Presentation 5

Emergency Warning System for Broadcasting

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Jakarta , Indonesia

DiBEG JAPAN

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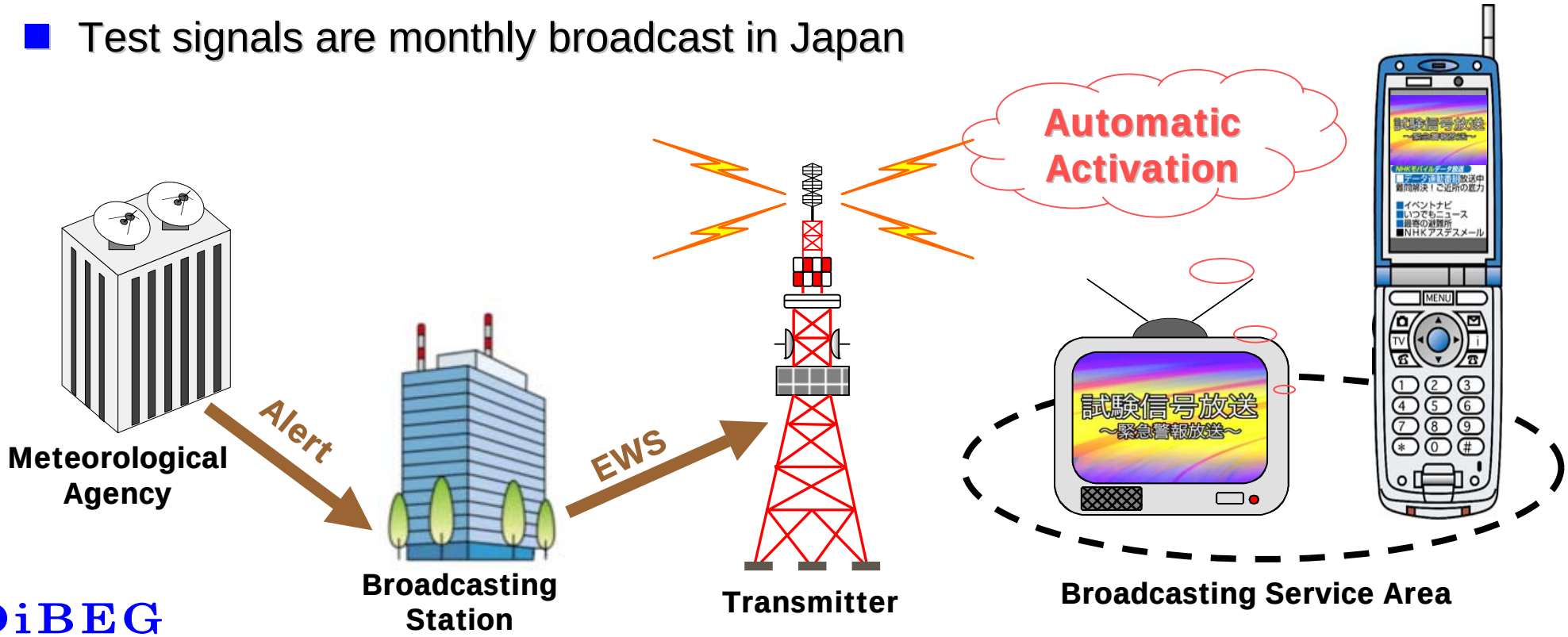
(NHK)

Emergency Warning System for Broadcasting

- Remote activation of Radio & TV ready for EWS
  - AM, FM Radio & TV : Control and Alert Sound
  - Digital Broadcasting (ISDB-T) : Emergency Warning Control Flag
- EWS has been operated since September 1985 in Japan
- Test signals are monthly broadcast in Japan



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Emergency Warning System for Broadcasting

Contents

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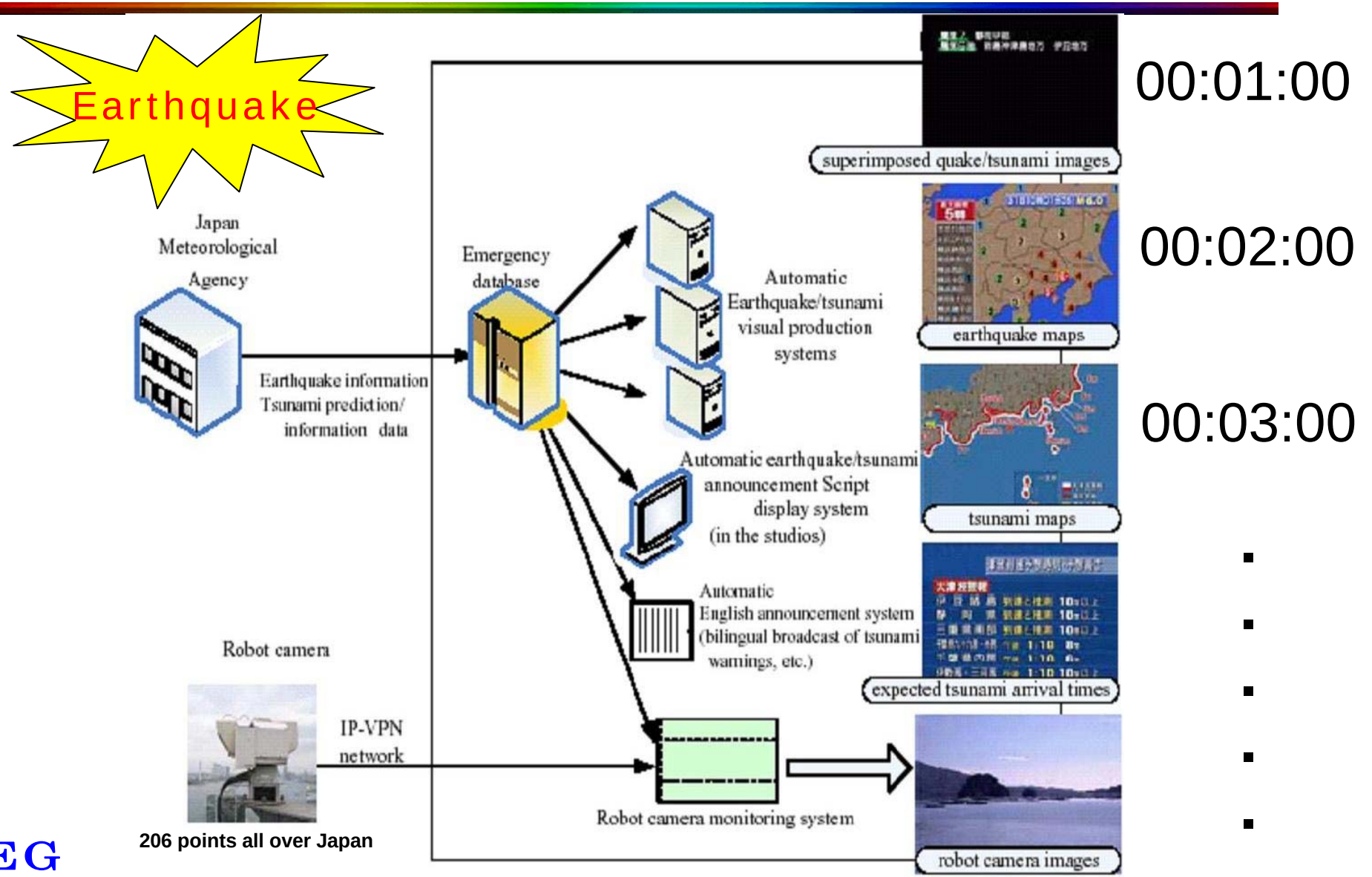
1-1. Functions of Broadcasting in Disaster Management

- Gathering/receiving disaster information
  from administrative organizations
- Filtering information
- Delivering disaster information to the general public
- Broadcasting offers reliable information
  There are no “spam” information in broadcasting
- Always connected to everybody
  There are no congestions like in communication
- Always active : 24 hour operation

- Broadcasting is a ideal media to deliver disaster information

1-2. Functions of Broadcasting in Disaster Management



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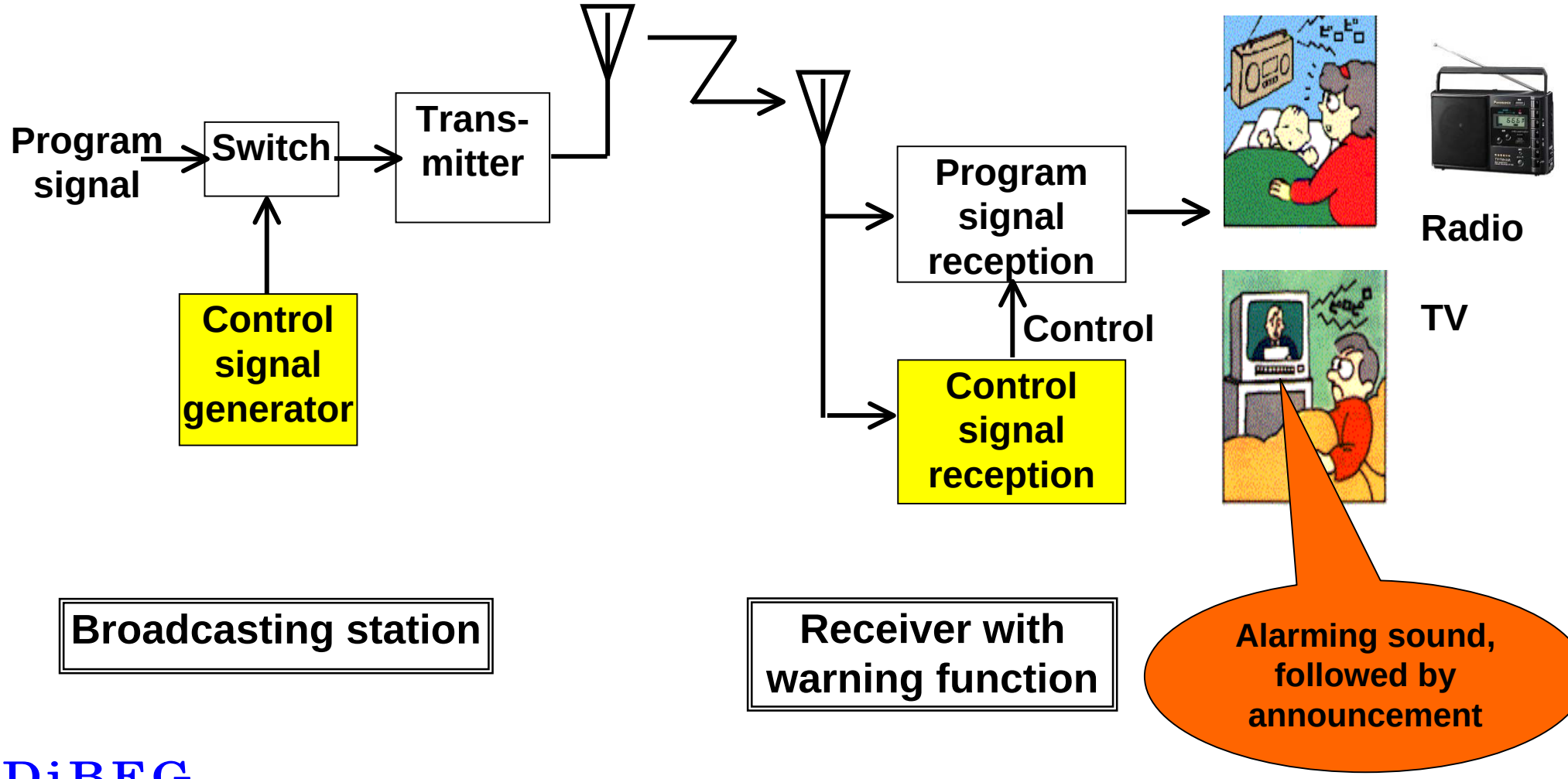
2. Emergency Warning System for Broadcasting in Japan - History

- 1980 Start of EWS study
- Sep. 1,1985† Start of EWS in Japan
- Mar.18,1987 First EWS operation for tsunami warning
- Jan.13,2007 Latest EWS operation for tsunami warning
- Up to now 15 times EWS operation during 20 years

† On Sep. 1, 1923, a big earthquake attacked Tokyo area and more than 100 thousand people died. It became a trigger to start radio broadcasting in Japan. Sep. 1st is the day of disaster prevention in Japan.

3-1. EWS for analogue broadcasting Transmission and Reception



3-2. EWS for analogue broadcasting Conventional Receivers

Receiver with a Clock

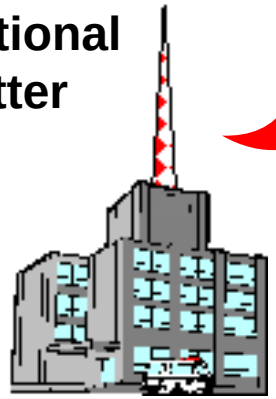
Portable AM/FM Receiver

Receiver with Power on switch

・・・・・were not cost effective ($60 - $130)

3-3. EWS for analogue broadcasting
Low cost EWS implements

Conventional transmitter



Compact Disc in which EWS signals are recorded

Enough for sending EWS

Conventional Receiver ($2)

Speaker

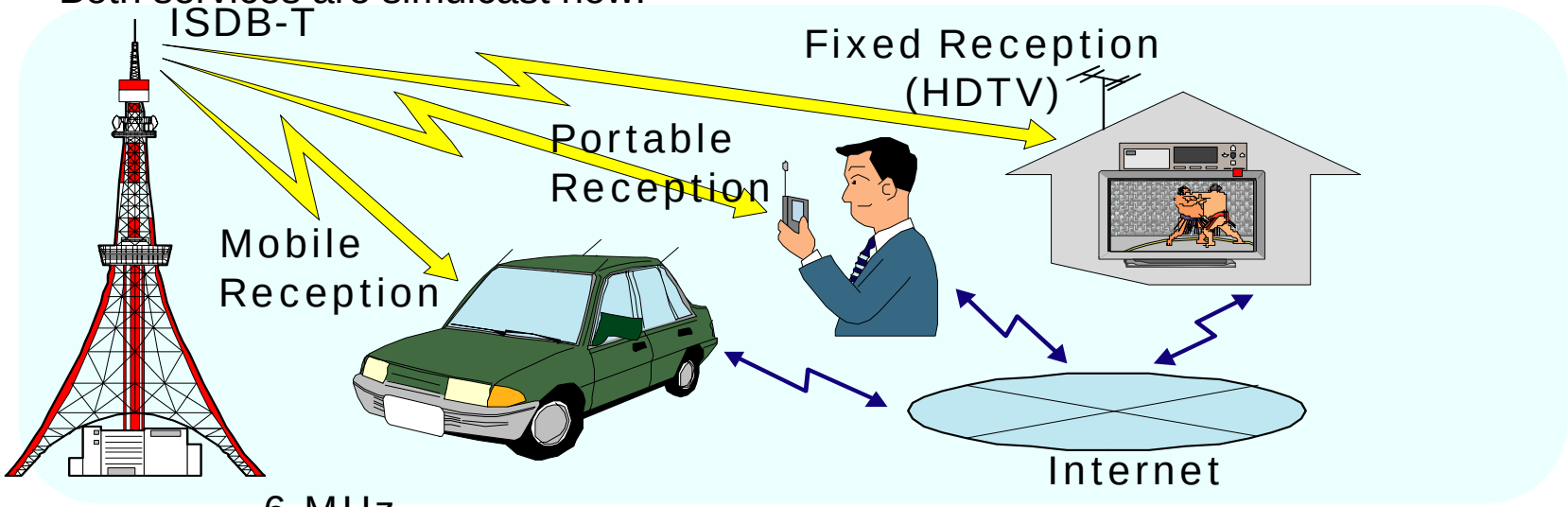
EWS Adaptor IC* parts: ($1)

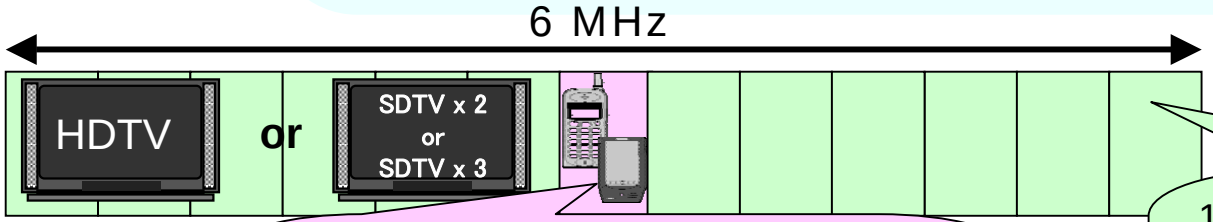
***TI MSP430**

Enough for receiving EWS

4-1. EWS for Digital Broadcasting
ISDB-T One-Seg Services

- A channel slot divided into 13 segments
- 12 segments for HDTV services
- 1 segment for mobile / portable services
- Both services are simulcast now.





1 segment : Mobile Portable Reception
Throughput : 416Kbps
Modulation : QPSK (2/3)
Features : Robust for Mobile Reception

12 segments : Fixed Reception (HDTV)
Throughput : 16.9Mbps
Modulation : 64QAM(r=3/4)
Features : HDTV & 5.1ch Surround Audio,
Multi-channel Services

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Digital Broadcasting Experts Group

4-2. EWS for Digital Broadcasting
ISDB-T One-Seg Terminals in the Market

au by KDDI W33SA

CDMA 1X WIN W41H by HITACHI

FOMA P901iTV

SoftBank 905SH

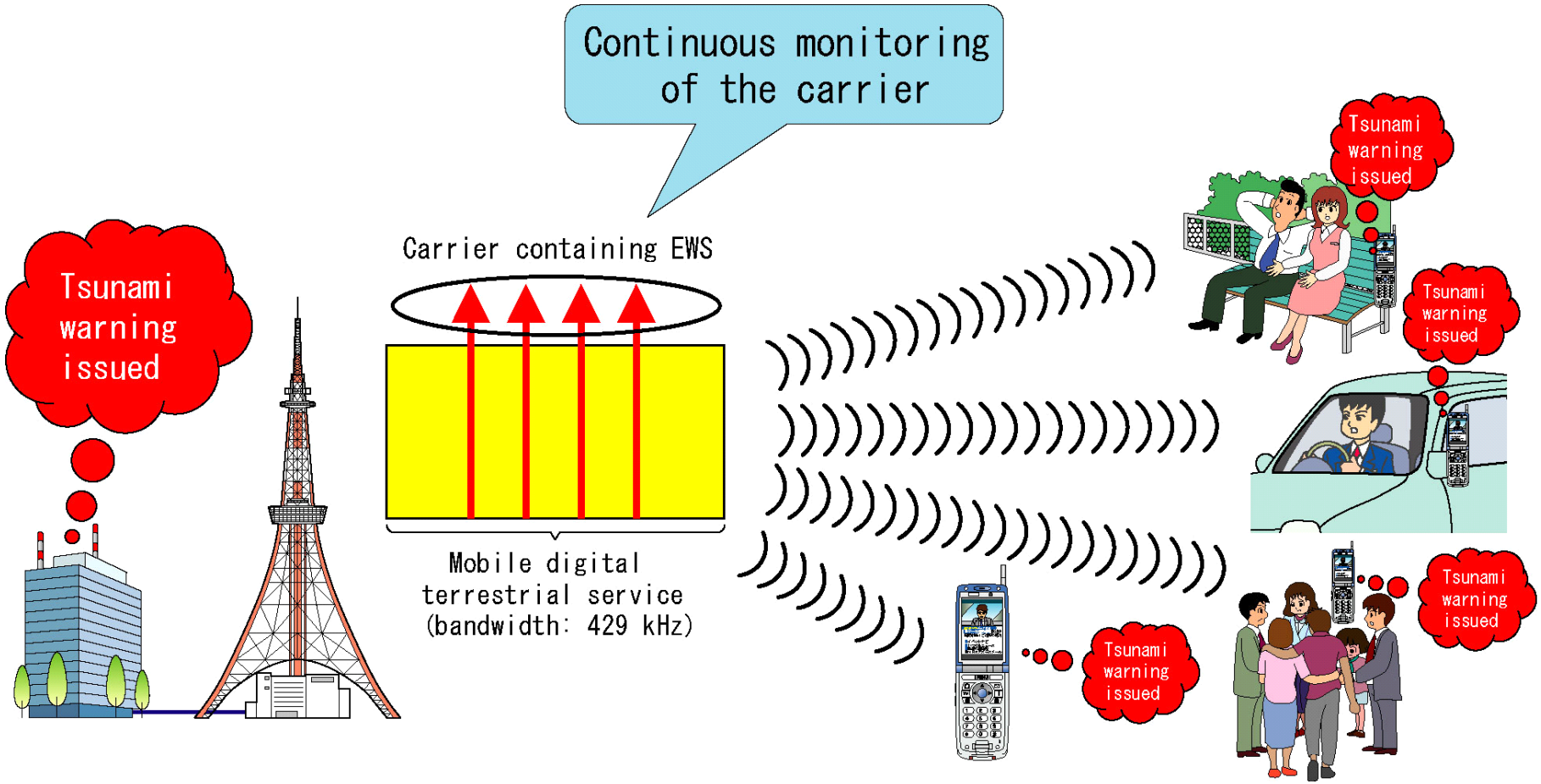
Laptop Computer

Portable DVD player

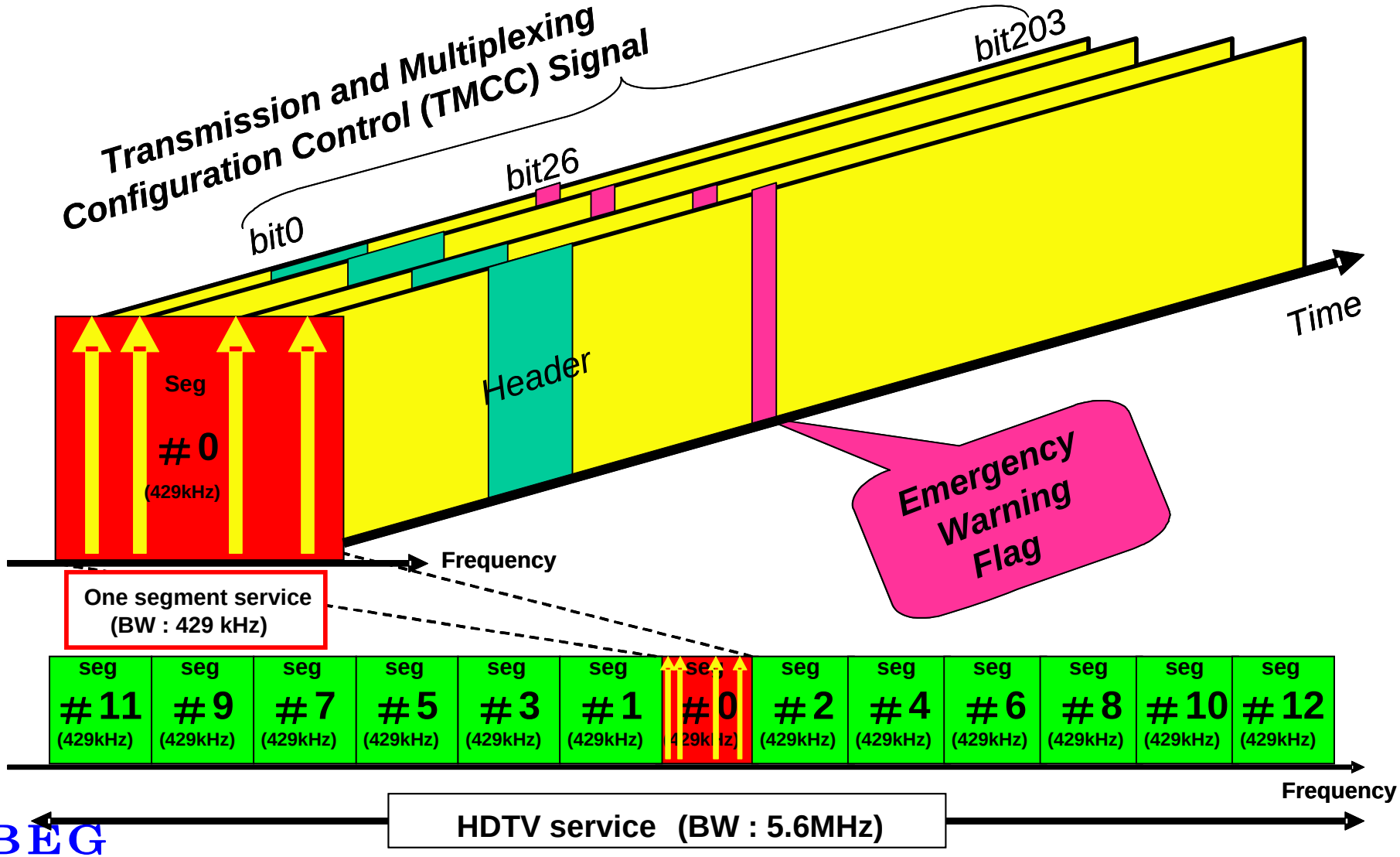
4-3. EWS for Digital Broadcasting
ISDB-T One-Seg Services

- EWS for ISDB systems have already been in operation in Japan as well as analog broadcast
- Portable EWS receivers for ISDB-T are now under development
- Portable receivers are expected to enlarge the opportunity to relieve disaster
- Technology for saving power consumption is the key
- EWS should be prepared by other digital broadcasting systems

4-4. EWS for Digital Broadcasting
Concurrent mobile receiver activation using EWS



4-5. EWS for Digital Broadcasting
EWS signal allocation in ISDB-T



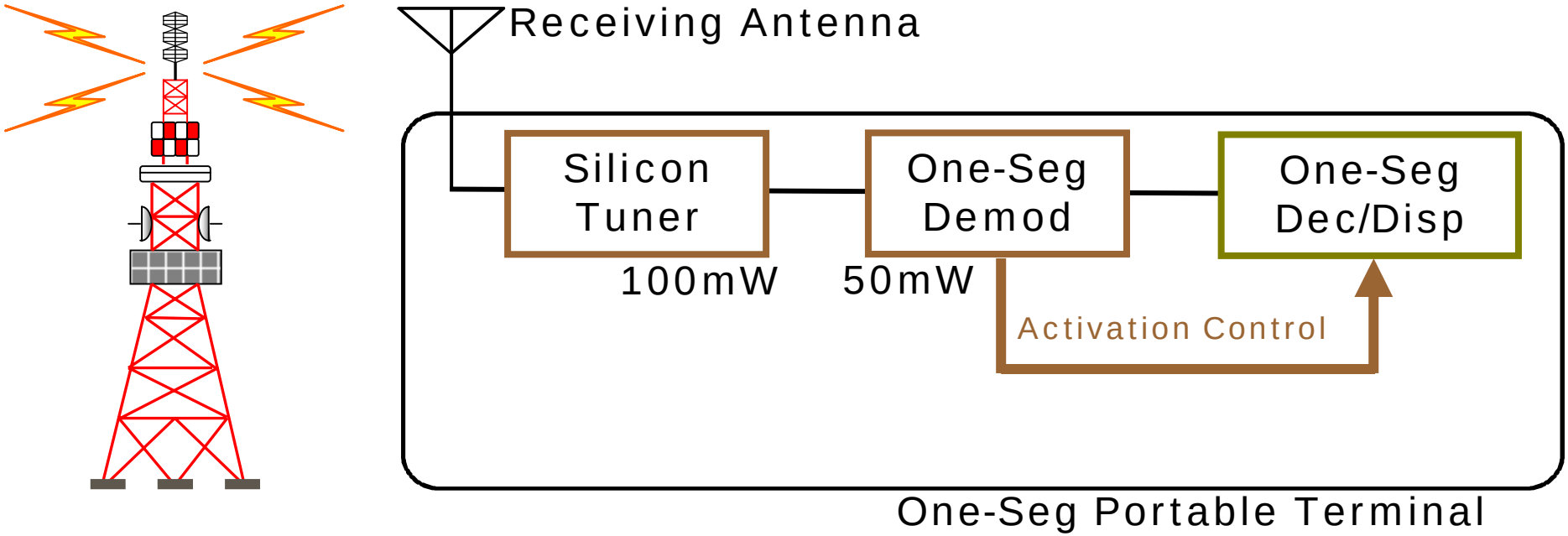
4-6. EWS for Digital Broadcasting
ISDB-T One-Seg Services & EWS

- Remote activation of mobile terminals by EWS is very effective.
- EWS bits in TMCC have to be always watched in mobile terminals.

- The problem is power consumption of mobile terminals

Power consumption saving is required during EWS stand-by mode

4-7. EWS for Digital Broadcasting
Conventional EWS stand-by



- Silicon Tuner(100mW) and Demodutator(50mW) are always active
- Life of a Battery(3.7V,800mAh≒3Wh) is only 20h(1 day)

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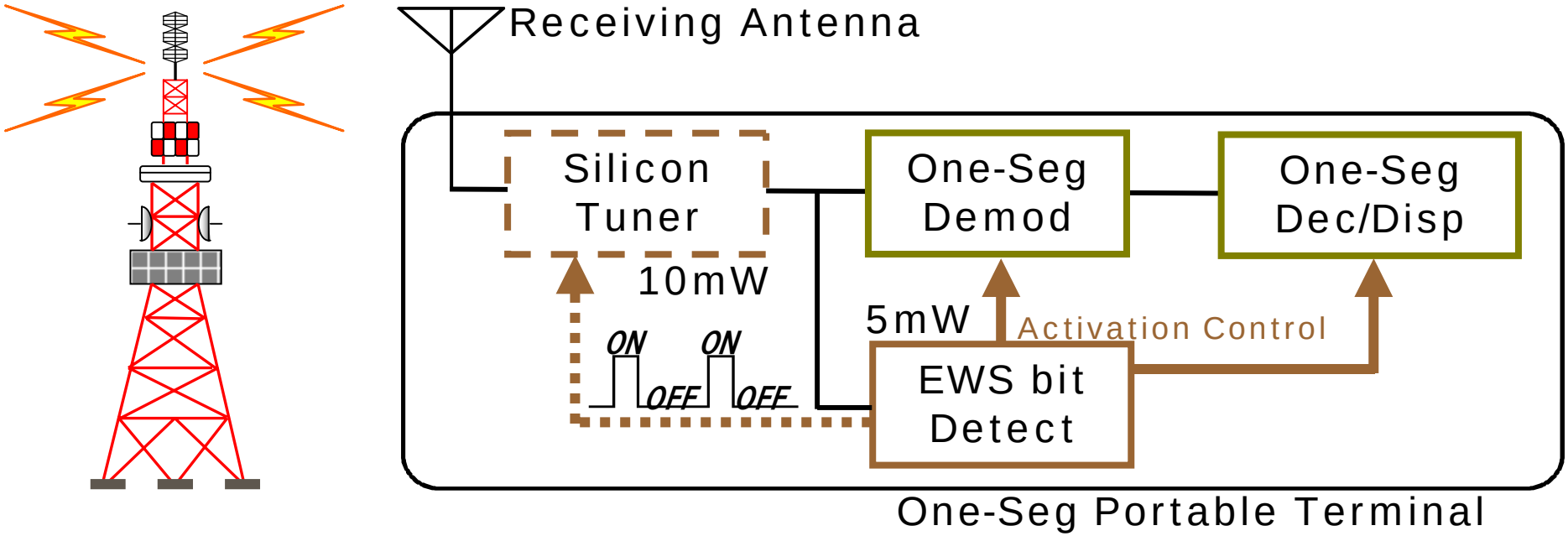
More than 200h(8 days) would be required

4-8. EWS for Digital Broadcasting
Saving Power Consumption for EWS stand-by



- Silicon Tuner(10mW) and EWS bit detector(5mW) are active only for necessary duration
- Life of a Battery(3.7V,800mAh≒3Wh) improved to 200h(8.3 days)

4-9. EWS for Digital Broadcasting

One-Seg Prototype Receiver ready for EWS with very low power consumption

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5-1. Conclusion

- **Broadcasting is a ideal media to deliver disaster information.**
- **EWS is a broadcasting system which remotely activates Radio & TV ready for the system.**
- **EWS for analog AM/FM radio and TV has already been in operation in Japan**
- **Preparation for EWS toward digital broadcasting**
  - **Remote activation of mobile terminals by EWS is very effective.**
  - **Power consumption saving is required during EWS stand-by mode.**

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5-2. Usage for EWS

Not only

- **Tsunami forecast**

But also

- **Earthquake forecast**
- **Hurricane forecast**
- **Flood warning**
- **Eruption warning**
- **Fire warning**
- **Other warning**

… Thank you for your attention !