Strengthening cooperation between telecommunications operators and national disaster offices in Caribbean countries

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Sources of information

- 2013 ECLAC Study on ICT for Disaster Risk Management in the Caribbean
- Participation in CANTO Disaster Recovery Planning (DRP) Committee
  - Simulated Hurricane Drill
- Interviews with National Disaster Organizations and CDEMA
  - British Virgin Islands
  - Cayman Islands
  - Jamaica
  - Montserrat
  - Saint Lucia
  - Trinidad and Tobago
  - CDEMA
- Damage and Loss Assessments

Tropical Storm Erika

- Heavy rain event
- Buried fiber optic backbone damaged by landslide and flooding damage
  - Bridge crossings particularly at risk
- 68 of 98 cellular sites affected
  - Some diesel generators ran out of fuel after 3 days
- Red Cross reported lack of Wi-Fi at distribution centers
- $US 10 million in damages and losses to telecoms sector

Hurricane Joaquin

- High wind and storm surge event
- Wind damage to arial network
  - Collapse of low-grade utility poles
  - Extended electricity outage
- Collapse of monopole cell towers
- Microwave dishes blown out of alignment
- Cable head-end destroyed
- 4+ weeks of service outage in some places
  - Damage to electricity and transportation infrastructure

How can telecommunications companies and National Disaster Offices work together to improve public safety and network resilience?

- Improved information sharing
- Public early warning systems
- Post-disaster operational coordination

Sharing of disaster response plans

- Telecommunications plans should be in alignment with national disaster plans
- Disaster offices currently have little insight into telco restoration plans
  - Understanding of backup capacity is limited
- Telcos are reluctant to share plans due to privacy concerns
- Sharing of partial plans may be appropriate

Advisory of planned outages

- In many cases, disaster offices are not forewarned of planned telecommunications outages
- Standardized protocols for sharing this information should be used
- Reporting of planned outages pre-disaster can help ensure better reporting of post-disaster outages

Network status reporting

	A	B	C	D	E	F	G	H
1	**Periodic status report on disaster impact to telecommunications service and infrastructure**							
2								
3	**Name of telecom organization:**						**Contact name:**	
4	**Date:**						**Contact telephone:**	
5	**Time:**						**Contact e-mail:**	
6								
7	**Summary of current network status:**							
8	Include estimated percentage of customers without service, list of areas without service, and other pertinent information.							
9								
10								
11	**Summary of response efforts:**							
12	Include information on assets deployed in the field, forcasted timeframes for service restoration, status in fulfilling any requests for special assistance by external agencies, and any current challenges to response efforts.							
13								
14								
15	**Requests for assistance:**							
16	References to any current or outstanding requests for assistance, including the name of the agency from which assistance has been requested.							
17								
18								
19	**Damage and impact log**							
20		**Damage description**	**Location**			**Current Status**		**Notes**
21	Ref. #		Name of locale	Latitude	Longitude	Impact on service	Response efforts	
22	1							
23	2							
24	3							

Sheet1 Sheet2 Sheet3

Hazard maps and telecommunications overlays

Hazard map of landslide risk in the areas of St. George's, Grenada

Hazard maps can help telcos in the planning process for locating new infrastructure, or for evaluating the need to relocate or harden existing infrastructure that has been situated in areas of high risk

Hazard maps and telecommunications overlays

- Telecommunications overlays provide operational value to disaster office
  - Enable early warning of telecom infrastructure in danger
  - Support decision making on equipping first responders with UHF radios
  - Understand cascading events as a result of damage to telco infrastructure
- Hazard maps and telco overlays should be exchanged and updated on a regular basis

Common challenges

- Reluctance to share information
  - The competitive commercial environment constrains the inclination of telecoms to make potentially sensitive information available to disaster offices.
- Information maintenance
  - Information that has been shared may become out-of-date, and must be updated on a regular basis.
- Limited congruity between the needs of regulators and disaster offices
  - Information shared for regulatory purposes is not necessarily suitable for the purpose of disaster risk reduction.

Early Warning Systems

Chas Eby @chas_eby · 23h

Just received a flash flood warning alert on my cell phone--that really is a great technology. Stay safe and dry! #MdWx

4 10

Flash flood kills 2, devastates Maryland city's historic downtown

Emergency declared in Ellicott City after major flooding destroys much of its downtown.

USA TODAY Jul 31, 2016

Common Alerting Protocol

- System to trigger multiple modes of early warning (TV, radio interrupt, email, sirens)
- Current deployments to Anguilla, Montserrat*, Tobago
- UNDP deploying CAP to Barbados, Dominica, Saint Lucia, Saint Vincent and the Grenadines
- Mobile phone-based early warning systems are often not included

SMS-based Public Warning Systems

- Frequency of testing ranges from every 4 weeks to “one time 4 years ago” to “never.”
  - Systems are not tested at scale
- Past experience has shown delay in message delivery and messages delivered out-of-sequence.
  - “up to 24 hours later”
- There is no “geo-fencing” capability to target users in a particular region.
- Can contribute to post-disaster network congestion.

Cell Broadcasting

- One to many messaging avoids network congestion
- Recipients can be targeted based on the location of cell towers
- Deployed for emergency alert systems in United States and Europe
- Investment required - $$$

App-based EWS

- Pros
  - Relatively easy to implement and customize on a per-country basis
  - Can support a high level of functionality
    - Mapping
    - Incident reporting
    - Support for photographs
- Cons
  - Limited to Smartphones
  - Dedicated data plan is needed
  - Tough to achieve widespread installation

Testing and drilling

- Existing early warning systems may be under-tested
- There is also a need to include telecommunications in national and regional drills
  - “Caribbean Wave” tsunami drill
- Testing of notification systems is an opportunity to educate the public

Connecting the dots

- Identify partners
- Identify funding
- Training
- Execution