

# Sahana CAP Implementation in Asia

## CAP Implementation Workshop 2015

Istituto Superiore Antincendi, Rome, Italy

24 September 2015

**Nuwan Waidyanatha**

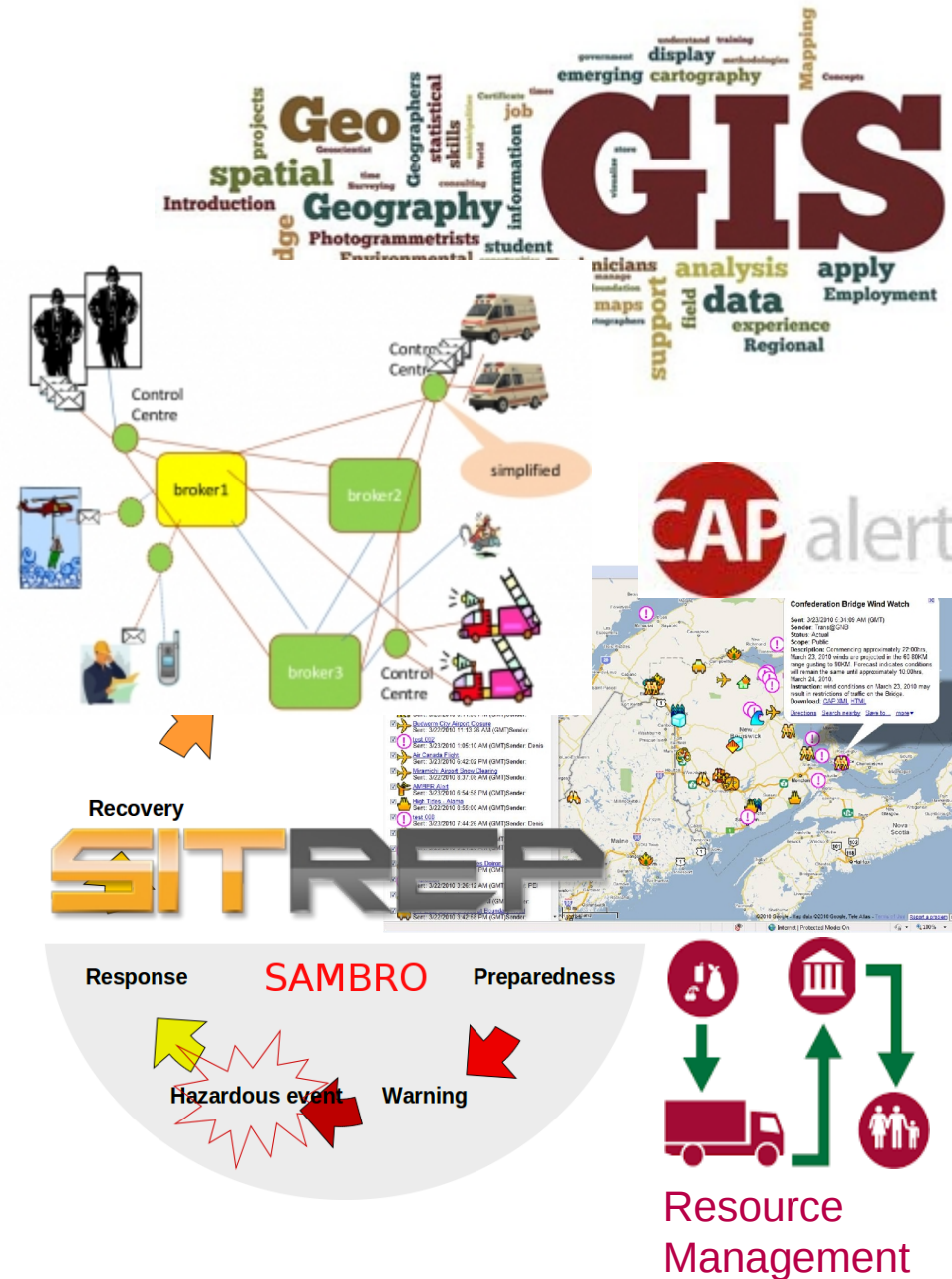


**SAHANA**  
SOFTWARE FOUNDATION

nuwan at sahanafoundation dot org

# Presentation Outline

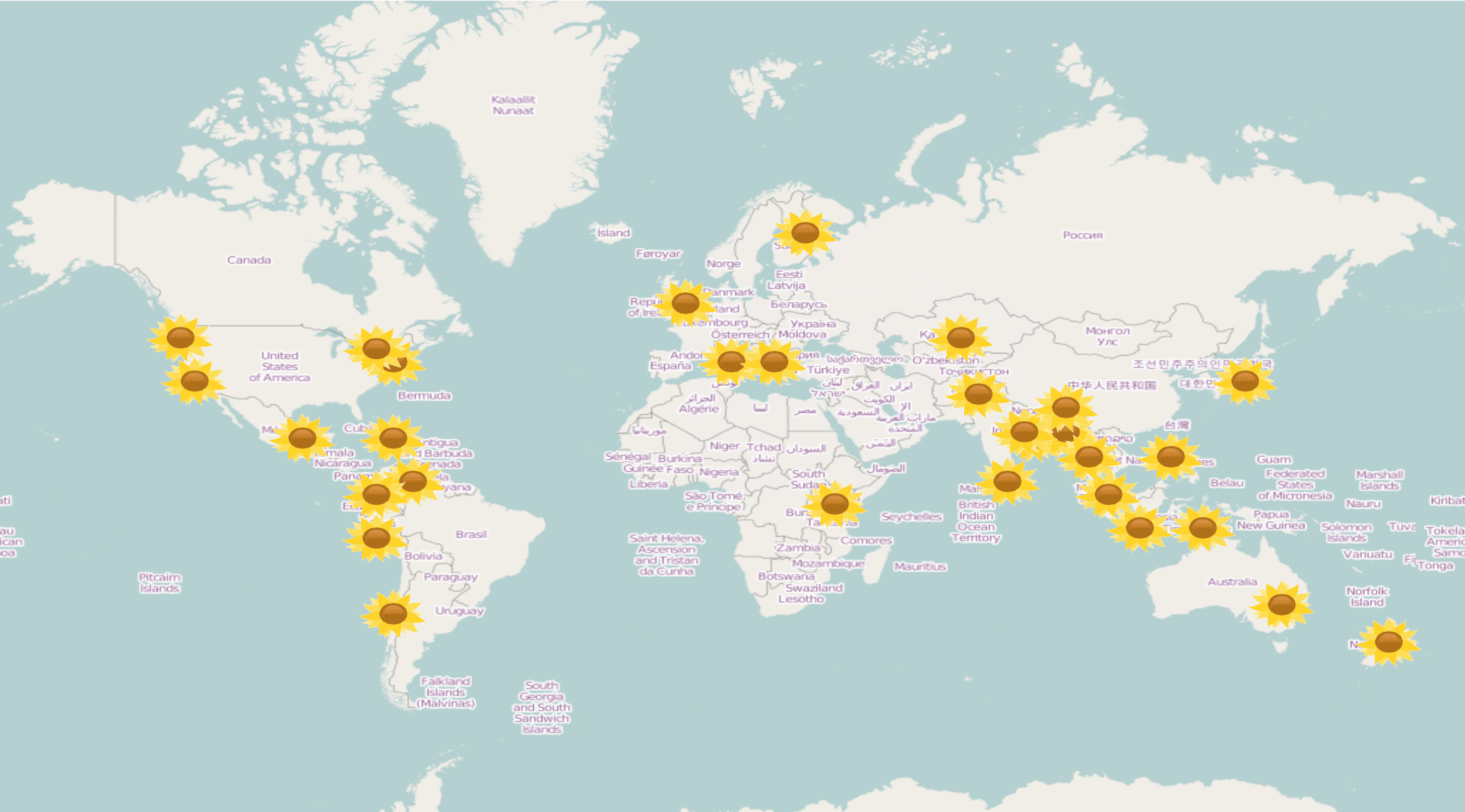
- Sahana Overview
- SAMBRO Scope
- Risk Mapping & Predefined Alert Areas
- Multi-language Multi-sequence Alerting
- Delivery through multiple technology modes
- Implementation challenges
- Way forward, scaling into rest of Asia and the Pacific



# **SAHANA OVERVIEW**



# Global Community



# How does Sahana help



**Directory** of organizations, offices and people to support communication and coordination



**Incident management** sharing real-time information



**Who's Doing What Where (3W)** information to identify where there are gaps and overlaps



Records what **resources** are available and where to support disaster



Brings all information together in a single platform to provide **situational awareness.**

# Technology

Host locally in the  
command center  
on a **Laptop**



Synchronize these  
2 together...

Host in the  
**Cloud**



MIT Open Source License



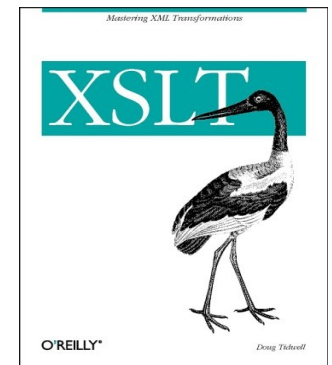
WEB2PY

python™

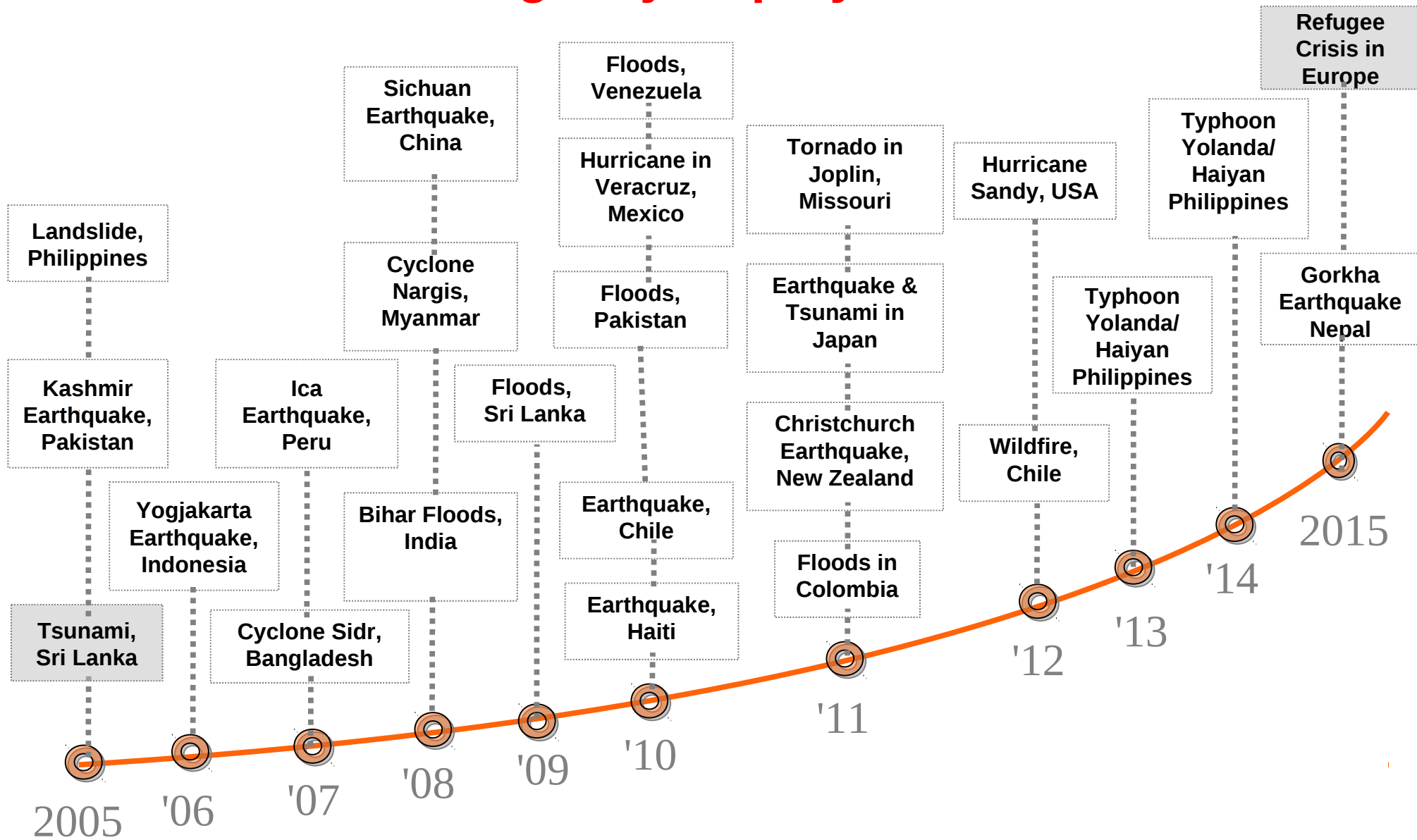
PostgreSQL



MySQL™



# Emergency Deployments



# Sahana Response to the European Refugee Crisis

Latest Information

Volunteers contributing to an effective response

Total Records: 2

News | Spendenstop Kinderkleidung | **Hamburg Städte** | Hamburg | Hamburg | 2015-09-12 21:36


**Kleiderkammer Messehallen**

**Spendenstop Kinderkleidung**

SPENDENSTOP BIS AUF WEITERES: Kinderderkleidung

Wir haben wirklich sehr viel bekommen und sind sehr gut ausgestattet!

Dominic König - Kleiderkammer Messehallen



Home Organizations Requests Shelters Map more



Refugee  
Coordination  
Croatia

## Login

Registered users can **login** to access the system

Email:

Password:

Remember Me

Boden | **München** | Oberbayern | Bayern | 2015-09-12 19:20

## nackten Boden

e Federdecken, keine Daunendecken), Schlafsäcke :hen

Show 25 entries

	Facility	Location	Volunteers?	Help Wanted	Donations?	Donations Needed
<a href="#">Open</a> <a href="#">Delete</a>	Infobus an der Luisenstr. 4	Infobus an der Luisenstr. 4, in direkter Nähe vom Hauptbahnhof, 80335 München, 80335, München	No		No	SUCHE: Isomatten, Decken (keine Federdecken, keine Daunendecken), Schlafsäcke (keine Daunenschlafsäcke) für 800 Menschen
<a href="#">Open</a> <a href="#">Delete</a>	Kleiderkammer Messehallen (HAMBURG)	holstenglacis 5, Hamburg Städte	Yes	+ Kleiderkammer in den Messehallen + Ab heute könnt ihr wieder Spenden in die Kleiderkammer in den Messehallen abgeben! Spenden täglich von 9 Uhr bis 20 Uhr	Yes	<ol style="list-style-type: none"> <li>1. Unterwäsche in S und M</li> <li>2. Socken in 38 - 45</li> <li>3. Flip Flops 40-44</li> <li>4. Winterjacken S - M</li> </ol> <p><b>SPENDENSTOP BIS AUF WEITERES: Kinderderkleidung</b></p> <p>Wir haben wirklich sehr viel bekommen und sind sehr gut ausgestattet!</p>

View Fullscreen Map

Layers

- Base Layers
  - OpenStreetMap (Humanitarian)
  - OpenStreetMap (MapQuest)
- Overlays
  - Facilities
  - Locations
- Hazards
  - Sea Level: Rise of 2m
- Incidents
  - Earthquakes: Recent Events
- Weather
  - Current Weather
  - Weather Stations
  - Cloud forecast
  - Precipitation forecast





# Active Deployments

Red Cross (IFRC)



UN World Food Programme



Asia Disaster Preparedness Center



Philippines Government: DSWD



Nepal Government: DHM



Timor-Leste Government: NDMD



City of Los Angeles



India, Japan, Taiwan, Portugal



# Sahana Center of Excellence at AIT



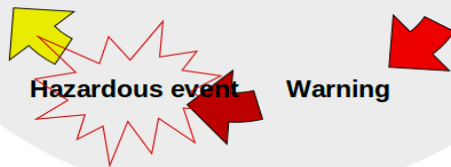
■ Sahana COE @ AIT is a program being developed with the Geoinformatics Center (GIC) of AIT

■ Building a **program and services to sustain SAHANA deployments**. Starting with Maldives, Myanmar, and Philippines

- Regional capacity building in preparedness and response
- Technology Research and Development
- Rapid Response with Situational-Information and on the ground support

■ Continue offering, primarily, Asia and the Pacific (but not limited to) with preparedness and response **solutions/services for building resilient communities**

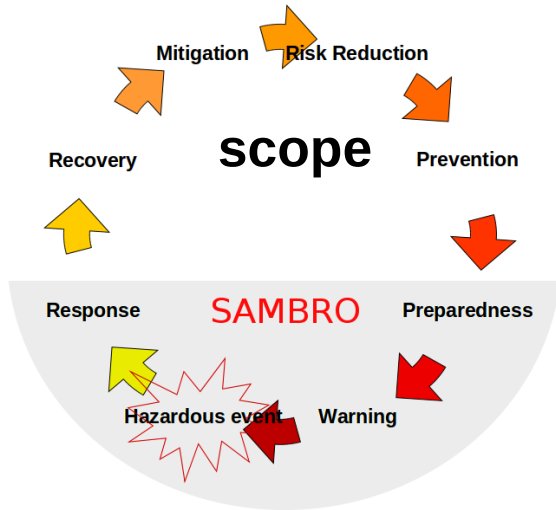
Response **SAMBRO** Preparedness



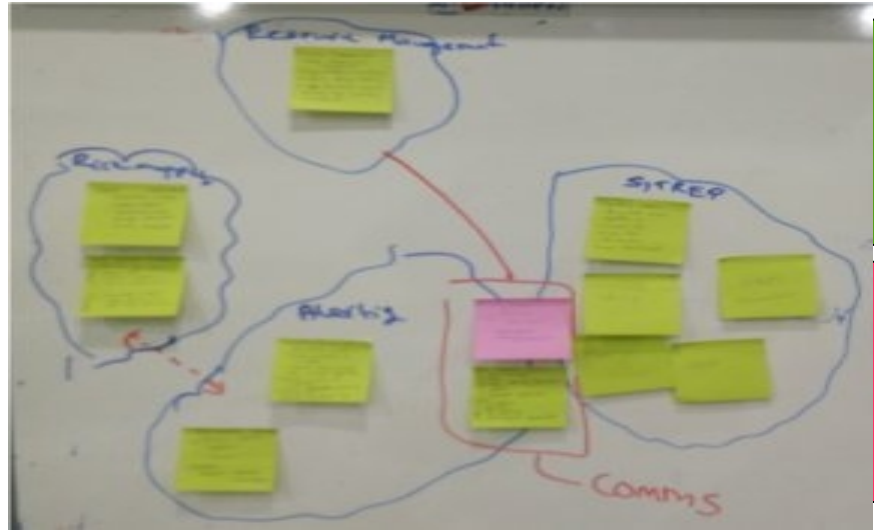
# **SAHANA ALERTING AND MESSAGING BROKER SCOPE**



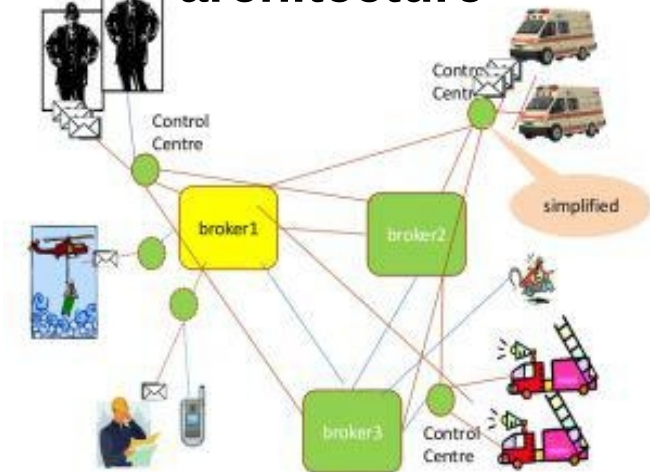
# Scope of SAMBRO



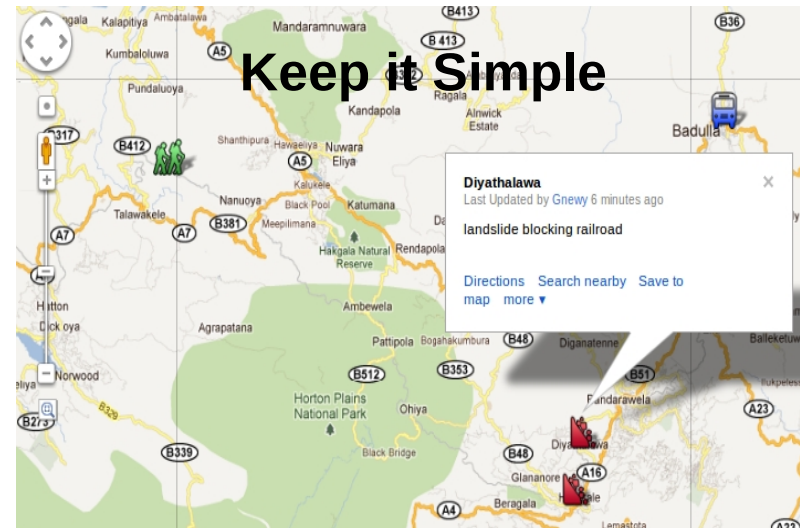
## functions



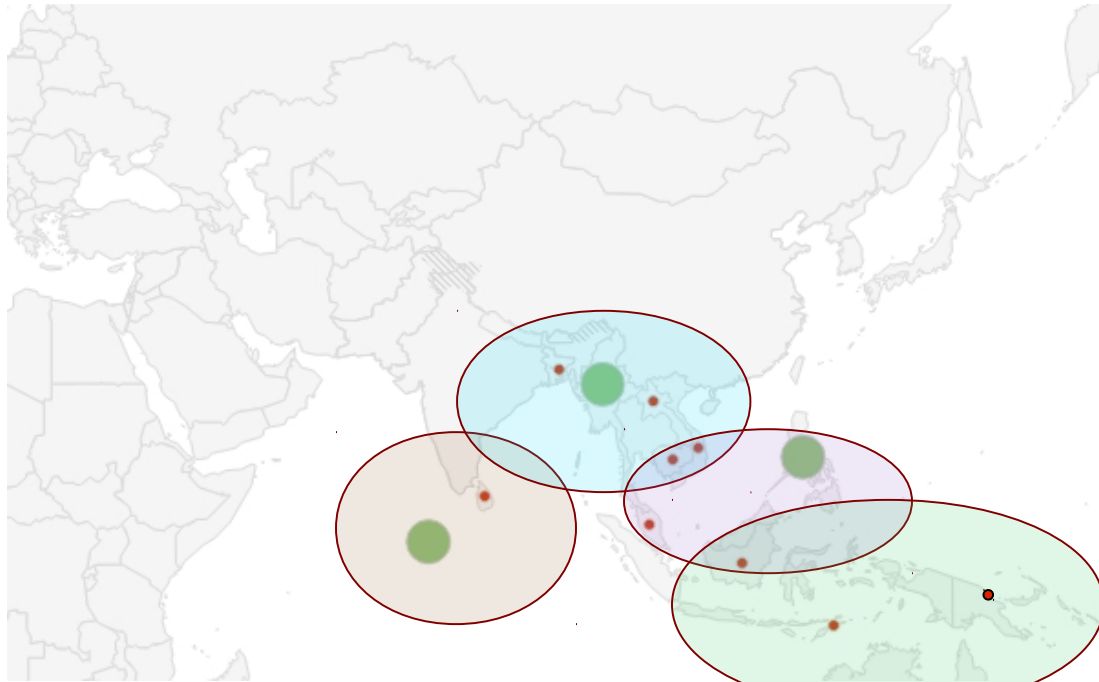
## architecture



## Keep it Simple



# Cultivating Alerting Cliques through a CAP Stewardship and a Community of Practice



- CAP on a Map aims to build systems and capacity to cover the Asia Pacific with alerting zones
- Start with Maldives, Myanmar, and the Philippines
- Scale in to Bangladesh, Cambodia, Indonesia, Laos, Sri Lanka, Timor-Leste ...
- Identify cross-boarder alerting cliques and foster cooperation
- Encourage a South-South CAP Stewarding Community of Practice
- Continue until the Asian and the Pacific is completely “covered”



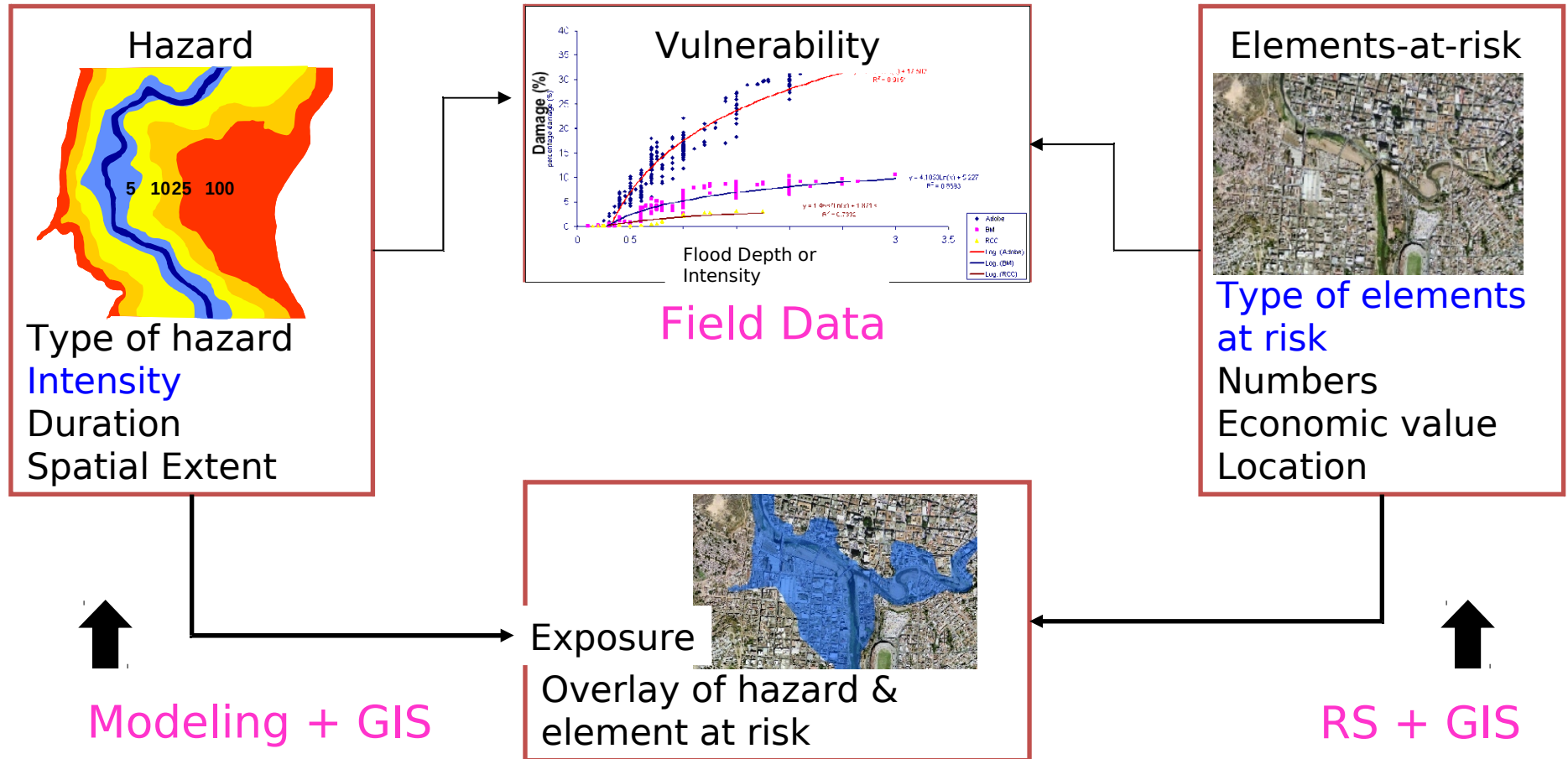
# **RISK MAPPING FOR DEVELOPING PREDEFINED AREAS**



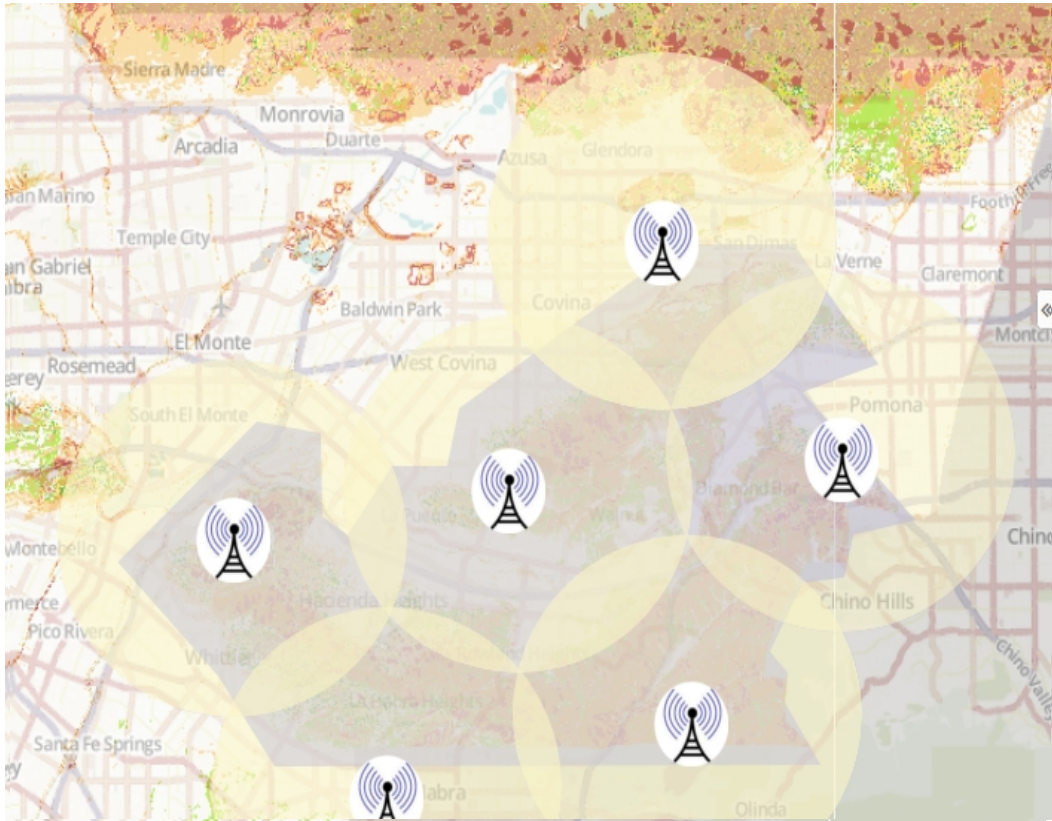
# Spatial Representation of Risk

$$\text{Risk} = \text{Hazard} \times \text{Physical Vulnerability} \times \text{Cost/Quantity}$$

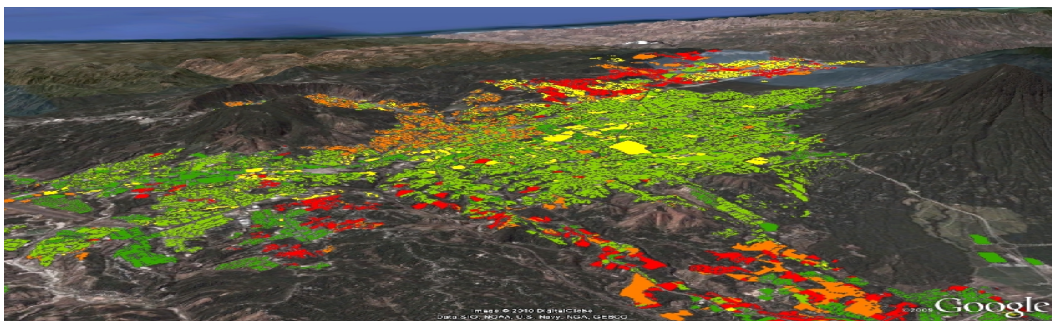
(Probability of occurrence) (Degree of losses to elements at risk) (Quantification of exposed elements)



# Risk Mapping for Impact-based Alerting



- Develop predefined alert areas
- Overlay telecom infrastructure maps to determine reliability
- Identify communities that require special attention
- Risk specific targeted alerting

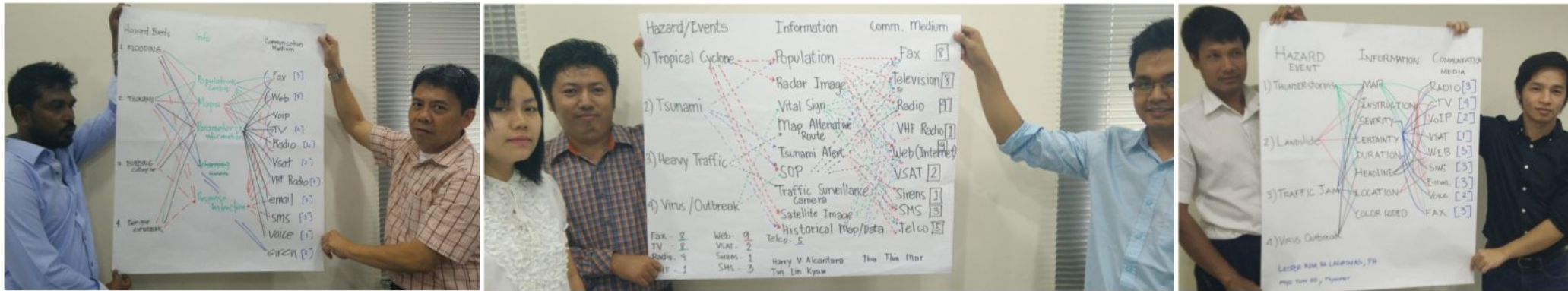




# **MULTI-LANGUAGE MULTIPLE- SEQUENCE ALERTING / WARNING**



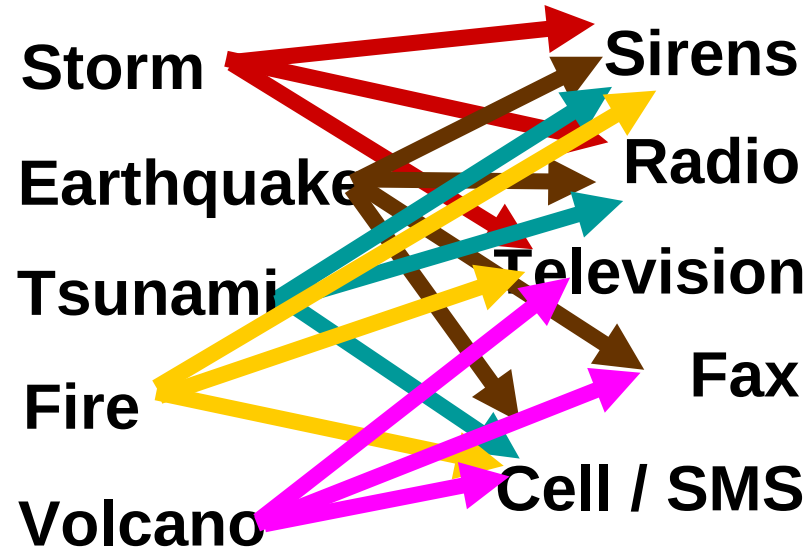
# Communication Challenges



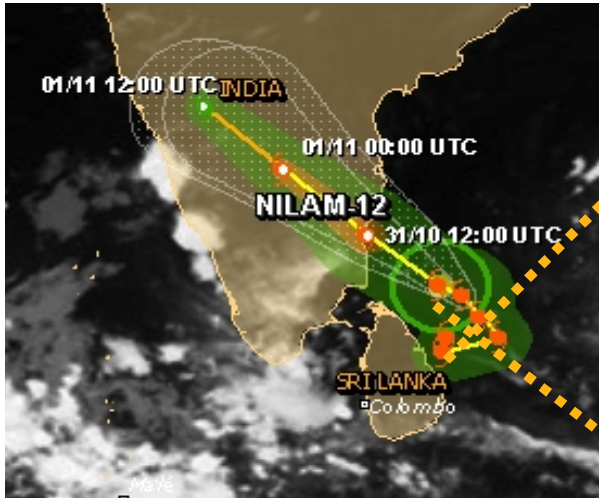
All governments have various public alerting systems:

- **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...

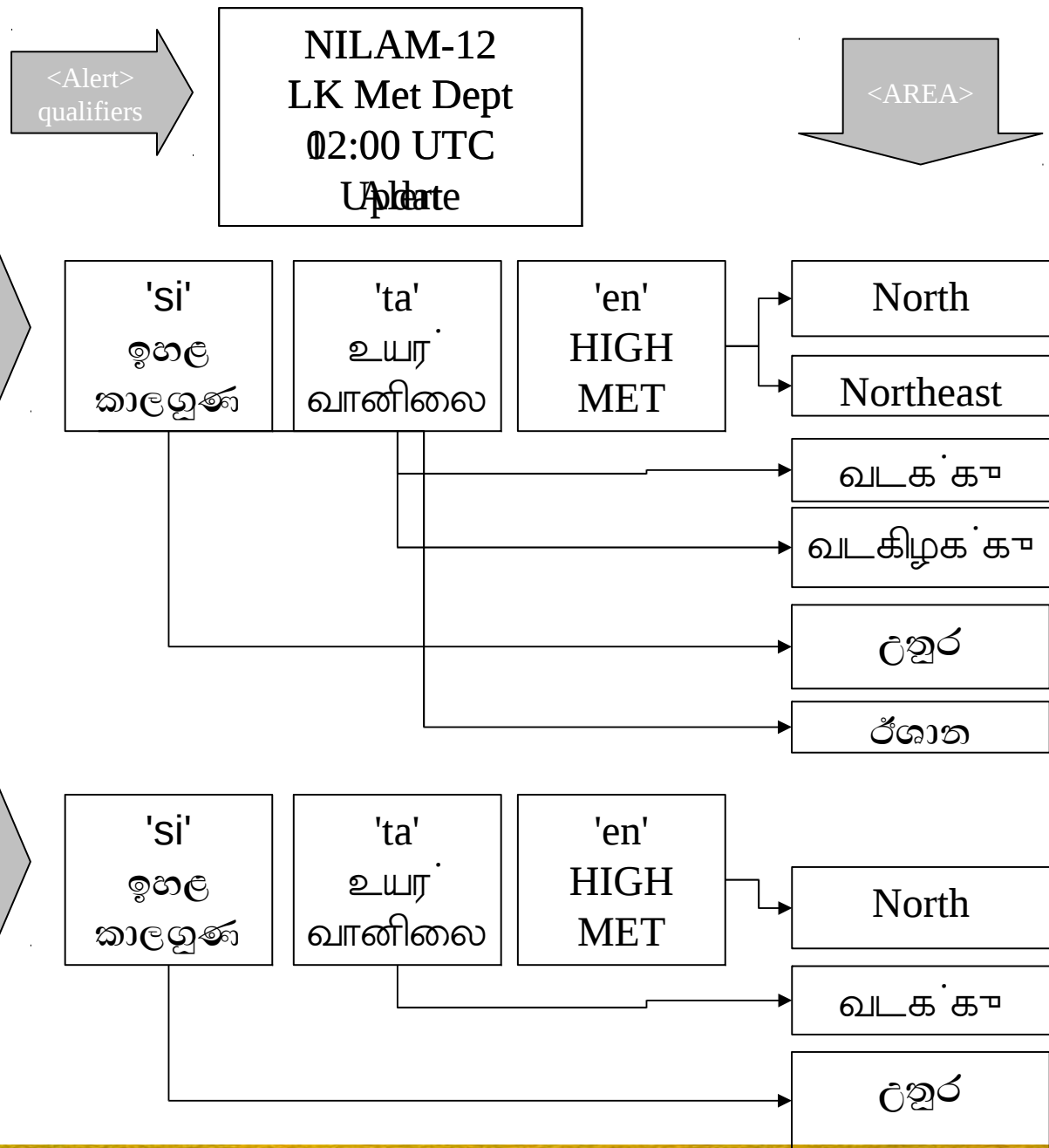
Another City / Province / Country  
 Another City / Province / Country  
**Your City / Province / Country**



# UX improves multi-language and multi-sequence



Cyclone NILAM-12  
2012 October 31



# CAP on a Map: keeping it simple

## Sahana Alerting and Messaging Broker (SAMBRO) improving Multi-Agency Situational-Awareness

Home Login Language

### Sahana Alerting and Messaging Broker

Home

MESSAGE ID :: 730b1b5f-b194-48e5-9ee6-fa6726bedf9d

HEADLINE :: Tropical Cyclone Warning : Typhoon HANNA (SOUELOR) Signal #2

DESCRIPTION :: A tropical cyclone will affect the locality. Winds of greater than 60 kph and up to 100 kph may be expected in at least 24 hours. At 10:00 AM today, the eye of Typhoon "HANNA" was located based on all available data at 405 km North Northwest of Ibatay, Batanes (24.1°N, 120.2°E). Maximum sustained winds of 150 kph near the center and gustiness of up to 185 kph Forecast to move Northwest at 20 kph \*24 hour (Tomorrow morning): Outside PAR or at 810 km Northwest of Ibatay, Batanes \*48 hour (Monday morning): 1160 km North Northwest of Ibatay, Batanes (Outside PAR)

RESPONSE TYPE :: **Prepare**

INSTRUCTIONS :: Write instruction here.Wave Height (Open Sea): 4.1-14.0m Storm surge possible at coastal areas \*Light to Moderate damage to high risk structures; \*Very light to light damage to medium-risk structures; \*No damage to very light damage to low risk structures \*Unshielded, old dilapidated schoolhouses, makeshift shanties, and other structures of light materials are partially damaged or unroofed. \*A number of nipa and cogon houses may be partially or totally unroofed. \*Some old galvanized iron (G.I.) roofs may be peeled or blown off. \*Some wooden, old electric posts are tilted or downed. \*Some damage to poorly constructed signs/billboards \*In general, the winds may bring light to moderate damage to the exposed communities. Most banana plants, a few mango trees, joll-joll and similar types of trees are downed or broken \*Some coconut trees may be tilted with few others broken

INFORMATION EVENT :: [Tropical Cyclone Warning](#)

Language :: English

Category :: Met - Meteorological (inc. flood)

Urgency :: Response action should be taken soon (within next hour)

Severity :: Possible threat to life or property

Certainty :: Likely (p > =50%)

Audience :: None

Effective Date :: 2007-06-11 02:59

Onset Date :: -

Expiry Date :: 2015-08-08 15:01

Filter Options Show

**Tsunami Alert, 00000000000000000000**

Thanintharyi Coast

Unknown Exercise - only for designated participants (decribed in note) Public - unrestricted audiences

Tsunami

[Full Alert](#)

**Tsunami Warning, 00000000000000000000**

K.Dhiffushi

Unknown Actual - actionable by all targeted recipients Public - unrestricted audiences

Tsunami

[Full Alert](#)

**Tropical Cyclone Inday Warning, Tropical Cyclone Dodong Warning**

Southern Luzon Area

Unknown Exercise - only for designated participants (decribed in note) Public - unrestricted audiences

[Full Alert](#)

#### News Feeds

31.500000 S, 72.000000 W 2007-06-11 02:59 000

WEHW40 PHEB 170025

TSUHMW

HIZ001>003-00S>009-012>014-01 /O.CON.PHEB.TS.A.0002.000000T

BULLETIN

TSUNAMI MESSAGE NUMBER 3

NWS PACIFIC TSUNAMI WARNING C 224 PM HST WED SEP 16 2015

TO - EMERGENCY MANAGEMENT IN

SUBJECT - TSUNAMI WATCH SUPPL

A TSUNAMI WATCH CONTINUES IN

AN EARTHQUAKE HAS OCCURRED WI

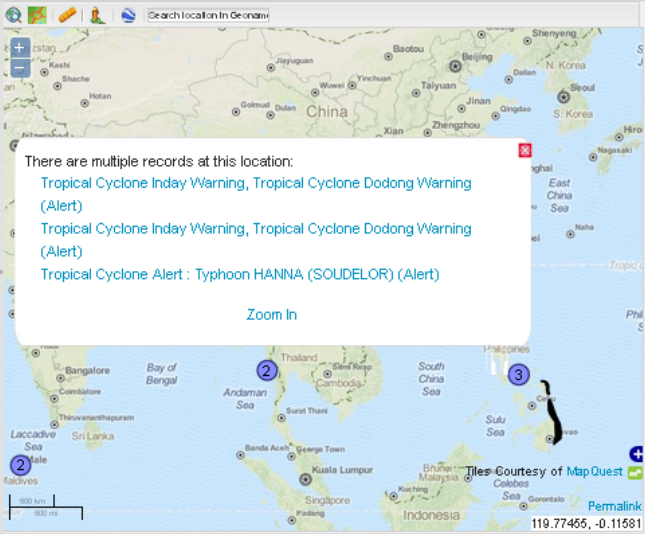
ORIGIN TIME - 1254 PM HST

COORDINATES - 31.5 SOUTH

LOCATION - NEAR THE COA

MAGNITUDE - 8.3 MOMENT

Search location in Geonavis



There are multiple records at this location:

- [Tropical Cyclone Inday Warning, Tropical Cyclone Dodong Warning \(Alert\)](#)
- [Tropical Cyclone Inday Warning, Tropical Cyclone Dodong Warning \(Alert\)](#)
- [Tropical Cyclone Alert : Typhoon HANNA \(SOUELOR\) \(Alert\)](#)

[Zoom In](#)



# IMPLEMENTATION CHALLENGES



# A few challenges with the implementations in Maldives, Myanmar, and Philippines

- Different warning priorities for different event types
- Variations in content and processes at various stage of a message status; e.g. <description> changes during Flood rise, to saturate, to fall.
- Alerting small boats distant from mobile coverage; last-mile still not covered in many areas for receiving near-real-time hazard information
- Multiple language issues with some non-Latin scripting characters don't display
- Need both a subscription (recipient controlled) and a group push (publisher controlled) approach for for message distribution, looking into EDXL-DE
- Getting countries to adopt all-hazards approach but it is a start on the long path with mindset still hung up on large scale events only
- Multiple steps of messaging authorization and re-authoring



# **We are exploring best-practices**

- What are the User Interfaces and User Experiences for efficiently authoring messages for multiple languages, multiple sequences, ...?
- What are the methods and practices for advocating cross-boarder cooperation and exchange of alerts?



# Thailand - 2016 CAP Implementation Workshop

Asian Institute of Technology and the Sahana Software Foundation propose to host the next workshop in Thailand

