Advanced Features of Digital Radio DRM & DAB

Multimedia Applications & xHE-AAC Audio

2014-07-03 @ Kaiserslautern.de
Symposium on DRM+/DAB for Local/Community Radio

Dipl.-Ing. Alexander Zink, MBA
Fraunhofer IIS
Broadcast Applications
cs-support@iis.fraunhofer.de

alexander.zink@iis.fraunhofer.de
phone: +49-(0) 9131-776-6089
fax: +49-(0) 9131-776-6099

Fraunhofer
IIS

Advanced Features of Digital Radio DRM & DAB
Open Digital Radio Standards – Overview

- ITU-endorsed
  open Digital Radio standards:

  - **DRM**
    - per-broadcaster transmissions
    - local + large-area (FM/AM bands)

  - **DAB(+)**
    - multiplexed transmissions
    - local coverage (typ. VHF band III)

→ **Common features & listener experience!**

Advanced Features of Digital Radio DRM & DAB
Open Digital Radio Standards – Coverage

AM bands:
National, international coverage

HF, (MF at night) – many 1000's km

MF daytime – many 100's km

VHF band II (FM) – many 10's km
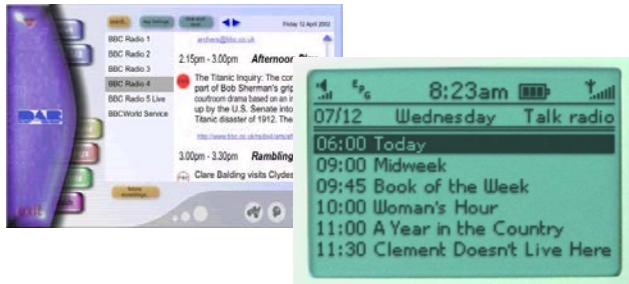
VHF band III – line of sight

VHF (FM) bands:
Local, regional coverage

Advanced Features of Digital Radio DRM & DAB
Common Data Applications – Overview

You are listening to My Life by Sharkura

Text based applications:

DRM TextMessage / DAB Dynamic Label
programme related short texts (Unicode),
max. 128 characters, typ. every 20 sec.
  ✓ **Identical specification**

Journaline
'Anytime News' advanced text service;
for all receiver classes (Unicode);
enables back-channel interactivity + geo-refs.
  ✓ **Combined DAB+DRM standard**

EPG – Electronic Program Guide
What's up now & next;
optional content search & recording feature
  ✓ **Combined DAB+DRM standard**

Advanced Features of Digital Radio DRM & DAB
Common Data Applications – Overview

Graphical applications & telematics:

MOT Slideshow
programme accompanying images,
optional simple animation
  ✓ **Identical specification**

TPEG traffic information:
advanced telematics services
  ✓ **Identical specification**

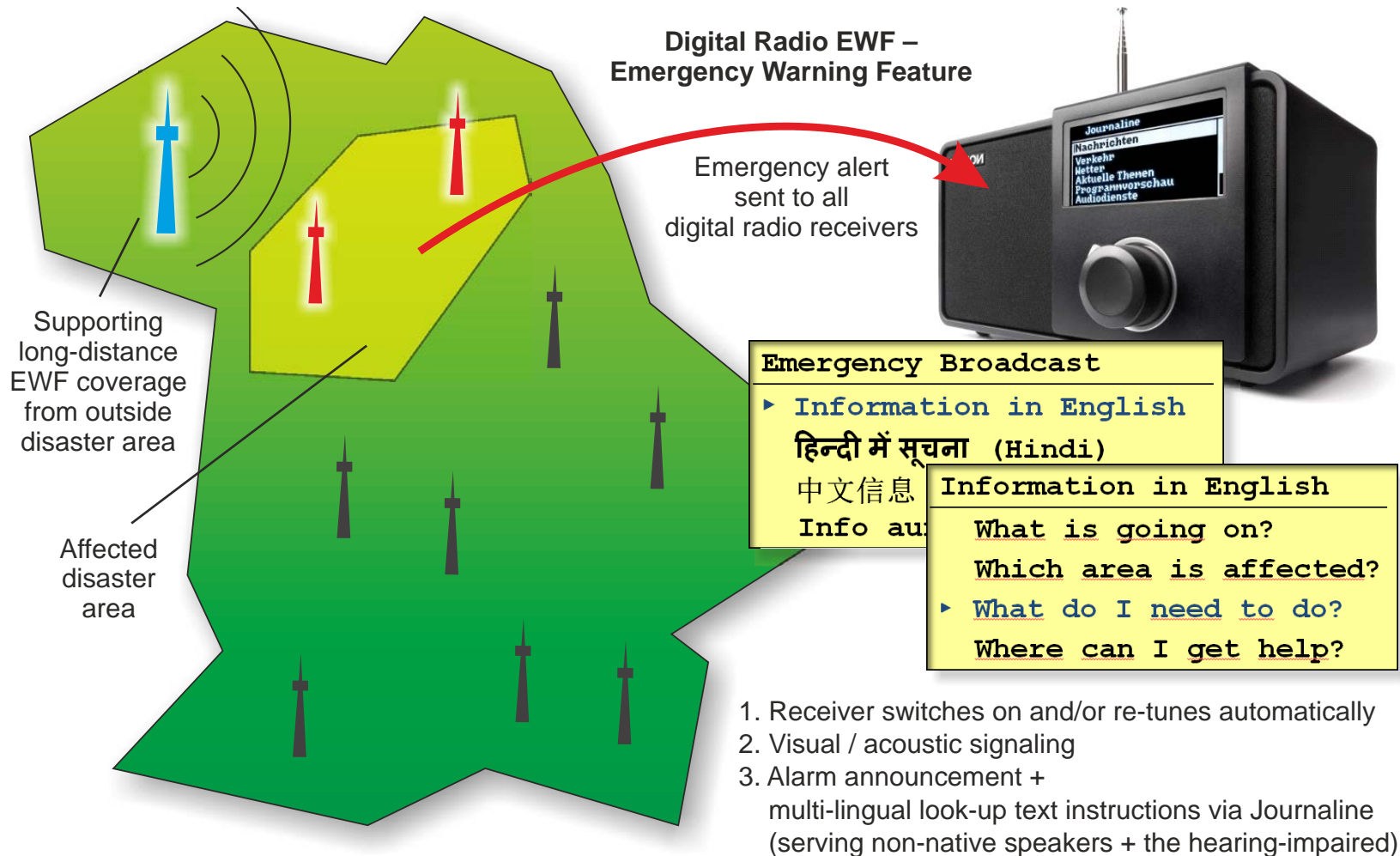**TMC** Traffic Message Channel:
classic TMC messages
with optimized transport mechanism for DRM
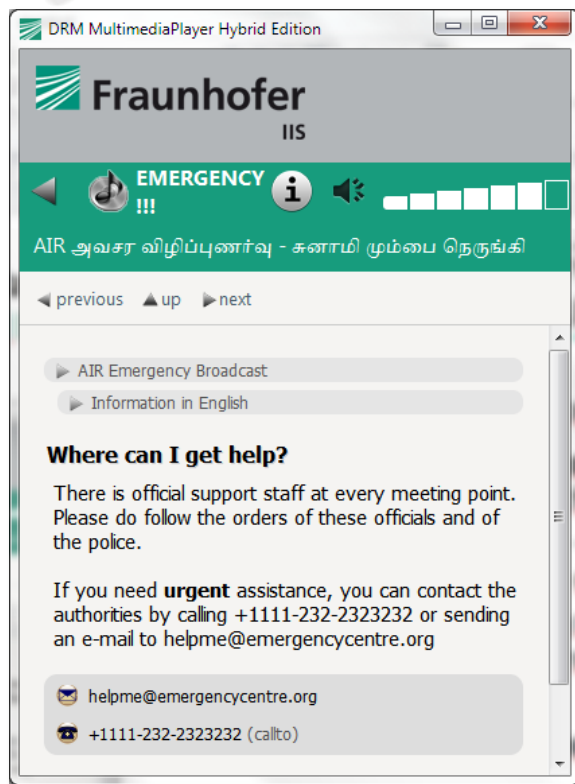 ✓ **According to RDS and DAB**

Advanced Features of Digital Radio DRM & DAB
EWF – Emergency Warning Functionality

Digital Radio EWF – Emergency Warning Feature

Emergency alert sent to all digital radio receivers

Supporting long-distance EWF coverage from outside disaster area

Affected disaster area

Emergency Broadcast

▸ **Information in English**

हिन्दी में सूचना (Hindi)

中文信息

Info au...

Information in English

What is going on?

Which area is affected?

▸ What do I need to do?

Where can I get help?

1. Receiver switches on and/or re-tunes automatically
2. Visual / acoustic signaling
3. Alarm announcement +
   multi-lingual look-up text instructions via Journaline
   (serving non-native speakers + the hearing-impaired)

Fraunhofer

IIS

Advanced Features of Digital Radio DRM & DAB
EWF – Emergency Warning Functionality

The advanced text application enables

- **Multilingual instructions**: What happened? / Which area? / What do I need to do? …
- Integrated **images** (SLS or online)
- **Hot-Button** interactivity: links to phone, web, e-mail, SMS
- **Geo-referencing**
- Small foot-print → **all rx classes**

→ Serves **non-native speakers** and the **hearing impaired** with **full instructions instantly**

Advanced Features of Digital Radio DRM & DAB
EWF – Emergency Warning Functionality

NewsService Journaline®

Examples for receiver screen renderings,
showing emergency text content (Journaline):

CNR Emergency Broadcast

▶ **Information in English**
  हिन्दी में सूचना (Hindi)
  中文信息 (Chinese)
  Info auf deutsch ↓

Information in English

  What is going on?
▶ **What do I need to do?**
  Where can I get help?

What is going on?

**A major tsunami is
expected for the Shanghai
region at 16:00 today.
The tsunami will hit the ↓**

What do I need to do?

**1. Move away from shore!
2. Evacuation has started.
Find the nearest meeting
point: Look for green ↓**

Fraunhofer IIS

Advanced Features of Digital Radio DRM & DAB
MPEG Surround 5.1

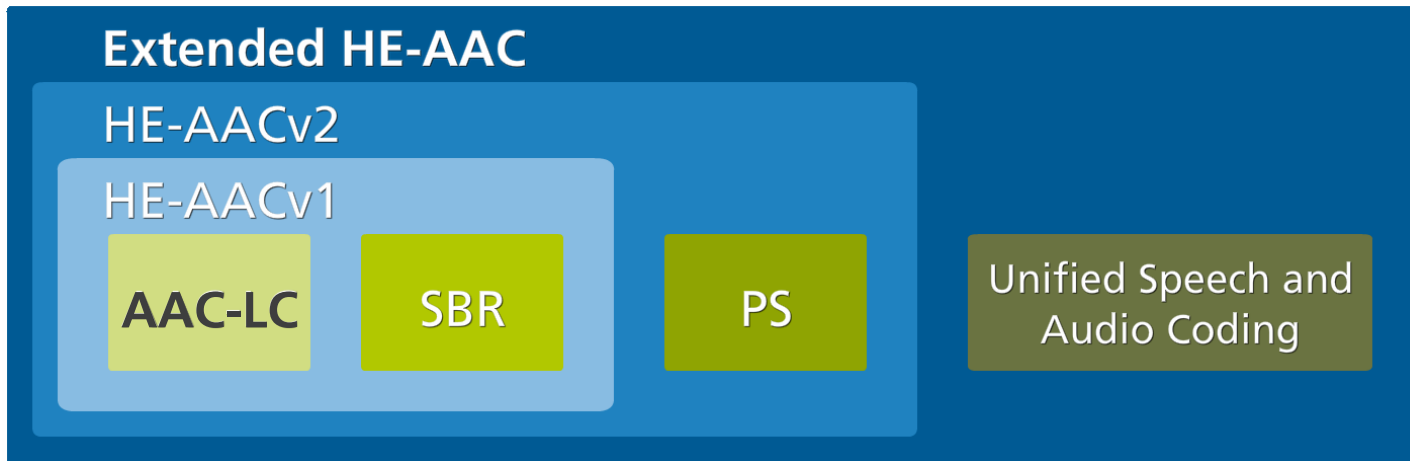Extra value for audio services:

MPEG Surround

- Enables true 5.1 surround services (sports, jingles, ads, concerts, ...)

- Very small embedded audio-data channel

- Compatible with all stereo/mono receivers

Mono → Stereo → 5.1 Surround
past   present   future!

✓ **Identical option for DRM and DAB+**

Fraunhofer IIS

Advanced Features of Digital Radio – DRM
MPEG xHE-AAC audio codec

- MPEG/ISO standardised in 2012

- Equally suits **speech and music coding at very low bit rates**

- Applications:
  Streaming, Media download (mobile devices),
  Digital Radio, Mobile TV

Advanced Features of Digital Radio – DRM
MPEG xHE-AAC audio codec

- MPEG xHE-AAC is added to the DRM system specification
  - replacing the speech-only codecs HVXC and CELP
  - HE-AAC v2 also remains as a valid audio codec option for DRM

- xHE-AAC benefits for Broadcasters and Listeners:

  - **Un-restricted audio content**
    even in most robust DRM configurations

  - **More services in a single transmission signal,**
    e.g. 2x stereo in MW band, 3x stereo in FM band

  - **Aligns with latest mobile technology**

  - **Simple broadcast encoder and receiver firmware upgrade**

Fraunhofer

IIS

Advanced Features of Digital Radio – DRM
MPEG xHE-AAC audio codec

Listen for yourself
to DRM xHE-AAC

Advanced Features of Digital Radio DRM & DAB
Conclusion

- DRM & DAB+ offer identical features
  (Multimedia Apps, HE-AAC v2 audio, Surround)
  - ✓ **One Digital Radio Family**

- DRM adds latest MPEG xHE-AAC audio

- DRM & DAB+ are open standards
  - ➔ **ITU recommended**

- Combined receiver implementations
  are cost-efficient and straight-forward
  - ➔ **Both DAB(+) and DRM (DRM30/+)
    part of Smart Radio Chip Initiative**

➔ **DRM and DAB+ combined
serve all possible digital radio needs**

➔ **Leave individual choice to broadcaster**

Fraunhofer

IIS

Advanced Features of Digital Radio DRM & DAB

Thank you!

Dipl.-Ing. Alexander Zink, MBA
Fraunhofer IIS
Broadcast Applications
cs-support@iis.fraunhofer.de

alexander.zink@iis.fraunhofer.de
phone: +49-(0) 9131-776-6089
fax: +49-(0) 9131-776-6099

Fraunhofer

IIS