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**COMMON ALERTING PROTOCOL (CAP)
IMPLEMENTATION WORKSHOP**

WDS-OBS/PWS-WIS/CAP-2014/INF. 1

NEGOMBO, SRI LANKA, 17-18 JUNE 2014

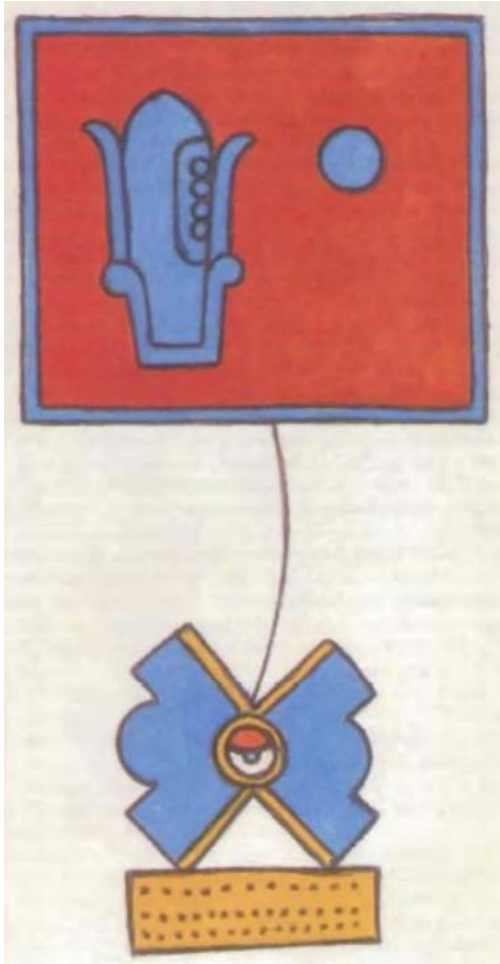
ORIGINAL: ENGLISH ONLY

Earthquake and Volcano Alerts



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Do you know when to warn for an earthquake?



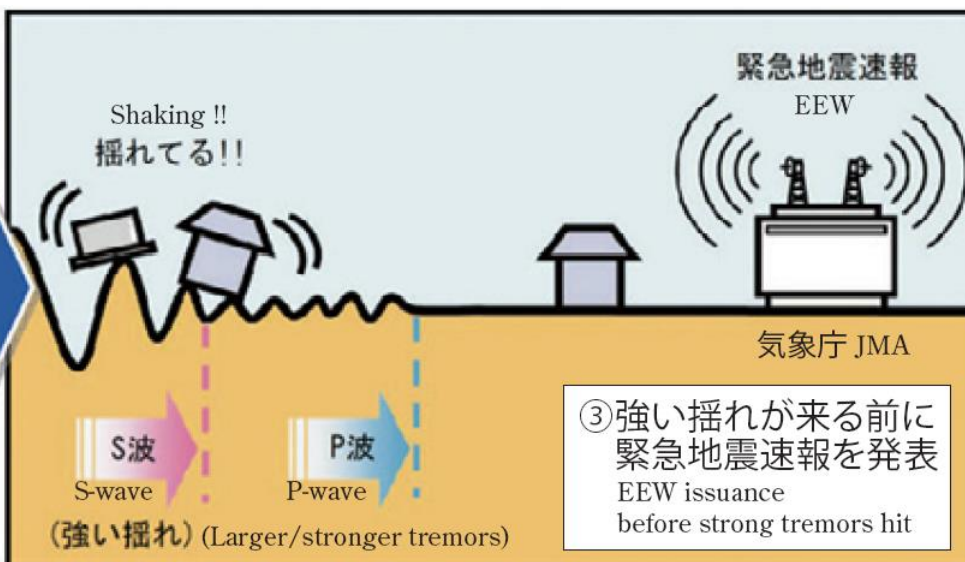
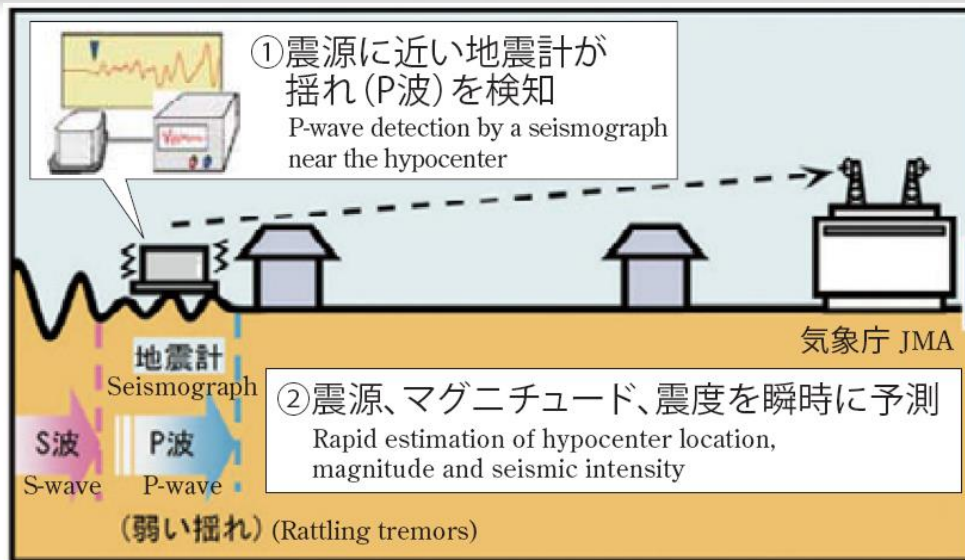
Night Time Earthquake Alert,
Prehispanic civilization

Man always wanted to prepare before earthquake hit.

“The earliest earthquake of which we have records took place in the year 1354, or “One-Flint” (uno pedernal) according to the pre-Hispanic notation.” (1)

(1) Cesar BUENROSTRO, Mexico City Director of Public Works 2004.

Do you know when to warn for an earthquake?



Currently, the only reliable warning system is based on:

- detecting an earthquake when it starts
- Using computerized algorithms to predict its level at the watched area
- Use the fact that electromagnetic waves propagate at the speed of light, while seismic waves are much slower, to alert areas before earthquake hits.

Do you know when to warn for an earthquake?

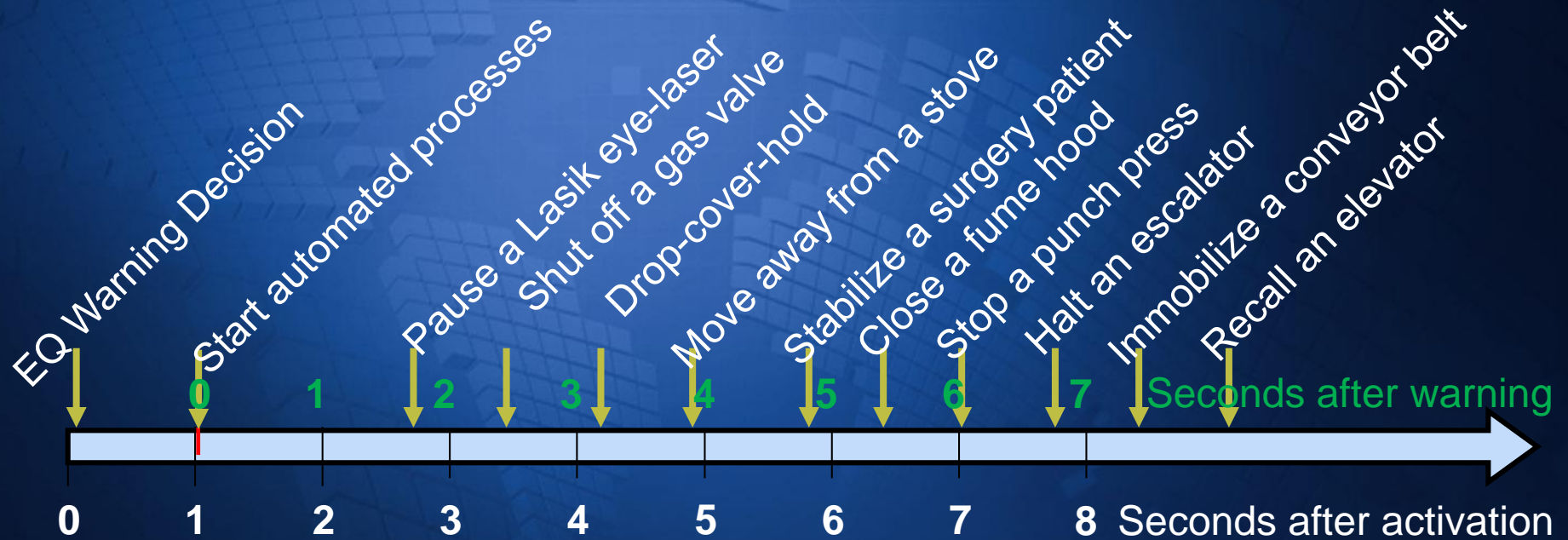


Protection response time achieved is based on

- the speed of detection and decision,
- the distance of the watched area, and
- The speed of warning system

What would you do if you had only a few seconds to save your loved ones?

Que harias si solo tuvieras 60 segundos para salvaguardar a tus seres queridos?



Case study – Mexico city

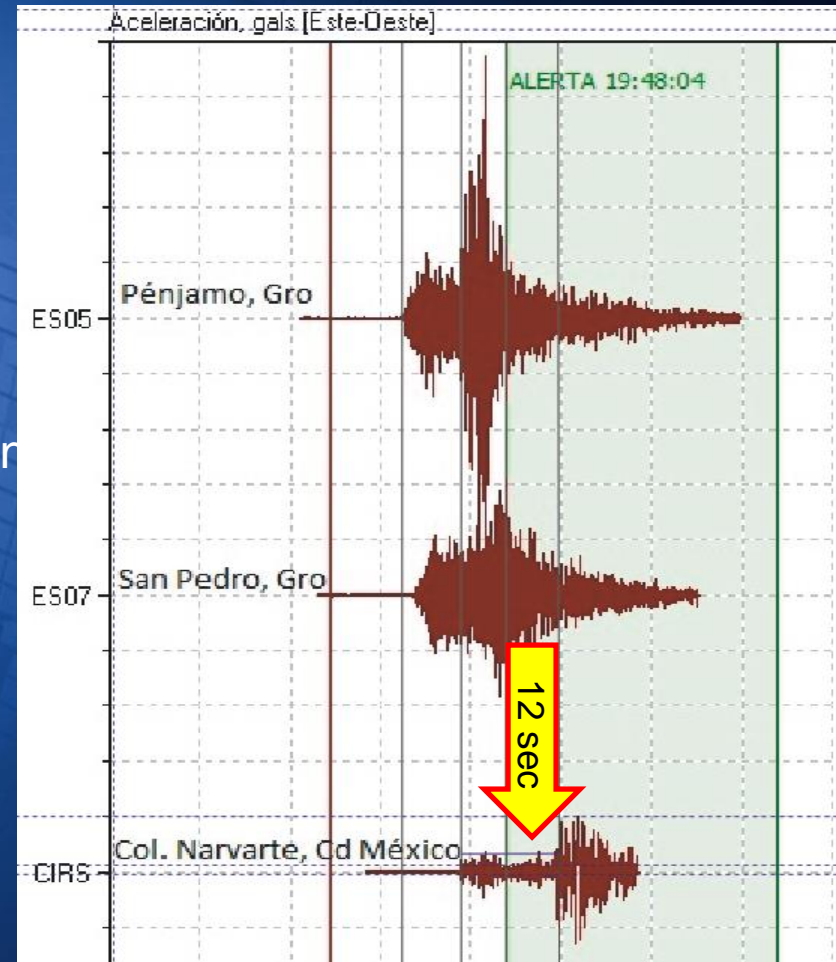
Showing the importance of fast alert

Example of alert time

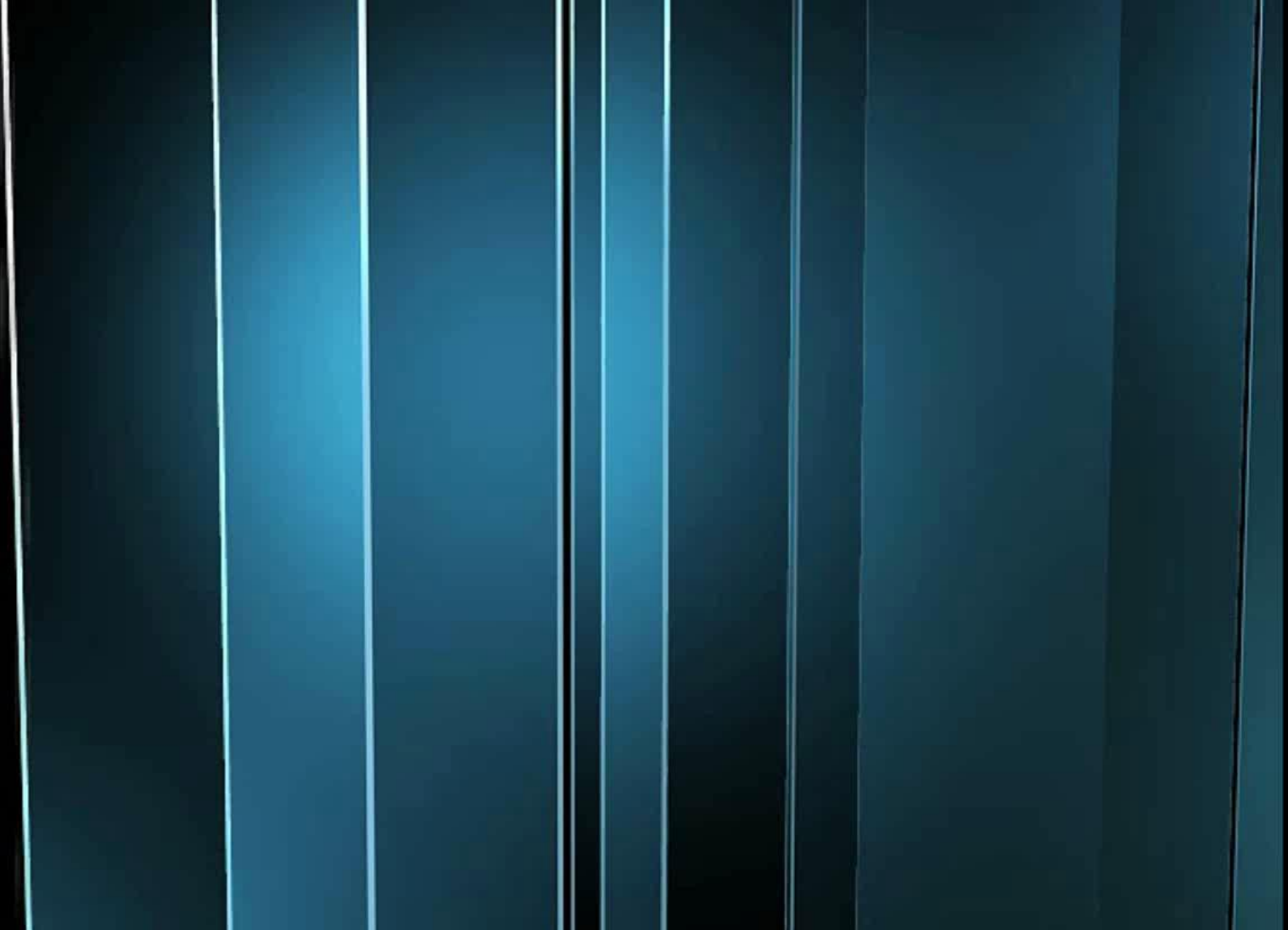
- Major EQ 110 miles from Mexico City
- Warning System activated in the city
- Arrival of EQ wave: 12 seconds after activation
- **Radio on with EQW sound: ~1 second**
- **Warning time: >11 seconds**



Mexico City Governor deploying SARMEX at the school most affected in 1985 EQ May 2012



Example: April 18 2014 7.2 earthquake



The Dilemma: To Alarm? or Not to Alarm?

To decide to alert you need:

- Fast and reliable detection system
- Fast and reliable automatically activated warning system
- Defined relationship between predicted seismic level (at the watched area) and warning group and means

Actions	If Quake happens	If quake did not happen
Alert	Great losses mitigated by protective actions taken due to the alarm	False alarm – economic disruptions, future disregard to warnings
No alert	Great losses worsened by being caught off-guard	Normal expectation.

Binary Warning System functionality

Shake Level EXAMPLE	Actions	If Quake happens	If quake did not happen
6 and above	Public Alarm	Great losses mitigated by protective actions taken due to the alarm	False alarm – economic disruptions, future disregard to warnings
0 - 5.9	No Alarm	Great losses worsened by being caught off-guard	Normal expectation.

Expanded Binary Warning System Functionality

Shake Level EXAMPLE	Actions	If Quake happens	If quake did not happen
6 and above	Public Alert	Great losses mitigated by protective actions taken due to the alarm	False alarm – economic disruptions, future disregard to warnings
5 – 5.9	<i>Media and Staff Alert</i>	<i>Prevents fear, Increased public awareness and</i>	<i>Future disregard to warnings. No economic damage if public is trained.</i>
0 – 4.9	No Alarm	Great losses worsened by being caught off-guard	Normal expectation.

Sensitive Warning System functionality

Shake Level EXAMPLE	Actions	If Quake happens	If quake did not happen
6 and above	Public Alert, <i>continue with comms, command and control through the rescue & recovery.</i>	Great losses mitigated by protective actions taken due to the alarm	False alarm – economic disruptions, future disregard to warnings
5 – 5.9	Media and Staff Alert	Prevents fear, Increased public awareness and	Future disregard to warnings. No economic damage if public is trained.
2.5 – 4.9	No Alarm, info message sent to public and staff	believe in the system	Partial disregard to warnings
0-2.4	No Alarm	Normal expectation.	Normal expectation.

How it looks with the right system?



- Mexican Earthquake 2014
- 1 Minute Early Warning

<http://www.youtube.com/watch?v=x5wE7-NgvX8>



- Los Angeles Earthquake 2014
- *NO* Early Warning

<http://www.youtube.com/watch?v=KiB7ny52-xw>

Possible Seismic Scenario for System Configuration

Earthquake Occurred

1. Public warning, staff notifications

2. Receive emergency requests and reports

3. Check if all personnel are accounted for (roll call / accountability)

4. Activate support and rescue forces as required

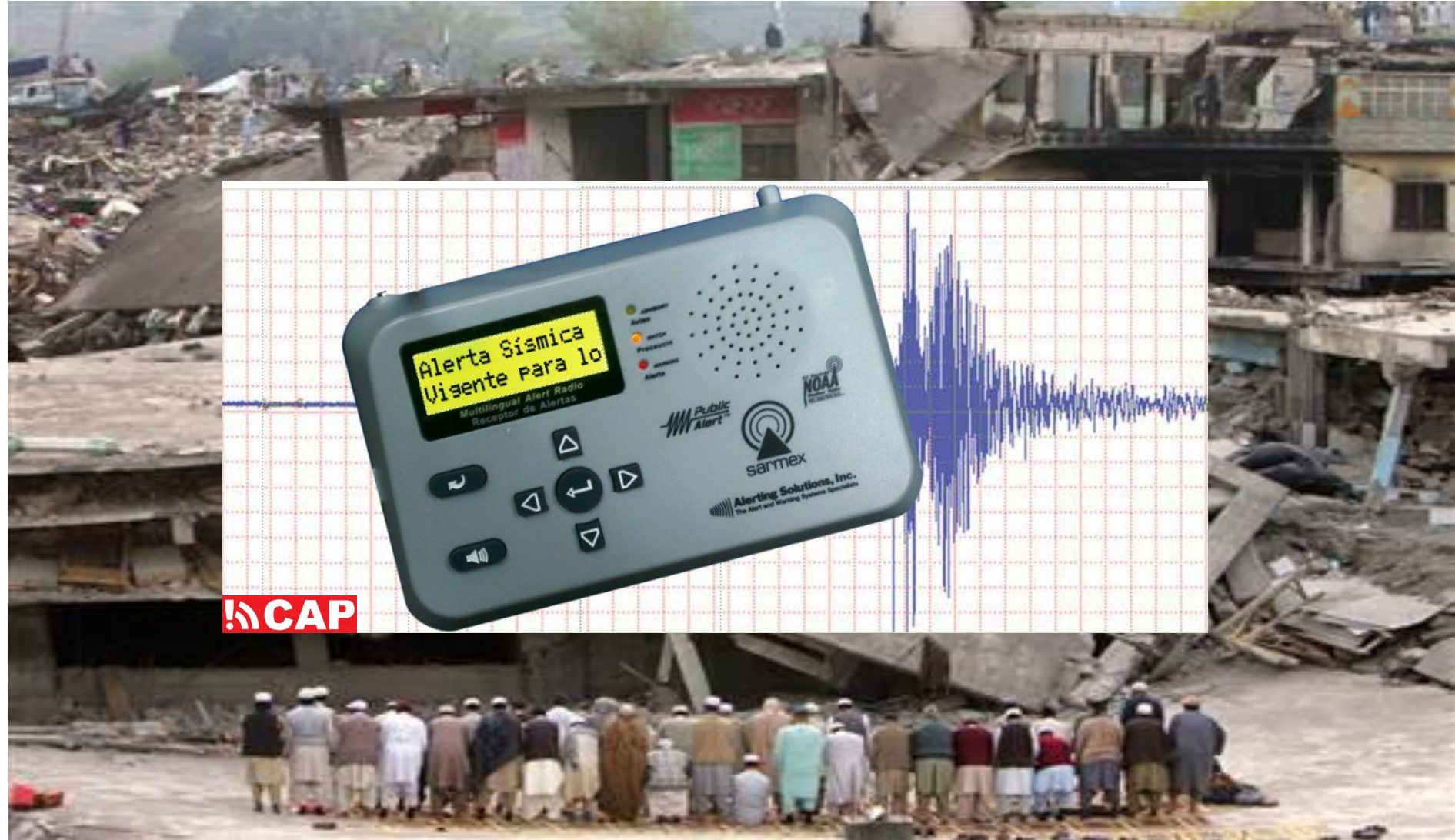
5. Send surveyors to damaged zone, Obtain field reports including photos/videos

6. Analyze situational map and define closed areas due to damage

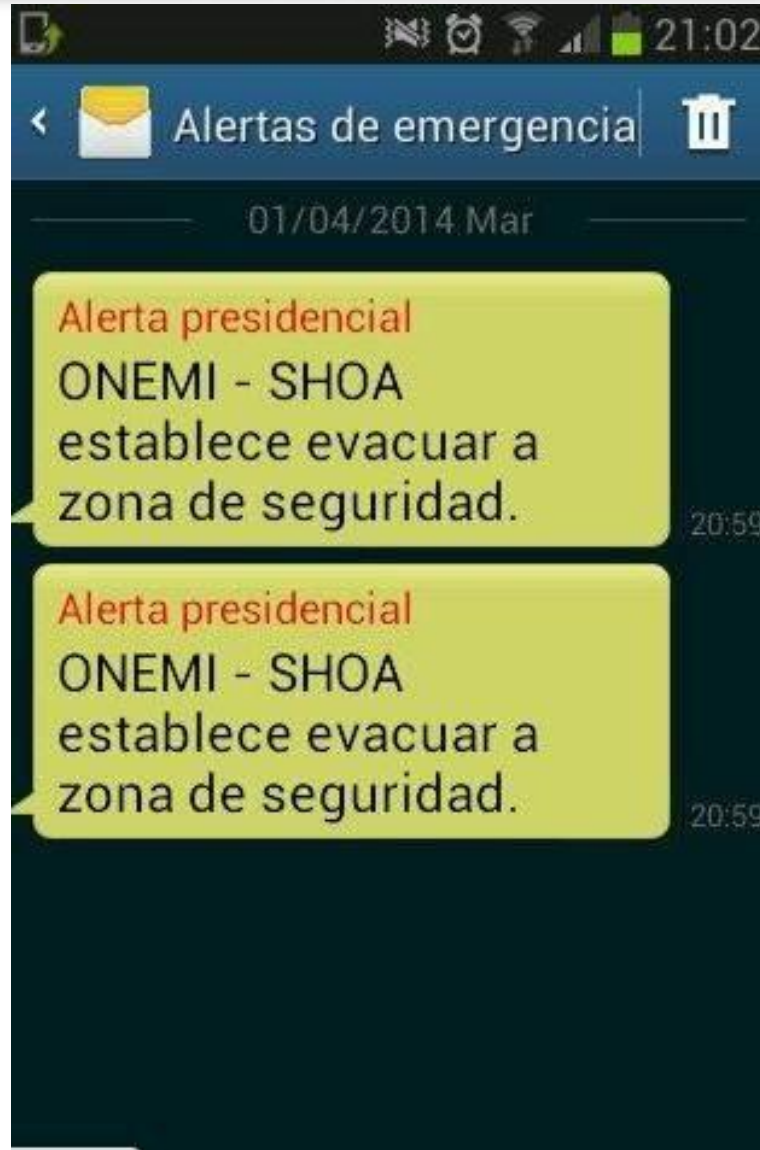
7. Instruct security to cordon the areas

Back to normal activity = ALL CLEAR

1a – Public Warning



1a – Public Warning using Cell Broadcast



1b – Staff Notifications and Recall

- Staff is a sub group of the public, but requires additional attention to:
 - ❖ Allow them to better serve the public
 - ❖ Activate the response staff
- In addition to the public alert, corresponding government staff should be immediately alerted to respond to the affected are.
- Communicate via:
 - ❖ SMS and phone calls
 - ❖ Mobile app on smartphone
 - ❖ Computer pop-up
 - ❖ Local area devices at locations, such as PA systems and digital displays
 - ❖ More as appropriate

2 – Receive Emergency Requests and Reports

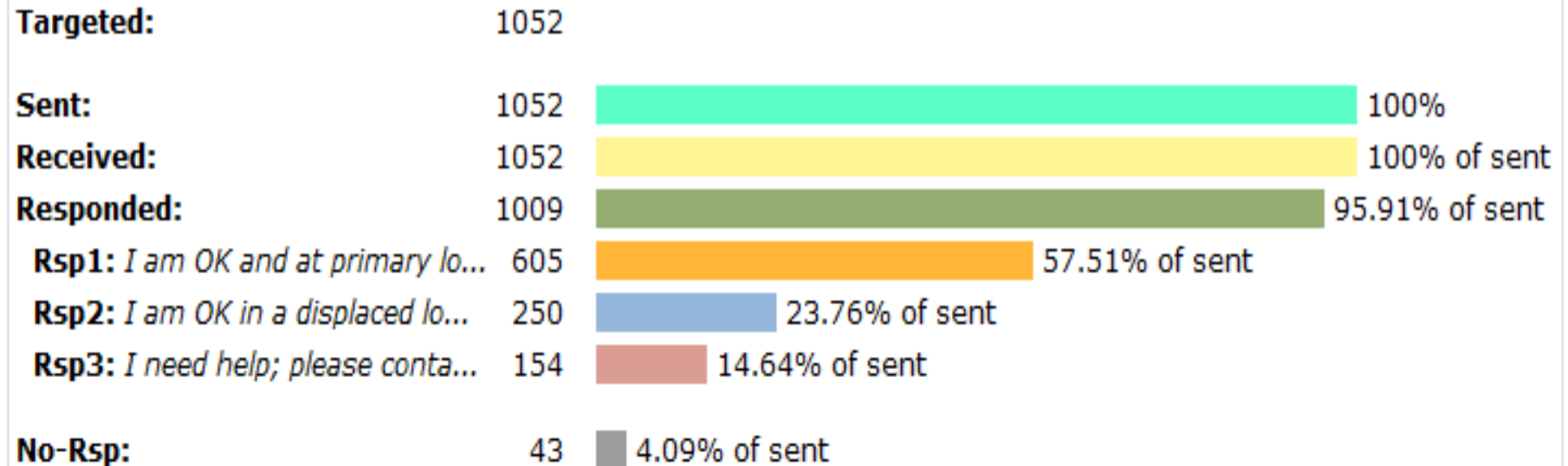


3. Accountability of Personnel

Delivery Summary

See how well the alert is doing - this Bar Chart displays an overview of the alert progress displaying number of users targeted, sent and acknowledged including breakdown of all the responses.

The number of targeted users and the number of users to whom the alert is sent may be different. [Learn Why](#)



4 – Activate Response Teams

- Noting the area affected, activate response:



5 – Send Surveyors and Obtain Field Reports including Videos and Photos



6 – Analyze Situational Map, Define closed areas due to damage

Tools

← 1 Selected

Fire at Old mill

Description
Huge fire at old mill. Neighboring areas affected.

Visibility
All Users

Layer
Civilian protection

Mobile access
Yes

Attachments

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7 – Instruct security forces to cordon the area

The screenshot displays the SSA Map interface within a Windows Internet Explorer browser. The main map area shows a large light blue circular region labeled "Chemical Spill" with a tooltip indicating "Area: 561834 sq. feet" and "Radius: 424 feet". A pink line, representing an "Exit Route", starts from the bottom left and points towards the spill area. The interface includes a navigation toolbar on the left with zoom and pan controls, a map style selector (Hybrid, Satellite, Map), and a scale bar (20 m / 100 ft). A bottom status bar shows "7 People are displayed on the map" and "66 People have no location info". On the right, a "Tools" panel is open, showing "1 Selected" and options for "Line Fill", "Exit Route", "Description", "Visibility" (All Users), "Layer" (Shared Layer), "Mobile Access" (Yes), and "Attachments". A "Filters" button is visible at the bottom center.

1906 "Shoot to Kill" Alert Message

PROCLAMATION BY THE MAYOR

The Federal Troops, the members of the Regular Police Force and all Special Police Officers have been authorized by me to KILL any and all persons found engaged in Looting or in the Commission of Any Other Crime.

I have directed all the Gas and Electric Lighting Co.'s not to turn on Gas or Electricity until I order them to do so. You may therefore expect the city to remain in darkness for an indefinite time.

I request all citizens to remain at home from darkness until daylight every night until order is restored.

I WARN all Citizens of the danger of fire from Damaged or Destroyed Chimneys, Broken or Leaking Gas Pipes or Fixtures, or any like cause.

E. E. SCHMITZ, Mayor

Dated, April 18, 1906.

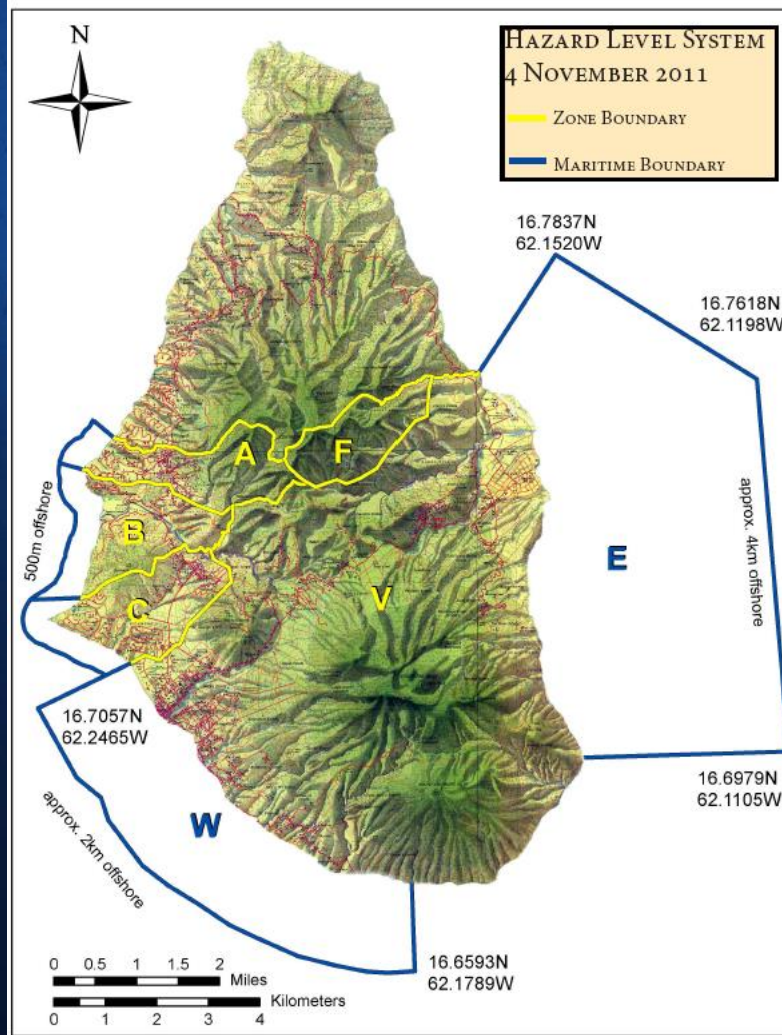
ALTYATER PRINT,  MISSION AND 230 STS.

The complete system



Volcano Alert - Montserrat





HAZARD LEVEL SYSTEM

Soufriere Hills Volcano, Monsterrat:
Hazard Levels and Access Restrictions

4 November 2011

ZONES

- A** South of Nantes River, including: Salem, Frith, Flemmings, parts of Olveston and Old Towne, and upper part of Happy Hill
- B** Iles Bay, Belham, Waterworks, parts of Old Towne and lower part of Happy Hill
- C** Cork Hill, Weekes, Fox's Bay, Richmond Hill and Delvins.
- F** Corbett Springs, Locust Valley. This zone is dedicated to farming and is defined by NDPRAC.
- V** St George's Hill, Soufriere Hills, South Soufriere Hills, Plymouth, Lee's, Harris, and Spanish Point

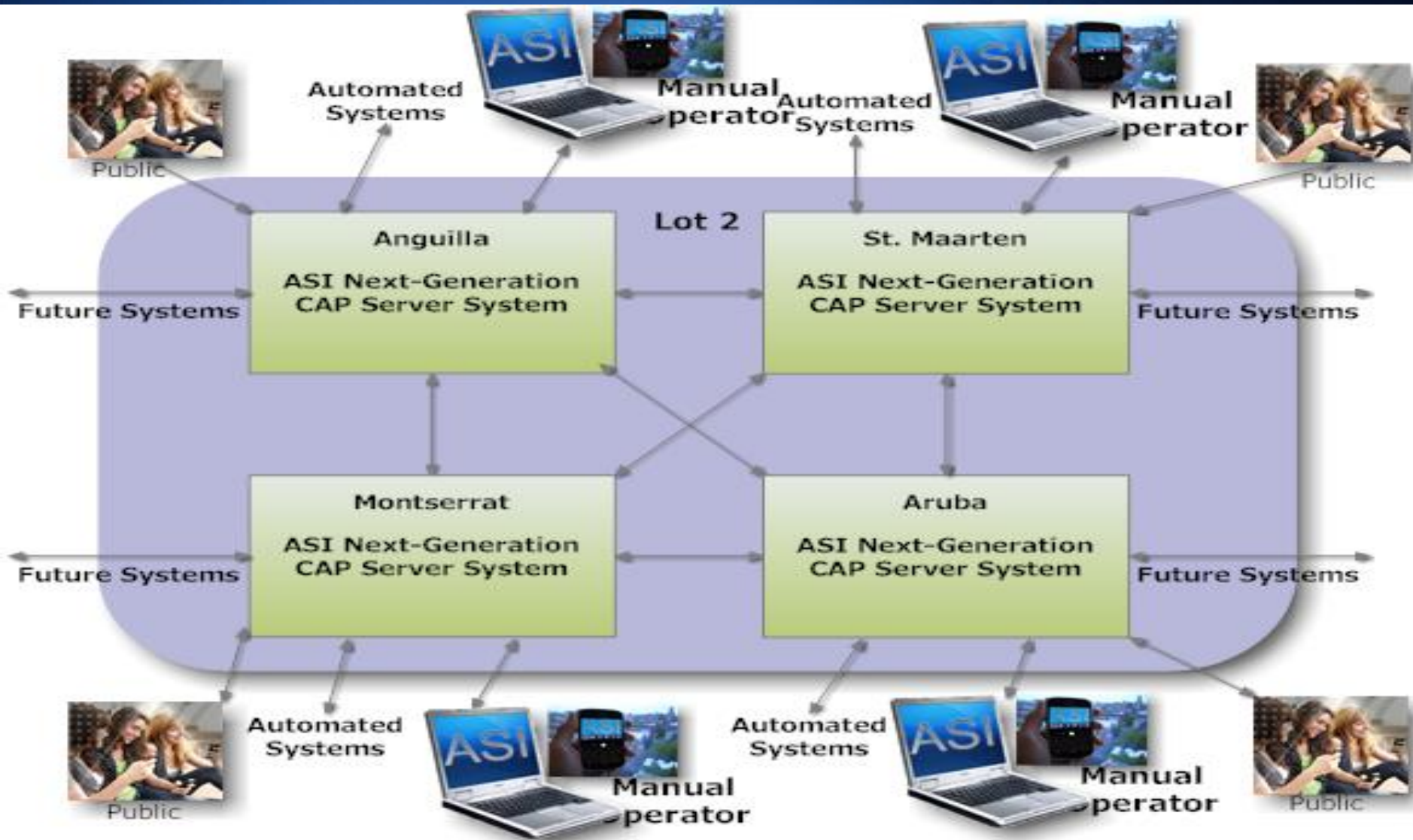
MARITIME EXCLUSION ZONES

- W** 2 km offshore between Sturge Point and O'Garra's.
- E** 4 km offshore between Roche's Yard and Spanish Point, decreasing to 2 km offshore from Spanish Point to Pelican Ghaut.

Threat and Response Matrix

HAZARD LEVEL ¹		1	2	3	4	5
TYPICAL ACTIVITY ²		More than one year with no measured activity.	No activity that threatens the north or west. ³ Low measured activity. ⁴	Mild activity that threatens the west. ⁵ Significant change of measured activity. ⁶ High measured activity. ⁷	Lava extrusion that threatens the north or west. Large unstable dome to the north or west.	Threat of large pyroclastic flows to the north or northwest. Threat of lateral blast or sector collapse.
ZONES	A	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Controlled access
	B	Unrestricted	Unrestricted	Unrestricted	Controlled access	Controlled access
	C	Unrestricted	Daytime access	Controlled access	Controlled access	Essential workers
	F	Unrestricted	Daytime access	Daytime access	Controlled access	Controlled access
	V	Daytime access to some areas	Essential workers	Essential workers	Essential workers	Essential workers
MARITIME EXCLUSION ZONES	W	Unrestricted	Daytime transit	Daytime access	Essential workers	Essential workers
	E	Unrestricted	Essential workers	Essential workers	Essential workers	Essential workers

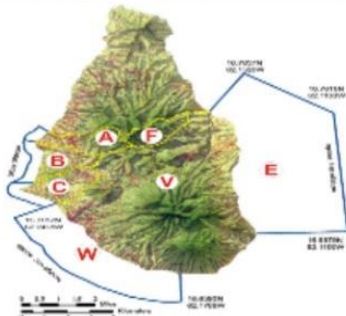
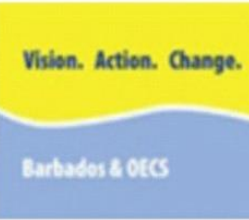
Implementation as a part of a 4 county system



CAP Alert System, Funded by UNDP



This project is funded by the European Union



[Enlarge Map](#)

[Bulletins Archive](#)
(last 7 days)

[Search Archive](#)

Caribbean Emergency Warning Network

Updated: 03:38 on 2012-03-12

[TEST ONLY A Gas leak has been reported at the bay.](#)

Immediate/Severe/Likely

All Zones

Alert sent at 03:37 on 2012-03-12

[TEST ONLY Er is een gaslek gerapporteerd bij \[LOKATIE\]](#)

Immediate/Severe/Likely

All Zones

Alert sent at 03:37 on 2012-03-12

[TEST ONLY Se ha reportado un escape de gas en \[UBICACION\].](#)

Immediate/Severe
/Likely

All Zones

Alert sent at 03:37 on 2012-03-12

[TEST ONLY Une fuite de gaz a été signalée a \[LIEU\].](#)

Immediate/Severe/Likely

All Zones

Alert sent at 03:37 on 2012-03-12

[TEST ONLY A raporta un escape di gas na \[LUGA\].](#)

Immediate/Severe/Likely

All Zones

Alert sent at 03:37 on 2012-03-12

Simplified Alert Issuing via Smartphone/Browser

Flood Warning

Affected Areas

- Zone-A
- Zone-B
- Zone-C
- Zone-F
- Zone-V
- Zone-W
- Zone-E

Languages for Alert

- English
- Dutch
- Spanish
- French
- Papiamentu

[← Back](#) [Continue →](#)

Public Registration Portal

Protecting you and your loved ones during an emergency or natural disaster

English

| Español

| Français

| Nederlands

| Papiamentu



Montserrat Alerting System

DISASTER MANAGEMENT COORDINATION AGENCY

Text size: [S](#) | [M](#) | [L](#) | [XL](#)



SIGN UP TO GET EMERGENCY ALERTS

We will notify you **immediately** of any emergencies or natural disasters affecting your area. *Staying Safe means being prepared.*

SEPARATE SIGN UP FOR BAMBOX AND/OR EMAIL



BY EMAIL

RECEIVE ALERTS BY EMAIL



BY SMS

RECEIVE ALERTS BY SMS



WHAT IS AN ALERT?

An alert provides official information about urgent events that put you and your family at risk. The alert will include actions you need to take to protect yourself. You will receive this information via email and SMS, national radio, radio data system (RDS), and sirens.

[LEARN MORE >>](#)



SIGN IN

FOR RETURNING USERS



ACTIVATE SUBSCRIPTION



LATEST ALERTS

[READ ALL >>](#)



Example of a volcano public message:

Erupcion Volcanica

Informing the population of the Valley of Mexico to the volcano Popocatepetl eruption made at 16:35 pm on this day throwing 10 KM incandescent material as well as large crater ash emissions which are expected to be scattered throughout the Valley of Mexico, without causing major damage to the population.

We call upon all the inhabitants of the valley of Mexico, not to throw these ashes into sewers, use water and sweep with broom. Any abnormality or emergency regarding this situation please notify Civil Protection

Se informa a la poblacion del Valle de Mexico que el volcan Popocatepetl hizo erupcion a las 16:35 horas del dia de hoy arrojando material incandescente a 10 KM del crater asi como grandes emisiones de ceniza la cual se espera sean esparcidas en todo el Valle de Mexico, esto, sin provocar mayores danos a la poblacion

Se pide a todos los habitantes del valle de Mexico, no arrojar estas cenizas en las coladeras, asi como no barrerlas con aguas si no unicamente con escoba. Cualquier anomalia o emergencia referente a esta situacion por favor comunicarlo a Proteccion Civil



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