ITUEvents

ITU Seminar on Radiocommunication Matters for Europe

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www.itu.int/go/ITU-R/SRME-19

Co-Organizers:

Digital Sound Broadcasting (DSB) in Europe

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DSB versus digital TV

- Transition to **digital TV** broadcasting is now well advanced

- Transition to **digital sound** broadcasting has received different levels of interest from administrations and listeners

Why move to DSB?

Strategic reasons:

- Innovation is required

  To compete with new digital services such as IP music services or internet radio

- Possibilities for new services

  Creating added value for listeners

- Reduce broadcasters operation costs

- Free for users

Why move to DSB?

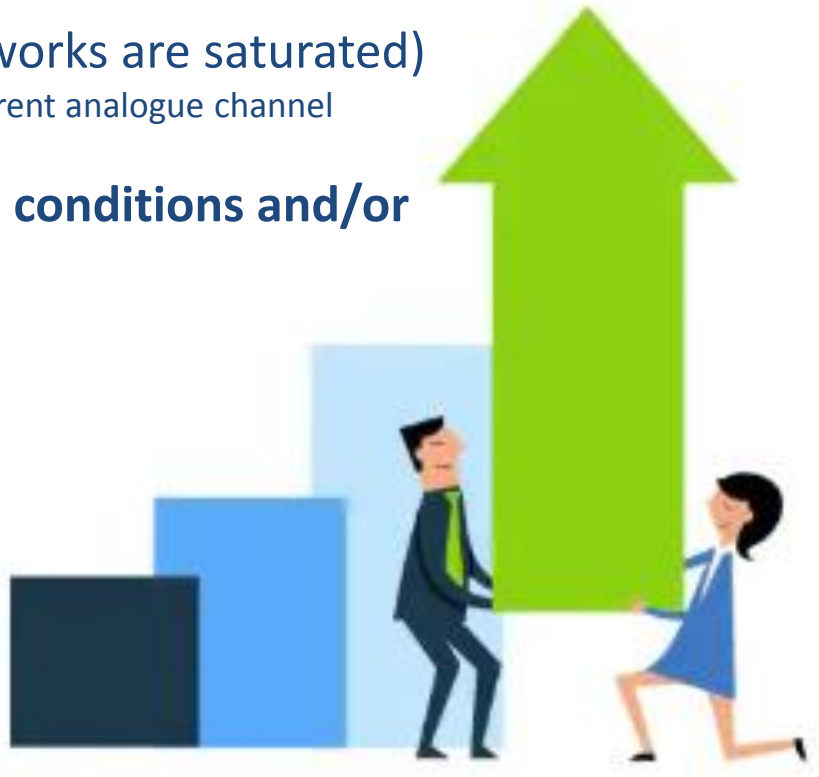
Technical reasons:

- **Optimum use of the spectrum** (FM networks are saturated)
  3 to 4 digital sound channels can be allocated in each current analogue channel

- **Less concerned by adverse propagation conditions and/or interference**
  - Reduced emitted power
  - Less number of transmitters

- **Improved audio quality**

- **Ancillary visual information can be added (image + text)**



- **Compared to internet radio**:
  - Accessible everywhere (no need of internet connection)
  - Quality and accessibility are not dependent on the number of users

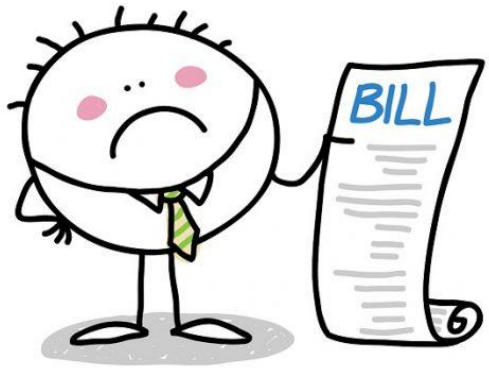
Difficulties when migrating to DSB

Strategic difficulties

- Resistance to change
- Competition
  internet radio and IP music services widely available using different wireless technologies (mobile, bluetooth …)

Technical difficulties

- AM/FM radio available around the world
  while there are different standards for digital radio
- The migration is costly for small/local radio stations
- Users will have to replace their terminals
  including all car radios (adaptors are available)



Summary of Digital Sound Standards

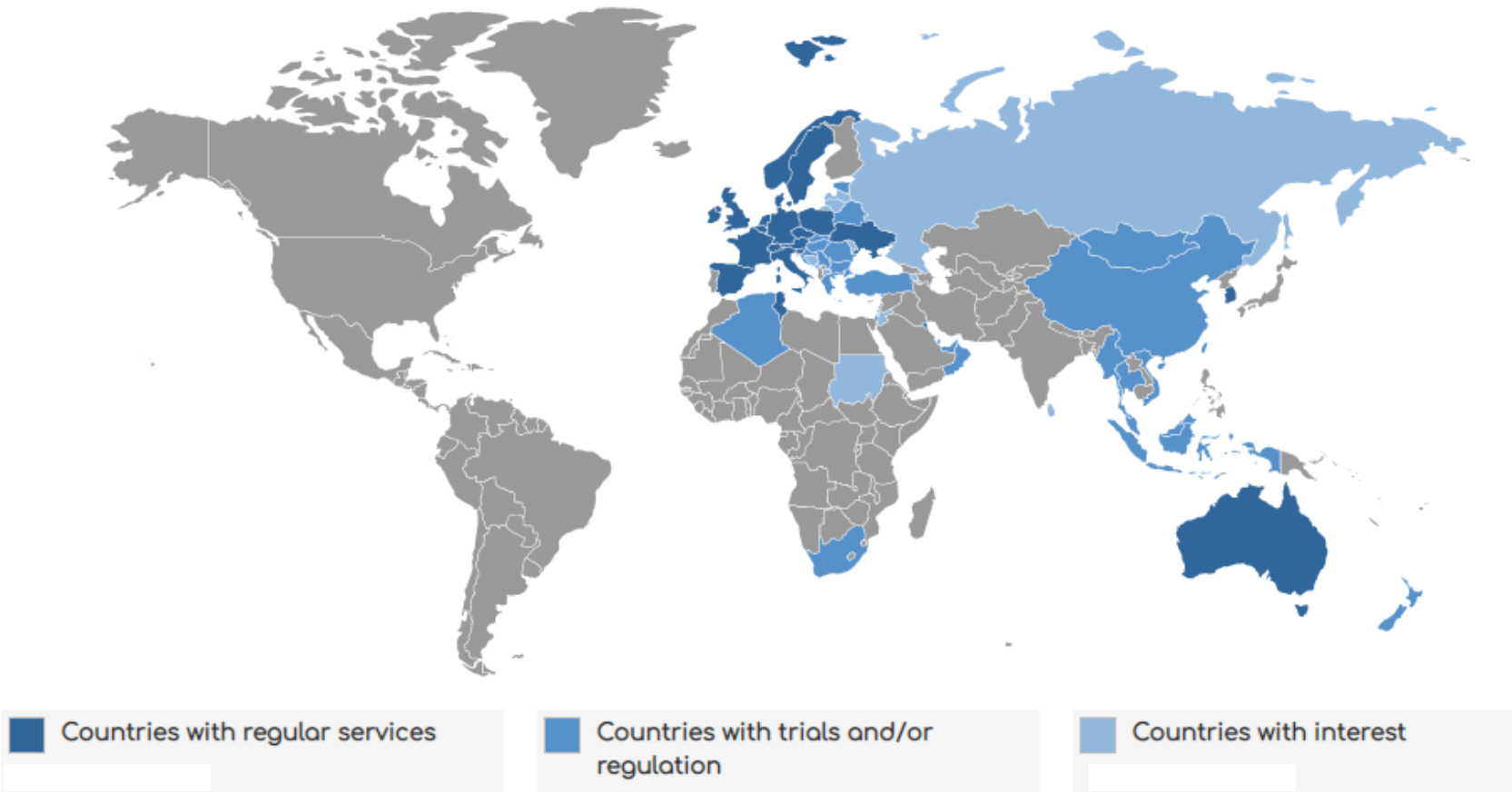
(See ITU-R Recommendation BS. 1114-7)

- **Digital System A: DAB/DAB+**
  Freq. 30-300 MHz. | channel bandwidth: 1.5MHz (10 to 20 programmes)
- **Digital System F: ISDB-TSB**
  Freq. 470-770 MHz. | channel bandwidth: 6MHz (50 programmes)
- **Digital System C: IBOC DSB**
  Freq. existing AM/FM bands | simultaneous transmission of analogue and digital (simulcast)
- **Digital System G: DRM/DRM+**
  Freq.: any frequency | channel bandwidth: 9-10 kHz. per programme
- **Proprietary standard from iBiquity: HD Radio™**
  Freq.: existing AM/FM bands | channel bandwidth: 200kHz.

For countries of Region1:

- 87.5-108 MHz: Any standard (GE84 Agreement)
- 174-230 MHz: DAB (GE06 Plan) – Other standards are possible

Use of DAB



Source: https://www.worlddab.org/countries

DSB in the Regional Agreements (Region 1)

GE75

R1 and R3

LF: 150-285 kHz
MF: 525-1 605 kHz;

Rule of Procedure (RRB): DRM A2 and B2 are possible. Radiation reduced by at least 7 dB in all directions w.r.t analogue assignment

Temporary measure until the decision from a competent conference

ST61 (Rev. 2006)

R1 and R3

41-68 MHz

Rule of Procedure (RRB): same coordination distances as analogue systems

No submission or notification to date

GE84

R1 and R3

FM: 87.5-108 MHz

Possible under 3.1 of Chapter 3 of Annex 2 to GE84: not cause greater interference, Nor require higher protection

Problematic to introduce new digital assignments in **congested bands**

GE06

R1 and Iran

174 –230 MHz

Adopted T-DAB as planned standard for digital sound broadcasting

Other digital systems are possible (Prov. 5.1.3)

1 DVB-T assignment can be replaced by up to 4 DAB blocks

Some DSB Figures in the GE06 Plan

- **3857 entries**
  3780 assignments
  77 allotments

- **20 administrations**

- **Leading countries** (in alphabetical order):
  Germany, Hungary, Norway, Sweden, Switzerland, United Kingdom

- **Norway**: 1st country in the world to have switched off the national analogue radio
  Local FM radio stations remain for 5 years

ITU-R Documents on DSB

Recommendations

- BS.1348: below 30 MHz
- BS.774: Service requirements for digital sound broadcasting to vehicular, portable and fixed receivers using terrestrial transmitters in the VHF/UHF bands.30-3 000 MHz
- BS.1114: Systems for terrestrial digital sound broadcasting to vehicular, portable and fixed receivers in the frequency range 30-3 000 MHz.
- BS.1514: System for digital sound broadcasting in the broadcasting bands below 30 MHz.
- BS.1660: Technical basis for planning of terrestrial digital sound broadcasting in the VHF band
- …

Reports

- BS.2214: Planning parameters for terrestrial digital sound broadcasting systems in VHF bands
- BS.2384: Implementation considerations for the introduction and transition to digital terrestrial sound and multimedia broadcasting
- …

Thank you for your attention!

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