

Emergency Warning

Attractiveness of radio for Emergency Warning



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Emergency Warning Distribution channels



- Analog Radio (AM/FM)
- Mobile Phones, SMS
- Internet / Social Network
- TV (Satellite, Terrestrial)
- Pager, ...
- Sirenes, Cars with Loudspeaker

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Emergency Warning

It happens ...



- 2005, New Orleans, Hurricane Katrina
 - Mobile phone networks destroyed
 - Information only via radio from outside, non affected areas
- 2010, Haiti, Earthquake
 - Massive destruction of most infrastructures
 - Radio broadcasts from outside



Emergency Warning

It happens ...



- 2012, Italy, Earthquake
 - Failure of mobile phone networks
 - Stationary internet destroyed
 - Radio still worked

- 2013, Boston, Bombing Attacks
 - Mobile networks disabled to block potential remote activation of more bombs



Emergency Warning

It happens ...



- 2013, Philippines, Taifun Haiyan
 - Local Infrastructures destroyed (also radio stations)
 - Setup of MW radio stations within some days
 - Rebuild of mobile phone networks and stationary internet took months



Emergency Warning

It happens ...



- 2015, Vanuatu, Cyclon Pam
- 2015, Paris IS Terror Attacs
- 2016, Italy, Earthquake
- 2017, Several Caribbean Hurricanes
- 2017, Earthquake Mexico



Emergency Warning

It happens ... also in Bavaria!



- **2013 Flooding Deggendorf:**
Mobile Network overload or destroyed
- **2016 Flooding Simbach:**
Mobile Network failed, no instant warning possible
- **2016 Rampage Munich:**
Mobile Services delayed, caused by overload,
misleading information ("fake news",...) in social networks
- **2017 Tornado Kürnach / Würzburg:**
Mobile Network overloaded, destroyed



Emergency Warning

It happens ... and in Slovakia!



- **2010 Flooding in Handlová:**
Warning via radio reaches most of the population



Emergency Warning

Electricity - Massive Blackout



- Dramatic situation for population
- No stationary Internet
- Smartphones and Mobile Networks failing within 1-2 hours without electricity
- Recovering of electricity networks complicated
- **Instructions and Information must be distributed comprehensively and efficiently to the population**



Emergency Warning

Mobile Networks and stationary Internet are often not always reliable!



- Destroyed infrastructures, reconstructions complex and timely
- Overload, caused by mass usage or high data traffic
- Long term electricity failures
- Terrorism, explicit switch off of mobile networks, to disable communication or remote activation of bombs



Emergency Warning

Broadcast Advantages



- **Exposed** Transmitter locations, large **Coverage Area**
- **Secured** Transmitter locations, **Backup Power Supply**
- **Robust** und **redundant** signal contribution (IP, Satellite, ...)
- SFN in Digitalradio **tolerates Failures** of single Transmitter locations
- Broadcast Transmitters can be **setup or reconstructed quickly** and put back into operation



Emergency Warning Broadcast Advantages



- **Car radios** still work in long term electricity failure scenarios
- **Battery powered** Receivers last much longer than Smartphones
- **Free to air** (no Provider contract required)
- Easily and intuitive **use by everybody**



EMERGENCY WARNING



ATTRACTIVENESS OF RADIO FOR EMERGENCY WARNING

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