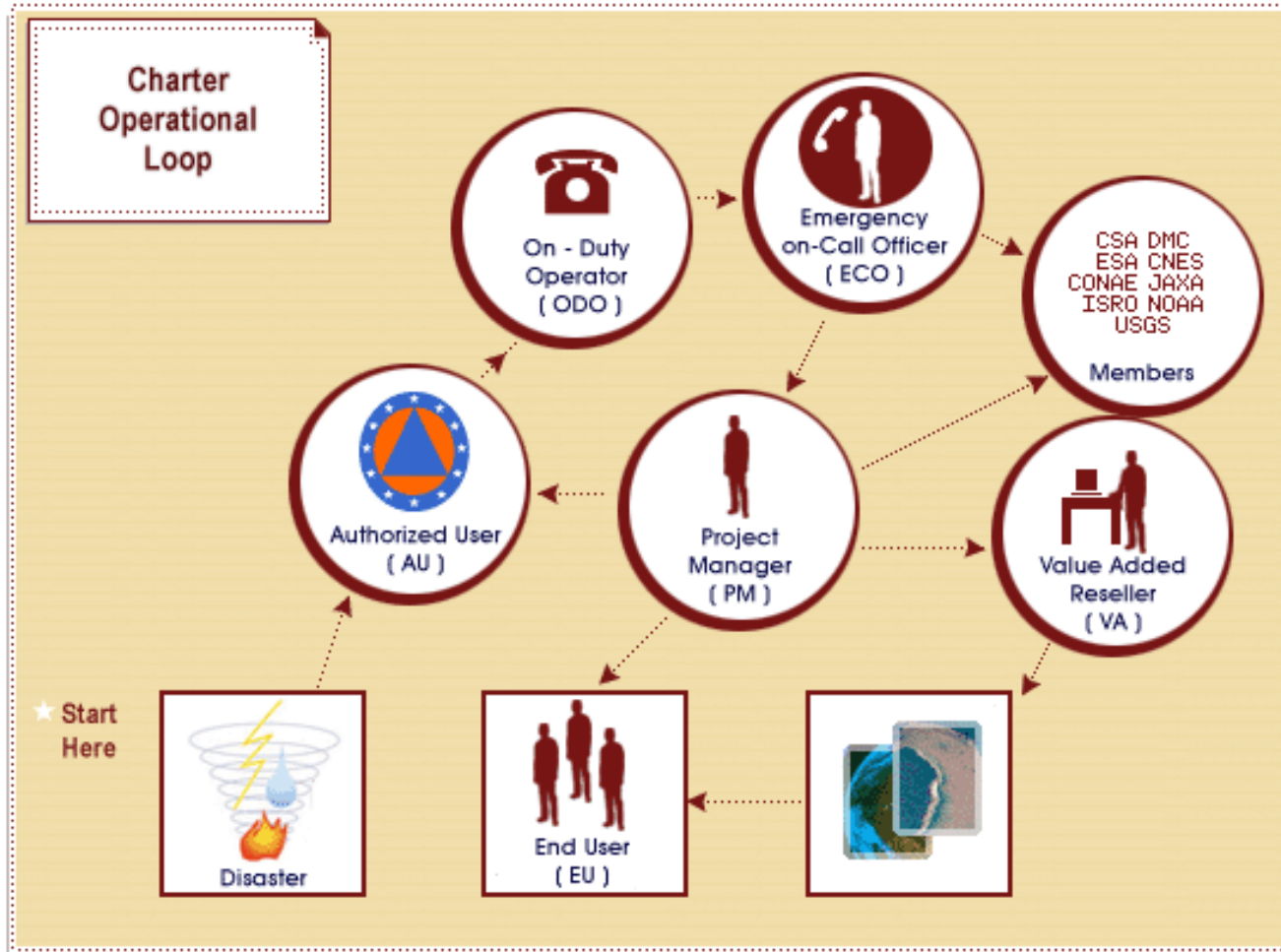
The concept of the proposed project as a whole is based on the COTS (commercial-off-the-shelf) philosophy, i.e. utilization of the latest IT technologies as developed for mass utilization in civil sector but with highest possible level of protection according to military standards (STANAG etc.) at the same time. This is how the long time existing split between military and security R&D could be reduced.

The philosophy of DVB Disaster Monitor is based on concept of data chain – Slide Nr.6

This chain consists of the following subsystems:

- 1 **Disaster Data Sources**
- 2 **Location Services**
- 3 **Integrated Emergency Center**
- 4 **Data distribution channel**
- 5 **See slides 6 - 10**

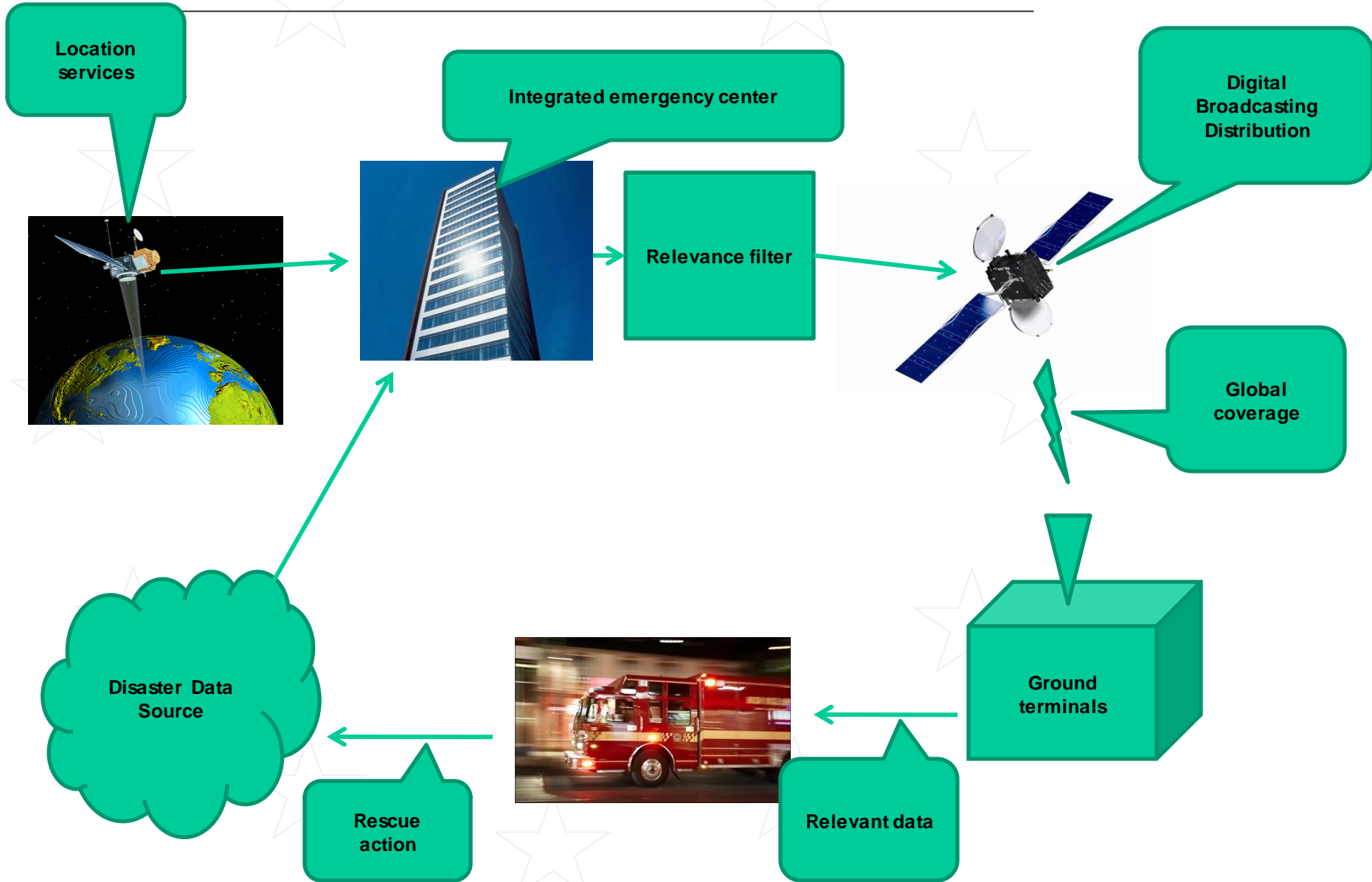
International Charter on Space and Major Disasters



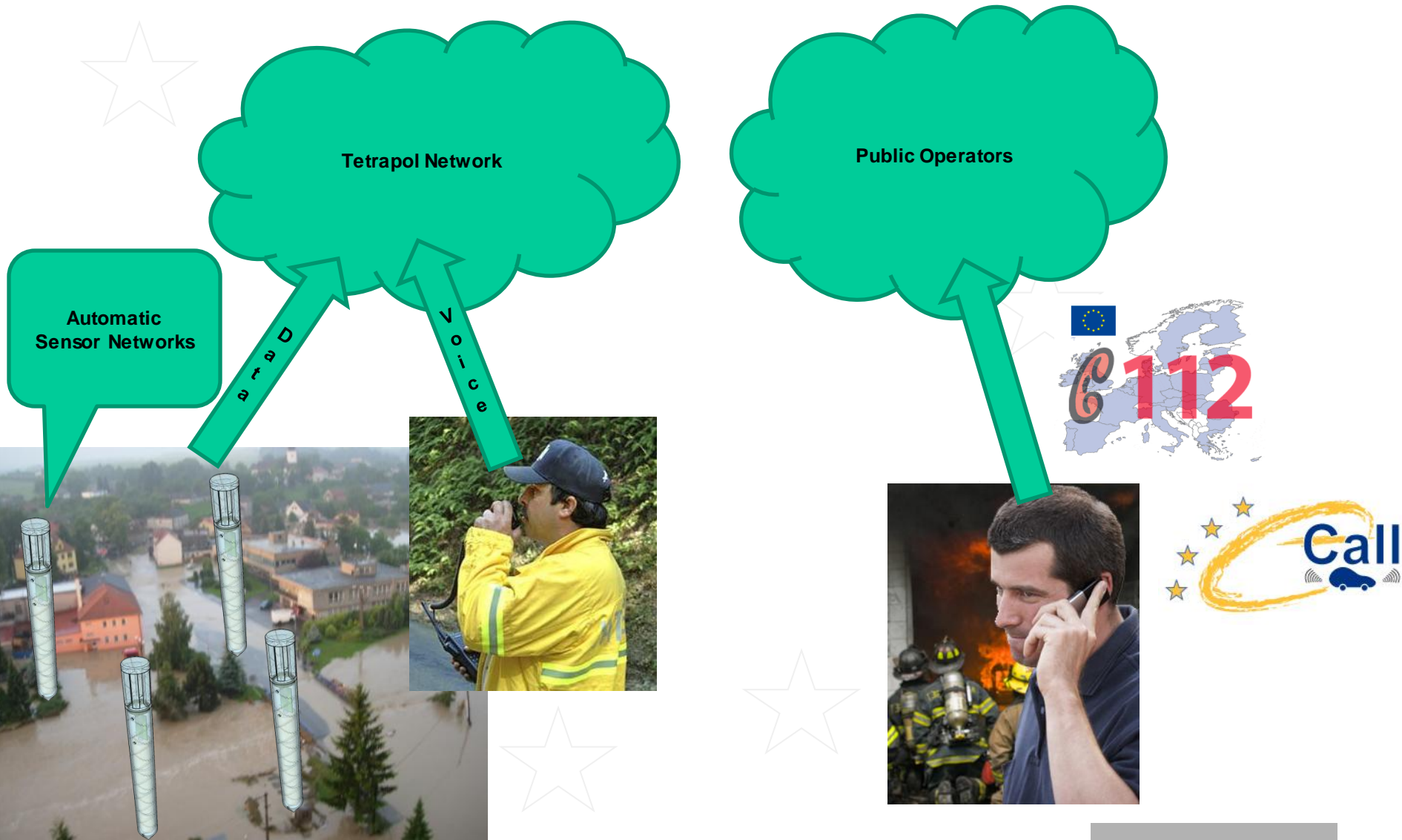
DVB Disaster Monitor Chain



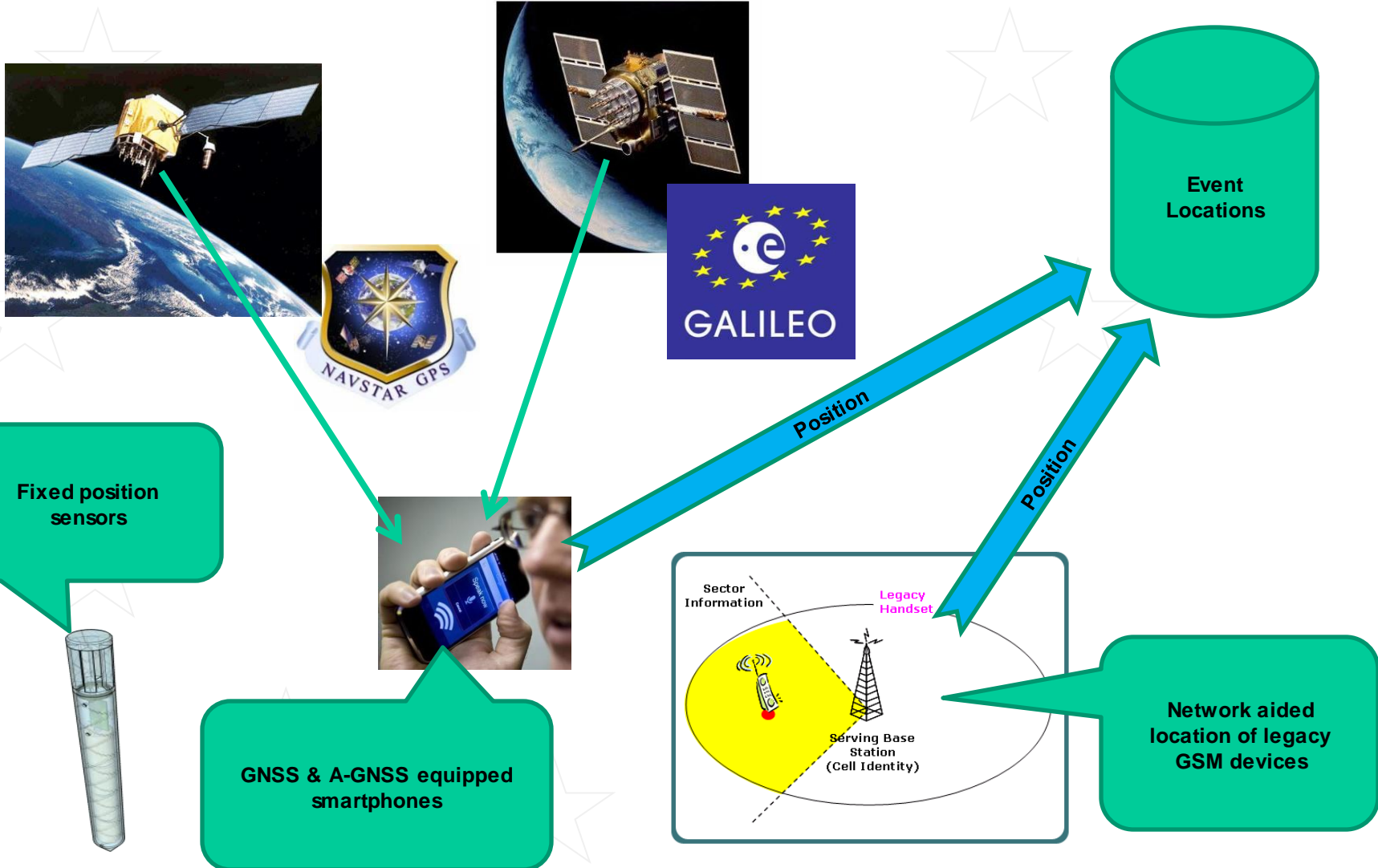
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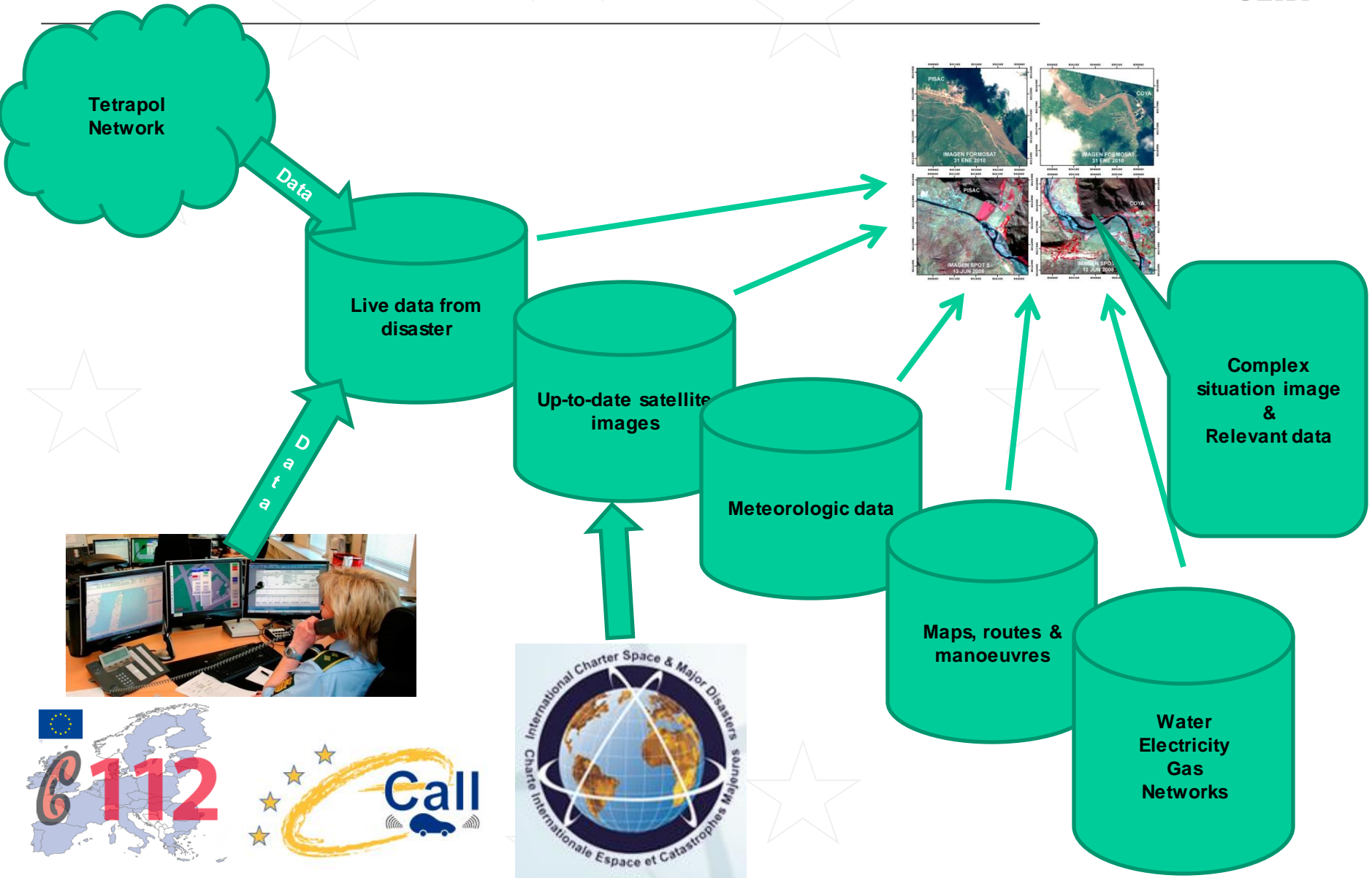
Disaster Data Sources



Location Services



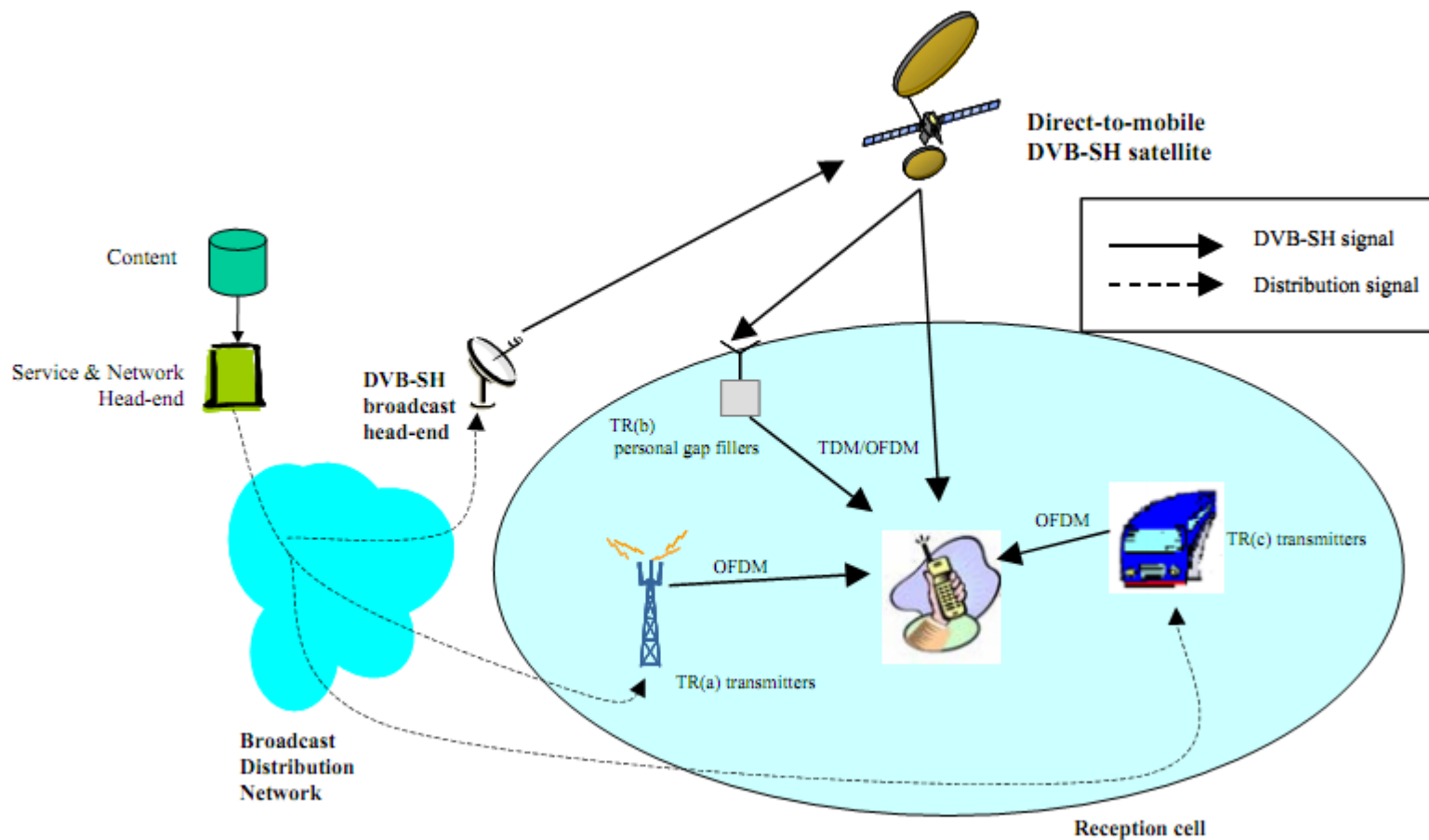
Integrated Emergency Center



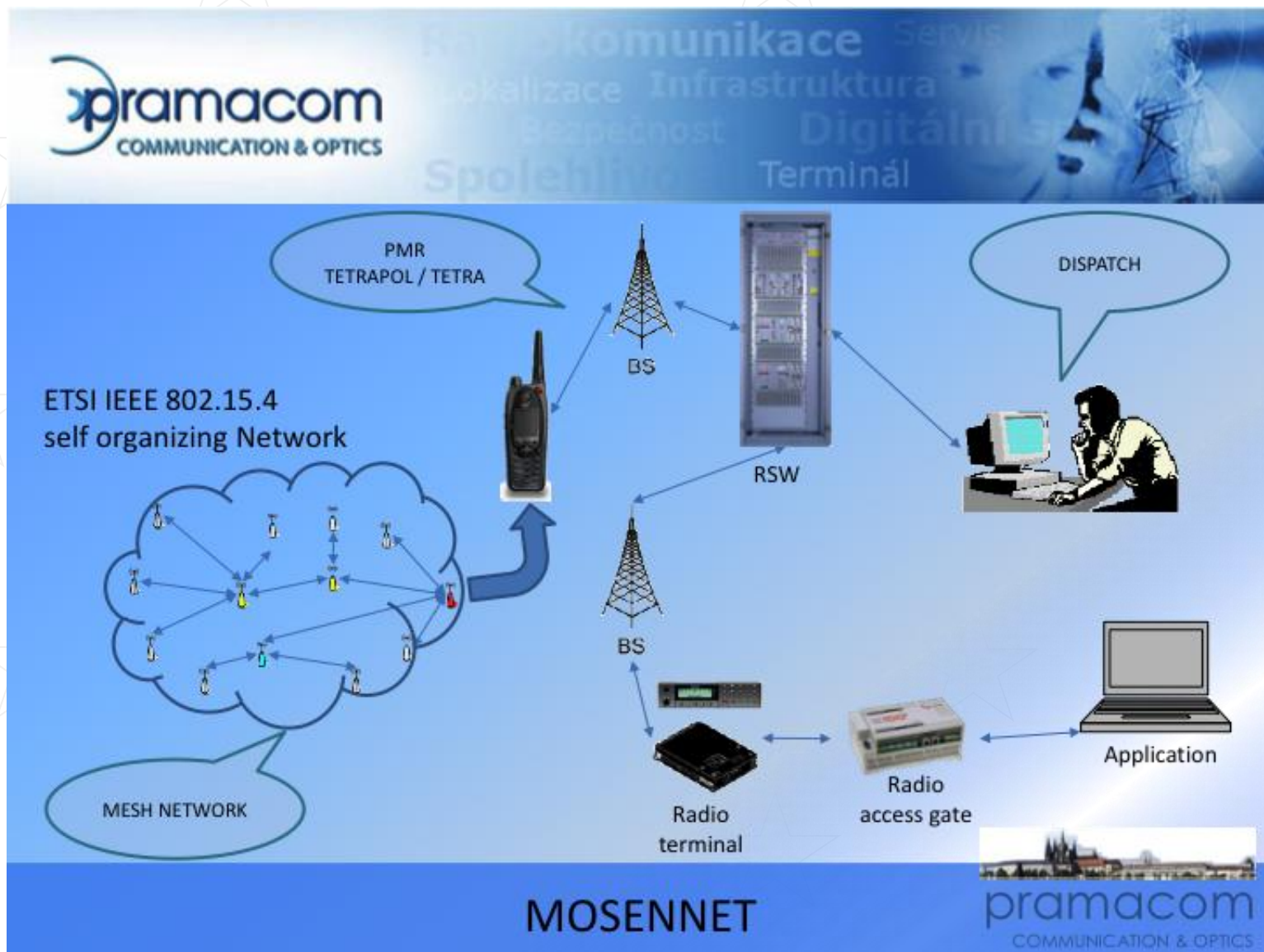
Data Distribution Channel



DVB-SH Architecture



PMR and MosSenNet communication



European eCall unit



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Satellite picture of Namibia flooding



Satellite picture of Portuguese forest fires



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New features of DVB Disaster Monitor



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- **Interface for existing backbone communication networks of the PMR class (TETRA, TETRAPOL)**
- **System MosSenNet of field data collection for preventing crisis situations**
- **System of data collection from new eCall “after market” units**
- **Satellite communication with safe regions via DVB-RCS /S2**
- **Delivery of broadband data to the members of rescue teams via WiMax and DVB-SH**
- **New long-range RFID communication technology**
- **Body area network (BAN) for collection of physiological data of the rescue team members**

Project partners



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- **ALCATEL-LUCENT, S.A. – www.alcatel-lucent.com**
 - **NXP Semiconductors, NV – www.nxp.com**
 - **Toumaz Technology, Ltd. - www.toumaz.com**
 - **CASSIDIAN – www.cassidian.com**



Thank you for your attention!