Implementing Inclusive ICTs

Mobile Cell Broadcasting for Public Warning and Commercial Use

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"Today even mobile telephones could be used as an effective medium to provide early warning and thus save lives and property".

-- Nobel Laureate, R.K. Pachauri, while addressing the 5th convocation of the Dhirubhai Ambani Institute of Information and Communication Technology (DA-IICT) in January 2009, highlighted the need for ICTs in dealing with natural disasters and other weather-related events that pose a threat to human life and property.

Disasters are no comparison between India and Maldives!

Overview	India (1980-2008)	Maldives (1987-2007)
No. of events	395	4
No. of people killed	139,393	102
Average killed per year	4,807	5
No. of people affected	1,506,794,740	53,012
Average affected per year	51,958, 439	2,524
Economic Damage (US x 1,000)	45,184,830	506,100
Economic Damage per year (US x 1,000)	1,558,098	24,100

Adapted from: www.preventionweb.net.

The Problem

- Natural hazards are causing disasters in much of the world due to **poor knowledge access**. Knowledge before, during and after the event must transfer seamlessly between those *in the know* to those who *need to know.*

Why improve knowledge access?

- People need knowledge so that they can **prevent the negative impact of hazards** and to **make informed decisions** on daily activities.
- We now have the means of reaching a broad swathe of people through **mobile phones**.
- **Cell broadcast** is a built-in technology that can disseminate knowledge to large groups of people quickly and efficiently.

The study

- The Telecom Authority of the Maldives (TAM) requested this study in its quest for an effective public warning system that may be integrated into a comprehensive information system for commercial use.
- The LIRNE*asia* research on cell broadcast would allow TAM and other stakeholders to make an informed decision on whether to implement a CB system.

Objective of the study:

To investigate pre-conditions in the Maldives that would make it feasible to implement cell broadcasting within a national public warning system, and, concurrently, evaluate the use of cell broadcasting for commercial use.

What is Cell Broadcasting (CB)?

- The ability to send a single text/binary message to be distributed to multiple phones within a “cell”
- Originally designed as one mechanism for the offering of *location-based services*
- It is a standard feature on GSM networks as well as on IS95 CDMA networks
- Essentially, it is a timely and efficient means of pushing out a message to an entire cell area without the lag times associated with SMS, which are queued
- It is a one-to-many mode of communication, unlike SMS, which is in essence a one-to-one mode

SMS vs. Cell Broadcast

SMS	Cell Broadcasting
Messages are sent point-to-point	Messages are sent point-to-area
SMS sender is a known entity	Unconfirmed push service
User-based. SMS provides no location-based information	Location-based push service
Store and forward service	Messages are not stored unless the user chooses
140-160 characters in length	93 characters
Poor Security. No indication that a message is generated by a legitimate authority	Good security. No way for an outsider to generate a CB message
Intense commercial use. SMS is traceable making billing simple	Little commercial interest. However, above Channel 100 the operator can bill for service.
No priority message feature	Messages are displayed in real time

Findings from Maldivian Operators

- Only 2 operators – **Dhiraagu** and **Wataniya**
- Primarily interested in **marketing** and **advertising** uses of CB.
- Little in-depth investigation of cell broadcast = **poor grasp of its capabilities**.

Drawbacks from Maldivian Operators

- CB will have to be activated; **no commercial license** right now
- "Limited" CB message capacity
- GSM signals cannot go beyond the 25-35km distance from the tower

No regulatory approval to explore CB in depth to date

Why Cell Broadcast for Public Warning?

Characteristic	SMS	CB
Mobile Number Dependency	**Dependent**. Specific numbers must be input	**Independent.**
Location Dependency	**Independent**. Only registered numbers will be notified	**Dependent.** All numbers in a cell area will be notified.
Message Type	Static messages sent to **pre-registered numbers**.	**Tailored messages** can be sent based on alert levels.
Bi-directionality	**Yes**	**Yes**, through embedded numbers or URLs
Congestion and delay	**Yes**, because of queuing.	**No**, dedicated channels.
Message Length	140-160 char.; up to 5X	93 char.; up to 15X
Security	Poor authenticity	Good security
Service Barring	No barring	Limited, service must be on
Reception	Yes	Limited
Delivery Confirmation	Yes, sender can request	Only if number/URL within
Repetition Rate	None	2 sec – 32 min intervals

Other Recommended Uses for CB in Maldives

- Location-based information
- Events (i.e. sports, etc.)
- Service and airport information
- Advertising (advertisers can have their own channel; 60,000+ logical channels available)
  - Subscription options must be available
- Tourist information
- Islamic information (call for prayer, etc.)
- Mobile banking

Factors to consider for cell broadcast: Maldives vs. India

Maldives	India
Telecom operators very small	Many and large telecom operators
No activated CBCs	CBCs activated (i.e. Celltick), CB companies active and available in-country (i.e. BSNL, Hutchison)
Little to no knowledge of CB	Extensive technological know-how on CB and complementary technologies
Limited number of applicable uses of CB	Numerous potentially applicable uses of CB
Few existing complementary warning systems (i.e. TETRAnet)	Plenty of complementary warning systems (i.e. INCOIS, etc.)

Next steps: Make it a government priority!

- Operators are more concerned about **revenue.**
- Government needs to reach **everyone always. (citizens, tourists, etc.)**
- Government involvement will promote **homogeneity (i.e. handset standardization).**
- Government can provide **security (i.e. credible information source).**