

FIG

FIG WORKING WEEK 2017

Helsinki Finland

29 May - 2 June 2017

Presented at the FIG Working Week 2017,
May 29 - June 2, 2017 in Helsinki, Finland

The role of SAMBRO as Cross-Agency Situational-Awareness Platform for Disaster Risk Management

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CAP on a Map Project (Jan. 2015 - Dec. 2016)

GOAL: Improve institutional responsiveness to coastal hazards through Cross-Agency Situational Awareness in Myanmar, Maldives, and the Philippines

ESCAP Trust Fund for Tsunami, Disaster and Climate Preparedness

The ESCAP Trust Fund for Tsunami, Disaster and Climate Preparedness was established in 2005, originally to support tsunami early warning through a multi-hazard approach. The destructive Indian Ocean Tsunami that occurred in December 2004 stressed the need for an effective regional disaster preparedness mechanism in the Indian Ocean and Southeast Asia. In 2010, the scope of the Fund was broadened to include overall disaster and climate preparedness within the Fund's core areas of support. The Fund contributes to narrowing the capacity gaps in the region and ensures the development of an integrated regional early warning system.



<http://www.unescap.org/disaster-preparedness-fund>

		Myanmar Department of Meteorology and Hydrology (DMH)
		Philippines Atmospheric, Geophysical, and Astronomical Service Administration (PAGASA)
		Philippine Institute of Volcanology and Seismology (PHIVOLCS)
		Maldives National Disaster Management Center (NDMC)





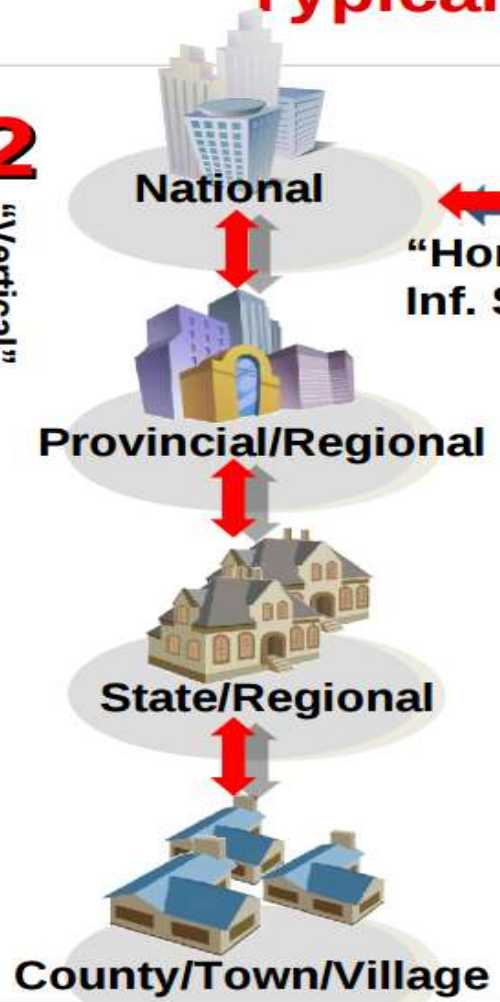
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Typical vertical horizontal integration

2
"Vertical"



3
A variety of means to public



**National
Emergency
Early Warning
& Alerting
System**





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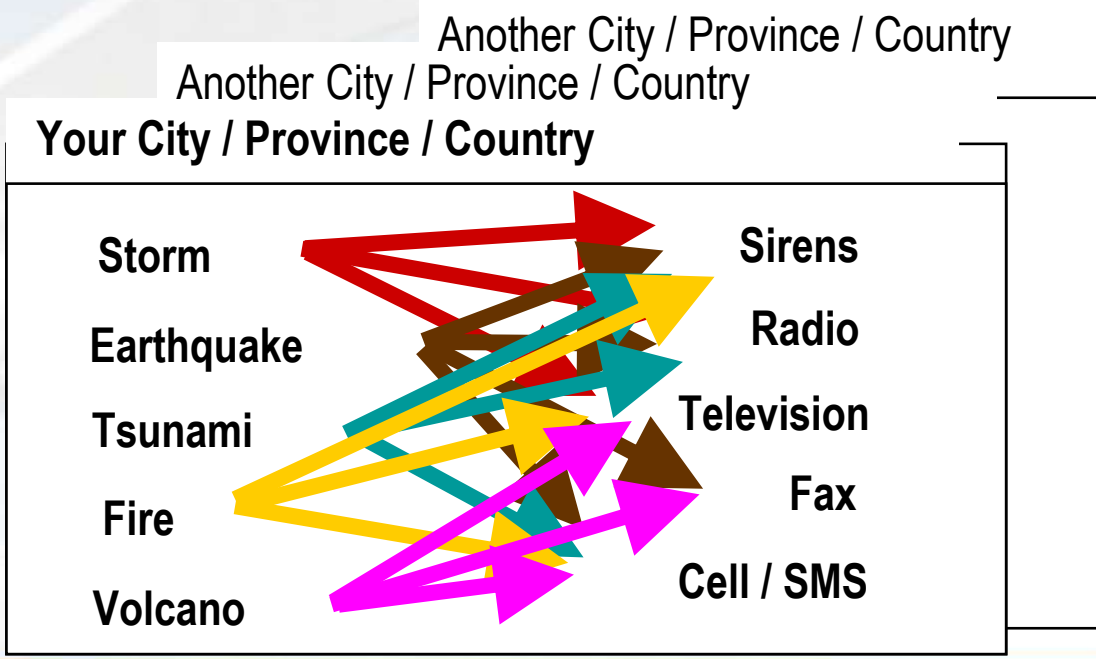
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Common Communication Challenges



All governments have various public alerting systems:

- **Earthquakes/tsunami** by e-mail, news wire, Web, 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...



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What is Sahana?

Sahana is an Open Source Community with a mission to **save lives** by providing **free and open source** information management systems that improves the effectiveness of organizations and communities throughout the disaster cycle.



Driving adoption to over 25 countries with 20 different disaster management modules:

<https://sahanafoundation.org/eden/features/>

- Sahana EDEN is open source.
- No licensing fees or restrictions.
- You have “the rights to study, change, and distribute the software to anyone and for any purpose.”
- Sahana adopts MIT license

Situation Awareness



Map



Incidents



Assessments

Who is doing What and Where



Organisations



Facilities



Activities



Projects

Manage Resources



Staff



Volunteers



Relief Goods



Assets

Manage Aid



Requests



Commitments



Sent Shipments



Received Shipments



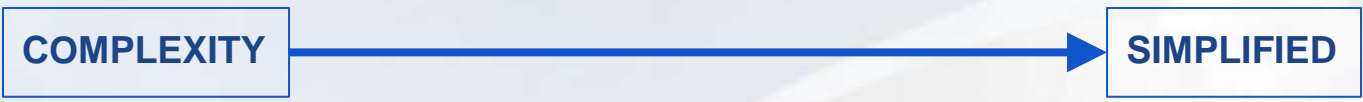


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SAMBRO - Simplifying All-Hazard All-Media Warning



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

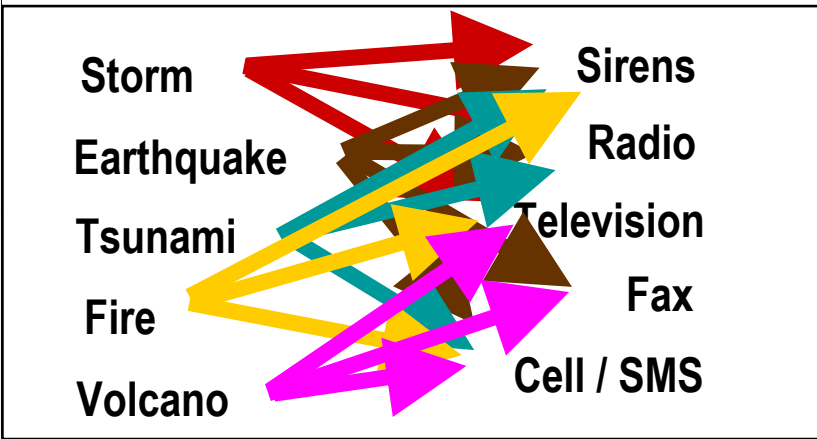




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Common Alerting Protocol

```

alert
Message ID (identifier)
Sender ID (sender)
Sent Date/Time (sent)
Message Status (status)
Message Type (msgType)
Source (source)
Scope (scope)
Restriction (restriction)
Addresses (addresses)
Handling Code (code) *
Note (note)
Reference IDs (references)
Incident IDs (incidents)

```



Elements in **boldface** are mandatory; elements in *italics* have default values that will be assumed if the element is not present; asterisks (*) indicate that multiple instances are permitted.

```

info
Language (language)
Event Category (category) *
Event Type (event)
Response Type (responseType) *
Urgency (urgency)
Severity (severity)
Certainty (certainty)
Audience (audience)
Event Code (eventCode) *
Effective Date/Time (effective)
Onset Date/Time (onset)
Expiration Date/Time (expires)
Sender Name (senderName)
Headline (headline)
Event Description (description)
Instructions (instruction)
Information URL (web)
Contact Info (contact)
Parameter (parameter) *

```

```

resource
Description (resourceDesc)
MIME Type (mimeType)
File Size (size)
URI (uri)
Dereferenced URI (derefUri)
Digest (digest)

```

```

area
Area Description (areaDesc)
Area Polygon (polygon) *
Area Circle (circle) *
Area Geocode (geocode) *
Altitude (altitude)
Ceiling (ceiling)

```



Standard is Managed by **OASIS** - Organization for the Advancement of Structured Information Standards - EM-TC



Recommended (**X.1303**) by the International Telecommunications Union Standardization Sector (**ITU-T**) – aligned with ISO standards notation



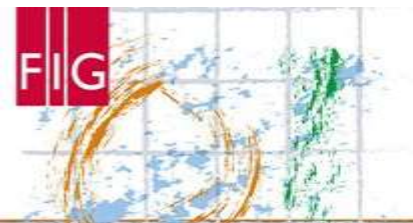
Strongly advocated by the World Meteorological Organization's Public Warning Services



Complies with the US National Science and Technology Council (NSTC) six principles of alerting, designed for:

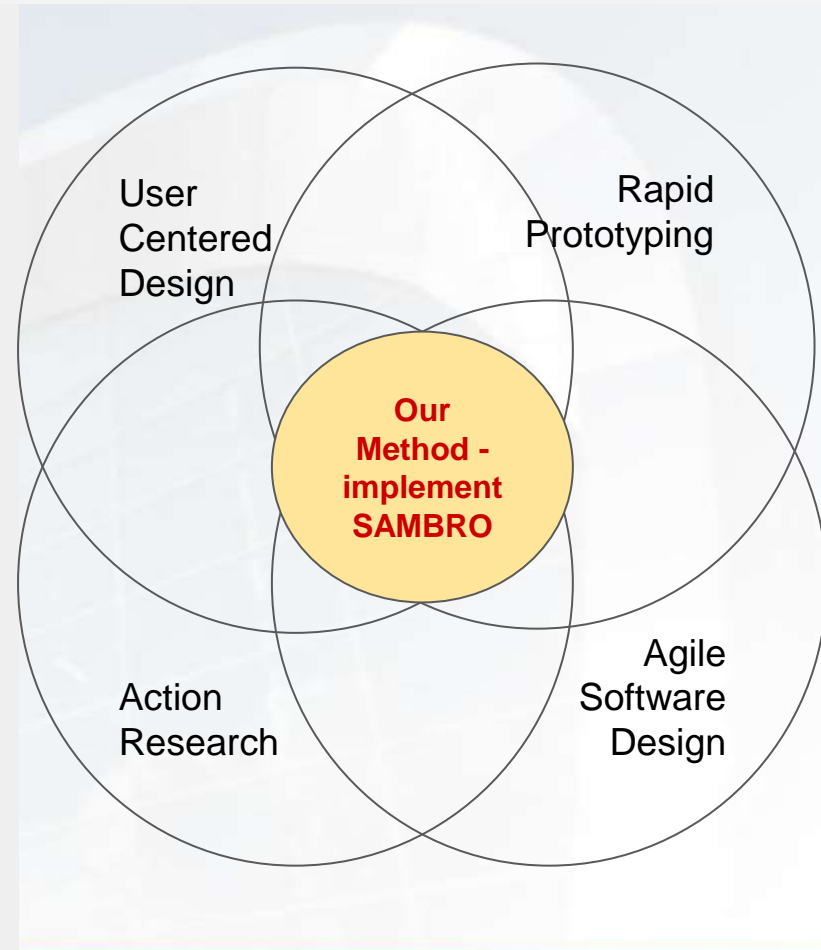
- Coordination (avoid duplication)
- Consistency (believable)
- Channels (Multiple)
- Completeness (unambiguity)
- Coverage (Geo-targeting)
- Control (security)





Information System Design

1. User Centered Design
 - a. Understanding user need
 - b. Involving users from the beginning of the project
2. Rapid Prototyping
 - a. Rapid prototyping of the interfaces and functionality
 - b. User models, workflows and information needs
 - c. Iterating and reiterating design until agreed
3. Agile Software Design (SCRUM)
 - a. SCRUM lightweight software engineering framework
 - b. Tightly-knit teams, close collaboration
 - c. Business side user stories
4. Action Research
 - a. Knowledge generation with planned action
 - b. Understand the problem and provoke change, actionable outcomes



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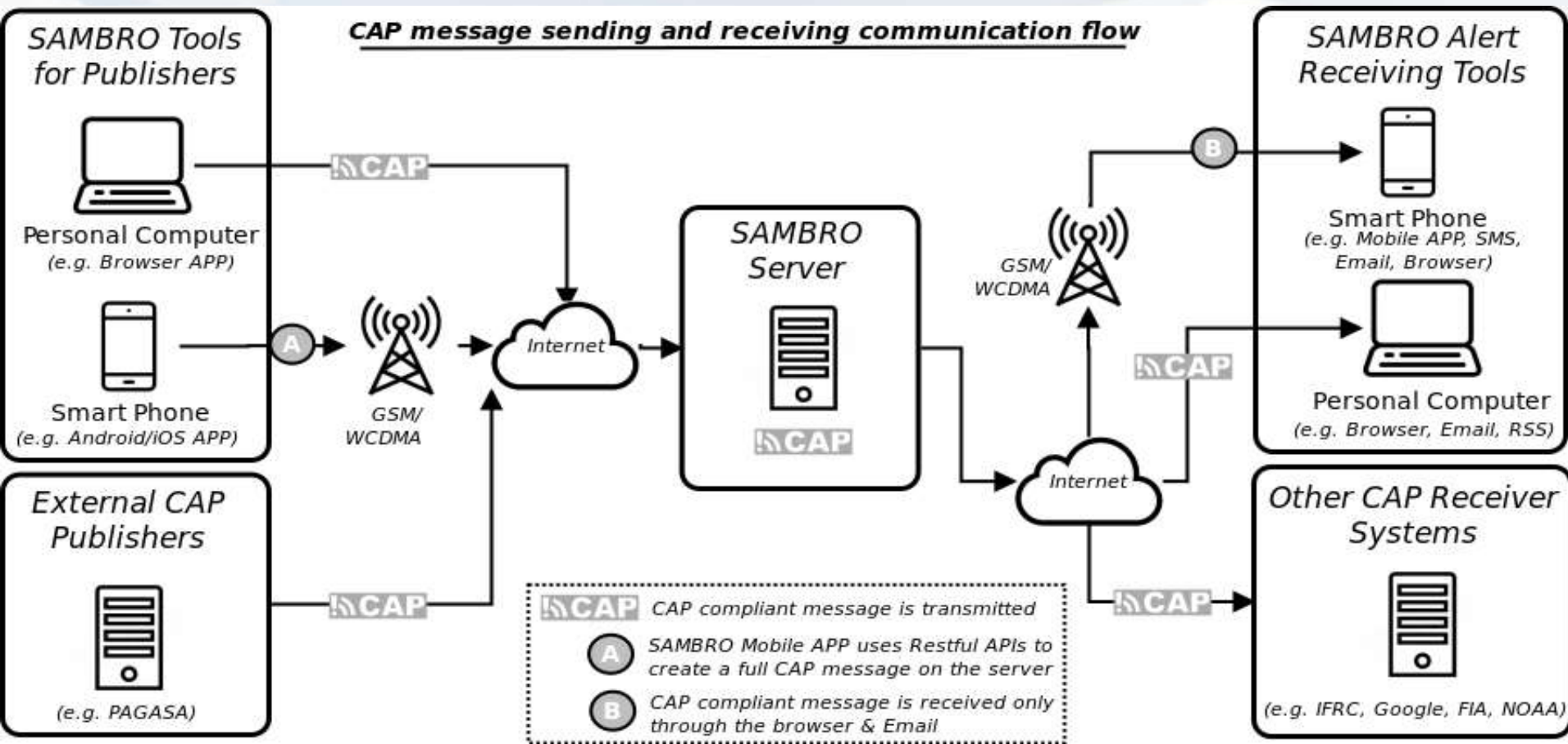


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SAMBRO Message Communication



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SAMBRO - Sequence of Operations

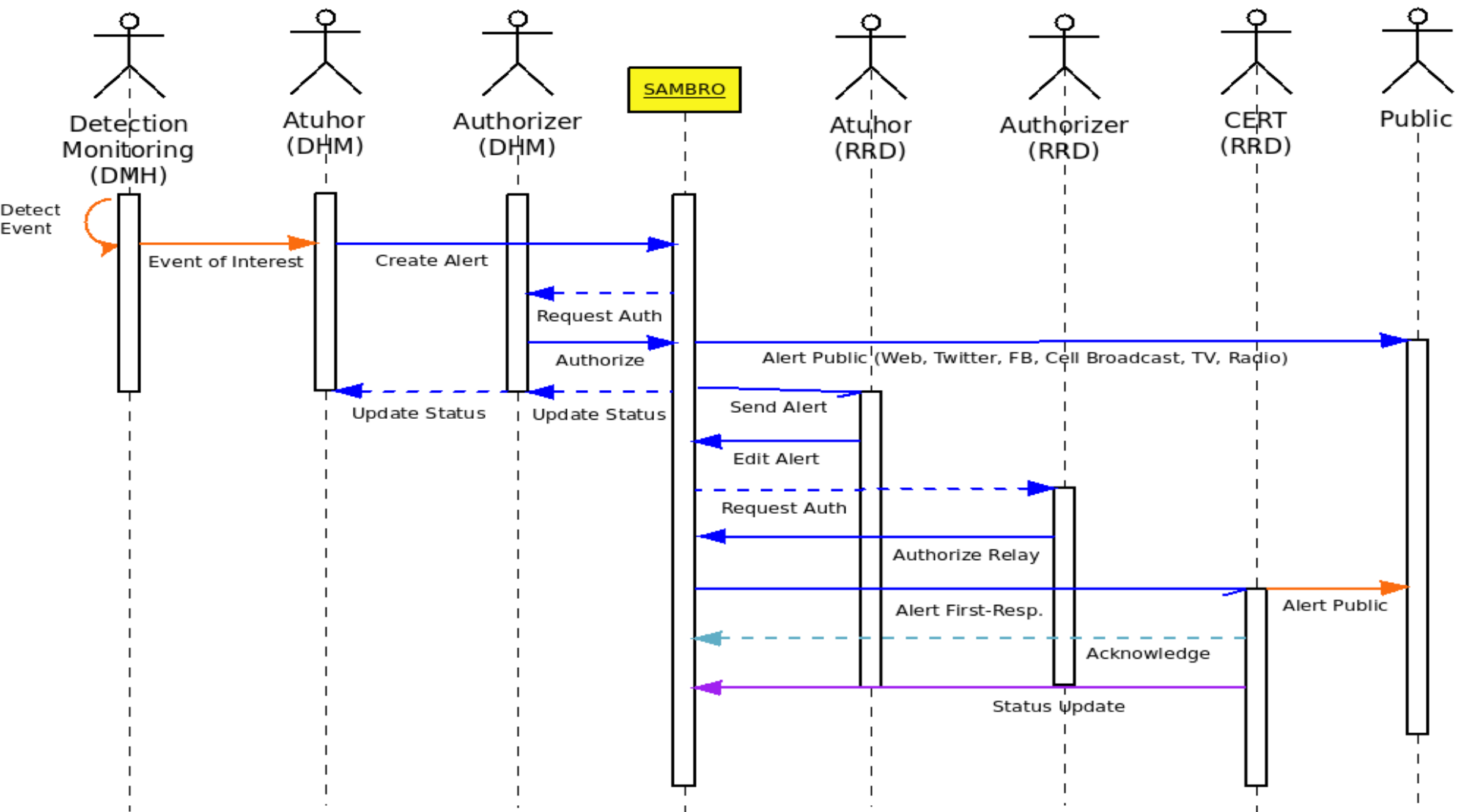





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SAMBRO - System-to-System Interfaces



BROWSER APP




MOBILE APP

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



Google, IFRC, FIA, and any other CAP Alert Hubs can talk to SAMBRO through RSS



Google Public Alerts

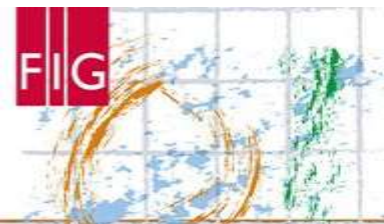


Red Cross Hazard APP



Federation of Internet Alerts





SAMBRO - Evaluation

1. Prior the exercises - No Surprises
 - a. Implementation should be complete (terminology, classifications, templates, predefined areas) and users should understand the workflows
 - b. Users should have already been trained for originating / relaying messages
 - c. Silent-test should have been carried out after the training
2. During the exercises
 - a. Users defined a real-case scenario, KPI, goals, intent, and actions.
 - b. Follows the present SOP
 - c. Discuss the steps for issuing with SAMBRO
 - d. Issue the alert with SAMBRO
3. After the exercises – Evaluation
 - a. Observers record the user's behavior applying a complexity index
 - b. Record the behavior with screen capture software
 - c. Users indicate the gulf of execution; i.e. “achieved level of the goal, intent, and actions
 - d. Users indicate their perception on the technology acceptance (usefulness, ease-of-use)



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SAMBRO Acceptance (TAM)



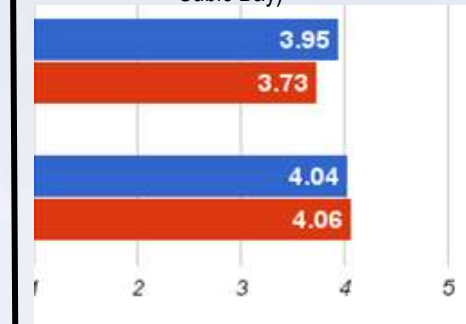
Myanmar

Publishers 13 (DHM, RRD)
Subscribers 38 (Kunyangon, Nyuangdon)



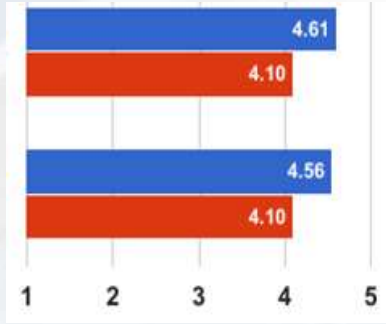
Philippines

Publishers 19 (PAGASA, PHIVOLCS)
Subscribers 21 (Manila Bay, Subic Bay)



Maldives

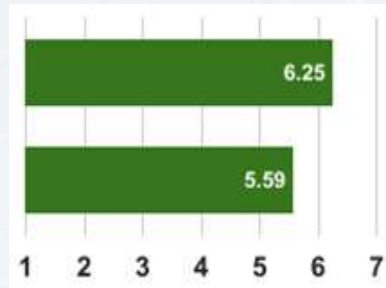
Publishers 06 (NDMC, MOH, MRC)
Subscribers 10 (Thulesdoo)



Publisher Subscriber

While Myanmar has a slightly lower opinion, users from all three countries, are inclined to, **AGREE** that SAMBRO is easy to use and useful for their warning practices

1 = Strongly Disagree, 2 = Disagree, 3 = Impartial, 4 = Agree, 5 = Strongly Agree



The attitude of the users from all three countries is that, all things considered SAMBRO is **QUITE a GOOD**, Beneficial, Wise, and Positive tool

“All things considered, my using SAMBRO for alerting is a(n) _____ idea.”

A = {Bad, Harmful, Foolish, Negative}

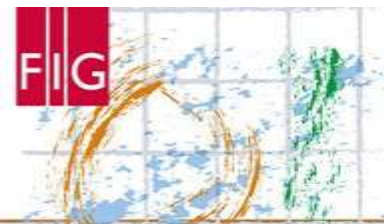
B = {Good, Beneficial, Wise, Positive}

1 = Extremely A, 2 = Quite A, 3 = Slightly A, 4 = Neither A Nor B, 5 = Slightly B, 6 = Quite B, 7 = Extremely B



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Implementation Issues and Challenges

- Despite several efforts, the stakeholder engagement was a challenge with trained staff unable to influence the top executive, i.e. decision maker.
- Warning Practice - National Warning Center (NWC) Vs National Disaster Management Organization (NDMO). Update by NDMO is slow.
- Many first-responders in the township of Myanmar do not have email.
- Acquiring Bulk SMS service is a tough nut to crack for DHM. PAGASA were very reluctant to coordinate with Telcos on acquiring service as stated by “Free Mobile Disaster Alerts Act” in Philippines.
- CAP related issues (multiple incidents from an event, eg. a cyclone causing storm surge and heavy rain; <geocode> issue with lat and lon; use of elements like <ack>, <cancel> only or cancel/delete>?)

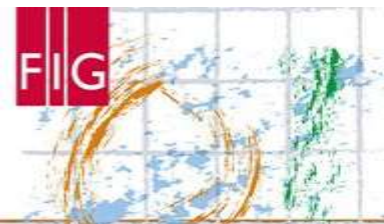


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Next Steps

- Revise the implementation strategy especially the stakeholder engagement, MoU and sustainable intake for scaling SAMBRO in other countries.
- Further analyze and engage with current users to develop hazard specific simplified user interfaces with enhanced automation; continue to improve SAMBRO.
- Produce more CAP resource person in the country.
- Toward a National Level Instance, which subscribing into the instances of NDMOs (long term vision)



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Conclusion

- The uptake of CAP is still poor and policies must be exercised for CAP adoption.
- Geocodes are useful for archipelago like Philippines.
- Nations should consider and practice a cross-agency situational-awareness approach to early warnings.



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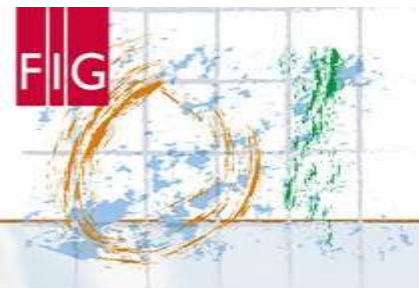


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