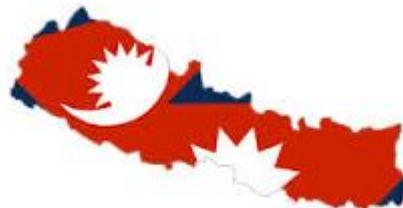# Evaluation of Nepal's Emergency Communication System

Investigation - Nepal Earthquake 2015

Learning Lessons from Nepal - Embracing ICTs for Disaster Management

Hotel Yak & Yeti, Kathmandu, Nepal
2016 March 18

Nuwan Waidyanatha
Senior Research Fellow
nuwan@lirneasia.net
Kunming, China

Chauthara Story

- Telecom damage
  - NT & NCell towers were intact but had to be relocated
  - SmartTel tower, outside of Baazar, was unharmed
  - After 48 hours batteries drained & were stolen
- Electricity
  - Bazaar and villages in darkness for four weeks
  - Solar powered mobile device charge centers
- Radio Sindu was down for two days
  - Bamboo antenna hoist
  - Transmission equipment unharmed
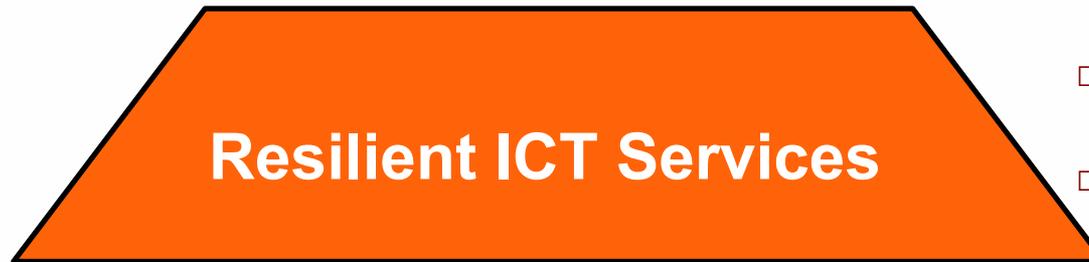 - Generator by ISOC

Areas for Improvement

Emergency Communication Services

Resilient ICT Services

Robust Infrastructure

Common Operating Picture

☐ Situational-Awareness
- ■ Alerting/Warning

☐ First-response
- ■ Dispatch (Resource Messaging)
- ■ Incident Command & Control
- ■ Situational-Reporting

Contingencies

☐ Business Continuity Planning
- ○ Institution, Personnel, ICTs

☐ Restoration of Services
- ○ Access, transmission, interconnection, power

Risk Analysis

☐ Survivability
- ○ Hazards, guidelines

☐ Availability
- ○ Congestion, coverage

Key Recommendations

I. Assess Telecom **Survivability and Availability** in support of a robust Government Emergency Communications (GEOC)

II. Develop a **Rapid Restoration** of Access to Telecommunications (RREACT) program for continuity of emergency communications

III. Pilot-test a Cross-Agency **Situational-Awareness** (CASA) platform and **Incident Command and Control** (ICCS) for a Common Operating Picture in support of emergency management

Activities: risk and coverage mapping
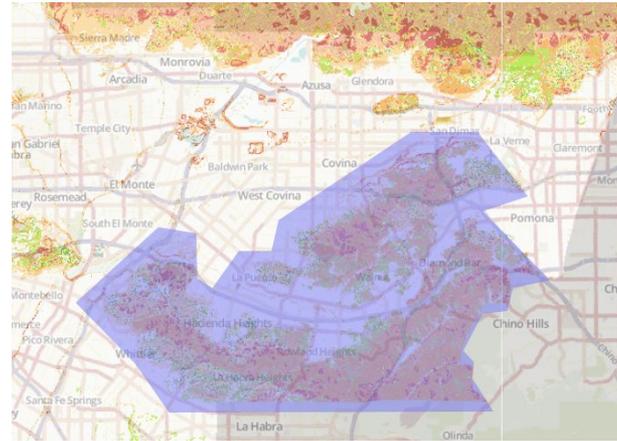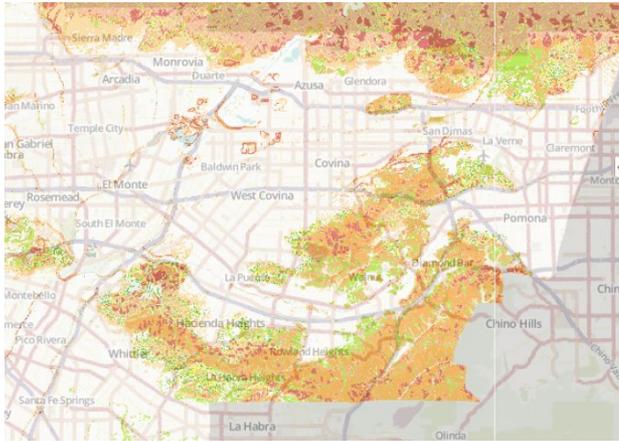
Using hazard, vulnerability, and exposure to identify risk (e.g., landslide prone area)

Define a risk-based predefined alert area to use when issuing heavy-rain and landslide warnings

Overlay with telecommunications signal coverage data to ensure warnings go through to intended recipients

Train a set of Trainers to assess the survivability and availability of emergency telecommunications (NETP 2013, Action Plan 8.3.3)

Activities: Risk Assessment and Refinement

RASTER Participatory Assessment
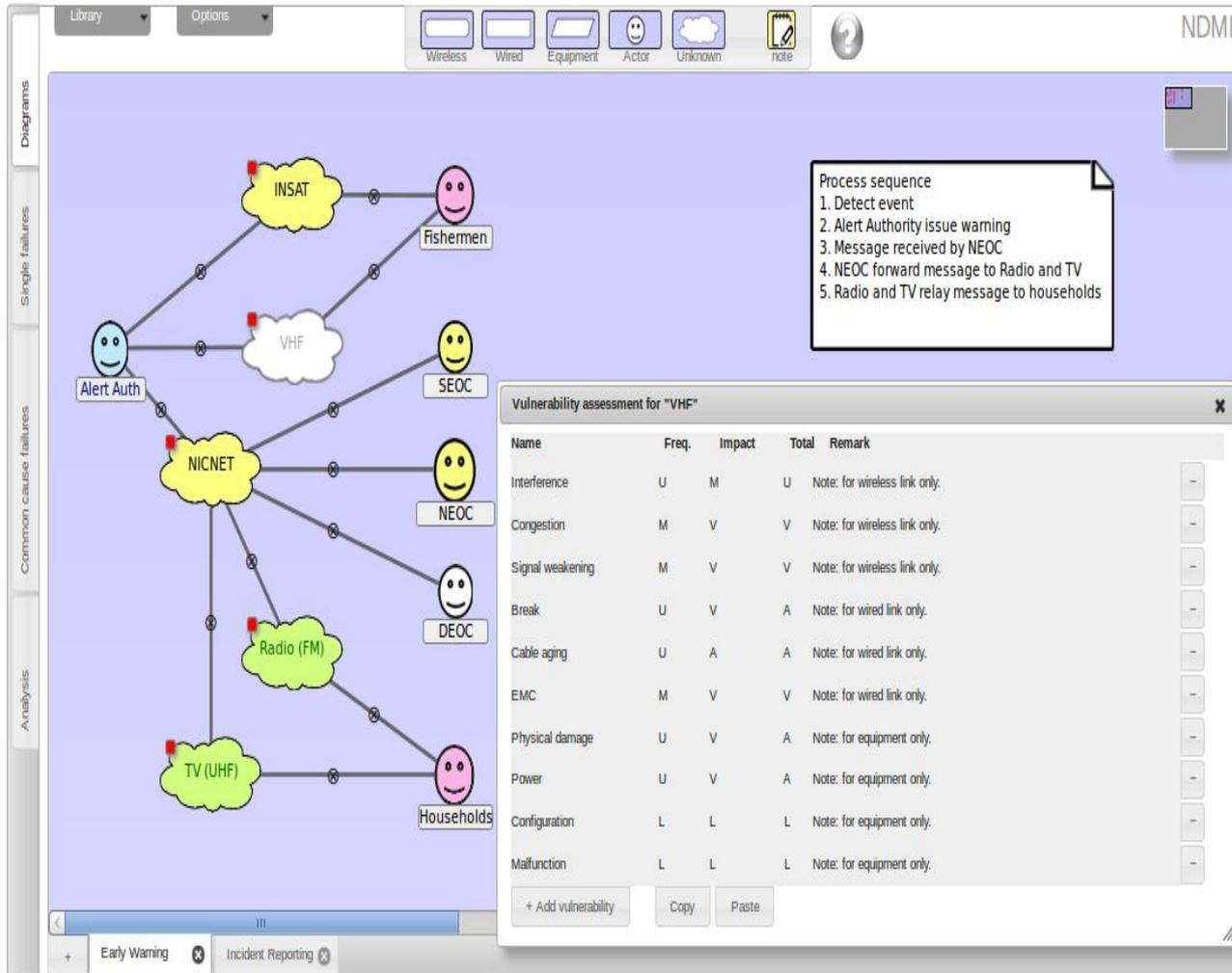
- What are the hazards and risks that threaten telecommunications infrastructure and services

- Identify the critical elements that must be improved to strengthen the resilience of the systems

Train a set of Trainers to assess the survivability and availability of emergency telecommunications (NETP 2013, Action Plan 8.3.3)
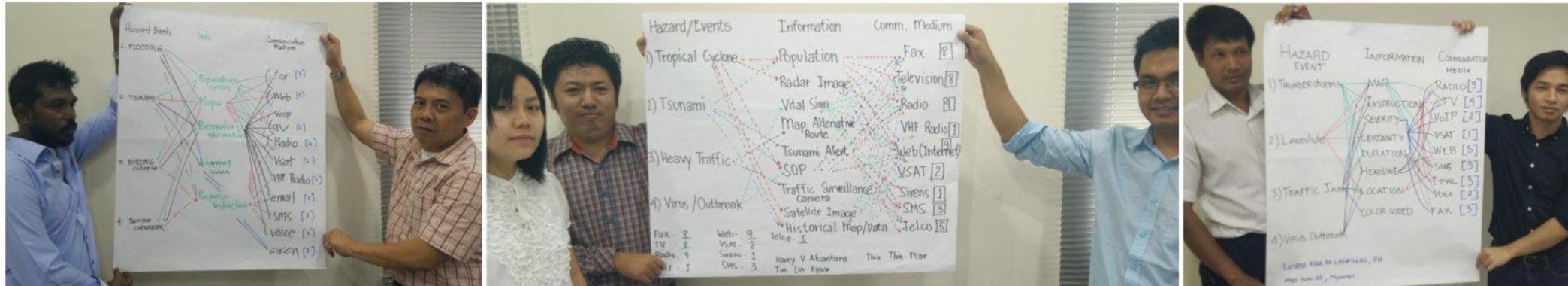
Activities: BC-DRP

☐ Build capacity in BC-DRP best-practices for developing a set of guidelines for the Nepali context (NETP 2013, Action Plan 8.7.3)

a. Conduct a comprehensive **BC-DRP needs and gap analysis** (GSMA published best-practices)

b. Develop **BC-DRP implementation guidelines** (NETCOMM)

c. Develop **BC-DRP self-evaluation guidelines** (NETCOMM)

d. Custom design **BC-DRP institutional programs** (telcos, data centers, services, personnel)

Activities: Infrastructure best-practices

☐ Facilitate a platform (e.g. NP Comm. Cl.) for stakeholders to build best-practices (NETP 2013, Action Plan 8.2.3)

a. Process the evidence from the Earthquake

b. Study the regional best-practices (LIRNEasia, ESCAP, ITU-D)

c. Combine a & b, earthquake and regional best-practices to derive the policy and guidelines (Earthquake building codes are available?).

Identify Stakeholder Information Needs

All governments have various public alerting systems:

- **Earthquakes/tsunami** by e-mail, news wire, Web sites, pagers, telephone calls ...

- **Weather** by news wire, fax, radio, television, e-mail, SMS text on cell phones ...

- **Fire, Security, Transportation** by television, radio, sirens, police with bullhorns...

Another City / Province / Country

Another City / Province / Country

Your City / Province / Country

Storm	**Sirens**
Earthquake	**Radio**
Tsunami	**Television**
Fire	**Fax**
Volcano	**Cell / SMS**
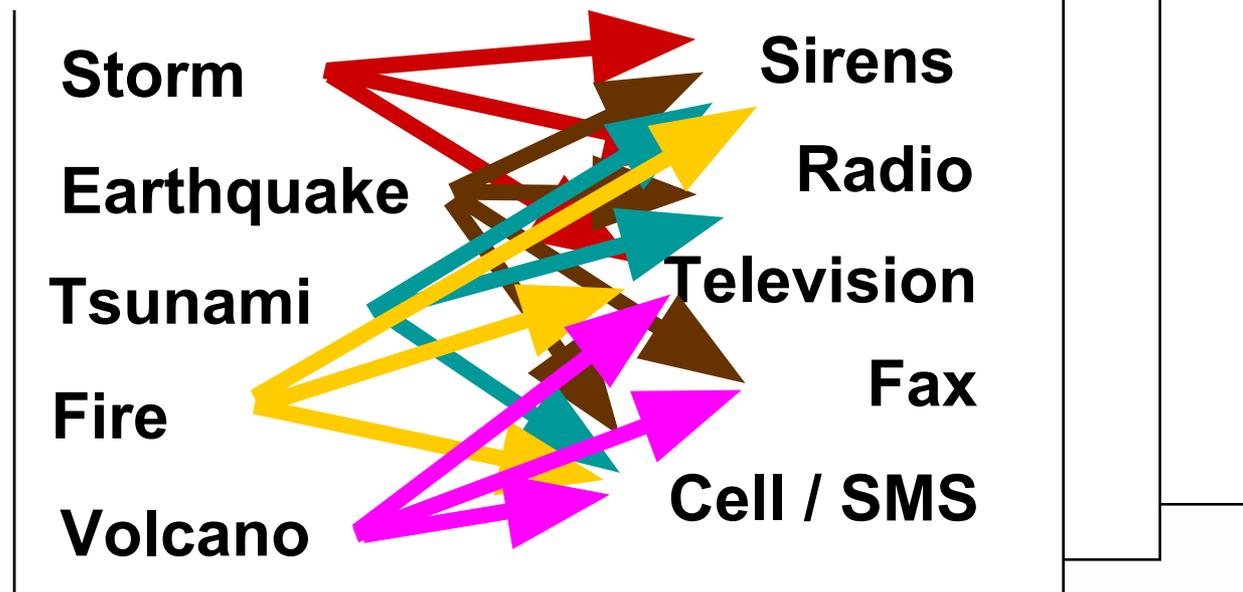
Emergency Communication - Simplified

scope

functions

RISK MAPPING (GIS)	ALERTING / WARNING (EDXL-CAP)
INCIDENT REPORTING (EDXL-SITREP)	RESOURCE MESSAGING (EDXL-RM)
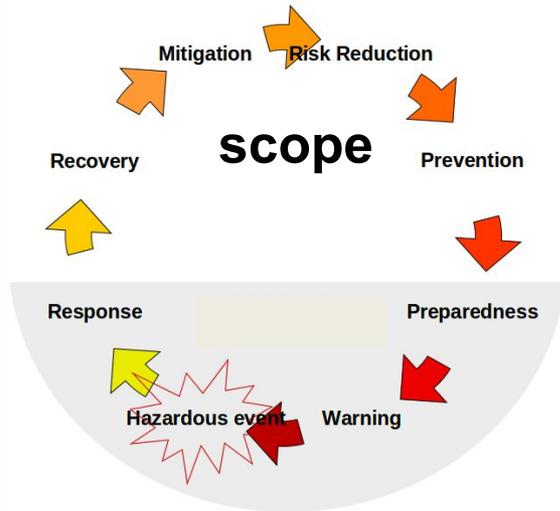
architecture
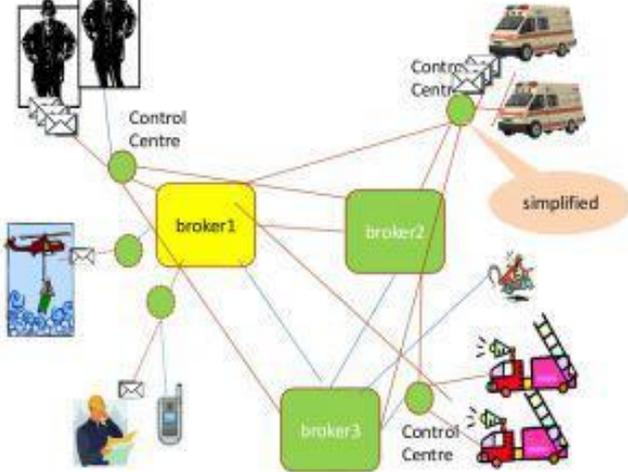
keep it Simple

Situational-Awareness

CAP on a Map: keeping it simple

Sahana Alerting and Messaging Broker (SAMBRO) improving Cross-Agency Situational-Awareness
Using EDXL-CAP and Pub-Sub (RSS/Email/SMS/FTP/Twitter/)
Common Operating Picture
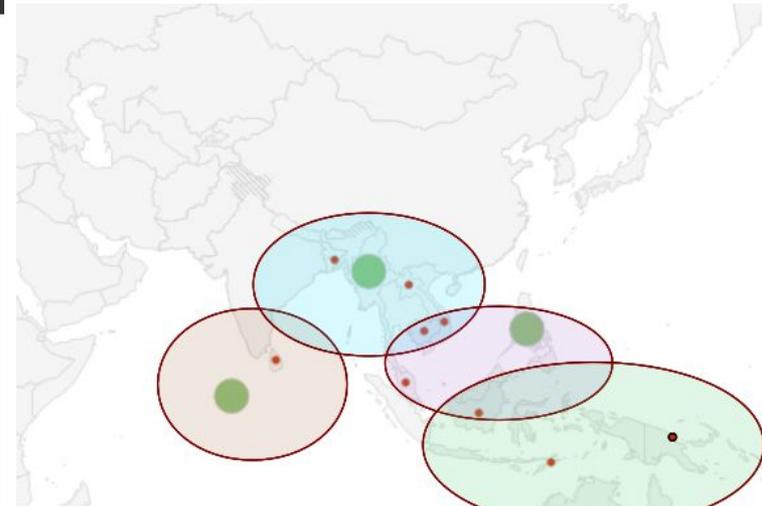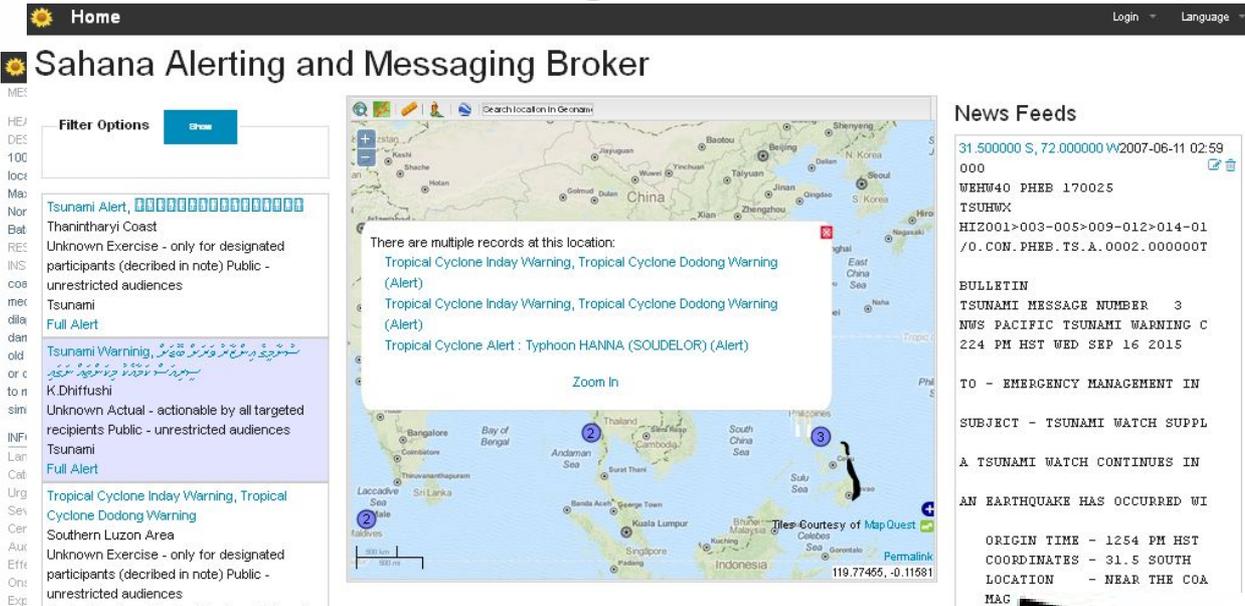
Incident Management

Common Operating Picture

Timor-Leste NEOC uses a simple alert and incident reporting system.

Resource Management System

Telcos to manage a RREACT program

Common Operating Picture

Each TSP can manage their own staff, warehouses, assets, incident management and alerting; on a single shared server; or sync

Elements and their Relationships

RESILIENT EMERGENCY COMMS

Survivability
Availability

BC-DRP

RREACT

Save
Lives

Robust
GECO

Real-Time
Data

Common
Operating
Picture

THANK YOU