Japan Telecommunications
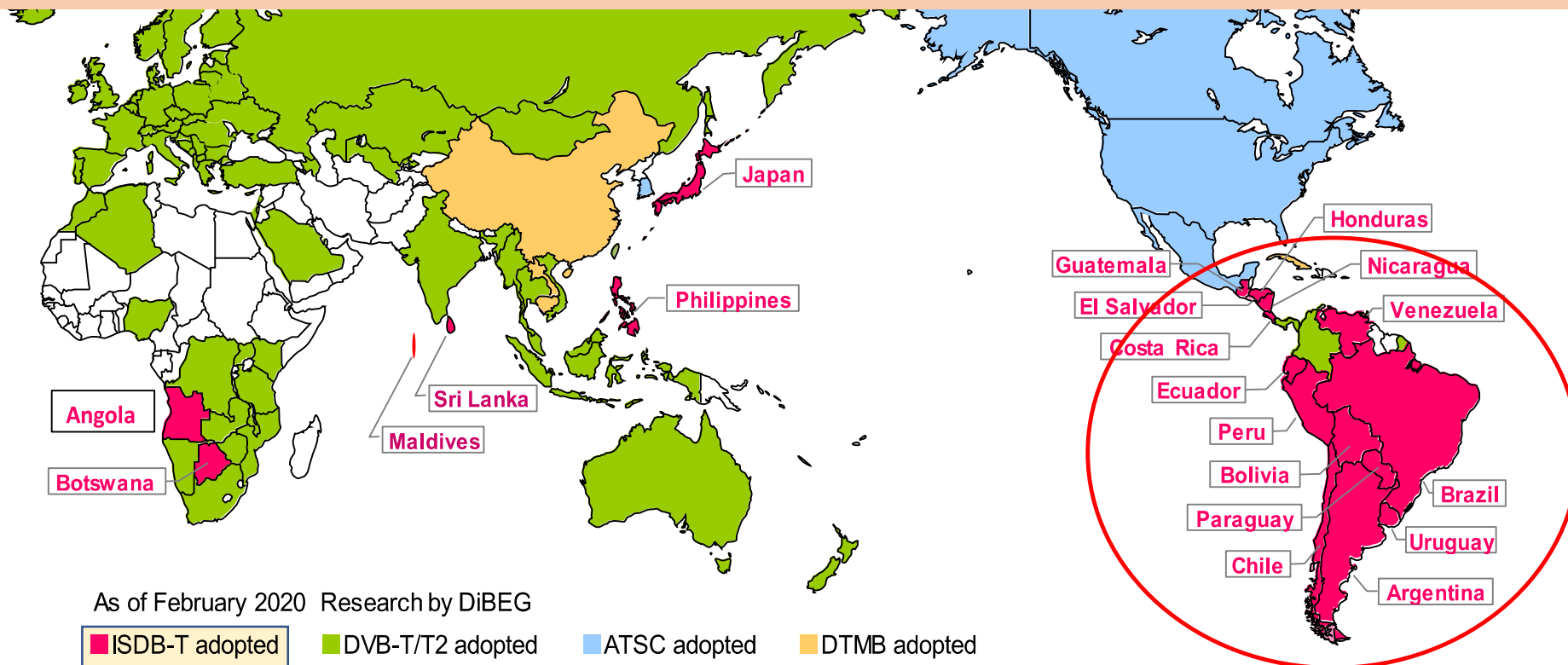**Engineering and Consulting Service**

Contributions to the overseas diffusion of the Japanese digital TV system, ISDB-T and its emergency warning function, EWBS

Yasuji SAKAGUCHI

Director, Broadcasting Systems Engineering,
Project leader of ICT system for Disaster Relief, JTEC

Principal Member of DiBEG, Japan

ISDB-T Adopting 20 Countries

JTEC as an entrusted organization by the Ministry of Internal Affairs and Communications of Japan as well as a member of DiBEG, provides technical support for the spread of Japanese digital TV standard, ISDB-T and its emergency function, EWBS to Latin American countries.

As of February 2020 Research by DiBEG

- ISDB-T adopted
- DVB-T/T2 adopted
- ATSC adopted
- DTMB adopted

EWBS implementation in Latin America with Japan's cooperation

Nicaragua	3/2018 Field experiment of EWBS equipment
	4/2021 Start of test transmission of EEW (Earthquake Early Warning) information
	12/2021 Pilot project for EWBS receivers' expansion
El Salvador	10/2018 Field experiment of EWBS equipment
	10/2019 Demonstration of EWBS receivers
	4/2021 Start of test transmission of EEW (Earthquake Early Warning) information
Costa Rica	10/2018 Field experiment of EWBS equipment
	3/2019 Demonstration of EWBS receivers
	4/2021 Start of test transmission of EEW (Earthquake Early Warning) information
Perú	1/2019 Field experiment of EWBS equipment
	3/2019 Start of technical support with operation training
	11/2019 Large scale demonstration in national evacuation drill on World Tsunami Awareness day (Nov. 5,2019)
Brasil	12/2019 Field experiment of EWBS equipment
Ecuador	3/2021 In-door experiment of EWBS equipment

Video

Introductions of various types of EWBS receivers to meet the requirements of Latin America

Demonstrations of EWBS introduction

Costa Rica （March 2019）

Demonstration of excellent mobile reception characteristics of One-seg, ISDB-T

Railway carriage

Vehicle

Coast guard boat

Peru （November 2019）

EWBS utilized in the national evacuation drill on "World TSUNAMI Awareness day"
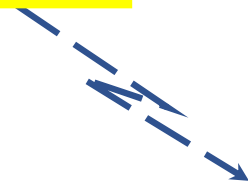
EWBS Display

Technical cooperation with SWISS international project (ATTAC) for promotion of EEW in Central America

*ATTAC: Alerta Temprana de Terremotos en América Central

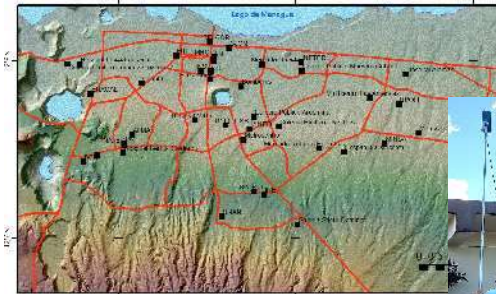Broadcasting Transmitting Station

EEW Alert information on EWBS

Trial in El Salvador

EWBS Insertor

EEW
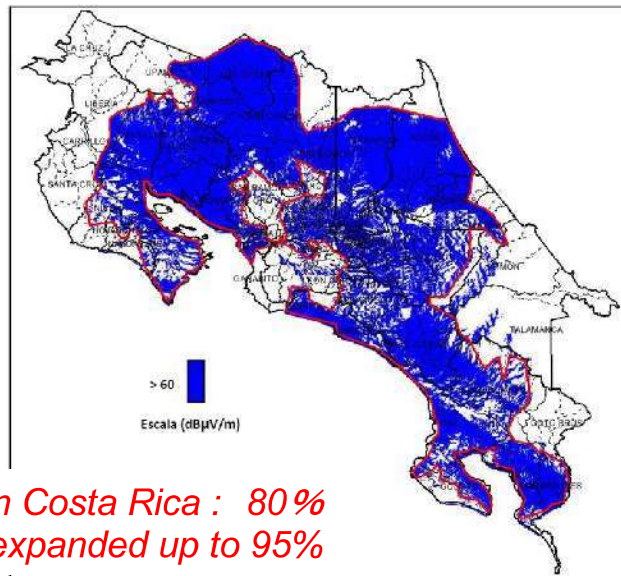(Earthquake Early Warning)

ATTAC
(Swiss International Project)

Trial in Nicaragua

ATTAC Annual Meeting in Costa Rica （2022.7.4 - 7.6）

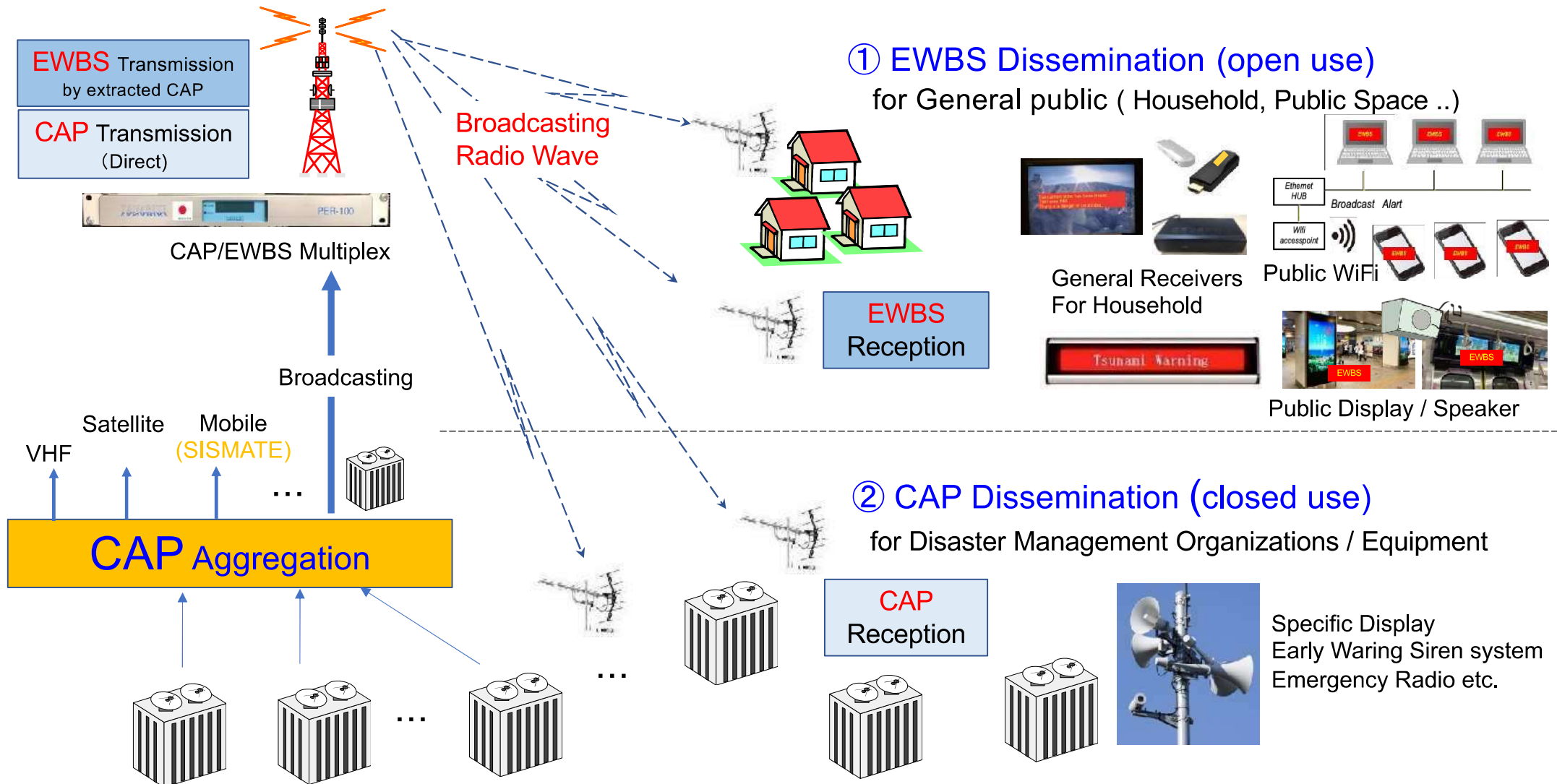*News Program covered by local Broadcaster*

TDT Coverage in Costa Rica： 80％
（planed to be expanded up to 95%

Next Challenge

➢ *Enhancing content with CAP Aggregation*

➢ *Strengthening technical functions for disaster relief with CAP Dissemination*
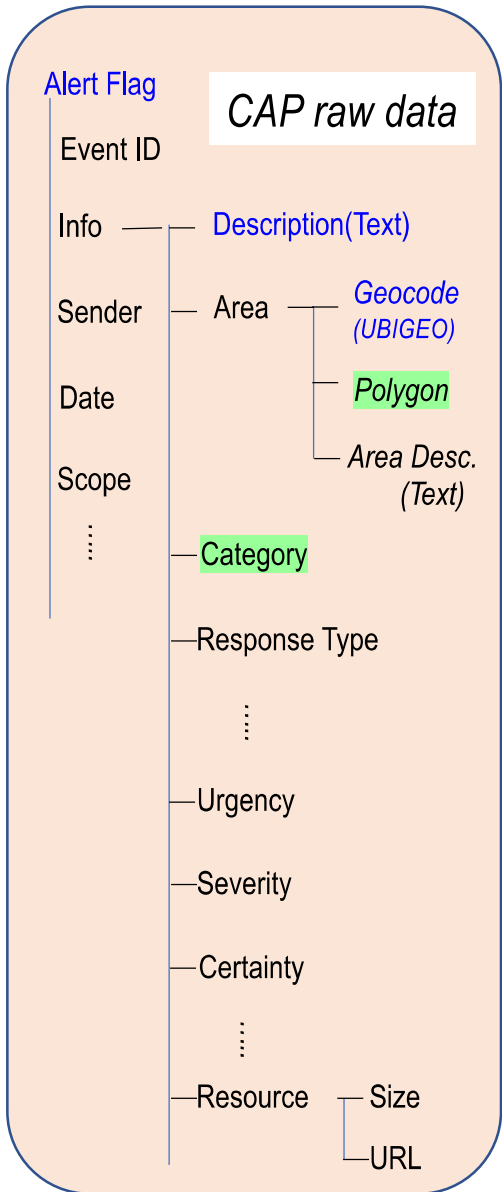
Comprehensive disaster relief ICT system
utilizing "EWBS - CAP Hybrid Transmission" (Proposal)

EWBS Transmission by extracted CAP

CAP Transmission (Direct)

CAP/EWBS Multiplex

Broadcasting Radio Wave

① EWBS Dissemination (open use)
for General public (Household, Public Space ..)

EWBS Reception

General Receivers For Household

Public WiFi

Tsunami Warning

Public Display / Speaker

Broadcasting

Satellite

Mobile (SISMATE)

VHF

CAP Aggregation

② CAP Dissemination (closed use)
for Disaster Management Organizations / Equipment

CAP Reception

Specific Display
Early Waring Siren system
Emergency Radio etc.

Classification of emergency information delivery on Broadcast Radio Waves

	EWBS for General Public（**open use**）	**CAP** for Specific Recipient（**closed use**）
Recipient	General household Public Space (Public hall, shopping mall etc.)	Disaster management organizations（Municipalities, fire departments, police, media, etc.）
Purpose	Dissemination for General public	Aggregation & Dissemination among related parties
Type	Broadcasting contents／One-way	Data communication ／ Semi-Interactive*
Receivers	TV, Radio etc. for Household Signage, Speaker etc. for Public space	Specific Display, Emergency radio Early Waring Siren system etc.
Information to carry	EWBS signal (Activation flag / Text message / Area-code)	CAP-XML
Technical regulation for receivers' manufacturing	General receivers that comply to Broadcasting technical standard	Dedicated receivers that comply to CAP open standard (delivery only by Broadcasting)
IoT Control over receivers	N/A	Required "Return channel" , "Software update"..
Area identification	limited specification by the standard（not flexible operation）	Flexible setting by CAP "Polygon"（flexible operation possible）

* Internet connection to be used for IoT Control

Area identification

for CAP

It is common to use "Polygon" for area identification. Receivers are always kept updated to the latest firmware by IoT control so that the area can be identfied correctly.
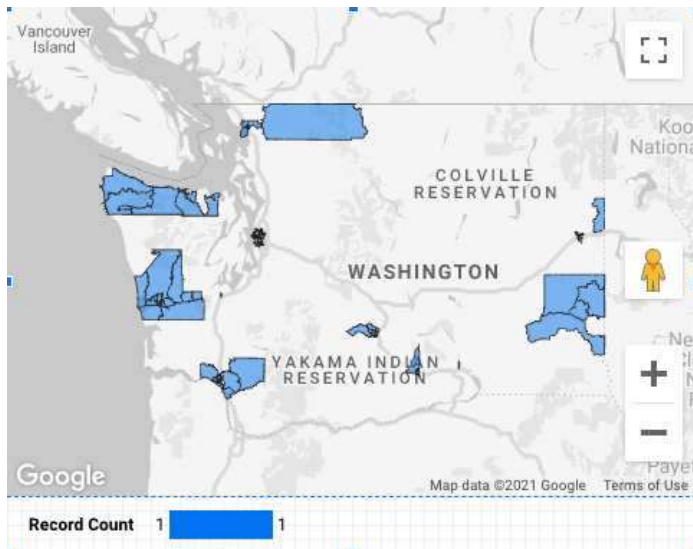
for EWBS

Area-code "table" defined by MTC
(Based on UBIGEO)

DEPARTAMENTO	UBIGEO	EWBS Deci.	EWBS Hex.
AMAZONAS	01	1	1

PROVINCIA	UBIGEO	EWBS Deci.	EWBS Hex.
CHACHAPOYAS	0101	101	65

DISTRITO	UBIGEO	EWBS Deci.	EWBS Hex.
BREÑA	150105	2285	8ED
CHORRILLOS	150108	2288	8F0
SAN ISIDRO	150131	2311	907

https://www.gob.pe/institucion/mtc/informes-publicaciones/393221-codigos-de-area-peru-otros-informes-television-digital-terrestre-tdt

➢ EWBS specified by ISDB-T standard only supports "table" , not "polygon"
   * IoT control over general receivers is not realistic.
   (ex. Polygon identification, Return-channel monitoring..)