

# Cell Broadcast

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# Cell Broadcast Definition

- ❯ CB resembles SMS to the end user
- ❯ CB is broadcast, one to many
- ❯ With Cell Broadcast it is possible to send a text message to
  - a large number of subscribers,
  - including visitors from other countries,
  - in near real-time,
  - with location specific information
  - in their desired language.
- ❯ Defined in 3GPP TS 23.041 for GSM, UMTS and 3GPP TS 23.401 for LTE



# CB PWS Worldwide Initiatives

## 📶 EU-Alert

- The Netherlands: NL-Alert
- Tenders out: France, Estonia, Greece, Sweden

## 📶 United States

- Commercial Mobile Alert Service CMAS

## 📶 Israel

- “Meser Ishi” – Rocket Alert

## 📶 Japan

- Earthquake and Tsunami Warning System (ETWS)

## 📶 Chile, Brazil



# PWS Standardization

- ❶ ETSI/EMTEL TS 102 900: EU-Alert
  - EU project group
  - European PWS using CB
- ❷ ATIS/TIA Standards J-STD-100, 101, 102
  - WARN Act and FCC Reports and Orders
- ❸ 3GPP TS 23.041 Cell Broadcast Standard
  - ETWS, CMAS, EU-Alert
- ❹ ITU-T SG2
  - Standardization of CB channels
- ❺ It is all Cell Broadcast!

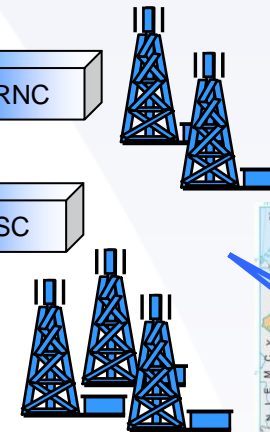
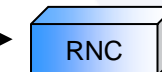
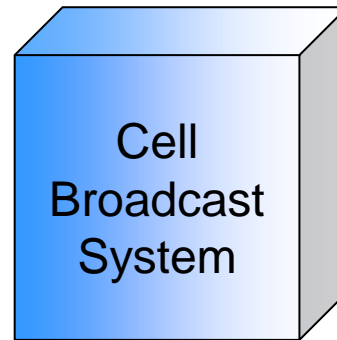


# EU-Alert (PL-Alert in Poland)

- 📶 Pan European Cell Broadcast PWS
- 📶 CMAS compatible
- 📶 Requirements:
  - Special ringtone and vibrator cadence
  - Various alert levels
  - Multiple languages
  - Support of international roaming
- 📶 EU-Alert/CMAS capable devices are coming to the market

# Cell Broadcast System

User interface



Node B

BTS



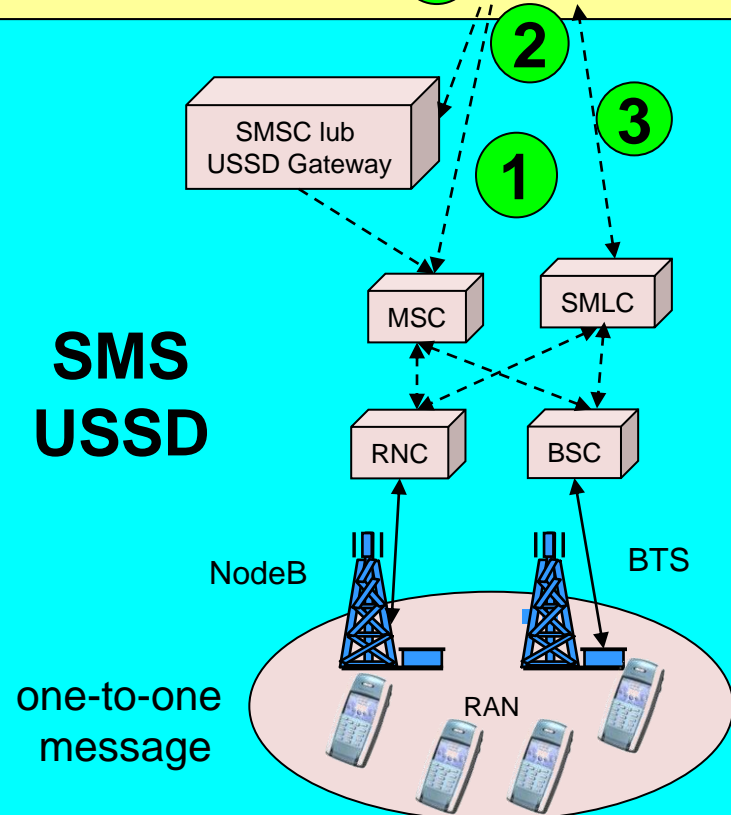
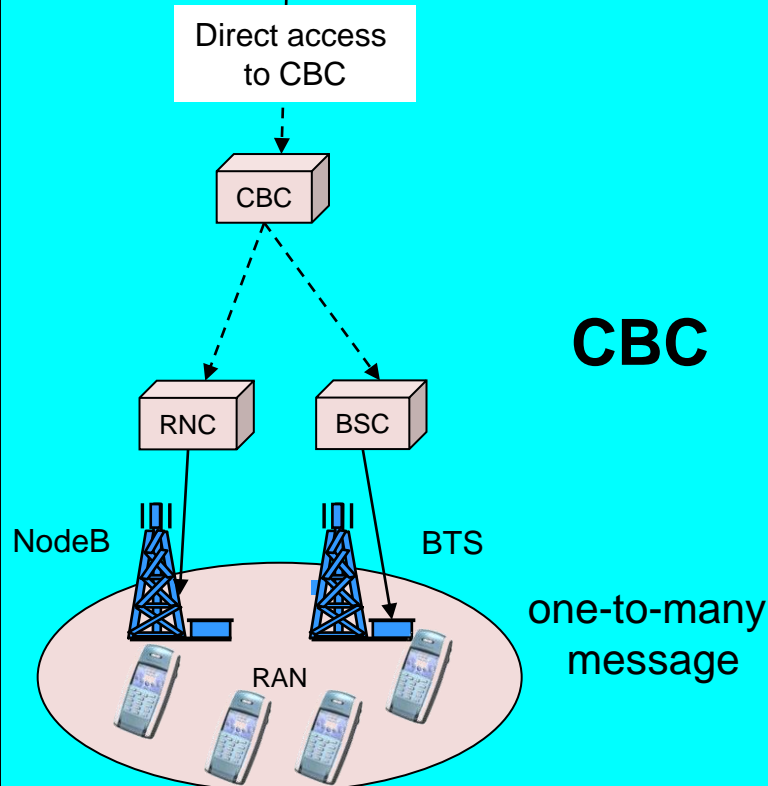
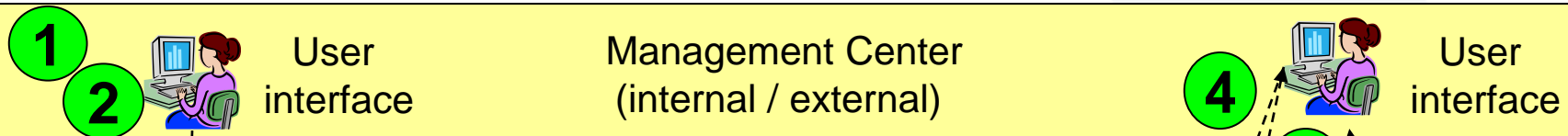
Functions:

- broadcast request management
- communication with GSM network
- message broadcasting parameters:
  - time
  - channel
  - area (from base station to whole country)

# Message broadcast procedure

1. Area selection
2. Broadcast of the message

1. Area selection
2. General MSISDN list in the area
3. Detailed location of MSISDN
4. SMS/USSD message distribution (in packages)



Live demo





# Backup slides



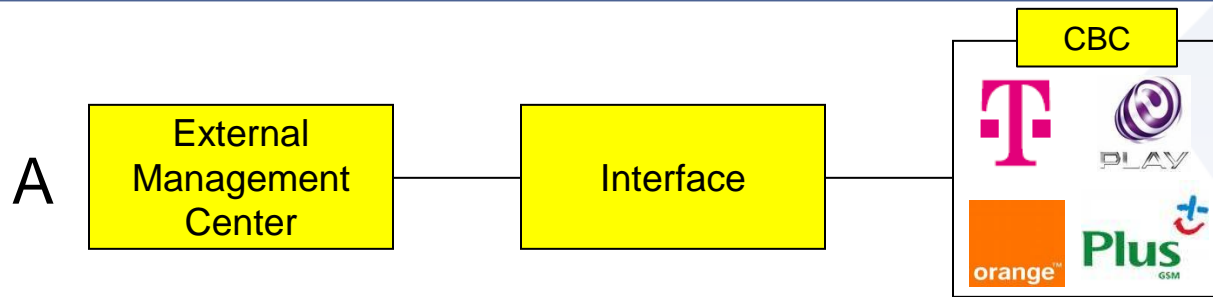
# Comparison of the technologies

	Cell Broadcast	SMS	USSD
Geo accuracy	All subscribers (including visitors) within the range of GSM/UMTS cell	All subscribers (including visitors) within the range of GSM/UMTS cell that performed the activity (call, SMS, periodic location update /every 3 hours/)	
Time accuracy	Message available within the defined timeframe	Some subscribers can be outside the area already. New subscribers that appeared in the area and have not performed any activity will not receive the message.	
Time of delivery	Immediately, entire area	Delays depend on the size of the area and time of phone numbers retrieval	
Additional network capacity	NO	YES: <ul style="list-style-type: none"> <li>• GSM/UMTS signalling network, capacity of USSD GW system</li> <li>• Additional system for user location data processing is needed</li> </ul>	
Reliability	Very high: service is available even during MSC/SMSC/IN network failure and calls are impossible	High, but MSC network must be available	
Phones constraints	Some phones do not support Cell Broadcast. Service must be activated in phone menu.	None	Phone must support USSD Phase 2 (only new models)

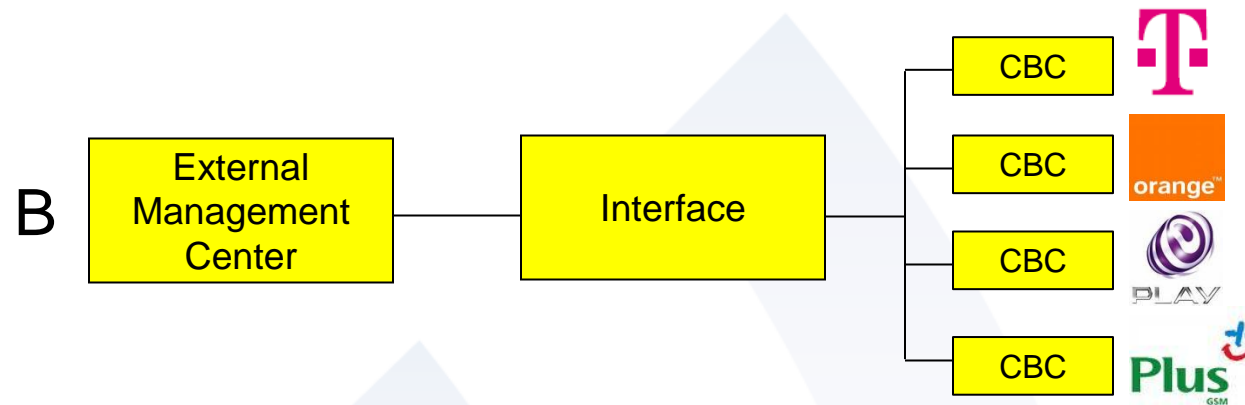
# Phones with Cell Broadcast support



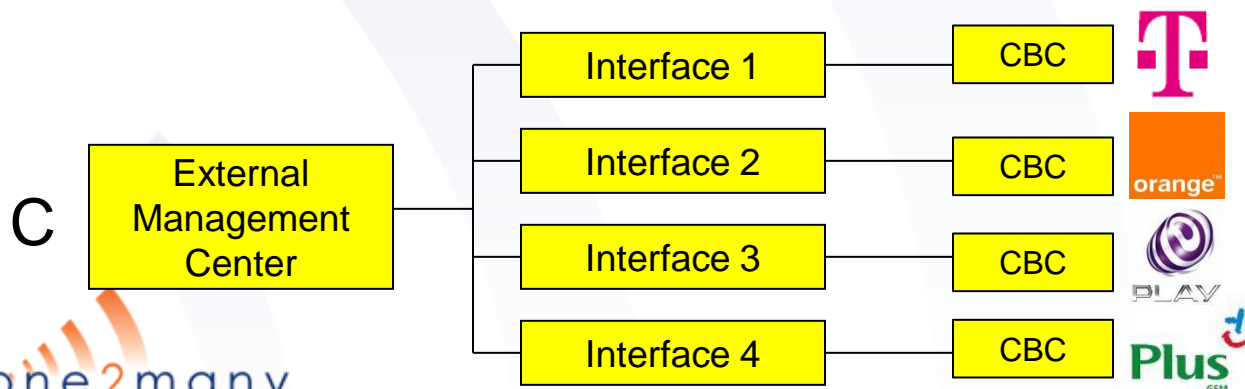
# Cell Broadcast in Poland – options



Access to one interface connected to one common CBC for the operators



Access to one interface connected to separated CBC of the operators



Access to different interfaces connected to CBC of the operators

# What is Cell Broadcast?

- ❏ Cell Broadcast is a mobile network service that delivers text or binary messages to the phones within the range of the base station, group of base stations or entire network
- ❏ Receiving is possible only on the phones with activated service
- ❏ Available for home subscribers as well as for visitors
- ❏ Cell Broadcast is defined by European Telecommunications Standards Institute (ETSI) and is incorporated into GSM standard

# Cell Broadcast messages

- Cell Broadcast message has max 15 pages
- Each page has 82 bytes of data => 93 characters
- Message can be broadcasted via defined channel
- Subscribers can activate selected channels in their phones
- Broadcast area can be defined by geo coordinates
- Lifetime (start and end of the broadcasting) can be defined for each message

# Why Cell Broadcast?

- ❶ One-to-many service => in short timeframe one message can be received by many phones
- ❷ Location based service => broadcast on the defined area
- ❸ Available even during networks overloads due to massive voice/SMS traffic (i.e. New Year's Eve)