

Resilient National Emergency Communications Network



Kim Mallalieu (PhD) and Patrick Hosein (PhD)
Departments of
Electrical & Computer Engineering Computing and I.T.
The University of the West Indies



Preparatory Meeting for Connect the Americas
Port of Spain
22 March 2012

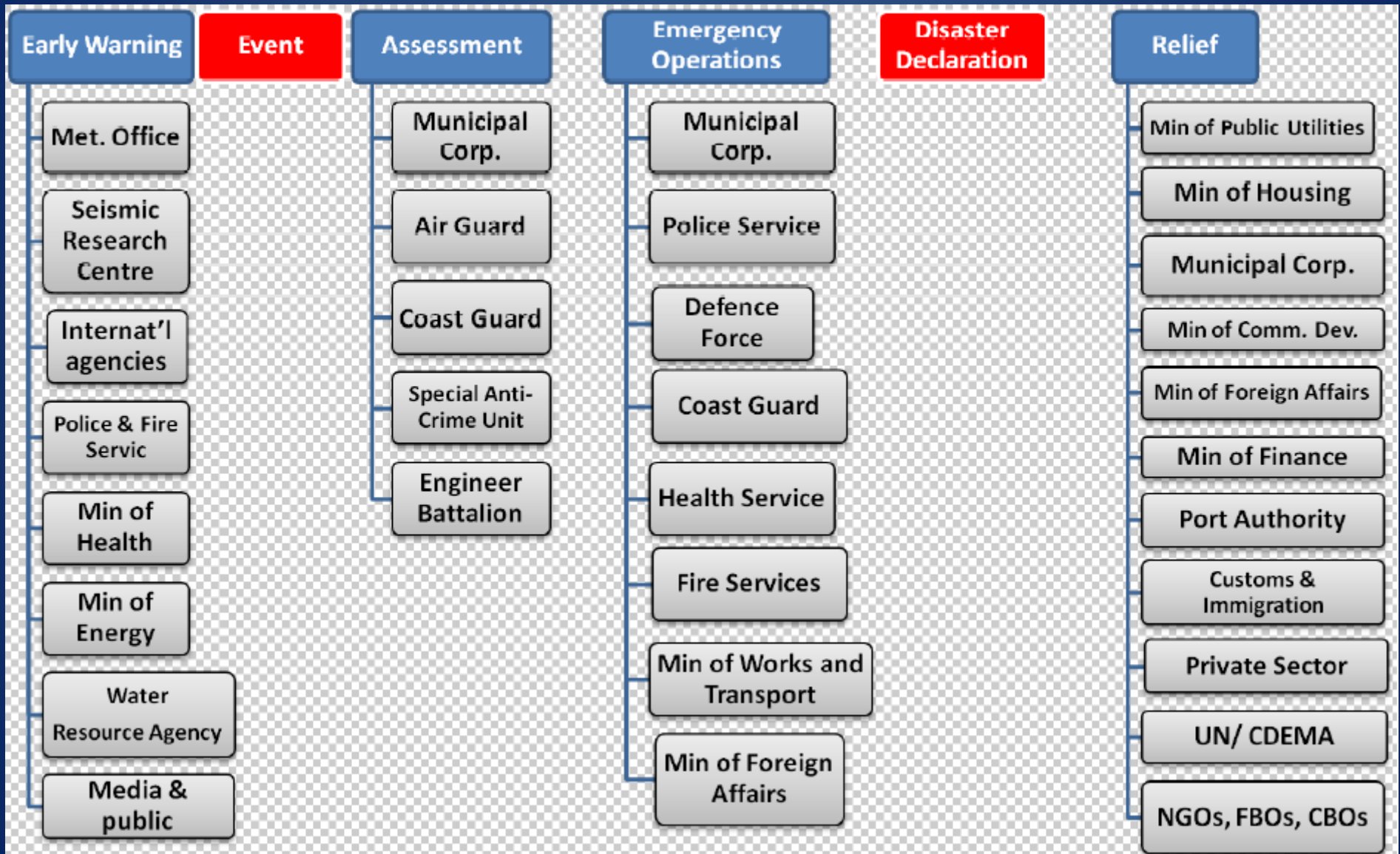
CTA Thematic Alignment

- 1. Emergency communications**
2. Digital broadcasting
3. Broadband access and uptake in urban and rural areas *
4. Reduction of Internet access costs
5. Human capacity building on ICTs, with emphasis on persons with disabilities and people living in rural and deprived urban areas *

Pressing Problem

1. Caribbean EmComms facilities are traditionally **voice-based**, yet response is heavily **info-/data-reliant**
2. **Web-based** emcomms platform (WebEOC) recently introduced in CDERA countries but access is dependent on **national infrastructure**
3. Limited **crowd sourcing** capabilities

Core Local Emergency EcoSystem

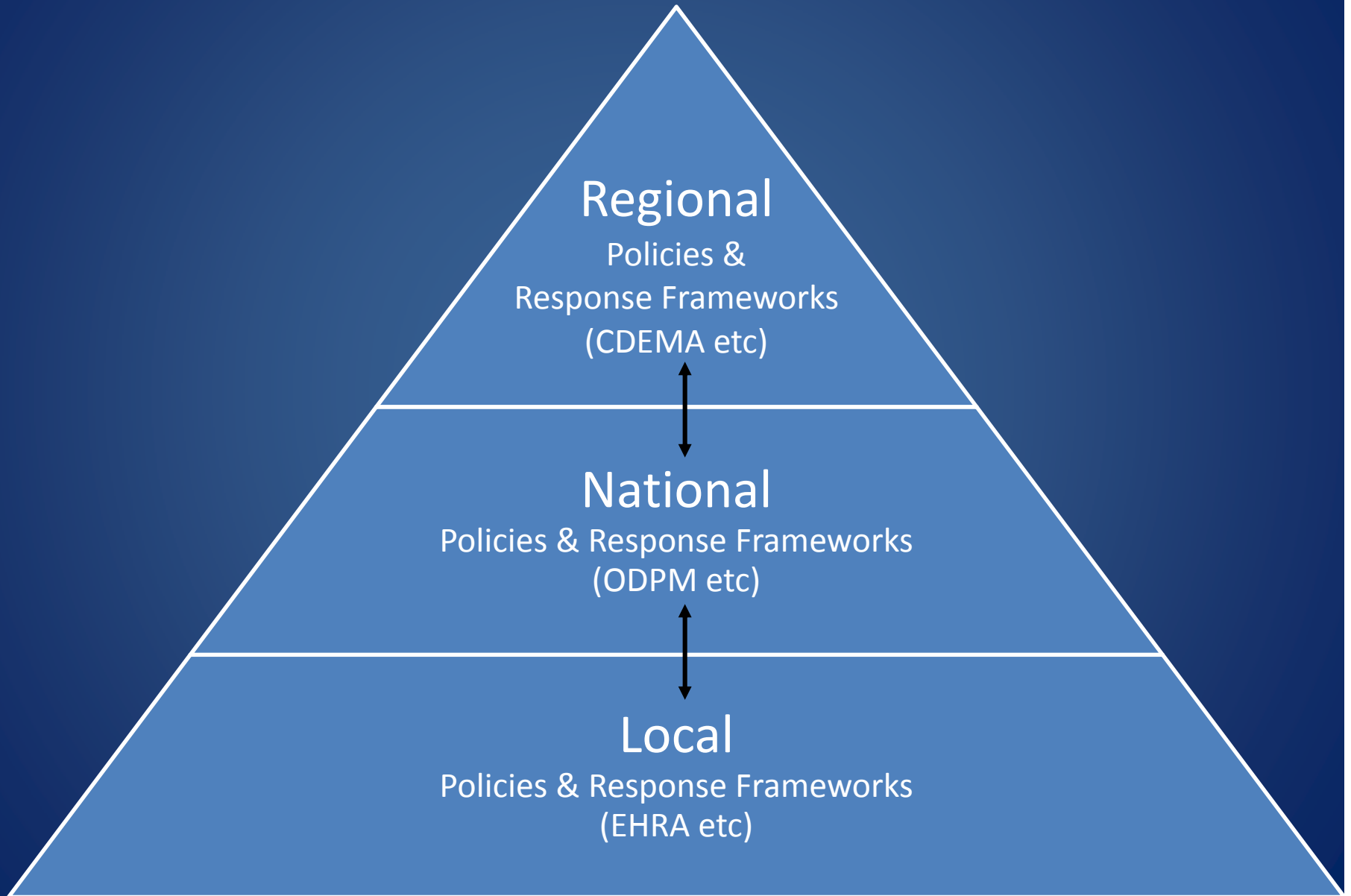


Proposed Intervention

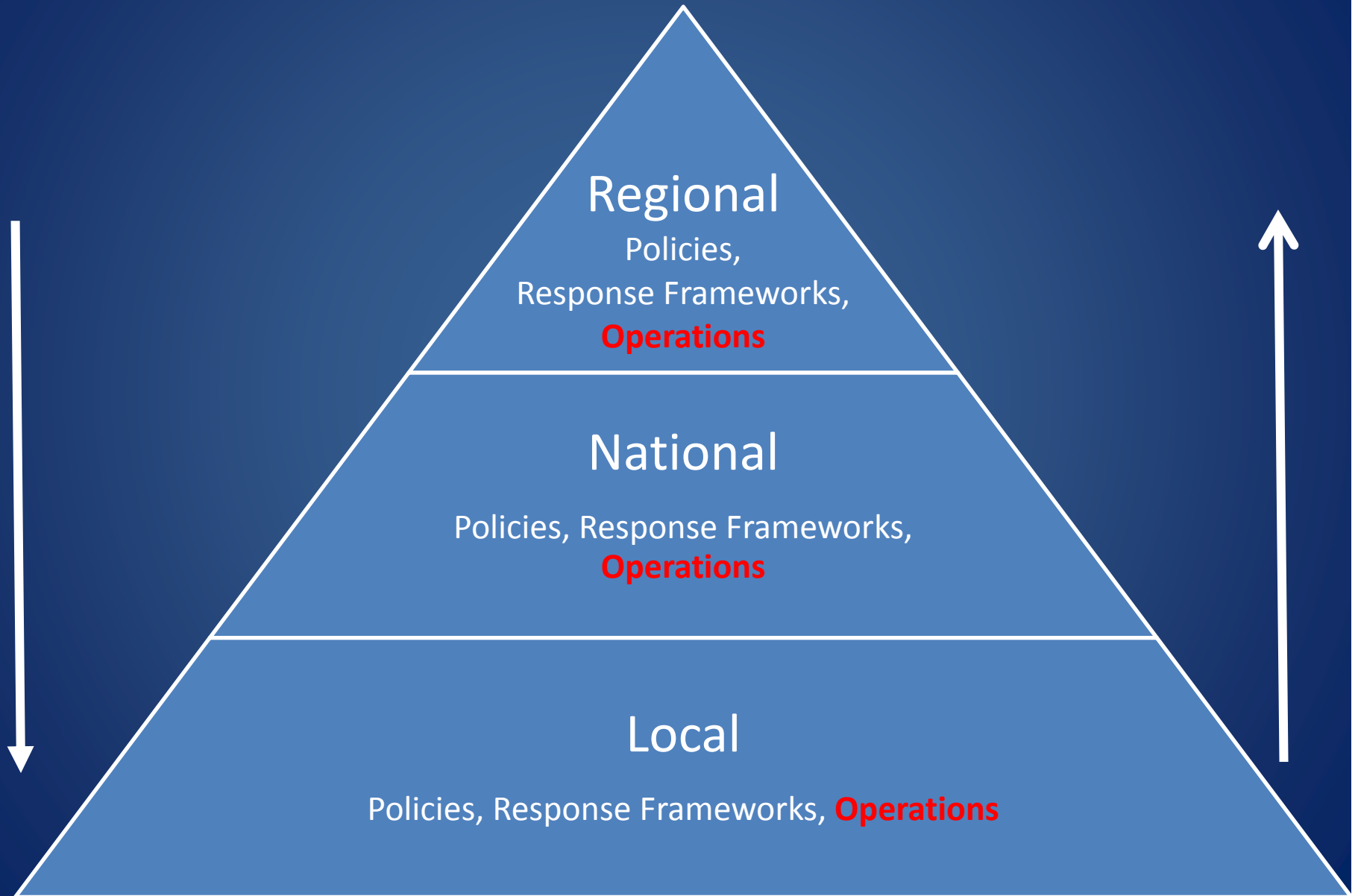
National telecom infrastructure for emergency communications that will:

- (i) Provide emergency voice & data comms
- (ii) Provide emergency communications access to the Internet in event of ISP outage
- (iii) Be accessible by wifi-supported mobile communication devices in event of cell net outage

Context: Caribbean EmComm Mechanisms



Intervention: Caribbean EmComm in Action



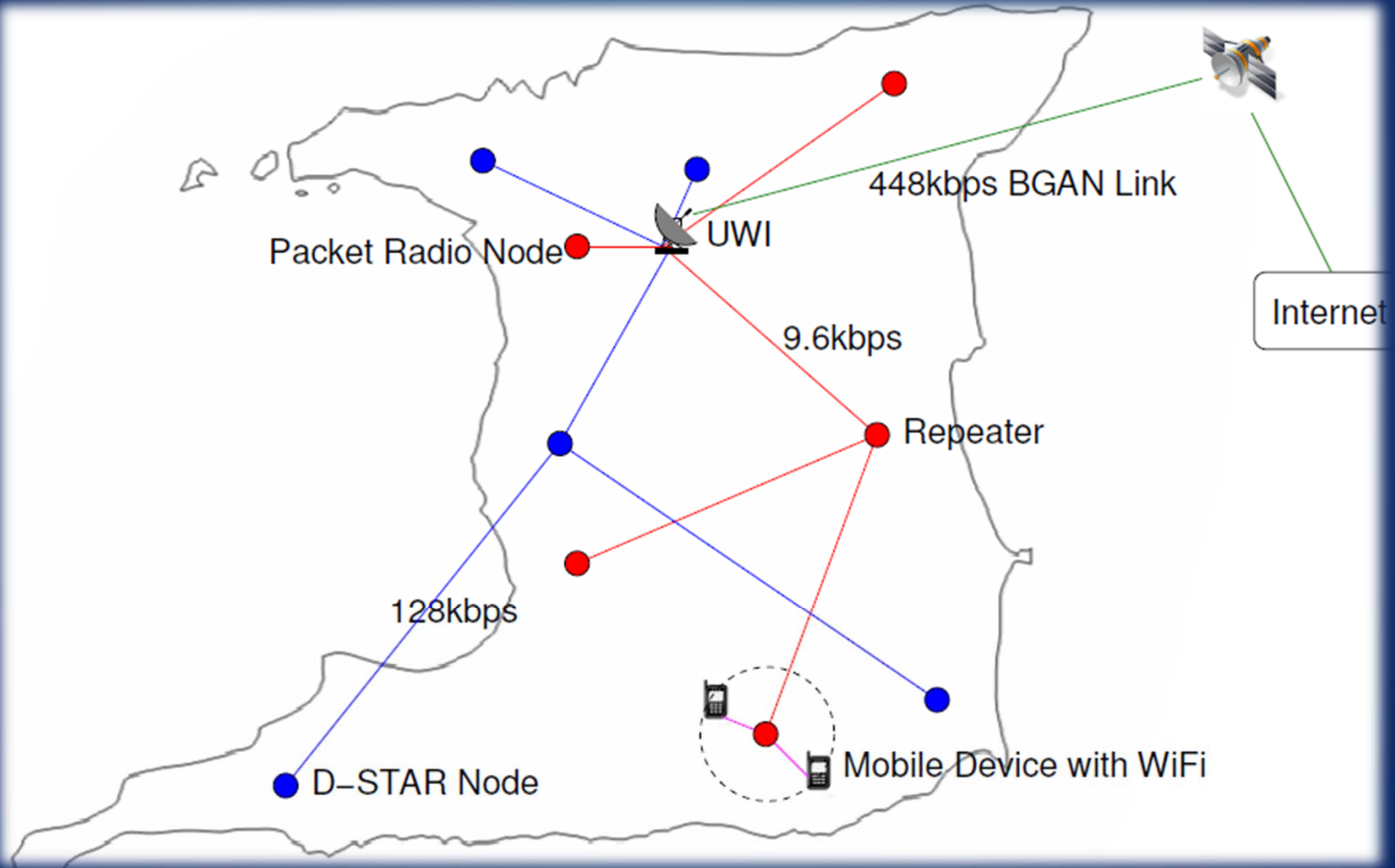
Proposal Particulars

The emergency network will supplement existing Amateur Radio transmission network to:

1. Connect to the Internet via 2 different technologies on independent networks:
 - i. A wireless backhaul network based on AMPR (Amateur Packet Radio)
 - ii. A wireless backhaul network based on D-STAR (Digital Smart Technologies for Amateur Radio)
2. Connect to external Internet over shared BGAN satellite link when local infrastructure down
3. Provide access to wireless devices through WiFi

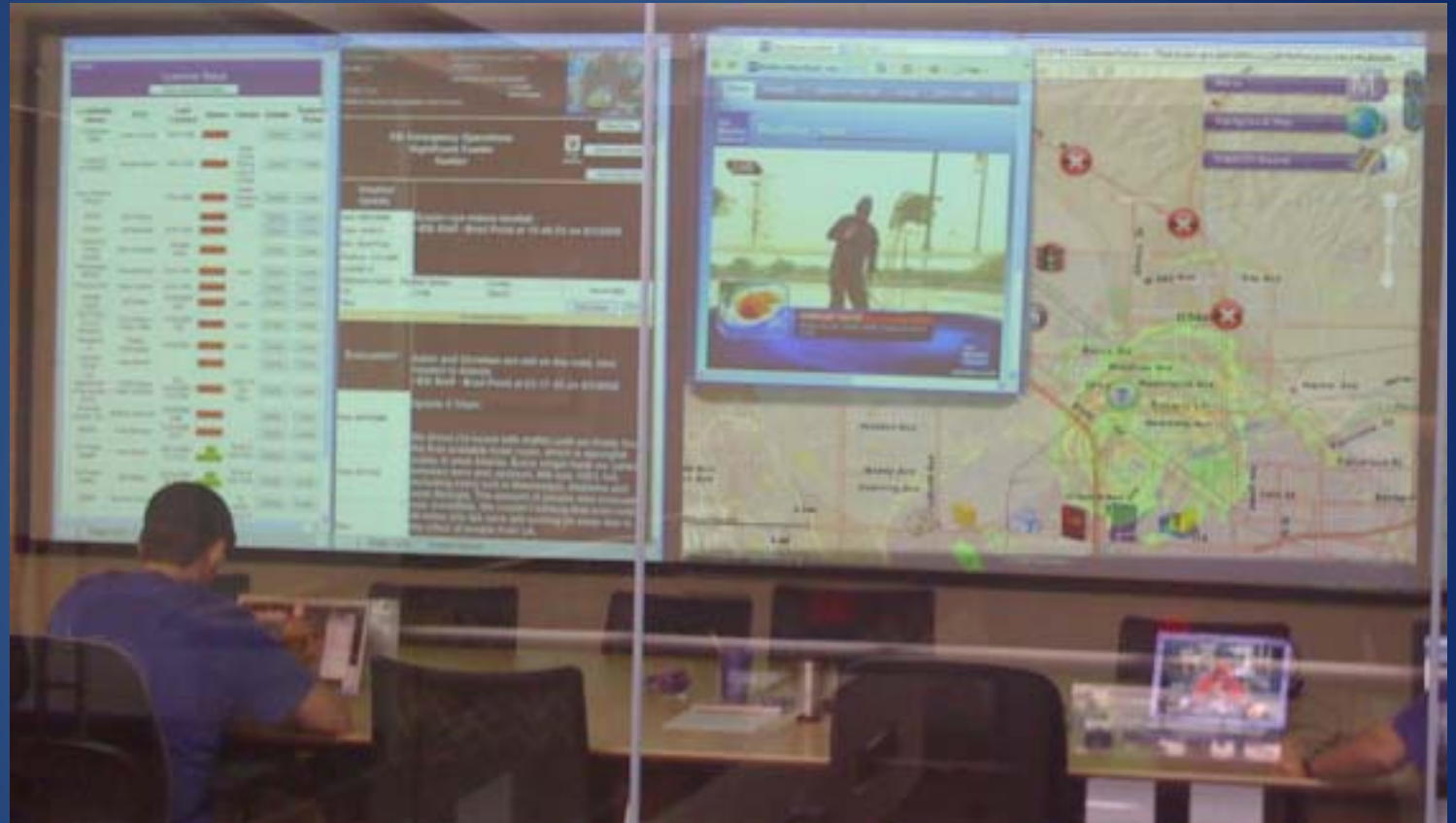


National Network Configuration



Emergency Operations Centre - WebEOC

- Chat
- Checklist
- Contacts
- Messaging
- File sharing
- Calendar
- Mapper
- Team Management
- Resource Management



Source: http://www.esi911.com/esi/images/stories/webeoc_use.png

Disaster management and IT professionals from all 18 CDERA States have received WebEOC training

Network Resilience & Reach

The dual-technology network implementation will feature redundancy in emergency situations and increased reach amongst local amateur radio operators

The configuration can be easily extended to provide nationwide coverage and readily replicable in other Caribbean territories.

Core Project Partners



1. TTARL & TTARS, Est 1951 -

- Communications: Infrastructure-independent & decentralized
- Operators trained and licensed to operate
- Equipment regularly used and maintained
- Emcomm partnerships: TTARS /EHRA, TTARL/ADRA MoUs etc.

2. UWI, Est. 1948

- Technical & facilities support in communications & computing
- Appraisal, analysis and assessment strengths
- Active centre for research and capacity building
- Independent support for policy making and regulation

3. ITU, Est. 1865

- Relationships and advocacy wrt emergency comms

Implementation

1. Stakeholder engagement
2. Preliminary appraisals
3. Design
4. Implement
5. Deploy
6. Field test the respective network segments (packet radio and D-STAR), integrated with existing amateur radio infrastructure
7. Functional and performance tests of network
8. Local training
9. Development of a resource pack

Project Model

Complementary
Capacities

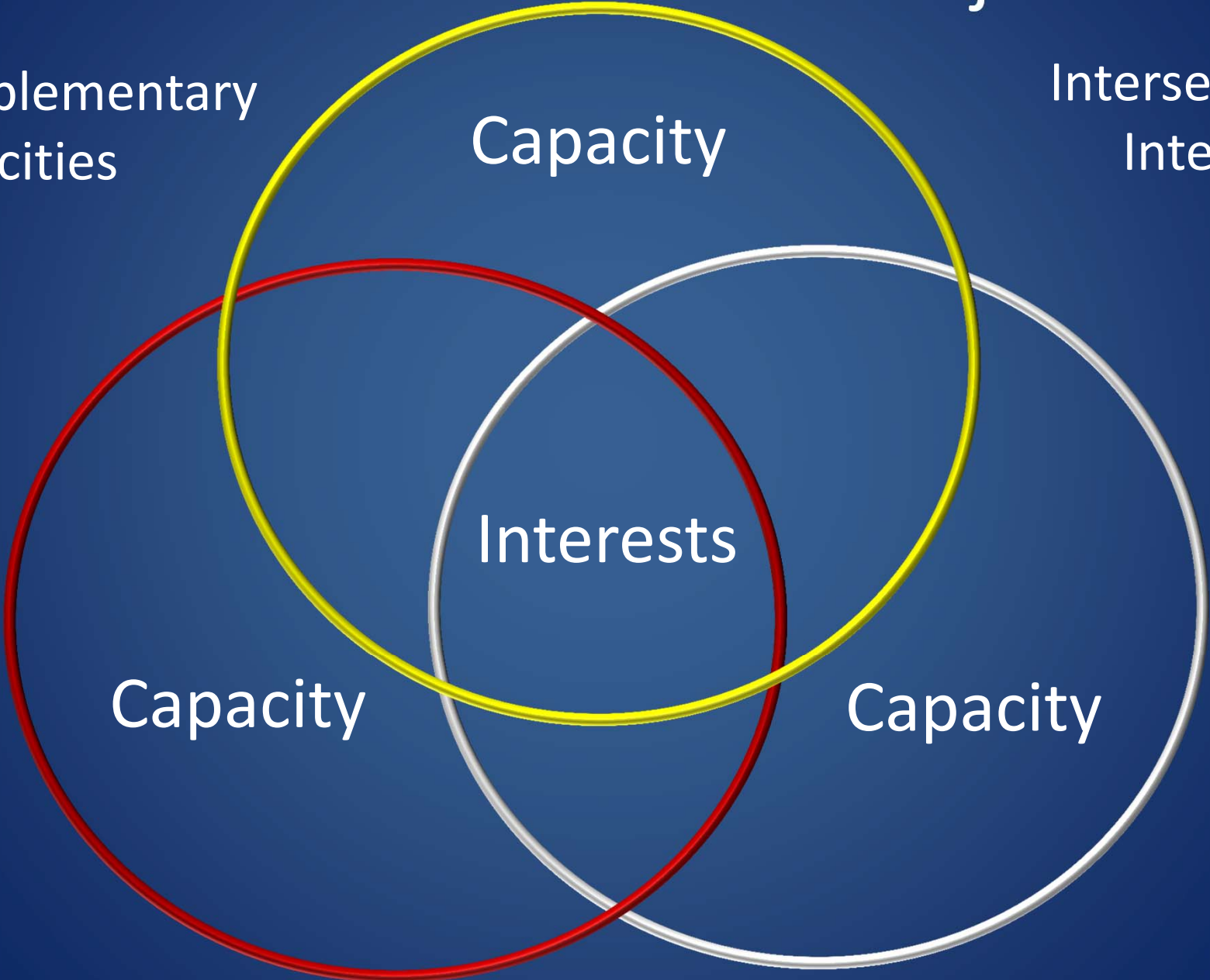
Intersecting
Interests

Capacity

Interests

Capacity

Capacity



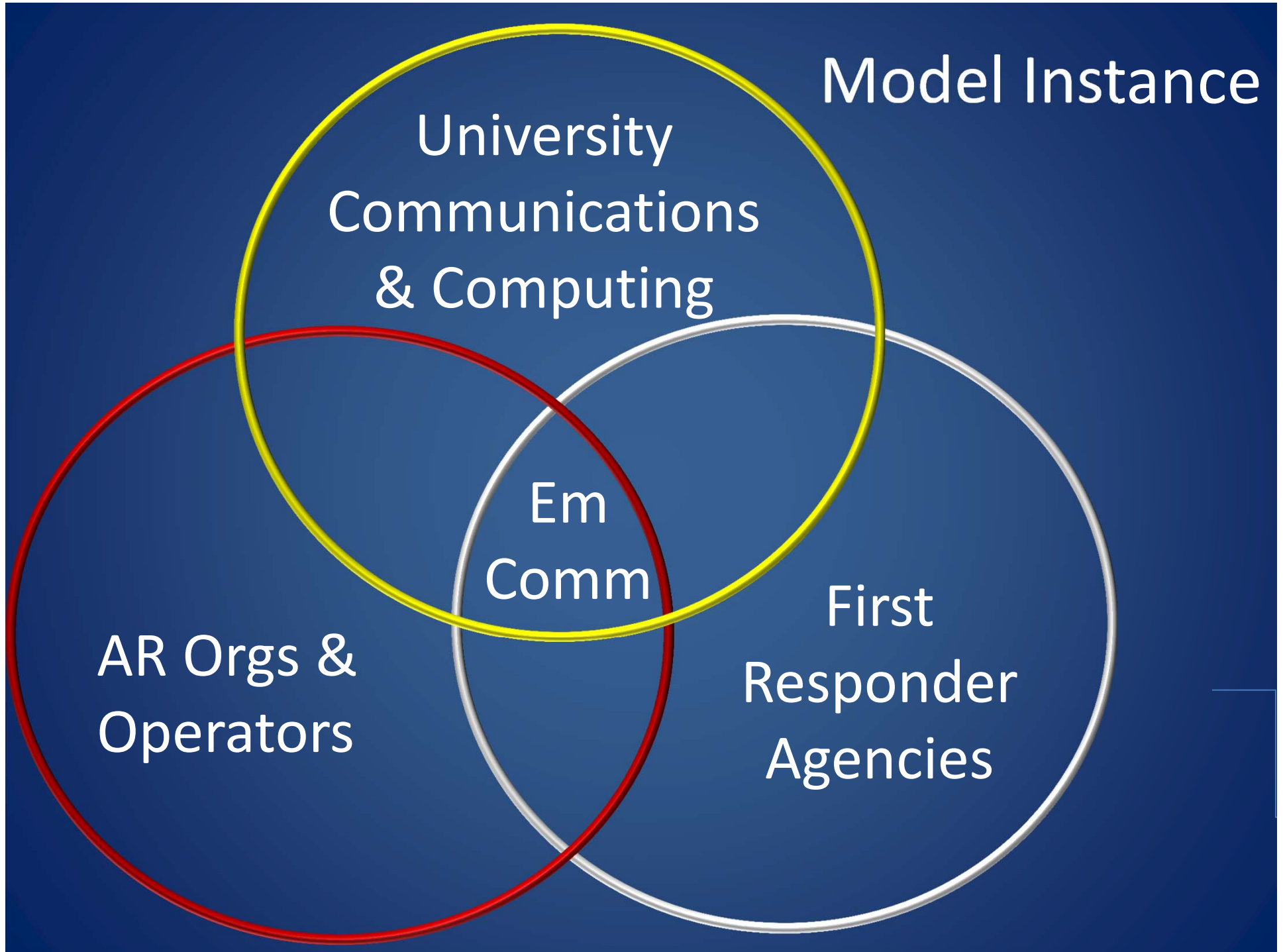
Model Instance

University
Communications
& Computing

Em
Comm

AR Orgs &
Operators

First
Responder
Agencies



Special Features of Solution

- Extendible (function: particularly wrt apps)
- Expandable (local range)
- Replicable (regional): Ready jurisdictions include Anguilla, Antigua, Aruba, Bahamas, Barbados, Belize, Bermuda, BVI, Cayman Islands, Curaçao, Dominica, Dominican Republic, Cuba, Grenada, Guadeloupe, Guyana, Jamaica, Montserrat, Puerto Rico, Haiti, St. Kitts & Nevis, St. Lucia, St. Maarten, Saba, St. Eustatius, St. Vincent & the Grenadines, Turks & Caicos)
- Sustainable (boundary partners: operators, relationships, mandates, Response Frameworks)

Call for Partners

Partner	Focal Point
Equipment Suppliers	Packet, DSTAR, BGAN
CDEMA & Offices of Disaster Preparedness & Other First Responders Agencies/ Agents	In-kind (operations)
Caribbean AR Societies	In-kind (operations)
Inmarsat	Waived idle service rate
ITU Partners	HR costs for research assistantships
Caribbean Universities and other TLIs	Collaborative research & analysis

Thank You