



**Smart Radio
Accessible
to All**

DRM Digital Radio – The Radio Solution for Asia-Pacific

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Several of the DRM Members

Panasonic

BBC
NEWS
WORLD
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 **ENCOMPASS**



RFmondial

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 **STAR WAVES**

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GOSPELL



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 **RF2DIGITAL Inc.**
(주)알에프투디지털



 **OptM**
Intelligence Optimized

 **inntot**

DAC SYSTEM

 **ASSENDIVE**
THE BROADCAST & MEDIA SPECIALISTS

 **cambridge**
consultants
Part of Capgemini Invent

NXP



SZOMEL



 **U.S. AGENCY FOR**
GLOBAL MEDIA

UNITED STATES
BROADCASTING
BOARD OF
GOVERNORS

The not-for-profit DRM Consortium
supports and promotes the DRM Standard and its take-up globally

DRM Digital Radio Mondiale – Some Facts

Standard

- Global open digital radio standard
- ITU Endorsed
- Public Specification

Accessible to All

- Non-proprietary
- Full and free access to spec by all
- No trade secrets or not under control of a single company

LF

MF

HF

VHF

DRM

All Band Support

- The only ITU standard supporting all frequency bands and coverage needs
 - Same standard and features for all bands
- **Direct digital successor technology for analogue AM/FM**

DRM Technology Update

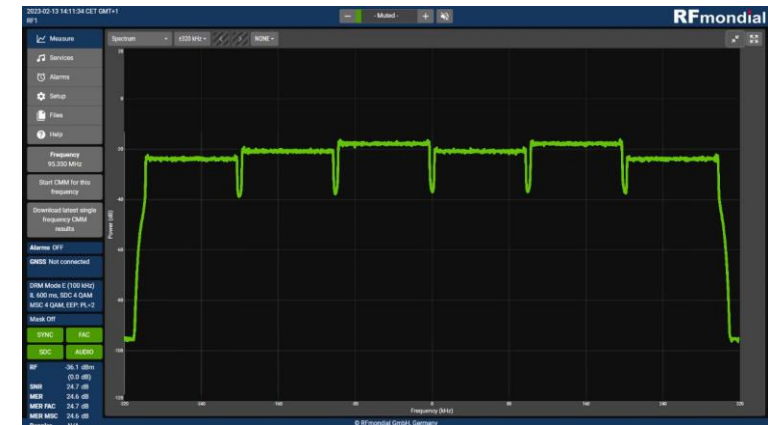
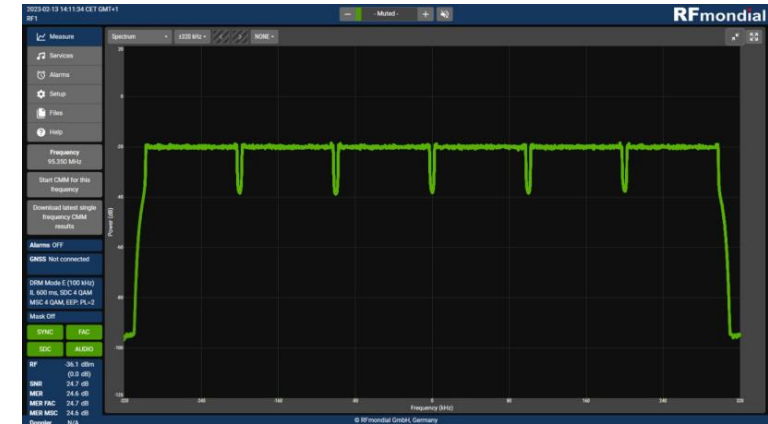
Multichannel-DRM

Sharing a **single** transmitter
to broadcast **multiple, independent** DRM signals

Efficiency with Shared Infrastructure – DRM Multichannel in FM band

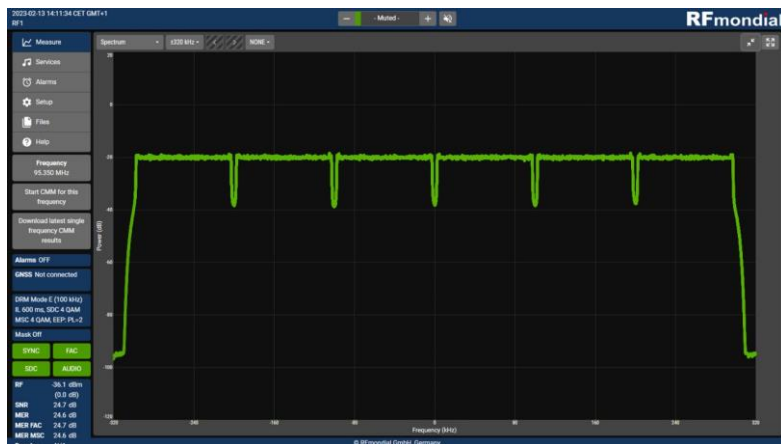
Sharing a **single FM-band transmitter** to broadcast **multiple, independent DRM signals with own coverage scenarios**

- Example:
6x DRM signals can carry 18 audio channels + data @ 600 kHz
- ✓ Every **Broadcaster can be in full control** of their own DRM signal
→ **Clear Responsibility** between Bx and Platform Operator
- ✓ Very easy installation and infrastructure (**no combiners** etc.)
→ **DRM Digital Combining at modulator level**
- ✓ **Power level** of each DRM signal can **easily be adapted** to target coverage area
- ✓ **Selective SFN** for some or all of the broadcasters
- ✓ **Compatible with all DRM receivers**

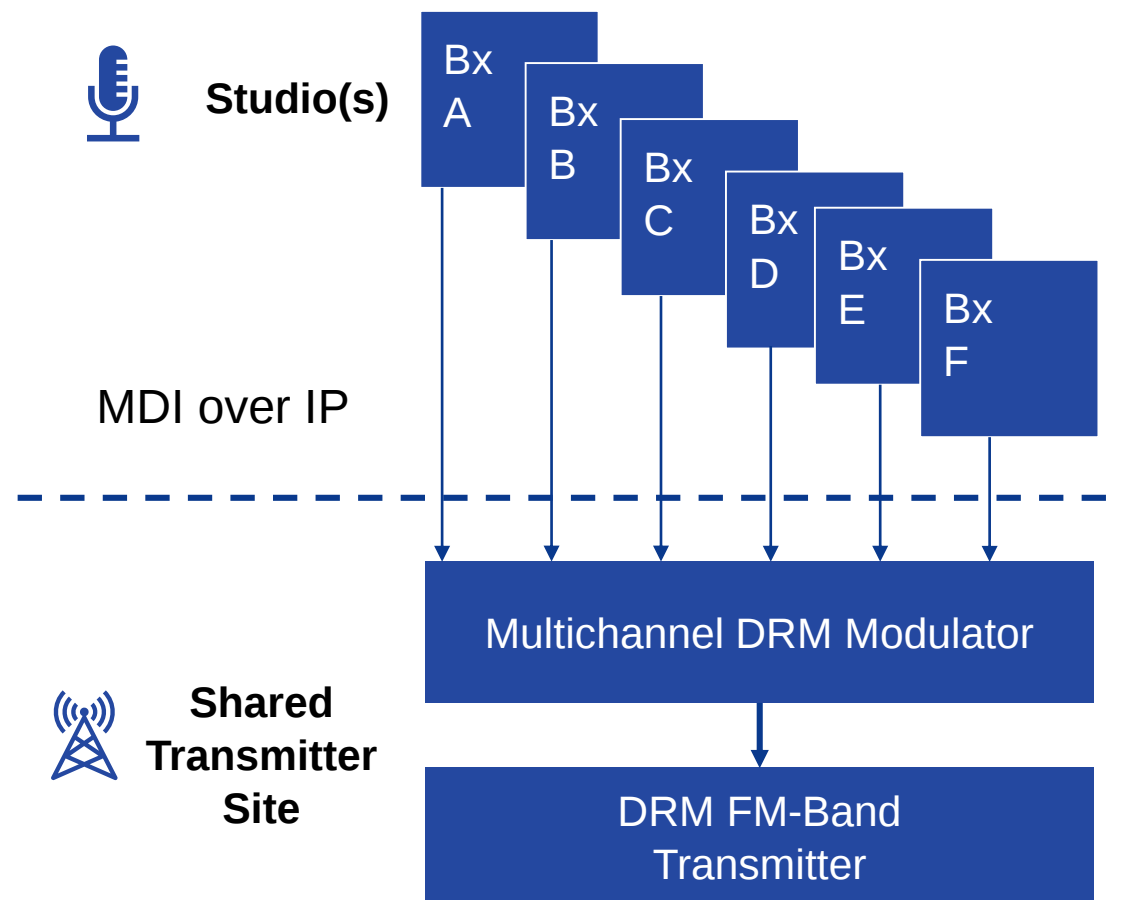


Savings – Multi-Channel DRM & Shared Transmitter Infrastructure

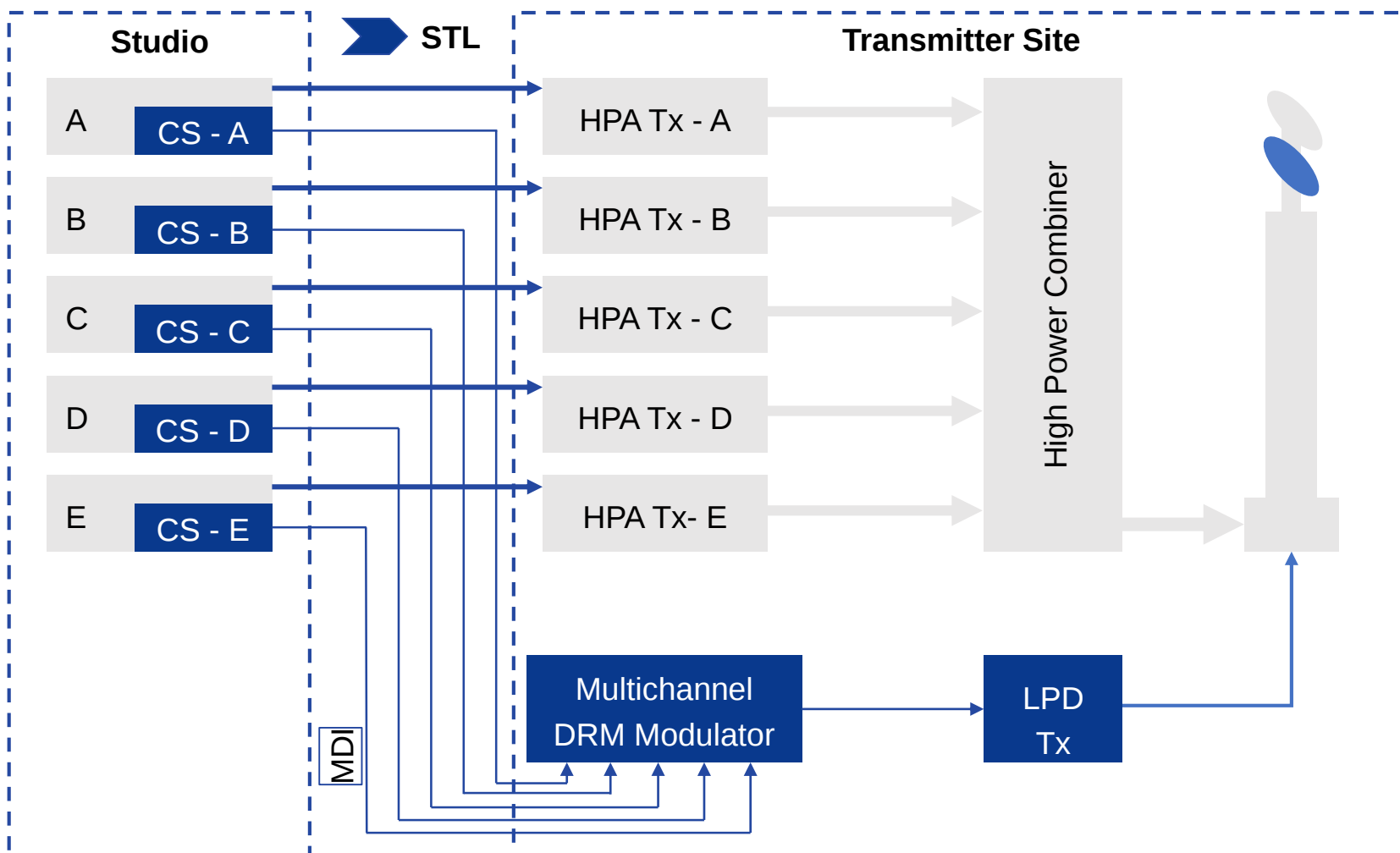
A low-cost solution for FM digitisation



- On-Air Signal in whitespace of 600 kHz
- A to E – signal from each broadcaster with full control over the content and on-air configuration



Multichannel DRM & Shared Transmitter Infrastructure Compliant with existing CTI infrastructure in India



A B C D E

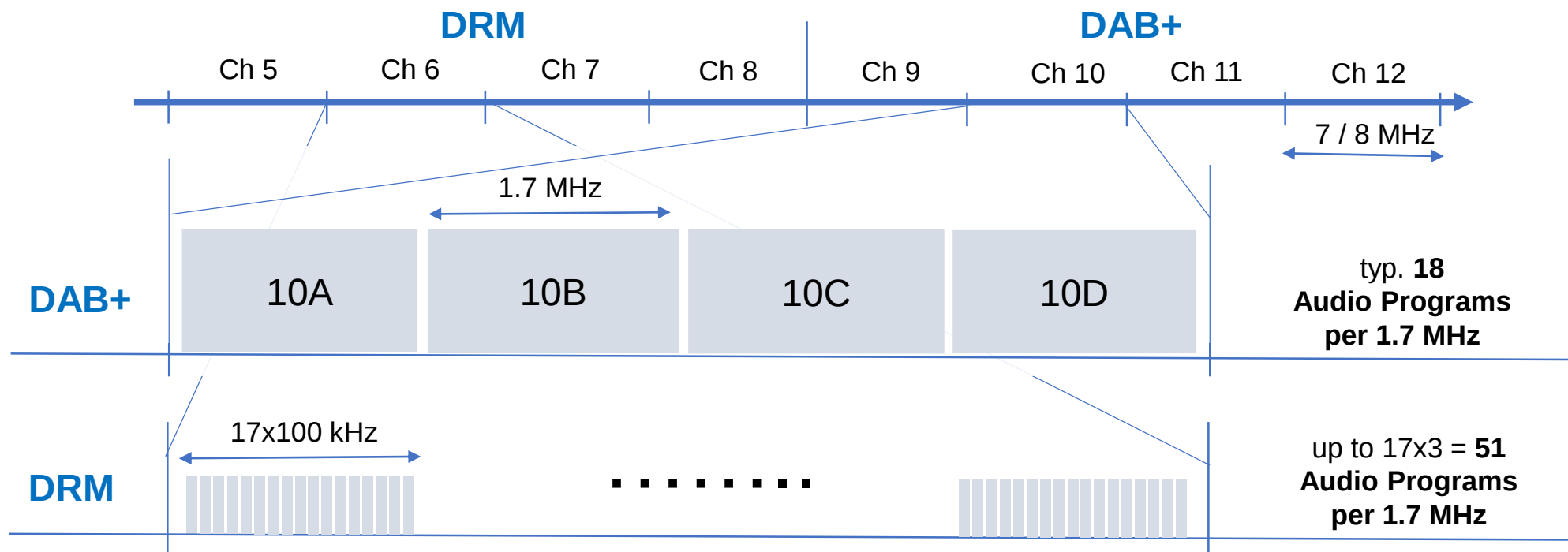
On-Air Signal; Assuming a whitespace of 600 kHz between existing analogue FM stations; tested in Jaipur CTI

 **Existing analogue FM** infrastructure catering to current FM coverage;
→ Not changed/affected at all

 **Multichannel DRM** infrastructure catering to DRM transmission;
→ Shared transmitter equipment

A to E: Represents different broadcasters
CS: DRM ContentServer
HPA Tx: High Power Analogue Transmitter
LPD Tx: Low Power DRM Transmitter
MDI: Multiplex Distribution Interface (over UDP/IP)

DRM Multichannel in Band III – Example Indonesia



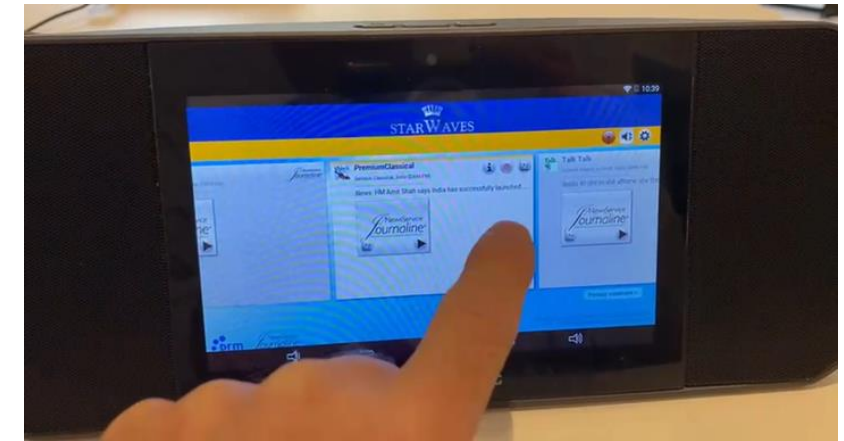
Spectrum	Channels	Capacity for Audio Programmes	
		DRM	DAB+
Half VHF band-III	5A—8D / 9A—12D	816 (+272 data)	288

Receiver Examples for Indonesia – First Band-II & III Prototypes



Automotive demo: DRM in Band-III

- 6 Multichannel DRM signals around 217 MHz
- Receiver supports DRM and DAB+ in Band-III
- Receiver switches between DRM and DAB+



Android SoftRadio App for Tablets

already supports **DRM in Band-III**
(Google, Amazon, Huawei)

Prototype in addition supports DAB+

DRM Technology Update

Emergency Warning Functionality – EWF

Reaching all Citizens via DRM Digital Radio
in Times of Crisis and Imminent Disasters

Serving **radio sets, cars, mobile phones** (FM band)

DRM EWF – Overall Components



National Infrastructure

Decision taking
for public alert
(by authorities)

Digital Radio EWF Manager

Content provision to
DRM ContentServers

Alarm Signaling

Alarm announcement
+ **AFS** Alternative
Frequency Signaling

3-Level Regionalization:

- Tx selection by coverage
- AFS geofencing
- Accurate geo- & string-based in Journaline

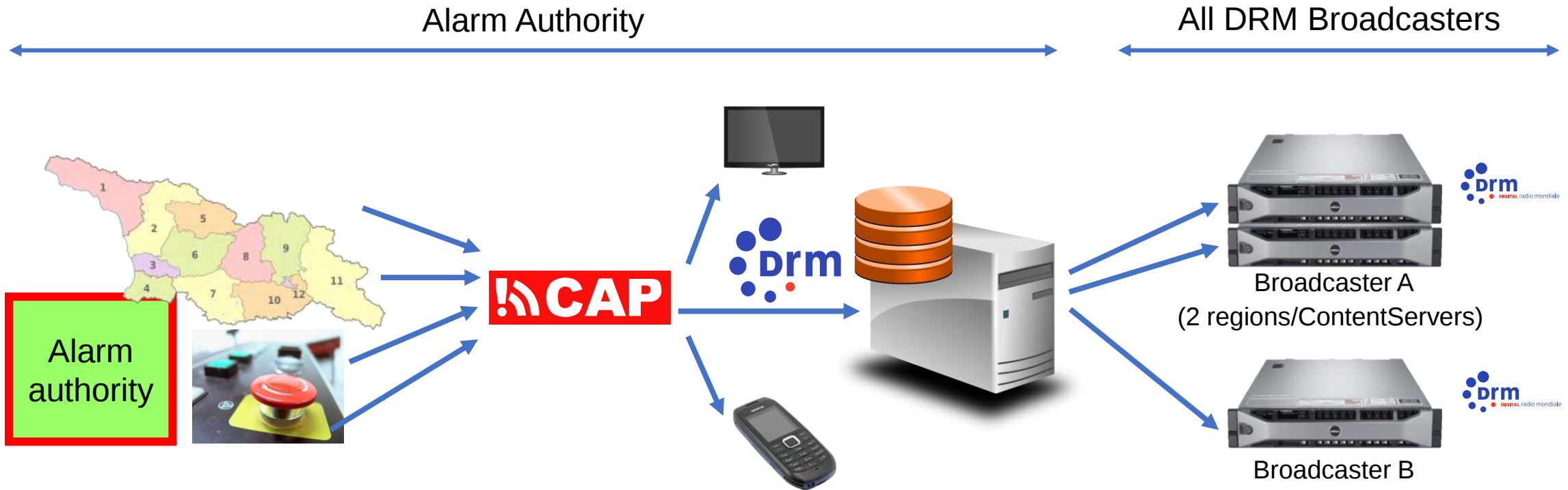
Emergency Programme

Audio announcement
(dedicated service)



+ **Multilingual text**
information on
radio screen

DRM EWF – National Network Integration



1. Trigger Source(s)

2. Authority Decision
→ CAP message

3. Digital Radio
EWF Manager

4. Digital Radio
Head-Ends

DRM EWF – Emergency Warning Programme

Journaline Advanced Text App – Example Pages



- ✓ Provides very **detailed information & instructions**
- ✓ Serves travelers & **non-native speakers**
- ✓ Serves the **hearing impaired**

Emergency Broadcast

► Information in English
Info dalam bahasa
हिन्दी में सूचना (Hindi)
中文信息 (Chinese) ↓

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 ↓

Summary



- DRM technology innovation for **maximum cost-efficiency:**
Multichannel DRM transmission configuration
 - Enables CTI conforming FM-band digitization in india
 - Enables efficient VHF band-III deployment in Indonesia

- DRM technology innovation for population **protection & saving lives:**
DRM EWF – Emergency Warning Functionality
 - Compatible with **CAP** based national alert networks
 - **Targeted alarm** dissemination to minimize over-reach
 - Emergency programme with **audio + Journaline on-demand text**

Free Introductory DRM Consortium Membership

Any company and organisation can join
for one year as an Associate Member **for free.**

After one year you may continue to support DRM as:

- ✓ Full member with voting rights and extra benefits
- ✓ Associate member (if qualifying)

For details please contact: projectoffice@drm.org

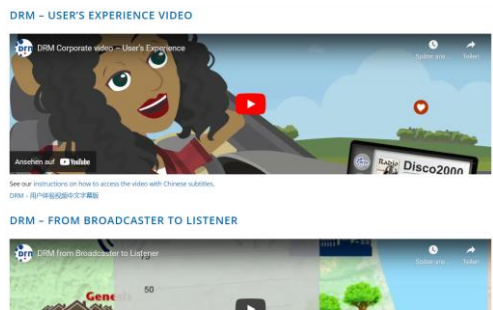


DRM Smart Radio Benefitting All Listeners



To access information on specific DRM subjects
type in your browser:

pocket.drm.org



Watch the DRM Corporate Videos:

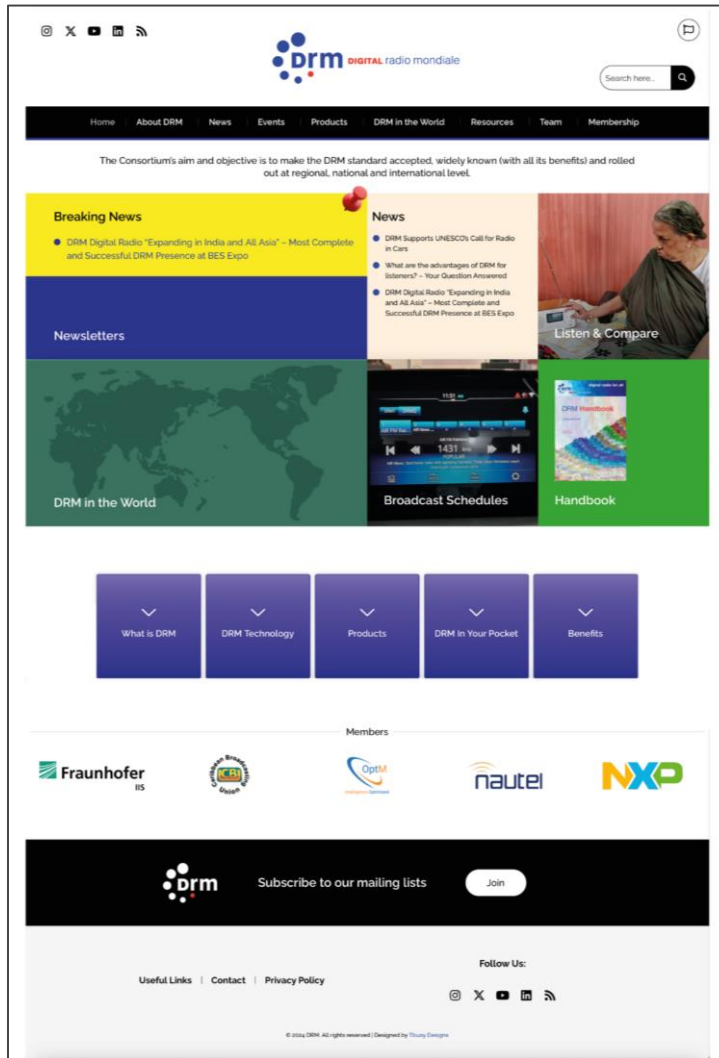
videos.drm.org



Additional videos on DRM YouTube channel:

youtube.drm.org

DRM Smart Radio Benefitting All Listeners



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