July 27, 2011

Major General Gamini Hettiarachchi
Director General
National Disaster Management Center
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Dear Major Gen. Hettiarachchi,

Register of Authorities: Toward a Common Alerting Protocol - Profile for Sri Lanka (CAP-PLK)

"Prevention pays if it is done right, and building stronger institutions and networks and making information more accessible is part of the solution."[1] In this regard, a multi-hazard disaster management approach requires improved exchange of real-time risk information of significance.

Under a well-developed disaster management system, the Sri Lankan National Disaster Management Center (NDMC) should be aware of and should map every significant emergency incident or risk in the country, down to the level of something as minor as a broken village bridge[2]. The local road maintenance authority would issue an alert about the broken bridge to local disaster management, police, health and other authorities. This would prepare all coordinators for emergency events. Health authorities would know not to dispatch an ambulance over that bridge to pick up someone about to have a baby. Local disaster authorities would be prepared to avoid that route in an evacuation event.

Disseminating such information among multiple agencies can be complicated. The Common Alerting Protocol[3] (CAP) lays out emergency policies and procedures for streamlined information sharing. In this vein, CAP Profile for Sri Lanka (CAP-PLK) would establish a comprehensive emergency communication protocol for Sri Lanka. Developing a register of alerting authorities would be a key step toward implementing CAP-PLK. NDMC should so do, following the method outlined in this brief.

The World Meteorological Organization (WMO) maintains an international Register of Alerting Authorities which uses an 'object identifier' (OID) standard[4]. Department of Meteorology and the Department of Irrigation's Hydrology Division have both registered with WMO[5]. The NDMC, in its responsibility for coordinating early warnings, should follow the OID standard in developing a register of authorities for Sri Lanka.

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1   Apurva Sanghi's (Senior Economist, World Bank, UN-World Bank). "Natural Hazards, UnNatural Disasters: The Economics of Effective Prevention", Third Session of the Global Platform for Disaster Risk Reduction, published by the International Institute for Sustainable Development: http://www.iisd.ca/download/pdf/sd/ymbvol141num6e.pdf

2   The second item listed, in the Hyogo Framework for Action, is "Identify, assess and monitor risks and enhance early warning." United Nations International Strategy for Disaster Reduction, World Conference on Disaster Reduction, Hyogo, Japan 2005: http://www.unisdr.org/we/coordinate/hfa

3   CAP Cookbook. 2009. CAP Fact Sheet, Jan. 14 2009 [cited April 2009]. Available from http://www.incident.com/cookbook/index.php/CAP_Fact_Sheet.

4   The WMO Register of Alerting Authorities is rooted at the OID 2.49.0, which translates in text format: {joint-iso-itu-t(2) alerting(49) wmo(0)}).

5   WMO-registered alerting authorities can be found at the URL site: http://www-db.wmo.int/alerting/authorities.html

1   Introduction

LIRNEasia recommends developing a CAP and OID compliant register of authorities as a first step toward implementation of the CAP-PLK. CAP is a worldwide content standard for exchanging warnings and alerts, recommended by the International Telecommunication Union[6] (ITU). CAP is ideal for emergency communications systems because of its clearly defined elements and capacity for supporting data interchange across multiple dissemination channels. A single submission at a central information hub can generate multiple downstream alerts. CAP supports situational awareness and incident management. A CAP-enabled national incident communication system integrates easily with other national and international incident management systems.

LIRNEasia has acquired experience with CAP in two recent projects concerning Sri Lanka, one evaluating last-mile warning dissemination (HazInfo, 2005–2008)[7], the other evaluating a real-time biosurveillance program (RTBP, 2008–2010)[8]. The HazInfo study investigated a preliminary version of a CAP-Profile and the use of CAP in last-mile communications devices such as the Disaster Early Warning Network[9]. The RTBP study, specific to the Department of Health Services, examined communicating public health events to health workers and officials. These projects gave rise to the 'CAP-enabled Alerting Broker' of the Sahana[10] software.

While CAP is the technical layout, a 'CAP-Profile' defines the policies and procedures for operationalizing such a system for a particular country: for example, the CAP-PLK.

CAP-PLK Objectives
- Define policies and procedures for administering and operationalizing multi-hazard all-media alerts and warnings.
- Maintain a register of alerting authorities[11] in the form of an OID[12].
- Specify message originators, dissemination channels, and recipients under the OID scheme.
- Categorize alerting authorities by location (typically governance units) and event types.
- Define other constraints, rules and conventions applicable to the Sri Lankan context
- Ensure the alerts, at least, make basic sense to recipients that are unaware of the profile restrictions.

2   Procedure to Register Alerting Authorities

To use the Register of Alerting Authorities[5], Sri Lanka's WMO Permanent Representative[13] (PR) should name a 'designated editor'—ideally a permanent NDMC official--to register entries.[14]" Thereafter, The designated editor would be empowered to subsequently register all officially recognized Sri Lankan hazard alert authorities.

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6   Recommendation ITU-T X.1303 is the publication with the CAP version 1.1 specifications.

7   The HazInfo CAP-profile can be found in Technical Annex 15: Guidelines for HIH, HazInfo Technical Report: http://www.lirneasia.net/wp-content/uploads/2008/05/hazinfo-technical-report.pdf

8   The RTBP CAP-profile is described in the paper presented to WMO, Geneva, 2011-Apr-05: http://lirneasia.net/wp-content/uploads/2011/04/Gow_RTBP_WMO-brief.pdf

9   The Disaster Early Warning Network was developed and implemented by Dialog Telekom, University of Moratuwa, and Microimage (Private) Limited for the NDMC to deliver warnings to district disaster management center firs-responders.

10 Sahana is a free and open-source disaster management system: www.sahanafoundation.org

11 The Administrative Procedure for Registering WMO Alerting Authorities; url to document: http://www.wmo.int/pages/prog/amp/pwsp/documents/AIR_PWS-20.pdf

12 The OID standard promulgated jointly by the International Standards Organization (ISO) and ITU-T uniquely and universally identifies any object in the telecommunications or information processing world: http://www.oid-info.com/

13 The permanent representative to WMO is Mr. G. B. Samarasinghe, Director General – Meteorological Department.

14 The Official correspondence should go to the Secretary General of WMO, per standard operating procedures.

Alerting authorities and messages can be identified by virtue of an OID tree as shown in Fig. 1. An OID tree is theoretically inexhaustible in depth and breath. The node (labeled 'authority (0)' in Fig. 1) designates alerting authorities at various levels while the node '2.49.0.1' (labeled 'country-msg (1)' in Fig. 1) designates alert messages disseminated from or through authorities at corresponding levels.

Under these two primary nodes comes branches of the OID tree country designation, in this instance 'lka (144)' for Sri Lanka under the ISO scheme. An OID starting with '2.49.0.0.144' refers to a Sri Lankan alerting authority and one starting with '2.49.0.1.144' refers to an alert coming from such an authority originating in Sri Lanka.

A national alerting authority like the Department of Irrigation (doi (1)) can designate immediately subordinate alerting authorities such as its Hydrology Division (hd(0)) and their respective subordinates. In Fig 1, we show Regional Deputy Directors for Anuradhapura (rdd-lk.ad (71)) and Kurunegala (rdd-lk.kg (61)) as Hydrology Division subordinates. The codes 'lk.ad' and 'lk.kg' are the Hierarchical Administrative Subdivision Codes (HASC) and the corresponding integers '71' and '61' are the ISO codes (see statistical OIDs for Sri Lanka[15]).
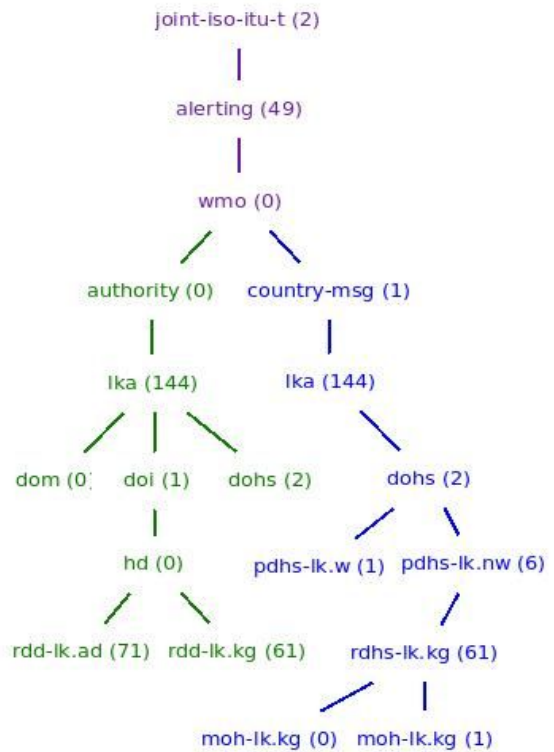

Figure 1: Example OID tree Register of Alerting Authorities for Sri Lank

OIDs can be used in CAP alert identifiers. A message originating from the Wariyapola Medical Officer of Health (moh-lk:kg(1)) would carry the alert identifier '2.49.0.1.144.2.6.61.1.' In that identifier, nodes below 'lka 144' are as follows: Department of Health Services (dohs(2)), Provincial Directorate of Health Services North West (pdhs-lk:nw(6)), Regional Directorate of Health Services Kurunegala (rdhs-lk:kg(61)), and Wariyapola Medical Officer of Health (moh-lk:kg(1)).

In addition to the OID, a CAP alert identifier would also carry a date and a message sequence number for that date. The designation '20110601.001' encodes a date (June 1, 2011) and the message number in sequence for that date (message number one, in this example). A globally unique identifier, '2.49.0.1.144.2.6.61.1.20110601.001' can hence be assigned for any alert, in this case for the first June 1, 2011 message from the Wariyapola Medical Officer of Health.

3 Dissemination Rules

The hierarchical tree structure can accommodate rules for disseminating alerts within and among organizations and government jurisdictions or across borders.

3.1 Proposed rules

1: An authority may issue alerts to subordinate entities.
2: An authority may transmit alerts to other authorities of equivalent rank.
3: An agency must share alerts with its immediately superior authority.

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15 Statoids for Sri Lanka are archived in this website - http://www.statoids.com/ulk.html

4: An authority may view alerts issued or received by subordinates.

5: National authorities (those registered immediately under the 2.49.0.144 node in Fig. 1) may share alerts across borders or with international organizations.

6: Only national authorities may issue public warnings.

3.2 Illustrations

<u>Scenario A</u> - After a chemical spill in Kurunegala reservoir, the Regional Directorate of Health Services (RDHS) for Kurunegala begins receiving hospital reports of poisoning symptoms affecting citizens after drinking water drawn from the reservoir.

Rule 1: The RDHS may issue alerts to subordinate medical officers, health inspectors and hospitals within its jurisdiction.

Rule 2: The RDHS might transmit the alert to the Regional Deputy Director of the Hydrology Division (rdd-lk:kg(61)), who would activate responses under his Kurunegala reservoir responsibilities; to the Kurunegala District Disaster Management Center (dmc-lk:kg(61)); and to other equivalent-rank entities with designation 'lk:kg(61)'.

Rule 3: The RDHS would share the alert with the Provincial Director of Health Services (PDHS) North West (pdhs-lk:nw(6)), who could then decide whether to disseminate it province-wide.

Rule 4: The NDMC would have access to the alert received by the Kurunegala District Disaster Management Center.

<u>Scenario B</u> - During the bird migration season, when the H1N5 virus can be carried to Sri Lanka, several people in Ampara District are confirmed as infected.

Rule 5: The Department of Health Services should notify the World Health Organization (WHO), which would in turn notify member states. The Department may also share the alert directly with neighboring countries.

<u>Scenario C</u> - The Lunugamvehera dam gates are to be lowered to shed excess monsoon water.

Rule 6: The Irrigation Department may issue a warning to inundation areas in Hambantota District.

4 Conclusion

There are substantial benefits in registering alerting authorities using the ITU/WMO schema. The schema helps reduce the complexities of managing multiple alerting agencies within a state and of integrating with international agencies.

Sincerely,

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