Improving Disaster Response Capacity

Improving Disaster Response Capability using Satellite Communication

Public Safety Communication Europe Forum

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https://artes-apps.esa.int/projects/idrc

esa

RATIONALE

RATIONALE

MOTIVATION

Time needed for advanced communications and services for improved mobilization and coordination

T0 **T0 + 2 hours** **T0 + 12-20 hours** **T0 + 72 hours**

Deployment team ready to go

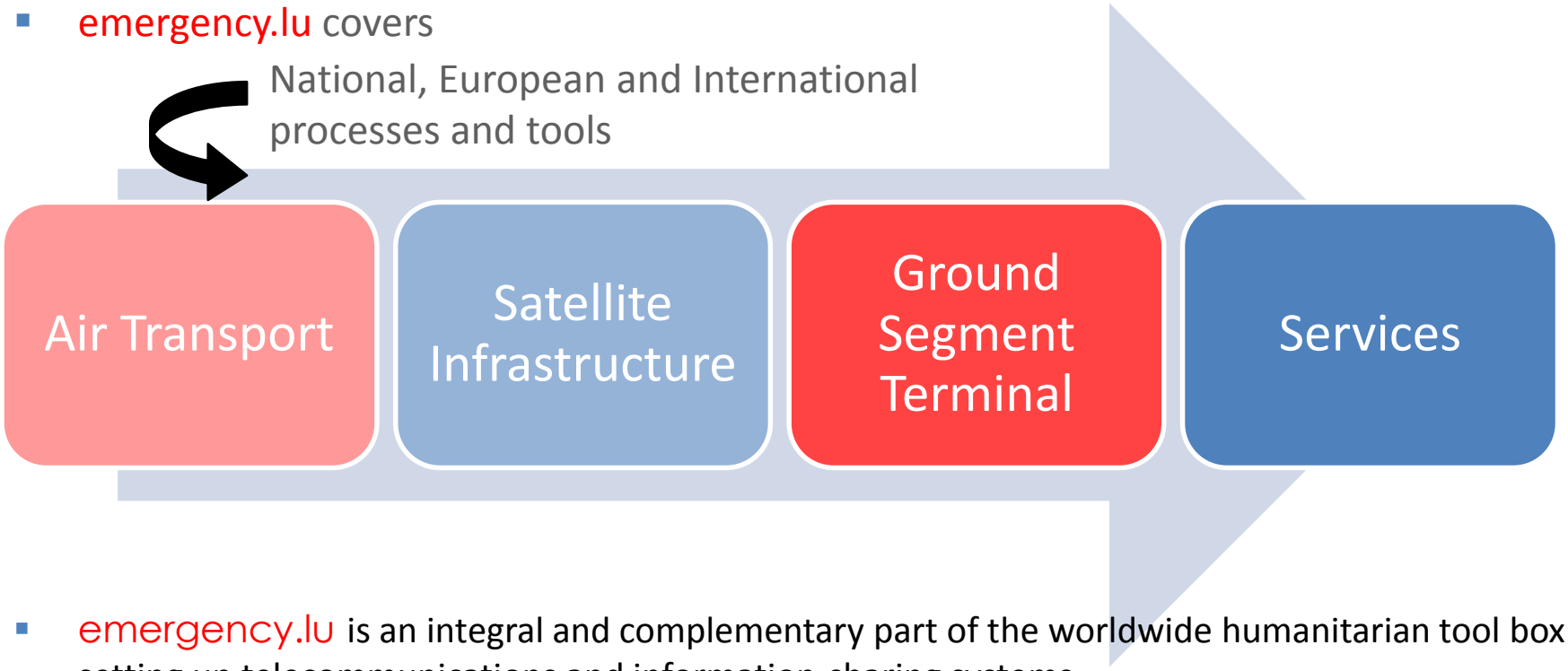
emergency.lu installed & operational

Current services

emergency.lu / IDRC

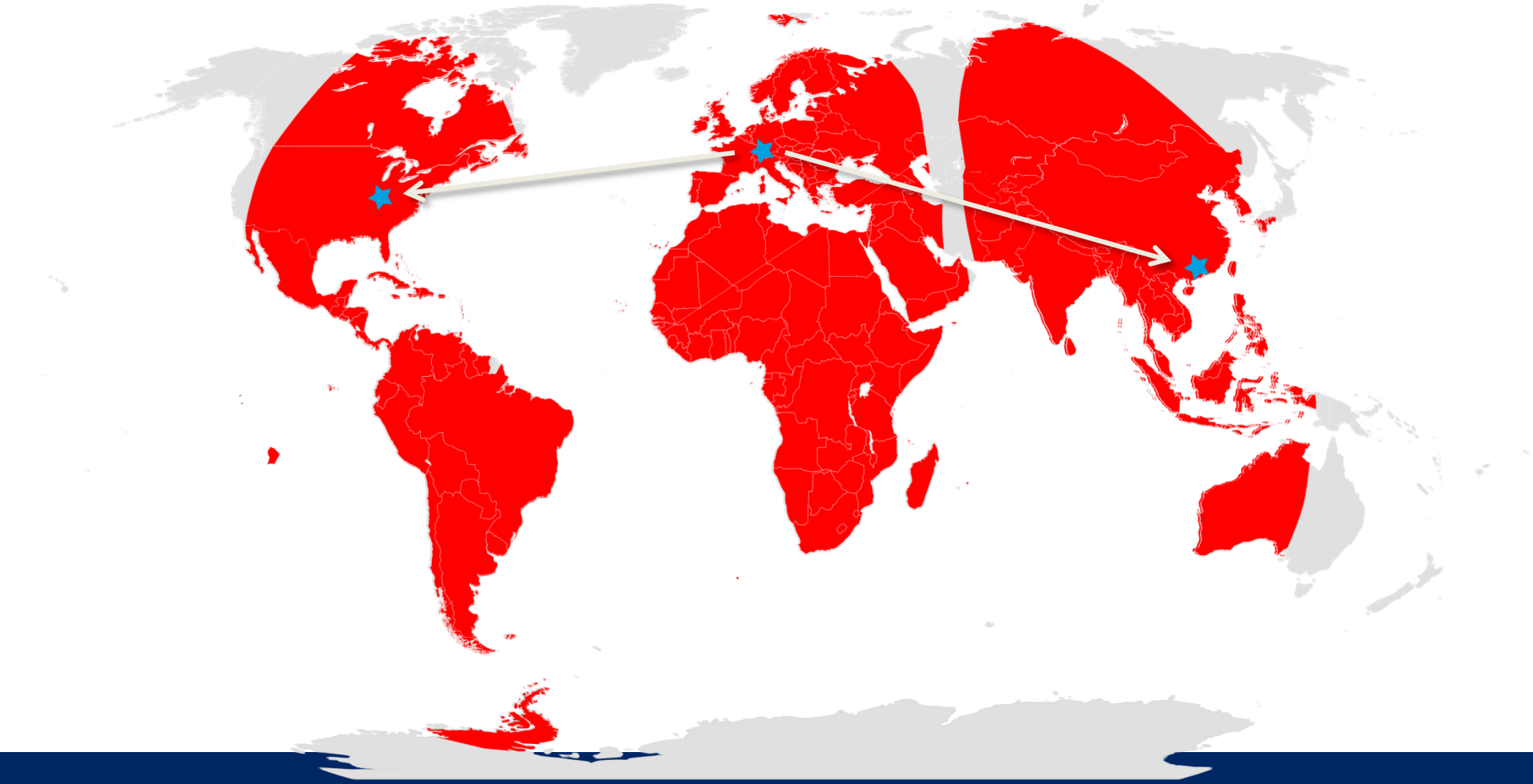
APPROACH OF EMERGENCY.LU

- emergency.lu covers



- emergency.lu is an integral and complementary part of the worldwide humanitarian tool box for setting up telecommunications and information-sharing systems
- emergency.lu has been deployed as Public Private Partnership
- The service is provide by the Luxembourg Government for free to the humanitarian world

PRE-BOOKED & AD-HOC SATELLITE CAPACITY



Emergency. lu
LOCAL & REMOTE SERVICES

- High speed Internet
- Maps background and annotations
- File sharing
- Public Communication via adapted Skype Client
- Tactical Voice with Voice over IP
- Reporting and “LogBook”
- Instant messaging
- Tracking and Tracing
- Alerting system

EMERGENCY.LU

Emergency.lu

- has been developed as a public private partnership
- in close cooperation with WFP, as the leader of the United Nations Emergency Telecommunications Cluster
- is offered by Luxembourg as a free global public service
- Latest deployments: Philippines, Nepal

IDRC Improve Disaster Response Capacity

ESA ARTES 20 feasibility Study

March 2013 – December 2014

Partners:

- HITEC Luxembourg
- SES TechCom
- Deloitte Luxembourg

Additional requirements

- **Technical Requirements:**
  - **Complementary Ku-band coverage for Europe**
  - **Additional services**
    - **Rapid deployment of metropolitan area networks (3G/LTE, TETRA)**
    - **Geo-referenced aerial and/or satellite imagery (SASISA, Copernikus)**
    - **Earth Observation aggregation & distribution**
    - **Additional Mobile apps**
- **New delivery model requested**

IDRC Delivery Models

- **Proactive**

  user buys the service and solution and has a longterm contract

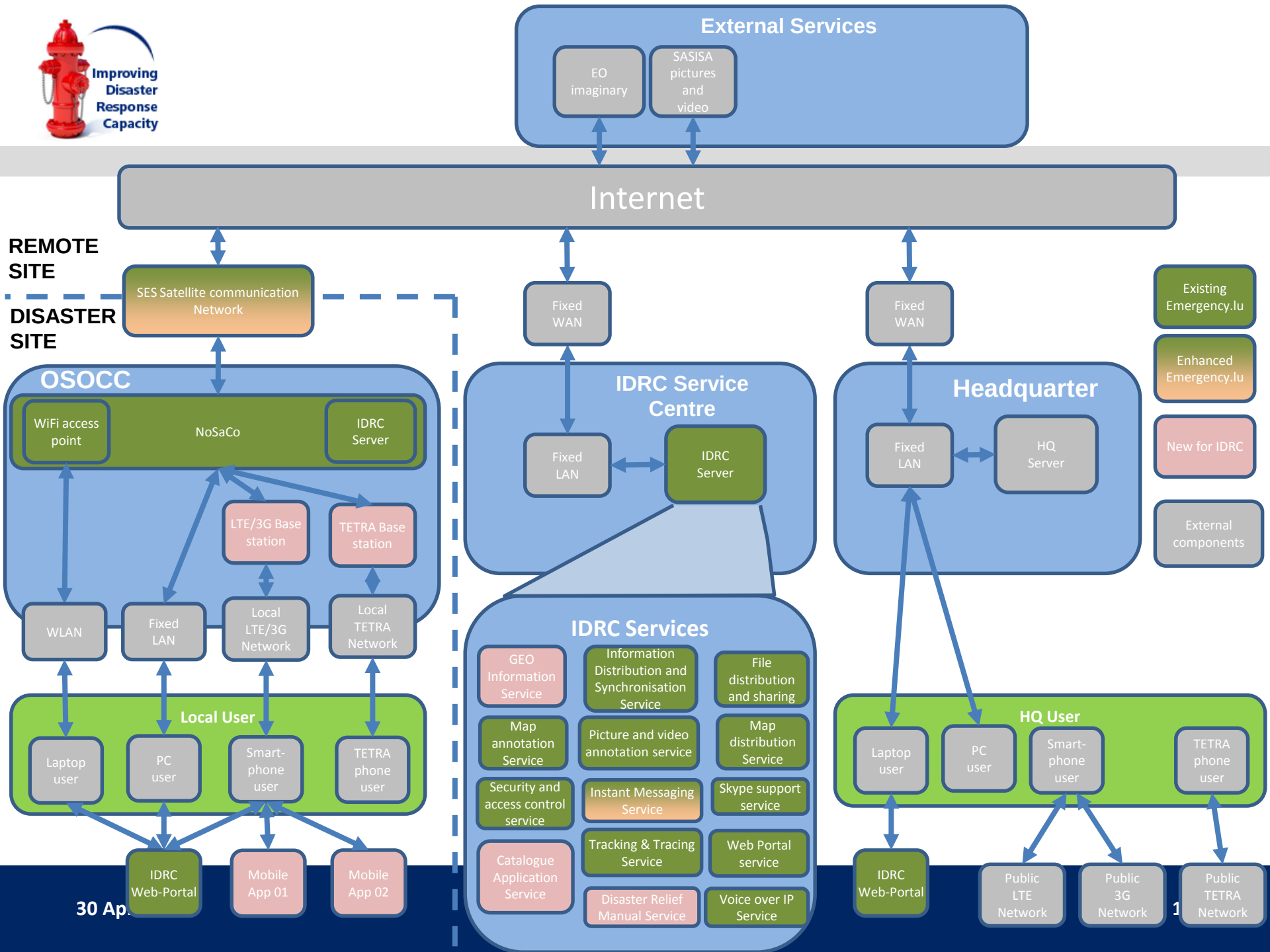
  Options: Sales or Leasing

- **Responsive**

  upon request in case of an emergency and for training purposes

- **Flexible**

  several users together buy the service and solution and share the costs and the usage rights


Improving Disaster Response Capacity
External Services
EO imaginary
SASISA pictures and video
Internet
REMOTE SITE
DISASTER SITE
SES Satellite communication Network
Fixed WAN
Fixed WAN
Existing Emergency.lu
Enhanced Emergency.lu
New for IDRC
External components
OSOCC
WiFi access point
NoSaCo
IDRC Server
LTE/3G Base station
TETRA Base station
WLAN
Fixed LAN
Local LTE/3G Network
Local TETRA Network
Local User
Laptop user
PC user
Smart-phone user
TETRA phone user
IDRC Web-Portal
Mobile App 01
Mobile App 02
IDRC Service Centre
Fixed LAN
IDRC Server
IDRC Services
GEO Information Service
Information Distribution and Synchronisation Service
File distribution and sharing
Map annotation Service
Picture and video annotation service
Map distribution Service
Security and access control service
Instant Messaging Service
Skype support service
Catalogue Application Service
Tracking & Tracing Service
Web Portal service
Disaster Relief Manual Service
Voice over IP Service
Headquarter
Fixed LAN
HQ Server
HQ User
Laptop user
PC user
Smart-phone user
TETRA phone user
IDRC Web-Portal
Public LTE Network
Public 3G Network
Public TETRA Network

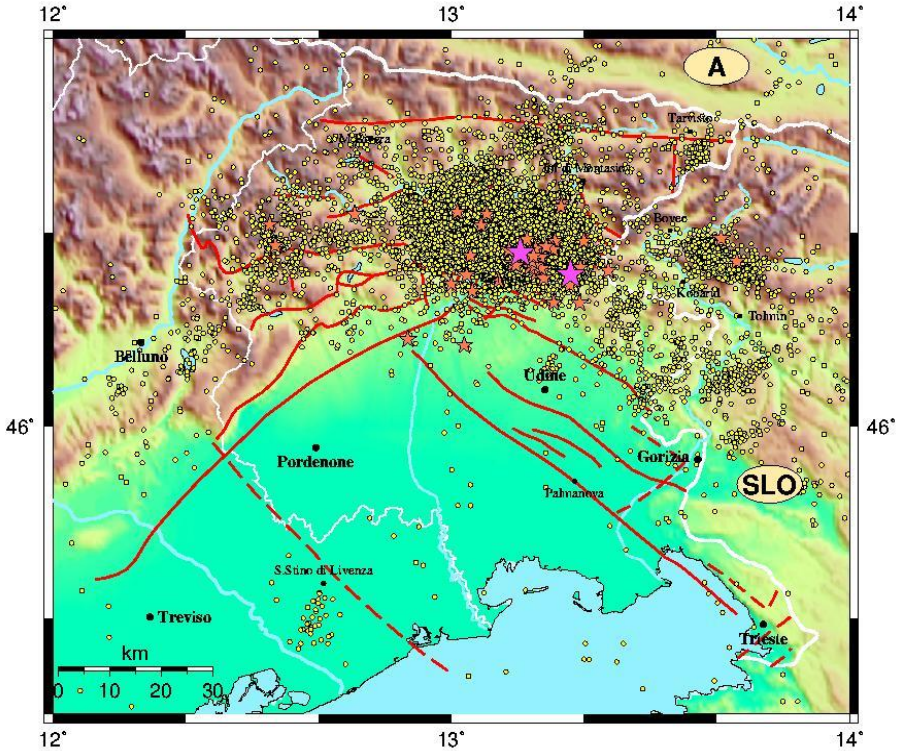
TERMINALS

- Rapid deployment kit
  - Complete system set-up in less than one hour.
  - User-friendly deployment, low maintenance and remote monitoring.
  - Pre-configured, ready-to-use end devices for voice communication.
- Regular deployment kit
  - Powerful, high performance satellite communication system.
  - Accessible for a large number of users and end devices.
  - Low maintenance and remote monitoring pre-configured; ready-to-use end devices for voice communication.

PROOF OF CONCEPT BACKGROUND

- Date: March 19th
- Location: Portis Vecchia – Italy
  (destroyed by the Friuli Earthquake 1976)
- Partners:
  Civil Protection of Autonomous Region Friuli, Ventia, Giulia
  Administration for Disaster Relief Slovenia
- Scenario:
  Disasterous Earthquake, setup of OSOCC and support of search mission

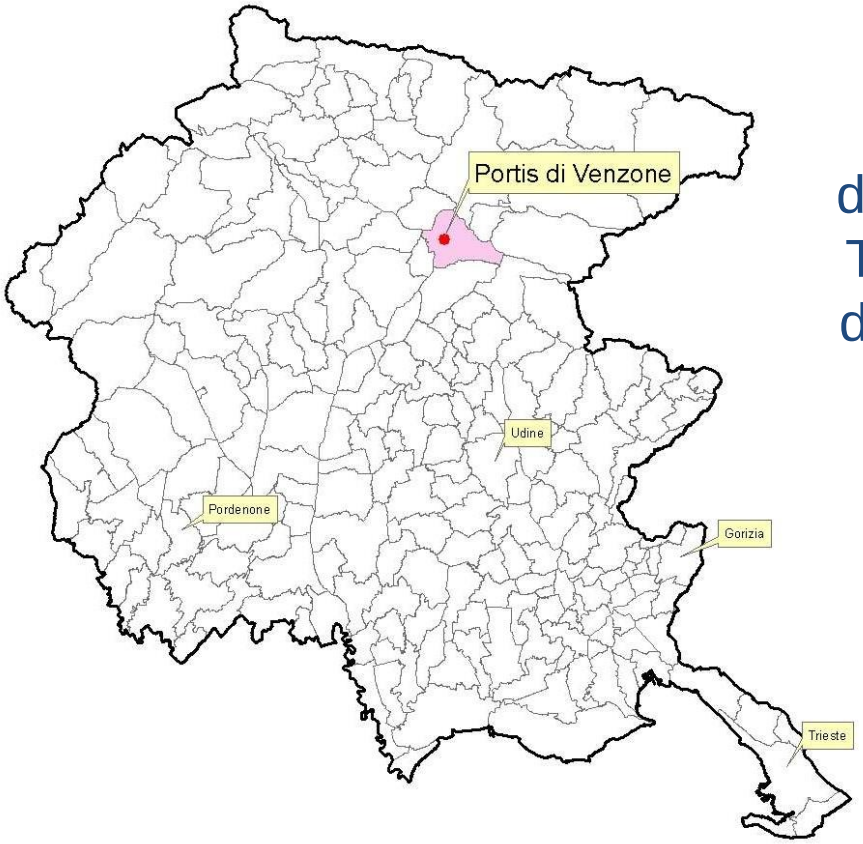
FRIULI VENEZIA GIULIA REGION: SEISMIC RISK



Seismic activity 1976 - 2005

Total events:	15052
Events magnitudo >2.5:	1962
Events magnitudo >4:	67

PORTIS VECCHIA IN VENZONE MUNCIPALITY



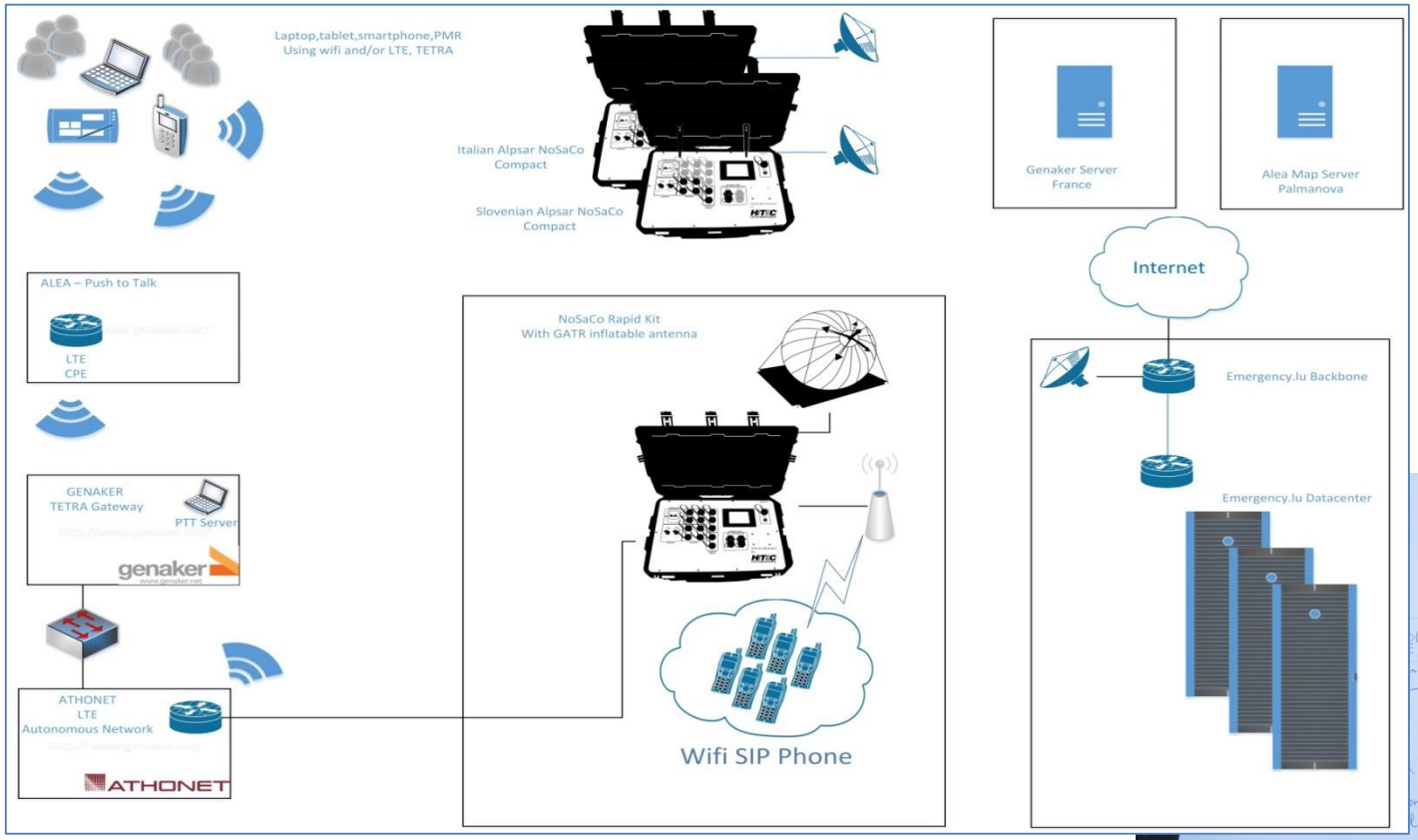
Portis Vecchia is a little town disused after the 1976 earthquake. Today this town is still at the same damage conditions as immediately after the earthquake.

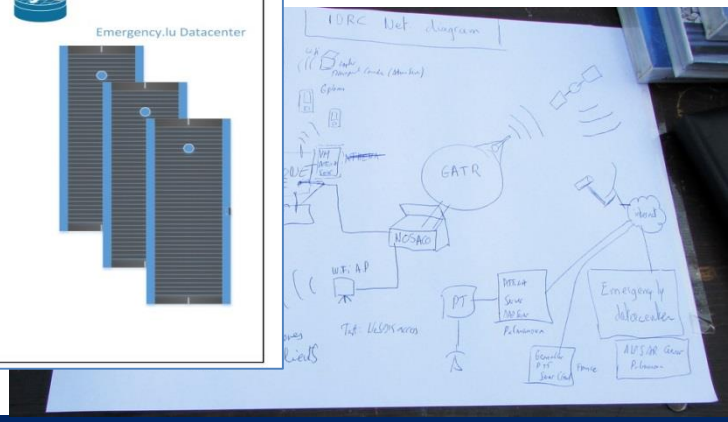
Improving Disaster Response Capacity

HOUSES AND BUILDINGS DAMAGED

PoC demonstration & validation

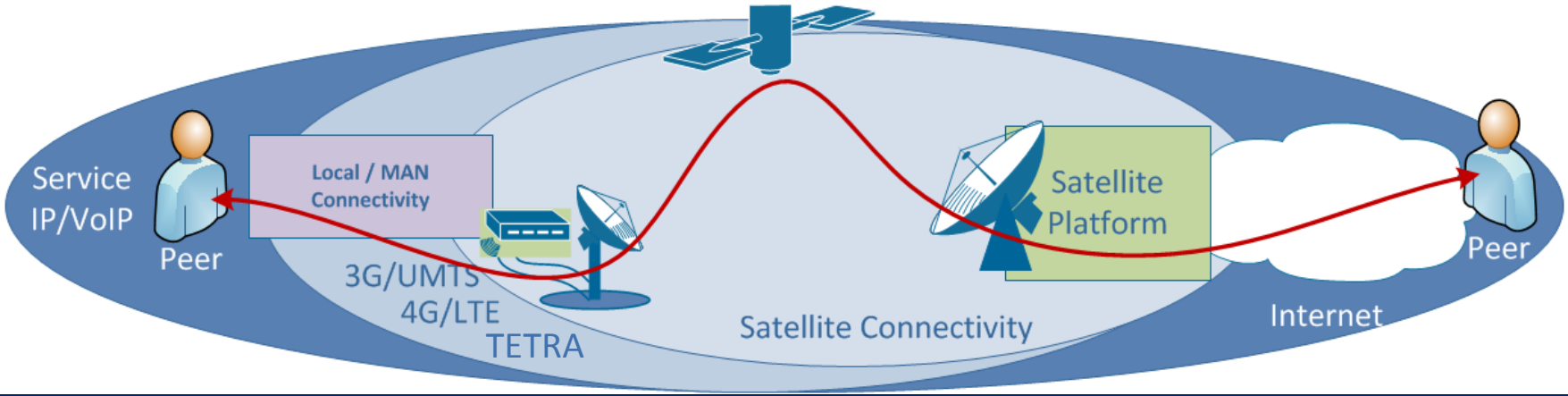
- On March 19th the final demonstration was executed in Portis Vecchia
- Detailed answers to the validation questions of slide 6 can be found in D4 $5.3



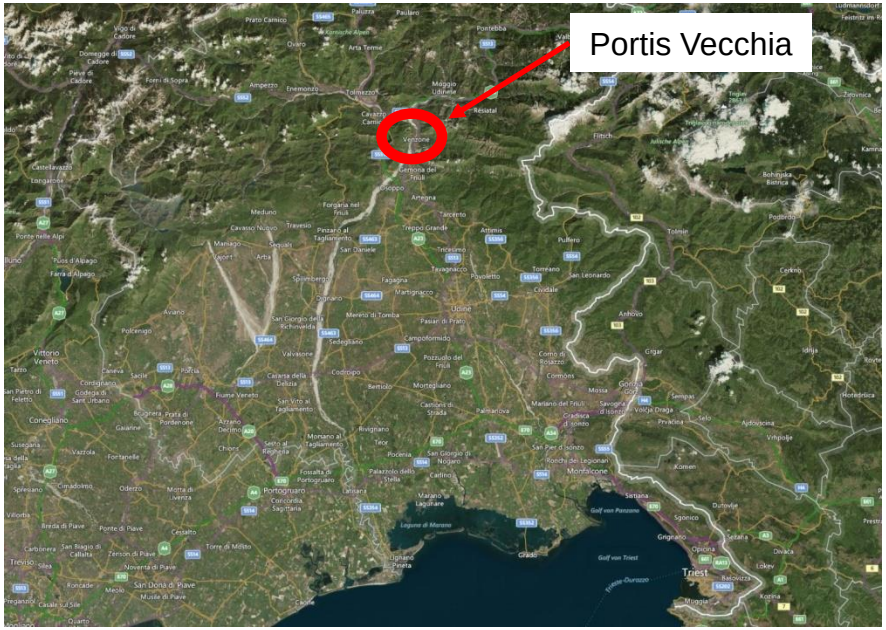


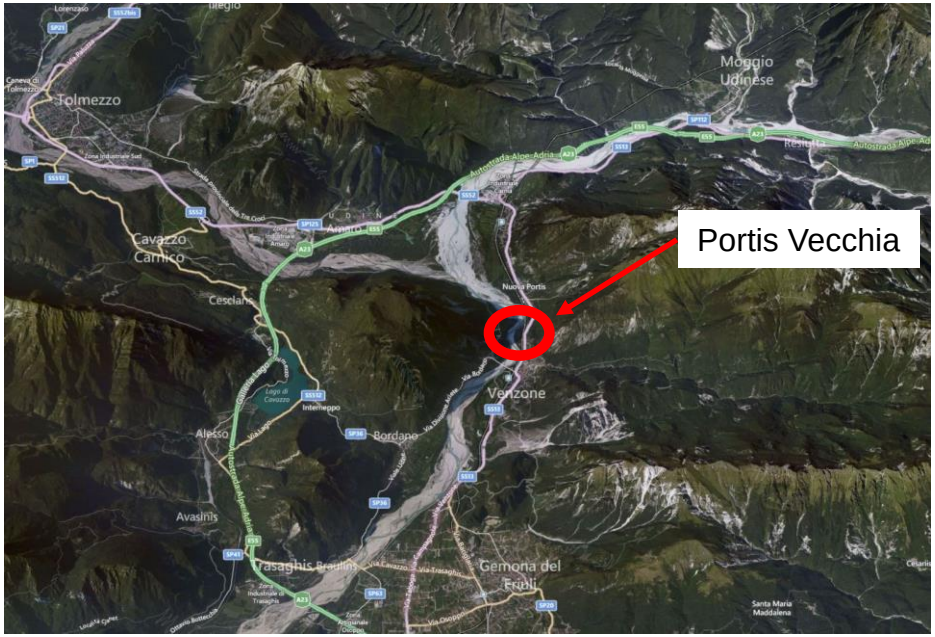
PROOF OF CONCEPT TECHNOLOGIES INTEGRATED

- **Emergency.lu**
  - **Rapid deployment kit**
- **IDRC**
  - **KU-band antenna with compact deployment kit**
- **Communication Networks on-site**
  - **WiFi**
  - **LTE (ATHONET pico base station)**
  - **TETRA solution (GENAKER)**
  - **Push-to-Talk service for Smartphones**



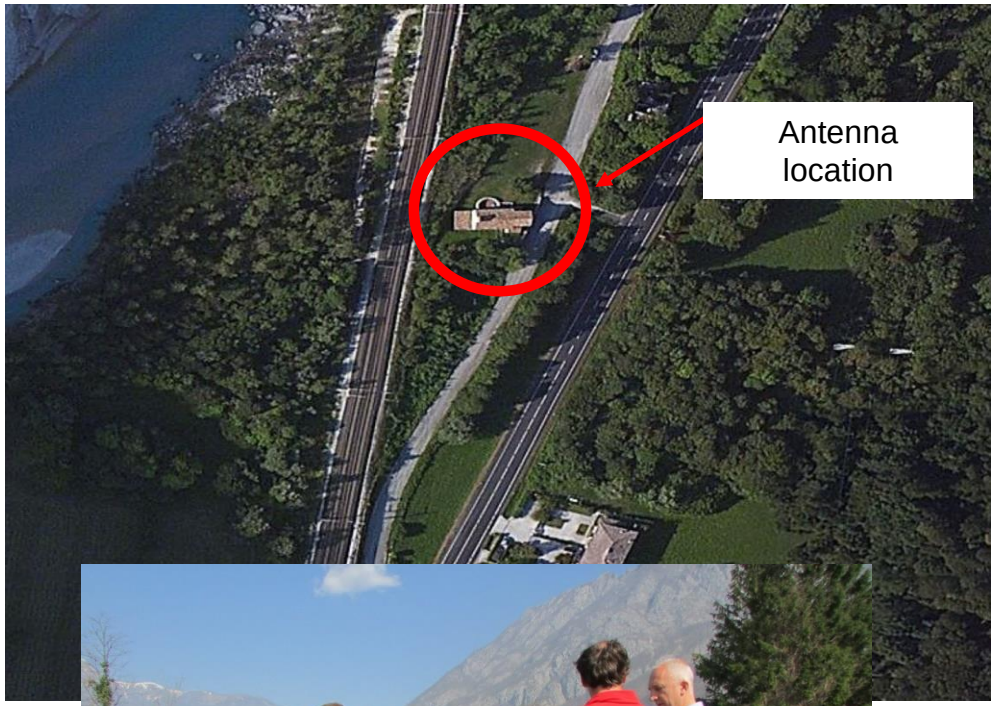
PoC scenario





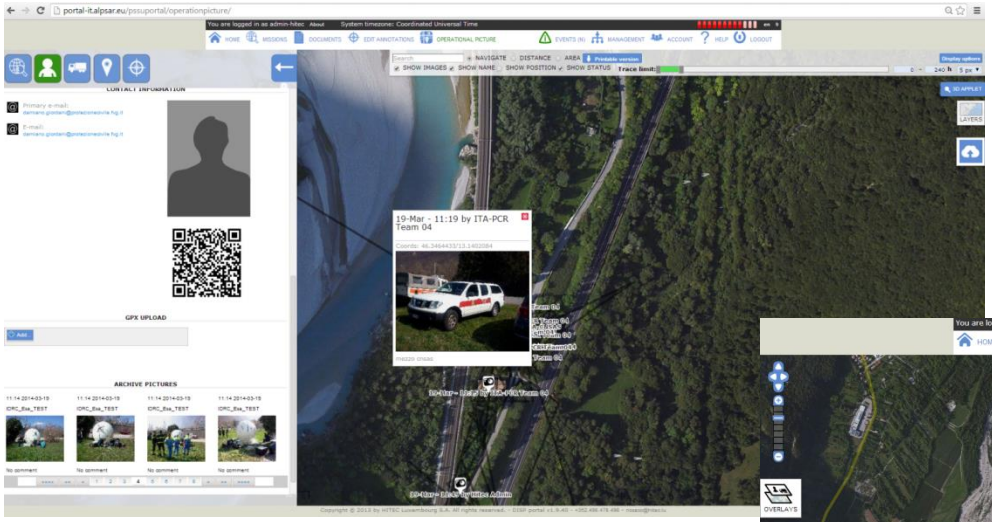
PoC scenario

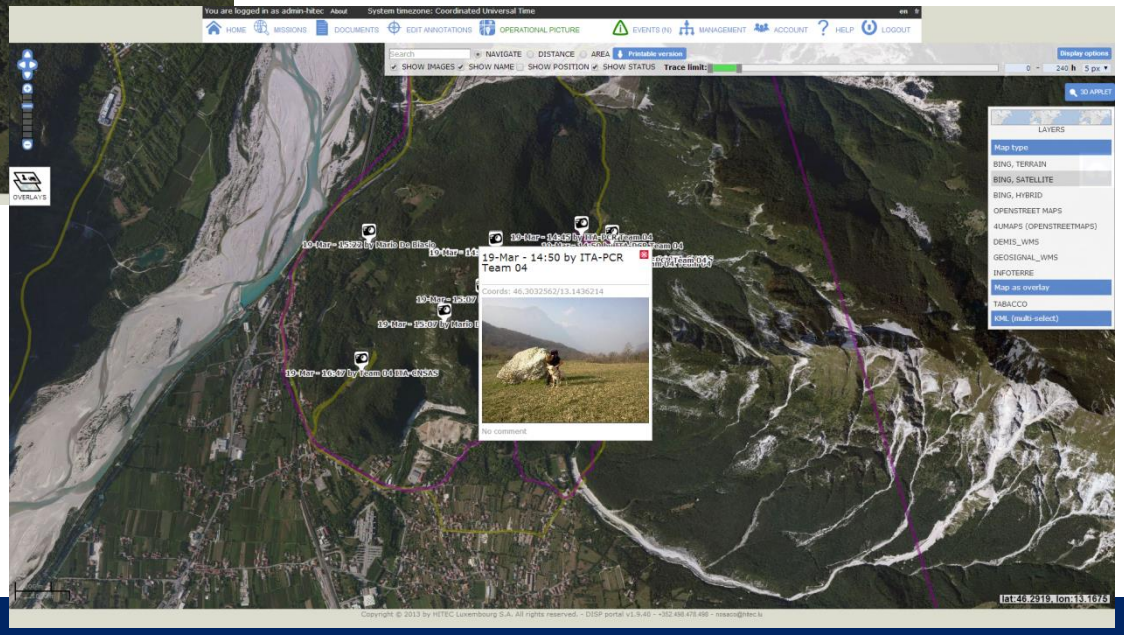
PoC scenario I: 1st attempt



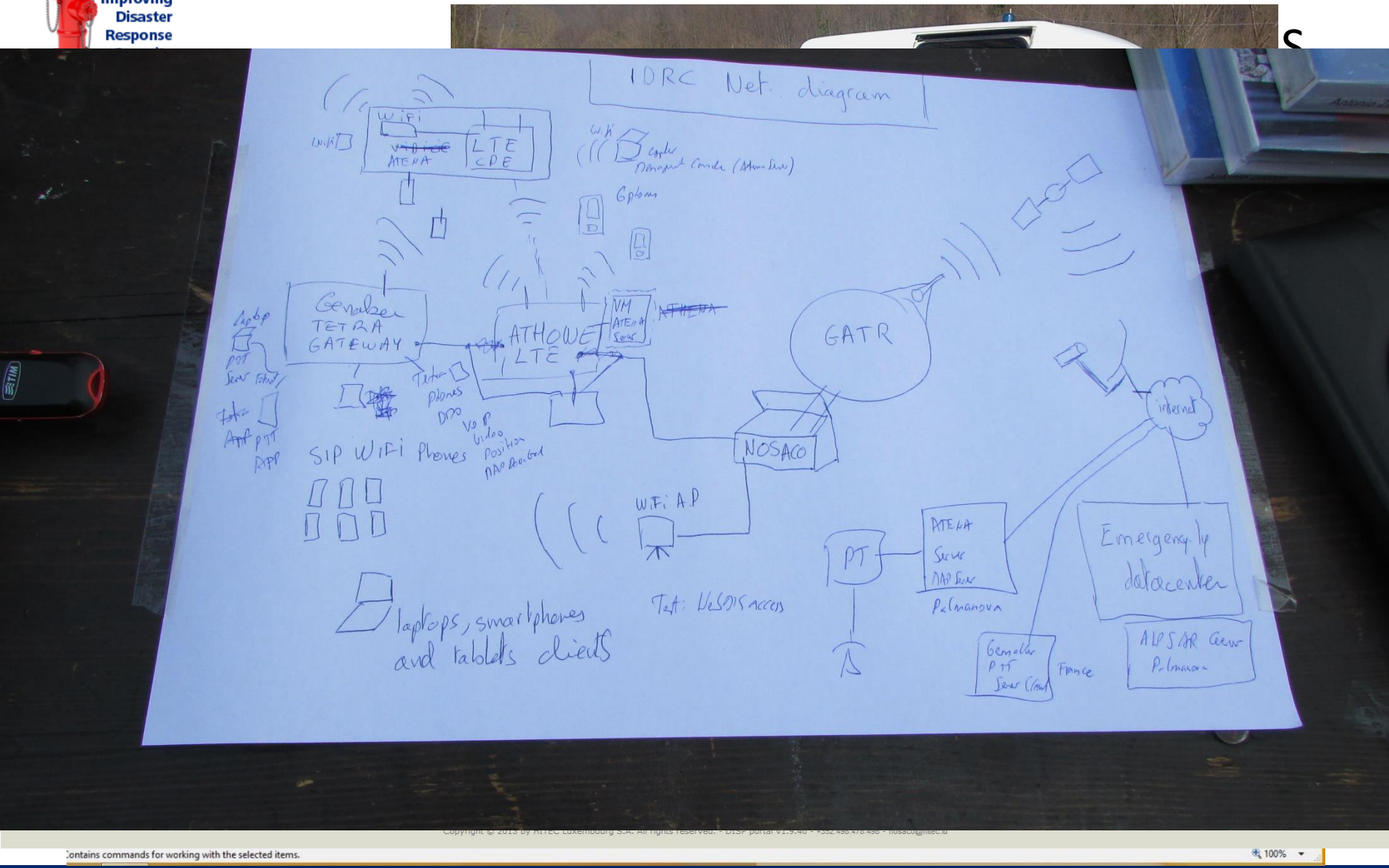
TETRA Phone support test

Tracking and Tracing





PROOF OF CONCEPT



Contains commands for working with the selected items. 100%

PROOF OF CONCEPT

- **Services tested**
  - Voice communication (WiFi, LTE, TETRA)
  - Information Sharing services
  - Instant Messaging
  - Reporting Services
  - Tracking Services
  - Map services
  - Security Services

ACHIEVEMENTS AND LESSONS LEARNED

- **PoC shows that the concept works and makes sense for users in real situation**
- **System flexibility demonstrated by integrating 3 new services in 2 hours. (LTE, TETRA, Push-to-Talk)**
- **Positive user feedback**
- **Main topic – Delivery Model**
  - **Users would like to own the solution**
  - **but for cost reasons sharing between different organisations is requested**

NEXT STEPS

- **Continued deployment of the existing Emergency.lu services and solutions**
- **Continued discussions with users and stakeholders to improve the existing services (e.g. moving to open source)**
- **Integration of IDRC concept into the Common Information Space by EPISECC**
- **Discussions with SATResponse team to explore how to join forces to implement the common vision**
- **Goal: service availability 2016/2017**

Questions?