



Previous editions of *ABA Update* have published information about digital terrestrial television broadcasting (DTTB) and the work of the ABA's Specialist Group studying this subject. The Specialist Group has recently published its first report. **Colin Knowles**, ABA General Manager Planning and Corporate, also who is the chairman of the Specialist Group, outlines what viewers might expect from DTTB. Included are the preliminary views of the Specialist Group as to how this technology might be introduced in Australia.



Colin Knowles

DIGITAL TERRESTRIAL TELEVISION

First Report of ABA Specialist Group on Digital Terrestrial Television Broadcasting

Digital terrestrial television broadcasting (DTTB) is a new form of terrestrial (over-the-air) broadcasting which could eventually replace existing television broadcasting methods which have been in use for approximately the last fifty years.

Digital transmission is better able to overcome the signal distortions introduced by reflections from buildings, interference from electrical equipment and other sources. Digital transmission has become the norm for modern telecommunications systems, particularly those using optical

fibre cables, and is already being used for satellite subscription television broadcasting services in Australia and in other countries. Digital technology also allows more flexibility in the use of transmission capacity by allowing television, sound and data services to be easily carried simultaneously on the same channel.

DTTB can provide to the viewer a wide screen cinema-type picture format that will meet the high definition picture requirements of future large flat screen displays. DTTB could also open the door to a more flexible use of available television channel bandwidth by allowing control over the number and quality of services broadcast on one particular channel. For example, DTTB allows the broadcaster to transmit either a single high quality service (i.e. a television service with high picture quality) or a number of lower quality services where the picture quality may vary from the quality avail-

able on a typical VHS video recorder to that of existing broadcasting services. The total number of such conventional quality services that could be broadcast on a single channel depends very much upon the complexity of the video sequences being transmitted. For example, when transmitting fast action live sport the complete channel may need to be taken up with a single program. Typically however, it is assumed it will be possible to transmit either one high quality service or four to six conventional quality services in one television channel.

DTTB can also provide high quality multi-channel digital sound allowing much greater realism, akin to the modern cinema. The digital sound channels could provide for a flexible variety of options such as multiple language transmission and description channels for the visually impaired. The digital signal will also be able to carry substantial amounts of data which might allow the transmission of program guides and other information that is either associated with a program or separate from it.

New receivers required

DTTB will require new television receivers. DTTB pictures will not be able to be displayed on existing television receivers unless they are converted to conventional analog images through a set-top unit. The disadvantage is that this approach would not provide viewers with the benefits of wide-screen images, or the other enhancements inherent in this new system of television delivery.

Thus, the Specialist Group is of the opinion that the public would benefit most if the introduction of DTTB services were based on new television receivers specially designed for digital services, ▶



At the launching of the DTTB report



Innovations

rather than to try and introduce DTTB as a set top unit additional to existing receivers. This will open the way for consumers and service providers to exploit the capabilities of the digital format more fully, and to allow a more effective market driven approach to DTTB introduction. For this strategy to be successful, there will need to be continued availability of the existing television broadcasting PAL format for a number of years to allow viewers to change over their equipment progressively as they are attracted to the offerings



of the new medium. Initially at least, DTTB receivers are expected to include facilities for reception of all existing services as well as the new DTTB services, by this means viewers will not be obliged to have two receivers to retain access to programs not yet converted to DTTB.

Any proposal to change an existing broadcasting system is very expensive to broadcasters and the public. It is expensive, not only in terms of the capital cost of the equipment, but also because of the potential disruption to services people have become accustomed to. Therefore, to make conversion attractive, the new technology must provide something new and of significant perceived benefit to users of the system. In short, DTTB will need to offer new program, entertainment, and information choices to viewers. These might range from wider choice of programs, through to interactive television.

DTTB is likely to be the means by which cable and satellite television services will eventually be able to utilise the full capability of the digital services they are now developing. At present these services must be converted back to analog PAL television format for display. Therefore they are constrained by the picture format and other

factors inherent in this approach. Once true digital receivers are available in the household, then wide-screen format and other benefits will be open to exploitation. In short, DTTB may be the consumer gateway to the future information super highway of tomorrow.

International development systems for DTTB are currently being developed in both the USA and Europe and broadcasts using these systems might commence as early as 1997. The systems being developed in these places are different in some aspects but do involve quite high commonality of approach in critical areas such as the way the pictures are converted into digital signals. These developments have been closely monitored by a group from the broadcasting industry, ABA, and other experts within the context of the ABA Specialist Group on Digital Terrestrial Television Broadcasting.

The Specialist Group has been examining not only the technology developments taking place internationally, but also how this technology might be introduced into Australia using existing parts of the radiocommunications spectrum allocated to television broadcasting. In carrying out this examination the Specialist Group has taken into account public submissions made to it.

The initial findings of the ABA's Specialist Group have recently been published in the *ABA Digital Terrestrial Television Broadcasting in Australia*, which is available free of charge from the ABA.

The report outlines a number of preliminary views about the way DTTB might be introduced into Australia (see over page), and invites comments on these or any other related matters from any interested person or organisation.

The Specialist Group hopes to prepare a final report for the ABA to consider as a report to Government, by September 1995. Accordingly comments on the first report are needed by 31 July 1995.

Summary of preliminary views

Preliminary View 1

The substantial weight of opinion expressed in the public comments and within the Specialist Group, is that DTTB services introduced to Australia will need to have the flexibility to meet market demand. Premature restriction to specific technical quality or service targets may stifle the market driven development of the service. Broadcasters will need to experiment and react to their audience in a dynamic way to encourage the purchase of new receivers.



The ABA considers these arguments have merit but further information about technical developments, and market exploitation is needed before any firm position can be developed on how multi-program versus high definition television (HDTV) issues should be addressed.

Preliminary View 2

The termination of existing PAL services assumes existing services must at some point migrate to DTTB. An arrangement to allow existing broadcasters to be allocated an appropriate DTTB channel and be able to operate this channel in parallel with their existing channels would facilitate the introduction of DTTB.

The termination of existing PAL transmissions will depend largely on when DTTB services are introduced in Australia, the level of acceptance of DTTB services by the consumer and the penetration of new DTTB television receivers. Other factors such as cost to the broadcaster and consumer, quality, quantity and variety of entertainment services will be significant.

No actual time period or date can be fixed at this point in time for the termination of existing PAL services in Australia. After a decision is taken to launch DTTB in Australia, the termination date for PAL should be subject to regular review and the decision made in a consultative process by both industry and government organisations.

Preliminary View 3

Irrespective of what band is to ultimately be used for DTTB services, DTTB should desirably commence in the band where it will permanently reside. This will ease the burden on consumers.

Further studies need to be undertaken to determine whether it would be possible to accommodate all potential services on UHF and for all DTTB services to commence on UHF while there is an incentive of adopting the new technology.

A mix of VHF Band III and UHF may be required to accommodate the demands for DTTB. Initial studies suggest DTTB could use VHF Band III, in the capital cities, but UHF will be required for DTTB in regional and country areas because of scarcity of VHF Band III channels.

Further studies need to be undertaken into the feasibility and cost of UHF options for DTTB, from both the broadcaster and consumer perspective so that any decision on the appropriate band for DTTB will be fully informed of the costs and benefits.

Preliminary View 4

Considering the support for retention of 7 MHz

channelling using either the US system or a variation of the European system, and the massive changes that would be necessary to existing television services to move to an alternative 8 MHz channel spacing, the ABA considers priority should be given to addressing how candidate digital systems might most efficiently be accommodated within the existing frequency allotment plan.

The ABA shares the concern that, if it became necessary to develop a 7 MHz system specially for Australia, it could result in unduly expensive receivers and Australian viewers and broadcasters could suffer because of its lack of standardisation with the systems in use in other parts of the world.

Preliminary View 5

It is premature to make a choice of either system at present, particularly as there are signs of increasing convergence between the European and North American systems.

Further studies are necessary to define the specific characteristics of a system suitable for the Australian broadcasting environment.

Preliminary View 6

The choice of the DTTB standard need not be related to the standard adopted for satellite pay TV or other pay TV services that might be introduced in the near term. However there does appear to be longer term advantages for the consumer if all services converge to a common or compatible family of standards.

Preliminary View 7

Introduction of DTTB should not reduce the possibility for television broadcasters to tailor programs for local and regional audiences, and hence contribute to access and diversity. Single frequency network principles may have advantages in some aspects of planning, particularly for translators and for regional services, further consideration should be given to the application of such networks when DTTB developments are further advanced. The ABA notes that single frequency network arrangements have at this stage only been demonstrated with the use of the COFDM type of transmission system.

Preliminary View 8

It is premature to reach any conclusions at this time on when it may be feasible to commence DTTB, but there will be much better information on which judgements can be made within the next 12 months. ☐