

# Satellite Communication & Disaster Management



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# Agenda

- Inmarsat and Télécoms Sans Frontières
- Technology for disaster relief
- Tsunami warning centers/ Early Warning
- Telemedicine / Media from disaster site
- Conclusion

# Satellite Communication:

- Satellite telecom infrastructure independent
- Distance, time and location ( Anytime Anywhere)

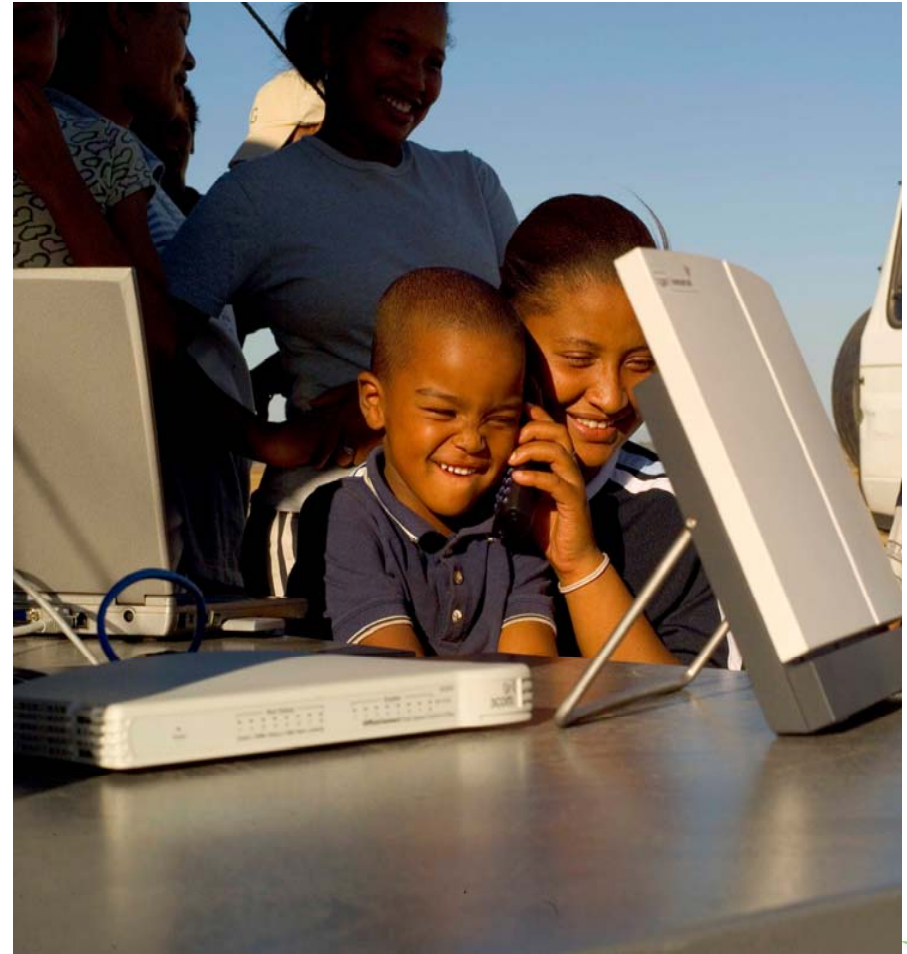
# Inmarsat and Télécoms Sans Frontières

- When disasters occur, terrestrial infrastructure is first casualty
- Télécoms Sans Frontières provides rapidly and anywhere in the world flexible, reliable and highly mobile technology
  - Enabling cooperation and coordination between rescue organisations
  - Reuniting displaced families
- Inmarsat sponsors Télécoms Sans Frontières technologically and financially
- 210 NGOs benefited from TSF services



# Technology for disaster relief

- Hurricane Katrina: Aug 05
- South Asia & Pakistan Earthquakes: Oct 05
- Bolivia Floods: Feb 06
- Philippines mudslides: Feb 06
- Niger humanitarian phoning operations: Mar 06
- Indonesia: May 06



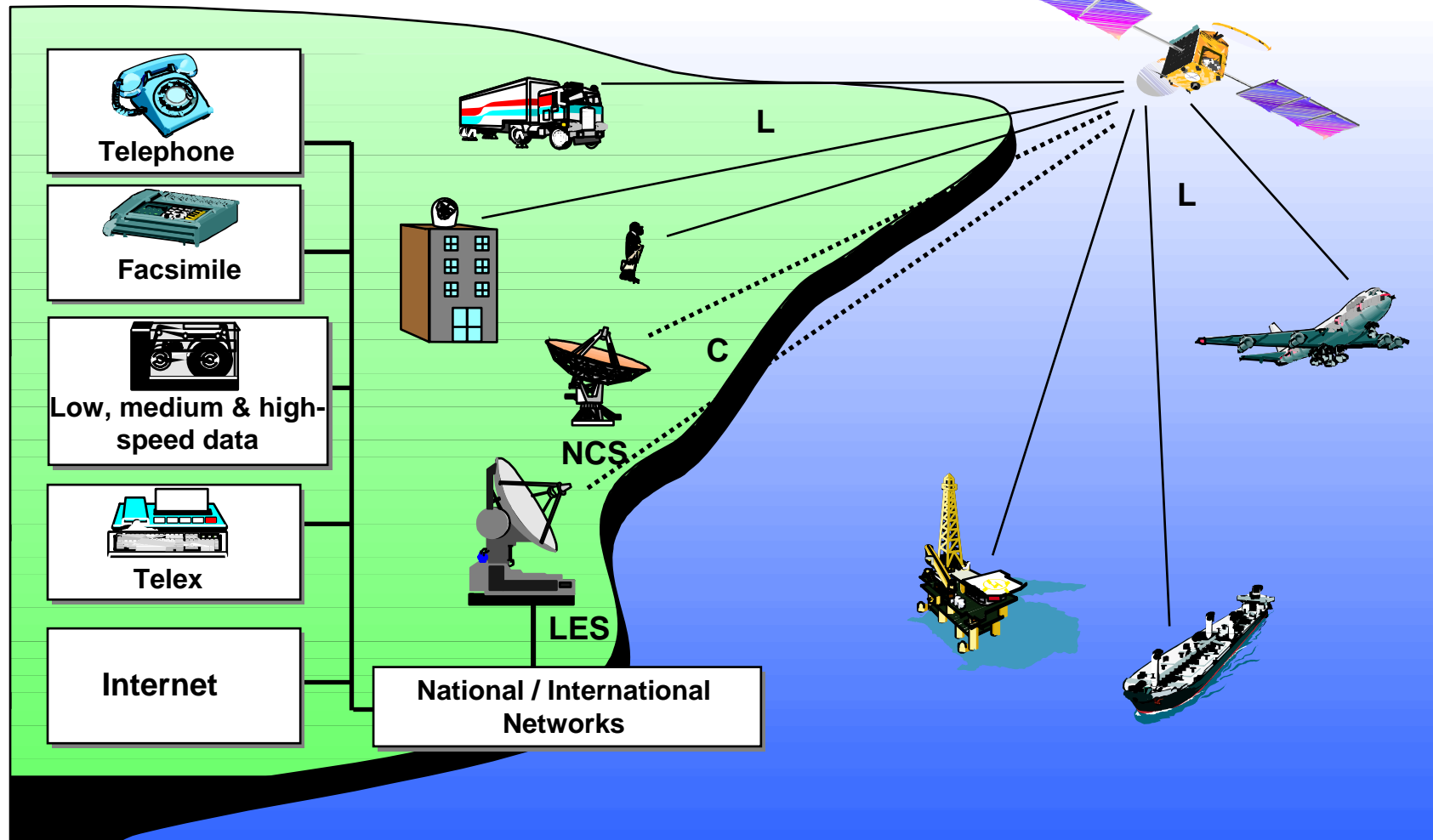
# Technology for disaster relief – *NGOs relying on TSF*

- Action Against Hunger - Spain
- Action contre la Faim - France
- AKUT Turkish SAR
- Alabama Disaster Relief
- Ambassade de France
- Architectes de l'urgence - France
- Armenian Rescue Group
- ASB - Germany
- Austrian Armed Forces
- Austrian Disaster Relief Unit
- Brigada Internacional de Rescate Tlateloco - Mexico
- Bulgarian Fireman Brigade
- Caritas Ireland
- China Team
- Civil Defence of Turkey
- Comité d'Aide Medical - Italy, Switzerland, France
- Comunidad de Madrid
- Convoy of Hope- USA
- Cordaid - Austria, Netherlands, USA
- Croix-Rouge Francaise
- Danish Rescue Team
- Dart - USA
- Deza - Switzerland
- ECHO
- Elam ministry - UK
- Emergency Architects
- Finnrescue - Finland
- Food for the Hungry - Korea, USA
- Georgian Rescue Team
- Global Relief - South Africa
- GNI – South Korea
- GOAL – Ireland
- Hungarian Baptist Aid
- I.S.O. – Iran
- ICCEMA
- IFSO - Iran
- IRIN – UN
- Islamic Relief – UK
- JTS – South Korea
- KFHI – Korea

- KFWA – Korea
- Korea International C.
- Korea National 119 Rescue Services
- Korean Foundation for World Aid
- MDM – France, Spain, Greece
- MEDAIR – UK
- Mercy Corps – Bangladesh, UK, USA
- Merlin - Holland, UK
- Ministry of Foreign Affairs – Spain, Iran
- Ministry of Health – Turkey
- Ministry of the Interior – Slovak Republic
- MSF – France, Italy
- Muslim Hands – Pakistan
- National Rescue Team of Slovakia
- NFA – Taiwan
- NICCO – Japan
- Norwegian Church Aid
- Nuevo Mundo – Cyprus
- Oxfam – Canada, UK, USA
- PCUAC – Mexico
- People in Need – Czech Republic
- People in Peril – Slovak Republic
- Polish Humanitarian Action
- Polish Rescue Team
- Red Crescent – Iran, Spain
- Red Cross – Spain
- Rescue South Africa
- Samaritans Puese – USA
- SARUV
- Save The Children – Norway, UK
- SCF UK
- SCUK - UK
- SCUS – USA
- SDC-SHA – Switzerland
- Secours Islamique – France
- Sivil Savunma – Turkey
- South African Embassy
- SPI – USA
- Taiwan Rescue Team
- Taiwan Usar
- TEMAD – Turkey
- The Frontiers – Korea
- THW – Technical Relief Agency – Germany
- TRAC – Turkey
- Turkey Medical Team
- Turkish Civil Sergeant Team
- UNDP – India
- UNICEF – Afghanistan, France, Switzerland, USA
- USAID DART
- WFP – Iran
- World Vision – Afghanistan, Canada, Eritrea, Germany, Iran, New Zealand, UK, USA



# System Elements

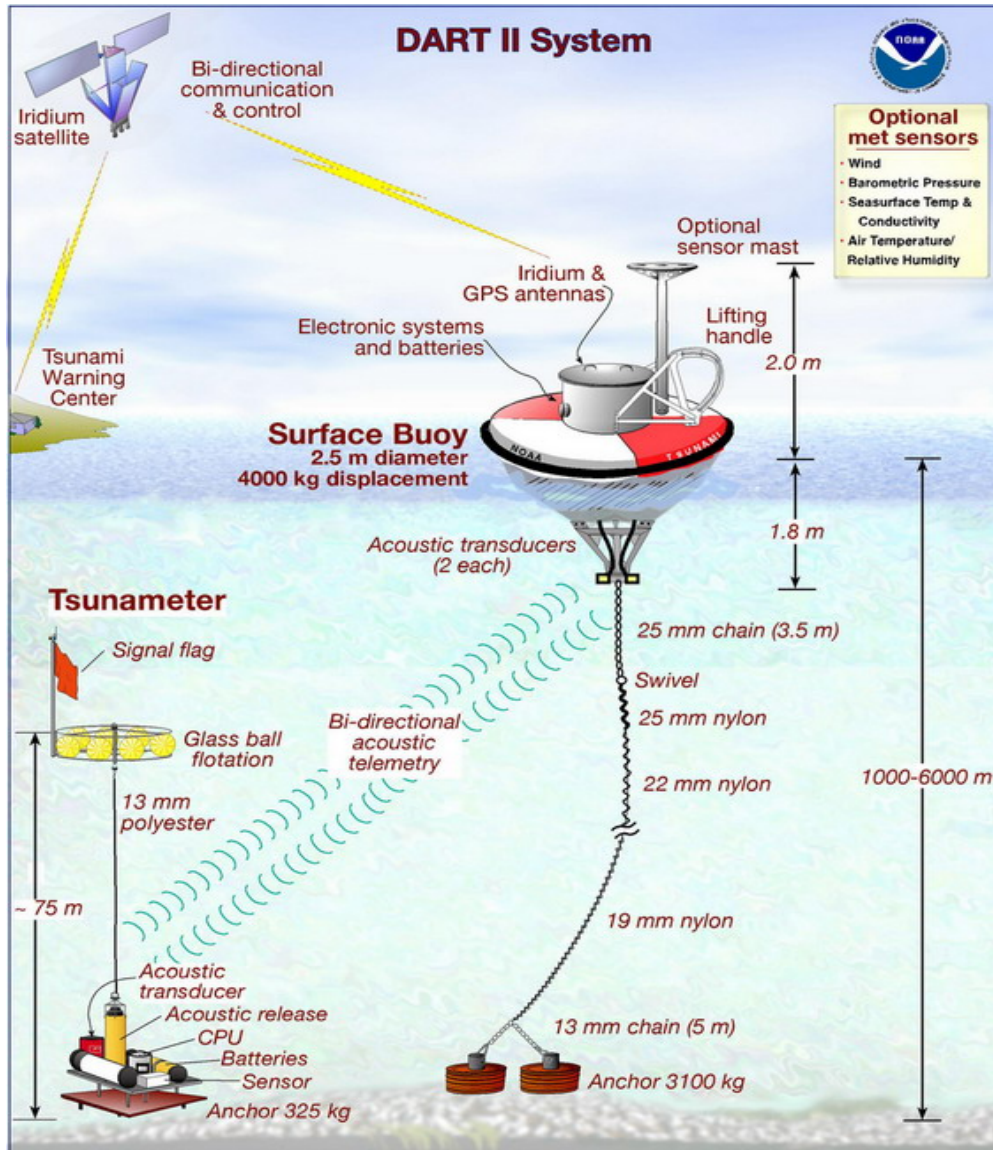




# Tsunami warning centers

- Tsunami Warning Center detects tsunami activity and issues alert
- Alert is broadcast, free of charge, and instantly to all Tsunami Watch Centers and ships around the region. Broadcast takes place via Inmarsat-C or mini-C satellite terminals
- Tsunami Watch Centers take necessary measures for evacuations
- Example Pacific Tsunami Warning Center  
<http://www.prh.noaa.gov/ptwc/>

# Deep Ocean Assessment and Reporting System for Detection of Tsunamis



- The BPR is capable of detecting and measuring tsunamis with amplitude as small as 1 cm in 6000 m of water.

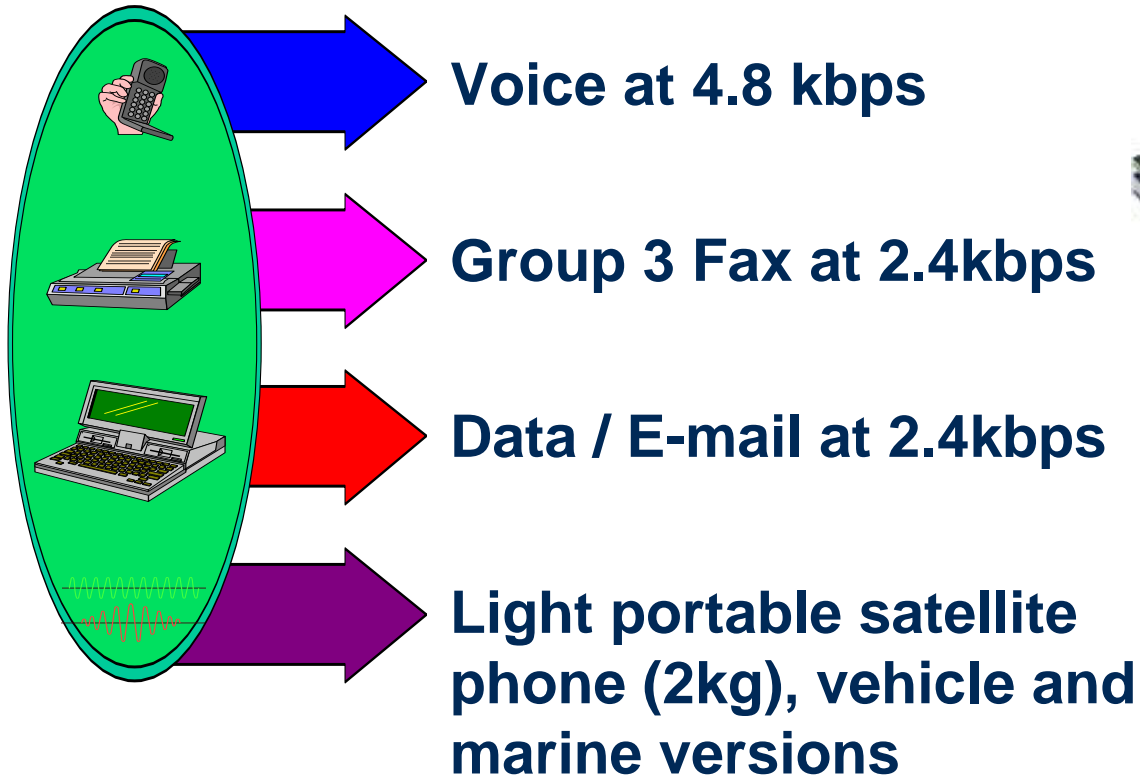
- The BPR uses a pressure transducer to make 15 seconds averaged measurements of the pressure exerted on it by the overlying water column.

- Under normal conditions (no tsunami) the BPR sends data hourly that is comprised of four 15-minute values which are single 15-second averages.

- An algorithm running in the BPR generates predicted water height values and compares all new samples with predicted values. If two 15 second water level values exceed the predicted values the system will go into the Tsunami Response Mode.

- Data will be transmitted on the Random channel (132) for a minimum of 3 hours, giving high frequency data on short intervals with 100% repeated data for redundancy for the first hour.

# Inmarsat mini-M



- Lap-top sized, light weight terminals, rechargeable batteries



# BGAN



Set up a broadband mobile office in minutes

1st mobile communications service to offer:



Broadband data (up to half a megabit)



... plus voice

accessible simultaneously

through a single compact device



with guaranteed data rates on-demand



Available globally



# Key benefits

## Global

- Network coverage wherever you go
- Use the same device worldwide

## Simultaneous voice & broadband data

- Accessible through one device
- Up to half a megabit data rates (for send or receive)
- Plus guaranteed data rates on-demand
- Replicate your broadband office environment on the move

## Portable

- Service accessible via small, lightweight devices

## Flexible

- Supports IP and circuit-switched applications
- Solutions to suit single users or small teams

## Reliable

- Dependable, peace-of-mind communications
- Robust satellite terminals
- 24/7 customer service

## Easy to use

- Same user interface across all terminals
- No technical expertise required

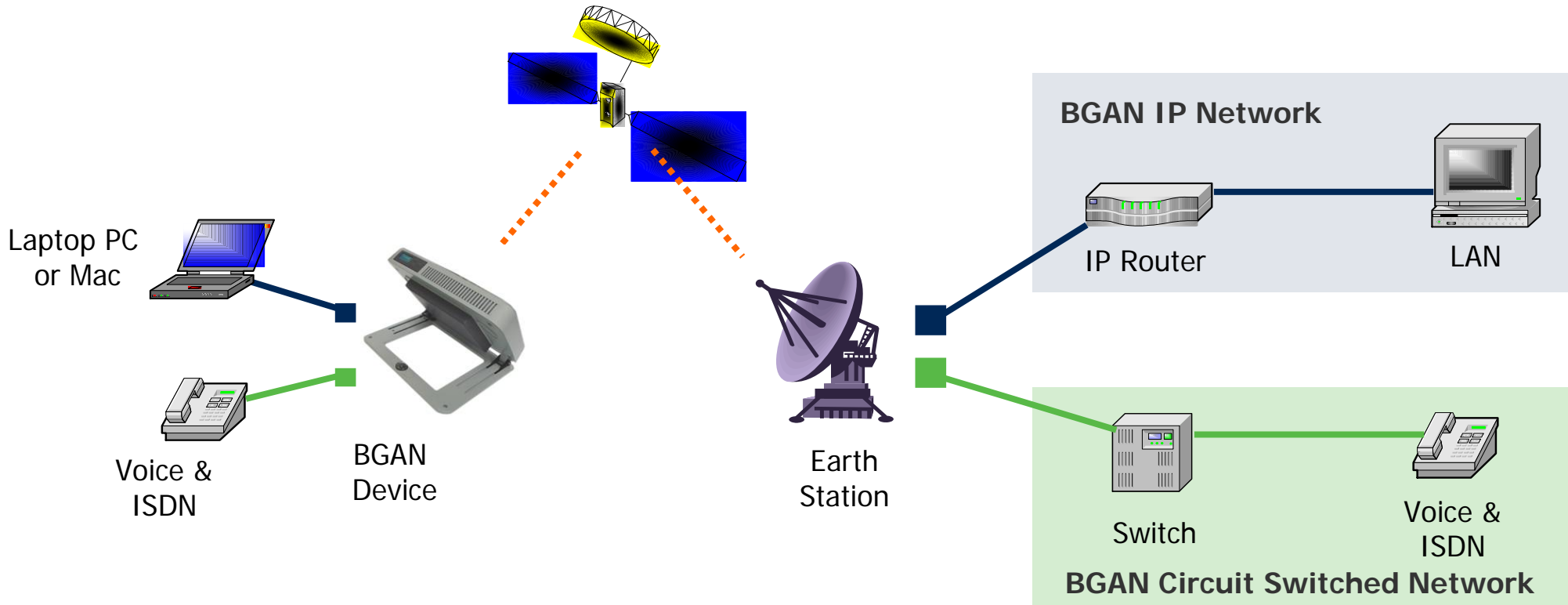
## Secure

- Secure access to VPNs
- Supports all major encryption standards.

## Competitively priced

- Competitive with other MSS operators
- Significantly cheaper than international cellular roaming

# BGAN: one device, two networks



## First Response: Familiar Solutions

Requirement	First Responder application	Inmarsat Solution
Situational Awareness	Local officials, "first on the spot" responsibility for coordinating response	Land portable; Swift64
Communications to mobile field teams; hub & spoke	Disaster inventory; wildfires; extending response to outlying areas	BGAN Land portable
Communications-on-the-move	"Second response" (flooding etc)	Vehicular BGAN
Mobile command post	Evolution from RV to SUV; responder & humanitarian comms	Land portable and vehicular BGAN



# In the BGAN World...

- *Katrina-like incident unfolds differently thanks to BGAN*
  - *Live video from levees to local command posts identify collapsing structural integrity*
  - *Real time communications pre-deployed in local shelters provide real-time assessment of humanitarian needs*
  - *Live surveillance allows local officials to respond faster to violence/looting*
  - *First Responders in touch with command posts despite collapsed terrestrial infrastructure*
  - *And the story keeps getting better!*



...essential communications are **always** available for first responders and emergency management

# BGAN hotspots

- Easy to use
- No specialist technical expertise required
- Create BGAN hotspot anywhere in the planet!

# BGAN Hotspot – Desert!

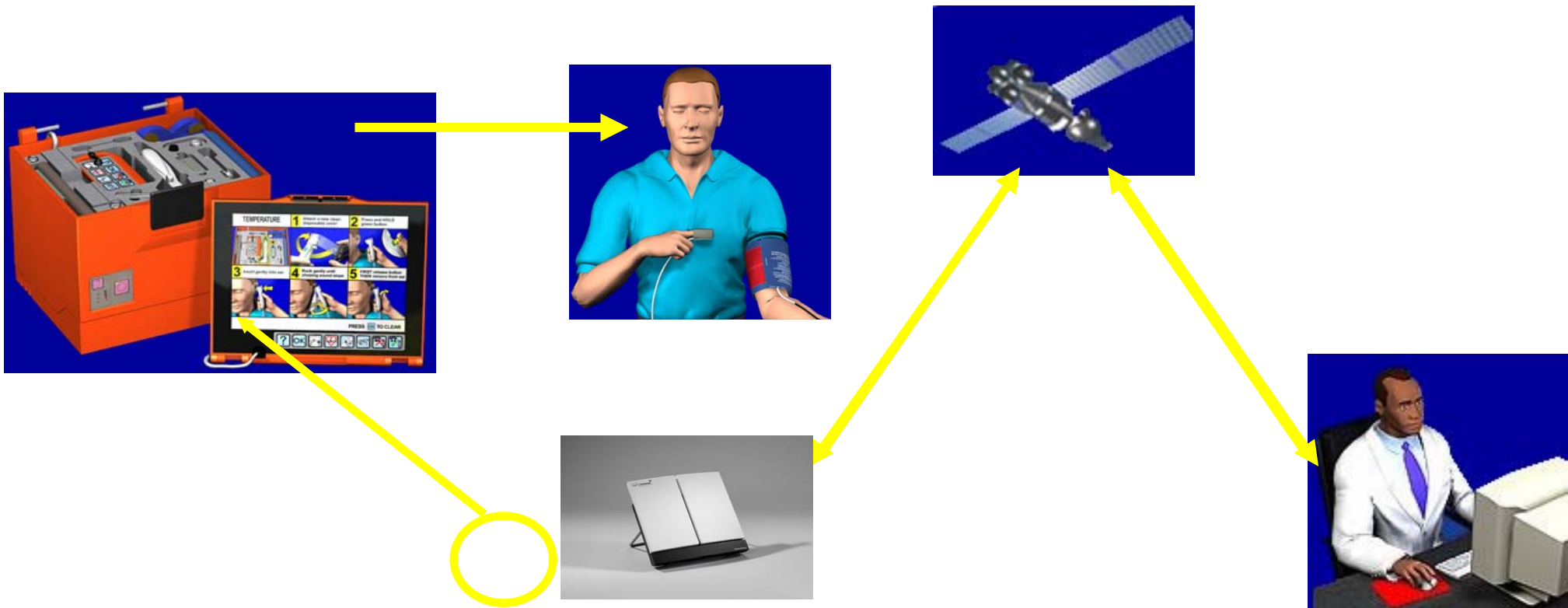


# BGAN Hotspot – Mountain Peak!



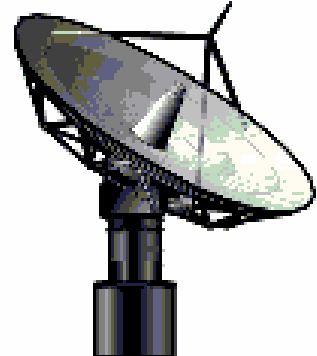
# Telemedicine

Allows transmission of medical data, including ECG and video



# Typical Layout

REGIONAL  
**Bgan**



Fucino Earth Station



Ethernet



video editor  
& MPEG 1 / 2  
AVI compression

Digital Video  
(DV) camera



IEEE 1394

Internet



firewall

LAN



Studio









inmarsat

  
TELECOMS SANS FRONTIERES  
Communications for life

50KG  
SUPER





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Communications for life



# Conclusion

- *Supporting aid and relief efforts*
- *Rebuilding communities*
- *Life-saving technology*



# Broadband for a mobile planet™