Digital Radio Mondiale
DRM Delivers for All

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HFCC

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Cape Town, South Africa

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The DRM Consortium

- **Founded in 1998** by international organizations in China to promote the adoption of the DRM standard worldwide
- **Not-for-profit and Organic**
- **Around 100 international members** (broadcasters, manufacturers, network operators, regulators, research institutes, etc.)
- **Experts and Technologists** ready to give expert, objective advice on the technology
- **Open** to companies, organisations, associations and individuals who can join at any time

DRM Platforms and Representatives Around the World

Indian Platform
Honorary Chairman Mr Y Pal
Indian Newsletter
Indian page

Brazilian Platform
Chairman - Mr Rafael Diniz
Website

Pakistan
Ghulam Mujadddid

Indonesia
Ariza Dinga

Southern Africa Platform
Launched July 2014
Chairman - Dr Roelf Petersen
Website www.drmsa.org

German Platform
Oldest platform - Website
Activities such us comparison study DRM (FM) and DAB+
Joachim Lehnert

Russian Group
Renewed interest

American NASB
Looking at digital SW

Selection of Consortium Members

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

Over 100 DRM Services around the World

Half of the world population can listen to DRM

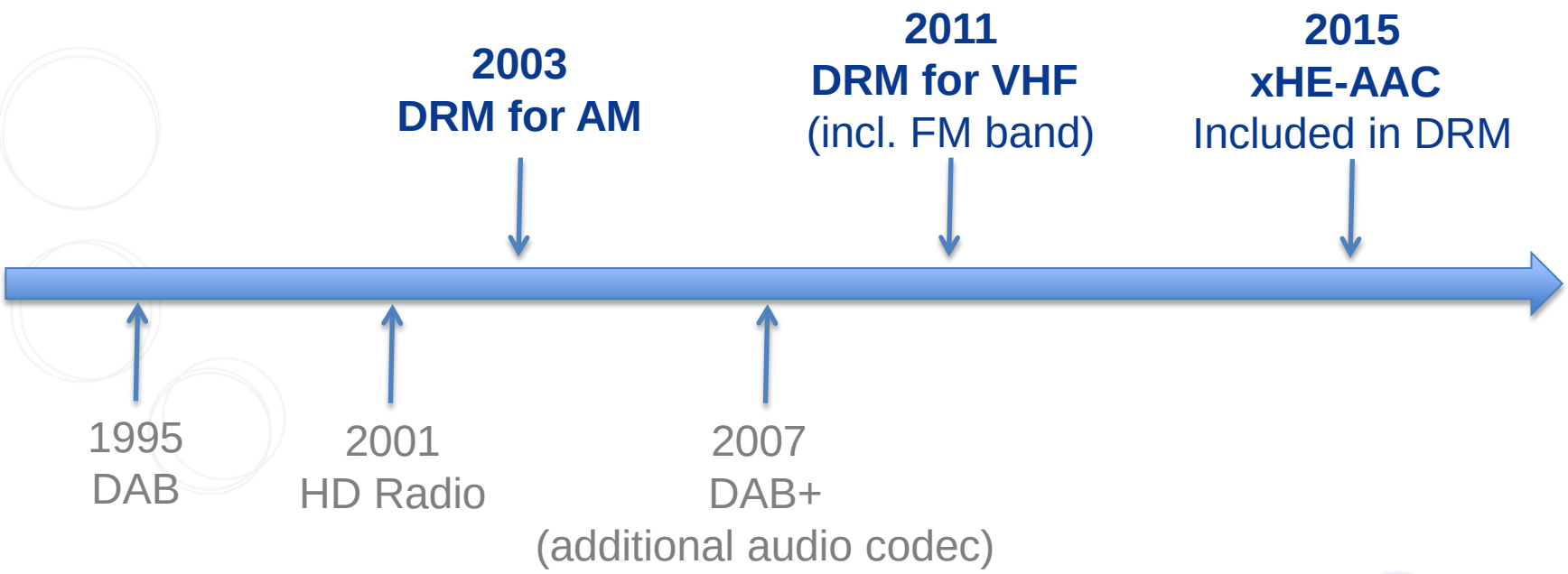
- All India Radio
- BBC World Service
- Radio France
- KBS World
- NHK Japan
- TWR Transworld Radio
- Radio Australia
- Radio Communicatii Moldova
- Radio New Zealand
- Radio Moscow
- Kofifi FM 97.2 South Africa
- Radio Pulpit South Africa
- Radio Romania
- Radio Vatican
- Broadcast Belgium
- Voice of Nigeria
- Saudi Broadcasting Corporation
- Pravasi Bharathi, UAE, covering the Middle East and South India (Malayalam Digital Radio)
- bit eXpress (Germany) and many more …

Visit the actual broadcast schedules http://www.drm.org/?page_id=151

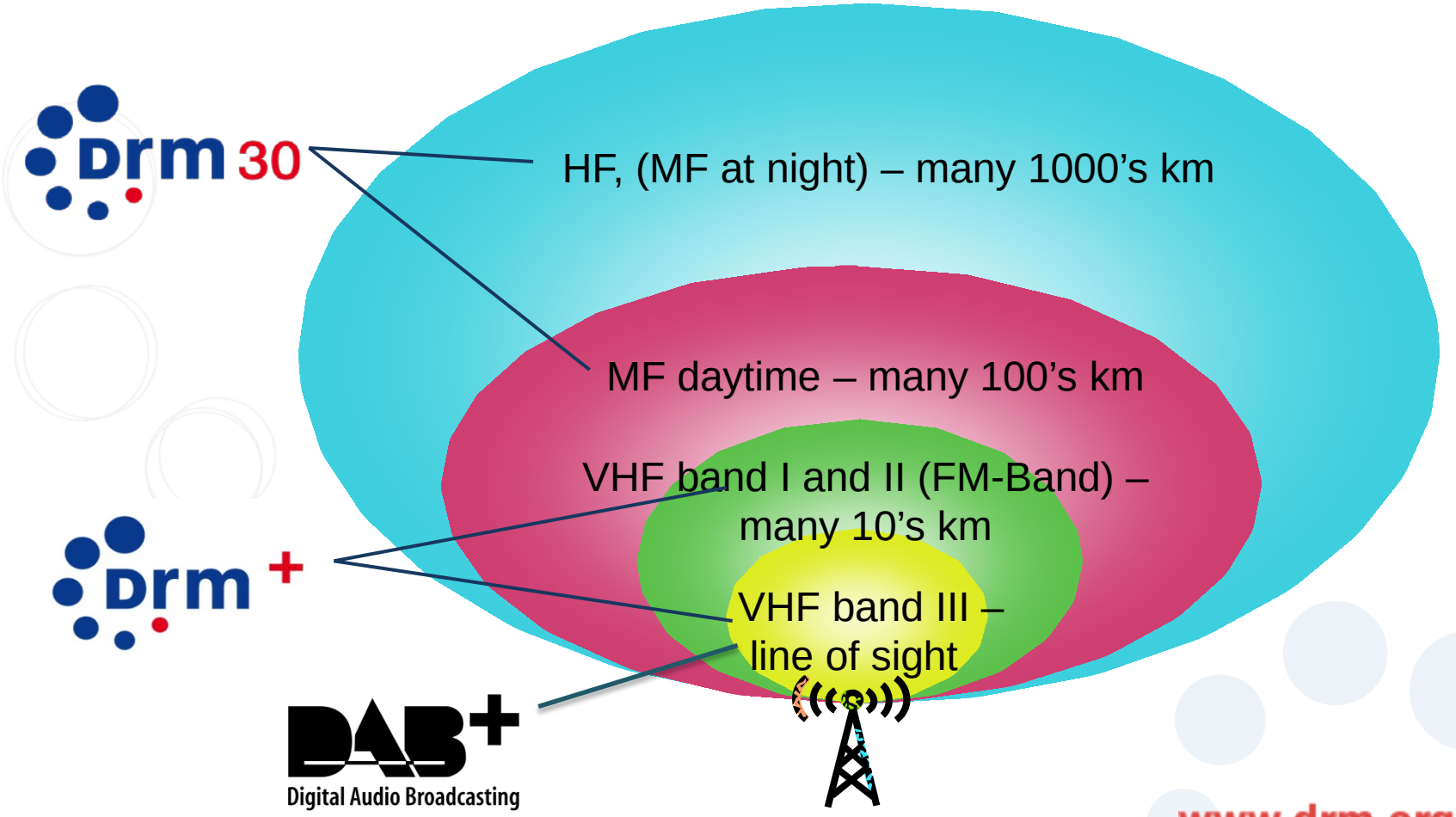
DRM – Key Facts

- Global, open and organic **standard for terrestrial Digital Radio**
- **Enables all coverage scenarios:** local, regional, national, international (in broadcast bands AM & FM/VHF)
- Digital-only or **simulcast** operation (with AM or FM analogue signal)
- Transmission equipment and multi-standard receiver chips / car model **readily available**, with **upgrade path for existing AM/FM transmitters**!
- **ITU endorsed** for worldwide operation
- All details **openly standardized** (ETSI) and published,
  Not controlled by a single company/organization – No licenses required

DRM is the most recent ITU confirmed Digital Radio Standard



Where DRM fits – Coverage Needs

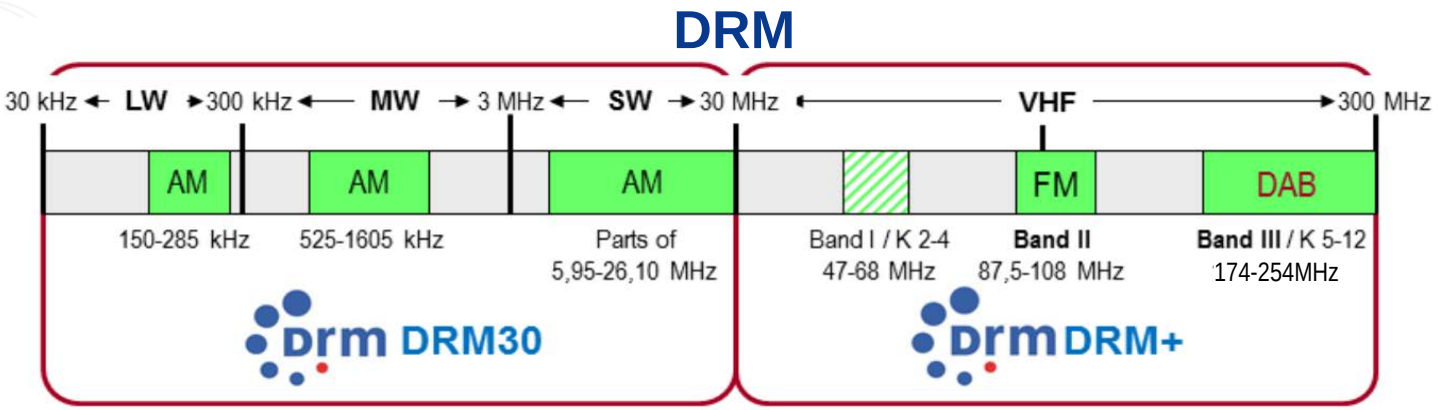


DRM in All Frequency Bands

DRM for local / regional coverage (VHF bands)
(Band I, II – FM band, III)

30 MHz

DRM for medium/large area coverage (AM bands)
(or LW, MW, SW) – the AM bands



DRM Digital Radio standard – One single standard:
Same key features throughout

DRM – Key Features

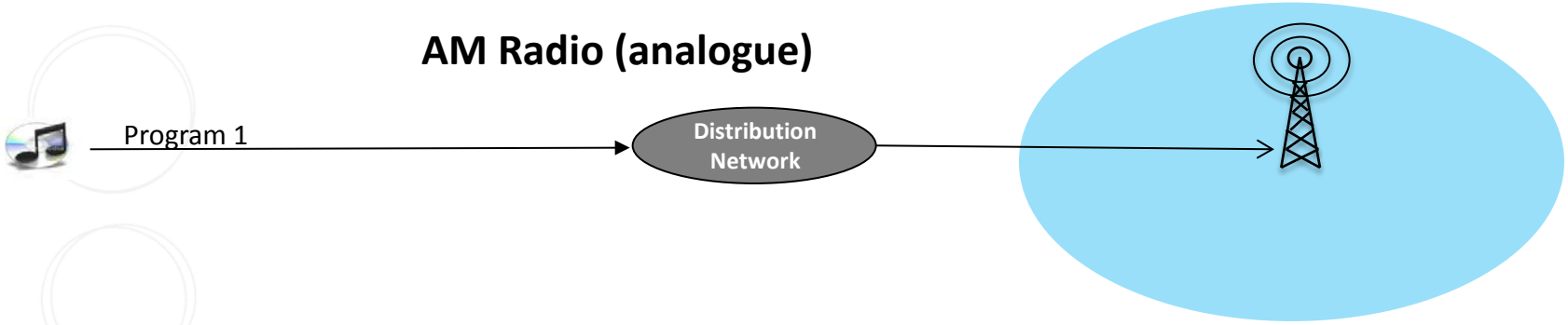
- **More choice** for listeners
  - Up to 3 programmes + multimedia on 1 frequency
  - Simulcast analog / digital
- **Excellent audio** quality
  - No distortion
  - Stereo and 5.1 surround sound
- **Multimedia Applications**
  - Great listener benefits
  - Extra revenue opportunities for broadcasters
- **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

AM/FM Analogue – 1 Program per Transmitter

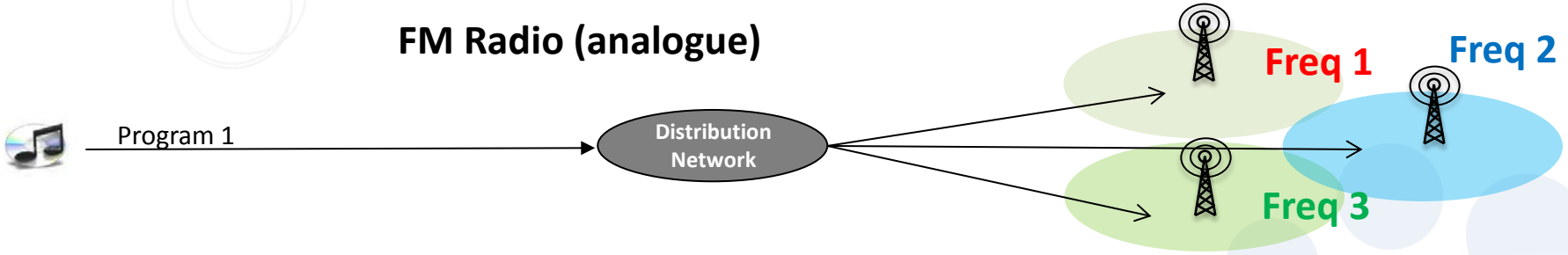
Programme Provider

Network Provider

AM Radio (analogue)



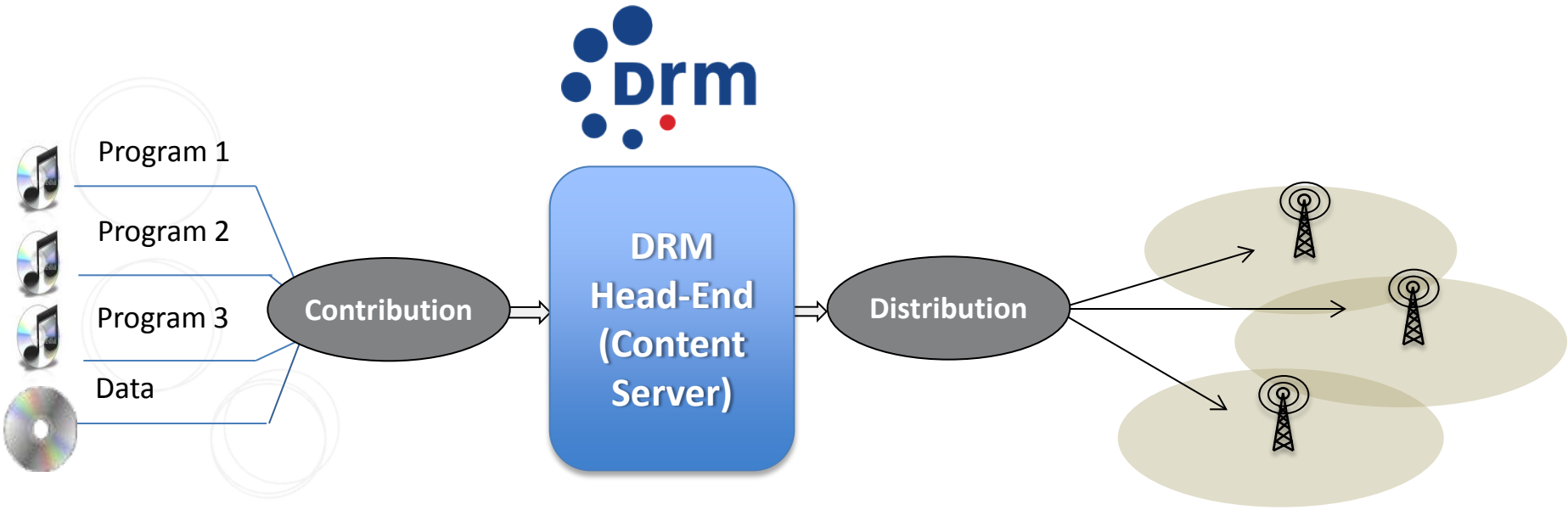
FM Radio (analogue)



DRM – Transmission System

Programme Provider

Network Provider



SFN **All TX on same Frequency**

DRM TextMessages
programme accompanying labels (Unicode), max. 128 characters, max. every 20 sec.

Journaline
text based information service (Unicode), supporting all classes of receivers, triggers interactivity and geo-awareness

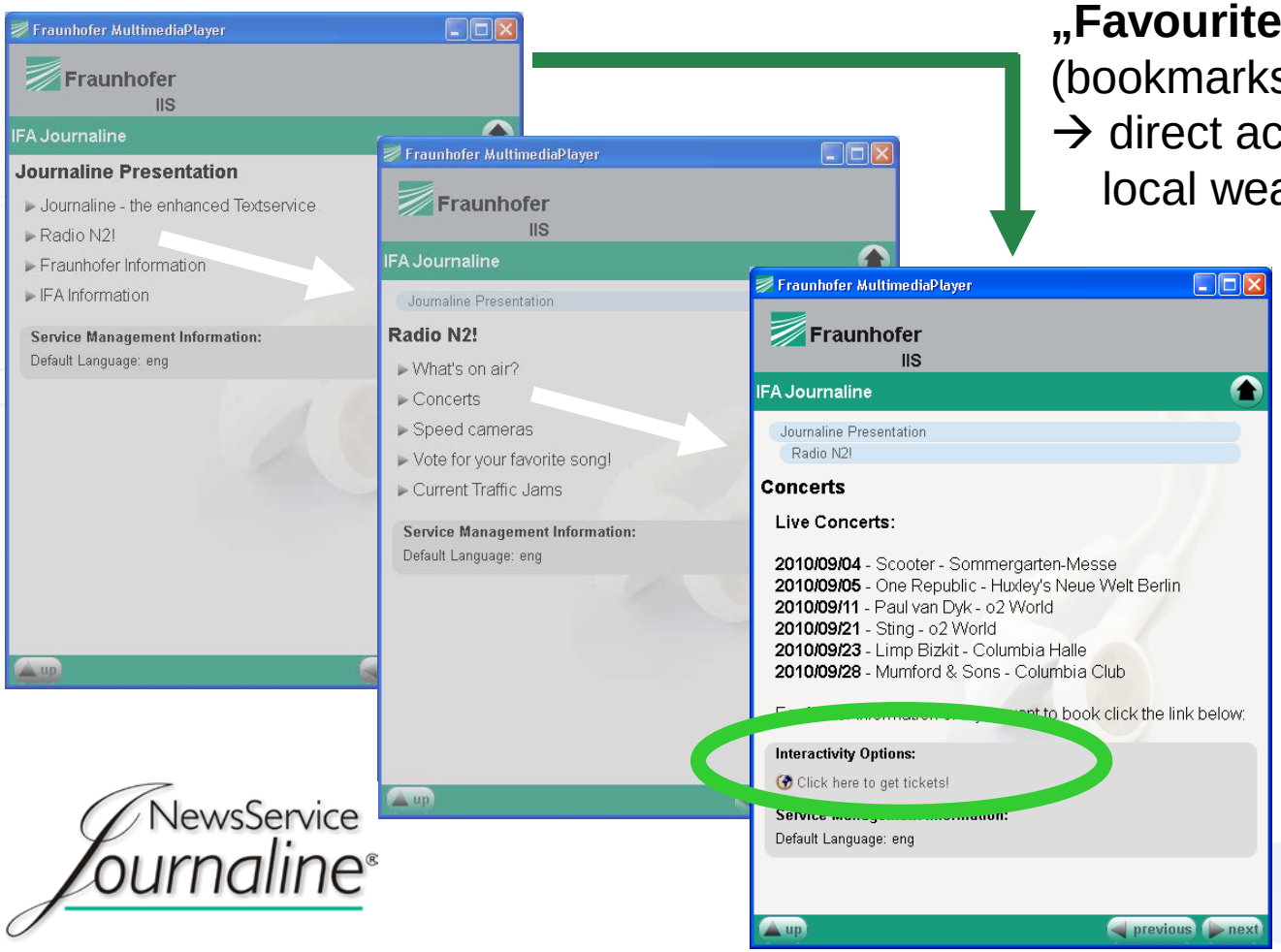
MOT Slideshow
programme accompanying images + animation

EPG – Electronic Program Guide
What's up now & next;
Search for programs and schedule recording

TPEG / TMC Traffic Information

→ **Great listener benefits & revenue source!**

Journaline – User Experience



„Favourites“ (bookmarks) → direct access to local weather, …

NewsService Journaline®

„Hot Button“ → direct user interactivity with broadc. on connected devices

Journaline – Broadcaster Benefits

NewsService Journaline®

Optimized for Efficiency & Simplicity all along the broadcast chain.

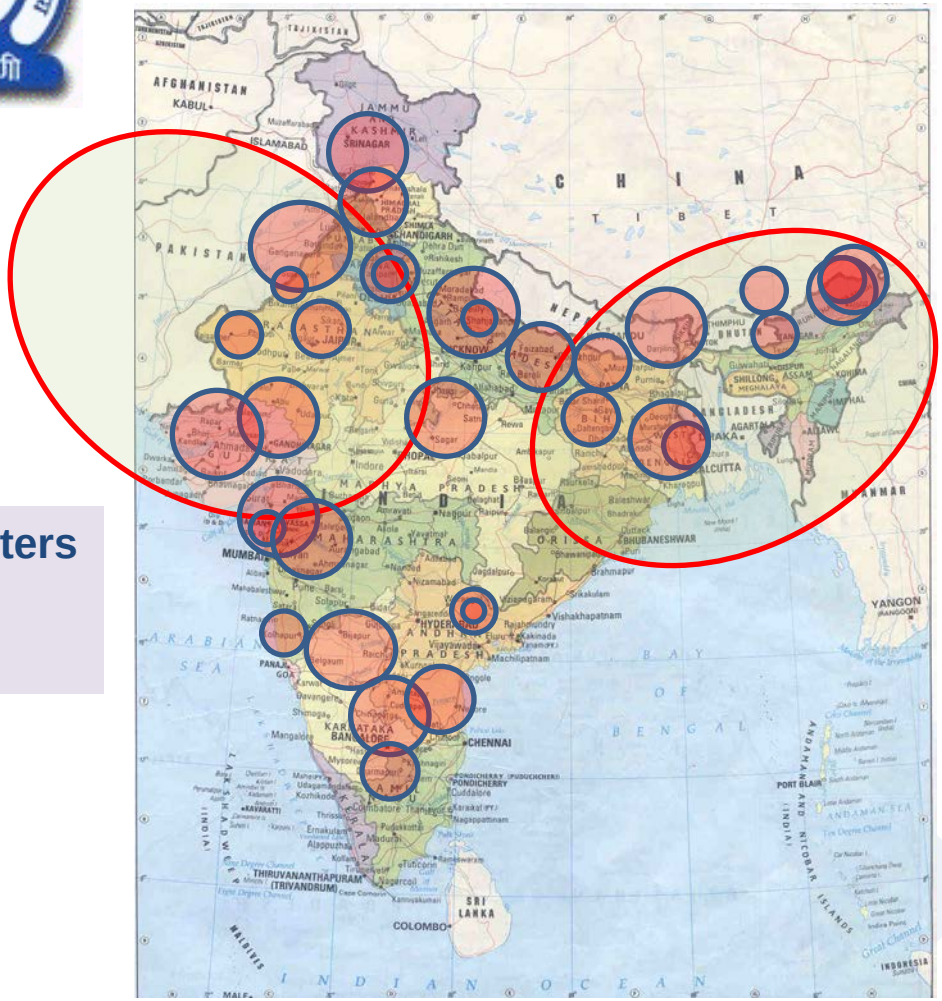
- Specifically designed for digital broadcast services into rural and underdeveloped areas: **low bitrate requirement** (e.g. 200 bps)
- Re-use of **existing data sources** for broadcasters (RSS, XML), Internationally applicable (Unicode/UTF-8)
- Optimized for **inexpensive consumer receivers** (low market entry barrier)
- Extensible **hinting information** for advanced receivers:
  - **back channel:** web, e-mail, phone,...
  - **geo-tagging:** local content, get me there
  - **speech hinting** for in-car use**,** etc.

DRM in the World
Some Key Countries

- India
- Indonesia
- Southern Africa
- Pakistan
- Brazil
- Russia

India

"One of the world's largest digital radio deployments"



MW – 35 transmitters

1000 kW - 2
300 kW - 6
200 kW - 10
100 kW - 11
20 kW – 6

SW – 4 transmitters

500 kW - 1
250 kW - 1
100 kW - 2

Transmitters	**39**
Investment	**Over 3 Billion INR**
Power	**8,000 kW**
Coverage	**0.6 Billion people**

All India Radio Completes Roll Out of DRM in MW


AIR DIBRUGARH 300 KW


AIR JAMMU 300 KW TRAINING SESSION

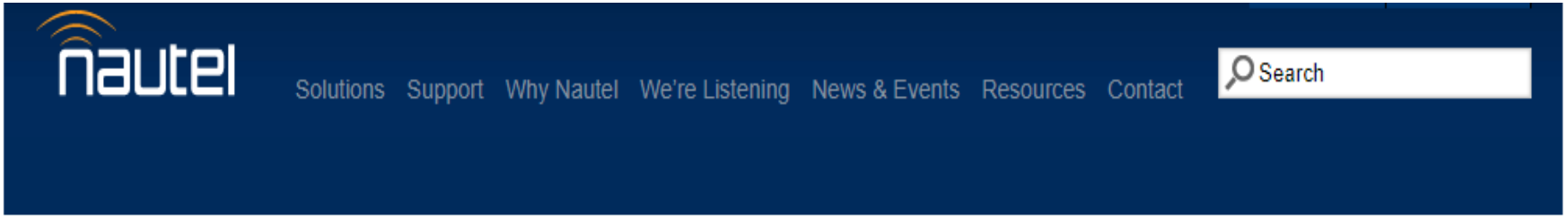

AIR LUCKNOW 300 KW ATU


AIR PANAJI 100 KW

All 35 MW Transmitters Installed by AIR

www.drm.org

Breaking News: All India Radio Adds Digital Transmitters



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Largest DRM Deployment in the World Expanded with Six More Nautel Transmitters

All India Radio adds to massive digital radio deployment with four 100 kW and two 200 kW NX transmitters.

Hackett's Cove, Nova Scotia – Nautel Limited has shipped six additional high-power DRM-enabled MW transmitters for deployment at All India Radio, the largest digital broadcasting system in the world. Four 100 kW NX100 and two 200 kW NX200 transmitters were shipped to India in July 2017 for installation in six cities. The transmitters will be commissioned by Nautel's in-country partner Comcon in association with India's Prasar Bharati.

The July, 2017 shipment of 6 NX transmitters complements the 27 NX transmitters which are already on air with DRM transmission throughout India. The massive project has the goal of bringing digital radio to nearly a billion residents of the country. The new transmitters will be installed at All India Radio (AIR) facilities in Hyderabad, Jagdalpur, Vishakhapatnam, Bhawanipatna, Jeypore and Sambalpur. All 33 transmitters in the AIR project are configured for DRM30 operation.

Nautel NX high power transmitters occupy a very small footprint and offer the industry's highest efficiency (90%) along with AM precorrection, unmatched linearity and Nautel's exclusive, award-winning Advanced User Interface which provides commercial grade instrumentation, spectrum analyzer, logging, presets, local and remote transmitter control, email notifications and enhanced support services.

India DRM Implementation

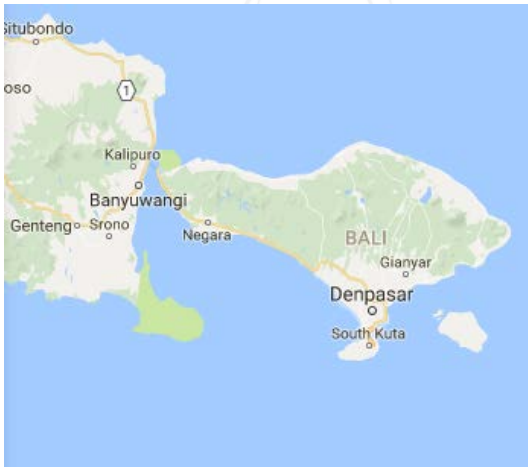
Phase 1: Completed – transmitters on the air
(600 million people covered)

Phase 2: Now started:
- full service specification
- audio quality & extra features (Journaline, logos)
- communication, marketing, links to the industry

Phase 3: Full digital services on all transmitters
Analogue switch-off, receivers widely available,
DRM also for the FM Band established

Indonesia

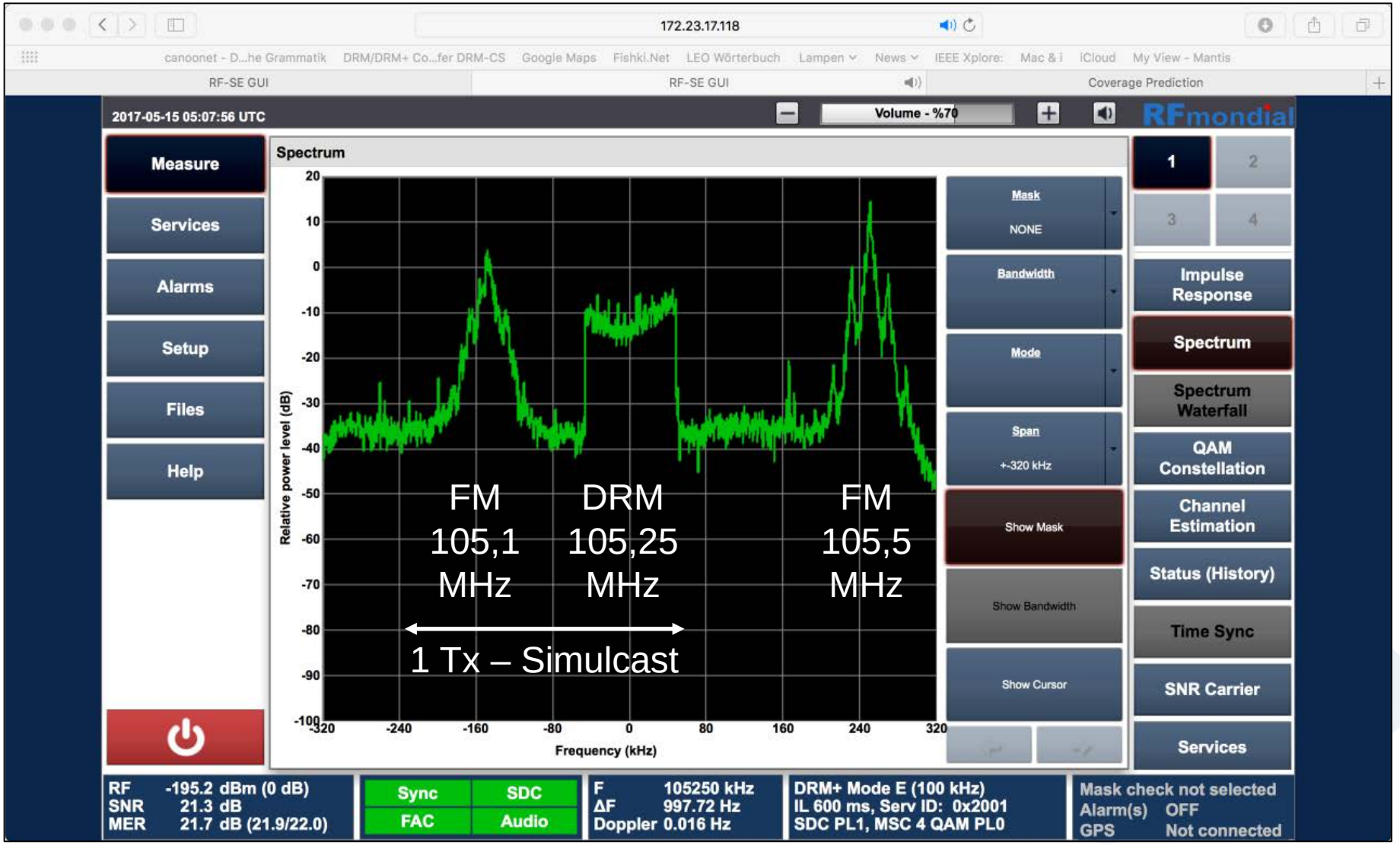
- April 2015 – trial and workshop at **Bogor/ DRM MW**
- Oct 2015 **RRI signs a cooperation agreement** with the DRM Consortium to promote the technology
- Oct 2015 **RRI becomes a DRM Consortium member**
- Oct 2016 **DRM for AM trial in Bali**
- May 2017 **DRM for FM trial in Batam**



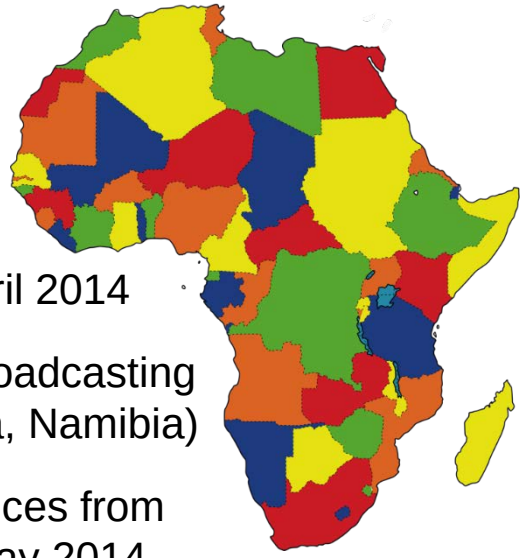
Indonesia

DRM in Batam May 2017

DRM in Batam 2017-05-15



Africa



- Significant interest in DRM in **Southern Africa** in last 2 years
- **DRM tests** started or in preparation in several countries
- SW DRM transmission to South Africa Oct. 2011, July 2013, April 2014
- **Increasing number of African countries** attracted to DRM broadcasting benefits (such as South Africa, Mozambique, Botswana, Zambia, Namibia)

Nigeria adopted DRM and is broadcasting international services from Abuja since March 2012 with increased DRM output since May 2014

Zambia adopted DRM in 2016

Mozambique (adopted DRM) and is preparing to do test broadcast.

Algeria adopted DRM and installed transmitters in 2013

Botswana installed DRM ready transmitters, Currently in AM broadcast mode

Namibia and Tanzania show interest in DRM to provide 100% radio coverage

South Africa adoption expected soon

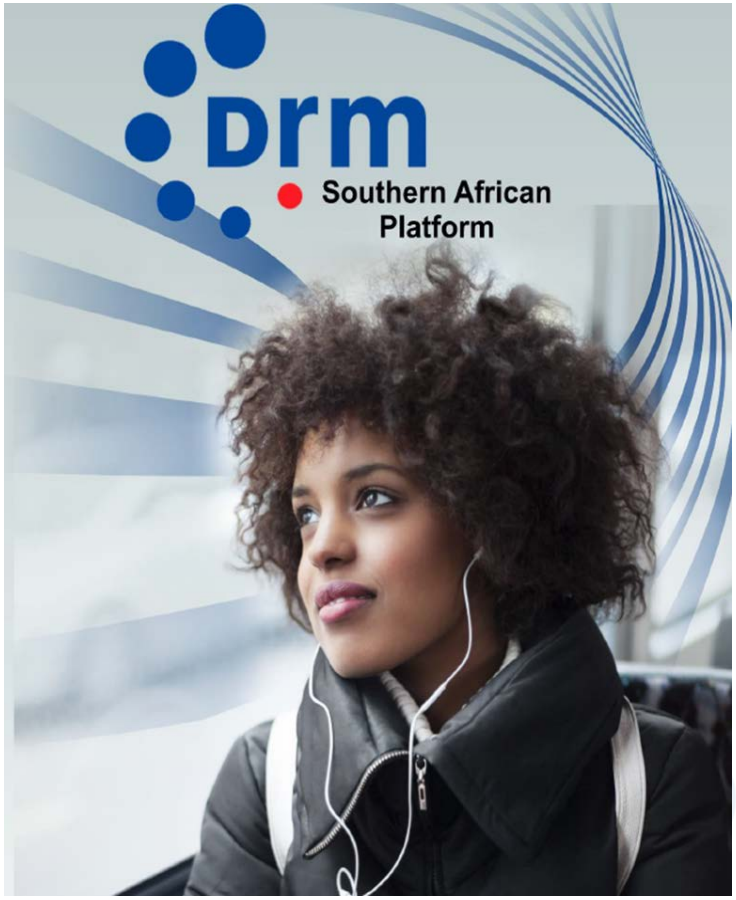
South Africa

Radio Pulpit initiated a DRM30 trial broadcast with support from Broadcom International cc and Sentech Ltd. The DRM test transmission was conducted in Pretoria South Arica during the period **September 2014 up to October 2015.**

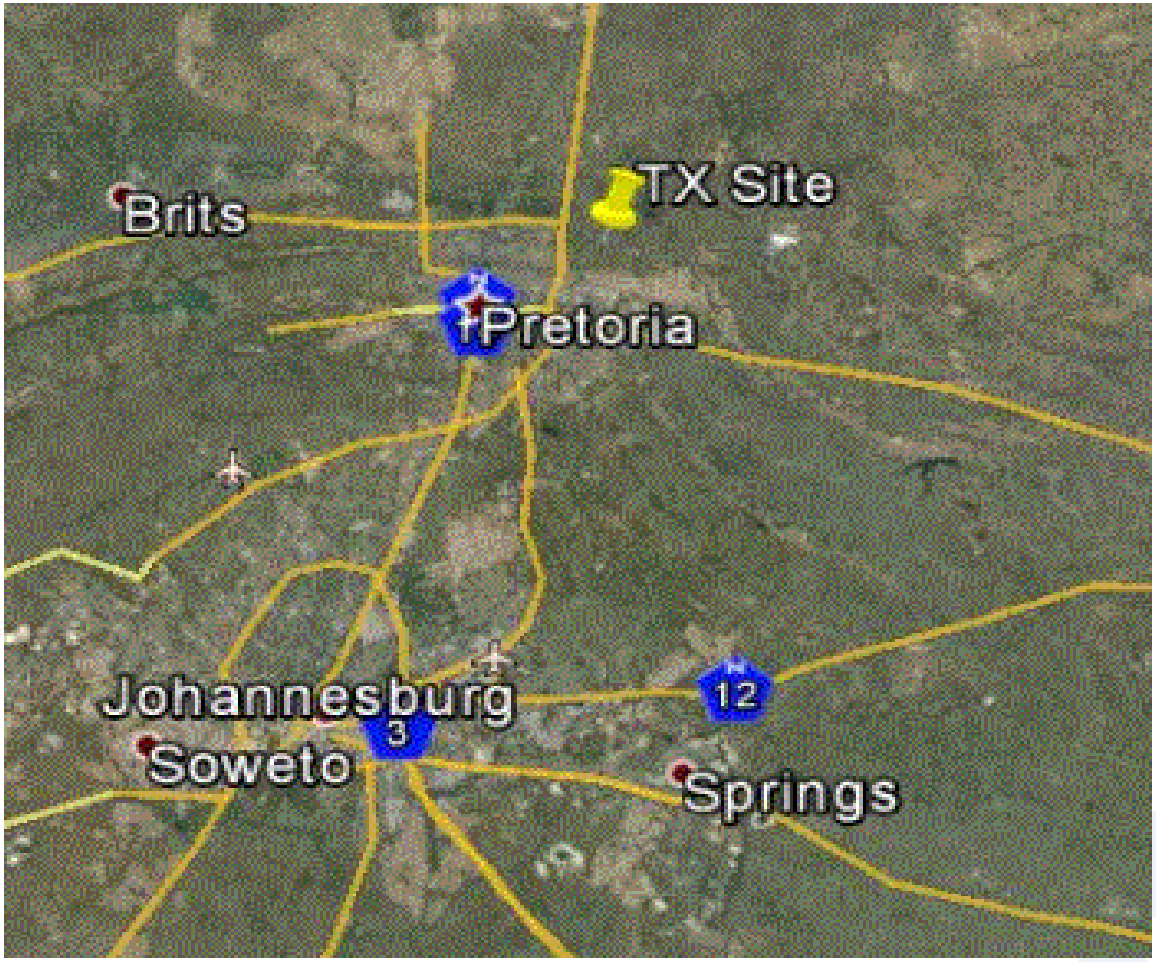
DRM Measurements were conducted successfully on 1440 kHz using a 10 kW DRM30 transmitter.
Two low profile antennas were used in the trial and both were capable to provide good signal coverage.

*"The DRM30 signal performed **better than the analogue** AM signal with regard to coverage area for the same transmitter power.*

*DRM30 demonstrated a **substantial reduction in energy consumption** compared to analogue AM broadcast to cover the same area."*



DRM for Large Area Coverage (DRM30 Mode)
Transmitter Location



DRM for Large-Area Coverage (DRM30 Mode)
Objectives of Trial

- Evaluation of actual coverage versus prediction (planning)
- Evaluation of ground wave and sky-wave (fading zone)
- Evaluation of DRM audio quality and value added services
- Evaluation of receiver behavior, both fixed and mobile
- Evaluation of two alternative low profile antenna's
- Obtain listener's experience (closed user group feedback)
- Correlation of data and issue test report

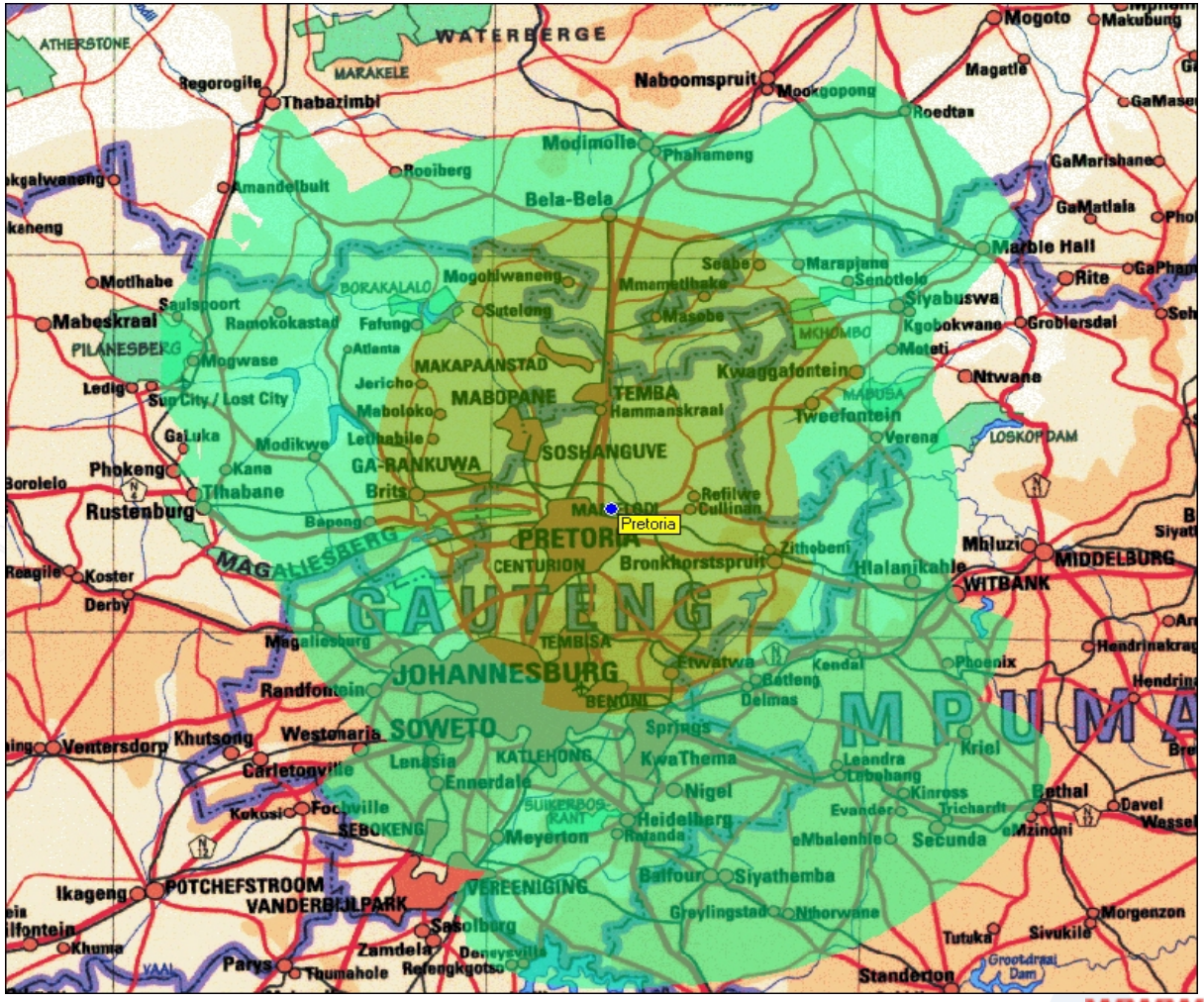
DRM for Large-Area Coverage (DRM30 Mode)
Outline of Trail

- Broadcasting on AM 1440kHz from Kameeldrift Pretoria
- Broadcasting 10kW DRM using a low profile antenna
- Coverage area - greater Pretoria and parts of Johannesburg
- Broadcasting two audio services on one MW frequency
- Radio Pulpit was the main sponsor and license holder
- Broadcom cc provide LP antenna and Engineering services
- Sentech provide alternative low profile antenna (Kinstar)
- Test & measurement done jointly by Sentech and Broadcom

DRM for Large-Area Coverage (DRM30 Mode)
Predicted Coverage of Trail

16 QAM

64 QAM



DRM for Large-Area Coverage (DRM30 Mode) Timeline of Trail

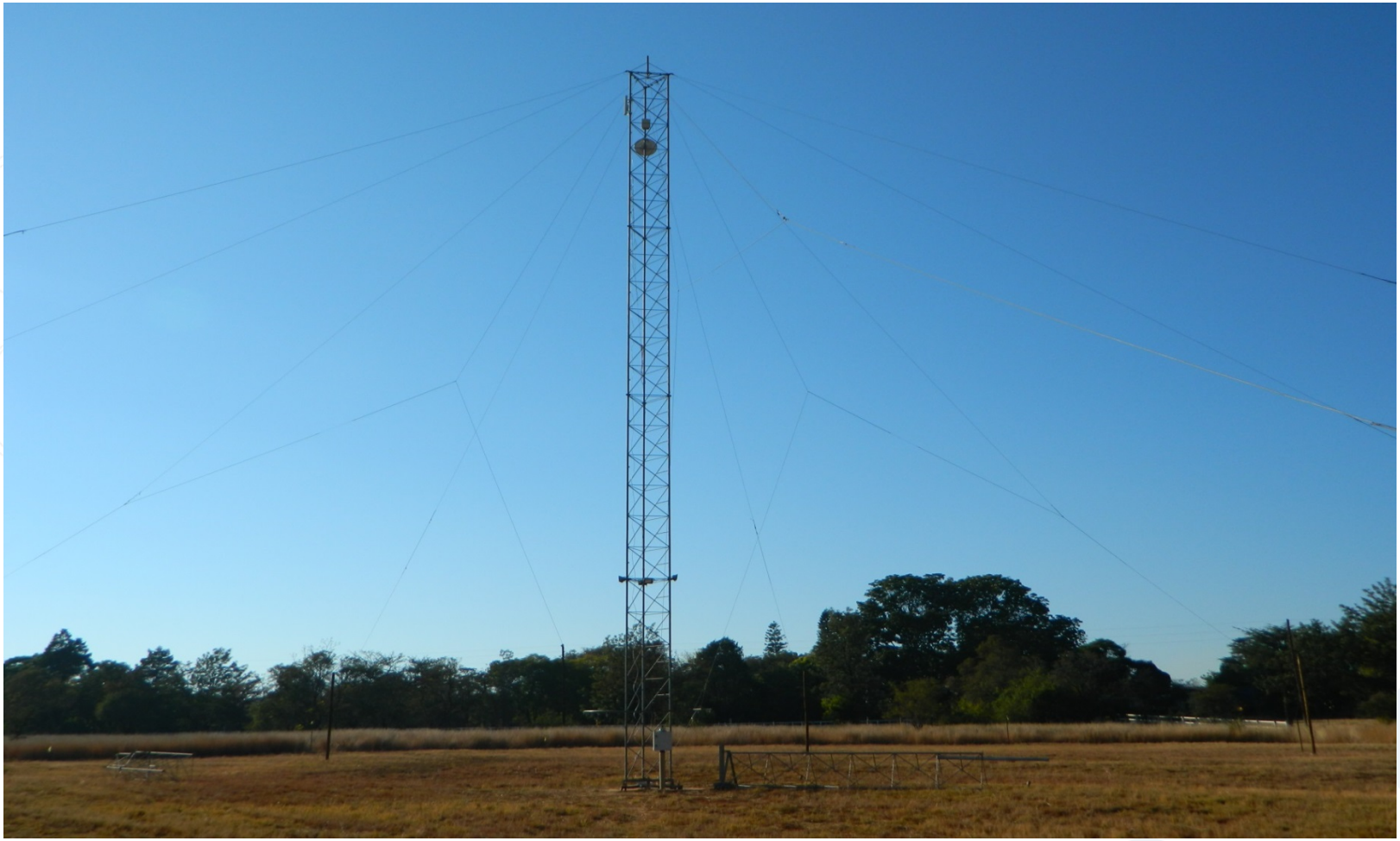
- DRM Trail transmitter site preparations done – July 2014
- DRM Trail test license issued – September 2014
- Broadcom LP antenna installed – September 2014
- Broadcom LP antenna evaluation completed – March 2015
- Trail broadcast license extended (6 months) – April, 2015
- Sentech Low Profile antenna installed – September 2015
- Sentech LP antenna evaluation completed – Oct 9, 2015
- DRM Trail test transmission terminated – October 16, 2015
- DRM Trial test report released – February 2017

DRM for Large-Area Coverage (DRM30 Mode)
Kameeldrift Transmitter Site

DRM for Large-Area Coverage (DRM30 Mode)
Ampegon 25kWatt Transmitter

DRM for Large-Area Coverage (DRM30 Mode)
PIE and Content Server

DRM for Large-Area Coverage (DRM30 Mode)
Broadcom Low Profile Antenna



DRM for Large-Area Coverage ((DRM30 Mode)
Sentech's Low Profile Antenna (22 m)

DRM for Large-Area Coverage (DRM30 Mode) Execution Outline of Trail

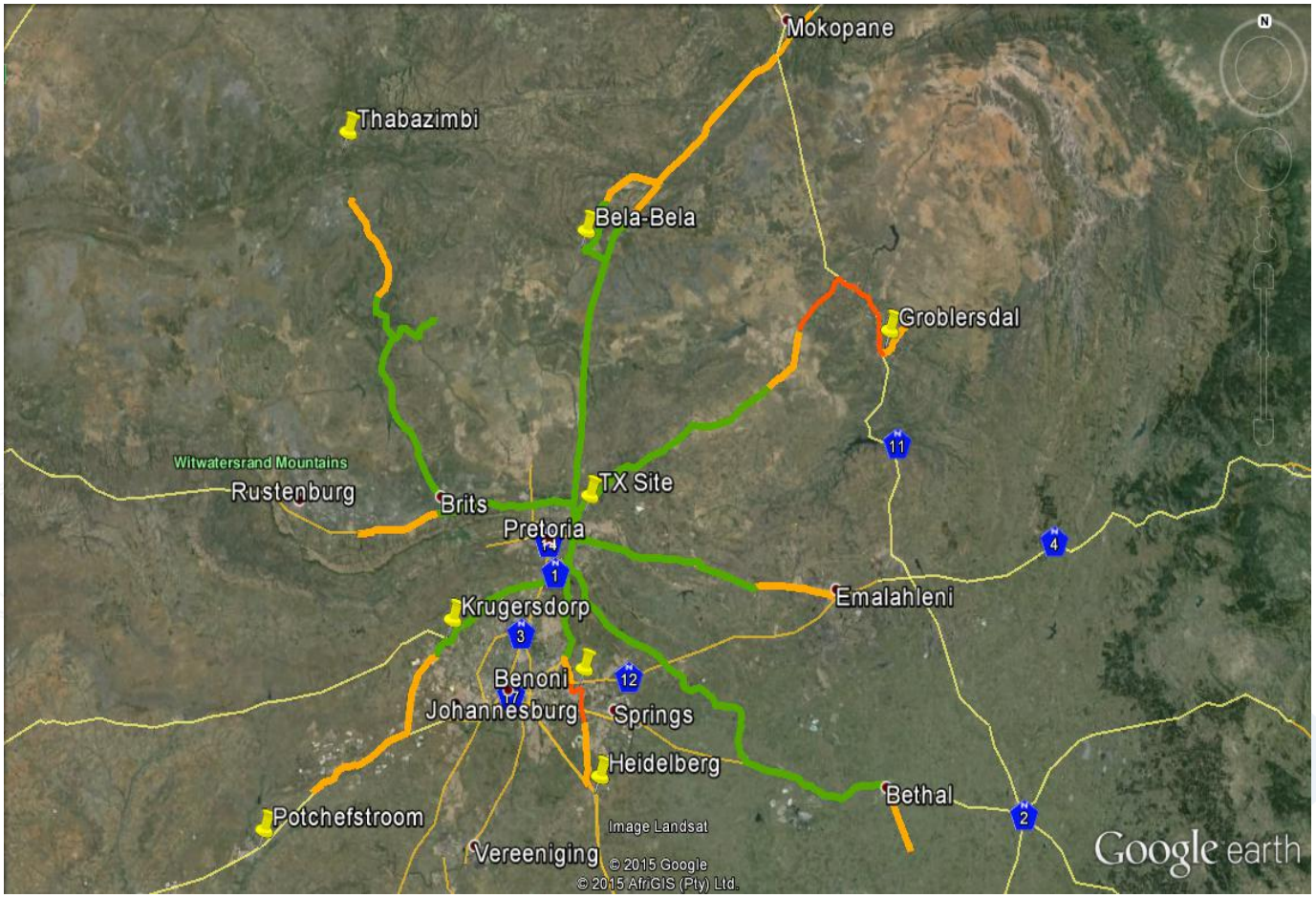
- Eight (8) radials identified (to include urban and rural area's)
- Measurement done in drive-by mode, continuous data collection
- Radials measured outward until 16 QAM cliff-edge (9K_A/16/4/0.5)
- Continued beyond cliff-edge, then switched to 64 QAM operation
- Radials measured inwards from 64 QAM cliff-edge (9K_A/64/4/0.5)
- Continued with measurements back up to the transmitter site
- Evaluate commercial receivers on both the in and outward routes
- Compare and correlate notes and measurements
- Sky-wave measurement done on 1 route (North on N1 10pm - 4am)

DRM for Large-Area Coverage (DRM30 Mode) Test Result (see report at www.drmsa.org)

64 QAM

16 QAM

Audio Drop Detected



DRM for Large-Area Coverage (DRM30 Mode)
DRM Trail Summary

- ± 1,700,000 measurements were taken over total period of 5 weeks
- ± 9000 km (drive-by) distance travelled
- 16 QAM outperforms 64 QAM (9k_Mode A, SDC 4 QAM, code rate 0.5)
- Man-made / environmental noise is a definite factor in performance
- Receivers were evaluated & point (location) of operation / failure noted
- Commercial receivers (older version) didn't perform as well as expected
- Sky-wave propagation could be detected and its effects measured
- Measurement equipment and test set-up performed well
- Transmitter and both antenna's performed well (typ. MER 45dB @ 3km)
- Demonstrated 2x audio services, each with embedded data content

DRM for Large-Area Coverage (DRM30 Mode)
Benefits for Africa

- **Improved Spectrum Management** Multi-channel service / SFN operation.
- **Large Area Coverage** DRM provide improved sound quality plus data features to cover cities and / or extended rural areas using a single transmitter or SFN.
- **Increased Revenue** Green Technology, More Services, Added Value.
- **Distant Learning / Information Distribution** (to Clinics, Rural communities) Transmission of Data, Pictures & Text message using Journaline / File xfer.
- **National Program Distribution / Independent Operation** DRM used as carrier of program(s) / Independent from Satellite & Gatekeepers.
- **Emergency Warning Feature (EWF) / National Disaster Management Plan** EWF included in receiver design. MW is a robust & reliable broadcast medium.
- **Digital Migration Path** through early integration DRM can support existing FM network, DRM feed low power FM gap-filler transmitters covering remote area's not serviced by main FM network. Low power FM transmitters and Low cost FM receivers can be used in transition period until DRM receivers are affordable.

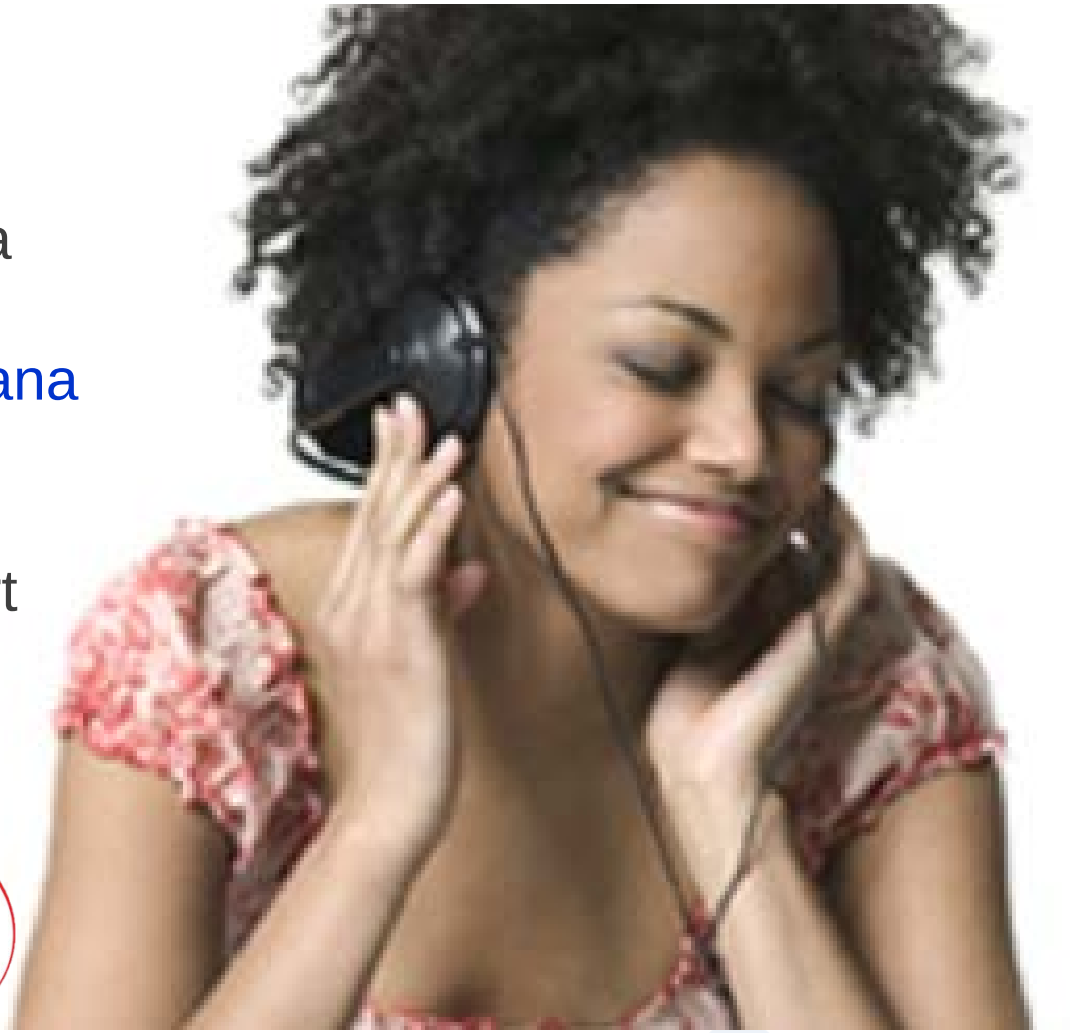
DRM for Large-Area Coverage – The Sound of Digital

Listen for yourself.....

DRM MW South Africa

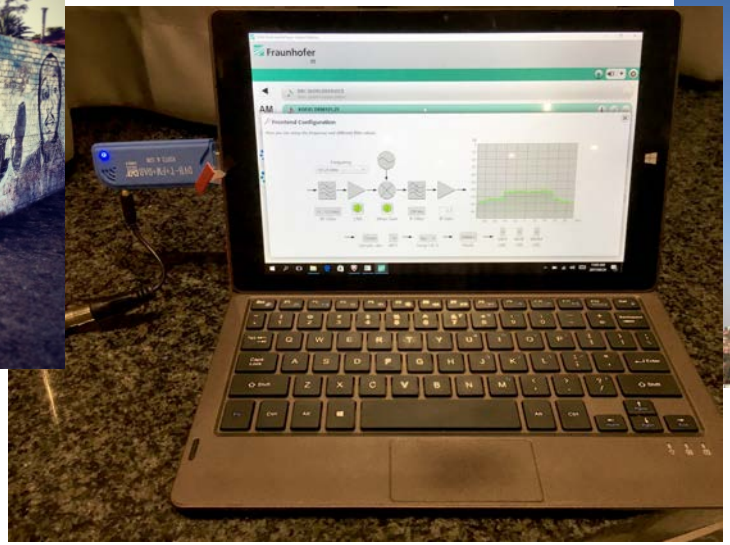
Audio Recording Botswana

for DRM30 Test Report
www.drmsa.org



DRM for Local Coverage Project (FM-Band) – First Time Tested in Africa

- WECODEC/Kofifi FM in Johannesburg – Community Radio
- DRM trial started in **March 2017** while SA considering digital radio standards and giving the lead to SADC and Africa
- Support from BBC World Service and Fraunhofer IIS



WECODEC

DRM for local coverage Trial in Johannesburg

- South Africa is currently looking at the two digital radio standards DRM and DAB+. Both have been tested by Sentech since 2006. DRM in the AM Band (MW) has been tested by Radio Pulpit and Sentech in 2014-2015.
- DRM+ had never been tested on the African continent and needed to be trialed to complete digital radio trials in South Africa. This was also raised at the CRASA Digital Broadcast Migration Workshop in June 2016 in Johannesburg.
- ICASA welcomed our initiative of testing DRM+ in South Africa and issued a license that became active on 01 March 2017. It is valid for 8 months with an option to be extended.
- The spectrum licenses were issued for Johannesburg 101.25MHz and Carnavon (Northern Cape) on 64MHz.

WECODEC

Object of the Electronic Communications Act

- **Encourage** investment, including strategic infrastructure investment, and **innovation in the communications sector** *(d)*;
- Ensure **efficient use of the radio frequency spectrum** *(e)*;
- Promote an environment of open, fair and **non-discriminatory access** to broadcasting services, electronic communication networks and to electronic communications services *(g)*;
- **Encourage research and development** within the ICT sector *(i)*;
- **Develop and promote SMMEs** and cooperatives *(p)*;
- Promote the development of public, commercial and **community broadcasting services** which are **responsive to the needs of the public** (r);
- Provide **access to broadcasting signal distribution for broadcasting** and **encourage the development of multi-channel distribution systems in the broadcasting framework** *(x)*.

DRM and Its Socio-Economic Impact

After the digital terrestrial television (DTT) network rollout has been completed, digital radio is now a focus area in ICT.

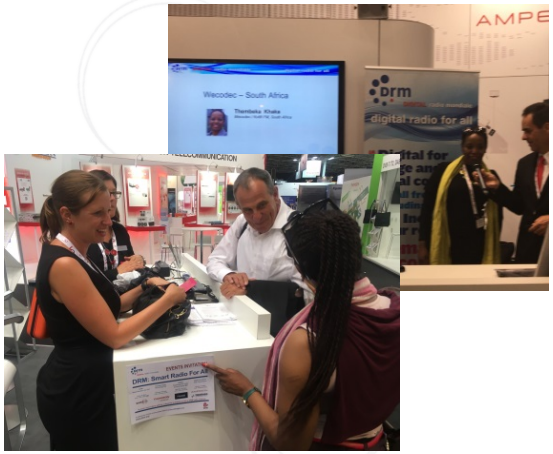
WECODEC assumes that DRM (Digital Radio Mondiale) has a lot of advantages for the socio-economic development and wanted to verify:

- Efficient usage of spectrum and energy as national resources
- Enhanced data services – universal access to information
- Covering even the furthest rural areas and bridging the digital divide
- Stimulation of South African Consumer Electronics Industry
- Job Creation and uplift of media industry and skills development
- Youth and women participation
- Allowing for fair competition, new entrants and sustainable business
- Demonstration of South Africa as an innovation base
- Improved signal quality and more program diversity
- Enhance content development in the 11 official languages
- Smart communities/cities information portals can use DRM
- Transmission of educational programs

WECODEC

Verification Overseas

- In summary it can be said that WECODEC's initiative to pioneer DRM in South Africa to enhance life quality in marginalized communities met a warm and open audience throughout the entire industry of media broadcasting internationally.

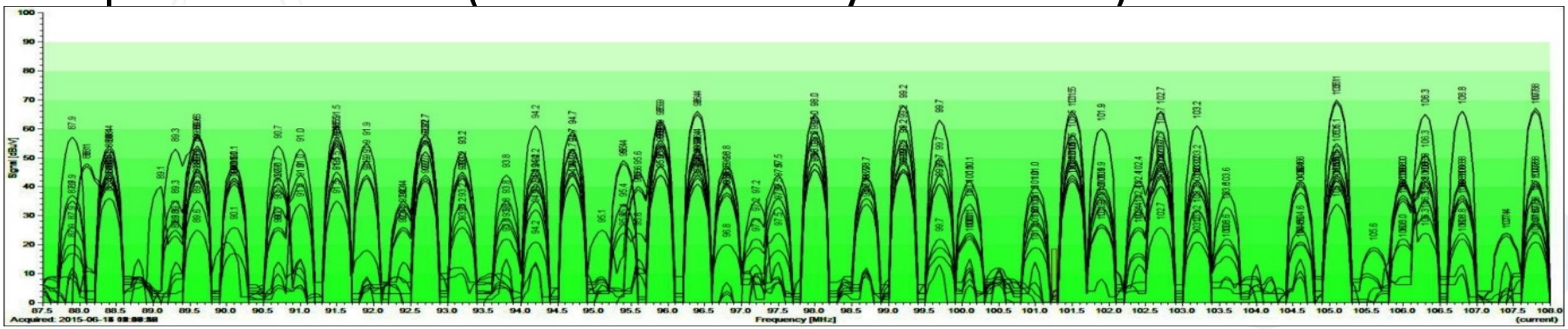


- We could witness that DRM+ can co-exist with FM in the same band without interferences – just to ensure we will be compliant.
- There are exciting new applications and projects to be evaluated with DRM that will take South Africa's ICT sector to the next level!

WECODEC

Spectrum in Johannesburg

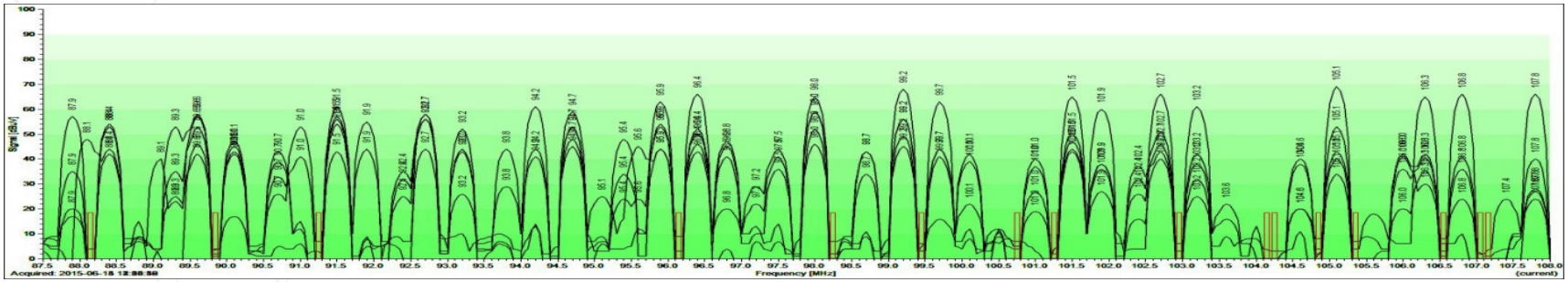
- The FM band provides a total available bandwidth of 20 MHz.
- In South Africa, a separation of 400kHz is considered the minimal separation of 2 adjacent FM signals without causing interference.
- Public broadcaster's radio stations maintain a 500kHz separation.
- This would give a total number of presumptive FM transmitters to a maximum of approximately 50 but the situation is however more complicated than that as the exhausted Johannesburg FM spectrum shows (measurement by WECODEC):



WECODEC

Spectrum in Johannesburg – contd.

- There is no space for more FM stations in Joburg and other places which resulted in a moratorium for community radio
- However, various field trials around the world have shown that the required offset between an FM an a DRM is much smaller – it starts with a Δf of 150kHz (Indonesia) but we consider 250kHz

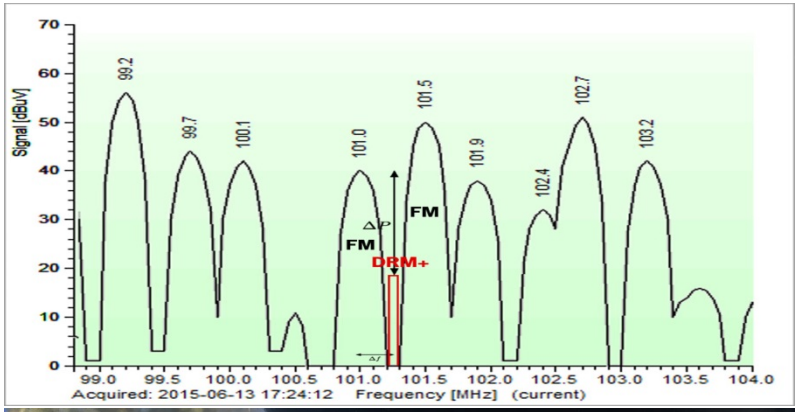


- This results in a scenario of 16 possible gaps for DRM+ signals
- Considering at least 3 sound services per DRM signal, in this scenario **up to 48 additional sound services plus data services** could be inserted to the current FM spectrum in Johannesburg without touching any other spectrum.

WECODEC

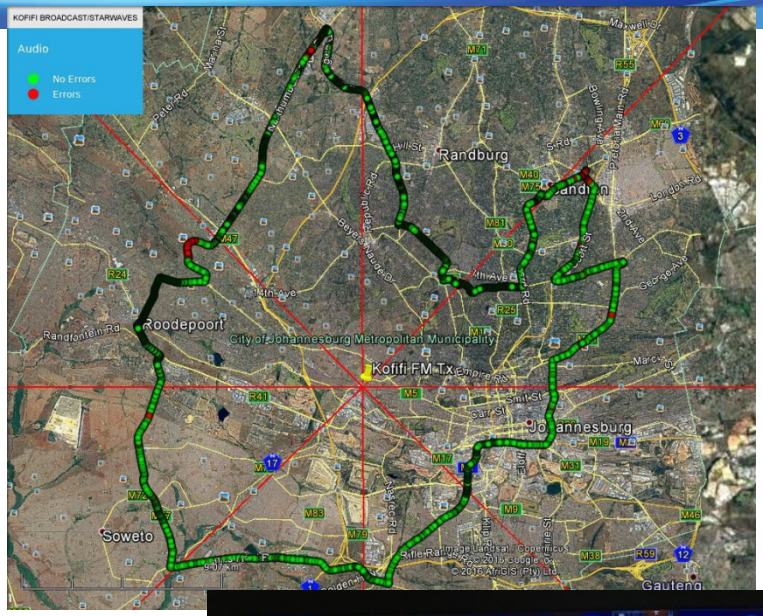
First Results in Johannesburg

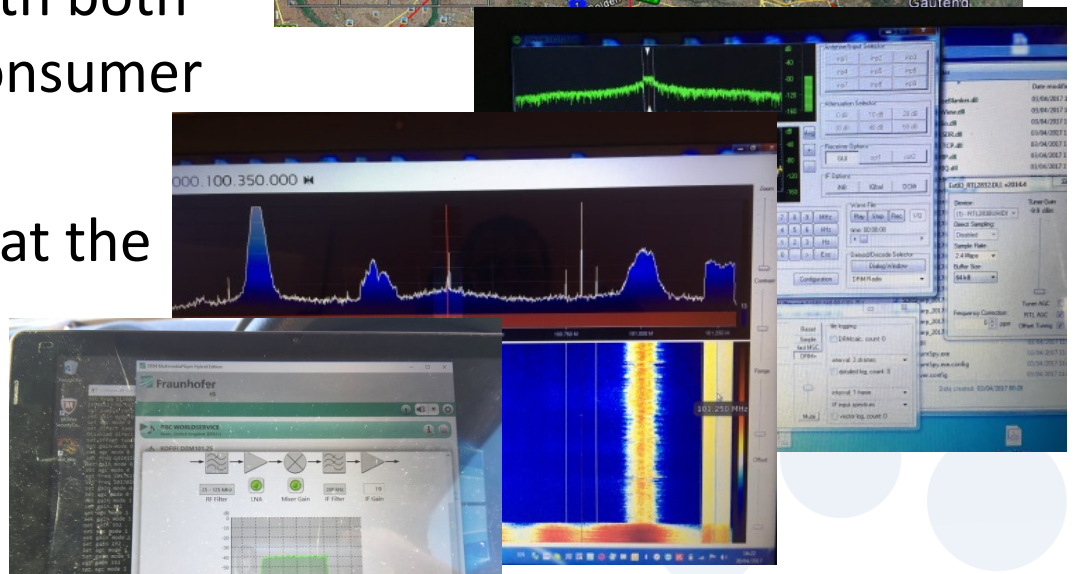
- The first objective was to prove that the DRM+ signal, situated between 2 FM signals with only 250kHz separation, will not cause interferences.
- This could be proven even in front of the transmitter (see also the video).
- With field strength as much as >71dBµV both adjacent channels (one coming in from Pretoria at a distance of 65km) are clear of interference.



First Results in Johannesburg (2)

- Next was to verify projected propagation with live measurements as well as comparing FM vs DRM+.
- For overall feasibility studies, signals are measured with both professional and (pre)consumer receivers.
- Our first results show that the DRM signal is available in most parts of the predicted areas despite its close separation to adjacent FM channels





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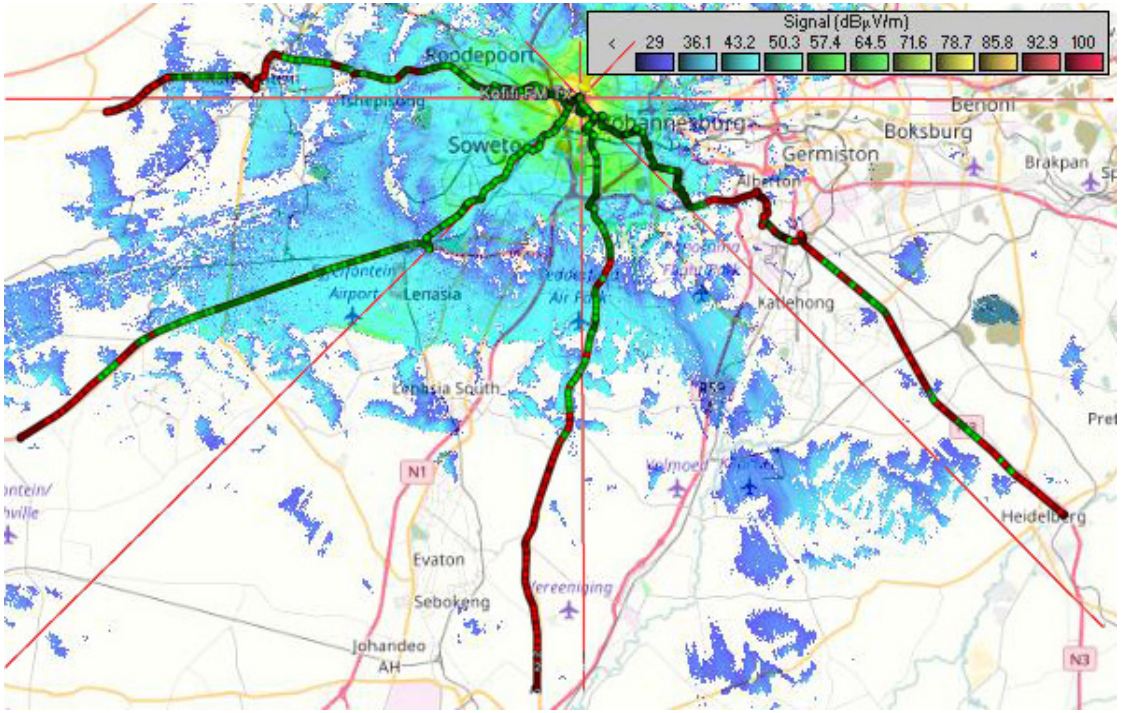
First Results in Johannesburg (3)

- Further analysis of our drive-by mobile measure-ments showed that measured values correlate with the pre-diction maps.

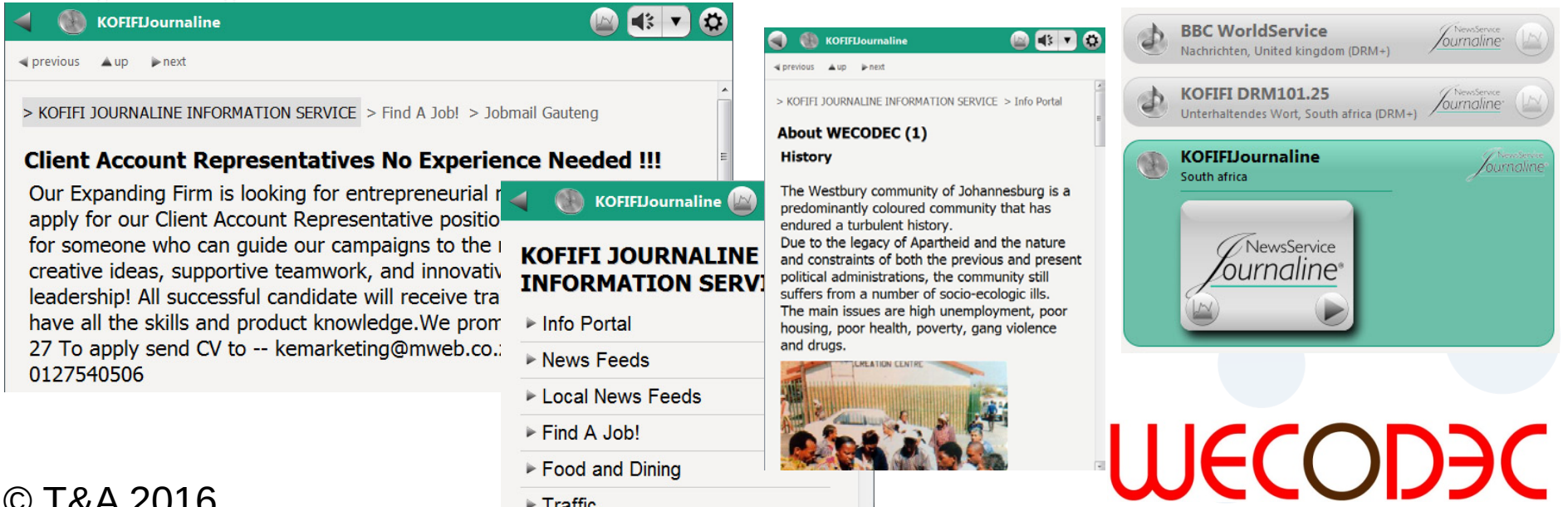


- Thereby it came out that the threshold to decode the signal is around 13dB below the official planning parameters
- This already confirms massive energy efficiency

WECODEC

Enhanced Data Services – Universal Access to Information

- The rollout of a sufficient ICT network infrastructure to bridge the digital divide is a national priority in South Africa
- However, the rollout of Wifi, 4G etc. will not happen overnight and is also very costly in rural areas - marginalized communities will remain disconnected for a long time without an intervention
- Besides sound services, DRM can carry relevant digital information services such as jobs, health, education, news etc. via Journaline:



Enhanced Data Services – Universal Access to Information

- These features can be used by the public, commercial and community broadcasters equally – on DRM with large or local coverage
- Community radio stations can generate their own digital content and broadcast it on the platform (like News24 for the commercials)
- This leads to skills development and job creation at a large scale and throughout the whole country regardless of the location / area
- **Women and Youth participation:** Everybody is talking about ICT. But how many kids really have access, specifically in rural areas?
- South Africa's population is young, we have a high level of millennials.
- WECODEC case study: Young community members and women are creating digital content for our Journaline platform!
- In future we will work with UJ to cooperate with students and make it a joint venture university / community project.

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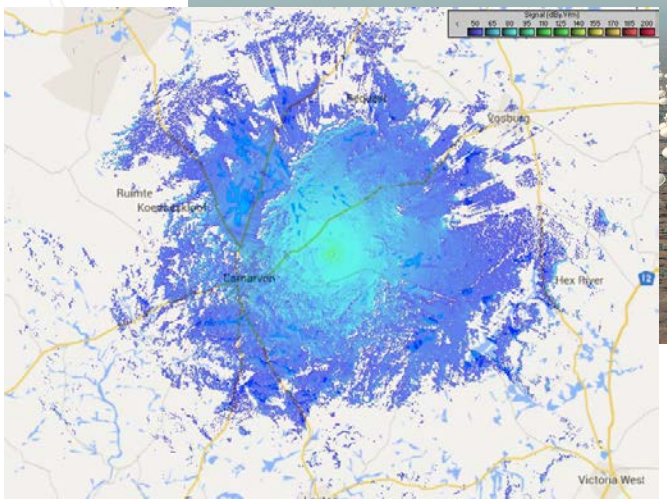
Trial in VHF Band I

- Once measurements in Johannesburg/FM-Band are completed, another pilot is scheduled in the Northern Cape near the SKA on Band I (64MHz) which would is the only radio frequency spectrum that is permitted (<100MHz) to carry broadcast signals to communities in that area which otherwise would remain disconnected from universal access to information.
- Two local community radio stations will participate on the pilot.



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Spectrum - the Millennium Challenge

- Since the initial efforts of introducing digital broadcasting in the 80's, the world has experienced numerous "revolutions" of information technology. Even the GE06 plans had to be revised several times again as radio frequency spectrum has become one of the most relevant natural resources on earth and different stakeholders are claiming utilization of the same.
- This is a big challenge for policy makers and regulators as the have to protect the interest of the public as well as provide an optimal environment for economic growth. The challenges are different for each economy due to individual developments of their ICT sectors, as well as population density, terrain properties, and many other parameters.
- In each economy, the most efficient utilization of radio frequency spectrum is paramount.

Spectrum - the Millennium Challenge (cont'd)

- In this light, the approach of DRM to fit into the existing FM and AM bands will allow for the most efficient spectrum usage without even touching additional spectrum that might be needed for DTT or other applications such as VHF Band III;
- VHF Band I has not been used for TV broadcasting because of frequencies below 63MHz having specific skywave challenges but **only a small portion (e.g. 63-66 MHz) could accommodate 90+ radio stations** – everywhere in RSA including the Karoo!
- By the way: DRM receivers don't care in which spectrum band the signals are broadcast – so the listener does not have to mind about this either. All stations/services will just be listed by name and can be selected by the consumer.

Stimulating Enterprise Development in (South) Africa

DRM Capable Home Entertainment

- **Enterprise Development at SMME level with local content!**
- Example: Design and production of various DRM capable receivers in **South Africa** as an answer to the demand of **job creation** and **skills development**
- There can be many such initiatives of **stimulating the electronic industry within South Africa**/SADC
- Receivers for the domestic market as well as export!

DRM Dongle

DRM Car Aerial

Affordable DRM Radio <30USD

Aftermarket Car Receiver

WECODEC

WECODEC
the westbury community development centre
IT 4455/00

Interim Report of a DRM Mode E Trial in South Africa

V1.4

Release Date: 08 July 2017

Project Partners:

Kofifi Media Group, Roodepoort, South Africa
BluLemon, Edenvale, South Africa
CR Electronics, Springs, South Africa
Genssoft Technologies, Midrand, South Africa
BBC World Service, London, UK
Fraunhofer IIS, Erlangen, Germany

Interim Report:
http://www.drm.org/wp-content/uploads/2017/08/Interim_Report for_DRM_Mode_E_Trial_in_South Africa_draft_1.47.pdf

DRM Trial, Johannesburg, South Africa

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DRM for Data Distribution

On Board Infotainment Service „News on the ship“

- **Audio service** from Radio Andernach
- **RSS news feeds** from Deutschlandradio and WAZ-group
- **News** from n-tv (images, videos)

Usage of existing SW antenna

DRM receiver

DRM-BoardNetServer

IP-insertion in IP-boardnet

Audio insertion ship loudspeaker

Video insertion in Bord-BK-Netz

Outlook:

- On service with **German Navy**
- Tested with **ocean freight vessels** from Germany to China
- Tested with a **cruise ships** from the Baltic sea to Alaska

DRM for Data Distribution

Project “News on the Ship”

Media Broadcast is a DRM encrypted live transmission from the shortwave transmitter Nauen (near Berlin) to vessels of the German Navy on the seas.

This solution provides on-demand access to currently and previously received audio and Journaline text information from any mobile device on the ship with a standard web browser.

New Generation of Chipset and SDR Solutions Brings Radio on all Frequencies to Cars and Devices

Fraunhofer IIS

NXP

ANALOG DEVICES

Parrot

PnpNetwork Technologies, Inc

siano MOBILE SILICON

Receivers

Avion AV DR1401

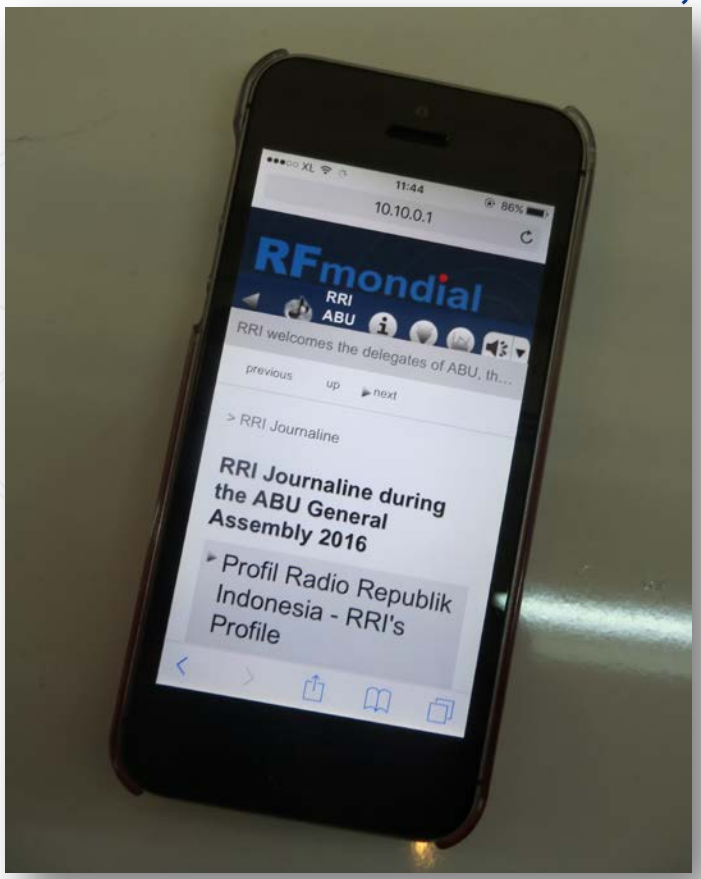
Full DRM feature set

Available now

STARWAVES CarBox

Aftermarket DRM Car Receiver/Converter Box

DRM Receiver Solution
With Built-in Wi-Fi Hotspot to Serve Tablets and Mobiles
At ABU, GA, Bali 2016



5 models of Hyundai have line-fit DRM Receiver

"*The work and tests which have been carried out highlight that DRM in India is a reality and that the auto industry is at the forefront of the Indian digital radio*" Bob Paul Raj, Hyundai Mobis

Elantra

Xcent

Tucson

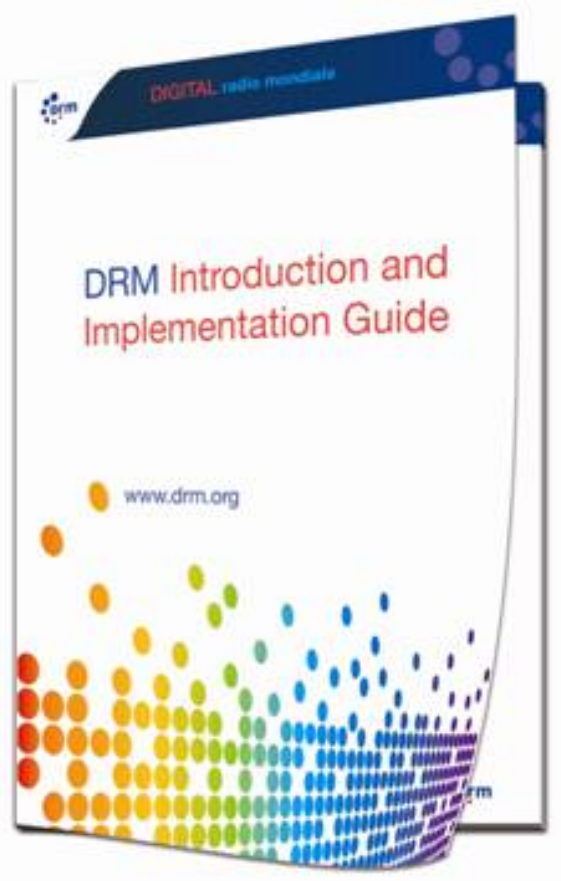
Grand

All you need to know about DRM Digital Radio

DRM Introduction and Implementation Guide

Version 2

Free download from: www.drm.org




drm
DIGITAL radio mondiale
Digital Radio Mondiale (DRM) Delivers
Invitation to DRM Special Events @
15th September 2017
GOSPELL
15:00 to 16:30
Hall 3, Stand C67
16th September 2017
THOMSON
BROADCAST
11:00 to 13:00
Hall 8, Stand C35
nautel
15:30- 17:00
Hall 8, Stand C49
17th September 2017
AMPEGON
11:00 to 13:00
Hall 8, Stand E62
To attend any of these events please RSVP to: projectoffice@drm.org
www.drm.org

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Dedicated India page

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