DAB EWF – Emergency Warning & Alert Functionality

DAB Tools, Features and Considerations for Application

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DAB EWF – Emergency Warning & Alert Functionality

1. DAB EWF – Emergency Warning & Alert Functionality
   - The Task
   - General Requirements

2. Technical DAB Tool Set
   - Announcements
   - DAB Multimedia Applications

3. DAB EWF Implementation
   - Listener Experience
   - Transmission Infrastructure
   - DAB EWF Ready Receivers

4. Summary
DAB Emergency Warning & Alert Functionality

The Task

In case of pending or current disasters / catastrophes, inform the public (+authorities) with maximum reach as quickly as possible, giving all relevant information.

→ How can DAB help to fulfil this requirement?
DAB Emergency Warning & Alert Functionality
General Requirements

Required qualities of EWF mechanism:

- Emergencies are comparatively rare
- Constant access to warning devices
- Devices must do something else useful
- Must be unobtrusive when in daily use
- Must be available to widest possible audience
- Information also accessible by visually or hearing impaired
DAB Emergency Warning & Alert Functionality

EWF vs. EWS

Note:

Do not confuse with DAB application

„EWS – Emergency Warning System“
(DAB Registered Tables - ETSI TS 101 756; CENELEC EN 62106)

„The EWS feature is intended to provide for the coding of warning messages [...] and will only be evaluated by special receivers."

→ NOT intended for mass-notification of public!
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4. Summary
Technical DAB Tool Set

Announcements

- Signal special on-air content to receivers
- Types: Road Traffic, News Flash, etc.
- Announcement Types for EWF:
  - Alarm (DAB ensemble-wide)
  - Warning/Service (per service)
- General support + activation signalling
- **Automatic receiver switching** → to subchannel carrying audio & PAD
Audio programme can only service one language

→ **DAB’s multimedia capabilities** enhance audience & speed-up information

DAB enables accompanying **detailed text information**, such as:

- **Reason** for the alarm signal
- **Instructions** what to do
- Contact details for **further information**
- List of affected areas
- List of affected people (search messages), …

→ **Textual information immediately available in multiple languages / scripts** with one single broadcast
Relevant DAB multimedia applications for Emergency Programmes:

**DAB Dynamic Labels**
programme accompanying labels (Unicode), max. 128 characters, max. every 20 sec. → short messages on Rx screen

**Journaline**
text based information service (Unicode), supporting all classes of receivers, triggers interactivity and geo-awareness → detailed textual information → multiple languages / scripts in parallel

Tsunami pending in Shanghai at 16:00
Technical DAB Tool Set
DAB Multimedia Applications

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?
  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
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DAB EWF Implementation
Listener Experience

When the **alarm signal is triggered** by authorities:

- All running DAB receivers pick up alarm signal from currently receiver DAB ensemble, and switch to emergency broadcast (if required).

- Turned-off receivers may switch on automatically (requirement to be communicated to rx mfcts).

→ All DAB receivers present the **audio content** of the emergency programme.

→ DAB receivers with text screen in addition present
  - **detailed information and instructions** (Journaline) +
  - **text-headlines** (DAB Dynamic Labels)
DAB EWF Implementation
Transmission Infrastructure

Typical structure of a DAB broadcast chain:

- **Studio**
  - Generates audio + text
  - Defines DAB configuration

- **DAB ContentServer „Program A+B“**
  - Creates DAB Multiplex signal
  - One per region or program-set

- **DAB ContentServer „Program C,D,E“**

- **DAB Modulator / Tx**
  - Broadcast DAB signal on-air

EDI via IP
DAB EWF Implementation
Transmission Infrastructure

When emergency alarm is triggered:

- **Central authority** triggers alarm for ALL relevant DAB ensembles
- **ContentServers** insert Alarm signal
- Optional Dynamic Service-Reconfiguration (making room for 1 emergency program)
DAB EWF Implementation – DAB Head-End Setup

Chongqing DAB-EWF Workshop 2013

Multiplex Parameters

Multiplex Configuration Parameters
- Multiplex Configuration Label: Chongqing DAB-EWF Workshop 2013
- Display Color: Green

General Label Settings
- Extended DAB Labels: Standard labels only (FIG1/x)

DAB Ensemble Parameters
- Ensemble Label: Journalino Mux
- Ensemble ID / Ensemble Country: 0x3123
- Country: Germany (D)
- Dynamic Sub-Multiplex Input Containers (STI-Ct): Not used (can be created in Sub-Multiplex Input Container Editor)
- Transmission Mode: Mode II
- Ensemble AFS Frequency List: Not used (can be created in AFS Editor - Alternative Frequency)
- Support of "Alarm" announcements: Supported
- Switch signal sources for "Alarm": My Announcement Trigger Source
- Switch target for source/My Announcement Trigger Source (Alarm): Klassik (Audio: live source or playlist)
DAB EWF Implementation
DAB Head-End Setup

Example – **Setup at DAB ContentServer:**

- Enable multiplex **Alarm**
- Define **source** for switch/activation signal
- Define switching **target** (subchannel)

→ Configure target Subchannel to carry **audio + X-PAD content** (DLS, Journaline)

User interface manufacturer specific – example
DAB EWF Implementation
Switch Signal Activation

Examples for delivering the alarm signal **from a central authority / studio** to a DAB ContentServer:

- **UECP**
  International standard for **automated** announcement transfer in studio infrastructure

- **Web interface**
  Allows to **manually** enable the alarm trigger in a ContentServer (e.g. from operator panel, or as backup mechanism)

Interfaces manufacturer specific – example
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Considerations for the DAB Broadcast Chain:

1. Prepare in advance:
   → Enable alarm signalling for all DAB ensembles (+ mux configs with emergency programs)
   → Establish alarm trigger signal paths from central authorities to all stations
   → Prepare textual information content + access to emergency audio program

2. In case of emergency alert:
   → Send switch trigger to all DAB receivers
   → Broadcast emergency program with audio + text (with maximum coverage)
DAB EWF – Summary

Conclusion

The DAB standard has all required tools built-in -- and supported by available chip sets – for a quick and complete mass-notification in case of disasters / catastrophes.

Provide DAB receivers with switch signals and alternative frequencies to receive emergency programmes

Provide listeners (including impaired users) with complete and detailed information by audio and multilingual on-demand text (Journaline).
DAB EWF – Summary

EWF Ready Devices

- PC USB device for DAB reception
- First device providing rich support for advanced DAB+ features:
  - Journaline
  - MPEG Surround
  - EWF – Emergency Warning
  - DL+, Intellitext, SLS, BWS, …
- Very successful both in retail as well as with broadcasters (give-away!)
- Radio Software continuously enhanced
DAB EWF – Summary

EWF Ready Devices

NOXON DAB Sticks
as broadcaster give-aways

→ Great promotion tool
for DAB+ extra features!

Radio software branding examples
First DAB receiver with full EWF functionality!

**NOXON DAB Radios**, based on **Quantek DAB chipsets**
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Thank you!

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