

Common Alerting Protocol

ITU Asia-Pacific Centre of Excellence Training/Workshop on
Effective Use of Telecommunications/ICTs
in Response to Disasters: Saving Lives

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LIRNEasia

Learning Initiatives on Reforms for Network Economies

www.lirneasia.net

eXtensible Markup Language (XML)

Header

Target Name Space
(Association)

Opening tag

Closing tag

```
<?xml version="1.0" encoding="UTF-8"?>
<alert xmlns="urn:oasis:names:tc:emergency:cap:1.1">
  <incidents>120321072006</incidents>
  <identifier>SarvodayaHIH0001</identifier>
  <sender>hih@sarvodaya.lk</sender>
  <sent>2006-07-21T13:40:01+05:30</sent>
  <status>Exercise</status>
  <info>
    <resource>
      <resourceDesc>audio file (mpg)</resourceDesc>
      <uri>http://www.hih.sarvodaya.org/getalertaudio_en</uri>
    </resource>
    <area>
      <areaDesc>All coastal regions of Sri Lanka </areaDesc>
    </area>
  </info>
</alert>
```

- What is XML?
 - Markup language like HTML
 - Designed to carry and store data
 - Self descriptive
 - W3C recommendation – (http://www.w3schools.com/w3c/w3c_xml.asp)

- Why Use XML?
 - Interoperable: xml data can be shared between incompatible systems
 - Well Formed: adheres to correct syntax
 - Validation: structure: Document Type Definition or XML Schemas
 - Accessibility: Document Object Model defines the text & attributes

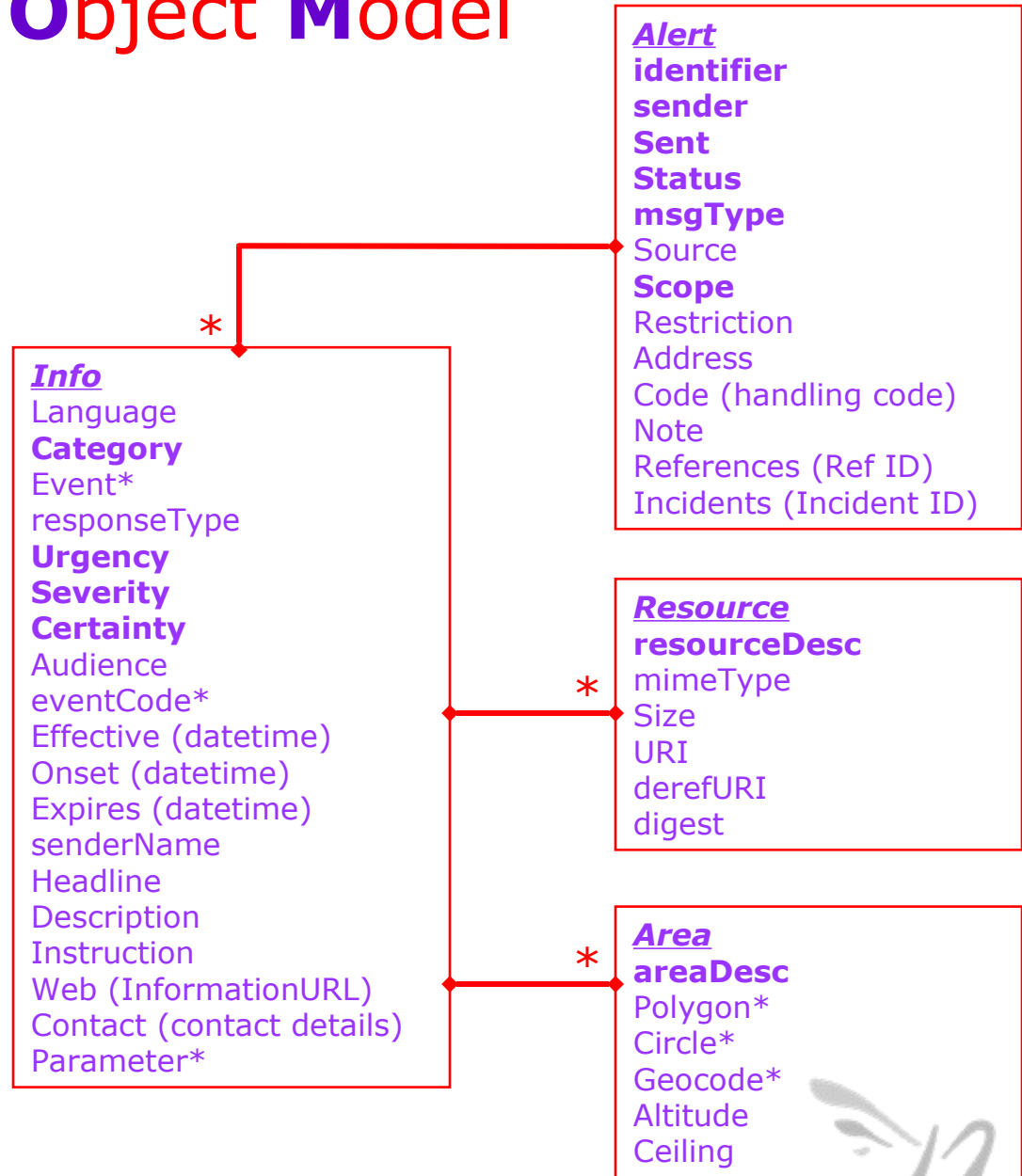
Common Alerting Protocol Overview

- ❑ All you want to know in “CAP Cookbook”
- ❑ **XML** Schema and Document Object Model
- ❑ **Interoperable** Emergency Communication Standard
- ❑ Specifically geared for Communicating **Complete Alerts**
- ❑ Capability for Digital encryption and signature X.509
- ❑ Developed by **OASIS** for “**all-hazards**” communication
- ❑ Adopted by ITU-T for Recommendations X.1303
- ❑ Incubated by W3C
Emergency Information Interoperability Framework
- ❑ Used by USA, USGS, WMO, Gov of CA
- ❑ Can be used as a **guide** to generate alerts



CAP Document Object Model

- Bold elements are mandatory
- Bold elements in `<Alert>` segment are qualifiers
- Others elements are optional
- Profile may specify other mandatory elements from optional list
- Single `<Alert>` segment
- Multiple `<Info>` segments inside `<Alert>` segment
- Multiple `<Area>` and `<Resource>` segments inside a `<info>` segment
- (*) indicates multiple instances are permitted



Predefined values

<i>CAP Element</i>	<i>Predefined Values</i>
<i><Status></i>	Actual, Exercise, System, Test, Draft
<i><msgType></i>	Alert, Update, Cancel, Ack, Error
<i><Scope></i>	Public, Restricted, Private
<i><Language></i>	en, fr, si, tm, ... codes ISO 639-1
<i><Category></i>	Geo, Met, Safety, Security, Rescue, Fire, Health, Env, Transport, Infra, CNRNE, Other
<i><responseType></i>	Shelter, Evacuate, Prepare, Execute, Monitor, Assess, None
<i><Urgency></i>	Immediate, Expected, Future, Past, unknown
<i><Severity></i>	Extreme, Sever, Moderate, Minor, Unknown
<i><Certainty></i>	Observed, Likely, Possible, Unlikely, Unknown
<i><Area></i>	b-WGS 84



Prioritizing Messages in CAP

Priority	<urgency>	<severity>	<certainty>
Urgent	Immediate	Extreme	Observed
High	Expected	Severe	Observed
Medium	Expected	Moderate	Observed
Low	Expected	Unknown	Likely

```
<info>  
  <language>en-US</language>  
  <category>Met</category>  
  <event>Category 4 Cyclone</event>  
  <responseType>Shelter</responseType>  
  <urgency>Expected</urgency>  
  <severity>Sever</severity>  
  <certainty>Observed</certainty>  
  <effective>2006-12-11T08:30:00 0000000+06:00</effective>  
  <expires>2006-10-11T12:00:00 0000000+06:00</expires>
```



Steps for setting up a CAP Profile

□ Audience <Scope>

- Alert **First Responders** only (i.e. closed user group)
 - Example: police, health workers, civil society, public servants
- Alert **Public** (entire population)
- **Combination** of First Responders and Public
 - step 1: alert First-Responders to give them time to prepare
 - Step 2: warn public

□ Geographical Descriptions <Area>

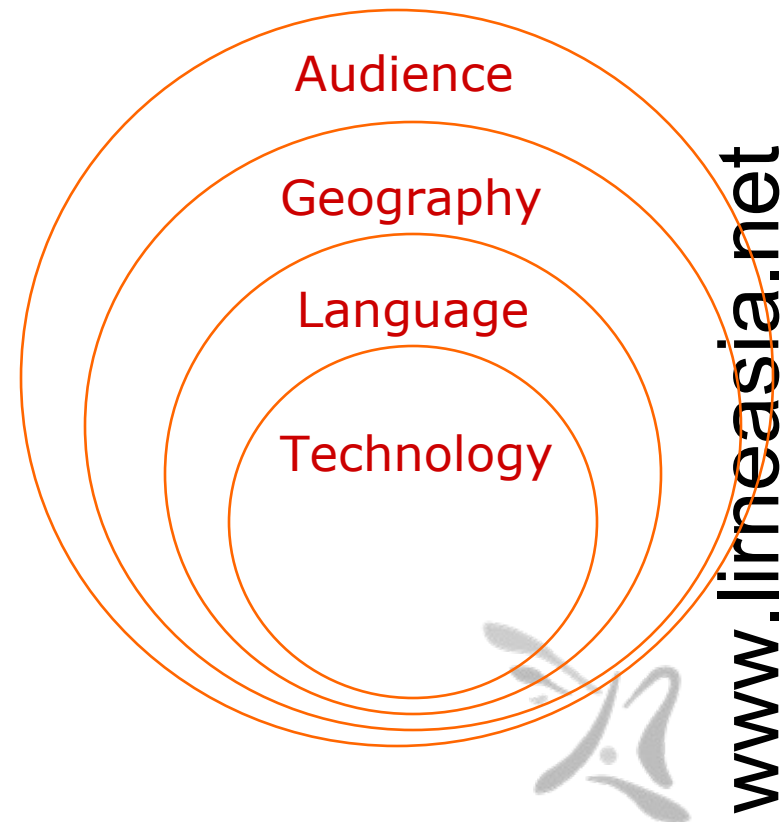
- Country wide
- Province or State
- District
- Other – Geocodes or GPS polygons

□ National <Languages>

- English only or Chinese only or Malay only
- English, Hindi, Chinese, and Malay

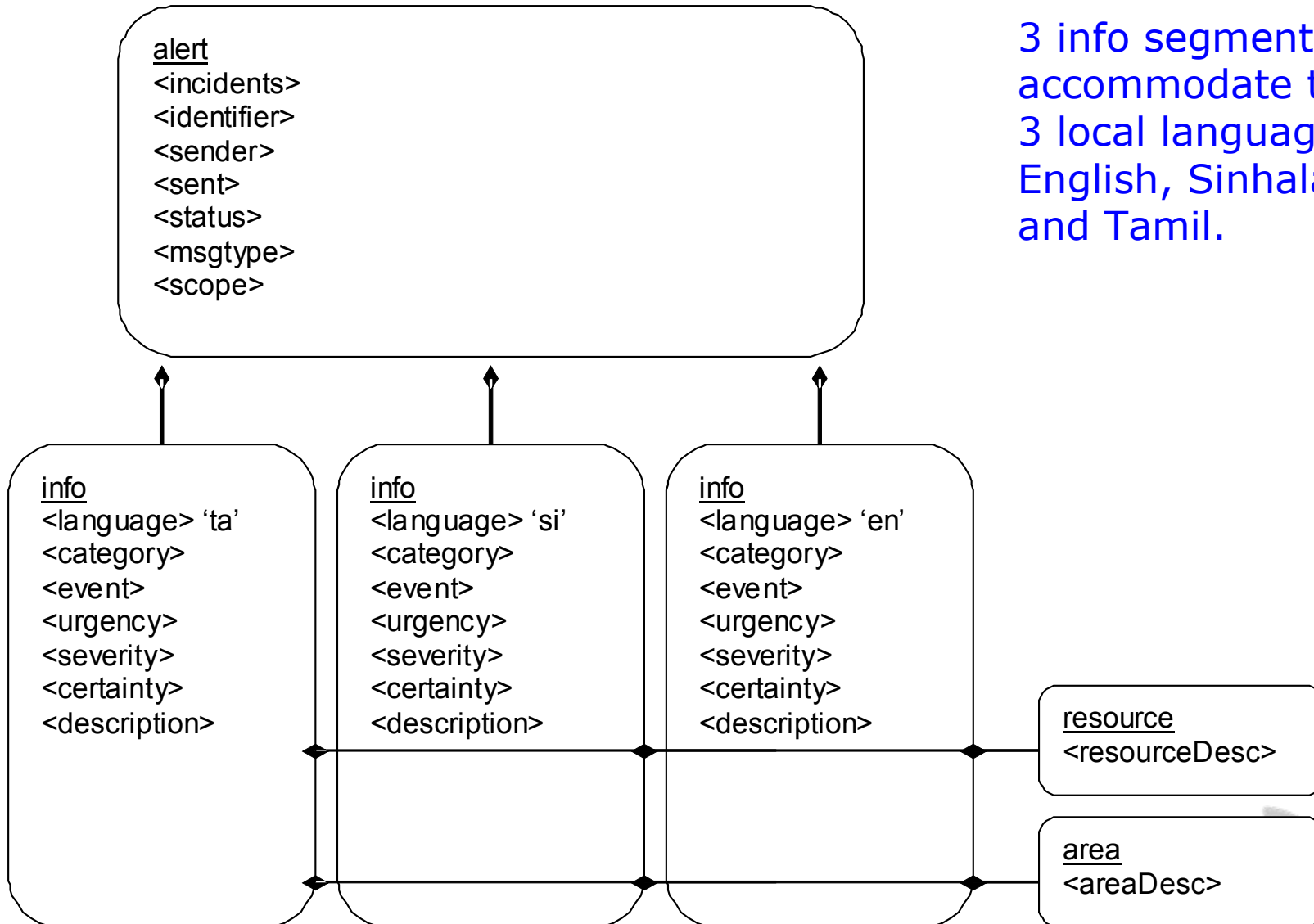
4. Communication Technology?

- Mobile phones – SMS, CB, Email, Applet
- TV – Text, Audio, Visual
- AM/FM Radio - Text, Audio
- VHF/UHF Radio - Audio
- Internet – HTTP, Email, Webservices



CAP Profile for Sri Lanka

3 info segments to accommodate the 3 local languages: English, Sinhala, and Tamil.



Cyclone Bulletin used in HazInfo Exercises

Last-Mile HazInfo Simulation. No Repeat No Real Event is Effect

TROPICAL CYCLONE ADVICE NUMBER 001

Issued at 09:55 am on Monday, December 11, 2006

BY Sri Lanka Met Department

A **SEVERE CATEGORY 4 CYCLONE** is now current for AMPARA and MATARA District coastal areas. At **06:00 am** local time SEVERE TROPICAL CYCLONE MONTY was estimated to be **80 kilometres northeast of Ampara District** and moving southwest at **10 kilometres per hour**. Severe Tropical Cyclone Monty is expected to cross the coast in the vicinity of Ampara and Matara Districts during Monday. Gales with gusts to 180 kilometres per hour are likely in coastal communities in Ampara and Matara District during the day.

This is to **alert** the residents of Ampara and Matara District about the potential of a very **dangerous storm** tide as the cyclone centre approaches the coast. **Tides are likely** to rise significantly above the normal high tide mark with very dangerous flooding, damaging waves and strong currents.

Widespread heavy rain and further flooding are likely in southern parts of the Ampara and Matara Districts over the next few days.

Last-Mile HazInfo Simulation. No Repeat No Real Event is Effect.



Cyclone CAP Message used in HazInfo Exercises

```
<?xml version="1.0" encoding="utf-8"?>
<alert xmlns="urn:oasis:names:tc:emergency:cap:1.1">
  <identifier>HIH-2006-12-11T095500</identifier>
  <sender>hjh@sarvodaya.lk</sender>
  <sent>2006-12-11T09:55:00.0000000+06:00</sent>
  <status>Excercise</status>
  <msgType>Alert</msgType>
  <source>Last Mile Hazard Warning System</source>
  <scope>Restricted</scope>
  <restriction>Sarvodaya ICT Gaurdians</restriction>
  <info>
    <language>en-US</language>
    <category>Met</category>
    <event>Category 4 Cyclone</event>
    <responseType>Shelter</responseType>
    <urgency>Expected</urgency>
    <severity>Sever</severity>
    <certainty>Observed</certainty>
    <effective>2006-12-11T08:30:00 0000000+06:00</effective>
    <expires>2006-10-11T12:00:00 0000000+06:00</expires>
    <headline>A Sever Category 4 Cyclone in effect in Sri Lanka</headline>
    <description>At 06:00 am local time SEVERE TROPICAL CYCLONE MONTY was estimated to be 80 kilometers n
of Ampara District and moving southwest at 10 kilometers per hour. Severe Tropical Cyclone Monty is expected to cross
coast in the vicinity of Ampara and Matara Districts during Monday. Gales with gusts to 180 kilometers per hour are l
coastal communities in Ampara and Matara District during the day. This is to alert the residents of Ampara and Matara
District about the potential of a very dangerous storm tide as the cyclone centre approaches the coast. Tides are lik
rise significantly above the normal high tide mark with very dangerous flooding, damaging waves and strong currents.
Widespread heavy rain and further flooding are likely in southern parts of the Ampara and Matara Districts over the n
days. </description>
    <instructions>Last-Mile HazInfo Simulation. No Repeat No Real Event is Effect. </instructions>
    <area>
      <areaDesc>Ampara and Matara Districts of Sri Lanka</areaDesc>
    </area>
  </info>
</alert>
```



CAP for Disease Notification

WER Sri Lanka - Vol. 35 No. 42

11th - 17th October

Table 4: Selected notifiable diseases reported by Medical Officers of Health
4th - 10th Oct 2008 (41st Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Received
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	
Colombo	23	1372	01	236	00	14	10	124	00	91	30	813	00	03	02	96	00	00	69
Gampaha	11	832	05	176	01	20	02	49	02	103	29	667	00	07	03	154	00	06	86
Kalutara	04	409	10	268	00	11	02	59	06	26	27	515	00	03	02	41	00	02	92
Kandy	06	233	05	256	00	07	01	55	02	97	23	409	01	89	00	111	00	02	76
Matale	07	133	01	177	00	04	05	48	00	13	08	661	00	02	00	25	00	00	100
Nuwara	01	25	09	230	00	03	08	235	00	166	03	51	00	36	04	104	00	01	92
Galle	01	92	06	163	01	18	01	17	00	43	09	339	01	14	00	08	00	03	71
Hambantota	00	85	00	88	00	05	00	07	00	12	01	90	05	84	00	14	00	01	91
Matala	05	271	06	181	00	13	00	35	00	06	13	415	03	199	00	14	00	01	94
Jaffna	00	54	00	135	00	04	00	238	00	16	00	00	00	151	00	35	00	00	00
Kilinochchi	00	00	00	35	00	00	00	01	00	04	00	02	00	00	00	01	00	00	00
Mannar	00	25	00	21	00	06	00	155	00	00	00	00	00	01	00	14	00	00	00
Vavuniya	00	12	01	58	00	02	00	13	00	19	00	05	00	01	00	05	00	00	75
Munaliyu	00	00	00	15	00	00	00	15	00	13	00	00	00	01	00	09	00	01	00
Batticaloa	00	85	00	129	00	07	03	25	00	29	00	08	00	00	00	89	00	07	55
Ampara	00	30	00	249	00	00	01	08	00	283	00	22	00	00	01	12	00	00	29
Trincomalee	00	177	03	97	00	01	00	13	00	14	00	30	00	16	00	13	00	00	70
Kurunegala	05	302	04	198	00	14	00	52	00	23	10	589	01	29	02	67	01	06	89
Puttalam	00	276	05	90	00	08	00	148	01	27	02	56	00	37	00	29	00	04	67
Aneradhapura	00	117	02	97	00	10	00	12	00	09	00	236	00	11	01	14	00	03	79
Poisonaraw	00	62	03	119	00	01	02	24	00	21	05	64	00	01	00	19	00	00	71
Badulla	00	81	07	413	00	05	01	119	01	96	03	60	01	106	01	132	00	01	73
Monaragala	01	53	01	319	00	03	03	39	02	119	00	90	02	97	00	44	00	00	45
Ratnapara	03	248	08	336	00	32	02	49	00	68	09	178	00	78	02	50	00	00	72
Kegalle	06	383	03	270	00	26	03	70	00	11	19	439	02	63	01	474	00	01	73
Kalmunai	00	36	01	241	00	02	00	09	00	16	00	03	00	03	00	24	00	00	31
SRI LANKA	72	5393	81	4577	02	216	44	1619	14	1325	191	5742	16	1032	19	1598	01	39	70

Source: Weekly Returns of Communicable Diseases (WRCD).
 *Dengue Fever / DHF refers to Dengue Fever / Dengue Haemorrhagic Fever.
 ** Family refers to returns received on or before 15 October, 2008. Total number of reporting units = 236. Number of reporting units data provided for the current week: 215.

```
<?xml version="1.0" encoding="utf-8"?>
<alert xmlns="urn:oasis:names:tc:emergency:cap:1.1">
<!--cap:alert-->
<identifier>EPIDSLMAVERVO135-No42</identifier>
<sender>chepid@slt.net</sender>
<sent>2008-10-11T00:00:00.0000000+06:00</sent>
<status>Actual</status>
<msgType>alert</msgType>
<source>Weekly Returns of Communicable Diseases</source>
<scope>Restricted</scope>
<restriction>Healthcare Workers</restriction>
<info>
<language>en-US</language>
<category>Health</category>
<event>Disease Outbreaks</event>
<responseType>Assess</responseType>
<urgency>Unknown</urgency>
<severity>Minor</severity>
<certainty>Possible</certainty>
<effective>2008-10-11</effective>
<expires>2008-10-17</expires>
<headline>Notifiable Diseases reported by MOH 4-10th Oct 2008</headline>
<description>DPDHS division:Gampaha diseases:Dengue Fever A=11 B=832, Dysentery A=05 B
A=01 B=20, Enteric Fever A=02 B=49, Food Poisoning A=02 B=103, Leptospirosis A=29 B=667, Typhus Fever A=
Hepatitis A=03 B=154, Human Rabies A=00 B=06; H-399 received85 percent</description>
<instructions>Evaluate the information in this message and do not use for any public wa
<resource>
<resourceDesc>website</resourceDesc>
<uri>http://www.epid.gov.lk/pdf/WER%202008/Vol%2035%20N042%20English.pdf</uri>
</resource>
<area>
<areaDesc>Gampaha DPDHS Division</areaDesc>
</area>
</info>
</alert>
```

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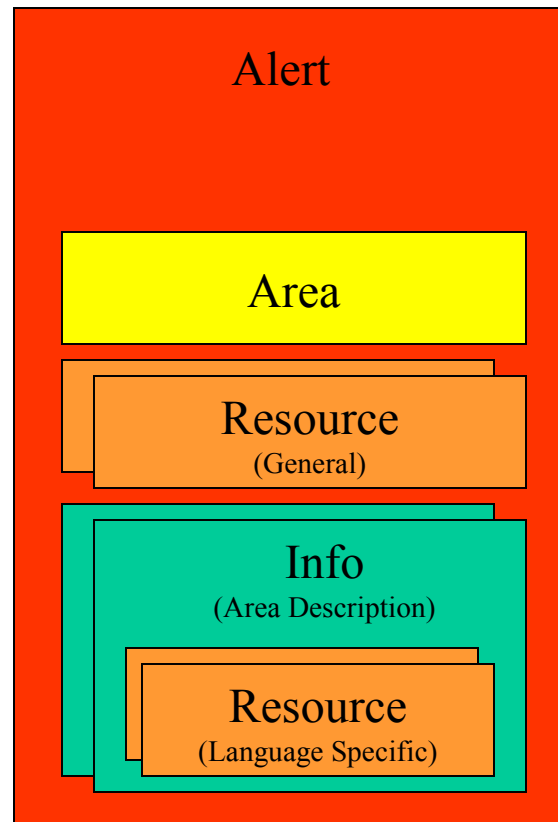
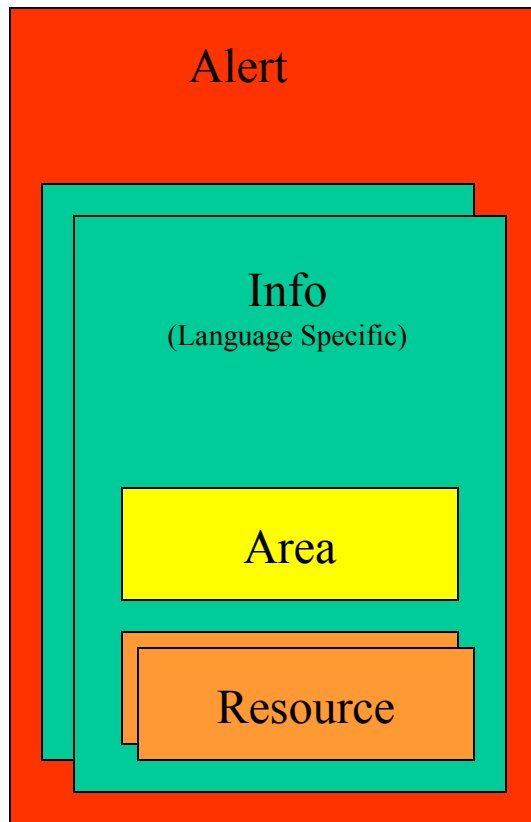
ON STATE SERVICE

Dr. M. R. N. ABEYSINGHE
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 COLOMBO 10



www.lirnea

CAP Canada Profile



- *<Area>* definition Standard Geographical Classification (Mngd: Stats CA)
- Debate on *<eventCodes>*
- Number of *<Info>* blocks
- Message Management



Automated Standard Message

"A **<event>** alert has been issued for **<areaDesc>** by **<senderName>**. Persons in this area are encouraged to **<responseType>**, and **<instruction>** (if fields . This event is rated as **<severity>**, and is **<certainty>**. Responsive action should be taken **<urgency>** . For more information about this event, visit **<URI>** or call **<contact>**."

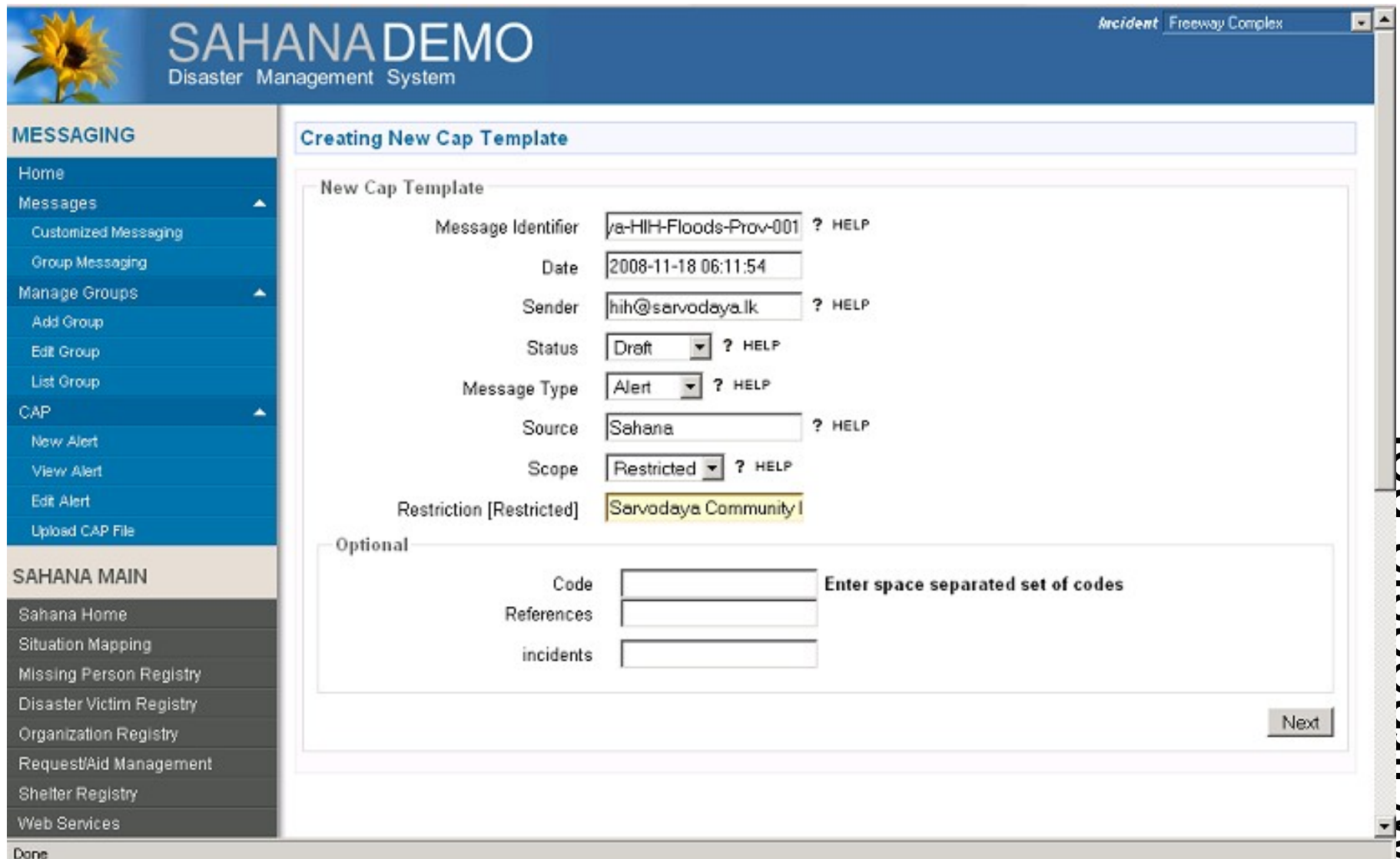


Example of Automated Standard Message

"A **Flood** alert has been issued for **North Western Province** by **Department of Irrigation and Water Resources**. Persons in this area are encouraged to **prepare**, and **stay away from demarcated flood zones**. This event is rated as **moderate**, and is **likely**. Responsive action should be taken **future**. For more information about this event, visit **<http://www.ndmc.gov.lk/>** or call **2395521** ."



Sahana CAP Templates/Messages – Page 1



The screenshot displays the SAHANA DEMO Disaster Management System interface. The top header includes a sunflower logo, the text 'SAHANA DEMO Disaster Management System', and a window title 'Incident Freeway Complex'. A left sidebar menu is divided into 'MESSAGING' and 'SAHANA MAIN' sections. The 'MESSAGING' section is active, showing options like Home, Messages, Customized Messaging, Group Messaging, Manage Groups, Add Group, Edit Group, List Group, CAP, New Alert, View Alert, Edit Alert, and Upload CAP File. The 'SAHANA MAIN' section lists various registry and management tools. The main content area is titled 'Creating New Cap Template' and contains a 'New Cap Template' form with the following fields:

Message Identifier	<input type="text" value="ya-HIH-Floods-Prev-001"/>	? HELP
Date	<input type="text" value="2008-11-18 06:11:54"/>	
Sender	<input type="text" value="hih@sarvodaya.lk"/>	? HELP
Status	<input type="text" value="Draft"/>	? HELP
Message Type	<input type="text" value="Alert"/>	? HELP
Source	<input type="text" value="Sahana"/>	? HELP
Scope	<input type="text" value="Restricted"/>	? HELP
Restriction [Restricted]	<input type="text" value="Sarvodaya Community I"/>	

Below the main form is an 'Optional' section with three input fields:

Code	<input type="text"/>	Enter space separated set of codes
References	<input type="text"/>	
incidents	<input type="text"/>	

A 'Next' button is located at the bottom right of the form area.



Sahana CAP Templates/Messages – Page 2

MESSAGING

- Home
- Messages ▲
 - Customized Messaging
 - Group Messaging
 - Manage Groups ▲
 - Add Group
 - Edit Group
 - List Group
 - CAP ▲
 - New Alert
 - View Alert
 - Edit Alert
 - Upload CAP File

SAHANA MAIN

- Sahana Home
- Situation Mapping
- Missing Person Registry
- Disaster Victim Registry
- Organization Registry
- Request/Aid Management
- Shelter Registry
- Web Services
- Inventory Management
- Messaging Module
- Volunteer Management
- Aid Catalog
- Reporting System
- Synchronization

Cap Message Information Incident Freeway Complex

Language:

Category:

Event:

Urgency:

Severity:

Certainty:

Optional

Sender Name:

Headline:

Description:

Audience:

Response Type:

Effective: (e. g., 2002-05-24T16:49:00-07:00 for 24 May 2002 at 16: 49 PDT)

Onset: (e. g., 2002-05-24T16:49:00-07:00 for 24 May 2002 at 16: 49 PDT)

Expires: (e. g., 2002-05-24T16:49:00-07:00 for 24 May 2002 at 16: 49 PDT)

Instruction:

Web:

Contact:



Sahana CAP Templates/Messages – Page 3

Resources

Resource Description	Mime Type	Size	URI	DerefUri	Digest	Remove
website		100	http://www.sahana.lk/			Remove
website		100	http://www.sarvodaya.org/HH			Remove

Cap Message Info - Resource

Resource Description

mime Type

Size

URI

Attach File

Digest



Sahana CAP Template/Message - Page 4

Home Messages Customized Messaging Group Messaging Manage Groups Add Group Edit Group List Group CAP New Alert View Alert Edit Alert Upload CAP File

SAHANA MAIN
Sahana Home
Situation Mapping
Missing Person Registry
Disaster Victim Registry
Organization Registry
Request/Aid Management
Shelter Registry
Web Services
Inventory Management
Messaging Module
Volunteer Management
Aid Catalog
Reporting System
Synchronization
User Preferences

Area incident Freeway Complex

Area Description	Polygon	Circle	Geocode	Altitude	Ceiling	Remove
Province						Remove

Cap Message Info - Area

Area Description

Polygon

X

Y

Circle

X

Y

Radius

Geocode

Value Name

Value

Other

Altitude

Ceiling



Sahana CAP Templates/Messages – Page 5

Save CAP AS: Incident Freeway Complex

Heavy rains bring flash floods to ??Name?? Province

On ??day?? ??Month?? ??Date??, ??Year??, the National Weather Service issued a flash flood warning for ??District(s)?? in ??Province(s)?? . Locations in the warning include but are not limited to: ??Town(s)/City(s)??.

Message Identifier : Sarvodaya-HIH-Floods-Prov-001
Sent By : hih@sarvodaya.lk
Date : 2008-11-18 06:11:54
Language : en_US

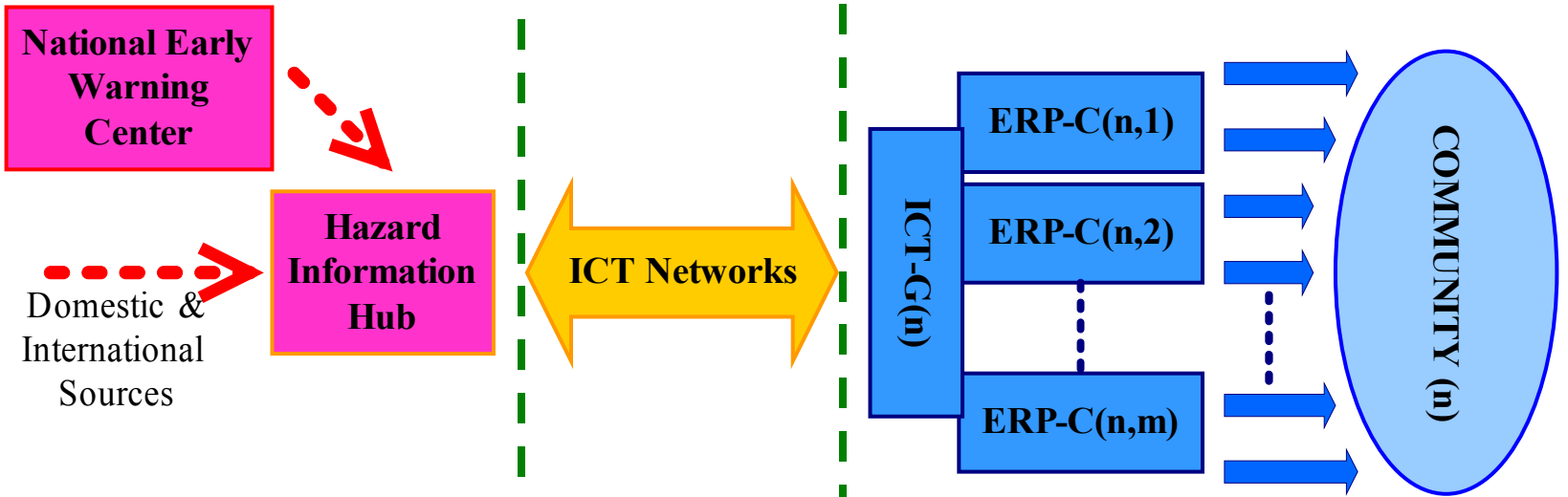
Status	Draft	Message Type	Alert
Source	Sahana	Scope	Restricted
Restriction	Sarvodaya Community First Responders	Address	
Code		Note	
References		Incidents	

Category :
Event : Flash Foods Alert
Response Type : None,
Urgency :
Severity :
Certainty :
Audience : First-Responders

Sender Name :
Instruction : A flash flood warning means that flooding is imminent or occurring. If you are in the warning area, move to higher ground immediately. Residents living along streams and creeks should take immediate precautions to protect life and property. Do not attempt to cross swiftly flowing waters or waters of unknown depth by foot or by automobile.
Contact :
Web :



Last Mile Hazard Warning System (HazInfo Project)



Sarvodaya Community Disaster Management Center (SCDMC)



Communications Providers

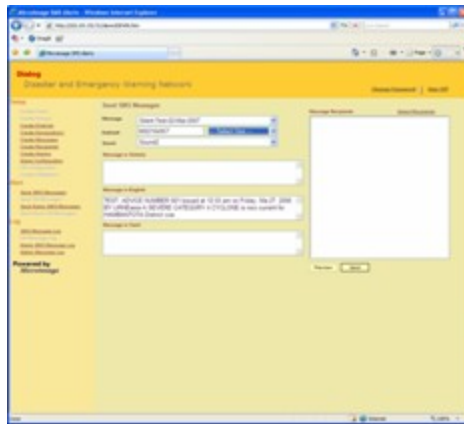


Sarvodaya Communities



Dialog DEWN Terminal Devices

Interface	HIH Monitor issued CAP Message	Receiver Device and {Medium}	ICT Guardian received Message elements
DEWN Internet Browse	<code><info></code> sub element with <code><Language>en</code> <code><Description></code> ... {no size restriction} <code><Language>si</code> <code><Description></code> ... {no size restriction} <code><Language>tm</code> <code><Description></code> ... {no size restriction}	MP {Text}	"Warning" <code><info></code> <code><Language>en</code> <code><Description></code> A SEVERE CATEGORY 4 CYCLONE... <code><Language>si</code> <code><Description></code> ...{sinhala} <code><Language>tm</code> <code><Description></code> ... {tamil} {restricted by 140 characters}
		RAD {Text}	



WorldSpace Satellite Radio

Interface	HIH Monitor issued CAP Message	Receiver Device and {Medium}	ICT Guardian received Message elements
ANNY Internet Browser application (AREA)	All sub elements in <Alert> element and message in <Language> en only.	AREA – B {Text}	<msgType> Alert <Scope> restricted <Sender> hih <Status> exercise <Category> met <Urgency> expected <Severity> sever <Certainty> observed <Event> A SEVERE CATEGORY 4 CYCLONE ... {restricted 250 characters}
	<Description> with <Language> all... {no size restriction}	AREA – B {Audio}	<Description> A SEVERE CATEGORY 4 CYCLONE ...{no size restriction}



Public Internet Alert System

Interface	HIH Monitor issued CAP Message	Receiver Device and {Medium}	ICT Guardian received Message elements
IPAS Internet Browser	<Description> with <Language>en only ... {no size restriction}	Personal Computer {Text}	<Description> A SEVERE CATEGORY 4 CYCLONE ... {no size restriction}



CDMA Voice Alerts

Interface	HIH Monitor issued CAP Message	Receiver Device and {Medium}	ICT Guardian received Message elements
CDMA 2000 1x_RTT	<Description> ... {no size and language restriction}	CDMA2000 1x_RTT Telephones {Audio}	<Description> A SEVERE CATEGORY 4 CYCLONE ...{no size restriction}



Evaluating Terminal Devices for CAP Completeness

<i>Value</i>	<i>Fuzzy rules for completing Profile requirements (Table 1)</i>
1.00	All sub elements that are contained in the <Alert> segment, which includes all the qualifier elements and <info> element as well as the <resource> and <area> sub elements
0.95	Mandatory elements described in the Profile for Sri Lanka, which are qualifier elements in the <alert> segment with at least the <urgency>, <severity>, <certainty>, and <description>
0.85	Qualifier elements of the <alert> segment and the <description> only
0.70	<description> only
0.50	Elements <category> and <event> only
0.25	Mandatory sub elements of the <alert> segment only
0	Otherwise

<i>Value</i>	<i>Fuzzy rule for Language Diversity (Table 2)</i>
1.00	Sinhala + Tamil + English
0.99	Sinhala + Tamil
0.95	Sinhala + English
0.80	Sinhala Only
0.38	Tamil + English
0.28	Tamil Only
0.15	English Only
0	Otherwise

<i>Value</i>	<i>Fuzzy Rule for Communication Medium (Table 3)</i>
1.00	Graphic + Audio + Text
0.95	Graphic+ Audio
0.90	Audio + Text
0.80	Audio
0.70	Graphic + Text
0.60	Graphic
0.50	Text only
0	Otherwise

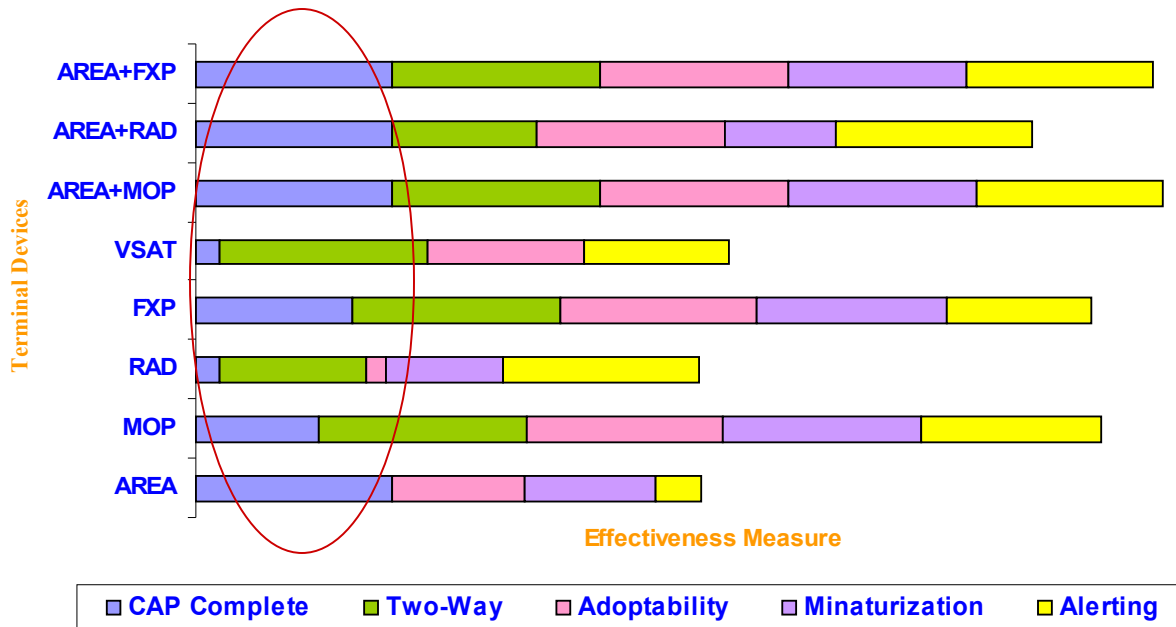
For a full description of the evaluation method refer to the "**HazInfo Technical Report**" - <http://www.lirneasia.net/wp-content/uploads/2008/05>



HazInfo Technology ratings

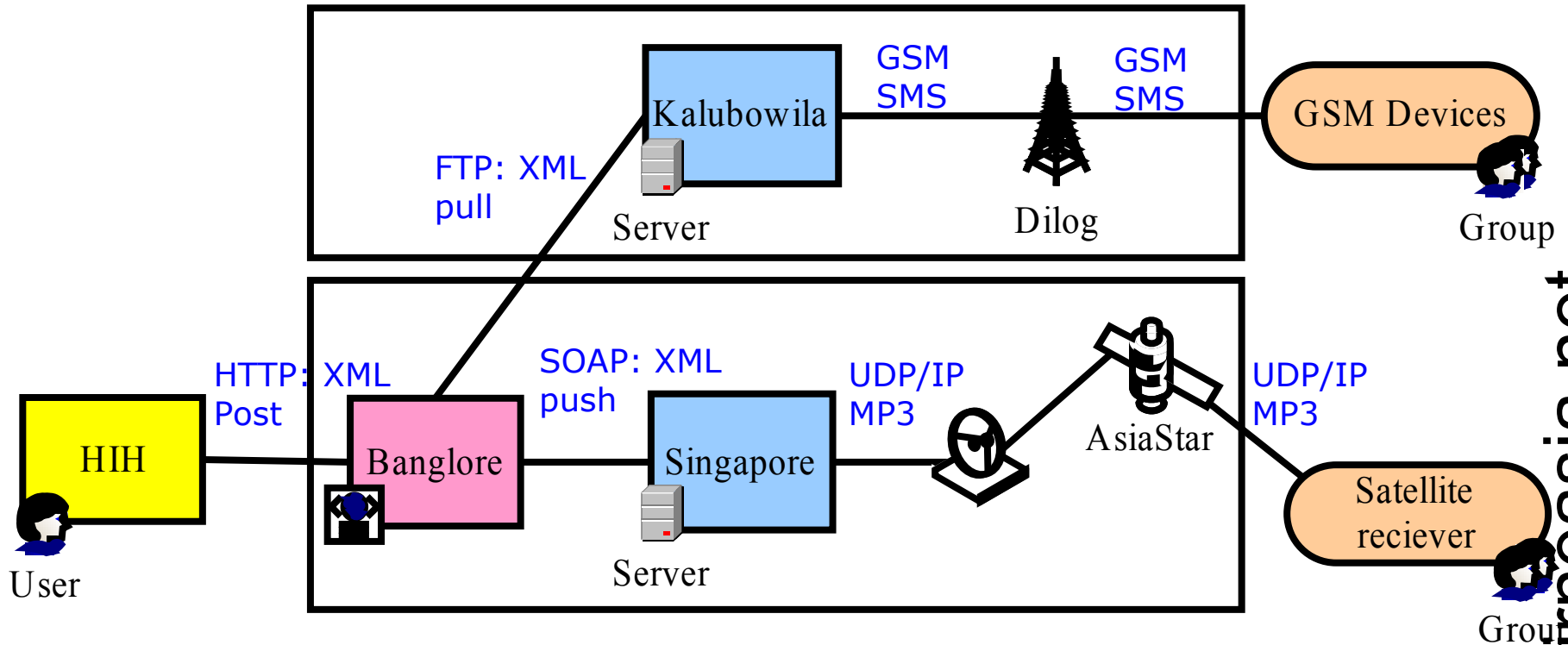
<i>Measure</i>	<i>AREA</i>	<i>RAD</i>	<i>MOP</i>	<i>FXP</i>	<i>VSAT</i>	<i>AREA+MOP</i>	<i>AREA+FXP</i>	<i>AREA+RAD</i>
Language	1.00	0.15	1.00	1.00	0.15	1.00	1.00	1.00
CAP elements	0.95	0.70	0.70	0.80	0.70	0.95	0.95	0.95
Multimedia	0.90	0.50	0.50	0.80	0.50	0.90	0.90	0.90
Rating	0.86	0.05	0.35	0.64	0.05	0.86	0.86	0.86

Effectiveness of Terminal Devices for Cliques of Parameters

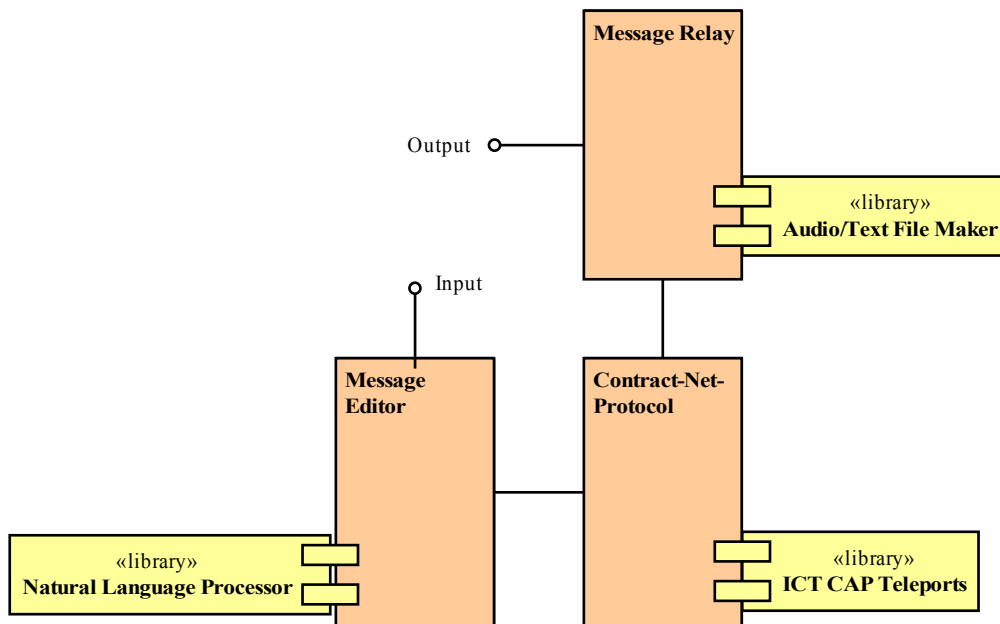
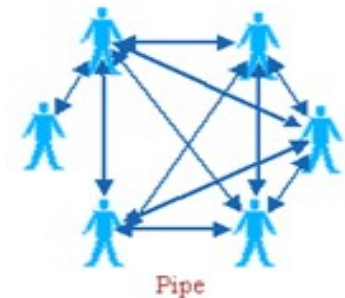
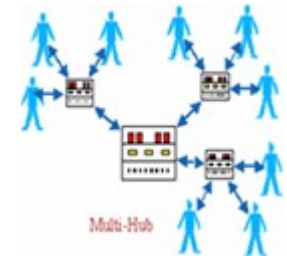
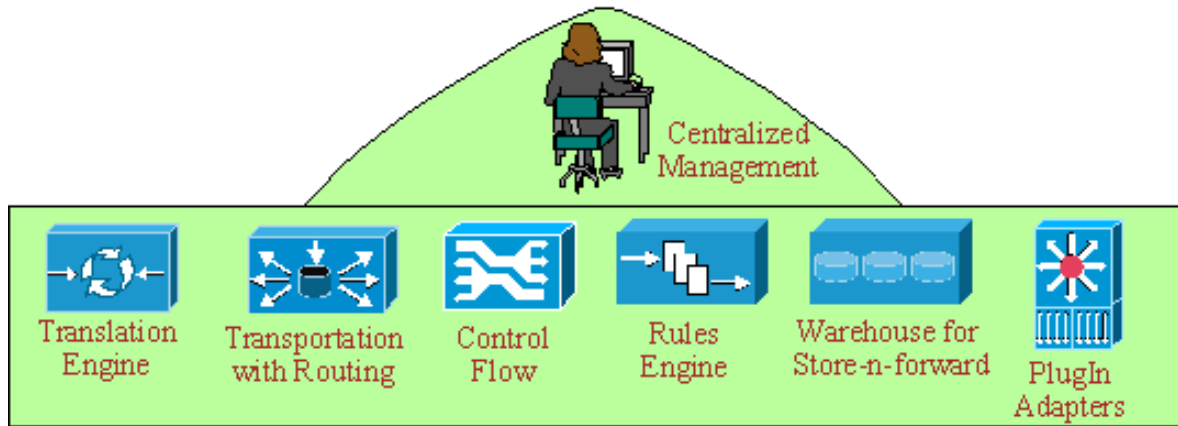


Interoperability Testing

June 2007 between WorldSpace-Sankya and Dialog-Microimage



Elements of the Sahana CAP Broker



Conclusions

- ❑ CAP is a consistent, complete, multi lingual, and interoperable global emergency communication protocol
- ❑ CAP offers standard guidelines for developing an inventory of emergency information templates and messages
- ❑ CAP should be adopted by states and organizations for their public and closed-user-group exchange of emergency information
- ❑ States or organization must first develop a CAP Profile in consultation with all involved stakeholders
- ❑ Profile should consider the target – audience (*<scope>*), jurisdictions *<area>*, *<Language>*, and Technologies
- ❑ Alerting agencies should adopt a “CAP Broker” for constructing and issuing CAP messages via “tested” technologies



<End> Do you have any questions? *</End>*

