GNSS for Early Warning Information Platform

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Asian Disaster Reduction Center (ADRC)

- Regional Center for DRR in Asia and the Pacific
- UNIDNDR, 1987
- Yokohama Strategy, 1994
- Established in 1998

- Turkey joined as 31st member country

- Asian Conference on Disaster Reduction 2019, Nov 25 – 27
  Turkey
Positioning Satellites

GALILEO

✓ USA : GPS (Global Positioning System) 【~10m】

✓ Russia : GLONASS (year2011~, 24units) 【50~70m】

✓ Europe : Galileo (year2016~, 30units) 【~1m】

✓ China : BeiDou (year2000~, 3units, year2020~ 32units) 【~10m】

✓ India : IRNSS (year2016~, 7units) by ISRO 【~5m】

✓ Japan : QZSS (year2018~, 4units / year2023, 8units) 【~cm】

as of December 2017
QZSS for Early Warning Information Platform

Quasi Zenith Satellite System

Earth Quake, Tsunami, Cyclone, Land Slide

L1S Compatible Receiver

Japan Meteorological Agency

Early Warning Information

Signboard/Speaker

Smartphone

Control Station, Cabinet Office

Car Navigation
Applications

Coastal Area
(Earthquake, Tsunami)

Mountain, River
(Eruption · Flood)

Disaster prevention
weather information

Disaster prevention crisis
management information

Alert: Earthquake

(QZSS corresponding terminal)

Vending Machine

Car Navigation

Control Station
Cabinet Office
Japan Meteorological
Business Support Center
Disaster Management Agencies
QZSS signal is available with each elevation angle.

QZSS orbit: one geostationary and a tree figure-eight.
EWI Platform with QZSS

- Redundancy & robust in case ITC system is not available
- Affordable, GNSS signal receiver 100 US$/unit
- Flexible with smart phone case, with loud speaker, car navigation
- Message available in local language, text and voice, and beep sound
- Collaboration with European Space Agency for wider coverage
Progress

• Common information protocol with European Space Agency

• GNSS signal receiver installed in smart phone case, less than 100 US$

• Validation study, done in Japan with car navigation

• Preparing for feasibility studies in ASEAN in the 1st stage