“EMERGENCY.LU” SOLUTION

U.N. SPIDER WORKSHOP

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Context And Motivation (1/2)

- **January 12, 2010**: Haïti has just been hit by an earthquake of historic magnitude. Hours later President René Préval is wandering:
  
  “My palace collapsed… I have no connectivity for my cell phone to even call somebody for help…”.

- **January 14, 2010**: Urban Search and Rescue (USAR) teams from Luxembourg arrive in Port-au-Prince, together with humanitarian workers from France and Belgium

- **January 15, 2010** (in the morning): USAR teams, with their dogs, are still blocked at the airport

  - During the 72 hours: due to lack of coordination, most of the help transported to the airport was unused whereas
  - However, first 72 hours are the most important to get a good situation awareness and needs assessments
The deployment of small teams of expert deploying relevant communication equipments can improve the efficiency of the experts sent onsite.

The experts are not telecommunication or ICT engineers: the tools should be easy to use and deployable in a few minutes.

The size and weight of the solution should be limited for quick transportation.

→ The solution Emergency.lu has been set up to fill this gap.
The approach (1/3)

- **Delivering Service on top of connectivity**
  The usual approach is to deliver point to point connectivity (VSAT model) or internet access.
  Emergency.lu provides services to:
  - Capture information on local needs,
  - Facilitate pre-defined information sharing,
  - Improve the coordination at the global level and on site.

- **The basic services required:**
  - Voice communication,
  - Video and picture sharing and access,
  - Sensor deployment, values collection, sharing and triggering,
  - Definition and modification of situation maps,
  - Assessment of the critical needs.

→ The services should be accessible from different locations at the crisis site.
The approach (2/3)

- To face the challenges, Emergency.lu consortium covers the entire service chain

National, European or International processes and tools

- Satellite Capacity
- Ground Segment Terminal
- Services
- Air Transport
THE APPROACH (3/3)

Crisis Location

Local to Central Communication
Local to Local Communication

SPoP #1
SPoP #2
SPoP #3

Expert or Rescue Team

Redundant Services Hosting
Various experts and operators
Technical solution and architecture (1/4)

- **Global organisation around three layers:**
  - Layer 1: Satellite communication technologies,
  - Layer 2: Middleware and service implementation,
  - Layer 3: End devices and services access.

- **Layer 1: Satellite communication technologies**
  - Telecommunication concept relies three geographically distributed hubs
  - HUBs implement advanced techniques such as:
    - DVB-S2 / ACM and LDPC FEC coding on outbound,
    - MF-TDMA and 2D 16-State coding on inbound.
  - Specific considerations for the TCP acceleration and QoS prioritisation have been implemented,
  - Both Ku and C band can be used.
Technical solution and architecture (2/4)

- Layer 1: Satellite communication technologies
Technical solution and architecture (3/4)

- **Layer 2: Middleware and service implementation**
  - Layer 2 relies on a middleware implementation that is ensuring:
    - Service resilience
    - Service security and accessibility
Technical solution and architecture (3/4)
Technical solution and architecture (3/4)
Layer 3: End devices and services access

- The NoSaCo terminals includes all the required end-devices:
  - Wireless Sensors,
  - Wireless Video Cameras (providing video and pictures),
  - Ruggedized laptops,
  - Wireless Voice over IP phones.

- User friendly and efficient access to services:

  **For the users in the field**: touch screen devices
Technical solution and architecture (4/4)

- **Layer 3: End devices and services access**
  - The NoSaCo terminals includes all the required end-devices:
    - Wireless Sensors,
    - Wireless Video Cameras (providing video and pictures),
    - Ruggedized laptops,
    - Wireless Voice over IP phones.
  - User friendly and efficient access to services:
    - **For the users in the field**: touch screen devices
    - **For decision making and analysis at headquarters**: Web 2.0 portal
Deployment and Conclusions (1/2)

In addition to the technical solutions, Emergency.lu includes:

- **Transportation:**
  - Luxembourg Air Ambulance provides **air-transport capacity with 24/7 on-duty technical and expert staff,**
  - Ready to leave **within two hours.**

- **Staff of experts:**
  - **Pre-emptive maintenance** on all technical equipments,
  - **Frequent trainings and drills** to ensure the required level of know-how and expertise, involving volunteers and professionals,
  - Luxembourg Air Ambulance pilots are trained to maintain and to provide the basic support on the NoSaCo terminals for any team in the field.
Conclusion and key topics:

Emergency.lu is:
- providing **services** to improve the communication and the flow of information between teams in the field and headquarters,
- facilitating on-site **coordination during the first hours after a crisis.**

Emergency.lu is an end-to-end solution with:
- **Satellite broadband connectivity with global coverage,**
- **Middleware and service implementation,**
- **End Devices** to:
  - Provide information (Cameras, Sensors),
  - Access to information (Laptops and Voice over IP phones).
- **On-duty transportation capacity,**
- **Integration with existing U.N. and European instruments.**
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THANK YOU FOR YOUR ATTENTION

QUESTIONS?