



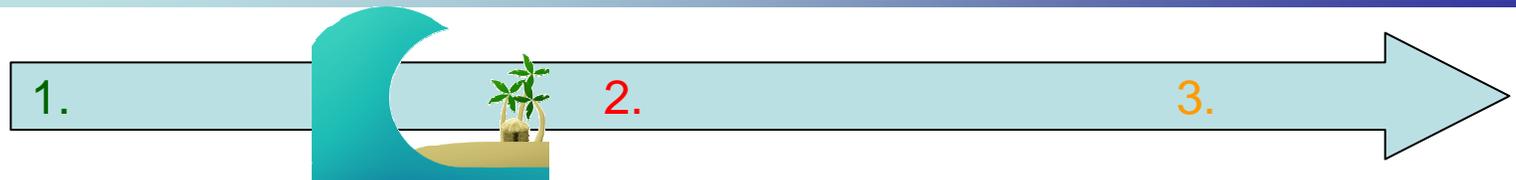
Roles for VSAT in emergency management

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HUGHES®



Summary of possible roles for satellite communication in disaster management



1. “Normal times”

- Relaying monitoring data back to central sites from remote locations

2. In the first few hours

- Satellite phones (e.g. Iridium and Thuraya) and Inmarsat systems for basic rescue service communications
- Pre-planned networks take over from normal networks

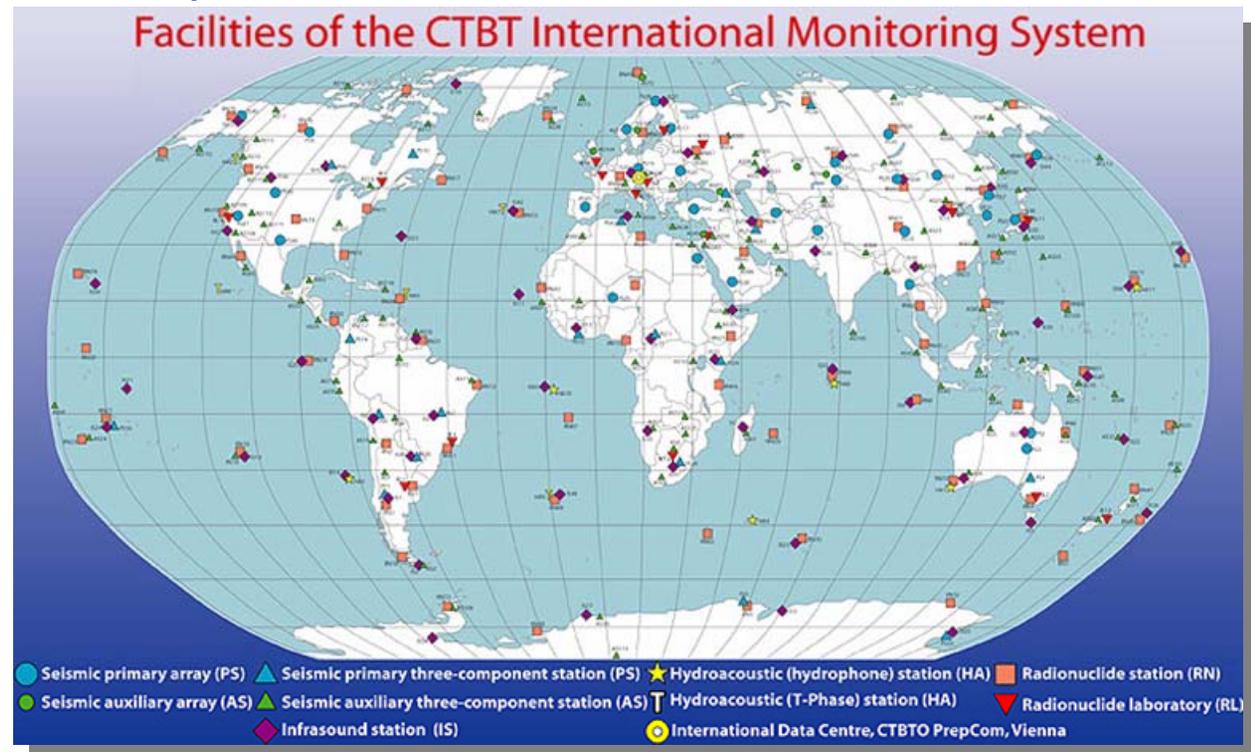
3. After the first few hours

- Restoring some kind of service with VSAT
- News gathering



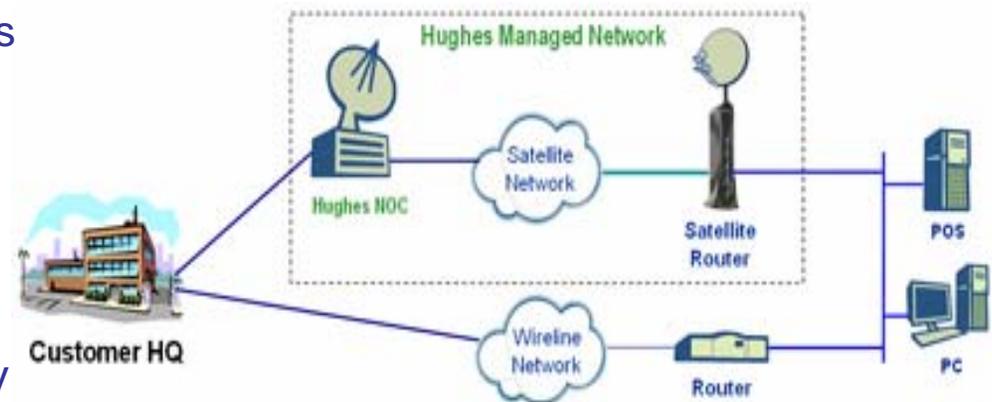
Monitoring - CTBTO

- A totally global network
 - Monitoring for seismic, infrasound, hydroacoustic and radio-nuclide events that might indicate a nuclear device being tested in breach of the test ban treaties
- VSAT's in many hard to reach locations around the world



HughesNet™ Access Continuity

- Providing communications when the terrestrial network fails
 - For Enterprise and Government Customers
- Can be scaled to cover different failure scenarios
 - Single site failure
 - Major node failure
 - Total network failure
- These can be caused by many different factors
 - The classic “digger through the cable!”
 - Natural disaster
 - Human problem (e.g. fire in duct)
 - Software or “viral” problems



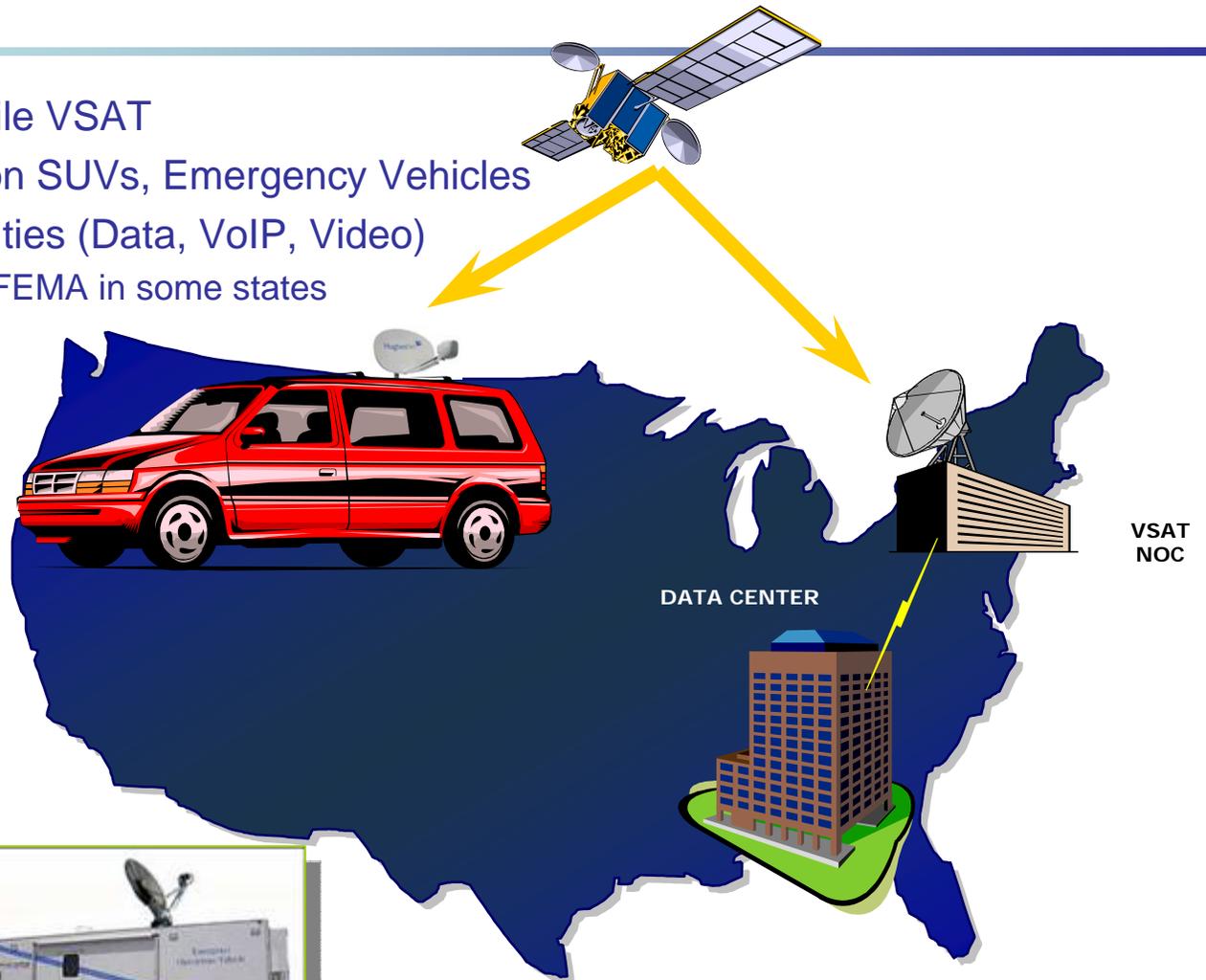
VSAT in emergency recovery



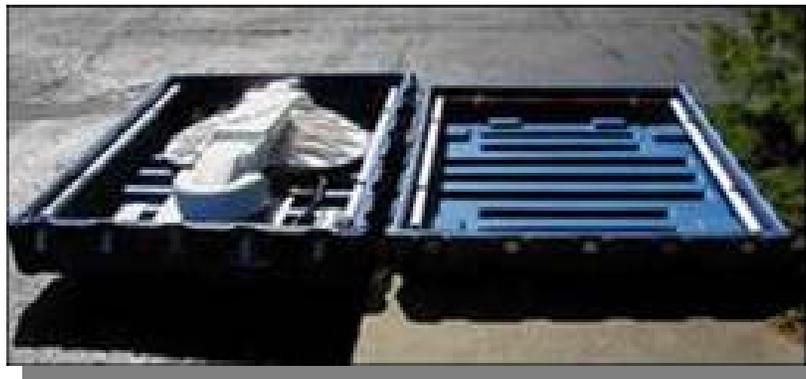
- All a VSAT requires to operate are
 - Location to mount dish
 - Clear line of sight to satellite
 - Power
- Modern VSAT's like Hughes HN series require low power
 - AC typically <60W
 - DC typically 40-50W depending on radio power
 - Solar and wind power with battery backup are feasible
 - Of course small generators may be easier
- Auto deploy antennas can find satellite automatically
 - Fit on four wheel drive vehicles for rapid in field deployment
 - Stabilised versions available for maritime deployments
 - Can be fitted into flight cases
- Broadband capabilities means not limited to data
 - Voice
 - TV News gathering

Emergency Management Access: Fixed Mobile

- Fixed - Mobile VSAT
- Mountable on SUVs, Emergency Vehicles
- Full Capabilities (Data, VoIP, Video)
 - Used by FEMA in some states



VSAT in flyaway packaging



Rapid deployment in rugged containers
by air, sea, or overland

VSAT mounted on four wheel drive

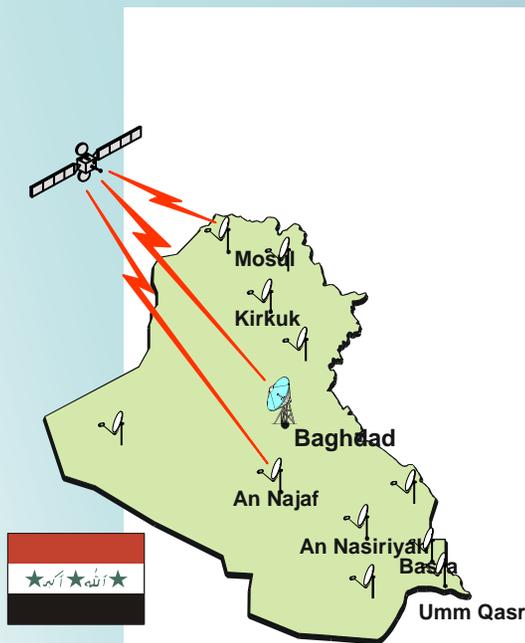


This is a four wheel drive vehicle with a HughesNet™ antenna with auto-deploy mount fitted on roof.

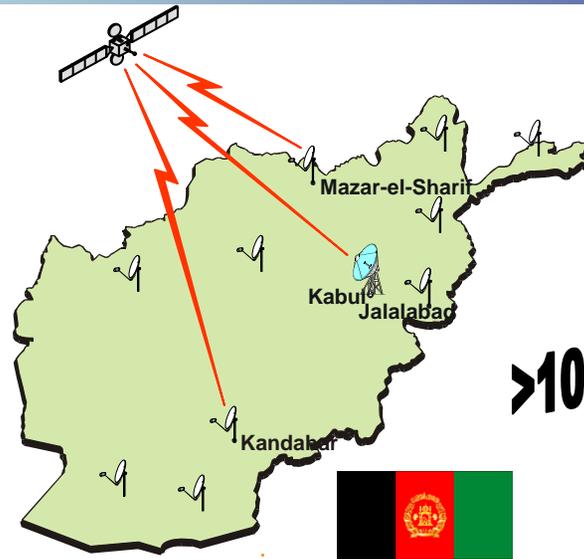
Simply drive up, press a button to locate satellite and have your broadband connection within 5 minutes



Hughes in Iraq & Afghanistan Today



>1000 sites in Iraq



>100 sites in Afghanistan

G-25849 P 05/06/03

- Providing 80+ Mbps to Iraq & Afghanistan (Europe/Middle East) region using Hughes Europe (NOC in Germany) service on Eutelsat W1 and W3a satellites
- Providing 40+ Mbps to Iraq & Afghanistan using service from Dubai on NSS6 satellite
- Connects to the outside world for Internet (email), VoIP and instant messaging

Hughes in Iraq



Hughes Inmarsat RBGAN



Hughes Thuraya handset



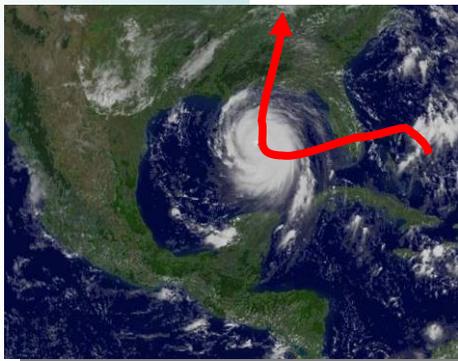
HughesNet™ Internet Access Service providing email services to troops in Iraq

Pictures courtesy of a Hughes VAR, **Servicesat**, that installed and maintains this site and many others

Hurricane Katrina – a reminder

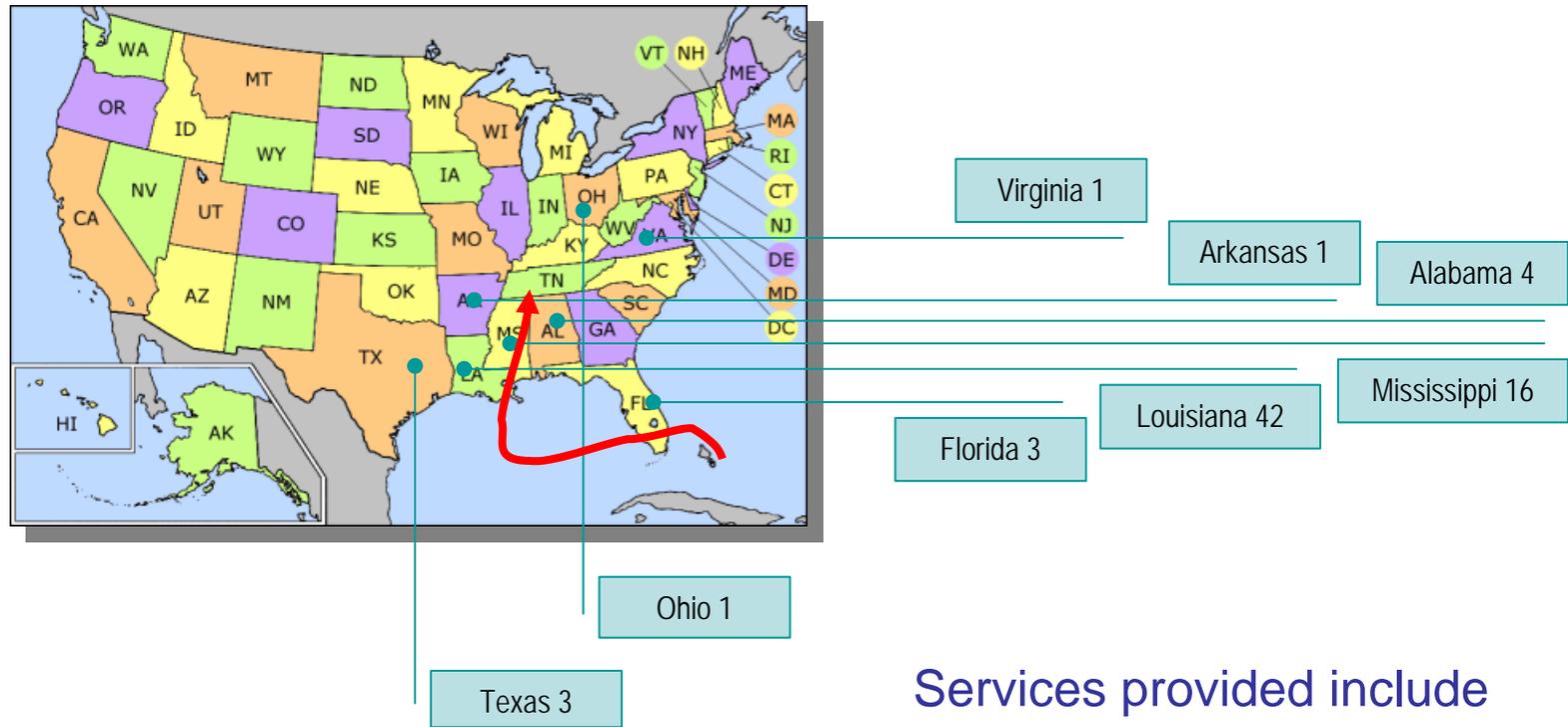
The costliest and one of the deadliest hurricanes in U.S. history

- Damage costs exceeding \$50 billion
- Fatalities, directly and indirectly, topping 1,300
- Katrina came ashore at Buras, La., as a Category 3 hurricane on August 29 with top winds estimated at 125 mph
 - Katrina was a Category 1 hurricane when it first struck the U.S. in Florida on August 24 after bringing tropical storm conditions to the northern Bahamas



Hurricane Katerina – September 14th 2005

71 Hughes VSAT's deployed in support of emergency



- Services provided include
- Internet access
 - Voice
 - ATM connections

HughesNet™ helping Katrina victims



HughesNet™ providing access to cash and helping international aid relief teams

Other examples included providing communications to a Coca-Cola warehouse being used as temporary accommodation for people displaced by the hurricane



In summary

- 👍 VSAT's are low cost
 - Viable solution for “business continuity” back up networks
 - Effective for networks carrying monitoring data that can be used to predict and thus minimise the impact of an emergency
- 👍 VSAT's require little support infrastructure
 - Can deploy in areas lacking many basic facilities
- 👍 VSAT's can be deployed very quickly
 - Can provide communications for emergency relief teams within hours
- 👍 VSAT's can provide many different services
 - Low bandwidth services like ATM's
 - Medium bandwidth applications like Internet or Intranet access
 - Voice and Voice over IP
 - High bandwidth services such as news gathering

HughesNet 
Broadband Unbound.™

FOR IMMEDIATE RELEASE

June 6, 2006

Extract

Hughes Announces Emergency Communications Service Offerings in Preparation for 2006 Hurricane Season

- In anticipation of the upcoming hurricane season, Hughes announced today that it is making available emergency communications offerings during this time, designed for rapid service restoral.
 - The U.S. National Oceanic and Atmospheric Administration (NOAA) is predicting a very active 2006 North Atlantic hurricane season and is urging people in hurricane prone areas to make preparations.
 - **NOAA's outlook indicates an 80% chance of an above-normal hurricane season.**
 - In an announcement made May 22, 2006 for the National Hurricane Preparedness Week (May 21 – 27), NOAA stated that a "very active hurricane season is looming." NOAA is predicting 13 to 16 named storms, with eight to 10 becoming hurricanes, **of which four to six could become 'major' hurricanes of Category 3 strength or higher.**
- In light of these predications and the experience gained from the 2005 hurricane season, Hughes has developed a range of emergency communications offerings under its HughesNet™ suite of services, for enterprises, government agencies and relief organizations:
 - **Access Continuity Service:** a private satellite network with pre-installed terminals that automatically switch-over in the event of primary path failure;
 - **Emergency Network Restoral:** a pre-established private network with satellite terminals deployed rapidly following an incident; and
 - **Emergency Business Internet:** expedited installation of satellite terminals providing broadband Internet access to affected locations.
- Large and small businesses, government agencies, and rescue and relief organizations can access the HughesNet Website at www.hughesnet.com to obtain detailed information.
 - In addition, these services are available to government agencies on the Hughes GSA Schedule #GS-35F-0907P.

"For over twenty years, satellite networks have provided vital day-to-day communications for businesses and government agencies around the world. And as we saw with the hurricanes of 2005, satellite technology is robust and can be deployed quickly when disaster strikes," said Pradman Kaul, chairman and CEO of Hughes. "Satellite communications provides a viable alternative infrastructure when terrestrial networks are severely damaged. We are poised to respond when and where needed during the 2006 hurricane season."

Thank you for your time!

- Any questions?

Simon Watts
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