Agenda

● Background
  ○ Speakers
  ○ Sahana

● Replacing DMIS

● SAFIRE: First Response

● SAMBRO: Alerting
Fran Boon

- Worked in Humanitarian Response in 30 countries for UN, Red Cross, Oxfam and other NGOs
- Headquarters, Regional & Field level experience
- Project Lead for Sahana Eden
- Mapping/GIS specialist
Nuwan Waidyanatha

Operations Research Analyst, Computer Engineer, and Emergency Communication Systems Expert

Over 17+ years experience in designing, building, implementing, and evaluating ICT-enable community-based and national emergency communication and telecom resiliency.

Developed and integrated enterprise-level mission-critical algorithms, databases, software, and hardware systems for managing operations and decision-support.

Published several book chapters, journal articles, conference proceedings and contributed to international technical committees and forums.

Led multitude of multi-sector, multi-stakeholder, and multi-disciplinary projects; completed over 35 research and implementation projects spanning across 12 countries.
Sahana

  - Sahana is the Sinhalese word for Relief
- Since used in over 50 countries
- Stewarded by the Sahana Software Foundation
  - A 501(c)(3) non-profit organization
Emergency Deployments

- Tsunami, Sri Lanka
  - Kashmir Earthquake, Pakistan
  - Cyclone Sidr, Bangladesh
- Cyclone Nargis, Myanmar
  - Ica Earthquake, Peru
  - Bihar Floods, India
  - Yogyakarta Earthquake, Indonesia
  - Sichuan Earthquake, China
  - Floods, Sri Lanka
  - Sichuan Earthquake, China
- Floods, Pakistan
  - Earthquake, Haiti
  - Earthquake, Chile
- Floods, Venezuela
  - Earthquake & Tsunami in Japan
  - Christchurch Earthquake, New Zealand
- Hurricane in Veracruz, Mexico
  - Tornado in Joplin, Missouri
  - Hurricane Sandy, USA
  - Typhoon Yolanda/Haiyan Philippines
- Floods in Colombia
  - Wildfire, Chile
  - Typhoon Yolanda/Haiyan Philippines
  - Gorkha Earthquake Nepal

Refugee Crisis in Europe

https://sahanafoundation.org/eden/deployments/
What or Who is Sahana?

- A Free, Open Source Humanitarian software platform.
  - No licensing fees
  - No restrictions to use (MIT license)

- A Global Community of Disaster Management professionals

Mission:
To save lives by providing information management solutions that enable organizations and communities to better prepare for and respond to disasters.

More than 75 deployments over more than 50 countries around the world.
Sahana Features

- **Access Control**
  - Hierarchical Realms

- **Integration**
  - Import/Export
  - Synchronisation
  - Open Standards

- **Data Protection**
  - Consent Tracking
  - Anonymisation

- **Customisable**
  - Rapid Application Development
Mapping
Communications & Social Media

General Public

Unverified

Public

Pre-Verified

Firewall

Verify Categorise Prioritise

EOC

Publish to all Official Channels

Professional Responders
Sahana Case Studies

- Resource Mapping System
  - Red Cross
- DRR Project Portal
- Relief Goods Inventory & Monitoring System
  - Department of Social Welfare and Development, PH
- Disaster Risk Management System
  - Timor-Leste
- Early Warning: SAMBRO
  - Maldives, Myanmar & Philippines
NEWS

RMS workshop will be held in Hanoi, Vietnam 8-10 November.

Field assessments feature under implementation.

Click anywhere on the map for full functionality.
Event Assessment Map

Display Question on Map:

[Image of map with markers and legend for marker levels: Low (at or below 0), Average (0 - 1473), High (above 1473), No Data]

Click on a marker to see the Event Assessment Response
DISASTER ASSESSMENT CHART

Template: First 24 Hours  Name: Tropical Storm Buleliga  Status: Active

Number of Event Assessment Responses 142
INFORMATION PRODUCTS

WHY THIS PORTAL?
- Share information on implementation of DRR: Who? What? Where?
- Collectively identify gaps, improve planning and programming on DRR
- Identify areas of cooperation on implementation of DRR

WHAT CAN WE GET FROM THIS PORTAL?
- List of completed and ongoing DRR projects - by country, hazards, themes, partners and donors.
- List of planned/proposed projects - better planning of future projects.
- Quick analysis - on number and types of completed and ongoing DRR projects
- Generate customised graphs and maps.
- Know more on the DRR frameworks/action plans guiding the region - identify priority areas for providing support and implementation.
- List of organisations implementing DRR projects at regional level.
- Archive of periodic meetings of regional DRR mechanisms.

HOW WOULD THIS INFORMATION HELP?
National Government,
- Identify gaps in the planning and implementation of DRR projects.
- Enhance coordination and collaboration among stakeholders.
- Improve the effectiveness and efficiency of DRR initiatives.

Development Partners,
- Gain insights into ongoing DRR projects and future plans.
- Identify opportunities for funding and support.
- Monitor progress and outcomes of DRR projects.

Civil Society Organisations,
- Access information on ongoing and completed DRR projects.
- Identify potential partnerships and collaborations.
- Advocate for and support DRR initiatives.

Community Members,
- Gain knowledge about DRR projects and their impact.
- Participate in decision-making processes.
- Advocate for and support DRR initiatives in their communities.

DISASTER RISK REDUCTION
DRR PROJECT PORTAL
FOR ASIA AND THE PACIFIC
Sharing information on disaster risk reduction initiatives for effective coordination in Asia Pacific

LOGIN
E-MAIL:

PASSWORD:

LOGIN
Register Lost Password

VIDEO TOUR

USER MANUAL

Currently the DRR Projects Portal has information on:
929 Projects
Relief Goods Inventory & Monitoring System (RGIMS)

Department of Social Welfare and Development, Philippines
Relief Goods Inventory & Monitoring System

Request → Send → Receive

Manage Your Warehouse

Please Select a Warehouse

Go

RGIMS aims to provide a reliable and accurate inventory control of the UNWFP and DSWD logistics management systems of tracking, monitoring and reporting of relief goods intake, warehousing and outflow of donations.

For more details on the RGIMS system please contact DSWD-NROC Office.

© 1998-2012, Department of Social Welfare and Development
Constitution Hills, Batasan Pambansa Complex, Quezon City, Philippines
Tel. (632)931-81-01 to 07
DSWD Background

- In disaster response the World Food Programme (WFP) distributes food through the Department of Social Welfare and Development (DSWD).

- WFP wanted to build DSWD’s capacity to manage warehouse inventory.

- WFP selected Sahana to provide a Relief Goods and Inventory Management System (RGIMS).
Typhoon Haiyan

- DSWD were the biggest provider of relief goods after Typhoon Haiyan - which was managed using Sahana.

- RGIMS was used to manage relief goods at 19 Warehouses.

- When changes were requested the volunteer Sahana community provided these in < 24 hours.
Timor-Leste Disaster Information System
Improving disaster prevention, preparedness and response in Timor-Leste.

Prevent
Share information to coordinate, cooperate, and collaborate with stakeholders in Timor-Leste to avoid potential adverse impacts of disasters through advanced actions

Prepare
Share information, knowledge and capacities to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events in Timor-Leste

Respond
Coordinate the provision of emergency services and assistance during or after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the needs of the people affected
Latest Information

**Assessment**

- Fatuleto | Zumalai | Covalima
  - Assessmentu konaba victoria iha covalima
  - Admin User • National Disaster Operation Center (NDOC)
  - 20 Sep 13 15:13

- Hala’o Assessment iha fatin refere
  - Joao Carlos Sing • National Disaster Operation Center (NDOC)
  - 20 Sep 13 16:08

**Plan**

- Dili
  - 21 Sep 13 15:05
  - IOM Prontu atu ajuda transporte (Kamioneta 3) ba responde emerjensia iha Covalima
  - Thomas Prozonato de Arce Scores... • International Organization for Migration (IOM Timor-Leste)

**Alert**

- Covalima
  - 20 Sep 13 14:57
  - Covalima udan tau to’o semana 1 iae para tamba povo sira gosta tesi ci horis, etc.
  - Carmen dores da cruz • MTC/DNMG

**Activity**

- Debos | Sual | Covalima
  - 21 Sep 13 14:55
  - Mercy corps halo actividades primeiro mak halo identikasun ba comunidade nebe mak infrenta udan bot hodi fahe terpal no halo evakusasun ba comunidade nebe mak hola besik mata ibun
  - Francescino cardoso • Mercy Corps (MC)

**Report**

- Covalima
  - 20 Sep 13 14:45
  - Inundasaun Sual iha liron 19 de Setembro de 2013 NOC simu informasaun husi DOC (Sentru Operasaun Distrito Sual) katab aksenta boot iha sub distrito Maucatar no Sual Villa. Resulda husi udan boot ne’e, akontese inundasaun boot iha sub-distrito rua nee. Iha Sub distrito Maucatar iha Suco rua mak afetun maka’as mak hanesan; Suco bekasac iha Suco Maucatar, iha sub-distrito Sual iha nam mak hanesa suco Carnenas suco Sual Villa. Atuaasaun PNTL Pntl distrito Covalima husi sub distrito seluk iha datan ona hodi be fo apoio PNTL iha sub distrito Maucatar no Sual Villa, hodi...
“Just like Facebook!”
Early Warning: SAMBRO

Improve institutional responsiveness to coastal hazards through Cross-Agency work in Myanmar, Maldives, and the Philippines

Myanmar
Department of Meteorology and Hydrology (DMH)

Philippines
Atmospheric, Geophysical, and Astronomical Service Administration (PAGASA)

Maldives National Disaster Management Center (NDMC)

http://www.unescap.org/disaster-preparedness-fund
Questions

1. What do you LIKE about the current DMIS?
   In your answer say “I LIKE …..”

2. What do you WANT from a future DMIS?
   In your answer say “I WANT …..”
DMIS Replacement

- Events
- Disaster Assessments
- Infrastructure
  - Population
- Human Resources
- Items
- DRR
  - Projects
  - Trainings
Additional Functionality

- Case Management
- Disease Management
- Shelters
DMIS Replacement

DEMO
Situational Awareness

SAMBRO & SAFIRE
Situational Awareness

1. Improves information sharing among first-responders
2. Immediate collaboration in response and mitigation
3. Creates connected agencies for public safety
4. Manages resource more efficiently and cost effectively
5. Saving lives and livelihoods
Typical Emergency Operation Center Functions

1) Call Center logs the Incident Reports received by the Public or the First-Responder through Voice and Data channels

2) EOC assess the situation, dispatch emergency services, and coordinate plans, operations, and logistics

3) SITREPs and real-time common operating picture – WHO is doing WHAT, WHERE, & WHEN, shared with stakeholders
SAFIRE Projects

● Urgences-Sante, Canada
  ○ Ambulance Dispatch

● Seychelles
  ○ Department of Risk Disaster Management NEOC
  ○ Prototype built
  ○ Positive Evaluations

● Albania
  ○ National Agency for Civil Protection
  ○ Interest from seeing Sahana used by Italian Civil Defence
SaFiRe

DEMO
SAMBRO

Sahana Alerting and Messaging Broker
SAMBRIO Key Components

SAMBRIO Server (Browser App) and Mobile APP talk to each other through RESTful APIs.

Google, IFRC, FIA, Accuweather and any other CAP Alert Hubs can talk to SAMBRIO through RSS.
1. Designed for local alerting authorities to issue CAP-alerts for village, townships, Islands

2. GCM push serves as a wakeup function with a Siren (limited e.g. China)

3. Requires a data connection but future versions will make use of SMS as a data transport
1. Application scope lies within disaster response and preparedness.

2. Key function is to bring efficiency to Alerting / Warning dissemination.

3. Apply a Messaging Broker architecture for improved interconnection and scalability.

4. Keep it simple with Map-based visualization and interaction for improved situational-awareness.
Simplest all-hazard all-media warning

Complexities of managing multiple event types, jurisdictions, and warning channels are simplified by the CAP-enabled SAMBRO to foster an integrated and coordinated approach to managing early warnings.
Integrates Publishers and Subscribers

- **Police**: Civil unrest, accident, terrorism
- **Community Leaders**: Local flooding
- **Fire**: Search & Rescue
- **Health**: Disease outbreak, public safety
- **Community**: Emergency Response Teams & Households
- **Local Media**: TV, Radio, Social Media
- **Medical**: Emergency medicine & ambulatory
- **Transportation**: Maritime, air, rail, bus, taxi

**User Roles**

- **Alert Publishers**: Author, & Approve alerts with each Organization managing their own Users
- **Alert Subscribers**: Receive event, priority, and location specific alerts; over SMS, Email, Mobile APP

**SAMBRO**

SAMBRO Server

Cebu Common Alerting Picture
Multilingual Multi-sequence alerting

Cyclone NILAM-12
2012 October 31

<Alert> NILAM-12
LK Met Dept
Alert / Update /All-Clear

<INFO> 12:00 UTC

<INFO> 02:00 UTC

<AREA>

North
Northeast
Sri Lanka
Maldives

'hi' දළුව කාලගුණ
'త' ඉහල භාගතපත
'en' HIGH MET

'Si' දළුව කාලගුණ
'త' ඉහල භාගතපත
'en' HIGH MET

'Si' දළුව කාලගුණ
'త' ඉහල භාගතපත
'en' HIGH MET

'Si' දළුව කාලගුණ
'ත' ඉහල භාගතපත
'en' HIGH MET

'Si' දළුව කාලගුණ
'ත' ඉහල භාගතපත
'en' HIGH MET
Risk mapping for impact-based alerting

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

- High risk
- Low risk
- No risk
Alerting functions and modes

Functions

1. Create Alert
2. Request Authorization
3. Approve/Disapprove Alert
4. Disseminate Alert
5. Acknowledge Alert
6. View Full Alert

<table>
<thead>
<tr>
<th>Functions</th>
<th>App</th>
<th>WWW</th>
<th>SMS</th>
<th>Email</th>
<th>RSS</th>
<th>Twitter</th>
<th>Facebook</th>
<th>FTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Create Alert</td>
<td>🟢</td>
<td>🟢</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Request Authorization</td>
<td>🟠</td>
<td>🟢</td>
<td></td>
<td></td>
<td>🟢</td>
<td></td>
<td></td>
<td>🟢</td>
</tr>
<tr>
<td>3. Approve/Disapprove Alert</td>
<td>🟠</td>
<td>🟢</td>
<td></td>
<td></td>
<td>🟢</td>
<td></td>
<td></td>
<td>🟢</td>
</tr>
<tr>
<td>4. Disseminate Alert</td>
<td>🟢</td>
<td>🟢</td>
<td></td>
<td></td>
<td>🟢</td>
<td></td>
<td></td>
<td>🟢</td>
</tr>
<tr>
<td>5. Acknowledge Alert</td>
<td>🟢</td>
<td></td>
<td>🟠</td>
<td></td>
<td>🟠</td>
<td></td>
<td></td>
<td>🟠</td>
</tr>
<tr>
<td>6. View Full Alert</td>
<td>🟢</td>
<td></td>
<td>🟠</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>🟠</td>
</tr>
</tbody>
</table>
Forest Fire Emergency Management Workflow

Objective is to demonstrate the typical workflow of SAFIRE and SAMBRO

1. Call Log of a Forest Fire
2. Create an incident report and assign a forest protection officer to assess the situation
3. Upon confirmation a Closed User Group alert is issued to all first responders and agencies
4. EOC updates incident report and action plan
   a. task assignment, resources, and so on
   b. then creates the first SitRep
   c. continues to update and publish SitReps
5. After the fire is contained
   a. EOC closes all tasks
   b. Submits the final SitRep
6. DDM issues an All-Clear Public alert
THANK YOU
Redundant Slides
SAMBR0 Research Projects

- **HazInfo**
  - Bridging the last-mile in community-based early warning system

- **Biosurveillance**
  - Disease surveillance and notification, e-Health

- **Voice-enabled Emergency Comms**
  - Interactive Voice Response integration for alerting and incident reporting
SAMBRO Projects

- HazInfo project
  - Community-based early warning
- Syndromic Surveillance
  -
- Voice-enabled Emergency Communication
- CAP-on-a-Map
- Nepal
Evolution of Software Versions

2004: Indian Ocean Earthquake
● Initiated by IBM’s Crisis Response
● Developed by Sri Lankan Center of Humanitarian Agencies (CHA).
● Funded by Swedish International Development Agency (SIDA).

Sahana community

2005-2008: Sahana PHP deployed throughout Asia, the Americas by NGOs and govts for disaster cycle.

2009-2017: Python-based EDEN platform launches as enterprise-grade solution. Functionality expands to incorporate over 20 modules driving adoption in over 25 countries.
Project Council aligns with the 3 types of deployments:

1. **Response** - In-situ emergency deployments to support major crises
2. **Eden** - Enterprise deployments institutional daily use
3. **Research & Action** - innovation and pilot projects
Complexity with disparate systems

Number of Channels $M = \frac{N(N-1)}{2}; \ O(N^2)$

Information Lost in relay and propagation

Redundant Data Collection / Sharing

Inconsistent Terminology

Manual Collation / Calculation

Delayed Situational-Awareness

Data standards, Information Communication Technology, and Situational-Awareness has proven to overcome these challenges by bring all information together onto a single platform.
MACS & EOC

MultiAgency Coordination System and Emergency Operation Center

https://www.youtube.com/watch?v=BA1jY8LJ8tM&list=PL23CB283949653EDC
All governments have various public alerting systems:

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

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

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

- **Mapping:** All geographic data can be displayed on a map.
- **Authorization:** All data is controlled by configurable permissions which allow for granular access by user, organization or office.
- **Reporting:** All data can be filtered and represented on matrix reports, pivot tables and charts.
- **Data Integration:** Web Services via RESTful API. Data import/export to CSV, XLS, XML, JSON.
Public Weather Services established this register of information about alerting authorities as identified by Members. For questions, please contact us. This page is using nested navigation, but is available without frames as well. Select a country to get started.

<table>
<thead>
<tr>
<th>Alerting authorities by WMO Member or Organization</th>
<th>Alerting authorities by WMO Member or Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>Albania</td>
</tr>
<tr>
<td>Argentina</td>
<td>Armenia</td>
</tr>
<tr>
<td>Bahamas</td>
<td>Bahrain</td>
</tr>
<tr>
<td>Belgium</td>
<td>Benin</td>
</tr>
<tr>
<td>Bosnia and Herzegovina</td>
<td>Botswana</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>Burundi</td>
</tr>
<tr>
<td>Cape Verde</td>
<td>Central African Republic</td>
</tr>
<tr>
<td>Colombia</td>
<td>Comoros</td>
</tr>
<tr>
<td>Cote d'Ivoire</td>
<td>Croatia</td>
</tr>
<tr>
<td>Democratic People's Republic of Korea</td>
<td>Denmark</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Egypt</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Fiji</td>
</tr>
<tr>
<td>■ Afghanistan</td>
<td>■ Albania</td>
</tr>
<tr>
<td>■ Argentina</td>
<td>■ Armenia</td>
</tr>
<tr>
<td>■ Bahamas</td>
<td>■ Bahrain</td>
</tr>
<tr>
<td>■ Belgium</td>
<td>■ Benin</td>
</tr>
<tr>
<td>■ Bosnia and Herzegovina</td>
<td>■ Botswana</td>
</tr>
<tr>
<td>■ Burkina Faso</td>
<td>■ Burundi</td>
</tr>
<tr>
<td>■ Cape Verde</td>
<td>■ Central African Republic</td>
</tr>
<tr>
<td>■ Colombia</td>
<td>■ Comoros</td>
</tr>
<tr>
<td>■ Cote d'Ivoire</td>
<td>■ Croatia</td>
</tr>
<tr>
<td>■ Democratic People's Republic of Korea</td>
<td>■ Denmark</td>
</tr>
<tr>
<td>■ Ecuador</td>
<td>■ Egypt</td>
</tr>
<tr>
<td>■ Ethiopia</td>
<td>■ Fiji</td>
</tr>
</tbody>
</table>
Complements SDGs

Sahana integrated Adashi Computer Aided Dispatch (ICCS) data streams, from State of WA Emergency Services to provide a Common Operating Picture for the public and stakeholders.

WA-COP proved the EDXL-SITREP could be implemented