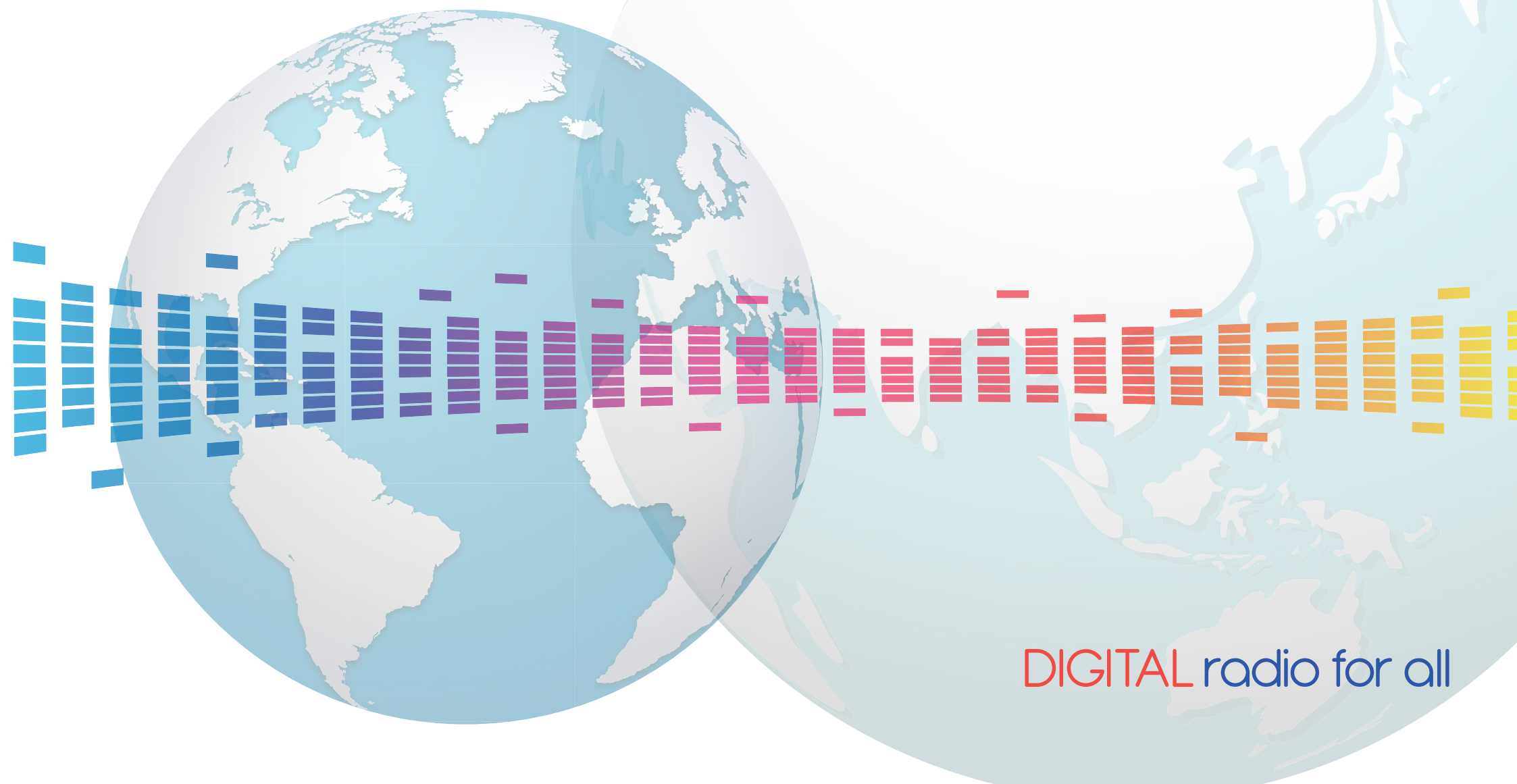


# DRM 2020 Review



DIGITAL radio for all

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# Foreword



In its 100th anniversary year radio is vigorous and in demand. DRM, not immune to the unprecedented challenges of 2020, has proven more than ever that it is the mass digital communication platform for our times. This e-book will take you through all the DRM developments over the last 12 months. We hope you will agree that it has been a good year for digital radio DRM and that its perspectives for 2021 are very encouraging. Enjoy the first DRM e-book, our gift to you and the industry!

For years, the DRM consortium has demonstrated that DRM is an open, efficient, and flexible all-band digital audio broadcasting standard that can ensure a smooth transition to digital broadcasting. The standard allows existing transmitter infrastructure upgrades, easy configuration, remote accessibility and has compatibility with other open standards. In 2020 this message was conveyed to more people, further afield than ever before. Old and new stakeholders and enthusiasts were the audience in the 2020 virtual conference rooms where a “show and tell” approach demonstrated DRM’s services and advantages in both AM and FM bands. We noted the DRM global expansion beyond India on any or several of the broadcast bands to Indonesia, Pakistan, China, Brazil, South Africa, Russia etc.

We introduced new technical development of the extra-efficient use of DRM FM which means that one antenna and one transmitter can broadcast between 12 to 18 pure DRM channels. New ETSI recommendations addressed the availability of multi-language content in receivers and an easier use of the Emergency Warning Functionality (EWF).

In 2020 the DRM consortium has devoted a lot of attention to DRM’s capabilities to deliver multimedia and, therefore, textual information needed not only for EWF but also to facilitate distance learning. DRM for distance learning is a new use of the standard. Lessons to be delivered to a digital radio, mobile, laptop screen or on a large screen, as part of public signage, could open new avenues for DRM. This is an area worth developing in 2021.

Receivers are also progressing. Over 2.5 million cars with DRM receivers are on the Indian roads. Manufacturers from China, India, Germany, South Korea, and U.K showcased dozens of receivers for AM (medium wave) but also for digital FM. We expect that DRM receiver manufacturers will receive next year the kind of orders they need to bring DRM receivers in big numbers and at affordable prices in more countries that are adopting DRM.

In 2021 we hope to see the full DRM standard (for FM, too) adopted in India and will engage very vigorously with the automotive industry. We also intend to extend the adoption and use of DRM in the AM for audio (and also data) in new territories, including the United States, Papua New Guinea, Latin America, Africa, and Australia.

We’ll also carve out a special place for the DRM capability to bring education to the millions of students who don’t have access to expensive gadgets and IP.

In 2021 millions of new and old listeners will discover and rediscover the wonder of radio, of digital radio DRM. And if you have just discovered the great potential of DRM, want to implement it, you might take a moment and enjoy this original DRM video taking you from studio to transmitter, receiver and the most important recipient, the listener.

We thank all of you for your contribution to DRM. A special thank you goes to our enthusiasts all over the world. At the end of this challenging year, we want to recognise one such DRM enthusiastic individual for being in effect a one-man DRM marketing machine and give him a special award. It is Dr Thamminana Krushna Rao of Andhra Pradesh, India. Congratulations!

So please **check our successes in 2020** and let us make 2021 a ground-breaking DRM year 2021!

**Ruxandra Obreja**  
Chair, DRM Consortium

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# Section 1 - Global DRM Reaches Beyond India

## India Update

### Intro

India remains the largest digital radio country in the world for its deployment of DRM digital radio. This year has seen significant milestones achieved by the public broadcaster All India Radio (AIR) including a newly announced automotive DRM workgroup as well as a planning unit for DRM activities and communication.



### Latest Digital Radio Mondiale (DRM) Developments in India

The roll-out of the DRM standard in India has made important strides in 2020 being driven and supported mainly by the public broadcaster, All India Radio (AIR), together with key stakeholders such as Prasar Bharati (the organisation that comprises All India Radio, the public broadcaster, and Doordarshan for TV) and the industry, the DRM India Platform and DRM consortium. They focused on introducing non-stop pure DRM transmissions with 3 services or programmes on one frequency in 4 key metros, more DRM transmitters for increased coverage, more varied and exclusive audio programmes with Journaline multimedia content added. There was also progress on the national rollout of DRM's Emergency Warning Functionality (EWF), and work on a programme information guide enabled by Journaline.

At the beginning of March this year AIR/Prasar Bharati constituted the **Project Monitoring Unit (PMU)** for the implementation of digital radio in India and the first meeting of this committee took place on the 6th March. Among the tasks the PMU identified then were the configuration of the technical DRM infrastructure for the entire country, the creation of popular, attractive content, the strong promotion of the DRM broadcasts and the intensified interaction with the industry aimed at manufacturing mass-scale receivers.

AIR has extended its **infrastructure**, as per the table right:

PRESENT INFRASTRUCTURE OF DRM - Digital Radio (MW)		
Power (kW)	Transmitters	Locations
<b>EXISTING SITES (35)</b>		
1000	2	Rajkot & Kolkata (Chinsurah)
300	6	Rajkot, Lucknow, Jammu, Dibrugarh, Suratgarh & Jalandhar
200	10	Delhi-A, Bengaluru, Kolkata-A, Ahmadabad, Dharwad, Jabalpur, Ajmer, Chennai-A, Siliguri & Itanagar
100	11	Panaji, Pune, Mumbai-A, Mumbai-B, Vijayawada, Patna, Varanasi, Tiruchirapalli, Kolkata, Ranchi & Passighat
20	6	Delhi, Chennai, Guwahati-B, Tawang, Bikaner & Barmer
<b>UPCOMING SITES (6)</b>		
<b>Already Tested</b>	<b>2</b>	<b>HYDERABAD (200 kW) &amp; VISHAKAPATNAM (100 kW)</b>
<b>COMING SOON</b>	<b>4</b>	<b>JAGDALPUR, SAMBALPUR, JEYPORE – 100 kW BHAWANIPATNA – 200 kW</b>

AIR's initiatives for the improvement of the **DRM transmissions** can be summarised as follows:

- Same frequency during simulcast and pure DRM (there is no need to retune receivers when the transmission switches between simulcast and pure DRM).
- Multiple DRM services available on a single frequency (in both simulcast and pure DRM)
- AIR Journaline text widely available with increased content and language offerings
- Non-stop daily pure DRM transmissions in major cities having three services on one frequency (except between 3-5pm). The transmitters in these cities have the following specifications and run on the following frequencies:

Mumbai – 100 kW (1044 kHz)  
Chennai – 20 kW (783 kHz)

Kolkata – 100 kW (1008 kHz)  
New Delhi – 20 kW (1368 kHz)



As far as the **programme content** is concerned, currently AIR has come up with new initiatives:

1. A channel made available on a single frequency to get:
  - a. 24/7 news exclusively in DRM broadcasts: <https://youtu.be/5KhO4o-hcnQ>



- b. An entertainment channel transmitting live sports events as well, such as cricket, which is the most popular sport in India; AIR is exploring the possibility of providing a Score Card under Journaline advanced text together with live cricket commentary in pure DRM.



- c. Popular music channel on national level.

2. The Journaline feature of DRM used for a Programme Information Guide is to be tested soon and introduced for regular programmes.
3. Ongoing discussions with the relevant agencies are going on for the introduction of the Emergency Warning Functionality, a key feature of the standard.

**Communication** to the industry and to the public has also increased during 2020. This has taken the form of tweets by Prasar Bharati management, press coverage and communication during their roadshows in India.




In terms of **receivers**, there are several manufacturers in India and abroad planning to start the production of receivers in significant numbers, when substantial orders are being received. One such manufacturer, Gospell from China has formed a partnership with Antriksh Digital Solutions to become their representative and distributor in India.

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**Going forward** a key element of success in India is the further adoption of the standard by the automotive industry. Currently in India there are over **2.5 million cars** with line-fit DRM receivers at no extra cost to the consumer. However, more brands need to consider the introduction of DRM radios in their vehicles, to satisfy consumer demand.

All India Radio is fully committed to supporting DRM in all of India and wishes therefore to see that there is industry-wide support for DRM MW (and, if possible, for SW, too) in all car models. This was underlined during the recent 2nd national Car Forum organized at the end of November by NXP, when the AIR representative said that it is imperative that the Government seriously consider mandating DRM digital radio in all vehicles in the country.

In addition to MW and SW there should be DRM in FM support from now on, as the industry is working already towards digitising the FM band.

The more cars with DRM radios there are in India, the better promotion of their DRM programmes AIR can make to the public.

And finally, there needs to be support for all core features of the DRM standard. Journaline has already been introduced. But this should be followed by the Emergency Warning Functionality (EWF), station logos, AFS, announcement, blending to AM/FM and others.

Activities in India have continued despite the pandemic and there is continuous activity linked to DRM in FM, DRM for education and popularising DRM more widely to listeners.

## DRM Consortium Announces Creation of DRM Automotive Workgroup for India

A new DRM Automotive Workgroup for India was launched during the second annual NXP India Cockpit and Infotainment Forum organized by NXP Semiconductors.

The Forum, a high-powered event included comprehensive presentations on the recent NXP milestones and future plans, as NXP is supplying inclusive and up-to-date infotainment solutions to the powerful automotive industry, the undisputed driver for radio consumption worldwide. Currently, on the Indian roads there are over 2.5 million cars (representing all the big automotive brands) fitted with DRM receivers at no extra cost to consumers. NXP, a DRM Consortium member, continues to work hard on DRM firmware development (in the AM and FM bands).

At the NXP Forum the automotive industry was strongly encouraged to support and help the transition to digital radio, by making DRM available in all car models, while supporting the full DRM feature set, and by promoting DRM to customers in cooperation with All India Radio (AIR).

This industry-wide body is accessible to all interested industry parties and enables an efficient two-way communication channel with AIR and India's government to ensure a smooth and successful DRM rollout. Those interested and requesting more details please write to: [projectoffice@drm.org](mailto:projectoffice@drm.org)

During the event, AIR presented recent optimisations of the national DRM coverage as well as upcoming, exclusive service offerings for their listeners on DRM.

NXP, AIR and the whole DRM consortium are asking the Indian government for support to mandate DRM reception including EWF – Emergency Warning Functionality – in cars, in a similar way in which the EU has recommended that any car for rent or sale in the EU needs to have a radio receiver capable of receiving services provided via “digital terrestrial radio broadcasting” from 2021 onwards.

## DRM Gossell Receivers Available to Buy in India Through Antriksh Digital Solutions

Gossell Digital Technology Co., Ltd and Antriksh Digital Solution LLP of India have recently signed a cooperation agreement for the sale of DRM digital radio products in the Indian market. The two parties have also officially launched the promotion of Gossell's DRM receiver products.



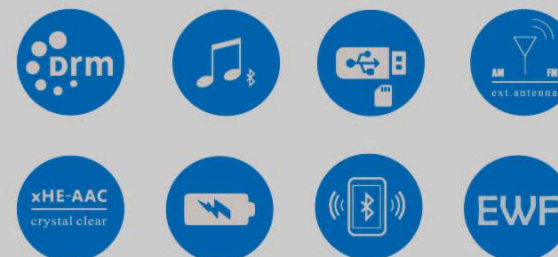
This cooperation agreement means that Antriksh becomes a Gossell digital radio distributor. Both parties will integrate their own resources according to market needs: Gossell will provide high-quality DRM digital radio products and services, and Antriksh will provide their customers with convenient purchasing modalities. The core advantage of this cooperation is to simplify the customer purchase process (no foreign exchange) and shorten the product shipment cycle. Indian customers can immediately purchase locally high-quality DRM digital radio products from Gossell through the distributor Antriksh and enjoy all the benefits of the Gossell products.

Currently there is a stock of Gossell DRM 216 receivers at reduced price which can be acquired for individual use or retail by phoning Mr. Santosh 96-76015678 in India. Currently only GR-216 is available in stock, and new models will be gradually introduced in the future.

The cooperation with Antriksh underlines Gossell's customer-oriented business approach and its services strategy which prioritises the customers' needs and expectations. This cooperation will streamline the purchasing process making it more convenient for customers.

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## Pakistan

### Pakistan Digitisation and Automotive Policy Plans

The Pakistani public broadcaster (PBC) announced a three-stage plan to digitise its operations using DRM technology. The budget for each phase of the project is under the consideration of the Government. Meanwhile, Radio Pakistan has decided in principle to install a 100KW digital (DRM) transmitter on the land of Sariab Quetta. This will be a welcome service for the large number of locals who have long been hoping for a modern digital transmitter in this area that will allow them to listen to good audio quality programmes and local artists in their mother tongues.

PBC has also requested that the Government includes the Policy for equipping all cars in Pakistan with DRM receivers in its automotive policy. This will be discussed for inclusion in the Automotive Industry Development and Export Plan for 2021-2026 of the Ministry of Industries and Production. PBC representatives will be part of the consultative body that will issue the new automotive policy.

This represents yet another major step in the already significant progress made by PBC towards the roll-out of the DRM digital radio standard in both the AM as well as VHF bands in their country. This policy will be a key driver for all major automobile brands and OEMs to prepare and produce line-fit DRM radios in their new cars and to provide solutions for the after-market vehicles in Pakistan.



DRM transmitters can be used for disseminating disaster warning to the radio listeners, in the event of an impending natural disaster. DRM in all bands supports “EWF” (Emergency Warning Functionality), which can automatically re-tune the receiver to the emergency programme or even help to switch on receivers from standby in case of pending disasters. The emergency programme then combines audio announcements with multi-lingual Journaline information to reach hearing impaired users and travellers with detailed on-demand information.

After the successful installation of the five digital FM transmitters RRI convened a two-day EWF workshop for all the major Indonesian stakeholders interested in providing this vital service to the population. The virtual webinar brought together RRI representatives, the national emergency disaster management agency (BMKG), regional disaster management bodies (BPBD), local disaster management councils, broadcasters, the Indonesian regulator KOMINFO, the online connectivity provider Telkom and DRM experts who joined online.

Sharad Sadhu, technology consultant, led the webinar and his full report is available [here](#).  
[Read more](#)



## Indonesia

### DRM Emergency Warning Functionality Really Works – Good Results for Indonesian RRI

The Indonesian public broadcaster, RRI, commissioned **five digital radio transmitters in the FM band**, using the Digital Radio Mondiale (DRM) FM digital radio standard committing itself to providing comprehensive emergency warning services to the public in Indonesia, using the DRM infrastructure.

## South Africa

### DRM Recommended in the Digital Migration Policy Unveiled by the South African Government

The Department of Telecommunications and Digital Technologies in South Africa published in July a [document](#) outlining its policy on digital migration in the country. The policy paves the way for the migration to digital radio broadcasting which includes the use of DRM digital radio technology. South Africa becomes the first country to recommend

both DRM (AM and FM) and DAB+ and the availability of multi-standard chipset receivers could be the catalyst in accelerating the adoption of digital radio broadcasting and help in future proofing radio.



## South Africa Takes Positive Step Towards Creating Radio Digitisation Framework

Following on from the publication of its **policy on sound broadcasting digitisation** in July, the South African regulator ICASA has worked hard and published in November draft regulations on how this policy can become reality.

South Africa is the first country in Africa and the world which has recommended both DRM (AM and FM) and DAB+ as standards (jointly called Digital Sound Broadcasting or DSB) to be used in digitising the terrestrial audio services of this large country. The draft regulations aim at setting out the framework for the introduction of DSB. They also set out the procedure to be used to acquire a digital license. This will have to be followed by public, commercial and community stations and refers to licensed signal distribution operators.

The draft regulations published on November 13th refer to multi-channel distributors required to have a network license and a (RF) spectrum license in order to be able to distribute several channels. Licenses will have to be granted by ICASA, the regulator, or rather by the newly created the DSB technical advisory group (DTAG) which will oversee the process. Those broadcasters in control of their infrastructure, without the need of any intermediary, will also need a spectrum license and the approval of the DTAG.

As this is only a consultative document for now, it is to be seen what the South African broadcasters' reaction will be and if there are some objections to the rather long timeframe for receiving a digital broadcast approval/license (2 years) for the new entrants onto the broadcasting market and the start of the actual digital broadcasts (2 years again).

The first steps towards digitisation are to be made in simulcast, as the switch off date of analogue will be decided by the Ministry in Pretoria. The November 2020 Draft on DSB Regulations is a big step forward on the way to South African radio digitisation. The actual framework will become reality once it is finalised and officially published in 2021.

## Brazil

### DRM SW Transmissions Started in Brazil

After initial tests carried out on 25th of November, from 2nd December 2020 on, Brazil is broadcasting in DRM on 11910 kHz from the public broadcaster EBC (Empresa Brasil de Comunicação) HF transmission site to the Amazon region and other parts of the Americas. The test is the result of the partnership between the Ministry of Science, Innovation and Communications, University of Brasília and EBC, and benefits from the development of the first HF DRM transmitter in Brazil by BT Transmitters. The recently installed transmitter is on air with 1 kW of power, irradiating from a huge HRS 4/4/0.5 antenna beamed to the north.

Companies and organizations supporting the project are BT Transmitters, Fraunhofer IIS, DRM Consortium, ABRADIG and many others which, directly and indirectly, are helping Brazil to give its radio broadcasting a future - which is digital.

The audio quality of the transmissions has been recorded in [Brazil](#) and further afield like the [US](#).



PICTURE of the team The Brazil Team (left to right): Mr Gil ( MCTI – government) Adriano (EBC) Flavio Lima ( Ministry of Communication), Prof Plinio (University of Brasília), Ismar do Valle ( EBC) and Rafael Diniz, chairman of the DRM Brazil Platform.

## Digital (DRM) in the AM Band is the Way Forward – Commentary by Nigel Fry (BBC)

In commentary published by Radio World, the BBC's Nigel Fry, outlined the benefits of transforming the AM band using digital radio technology. DRM digital radio is an option to achieving this transformation. [Read more](#)

### USA

#### Who's Afraid of DRM?

Following months of consultation on the revitalisation of the mediumwave band in the US by the FCC, the Commission gave the green light for broadcasters to broadcast all digital in HD. The Commission also noted the interest by some broadcasters in "alternative technologies" (i.e. DRM), which, after further tests, could be considered. Using the opportunity offered by the FCC in their statement, Ruxandra Obreja, DRM Consortium Chair writes in Radio World that DRM is ready to prove its advantages. DRM an ITU recommended standard for mediumwave, has been tested and documented about two decades ago. [Read more](#)

#### USAGM Voice of America Testing Innovative Technology – DRM

This year, the United States Agency for Global Media's ("USAGM") Office of Cuba Broadcasting ("OCB"), in cooperation with USAGM's Office of Technology, Services, and Innovation ("TSI"), began DRM test transmissions from the Edward R. Murrow transmitting station in Greenville, North Carolina. This station was chosen for a number of reasons, but primarily due to an interest of OCB in experimenting with this mode of transmission and the proximity of the station to the USAGM Washington, DC, headquarters. However, another very compelling reason for using this site was the availability of a transmitter that could be used with DRM without any modifications. [Read more](#)

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- 33 DRM-enabled sites for All India Radio
- 2 Megawatt DRM-enabled system for Antenna Hungária



## Section 2 - DRM Is Technically Better Than Ever

### DRM Simplified – ETSI Recommendations

The European Telecommunications Standards Institute (ETSI) has recently published two specifications for Digital Radio Mondiale.



**ETSI TS 101 968** – DRM data applications directory. This fully backward compatible update and simplification of the core DRM standard itself contains updates to the table of FAC (Fast Access Channel) Application identifiers to include Slideshow and the special indicator that allows lower power monitoring for emergency warning receiver wake-up.

**ETSI TS 103 771** – DRM regional text profiles is a new specification for the regional text profiles, which include the Core Indian profile. This new specification is meant to support the DRM roll-out worldwide by ensuring proper receiver support for local Unicode scripts in various countries. It is a companion specification that will become fully effective when the main DRM system specification, ES 201 980, is approved and published because that has all the definitions for better text handling, the clean-up of the coding and modulation and the extra details for the low-power emergency warning monitoring.

Approval and publication of the DRM system specification, ETSI ES 201 980 is expected in early 2021

### DRM for FM – An Even More Efficient Solution Now Available

DRM consortium members RFmondial and Nautel introduced a technical development that allows the superefficient use of one FM transmitter on one antenna and one frequency. Using a Starwaves receiver, they demonstrated the way in which DRM can be the most efficient open standard by broadcasting up to 18 DRM channels within 600kHz on one frequency, from one single FM digital transmitter and antenna.



This solution allows one analogue FM transmission (200 kHz) and four DRM channels (two in each of the 200 kHz guard spaces as a DRM channel only occupies 100 kHz). Or if the whole 600 kHz are used in pure DRM then up to six DRM channels (each service with up to three audio and one data services) can be offered from the same transmitter, same antenna with possible sharing of costs among several broadcasters. The individual broadcasters remain in control of their transmissions without the involvement of third parties.

### Digital Radio – European Electronic Communications Code Sends Powerful Message to Countries Adopting DRM Globally

The DRM Consortium welcomed the letter and spirit of the EECC code of 2018, now ready for rollout. It recommends in a technology-neutral form that any car for rent or sale in the EU should have a radio receiver capable of receiving services provided via “digital terrestrial radio broadcasting” (without specifying any particular digital standard). It must now be transposed into national legislation by EU Member States by 21 December 2020.

This European initiative serves as a good example to all the countries and administrations around the world adopting or considering the rollout of DRM technology.

Even within Europe, digital terrestrial radio broadcasting covers more than one standard. With international DRM transmissions on the air in Europe and from other parts of the world into Europe, such an overarching act can hasten the radio digitisation. Existing multi-standard chipsets allow for one or two complementary standards to be used so that listeners have access to a variety of services provided nationally and internationally. So even in Europe adding DRM to car receivers would be fully in line with EECC and be a good service for listeners as programmes are available.

The act is also significant because it urges the creation of an equal playing field for the car industry. It can also help with the roll out of digital radio whose aim is to offer continuous services across countries and continents giving listeners a chance to enjoy digital radio and its extra features, irrespective of the digital broadcasting platform used.

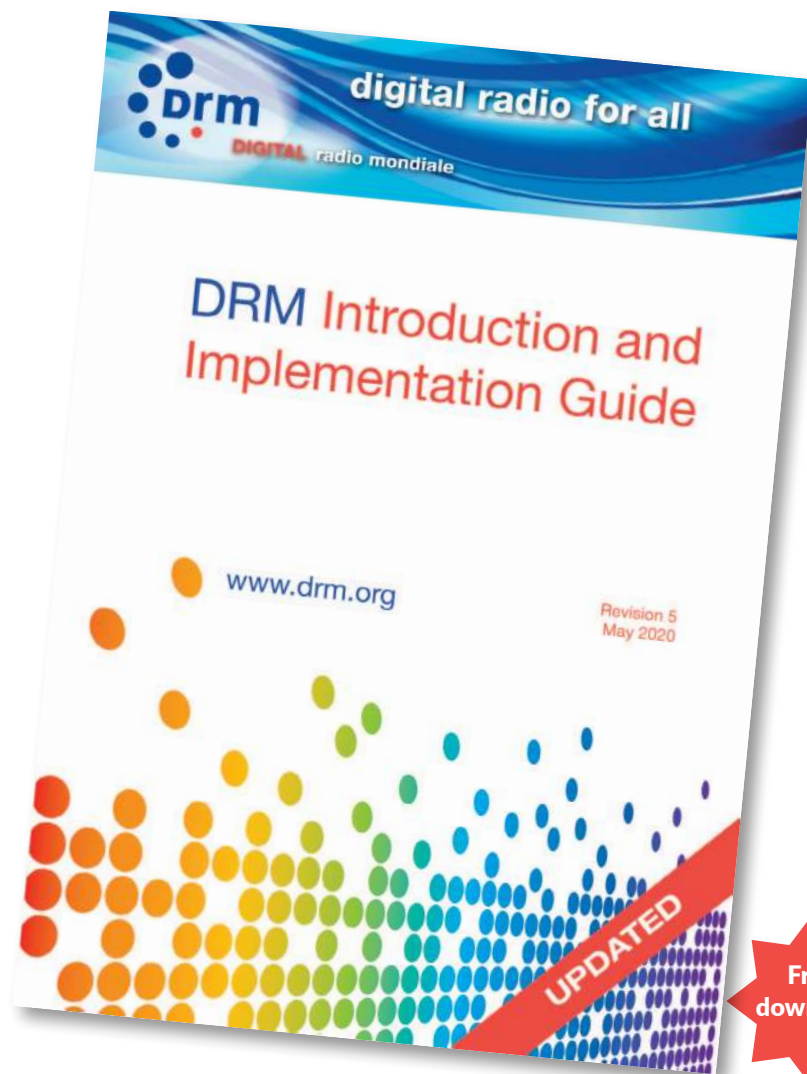
### DRM – Key Member of the Digital Radio Standards Family

DRM is the only global, all frequency bands digital audio broadcasting standard. ITU recommends at least another two main ones. DRM Chairman wonders if this is an advantage or disadvantage and under what conditions they can coexist. [Read more](#)



## DRM Handbook Updated

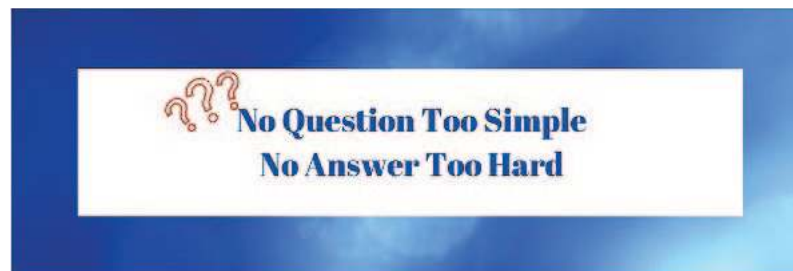
The comprehensive [DRM Handbook and implementations guide](#) has been updated and is available for download on the DRM website or [handbook.drm.radio](#). The latest version 5 is for all those interested in DRM and anyone interested in DRM implementation and wish to have now a complete and clear document.



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download

## Over to Your: Your Questions on DRM Answered

**Launched in April 2020.** No Question Too Simple, No Answer Too Hard – was the two-channel communication way to answer the many questions posed by specialists and experts directly to the Consortium or during the many webinars held together with organisations like ABU, ASBU, AUB, AIBD etc. throughout the year. The initiative has proven to be very successful and the Consortium continues to invite more questions. Keep your questions coming [here](#)



## Section 3 – DRM Showcases Reach Further in 2020

### DRM Holds Virtual General Assembly

The DRM **General Assembly in March** in 2020, unlike any other, tested our virtual communication skills and was declared a real success.

A comprehensive presentation on the DRM receiver situation was very well received. This was focused on the over 2 million DRM receivers in Indian cars and the new consumer receiver models (standalone, car solutions and adaptors, SDR) from China, India, Germany, UK, supporting the full DRM feature set with Journaline, EWF (Emergency Warning Functionality) and DRM in the AM and FM bands.

The online meeting also brought the members together in sharing news and ideas, as well as in contributing to the strategic directions for the following months. These are mainly focused on the DRM (in the FM and AM bands) take-up in Asian countries including India, China, Pakistan, Indonesia, and on other continents.

During the General Assembly, the members were also introduced to DRM's presence under the new radio domain, [www.drm.radio](http://www.drm.radio), which is currently equivalent to [www.drm.org](http://www.drm.org). This new radio domain gives convenient and direct access to the most visited pages of the DRM website: [handbook.drm.radio](#), [india.drm.radio](#), [schedule.drm.radio](#), [news.drm.radio](#), [newsletter.drm.radio](#); and to external DRM services including [twitter.drm.radio](#) and [youtube.drm.radio](#).

A special service was also unveiled for members only: the DRM Monitoring online service. This web-based service lets you experience the audio content and quality as well as the advanced DRM features such as Journaline and EWF, as they are being broadcast at that moment through DRM transmissions in different parts of the world.

### IBC – Best DRM IBC event in its History

Despite the changed reality across the world, the virtual IBC 2020 occasioned the biggest and most exciting DRM event of the year. Under the overarching theme “DRM – Advanced Radio for All” the DRM Consortium shared virtually with participants from countries on all continents, the recent advances of DRM in various parts of the world (India, Indonesia, Pakistan, South Africa etc.) and the most recent improvements to the DRM performance, equipment, and receivers (from Switzerland, India, China, South Korea, Germany, UK etc.).

The two-hour online presentation provided an insight into recent DRM developments taking place around the world, as well as a peek at new dedicated products.

The highlights of the event included details on DRM progress in India (more DRM MW transmitters announced), Indonesia (successful use of DRM for FM transmitters also for emergency warning), Pakistan (announced as a DRM country with a comprehensive implementation rollout), South Africa (with a new digitisation policy also mandating DRM) and Brazil.

Building on receiver progress announced at the General Assembly, DRM-compatible receivers were again a main topic of presentation. Manufacturers Gossell and Inntot promoted a variety of standalone and automotive receiver solutions. Starwaves highlighted the Tuk-Tuk receiver and launched a new receiver demonstrating excellent DRM in shortwave reception. South Korea based RF2digital showcased their multi-standard SDR option. Other solutions came from Cambridge Consultants regarding new developments on low-cost, low-energy receivers and from Avion.

Presenters from RFmondial, Nautel and Starwaves demonstrated the way in which DRM can be the most efficient standard in broadcasting up to 18 DRM channels within 600kHz on one frequency, from one single FM digital transmitter and antenna. One presentation that also attracted a lot of interest was the use DRM for emergency warning and especially education (both in receivers and for public signage).

The event demonstrated the commitment of our members and of all those convinced of the DRM superiority and efficiency.



## DRM Bringing Affordable Digital Radio to Global Audiences

With the increasing availability of DRM radios in the consumer market 2019/2020 saw some exciting developments in DRM (Digital Radio Mondial). Low cost, low power consumption radios are one of the major factors influencing the take up of DRM technology on a global scale.



For broadcasters, DRM is an attractive proposition, enabling operational cost savings through the lower power requirements of DRM transmitters. For the listener, DRM offers excellent “FM like” sound quality in stereo – even on short and medium wave, plus simultaneous programme related data such as text and pictures, and ease of tuning from a familiar Electronic Program Guide (EPG) display.

The consumer market however, has been slow to respond. Until recently, only a handful of receivers in the form of portable radios have been available. The exception of course is India, where the adoption and implementation of the DRM digital radio standard represents probably the biggest digital radio roll-out project in the world.

The commercial development of consumer DRM radios has been hampered by the cost of production of a relatively low number of units, and the power requirements of the DRM chipset inside the radio itself. Over the past 12 months or so, both of these problems have been addressed by research and development teams working in the UK, US and Asia. In the UK, innovation specialist Cambridge Consultants has unveiled a design for a sub-\$10 DRM receiver; still in its prototype stage, the new chipset is both cheap to produce and far less demanding on power supply – an important consideration for DRM radios to be successfully marketed in regions where battery operated, or ‘wind up’ radios are essential features.

Elsewhere, new consumer receiver models, including standalone radios, in-car solutions and adaptors and software defined radios (SDR) from China, India, Germany and the US have been released, all supporting the full DRM features of Journaline (scrolling text and news etc.), EWF (Emergency Warning Functionality) and transmissions in the AM and FM bands.

Encompass and the BBC were founding members of the DRM Consortium – an international not-for-profit organisation composed of broadcasters, network providers, transmitter and receiver manufacturers, universities, broadcasting unions and research institutes – and continue to fully support DRM. As the BBC’s international transmission provider, Encompass was one of the pioneers of DRM technology and has been

broadcasting regular digital radio transmissions to Europe and Asia since 2003. Now, with cheaper DRM receivers due to launch this year with much lower power consumption than previous generation devices, the consumer market for DRM is likely to grow even wider and reach new audiences across the globe.



© Neale Bateman

Transmission towers on the volcanic Ascension Island, broadcasting to Africa.  
Article reproduced with permission from Encompass Digital Media.



## Section 4 - DRM Distance Learning

### Intro

As our daily lives from work to education and most other activities have moved online, the unique qualities of radio have proven to be the best way to ensure equal access for all. The crisis has demonstrated that radio as an enabler of distance learning is more accessible and realistic than universal broadband.

### DRM - Important Distance Learning Tool

DRM digital radio can be a useful and imaginative platform to deliver education to millions of students without access to IP, G5 or even electricity. DRM does not only offer simply excellent sound in all bands at lower energy prices but so much more. Its data distribution potential is now coming to the fore DRM for distance learning was introduced to many interested parties in 2020 and is an area worth developing in 2021. DRM can deliver the typical classroom education as well as lessons for personal self-study by combining its audio and multimedia service capabilities. Using the Journaline application developed by Fraunhofer IIS, lessons can be delivered to a small radio and via WI-FI spots then to mobile or, laptop screens. Or they can be beamed on a large screen, as part of the public signage application of DRM, therefore achieved again through terrestrial digital broadcasting.

Rich or poor, in the outback or in faraway regions, on islands and ships, DRM can reach everyone in a region or the whole country at once with sound, text and other data. A unique crisis has presented a unique opportunity to deliver innovative solutions using DRM digital radio.

### Digital Radio DRM Serves Communities with Radio Schooling and Distance Education - No Internet Required

#### Digital Radio Mondiale (DRM)

DRM is the modern successor technology of the analogue radio broadcast standards AM and FM. It propels radio listening to the 21st century, while giving listeners, broadcasters, and device manufacturers a wealth of innovation and new business opportunities.

#### Education Disruption due to Covid 19

The global Covid-19 pandemic has caused education disruptions in most countries around the world.


A low-angle, blue-tinted photograph of a tall radio tower with multiple antennas and structural beams, reaching towards the sky.

# RFmondial

## Products and Services for Digital Broadcasting

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mail [info@rfmondial.com](mailto:info@rfmondial.com)  
phone +49 (511) 330 995 60



Radio enjoys wide coverage and DRM Digital Radio offers revolutionary advantages that can deliver distance education to all.

DRM technology empowers broadcasters to enhance their radio offerings. This includes up to three high quality audio programs with additional multimedia/data service on a single transmission. Listeners benefit directly from DRM's additional capacity for audio programs, along with all the new data services such as Journaline advanced text, slides show images, etc. Additionally, DRM receivers can cache and store the data obtained as Journaline text on the device itself, allowing the user to access the information instantly and at any time. This combination of audio and multimedia services available on a standard digital radio set via free-to-air broadcast has the potential to tackle the disruption in education posed by Covid-19 pandemic.

### Distance Education using DRM – Use Case

DRM can deliver the typical classroom education as well as lessons for personal self-study by combining its audio and multimedia service capabilities. The DRM audio service carries a teacher's classroom lectures at certain times with a pre-announced schedule ("Radio Lessons"). In parallel, DRM's advanced text application Journaline carries the complimentary lecture notes, full textbooks including graphics and formulas, illustrative images, etc. ("Radio Book"). The complete textbook information is constantly available as part of the DRM transmissions, not just during the live audio lectures; it therefore serves simultaneously as lesson-accompanying lecture notes during a live audio lesson, and as a full textbook for self-study of the subjects by students at any time. The Journaline content can be structured by language, class level, subject, topic, and chapters, for easy and instant navigation and content access by the students.

### Distance Education using DRM – User Experience

**Figure 1** paints a generic picture of the user experience during a live lesson. The audio service presents the teacher's voice. The teacher will point to specific Journaline chapters during the lesson, equivalent to how they would work with a physical textbook in class.

To prepare for the live lessons, or to self-study at any time, students can access the complete Journaline offering at any time, including additional lecture notes by the teacher for specific live classes, and accompanying quizzes (with answers on separate pages) for students' self-judgement of their learning progress. Other than the live lessons, the Journaline textbook content can be provided in several languages simultaneously: a student could for example access the text version in a regional dialect while the live lesson is provided in a country's official language. This multi-lingual aspect is particularly relevant for major global broadcasters addressing an international audience.

Thanks to the standardized MDI format containing the full DRM multiplex signal, receivers can easily allow users to record live lessons including all the associated data.

DRM radio sets that are optimized for the radio schooling use-case may provide a built-in WiFi hotspot feature, allowing anybody nearby to access the full content of the DRM lessons – audio and Journaline textbooks – using any device that supports an HTML web browser.

Enabling radio schooling and distance education services in the field requires the close cooperation of all stakeholders – from education specialists, professionals in the audio-visual sector, broadcasters, receiver manufacturers, regulators and more. Thanks to DRM, the tools to support and elevate societies even in times of crisis are all available. We just need to make use of them!

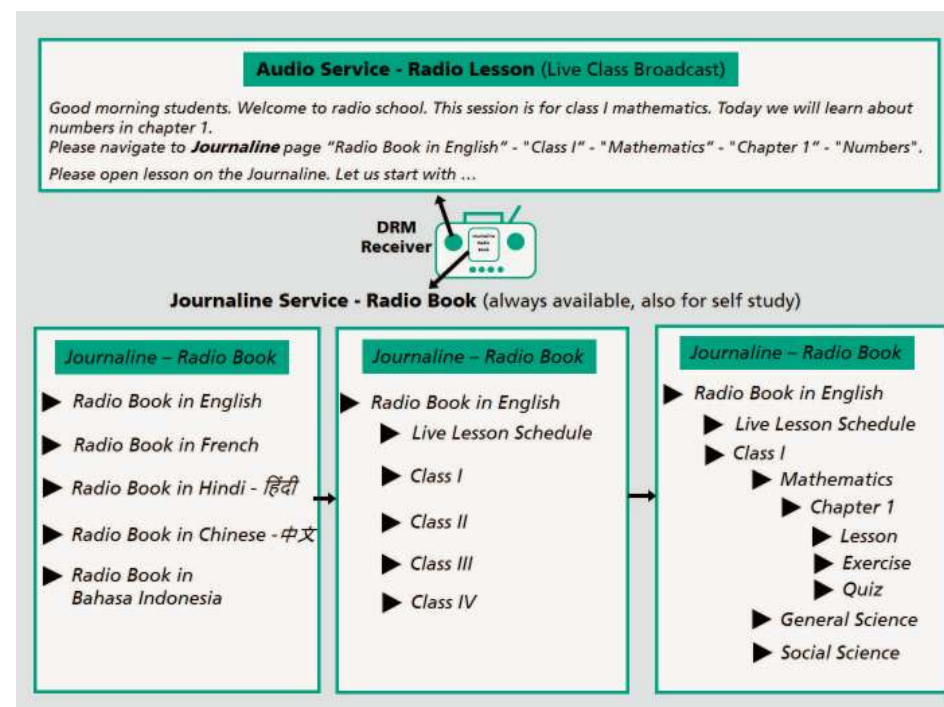


Figure 1: DRM Distance Education – User Experience

This is a shorter version of an article that first appeared in the IEEE's *Broadcast Technology* publication.

## Section 5 – A New Year Full of Promise for DRM

### Why DRM?

#### DRM Interview on BBC World Service's Digital Planet Programme

An interview with the DRM Chair, Ruxandra Obreja, was featured on the BBC World Service programme Digital Planet on April 14th. The interview explored the support for DRM in India, Pakistan, China and Brazil. In particular, the interview focused on some of the key benefits of DRM: with this standard digitisation can be achieved using existing infrastructure which can then act as a backup in disasters when other forms of communication fail. [More here](#)

#### DRM Advanced Radio for All – Video “From Broadcaster to Listener”

One question we hear a lot is how to go from transmitter to receiver and listener. The recently launched video from the DRM Consortium, highlighting the full digitisation process in a simple, clear and applicable way has been a huge success on our [YouTube Channel](#).

#### The Moment to Relaunch Digital Radio Anew Could be Now

In 2020 lockdown has driven and given a boost to radio listening. The great advantage gained now will allow radio and especially digital radio a reboot, or rather an even stronger relaunch, for all those who never put their heart in the digitisation of radio.

The lockdown has also demonstrated that broadband is great, when you have it, laptops are fantastic, if you can afford them and there are enough to go around your family. It has also proved that the one cheap, widely available and very easy to use gadget is the radio set.

Big UN organisations wish for a fast ICT development in African, Asian countries, in the Pacific islands and the countries of Latin America. This is laudable but hard to achieve. The reality is that the internet is more of a first world advantage and not even there universally available.

If you want to educate children in rural areas, even in more developed countries, what you need is digital radio. If you use a DRM shortwave or medium wave transmitter you will be

able to cover vast areas with up to three programmes in different languages and data (like maps, sums, pictures etc.) to accompany them. Radio as an enabler of distance learning is more accessible and realistic than universal broadband now.

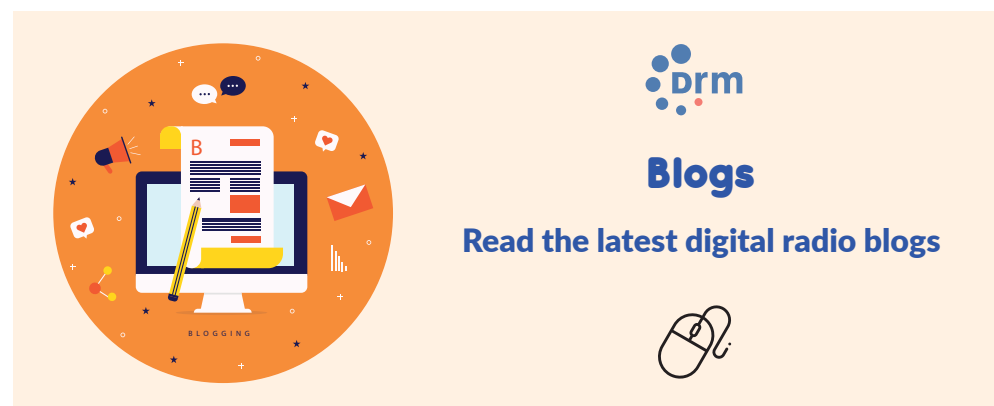
After the corona will be extinguished, the regulators, other main stakeholders and the industry must be persuaded that digital radio, needs to be viewed more holistically.

It is time to build resilience in our communities as we have seen how quickly our modern gadgets and fibre glass links can become useless.

Coronavirus, so invisible and so lethal, will die down and then the time will come to take a fresh look at radio, at digital radio, at DRM, too, and all its benefits. Digital radio DRM can offer full country coverage without gaps, with clear advantages for normal times and extra services in times of crisis.

DRM alone, or in combination with other standards and platforms, can be part of a national arsenal of assets to be fully exploited when unexpected events occur. For this reboot or rather radio relaunch, DRM must prepare in new and persuasive ways to engage all the stakeholders. And they themselves must engage fully and in an unbiased way, without letting themselves be influenced by long-standing lobbyists, uninformed “experts” and those who put commercial gains before the listeners’ needs and the national interest.

*Abridged version full article can be viewed [here](#) on the Asia Radio Today website*



## Benefits of DRM

1. DRM can cover fully any country regardless of its size using any radio frequency band (AM and VHF)
2. DRM offers excellent audio and data in both the AM and VHF bands
3. DRM offers up to three programmes and data on digital AM and digital FM (100KHz)
4. DRM keeps broadcasters in control of content and infrastructure which they can upgrade to digital
5. DRM is a green standard, delivering 50-90% energy savings depending on the frequency bands used
6. DRM incorporates the Emergency Warning Functionality (EWF) which can be switched on only when and where necessary
7. DRM can be used for education and information for all anywhere, especially in places without internet, television or satellite communication facilities

## Membership

### DRM Full Membership

DRM Full Membership entitles members to valuable benefits, some of which are:

#### Voting rights

- Rights to participate and vote in the DRM internal meetings (General Assembly, specialised Committees and groups)
- Rights to be nominated to serve on DRM's Steering Board which defines the overall policy direction of all DRM Consortium's activities

#### Networking Opportunities

- The best B2B platform to meet and build contacts related to the DRM business
- Unique opportunity to participate in specialised committees for technical or commercial development of digital radio
- Presence at big international media events representing both the Consortium and own company

#### Privileged Information

- Gain access to world leading information, resources, technical guidance and advisory services
- Be always up to date about all DRM and digital radio developments from around the world through the Monthly Newsletter and localised Noticeboards and members' updates
- Opportunity for members to publicise in the monthly DRM Newsletter their new DRM related developments

#### Marketing and PR Support

- Free company logo display on the DRM website
- Support from the DRM Project Office for communications on company DRM related news, products or services

### OTHER MEMBERSHIP OPPORTUNITIES

Not-for-profit organisations such as research institutes, universities or private individuals may also join as **DRM Associates** or **DRM Supporters** respectively.

DRM is the place where the experts from cutting-edge global manufacturing firms work in tandem with the world's best-known media organisations.

### Come and join the DRM Consortium!

To get more information and receive an application form, please write to:

[projectoffice@drm.org](mailto:projectoffice@drm.org)

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