ITU Workshop on "Disaster Relief Systems, Network Resiliency and Recovery"

(Phuket, Thailand, 20 May 2013)

An Application of "Hybridcast" for Disaster Information Delivery

Go Ohtake

Research engineer

NHK (Japan Broadcasting Corporation)

ohtake.g-fw@nhk.or.jp

International Telecommunication Union

Introduction

Introduction

- In case of large-scale natural disaster (e.g. Great East Japan Earthquake), **prompt and reliable information is strongly required.**
  - Emergency alert of big earthquake and tsunami
  - Evacuation guidance and recommendations.
  - Status of lifeline systems. (electricity, gas, water supply, etc.)
  - Traffic info.

Our contribution*

Proposal of an application of "Hybridcast" for a disaster information delivery

* This development has been done in cooperation with NHK Engineering System, Inc., NTT IT Corporation and Tohoku University with the support of the Japanese Government.

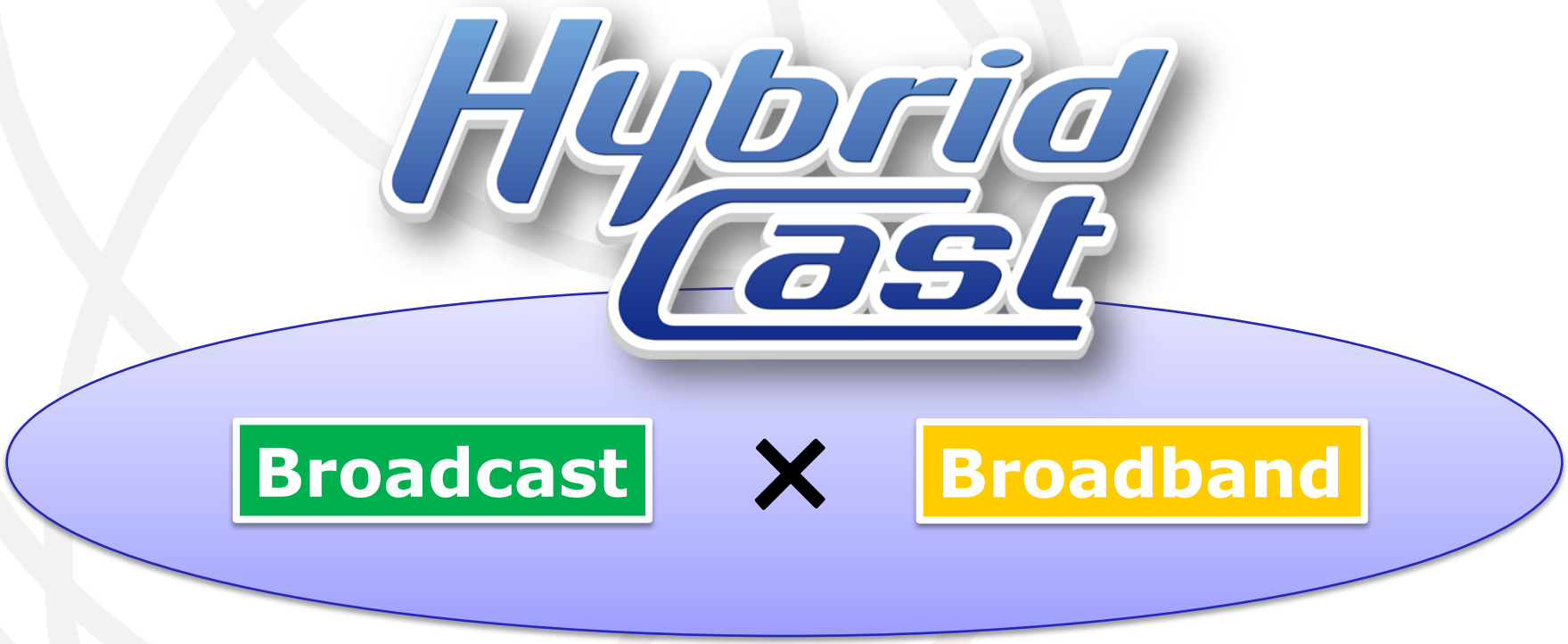
What is “Hybridcast”?

Phuket, Thailand, 20 May 2013

International Telecommunication Union

What is “Hybridcast”?

- An Integrated Broadcast-Broadband (IBB) system
  - Enhancing broadcasting service with broadband
  - Standardized by IPTV Forum Japan based on the proposal from NHK (IPTVFJ STD-0010, IPTVFJ STD-0011)



Advantage of Broadcast & Broadband

Broadcast

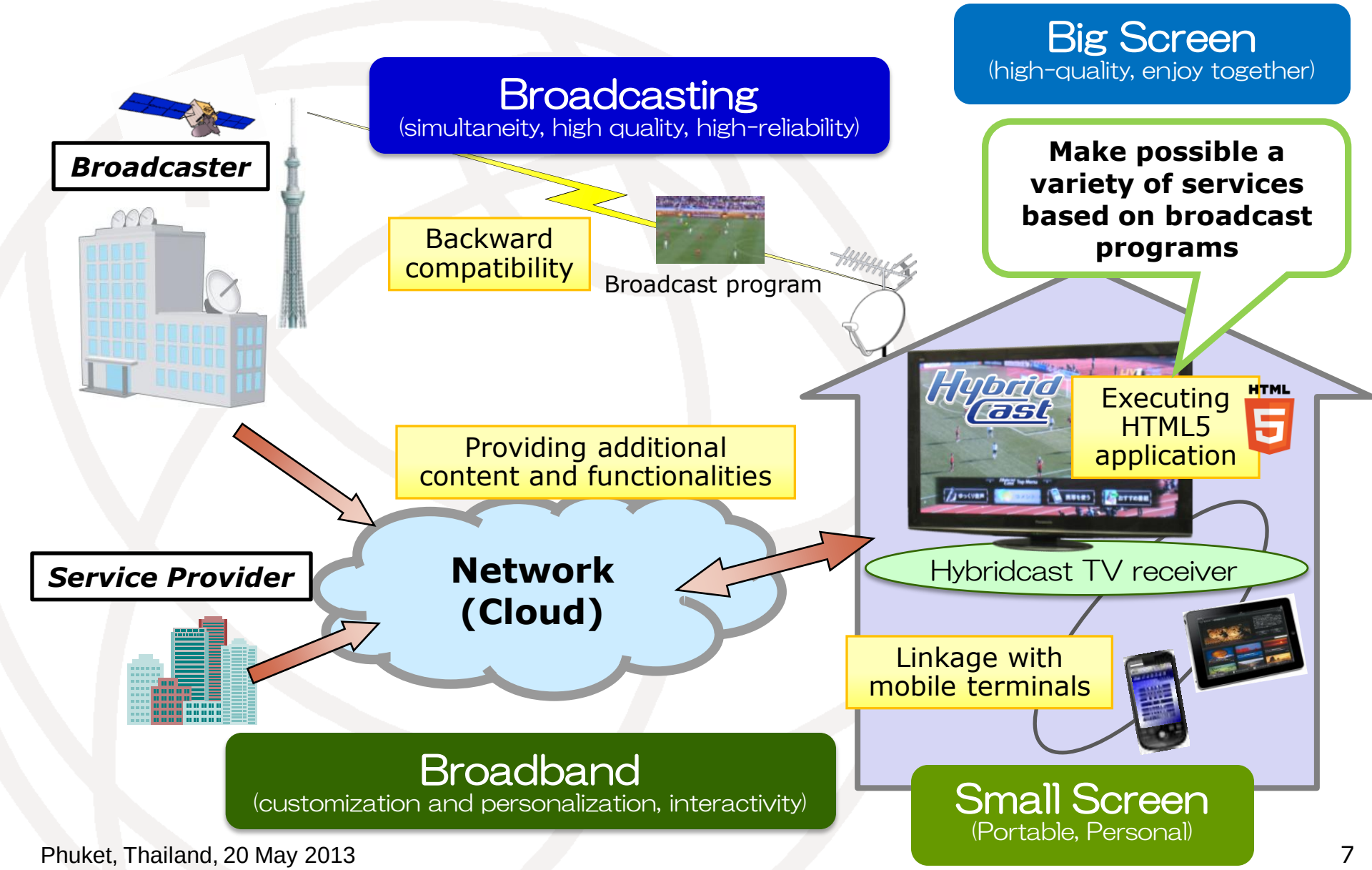
- *Simultaneity*
  - Provide public service for mass viewers
- *High-quality*
  - Transmit HD video at low cost
- *High-reliability*
  - Dependable media during disaster

Broadband

- *Customization and Personalization*
  - Satisfy individual needs
- *Interactivity*
  - Communication

Hybridcast can provide advanced broadcasting services by a combination of both advantages

Overview of Hybridcast system



Prototype applications of Hybridcast

Program-related service

Social TV

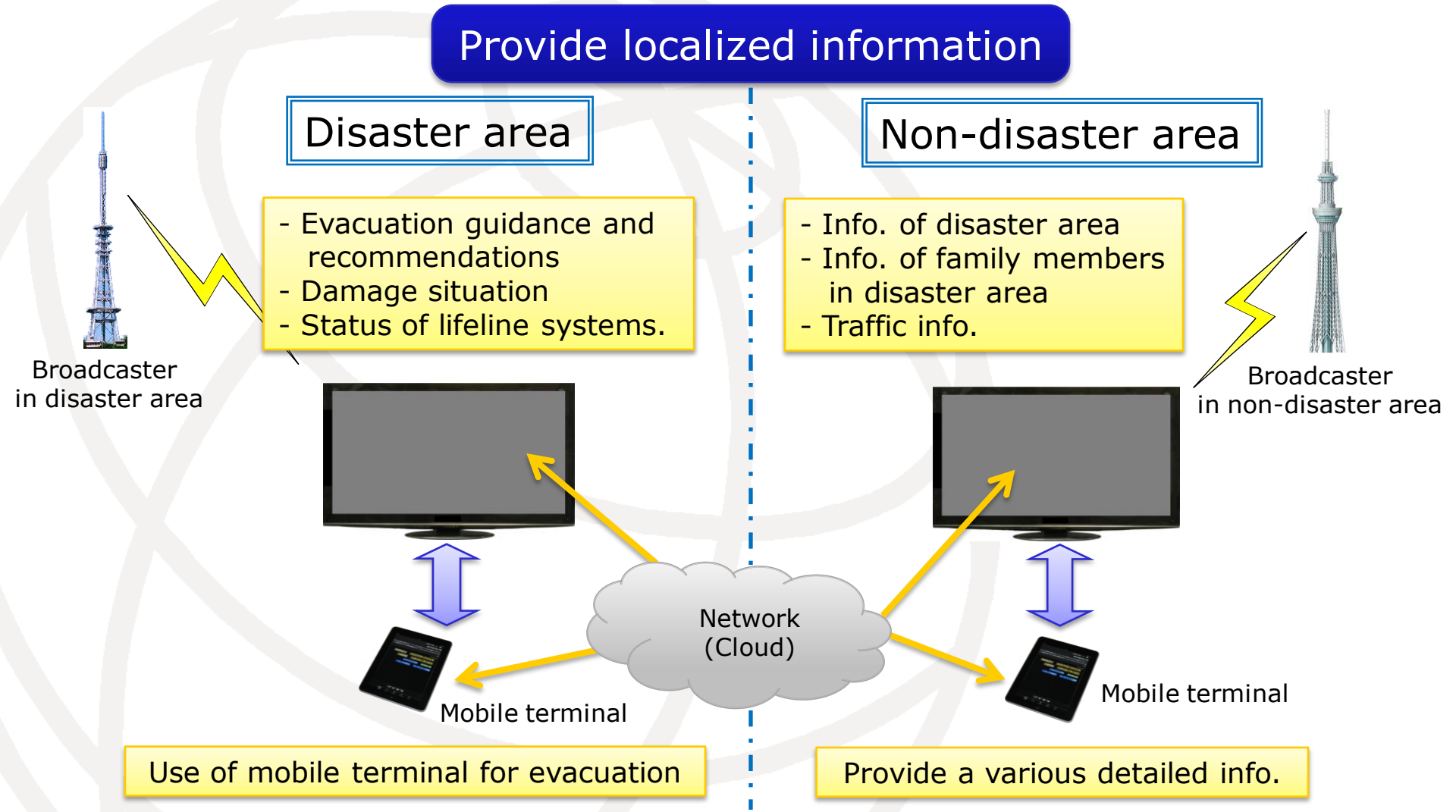
Interactive Quiz program

Prototype application of Hybridcast for disaster information delivery

Phuket, Thailand, 20 May 2013

International Telecommunication Union

Prototype application of Hybridcast for disaster information delivery



Behavior of the disaster application (1)
(On the day a big earthquake happens)

- When a TV receiver detects "Earthquake Early Warning" signal from broadcast,
  - the receiver launches the application immediately and automatically
  - the app. displays detailed disaster information for local area

Behavior of the disaster application (2)
(On the day a big earthquake happens)

- When “Tsunami Warning” is issued,
  - an alert message is appeared, according to urgency for those who live in the area where the tsunami will probably hit.

Alert message:
“Major tsunami warning
has just been issued.
Please evacuate immediately!”

Hybridcast TV receiver

Behavior of the disaster application (3)
(On the day a big earthquake happens)

- A user in the disaster area can inform his/her family who lives separately of his/her situation with easy operation.

Behavior of the disaster application (4)
(On the day a big earthquake happens)

- The application shows live streaming video from the fixed cameras located in the disaster area.

Hybridcast TV receiver

Behavior of the disaster application (5)
(On the day a big earthquake happens)

- A mobile terminal connected to Hybridcast TV receiver
  - gets useful information for evacuation
  - can be kept during evacuation

Estimated water level of tsunami

Route to the nearest evacuation site from his/her home

Mobile terminal

Behavior of the disaster application (6)
(On the following day and after)

- The application on TV receiver as well as mobile terminal displays status of lifeline systems in local area
  - Electricity, gas, water supply, etc.
- Users can watch previous news programs anytime on any of equipment.

Assessment experiment

Phuket, Thailand, 20 May 2013

International Telecommunication Union

Assessment experiment

- Purpose of the experiment
  - Assessment of disaster application in terms of usefulness
- Examinee
  - People aged in their 20s to 60s living in Sendai city (Tohoku region) who experienced Great East Japan Earthquake
- Assessment procedure
  - Whole test (by 104 examinees)
    - Examinees answer a questionnaire after operating disaster app.
  - Group interview (by 32 examinees)
    - A moderator hears their opinions about disaster app.

Experimental result

- The disaster app. gave positive impression to many of examinees.

	Positive opinions	Negative opinions
Urgency	"It is good that an application is launched automatically to get various information."	
Power		"It is useless if electric power is not supplied after earthquake."
Content	"I can preferentially select information I want to know." "I can get local information about living area."	"I want well-organized information." "I need more information for daily living."
Promptness	"It is good that information is updated continuously."	
Usability	"It is easy to understand its user interface."	"It is difficult for elderly persons or children to operate the application." "I'm concerned about operating the application correctly when I'm in panic after earthquake."
Others		"I'm concerned about the reliability of information on the Internet."

Summary

Summary

- An application of Hybridcast for a disaster information delivery is proposed.
  - Prompt and reliable disaster information can be provided by a combination of both advantages of broadcasting and broadband.
  - Assessment experiment shows that the application is useful in the event of large-scale natural disaster.
- Future work
  - Standardization
    - System specification of IBB systems is underway by ITU-T SG9 and ITU-R SG6 cooperatively.
    - The application of Hybridcast for a disaster information delivery will contribute to usage assessment at FG-DR&NRR.

Thank you for your attention!!

Phuket, Thailand, 20 May 2013

International Telecommunication Union