



significant spectrum efficiencies compared with using television frequencies for analog services.

To date, because permanent digital television transmissions started only last year, experience with SFNs is relatively limited. The USA's 8VSB system adopted by the American Television Standards Committee does not make provision for SFNs, although work is now being done to see how SFNs might be implemented in that system. In the many countries that have now adopted DVB-T for their digital television systems, little use is made of SFNs at this stage.

Trial SFNs are operating in parts of Germany (in Berlin, Hanover and Munich) in Italy, Spain and in France. All are operating in the UHF bands; none operate in the VHF bands. However, there are plans to look at VHF implementation of SFNs in some of these cases. The UK, which is most advanced in its implementation of DVB-T services, is proposing some limited use of SFNs, but only for small coverage areas using UHF frequencies.

Because of the lack of practical experience in other countries in implementing SFNs, the ABA is to undertake an urgent study of the practicalities of implementing them. This project is to be done in close consultation with broadcasters, potential broadcasters and datacasters, equipment manufacturers, facilities providers and any other party wishing to participate.

Scope of the SFN study

Some of the parameters to be studied are:

- what are the technical planning constraints,

can SFNs be used in situations such as those at the Central Coast?

- how practical and under what circumstances can a local SFN 'gap filler' transmitter operate on the same frequency as an adjacent analog transmitter?
- what are the limitations of 'off-air' feeds? and
- how can we best maintain effective coverage with SFNs?

The ABA's studies will also consider the relative costs of SFN proposals compared with the cost of multi frequency networks, i.e. use of more than one frequency in a network of digital transmitters in the licence area of a service.

Trial SFN transmissions supported by participants in this study are expected to yield much information in relation to the questions to be addressed and to confirm many of the practicalities of implementing SFNs in Australia. Wherever possible, the SFN working group will liaise with and exchange information with overseas groups doing similar studies.

The SFN working group is to make appropriate recommendations to the ABA by the end of 1999.

Membership of the group will be drawn from this interested in broadcasting in the free-to-air environment, broadcasters, potential datacasters, transmission facility providers and representatives of the receiver industry. Anyone interested in assisting with this work should contact Bob Greeney, ABA Director Technology, by phone at (02) 6256 2899, fax: (02) 6253 3277 or by e-mail at bob.greeney@aba.gov.au



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ITU meetings on television and radio broadcasting

By Bob Greeney
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Digital television broadcasting developments

The meetings discussed developments in, particularly developments of an alternative system in Japan. Currently, two systems are accepted as international digital terrestrial television standards: the North American Digital Vestigial Sideband system known as 8VSB and the European Digital Video Broadcasting (DVB-T) system. The Japanese development is similar in many respects to the European DVB-T system and uses the same coding techniques, with a variation. The system called Integrated Services Digital Broadcasting for terrestrial broadcasting

(ISDB-T) segments the digital data stream allowing for simultaneous transmissions of different modulations, providing television transmissions for home and mobile reception as well as capacity for digital radio transmissions. The claim is the ISDB system provides a superior mobile service to the alternative systems and a digital radio service at CD quality, similar to that provided by the European Eureka-147 Digital Audio Broadcasting (DAB) system.

The ISDB standard is now undergoing final development and refinement in Japan before being submitted to the Japanese authorities late this year, and then to the ITU for acceptance as an alternative standard for digital television and radio broadcasting.



Digital radio broadcasting

Work continues in the USA on the In-Band-On-Channel (IBOC) digital radio proposals with a deadline of mid-December 1999 for submission of test results to the Federal Communications Commission's National Radio Standards Committee.

Other work is being completed on an alternative digital radio broadcasting system to be used to replace analog HF short-wave and medium frequency AM broadcasting systems. This new system, being developed by the Digital Radio Mondiale consortium, shows a lot of promise and has been successfully demonstrated. It provides better quality sound than current AM systems and is not as susceptible to fading as short-wave services. It is not able to deliver CD quality sound, mainly because of bandwidth limitations in the short-wave and AM broadcasting bands. The DRM consortium includes membership from more than forty countries as well as receiver manufacturers and broadcasters. The DRM system requires vacant spectrum in which to operate, hence it is truly a replacement or conversion technology. The DAB (Eureka-147 system) uses alternative spectrum and can co-exist with existing analog broadcasts in other frequency bands.

WorldSpace, a new satellite digital radio service provider announced some proposed innovations to its system. These include terrestrial

transmitters using similar coding and modulation techniques to those used by the Eureka-147 system, to improve availability of its service in remote and rural communities by using terrestrial retransmissions.

The future

There was significant discussion about the structure and arrangements for sound and television broadcasting study groups in the ITU. Proposals to merge the two groups are widely supported because of the convergence of technologies and the emergence of interactivity as a major consideration in digital broadcasting services. The merging of the two study groups is likely to take place next year following an extraordinary joint meeting of the two extant study groups in November 1999.

Broadcasters in all countries are now beginning to look at strategies for their business futures which provide value-added services to their traditional broadcasting services. They regard interactivity as a major innovation, as is the ability to provide program-associated data such as descriptions of the artist, and to provision of pictures to accompany radio programs (radio with pictures). Other new services may include purely data services unrelated to the broadcast program such as stock market information, weather data, online services such as home shopping, and banking.

The most recent meetings of the International Telecommunications Union's study groups dealing with radio and television broadcasting were held in Geneva in late May and early June. Representatives of the Australian broadcasting industry and relevant government agencies including the ABA and the Australian Communications Authority regularly attend meetings of the two study groups.

