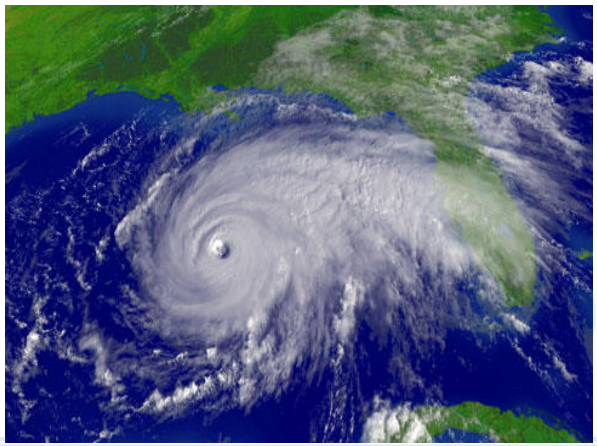
Emergency Warning and Alert

Integral Part of

DRM – Digital Radio Mondiale

Kuwait City 25th January 2016



Welcome to the DRM Digital Radio Workshop

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DRM Received ITU Award - 1st Oct 2014
For its Outstanding Contribution in The Last 10 years
In the Field of Telecommunications

Disasters Natural and Man-Made

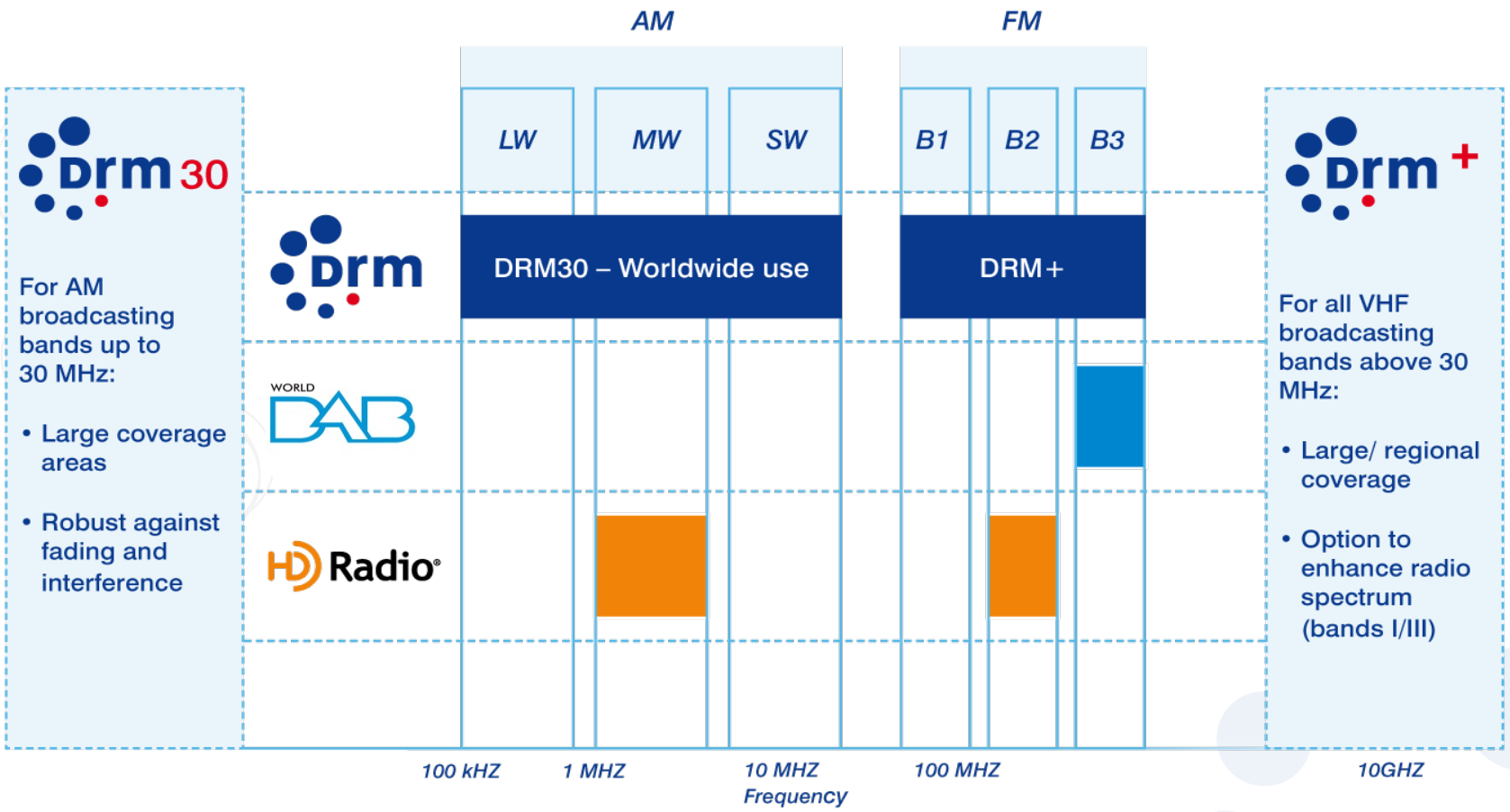
- Comparatively rare – but need urgent tackling
- First to go: telephone lines, cell phone towers and internet
- Even TV succumbs to the electricity supply
- Radio is the last line of resistance and obvious solution because

It is ubiquitous, portable, covers 100% of a country, works on batteries

Emergency Warning Systems

- Must cover large areas with very high reliability
- Must work when everyday services don't
- Must do something else useful
  - Emergencies are comparatively rare
  - People need to carry the warning devices
- DRM30 is an ideal technology though this feature applies to the whole DRM standard and is mandatory as described in receiver profiles

DRM is the Global Open Digital Radio Standard for all Bands Below and Above 30 MHz



DRM 30

For AM broadcasting bands up to 30 MHz:

- Large coverage areas
- Robust against fading and interference

DRM +

For all VHF broadcasting bands above 30 MHz:

- Large/ regional coverage
- Option to enhance radio spectrum (bands I/III)

Digital Radio Mondiale - DRM

- DRM: the whole system
  - In all frequency bands
- DRM30: DRM below 30 MHz
  - i.e. LF, MF, HF (or LW, MW, SW) – the AM bands
- DRM+: DRM above 30 MHz (bands I, II and III)
  - i.e. VHF – including the FM band

What is DRM?

- **Digital Radio Mondiale (DRM)** – global, open digital radio for **all frequency bands** (AM & VHF*)*
  - **DRM30:** DRM below 30 MHz, i.e. LF, MF, HF (or LW, MW, SW) – *the AM bands*
  - **DRM+:** DRM above 30 MHz, i.e. VHF (Band I, II, III) – *including the FM band*

- **DRM standard** for all coverage needs of a broadcaster:
  a. large geographic areas, **b**. cities and villages, **c.** on the move (cars)
- **Existing analogue transmitters can be upgraded to DRM, no need to invest in complete new and expensive infrastructure**

- **More content and choice:**
  up to 3 programmes + multimedia on one frequency of **100 kHz (current analogue channel)!**
- **Easier tuning and selection of programming:**

  station selection by its name (no longer band + frequency),
  automatic switching between different transmitters/standards for continuous service
- **DRM complements and works seamlessly with other digital standards**

DRM Key Features

- **More choice** for listeners
  - Up to 4 programmes on 1 frequency
  - Simulcast analog / digital
- **Excellent audio** quality
  - No distortion
  - Stereo and 5.1 surround sound
- **Multimedia Applications**
  - Great listener benefits
  - Extra revenue opportunities for broadcasters
- **Good coverage** area and robust signal
  - Supporting SFN (Single Frequency Networks)
  - Green and energy efficient
- **Automatic tuning**
  - by station name, no longer by frequency
  - re-tunes when leaving coverage area
- **Emergency warning & alert**
  - All stations switch, present audio and text information

DRM Includes Emergency Warning Functionality

What is your country‘s approach today on information dissemination in case of disasters?

How effective is it?

DRM can support this task in the receivers

EWF for Digital Radio – Disaster Stages

Detection of pending disaster

Disaster hits

Preparatory General Education → **Instant Warning Dissemination** → Crisis / Rescue Support → Post-Disaster Services

Digital Radio provides essential services in all these stages, as it:

a) **reaches the affected people reliably**

b) enables detailed **multi-lingual text infos**

The Task

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

→ How can DRM help to fulfil this requirement?

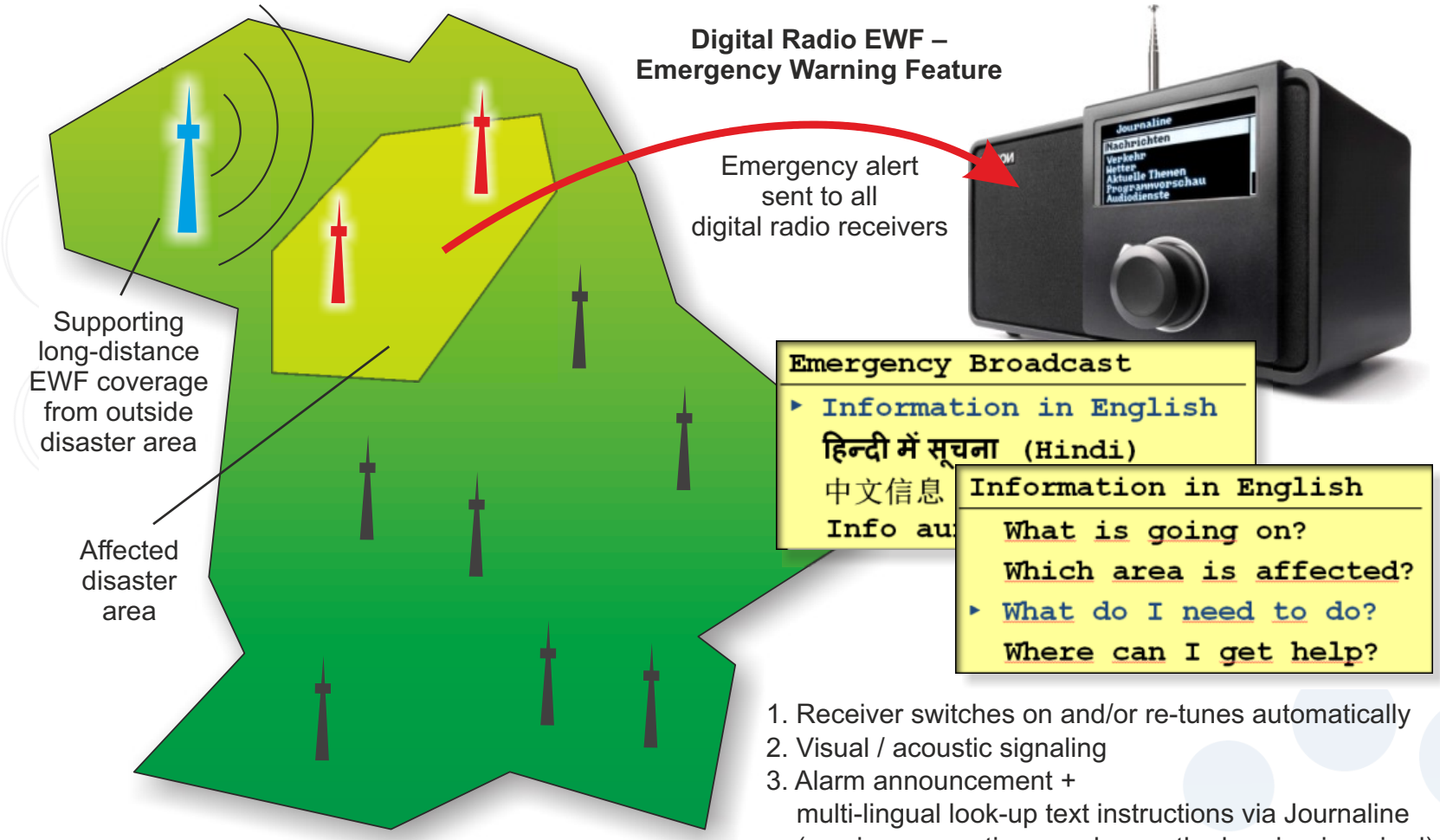
Emergency Warning Solutions – General Considerations

- Must be **un**obtrusive
  when device in daily use
- The device must do something else useful
  - Emergencies are comparatively rare
  - People need to carry the warning devices
- Must be available to widest possible audience
  including visually or hearing impaired,
  serve **various languages**

Basic Considerations

- Notify as many people as **quickly** as possible
- Cover **large areas** with very high **reliability**
- Work when everyday and local services don't
- Make warnings available on **everyday devices**
- Reach devices when **electricity fails** e.g. radios
- Be available and on-air throughout the emergency for authorities to access and control

DRM EWF – Functional Overview



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)

DRM EWF – Functional Overview

DRM EWF Technology

- The **DRM Emergency Warning Feature (EWF)** is **mandatory** (see DRM Receiver profiles)

→ **All components are part of DRM standard** – No special chipset or 'extra' adaption is needed, but feature must be enabled in receivers!

- DRM should be the major building block of a **national emergency warning policy**.
- DRM provides full and continuous services even from **remote transmitter sites**

Listener Experience

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

- All running DRM receivers pick up alarm signal from currently receiver DRM Service, and switch to emergency broadcast (if required)
- Turned-off receivers may switch on automatically (requirement to be communicated to rx mfcts)

→ All DRM receivers present the **audio content** of the emergency programme

→ DRM receivers with text screen in addition present
- **detailed information and instructions** (Journaline) +
- **text-headlines** (Text Messages)

Listener Experience – Emergency Programme

NewsService Journaline®

Audio programme can only service one language

→ **DRM's multimedia capabilities enhance audience & speed-up information**

DRM 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

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

AIR Emergency Broadcast

▶Information in English
हिन्दी में सूचना (Hindi)
在中国的信息 (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?

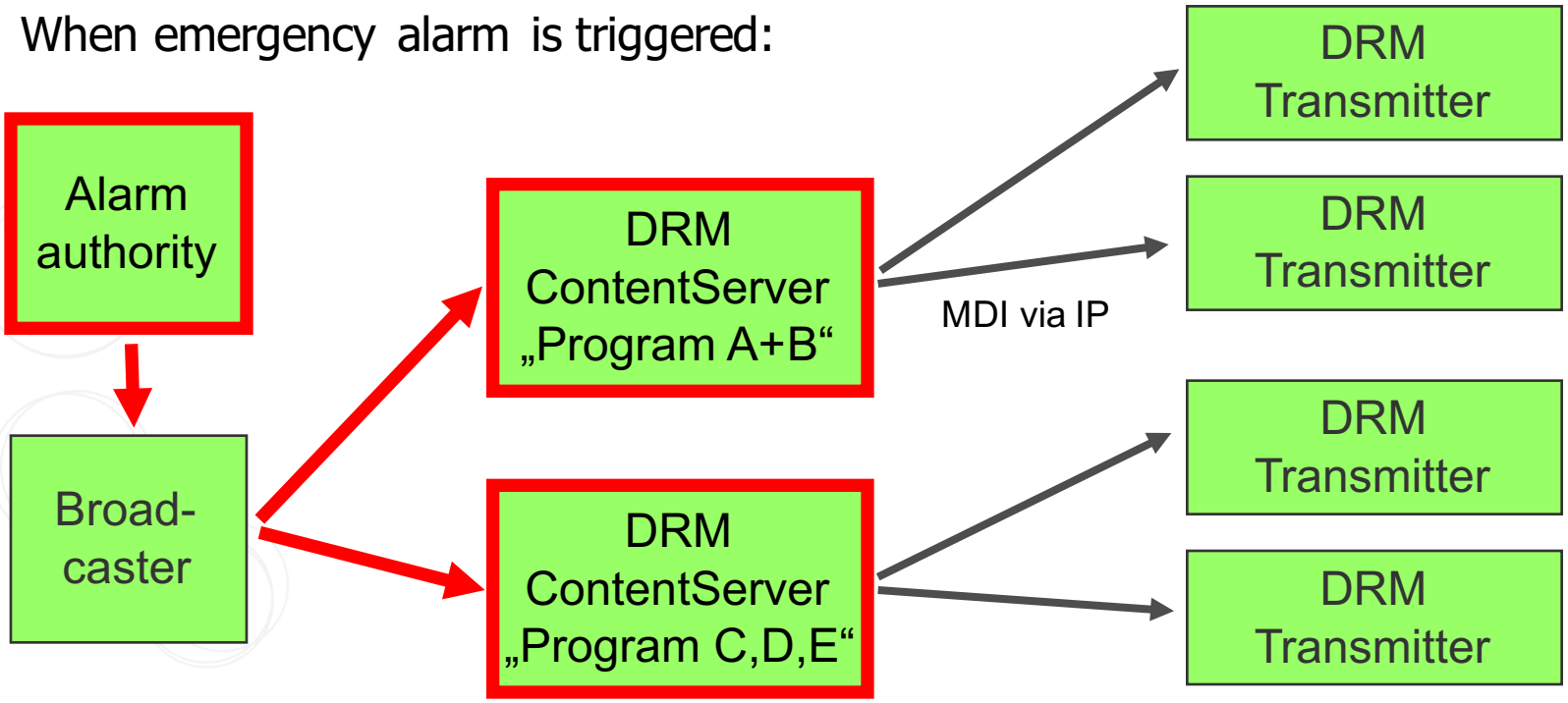
A major tsunami is expected for the Mumbai region at 16:00 today. The tsunami will hit the ↓

What do I need to do?

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

DRM Broadcast Networks

When emergency alarm is triggered:



- **Central authority** triggers alarm on ***ALL*** DRM programs (incl. private Bx!)
- **ContentServers** insert Alarm signal
- Optional Dynamic Service-Reconfiguration (making room for 1 emergency program)

DRM Broadcast Networks

Considerations for the DRM Broadcast Chain:

1. Prepare in advance:

→ Enable alarm signalling for all DRM broadcasts (+ AFS link to 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 DRM receivers

→ Broadcast 1 emergency program with audio + text (with maximum coverage)

Conclusions

DRM 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 DRM 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).

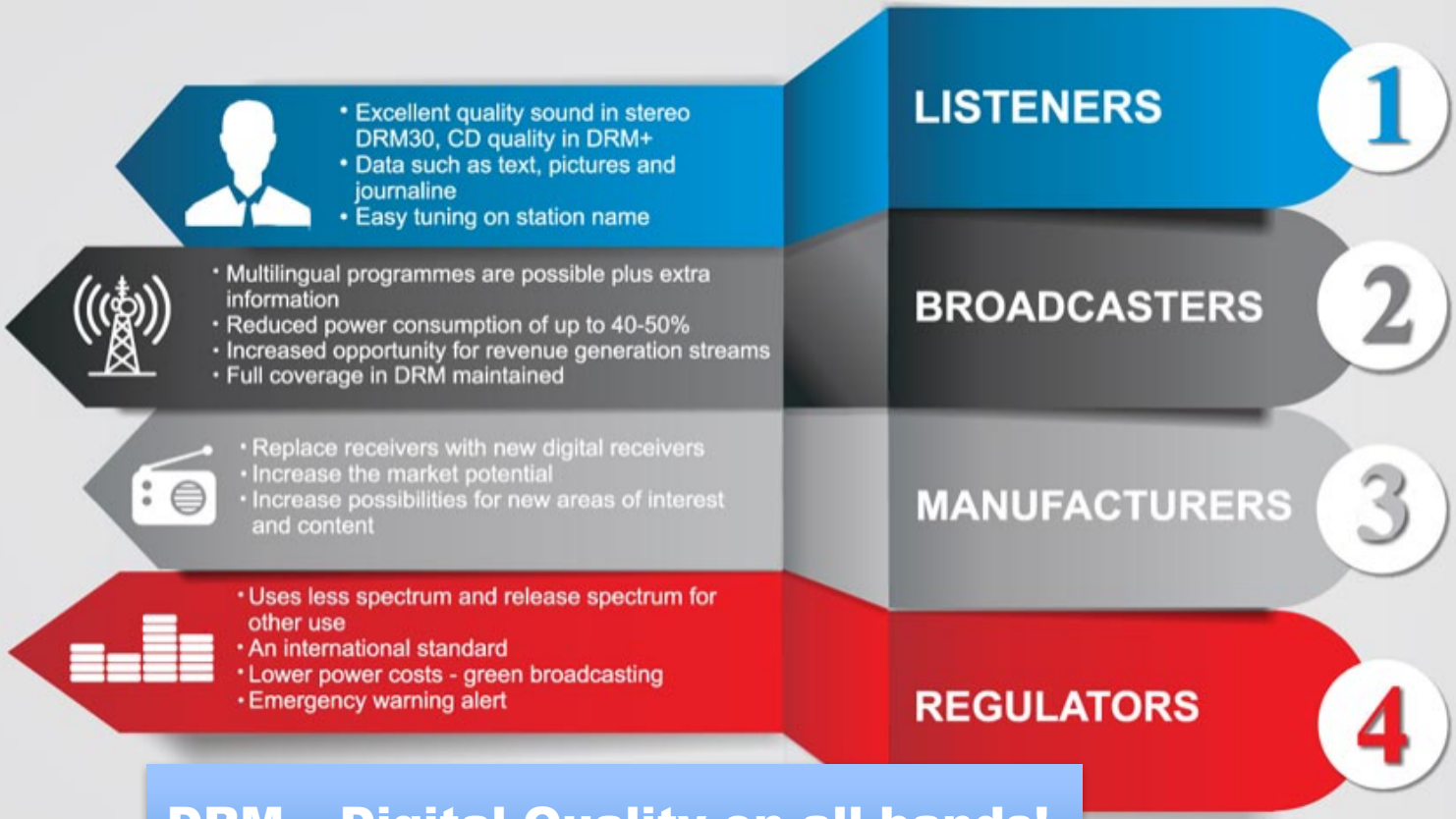
Conclusions

Preparation is required in terms of:

- Alarm trigger routing (central authority)
- Content preparation for immediate availability (text information, audio feed)
- Full receiver functionality to be implemented (including EWF and automatic wake-up)

DRM is Here for you Now!

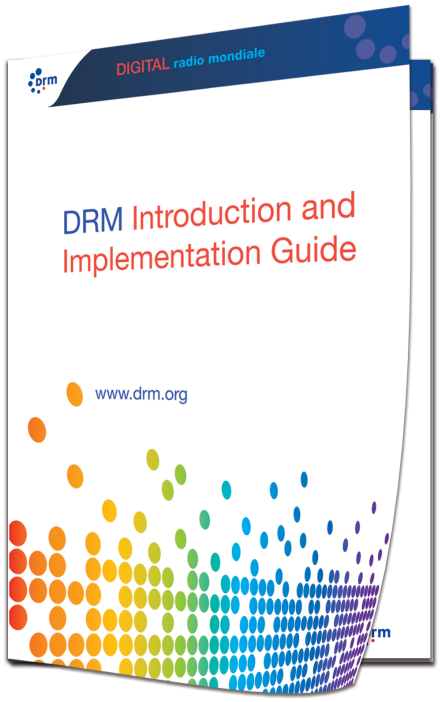
BENEFITS OF DRM



DRM – Digital Quality on all bands!

Download for free all you need to know on DRM

DRM Introduction and Implementation Guide



http://www.drm.org/wp-content/uploads/2012/10/DRM-Introduction-Implementation-Guide.pdf

Thank you!

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