

## The Pacific Disaster Center

Two decades of humanitarian technology innovation leveraging Common Alerting Protocol (CAP) to for the SDGs and DRR

> Common Alerting Protocol (CAP) Implementation Workshop 29 – 30 September 2020

Mssr. Joel Myhre Senior Disaster Services Specialist, Geneva Pacific Disaster Center

http://www.pdc.org



Baseline Assessment

NATIONAL DISASTER PREPAREDNESS





## **DC** GLOBAL PDC - Fostering Resilience and OPDC GLOBAL GLO

We use science and technology to help ...

UATEMA

managers worldwide make informed decisions to ...

executives and disaster

reduce disaster risk and prepare for and respond to disasters







## Who is using our systems?

### A glance at our partners

We're working hand-in-hand with partners around the globe to reduce disaster risk, prevent losses, and protect the lives and livelihoods of millions of people.

1.7 million mobile users

#### Nations

- Indonesia
- Thailand
- Vietnam
- Philippines
- Bahamas
- Peru
- El Salvador
- Cambodia
- Myanmar
- Honduras
- Nicaragua
- Guatemala
- Dominican
  Republic

- International
- United Nations (IAEA,

OCHA...)

- ASEAN (AHA Centre)
- CDEMA
- CEPREDENAC
- American Red Cross
- World Food Programme
- Salvation Army
- More...
- Jamaica
- Bangladesh

Australia

Fcuador

China

• Brazil

Palau

Nepal

Japan

Paraguay

• Fiji

- Haiti
- More...

## Public

- International community
- Friends, family, etc.





## PDC has been proud to promote CAP globally via our many national partners in SE Asia, LatAm and the Pacific

Myanmar- Department of Meterology and Hydrology (DMH)

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Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA)

Indonesia - Yayasan Peta Bencana, BNPB, Badan Meteorologi, Klimatologi, dan Geofisika (BMKG) – InaTews

Thailand



Better solutions. Fewer disasters. Safer world.







#### GUANGDON CHHATTISGARH TELANGANA Thailand ANDHRA RNATAKA PRADESH TAMIL NADU Kyaukpyu, Myanmar KERALA TROPICAL CYCLON CATEGORY ENANG TERENGGANU PEAK WINDS 110 MPH (177 KPH Malaysia LAT 19.421 LOCATION LONG 93.545 NORTH SUMATRA rom Wannar WEST SUMATRA LIMANTAN SOUTH **Building Disaster Monitoring and Early Warning Capacity** Within the Government of Myanmar by leveraging AHA Centre's DMRS System



## **Project Overview**

## Goals

Improve risk assessment, early-warning, and disaster-management decision making outcomes by enhancing capacity within Myanmar's disaster management community.

**Duration** 

24 months



Funding



#### Beneficiaries

DMH, DDM, and supporting GoUM and NGO Staff (84 training participants)

Indirect: 53 Million (Population of Myanmar) Increase access to automated hazard information and infrastructure data



Effectively share information between GoUM agencies and external agencies



+

Disseminate timely alerts and warnings to at-risk communities

## DATA DEVELOPMENT



## Demographic

- Population and Housing Census
- Myanmar Population Map
- ADB Economic

## Hydrological

- Surface Water
- ADPC/SERVIR Hydrography
- Sentinel Flooding

#### Infrastructure/ Environmental

- Airports/Seaports
- Dams
- Transportation
- DDM Shelters & Warehouses
- Mangrove/ Conservation



 Automated Hazard Alerting



## **Building a bridge**





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## PDC's integrated approach



Observational and collection





Advanced modeling and risk





Improved decision support capabilities



Informed decision making

GIS and visualization systems





Computing and communication technologies







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## Making Information Meaningful

GLOBAL





## Disaster Management Headaches

Risk & Spatial Intelligence

- What, where, how bad? (Prepare)
- What to do? (Event horizon)

Logistics & Temporal Intelligence!

- Mobilization! (Response)
- Transparency & tracking! (Recovery)







Big data (& smart devices) IoT (& nanotech sensors) UAV (drones)



Social media (collection) Artificial Intel (reasoning) Block-chain



Connectivity (wireless/ mobile) Artificial Intel (V/A) reality Social media (peer-to-peer)



3-D printing Artificial Intel (neural nets) Automation

## **Technology Revolutions**





## Disaster Management

## What's Here Already?

Case #1 – Exposure Analytics

Addressing "what, where, and how bad?" before an event occurs, or within seconds of occurrence.

\* This is now possible with development of global exposure database (Big Data), and the exposure modeling (Expert).





Disaster Management

## Close Possibilities?

Case #2: News Media Analytics

Extract reliable data (e.g., killed, injured, etc.) from credible news coverage.

\* This is possible with digital news (Big Data), and Natural Lang Process (Expert).



#### #AI4EARTH



## Data Revolution & Spatial Awareness Crowd sourcing

#### **Open Street Mapping, GFDRR, PetaBencana** (id)

- Smart devices
- Drones
- Apps

### Mapping

- Population
- Assets
- Hazard risks
- Resilience



## Al is being leveraged across the UN and NGO community

UN Pulse Labs use social media and AI/ML to analyze logistics after disaster strikes &

UNOCHA's Humanitarian Data Exchange visualizes risks of El Nino to nations



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#### WITED NATIONS GLOBAL PULSE Verseene be dete for development and UN Global Pulse use #AI4EARTH for Disaster Risk Reduction







Early assessment on demand

What used to take a team of analysts and experts hours/days is now produced instantly

### Technology

- Realtime data (IoT & sensors)
- Big data + exposure analysis
- Asset inventory (IoT)
- AI (expert system) analytics



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Merces Kecover and Rebuild



facebook research

## Social Media and Big Data can be processed using Al algorithms

## Facebook Disaster Maps

- Where people are moving from/to
- Where they check in safe
- Where are the power outages



## From 2011, an S&T example from California ...







# Now in 2020, an S&T example from California ...

- Chat-bots
- Augmented / Virtual Reality
- AI + Expert Systems to
  - Perform Hazard modeling + Exposure analytics
  - Match needs
  - Track delivery
- Smart devices for delivery
- IoT for tracking & transparency

This is Beacon. It looks like you may be experiencing flooding in your area.

Yes! Water in the house & rising

Okay! 3 ft. of flooding is expected over the next 6 hrs. We're working on an evacuation plan for you now. Stand by!

Deloitte









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#### **Better solutions.**

# Safer, more resilient world.

@PDC\_Global



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www.pdc.org



info@pdc.org

PDC Headquarters 1305 N Holopono, Suite 2 Kihei, HI 96753 (808) 891-0525



