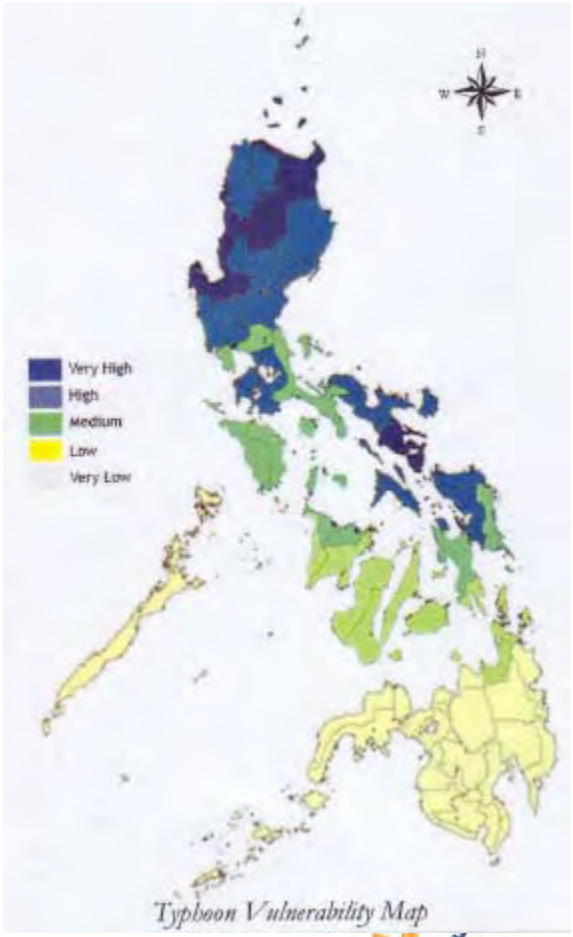
Disaster Risk Reduction and Management Experience in the Philippines (DRRM)

RAUL N. NILO, CISA
Director, Systems and Infrastructure Management
DOST-ICTO, Philippines

Philippines has the 5th largest coastline in the world 36,289 km. and over 17,000 km coastline are exposed to high risk due to storm surge

WorldRiskIndex		
Rank	Country	Risk (%)
1.	Vanuatu	36.50
2.	Philippines	28.25
3.	Tonga	28.23
4.	Guatemala	20.68
5.	Bangladesh	19.37
6.	Solomon Islands	19.18
7.	Costa Rica	17.33
8.	El Salvador	17.12
9.	Cambodia	17.12
10.	Papua New Guinea	16.74
11.	Timor-Leste	16.41
12.	Brunei Darussalam	16.23
13.	Nicaragua	14.87
14.	Mauritius	14.78
15.	Guinea-Bissau	13.75

- World Risk Index Report 2014



Typhoon Vulnerability Map

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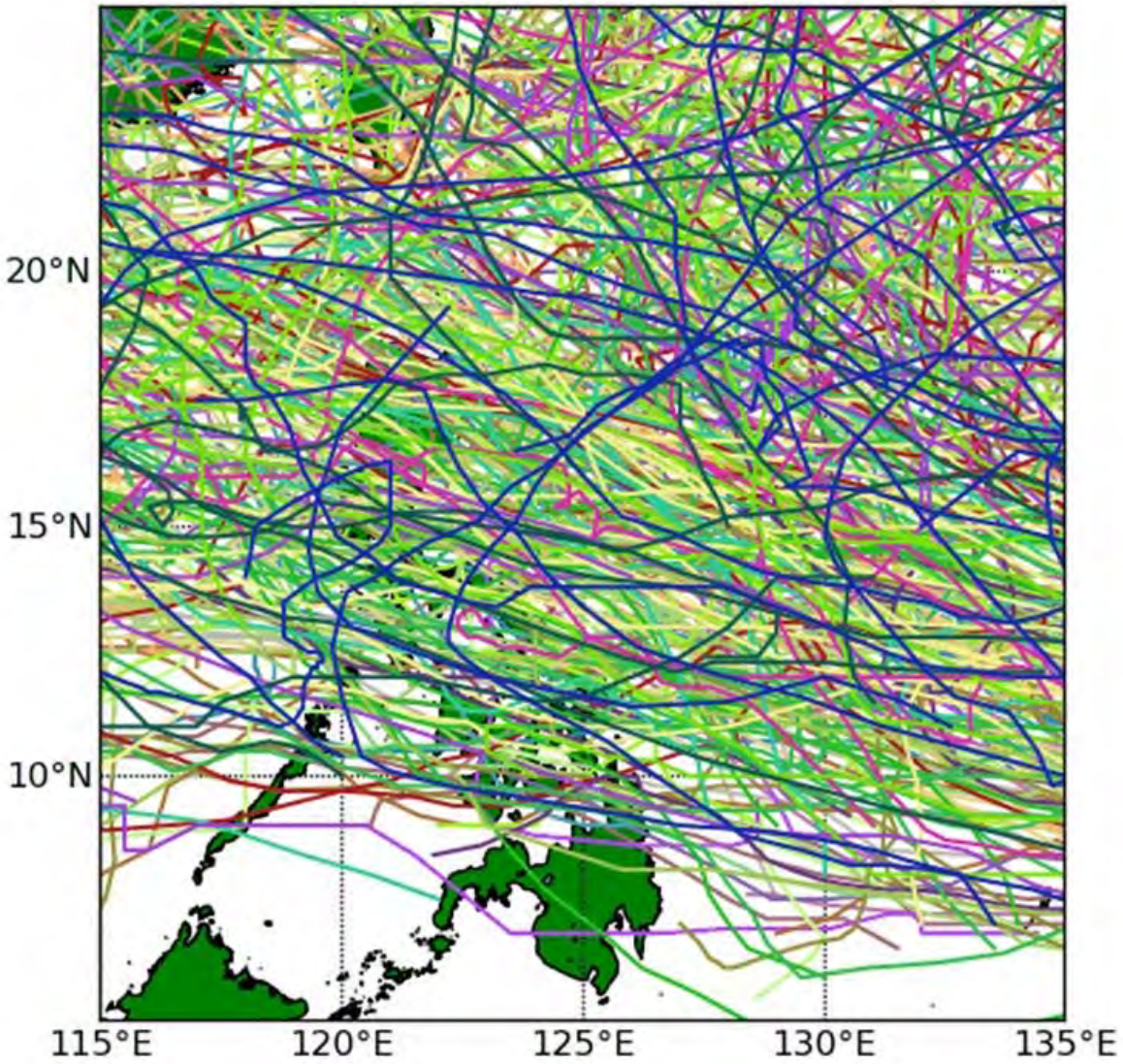
Tracks of Typhoons in the Philippines from 1951 to 2013



Average number of typhoons per year is 21

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Profile of Philippine Volcanoes

The Philippines sits on a unique tectonic setting ideal to volcano formation. The archipelago is surrounded by subducting plates as manifested by the trenches that are related to volcano formation.

Active	**23**
Potentially Active	**27**
Inactive	**355**

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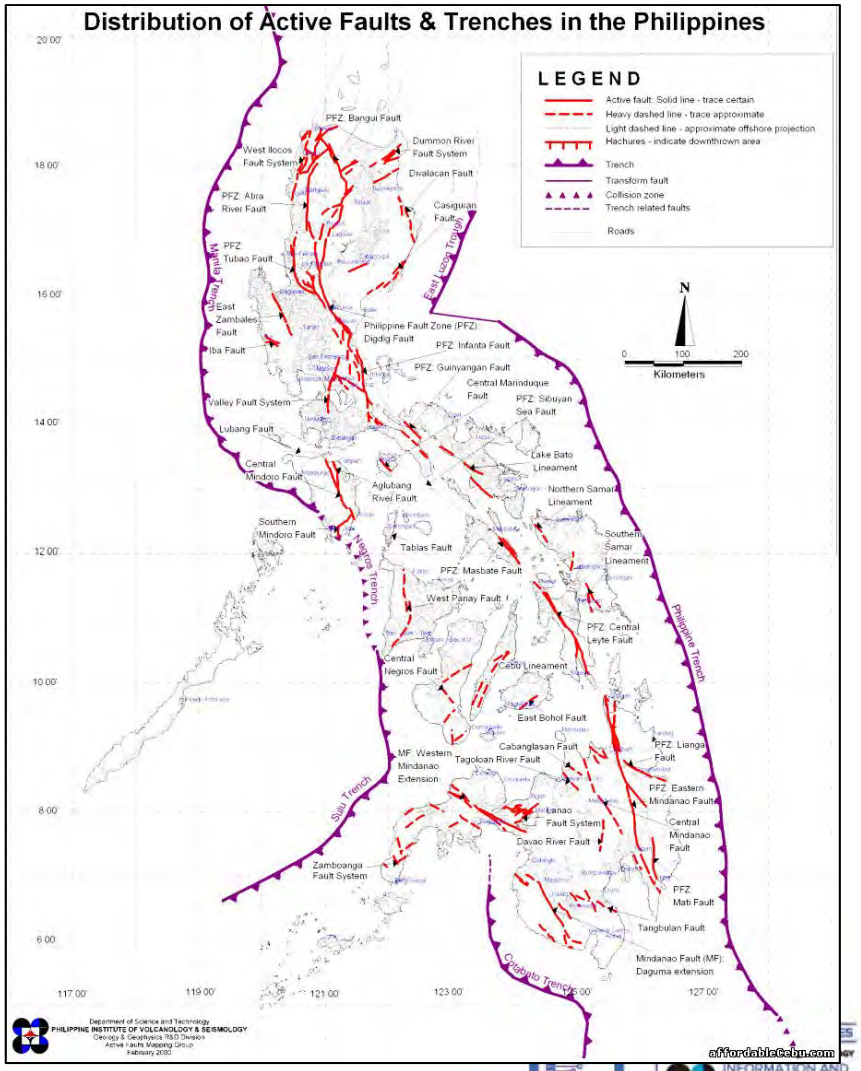
Philippine Faults and Trenches

- The **Philippine Fault System** is an inter-related system of faults throughout the whole of the Philippine Archipelago, primarily caused by tectonic forces compressing the Philippines into what geophysicists call the Philippine Mobile Belt.
  - 5 major fault lines
  - 6 trenches



Top 10 Philippine Earthquakes

Number	Magnitude	Origin	Location	Date
1	7.3	Tectonic	Casiguran	August 2, 1968
2	7.0	Tectonic	Ragay Gulf	March 17, 1973
3	7.9	Tectonic	Moro Gulf	August 17, 1976
4	6.5	Tectonic	Laoag	AUGUST 17, 1983
5	6.8	Tectonic	Bohol	February 8, 1990
6	7.1	Tectonic	Panay	June 14, 1990
7	7.9	Tectonic	Luzon	July 16, 1990
8	7.1	Tectonic	Mindoro	November 15, 1994
9	6.8	Tectonic	Palimbang	March 6, 2002
10	6.2	Tectonic	Masbate	February 15, 2003

Legal Framework for Disaster Risk Reduction and Management

" To provide maximum care, assistance, and services to individuals and families affected by disaster, implement emergency rehabilitation projects to lessen the impact of disaster and facilitate the resumption of normal social and economic activities"

Applicable Philippine Law	Description
Philippine Disaster and Risk Reduction Management Act of 2010	Multi-stakeholder participation in the development, updating and sharing of DRRM Information system
Climate Change Act of 2009	Use of database technology for risk assessment
People Survival Fund Act	Financing the development of forecasting and early warning ICT system
Risk Reduction and Preparedness Equipment Protection Act	Punishes the theft, destruction, tampering or illegal selling of equipment used in risk reduction and prevention

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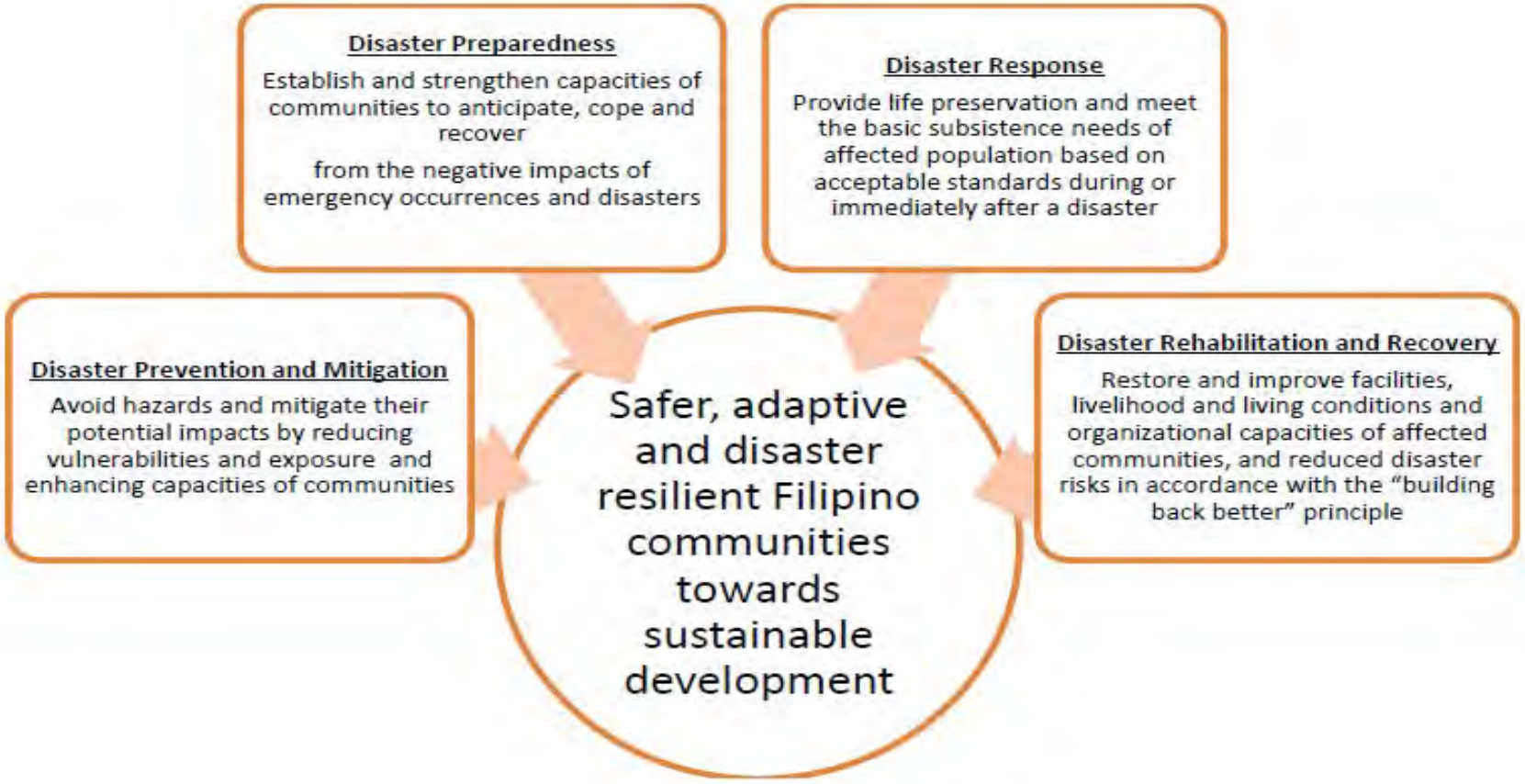
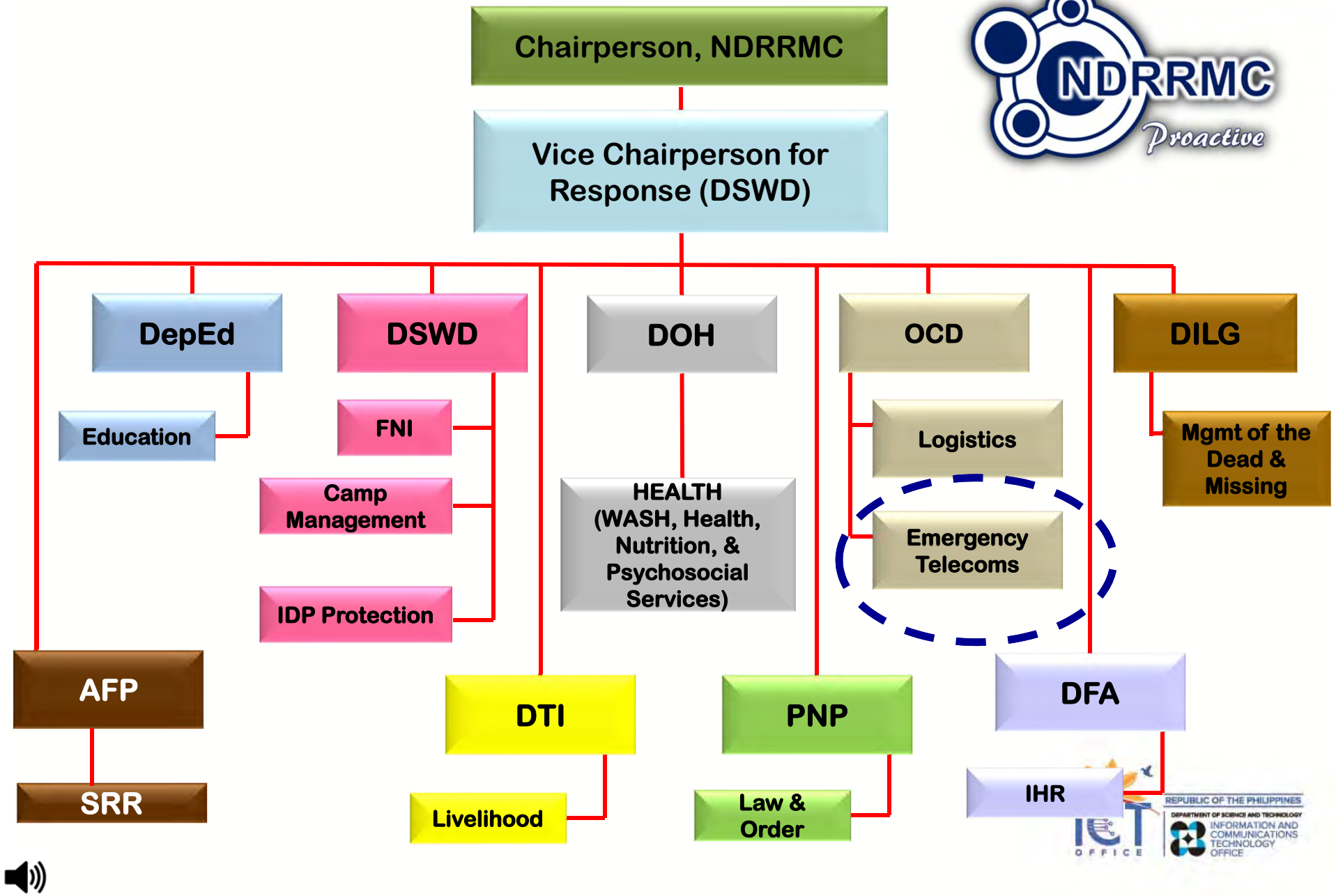
National Disaster Risk Reduction and Management Plan NDRRMP 2011-2018

"safer, adaptive and disaster resilient Filipino communities toward sustainable development."



Organizational Structure



Philippines ICT Response Cluster

BACKGROUND

- During disaster, affected areas were badly hit by tropical cyclones or torrential rains that Information and Communications Technology (ICT) systems are rendered non-operational. This may result in the:
  - ✓ unavailability of essential voice, data, television and radio broadcast services that are critical during and post disaster management operations.
- In such cases, the activation of Emergency Telecommunications Cluster is required to install, operate and maintain a system of communication that will reconnect the isolated LGUs' Emergency Operations Centers to the NDRRMC's Operation Center and system.

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Emergency Telecoms Cluster

- **NDRRMC Cluster E**
  - Strengthen the ICT capacities at the national level down to local levels to prepare for, respond to and recover from the impacts of disasters
- **Rapid Emergency Telecommunications Team**
  - Activate a quick response team that will be primarily in-charge in establishing the ICT requirements of the NDRRMC on-site operations and coordinating center.

ICT for DRR

- **Movable and Deployable ICT Resource Unit (MDRU)**
  - A joint project with ITU, MIC, DOST – ICTO, NTT AND CVSnet
  - Provides a quick response ICT solution and restore communications in all disaster-affected communities.

- **Mobile ICT Unit (MICT)**
  - Local cellular service (domestic roaming)
  - Local AM, FM and TV service
  - Local Internet broadband service
  - Radio Gateway to HF, VHF and UHF
  - VHF/UHF repeater service
  - Satellite backhaul
  - On-site data center (cloud) service for disaster response and relief management tools
  - Self-contained power generation

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ICT for DRR

- **Integrated Services Digital Broadcasting –Terrestrial (ISDB-T) with Early Warning Broadcast System (EWBS)**
  - Incorporate Early Disaster Warning to the ISDB-T television broadcast to reach to wider sectors of society.

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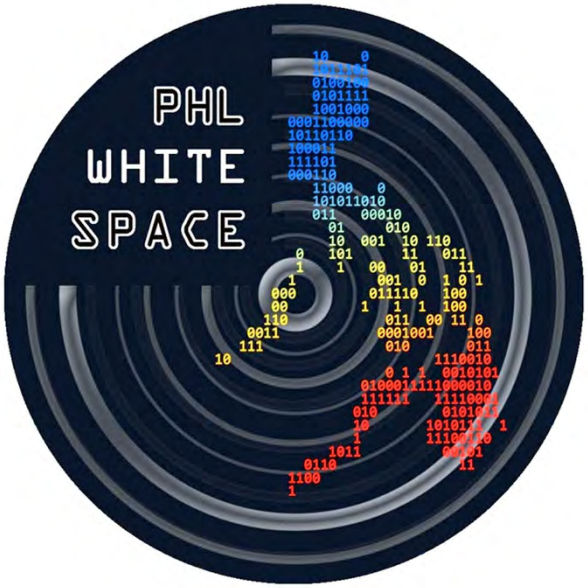
ICT for DRR

- Radio System
  - Traditional HF, VHF and UHF Analog
  - Modern HF, VHF and UHF Digital
  - Amateur radio groups
- Satellite Communications
  - Satellite Phones – Thuraya, Inmarsat, ITU
  - Inmarsat BGAN
  - Transportable VSAT
- TV White Space



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Intelligent Operation Center (IOC)

- It provides information to other government agencies in sharing the impact analysis and hourly updates during extreme weather disturbances
- Periodic updating of the database concerning location of evacuation centers, health centers, and other institutions involved in disaster response and recovery

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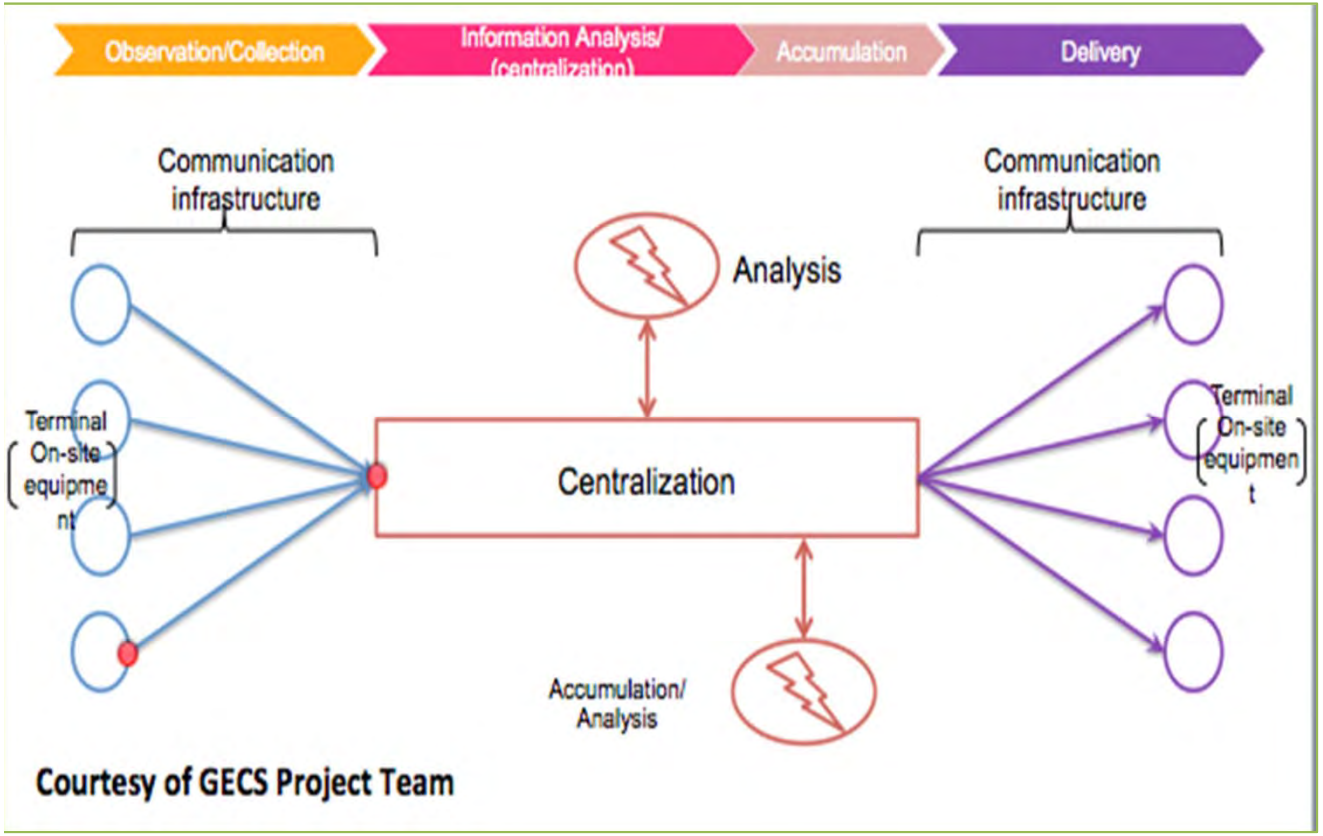
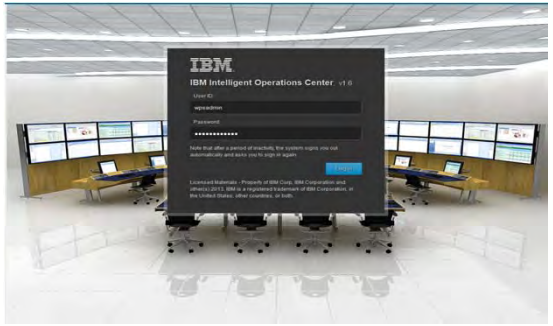
ICTO IOC Set-up

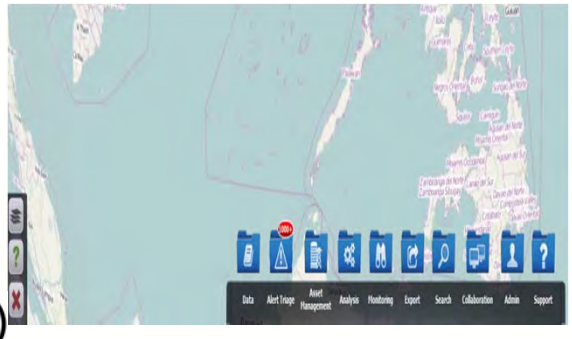


WEBIOC Log-in Menu

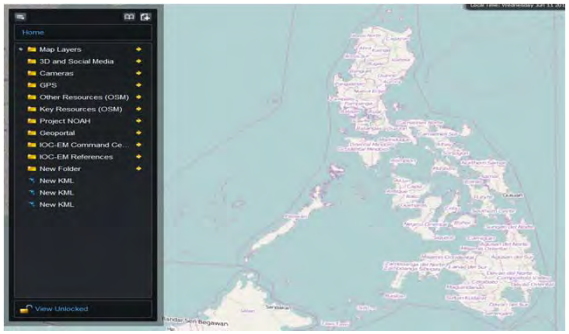


TACCS Log-in Menu

TACCS Admin Menu



TACCS Database Menu



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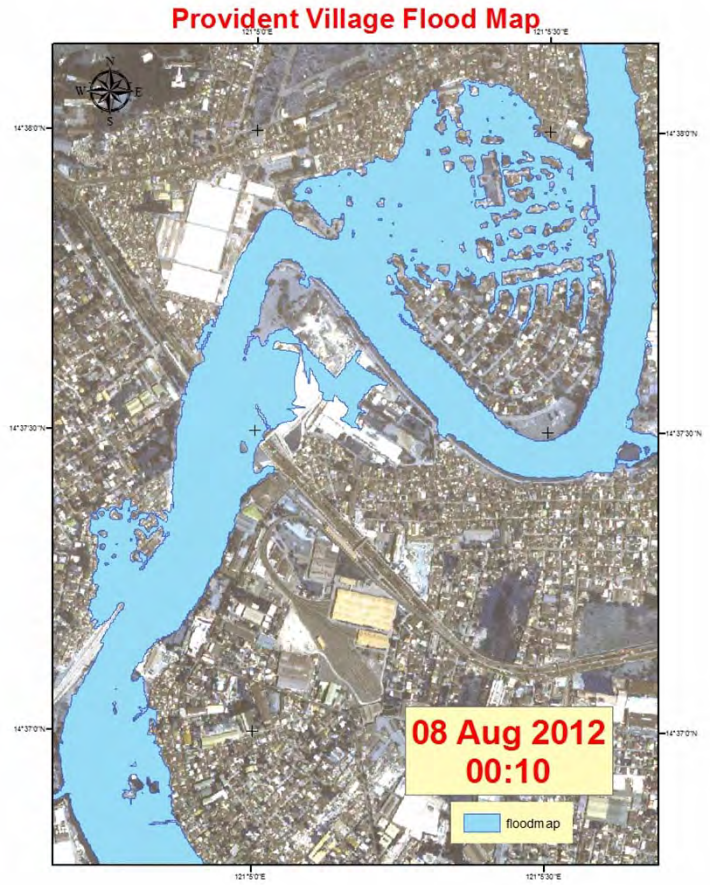
Government's strategy for a responsive disaster prevention and mitigation program

- Develop a flood mitigation system (6 hour warning system) for communities living along the major river systems
- Enhancement of geo-hazard maps
- Enhancement of storm surge vulnerability maps



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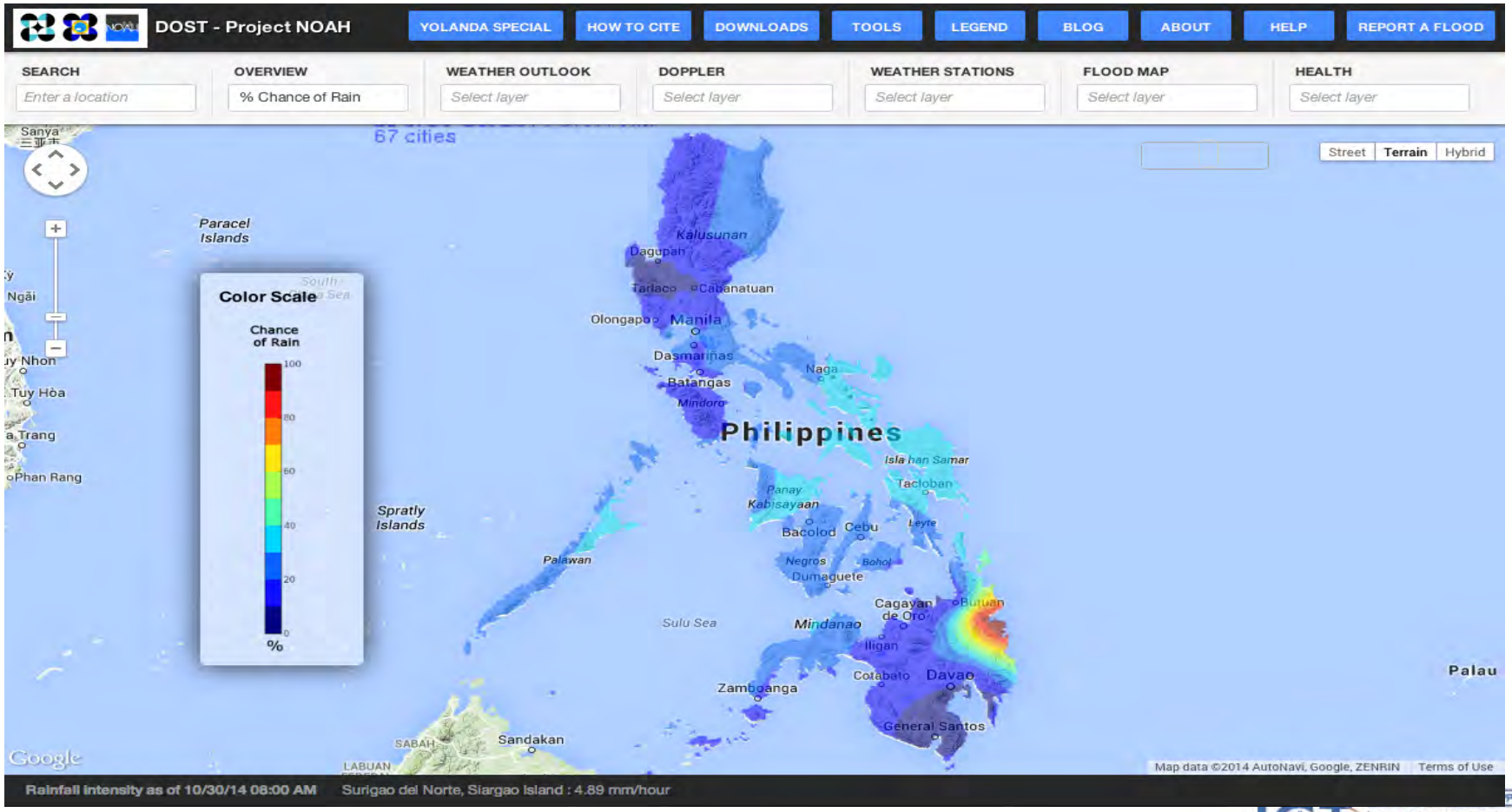
Nationwide Operational Assessment of Hazards

Enhancing the effectiveness of disaster response by strengthening disaster management networks through collaboration with various stakeholders



Information and Apps for Disaster Awareness

- **Disaster Information Nationwide Awareness** (DINA) website provides the public exposition and access of disaster risk reduction and management information materials and disaster preparedness knowledge on what to do before and after the hazards i.e. earthquake, tsunami, tropical cyclone, landslide, flood volcanic eruption and fire.

- **Batingaw** is a mobile phone application that provides information management system for updates of DRRM activities. It also provides safety tips, digital tools, contact details of national responders and e-library of some DRRM documents.

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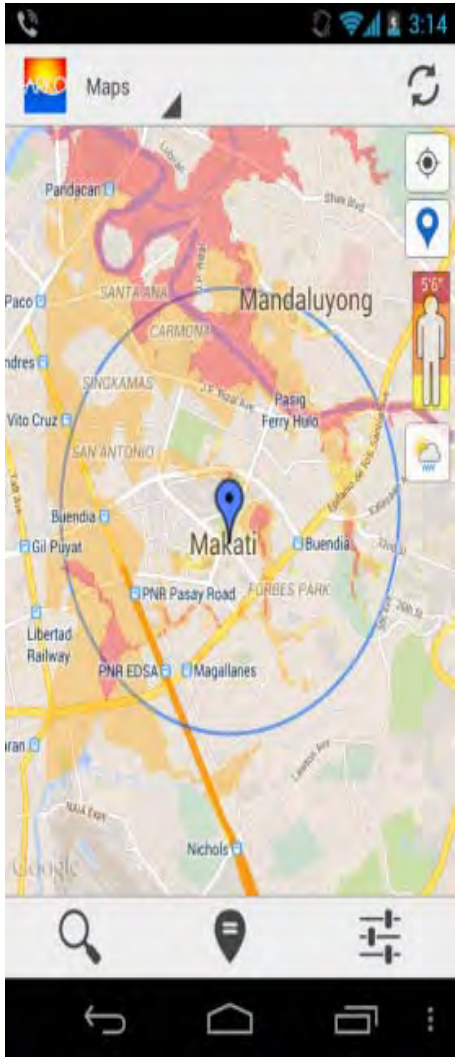
App for Flood Monitoring (ARKO)



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Project Agos

PROJECT AGOS PREPARE

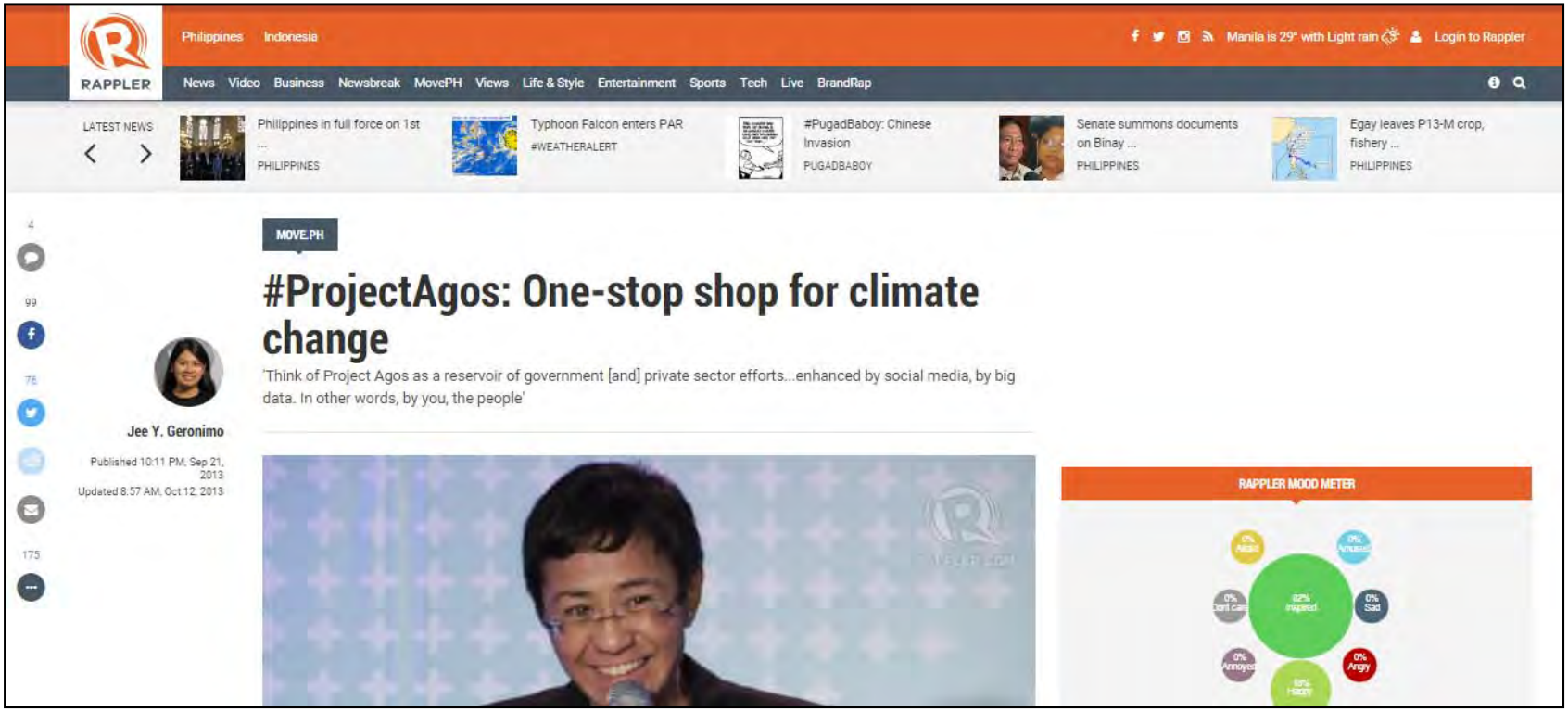
PROJECT AGOS RESPOND

PROJECT AGOS RECOVER

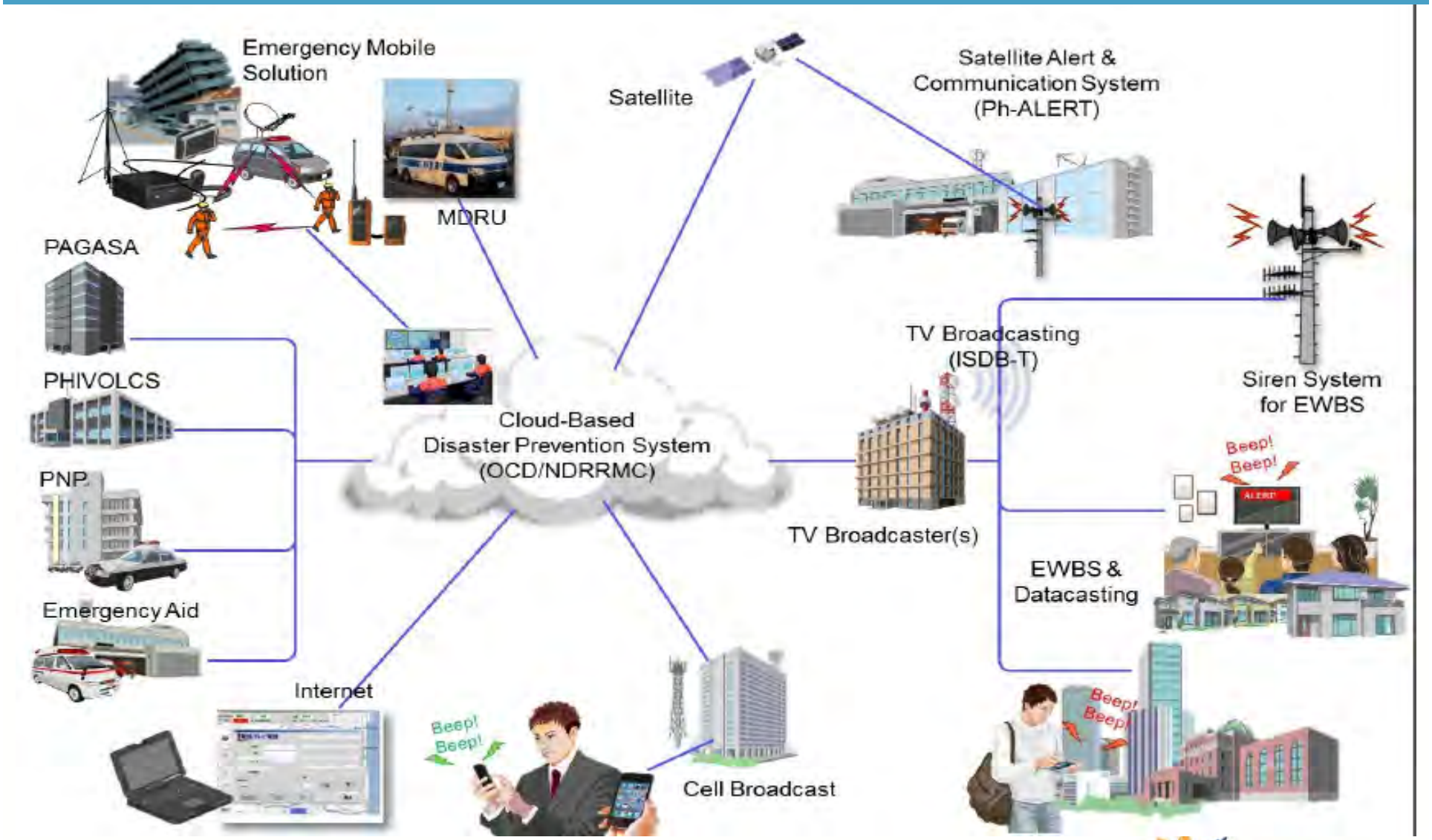
RAPPLER

#ProjectAgos: One-stop shop for climate change

'Think of Project Agos as a reservoir of government [and] private sector efforts...enhanced by social media, by big data. In other words, by you, the people'



Cloud-based Disaster Management System



Template for International Cooperation

1. Forms 7-man ICT teams

2. Applies for intent at PH Embassy

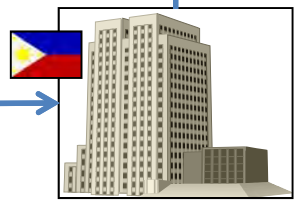
3. Endorses application

4. Approves Visa / Permit

5. Issues Visa/Permit

Requesting Country

PH Embassy



PH Department of Foreign Affairs

6. ICT Team proceeds

7. ICT Team reports

NDRRMC Proactive

8. ICT Team referred

ICT Cluster

- RF Management
- VSAT
- Special Equipment
- Information Technology
- Public Information

9. Identifies designated location

10. ICT Team proceeds to disaster area

11. ICT Team deployed to designated location

Conclusion

Effective strategy for DRRM requires…..

……rationalize all plans and examine the mandates of agencies responsible for disaster risk reduction and management to ensure that programs converge and synchronize with the overall agenda for national development…..

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Thank you

for

your attention

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