



Discussion Document on Regulatory Framework for Digital Sound Broadcasting

WECODEC for ICASA – 13/07/2018

Joseph Cotty · Thembeke Khaka · Johannes von Weyssenhoff · Trevor LaGrange

Introduction: Who we are

- The Westbury Community Development Centre (WECODEC) is a non-profit organization serving the needs of the disadvantaged community of Westbury, Sophiatown and surrounding areas for the past 20 years;
- WECODEC operates its own Community Radio Station Kofifi FM 97.2 since 2012;
- **WECODEC has executed Africa's first DRM Trial in the FM-Band.**

WECODEC Broadcast Objectives

- We are here within the spirit of the ECA being one of the **new entry** community broadcaster entities but also as an **intervener** on a technology basis.
- We want to support media diversity and **transformation** to take place at an holistic level and we identified that technology and **innovation** is key.
- The Discussion Document on DSB (Digital Sound Broadcasting) 2018 addresses serious matters that we believe of being able to make constructive contributions to.
- Therefore we are delighted to utilize this opportunity to contribute.

Reminder: Object of the ECA (Section 2)

- **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);
- Ensure that broadcasting services and electronic communications services, viewed collectively, are provided by persons or groups of **persons from a diverse range of communities in the Republic** (k);
- **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).

Need for Digital Radio in Our Communities

- Community radio is very popular and successful in South Africa.
- Actually, in many communities it is one of the main information sources, specifically in the rural and underprivileged areas.
- Community radio **encourages the youth** and gives them a sense of **empowerment** and belonging as well as providing them with information about **careers and youth development**.
- In many cases community radio and associated organizations are an important **job creator** as well as **source of education and skills development**. Therefore it is often – like in our own community – a **direct intervention to crime and drug abuse**.
- **But:** Many communities still don't have this opportunity **due to the community radio licenses moratorium – a spectrum issue**.
- DSB can change that but only if the selected technologies can accommodate community radio.

Over-Estimation of GE-06

- Throughout the Discussion Document it is repeatedly mentioned that South Africa was “*bound by*” and “*a signatory to*” GE-06 – leaving an impression that the 13-year-old outcome of this conference was unmovable which is not true at all.
- In reality, in 2006 most participating countries were not even aware of the **main purpose** that **digital migration** would have in the future: **to unlock spectrum for the digital dividend!**
- **In the following years there have been several** follow-up conferences and **resolutions worldwide** including **South Africa** that already **reversed large portions of the GE-06 resolutions** in favor of releasing spectrum that is desperately needed to bridge the digital divide and **provide universal access to ICT services.**

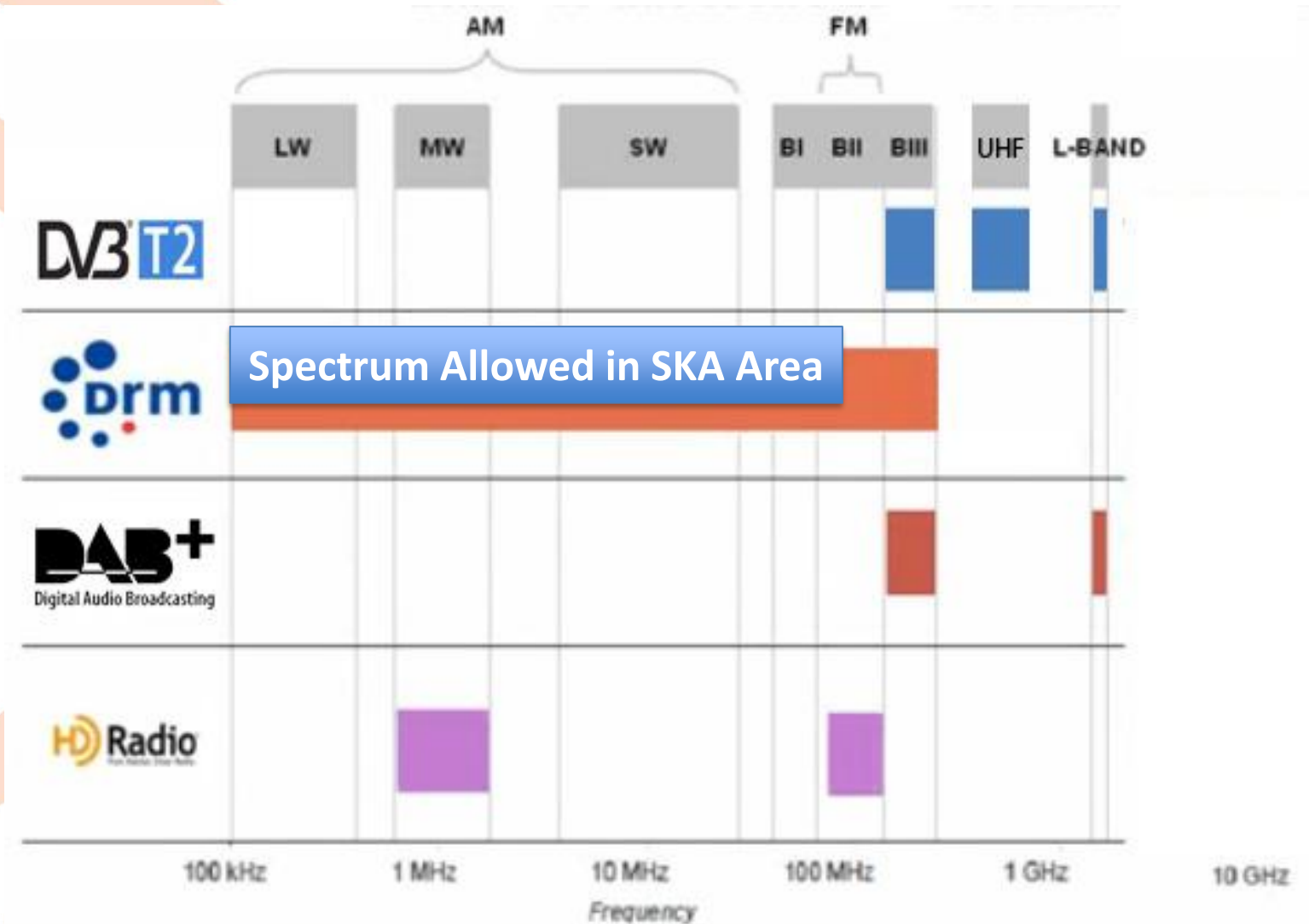
Over-Estimation of GE-06

- Indeed the Discussion Document points it out in the introduction where its main purpose is described: to **“improve radio frequency spectrum efficiency and management”** – which is also one of our major concerns.
- Meanwhile not only the demand and purpose for spectrum usage has changed – **also technologies have progressed** hence the then-relevant DTT technology had already been replaced.
- Therefore, we would like to point out that spectrum plans and associated technologies from the past must not be considered unchangeable. South Africa’s demand of **ICT spectrum** with the aim of providing **Universal Access** and **Bridging the Digital Divide** are more relevant than the fact that some frequencies have been assigned for a specific purpose many years ago.

Available Spectrum for DSB

- A more relevant consideration in this context is the fact that BRICS partner countries like Brazil and even China are considering the extension of their FM Band to frequencies below 87.5MHz. Brazil has concrete plans to go down to 76MHz, China even to 64MHz.
- A similar approach could help South Africa to utilize spectrum that is not relevant to any ICT broadband requirements (direct or indirect) for DSB and even fully applicable in the SKA area, as it does not fall under the SKA restrictions.
- Even the smaller Brazil variant of the extension of the FM Band to 75.2MHz would accordingly provide space for over 350 additional radio stations – almost the double amount of the DAB+ capacity in a region (referring to footnote 108 of this document) and without touching Band III.

Available Spectrum for DSB



Number of Available Audio Programs

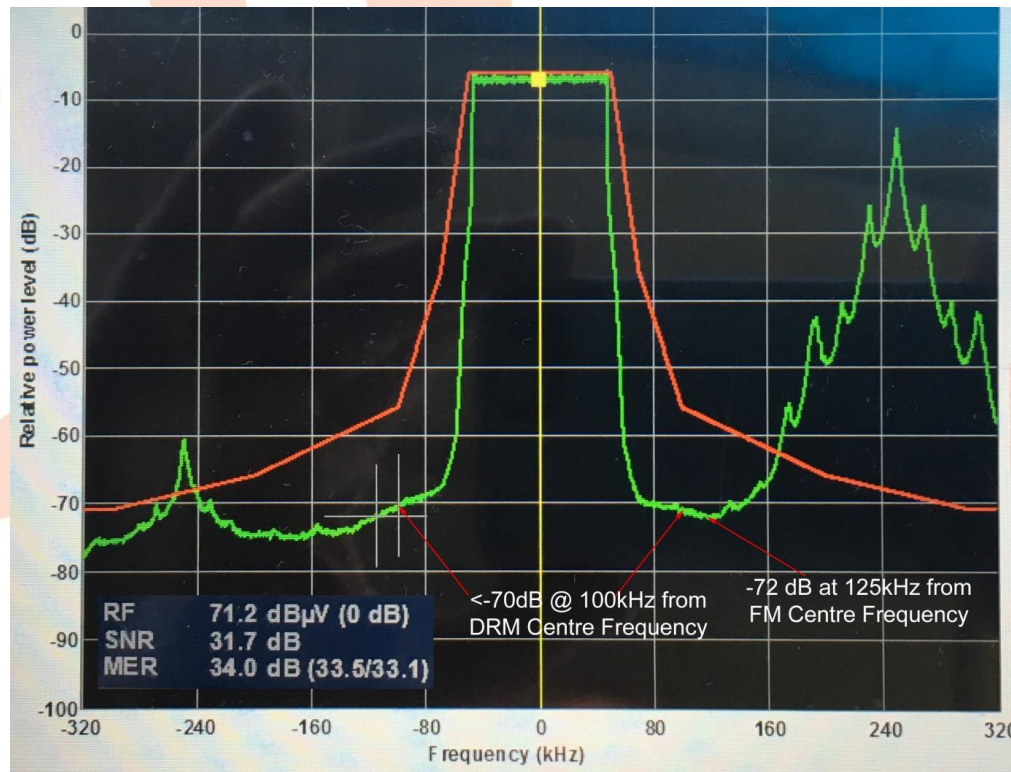
Spectrum		No. of Audio Programs		Currently free Spectrum*	Allowed in SKA Area
Name	MHz	DRM	DAB+		
SA Band I block immediately free	63-66	90	---	Yes	Yes
China planned FM Band Extension	64-87.5	705	---	Yes	Yes
Brazil planned FM Band Extension	75.2-87.5	369	---	Yes	Yes
GE-06 assigned Band III Spectrum	216 - 229.9	417	160	No	No
Band III Channels 13A-13E (UK)	230-238.2	246	100	No	No
Band III Channel 13F (UK)	238.3-240	51	20	Yes	No
Previous SA Ch. 12 lower portion	240.1-242.9	84	---	Yes	No
Previous SA Ch. 12 upper portion	243.1-246	87	---	Yes	No
Total without China Band Extension		312/975	20/280	*) and not blocking future DTT migration to VHF Band III	
Total with China FM-Band Extension		927/1590	20/280		

Available Spectrum for DSB

- Additionally, as demonstrated in our FM-Band trial, there were **48 more DRM** audio channels in the FM-Band as well (example Johannesburg) – in less congested areas it will even be many more.
 - If DSB was switched on tomorrow in the VHF Bands, there is currently space for at least **360 DRM** audio programs vs only **20 DAB+** audio programs.
 - After analogue television switch-off (ASO) it would be **1023 DRM** vs **280 DAB+** audio programs.
- > DRM in the VHF Bands can RIGHT NOW accommodate more audio programs than DAB+ will ever in the future (according to GE-06 assignments)!**

Outcome of our DRM+ Trial

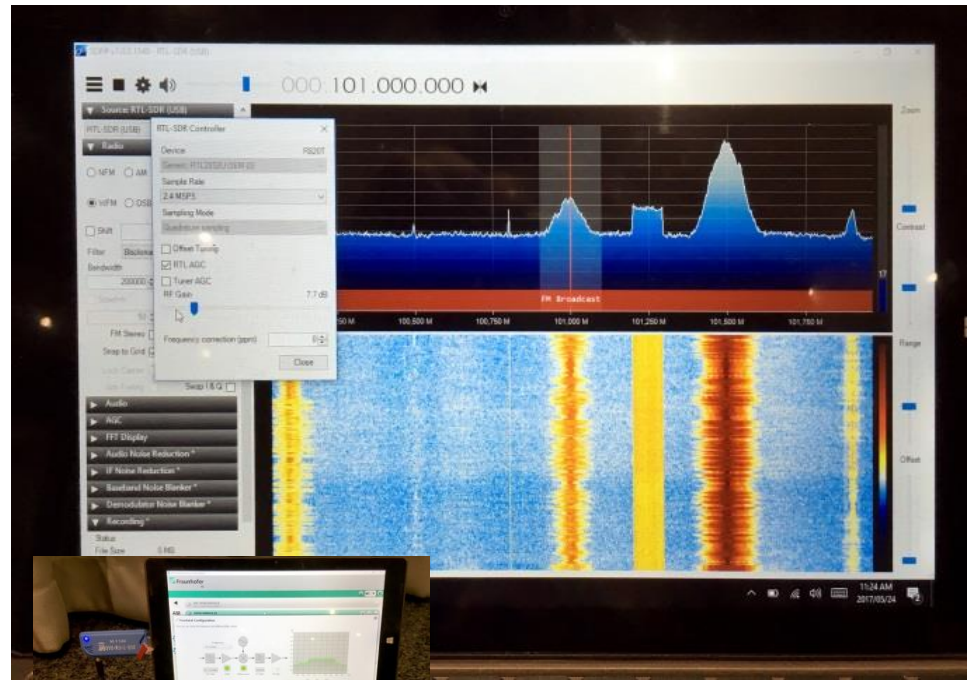
- *Already 100kHz separated from the center frequency, the DRM signal was clearly down to $<-70\text{dB}$ on both sides;*
- *With only 250kHz separation to both sides, the DRM transmission caused no visible or audible interference to both adjacent FM channels even when near the DRM transmitter;*



For those who have doubts:
As our license has been extended and the transmission equipment is still in place, the results from our trial report can be validated any time by interested parties if desired.

Outcome of our DRM+ Trial

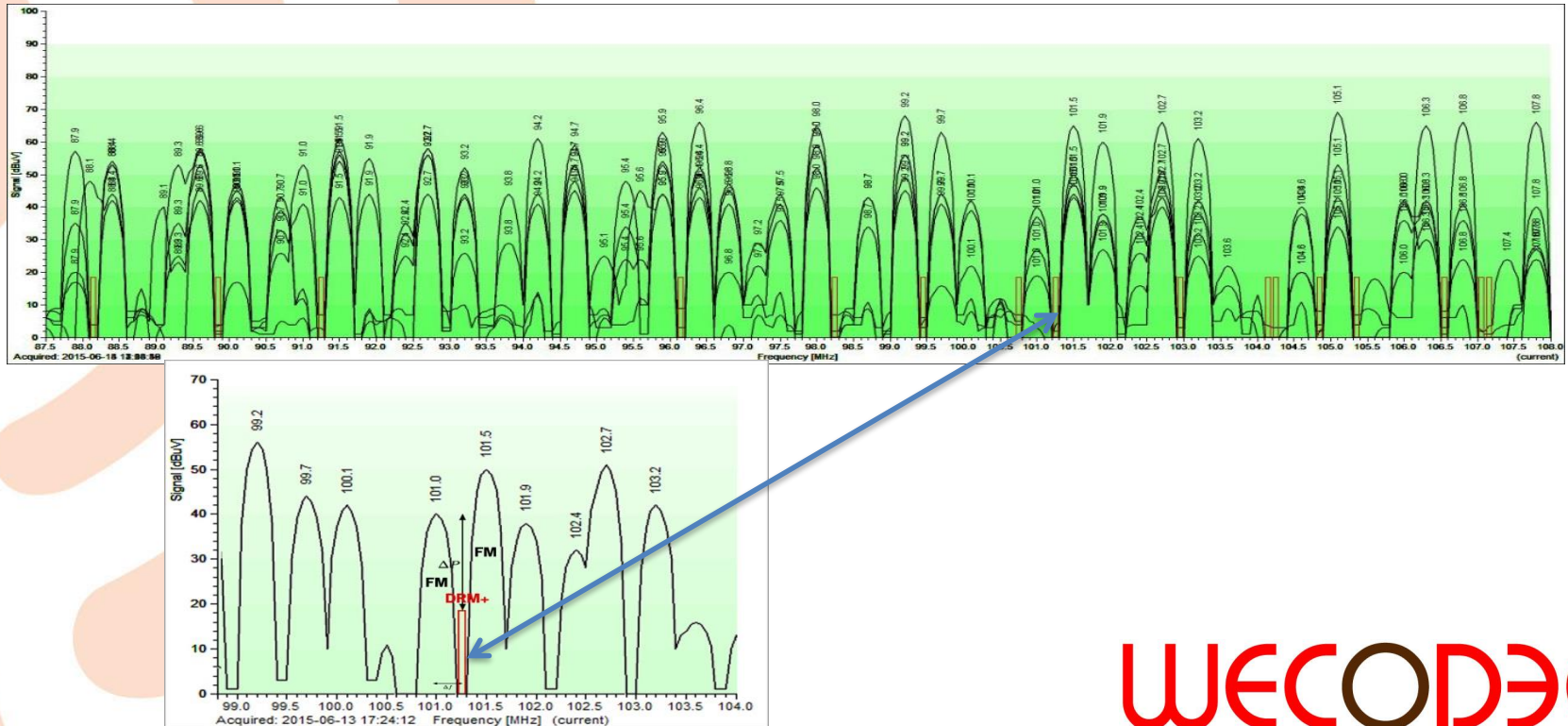
- *Also, both adjacent high-power FM stations had no impact on the DRM signal, as the DRM signal propagation was always according to field strengths predictions or above and also correlated constantly with an FM audio control signal on a neutral FM frequency;*



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Outcome of our DRM+ Trial

- Applying these results to Joburg's congested "full" FM Band shows that DRM can immediately provide space for around 50 extra radio programs within the existing FM Band in Joburg – without restacking or changing any of the existing analogue broadcast services in that band).



DRM/DAB+ Multi-Standard Scenario

- Apart from the above mentioned critical spectrum considerations, WECODEC would like to point out that from us speaking as a community radio station there are no concerns regarding a DRM (**in all Bands!**)/DAB+ multi-standard scenario.
- **DRM and DAB/DAB+** technologies are (largely) **compatible** at application level, and **both are open and organic standards**.
- **The industrial development and introduction of DRM(/DAB) receivers is relatively unproblematic and can be managed by South African industry without excessive foreign facilitation.**
- **DRM/DAB/DAB+ chipsets** are now becoming **worldwide standards** also in the **automotive industry**.
- **Whilst DRM could kick-off immediately (pilot!)** and give **relief** to the **community radio moratorium situation** DAB+ could be introduced at a later stage after TV ASO.

Multiplex Operators

- The idea of large DSB multiplexes was never an objective when DAB digital radio was developed. When DAB was first deployed, it could only cater for **6-8 audio programs** per MUX.
- Only because **DAB+** multiplexes **cannot be split** into smaller spectrum slices this has led to the **handicap of mandatory MUX operation** in countries where **DAB+** is the only DSB standard.
- **Large multiplexes are very problematic for community radio as their individual requirements on coverage cannot be met.**
- **With DRM** (even in combination with DAB+), there is now a versatile instrument that allows for individual small multiplexes – even multi-lingual standalone radio stations with extended data services and self-operation will be possible – **a perfect solution for community radio but also all other applications (specifically in the VHF Bands = DRM+)**

DSB in the International Context

- Of course, there are many international deployments of DSB which differ from country to country, and **the examples given in this document** are only a small snapshot (**mainly informed by the DAB/DAB+ experience**) of what is going on in the world.
- Apart from the incomplete **Australian** portrayal, which should mention that **DAB+ can only cover 0.4% of Australia's geographic territory** and therefore nationwide digital coverage can never be achieved without the introduction of a technology like DRM, there are two other important examples to mention:

DSB in the International Context - India

- **India** has the **World's second largest population** and suffers from the **negative effects of the digital divide** more than most other economies in the world. **70% of India's population live in rural areas** and have **almost no universal access to information**.
- To efficiently remedy this situation, the National Broadcaster on decision and financial support from the government started to **roll out the world's largest digital radio deployment**, now covering up to **0.6 billion Indians with DRM**.
- Meanwhile, **all top car manufacturers** in India have developed **DRM capable car entertainment systems**. Today the number of cars with line-fit DRM receivers is nearing one million!
- The increase in India has been faster and more remarkable than in any European country to date. Indian made receivers and about half a dozen solutions of various DRM receivers aiming at the Indian market alone.

DSB in the International Context - Sweden

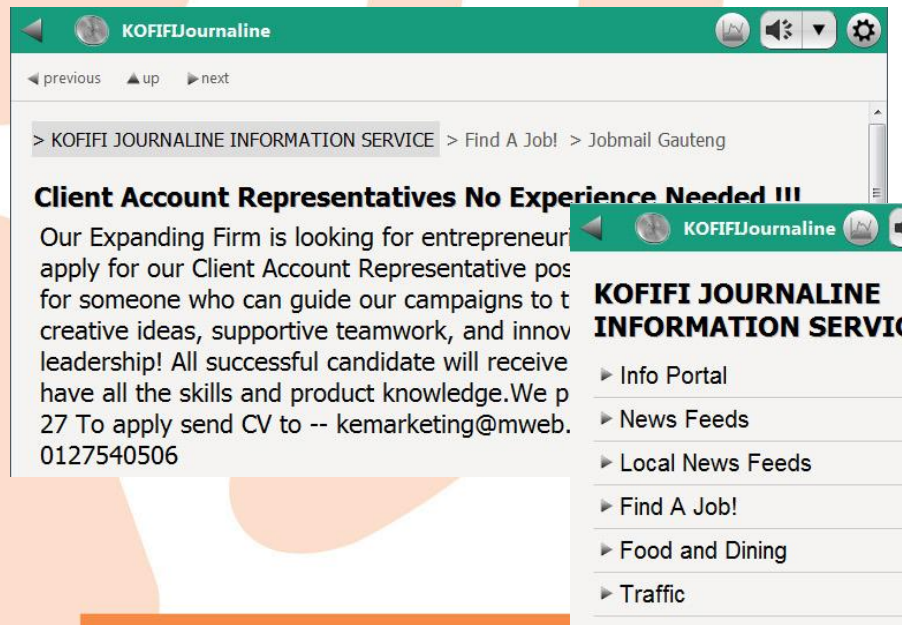
On February 3, 2016 Sweden's parliament has rejected the DAB+ proposal consequent to an overall negative response by relevant authorities, academics, and organizations as well as a critical report on the (former) government's process for a proposed transition to DAB+. Besides many other aspects of why the proposal was rejected, we would like to highlight one for our understanding highly critical aspect which significance should not be underestimated. In a document *"The Facts Behind the DAB Radio Failure in Sweden"*, published by the Public Service Council on 07 March 2016, it says: *In step with increasing mobile broadband demand for space in the UHF band, on frequencies higher than 450MHz, digital terrestrial broadcast television (DVB-T2) will increasingly need relocation back to the VHF band III (174-240MHz). Allotment for DAB (T-DAB) in this band will partly block such future measures"*.

DSB in the International Context - Sweden

- One of the main objectives of the discussion document is to find *“How the implementation of DSB services can improve radio frequency spectrum efficiency and management”*. Other than in most European countries, South Africa will require a lot more frequency spectrum for last mile connectivity, specifically in rural areas, as large scale optic fibre networks in such areas are economically difficult to deploy. Therefore, it is more than likely that in the near future the entire UHF spectrum might be required to provide universal access through ICT broadband capacity throughout the country.
- In this case it would not be advisable to block Band III with DAB+ as it might have to accommodate DTT in the future.
- This by the way is also the same consideration Finland took in rejecting DAB+ to save space for future DTT needs.

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 and was even possible for us as community radio station:



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Stimulating Enterprise Development in South Africa

- **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**
- Receivers for the domestic market as well as export -> e.g. India (**BRICS!**)

Value Chain:

- **Antenna: Local development and production.**
- **Radio for mass production:** Manufacturing and/or assembly: **Local** and perhaps with an international partner. Software and hardware R&D: **Local development.**
- **Content Server, Modulator, Transmitter:** **Local** and perhaps with international partner.

DRM Dongle



DRM Capable Home Entertainment



Affordable DRM Radio <30USD



Africa's First DRM/DAB Radio

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Socio-economic Impact of DRM

Digital Radio Mondiale (DRM) in both the AM and FM bands has a lot of advantages to the socio-economic development:

- Efficient usage of spectrum and energy as national resources
- Enhanced data services – universal access to information
- Covering 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, 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

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THANK YOU

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