

DIGITAL TERRESTRIAL TELEVISION BROADCASTING: CONSUMER ISSUES

AS PART OF THE ABA'S CURRENT EXPLORATION OF ISSUES SURROUNDING DIGITAL TERRESTRIAL TELEVISION BROADCASTING (DTTB) IN AUSTRALIA, THIS PAPER, BY NADIA MENCINSKY, ASSISTANT MANAGER, POLICY SECTION, FOCUSES ON THE CONSUMER ISSUES ARISING FROM THE INTRODUCTION OF DTTB. THE PAPER HAS BEEN PREPARED AS A CONTRIBUTION TO THE ABA'S DTTB SPECIALIST GROUP AND WILL FEED INTO THE SPECIALIST GROUP'S FORTHCOMING REPORT COVERING THE CURRENT STATE OF DTTB DEVELOPMENT.

INTRODUCTION

World wide developments in digital technology have driven the revolution in the telecommunications, computer and broadcasting industries and have created, in turn, a wide variety of new communications products and services which are either currently, or will soon be, available to the ordinary consumer.

In this new world, the possibilities offered by terrestrially transmitted television have not been forgotten or ignored. Currently, the terrestrial broadcasting system around the world uses an analog based transmission system, of which there are a number of types: NTSC, as used in the US, Japan and Canada and PAL, as used in Australia, Europe and some parts of Asia.

However, by applying digital processes to the means by which the terrestrial television signal is modulated and transmitted, rather than analog, and in turn exploiting techniques of digital compression, digitally terrestrially transmitted television has the ability to offer better picture quality and reception than currently available. It may also lead to greater set portability and in the long term, the availability of new services through more efficient use of the spectrum.

The ABA has established a Specialist Group to examine options for a digital terrestrial television broadcasting (DTTB) system which will 'best suit Australia's consumer and broadcasting needs into the next century'¹. The Group considers the move to digital transmission to be 'inevitable' in light of the technical superiority of digital and the more efficient use of the spectrum which it affords. However it believes that further consideration is required to 'provide direction for the introduction and implementation of digital services'².

As part of this process, and in the lead-up to the final report from the group, this paper will attempt to highlight the consumer issues which may have implications for the introduction of DTTB. These aspects will need to be considered in the wider context of technical and industry perspectives, recognising, however, that consumer acceptance of DTTB will be critical to its success.

Consumer take-up of this technology will depend on the attractions of the programming and other features offered. DTTB has the potential to provide multiple programs and other features which do not fit perfectly within the existing legislative framework. Future policy development and any changes to the legislation will need to be considered in the wider public interest of a healthy industry and the provision of a wide range of quality services to the public.

ADVANTAGES AND DISADVANTAGES FOR THE CONSUMER

One of the major questions to consider in relation to the introduction of DTTB is whether it can help to provide consumers with a better broadcasting system which, in the spirit of the *Broadcasting Services Act 1992*, can contribute to the diversity and quality of broadcasting services available.

In this sense, the advantages of DTTB over the current PAL broadcasting standard have been outlined in the DTTB Specialist Group's Issues and Options paper, but are explored here again, with a particular emphasis on the perceived benefit to the consumer.

The potential disadvantages of DTTB are also covered in this section briefly, but are addressed more specifically in the context of potential problems in the transition period.

ADVANTAGES

Natural advantages of terrestrial transmission retained

The DTTB specialist group's paper notes that one option for DTTB involves using single frequencies for each service i.e. the whole of Australia could become a single licence area for some services.

Yet, as acknowledged in the paper, this would negate one of the main advantages of terrestrial television over other types of program delivery - the ability to provide a valuable mix of national, regional and local programming.

Terrestrially transmitted services provide national coverage, with the ability to provide nationally based programming. Terrestrially based television services are also ideally placed to provide regional and local services to the consumer (such as local and regional news, sport, current affairs and advertising).

It is technically difficult for many of the other technologies to provide these aspects of service in the near to medium term. Satellite based transmissions, for example, can easily provide services over a wide area but are limited by their inability to efficiently provide regional and/or local services. Cable delivery systems, on the other hand, are unlikely to achieve national coverage in Australia in the near to medium future. They will most probably be concentrated in more populous centres in light of the significant cost involved in providing cable across the whole of Australia³. In relation to multi point distribution systems, only limited numbers of channels have been made available in the capital cities and other large cities.

Accordingly, it would appear to be in the consumer interest that terrestrial

Continued on p.14

Continued from p. 13

services should continue to operate in the new broadcasting environment and if possible, be improved and enhanced by the introduction of digitisation.

Improved picture quality and reception

As outlined in the ABA's DTTB Specialist Group's paper, DTTB can provide higher quality pictures and sound (with new larger, wider screens), and better reception (with fewer problems related to ghosting, noise and interference) than analog. These technical improvements to the signal quality and its reception provide obvious benefits to the consumer.

While it may be questioned whether these are the most important or significant improvements consumers are seeking in relation to existing broadcasting services (for example, it could be argued that the public has shown a greater interest in audio quality than picture quality, and has expressed only relatively minor concern about transmission impairments), it seems feasible to presume that as consumers become more used to higher picture quality (for example, through satellite or cable services), they could also begin to expect this from terrestrial television services⁴.

On the other hand, it must also be acknowledged that technical improvements in picture screen quality won't be evident to a large degree on existing PAL receivers. The technical advantages of DTTB will only become fully evident once new wide-screen DTTB television sets are made available, which is not foreseeable in the immediate future, due to technological constraints⁵. This has ramifications for how the transition period to DTTB might be handled, particularly in its initial stages (i.e. how do you make it attractive for consumers to 'switch over' in the period when only set-top units will be available) and how it could be ensured that consumer expectations are not raised unnecessarily during the early stages of DTTB.

Greater portability

For the consumer, the greater portability of reception offers increased possibilities in regard to the flexibility with which television sets can be moved

in and around the home and opens up the door for new products which can take advantage of their mobility.

Integrate television industry with telecommunications and computing

Digitisation ensures terrestrial television moves closer to converging with the telecommunications and computing industries, which also use digital signals to transmit information. For the consumer, this could make it far easier to have access to a variety of multimedia services, which could include a variety of interactive services.

More efficient use of the spectrum - increased number of program channels and services

The eventual exclusive use of digital technology should lead to much more efficient use of the broadcasting spectrum.

Although this scenario is potentially more than twenty years away, once analog transmissions have been phased out, the possibility exists for either a greater number of channels or enhanced picture quality such as wide screen, high definition television, suitable for home cinema applications. Associated with this would be multichannel capabilities, data channels, specific services for the hearing and visually impaired and other ancillary services.

DISADVANTAGES

Viewer 'overload' in relation to new services

In the next 5-10 years, a wide variety of new services will become available to Australian viewers, such as satellite pay TV, cable television, MDS and limited interactive television.

It is difficult to assess whether in this environment, consumers will respond positively to the wide array of services available. There might be simply too many services coming onto the market at the same time to allow consumers to make fully informed decisions about their participation. It is also not unreasonable to expect that some could find any anticipated change to one of the few remaining familiar types of broadcasting service available - free-to-air television - potentially threatening.

As a result of this, the introduction of DTTB could need to take into account

possible consumer hostility towards 'being forced' to adopt DTTB, and consider strategies which might help to alleviate this. This could include structuring the education campaign appropriately [see below] and allowing a longer and more market-driven time frame for conversion [see below].

TYPES OF SERVICE

As outlined in the ABA DTTB Specialist Group's paper, there are two different DTTB systems being developed by the USA and Europe. Although technical and other considerations might affect which system is eventually adopted in Australia, this section will examine the consumer implications of both systems.

HIGH DEFINITION TELEVISION

The US and Canada have decided in principle to adopt a High Definition Television (HDTV) system utilising DTTB (or Advanced Television as commonly referred to in North America)⁶.

Although the Japanese have been developing HDTV for between 20-30 years (commonly referred to as Hi-Vision), the private sector in the US, with co-operation from the FCC, has taken the lead in developing a HDTV system which is different from the Japanese system in one crucial respect - it will be digitally, not analog, based. This ensures HDTV's compatibility with digital systems around the world, and as admitted by the head of broadcasting at the Japanese Telecommunications Ministry, Mr Akimasa Egawa in March this year, virtually guarantees the end of analog Hi Vision HDTV⁷.

Thus, for the consumer, the advent of digital HDTV holds a significant advantage over analog HDTV, in that it has the potential to be compatible with other digital pay services.

On the other hand [as noted above], the benefits to the viewer of HDTV would not be evident without new, wider screen sets, which are unlikely to be available in the initial period of transition.

MULTICHANNEL

In Europe, DTTB is also being explored in the context of its ability to provide greater flexibility to broadcasters to operate multichannel services

(i.e. the flexibility to provide more than one program per channel). As outlined in the ABA DTTB Specialist Group's paper, this could involve flexibility for broadcasters to move from high quality pictures for certain programs, to four or more program channels where the technical quality is less important.

For consumers, preference for a particular system may centre on whether there is a perception that new pay TV services are able to provide sufficient additional choice and diversity in programming, or whether consumers, particularly those who do not have access to these new services for various reasons (geographical location or level of disposable income), also desire greater programming choice from free-to-air television.

At present, there appears to be a wide range of opinion about whether the public is satisfied with the current range of broadcasting services and to what extent they are prepared to pay for any new services which might become available. While various types of research into demand for new radio and television services is being conducted by industry and government, ultimately, consumer reaction to new pay TV services may be the first real indication of demand in this area⁸.

TRANSITION STAGE

One of the most critical questions for consumers, arising from the introduction and implementation of DTTB, is how to ensure that the transition from analog to digital transmission is affected in a manner which is easily understood and relatively uncomplicated, fair, cost effective and able to be undertaken in a reasonable time frame.

In the US and Canada, it would appear that most or all current NTSC licensees will be allocated another channel to begin digital transmission. Once the transition stage is determined to be over, the NTSC channel will be reclaimed. In this sense, DTTB is viewed in the interim as a 'replacement technology', rather than another form of television which should be opened up in the transition period to new players. In Europe, initial indications by the Independent Television Commission

(ITC) in the United Kingdom for example, point to existing terrestrial broadcasters having the opportunity of being automatically allocated a digital channel, though additional frequency does appear to be available for new services in the interim period⁹.

Some commentators have argued greater attention should be given to a transition stage whereby all available digital channels would be allocated to new players. In this scenario, for example, existing analog based terrestrial services would be allocated digital fre-



Nadia Mencinsky

quencies at the point when analog transmissions are to be terminated, or would need to bid like any other potential player for the necessary channels¹⁰.

This approach assumes that the need to introduce DTTB is primarily driven by the need to introduce new services and assumes that these services will be highly attractive to viewers i.e., will be more likely to create the high levels of transition needed to convert the viewing population to digital¹¹. This approach also assumes that the existing terrestrial broadcasting industry could sustain itself in face of this competition.

In most countries, however, it appears to have been considered that a realistic transition to DTTB requires the full participation of the existing broadcasters. In this way, the introduction of DTTB implementation strategies aims to provide existing broadcasters with an opportunity to move to DTTB, have time to develop new formats, and if necessary, new programming. It is also

hoped that this strategy for introducing DTTB would allow a more orderly introduction of new services and be more likely to promote total transition to DTTB, with the least possible impact on the viewing public. Further, a more cautious approach to spectrum allocation i.e., not making a final decision now about the extra capacity available, would also give the Government, industry and regulators a greater opportunity to assess and plan uses for the additional frequency which will become available once PAL broadcasters have moved to digital.

In Australia, preliminary studies show that at least one digital channel for each existing television transmitter throughout the country could be made available in the interim period, before PAL services are terminated¹². In light of the special capacity of digital, this would represent spectrum which would otherwise be unavailable during this period.

It is this policy approach which will be assessed in light of consumer ramifications below.

SIMULCASTING OR NEW PROGRAMMING?

In allocating a second channel to existing terrestrial broadcasters, one of the most interesting questions for the consumer is how programming might be affected.

In the US, the Federal Communications Commission (FCC) has made a preliminary decision to require simulcasting of the same programs on both the new and the old channels. Initially, a 50 percent simulcasting requirement will be imposed seven years after the application/construction period ends and a 100 percent simulcasting requirement two years later (i.e. at nine years).

Initial flexibility with the simulcast requirement is allowed to provide 'sufficient time and flexibility to establish, as a technical matter, a distinctive [Advanced Television] format in the marketplace'¹³. This could be done, for example, by utilising programs produced on film and directly converted to ATV, or programs originally produced on ATV. The FCC stresses, however, that the broadcaster should not 'de-

Continued on p. 16

Continued from p. 15

velop a second programming service' in light of the FCC's intention of 're-claiming the reversion channel as soon as possible'¹⁴. At the nine year mark, 100 percent simulcasting is required predominantly to 'protect consumer investment in NTSC equipment, while at the same time promot[ing] ATV implementation'¹⁵.

One of the greatest questions in relation to a simulcast model centres around whether there would be sufficient incentive for consumers to switch over to the digital service if there are no discernible differences in the service provided, except for some technical improvements to signal quality and reception. Although the cost of new equipment is likely to play a role in the rate at which digital technology is adopted by consumers [for further discussion of cost factors, see section 4.4], without other incentives to switch over, the transition period might become unnecessarily protracted.

In recognition of this fact, some have proposed that new programming on the digital channel is a valuable option for providing additional incentive for consumers to switch to digital. In Canada, for example, it has been proposed that the broadcaster have the option of providing a digital service based upon different programming¹⁶. In the UK, the ITC has also highlighted that it 'would probably be necessary to allow some distinction in the two program services, with more attractive programming being introduced on the digital service'¹⁷.

In Australia, some combination of the two approaches might also provide the greatest benefit for the consumer. Simulcasting in certain periods of the day could ensure that the introduction of DTTB is viewed primarily as a 'replacement technology', which has an in-built protection for those consumers with PAL equipment, particularly towards the end of the transition period when it might be more cost efficient for the broadcaster to broadcast only in digital.

The flexibility to provide new and/or more attractive programming on the digital channel, however, could also be crucial in attracting consumers to the

new technology and ensuring DTTB is viewed as a positive development for free-to-air television. This might be particularly important in the interim period, when set-top units will not be able to capture for the viewer the benefits of better picture quality.

HOW WILL THE PUBLIC BE ADVISED OF THE CROSS-OVER TO DTTB?

Without an extensive education campaign about the intended introduction of DTTB, a great deal of public confusion and uncertainty could arise about the effects of DTTB.

Confusion could arise in relation to the introduction of yet another new service, and uncertainty as to how this new service sits in the new broadcasting environment and whether it will be 'necessary' to switch over to DTTB.

Consumers might also fear they will be forced to change their television sets prematurely, and at great cost. Unfair expectations could be further raised in regard to the visibility of technical improvements on screen in the period before digital television sets are available.

In light of this, it would appear that all parties involved in the transition to DTTB will need to participate in the education process, including the television broadcasting industry, manufacturers, importers, retailers and regulators.

Issues which will need to be highlighted include explaining why this technology is being introduced and how it is different from other new services, the time frame for conversion and the type of improvements which can be expected at various stages in the process.

More general issues which will need to be considered include the simplicity and clarity of the information, the accessibility of the information (for example, in relation to where information can be obtained and whether information will be provided in a number of languages), and the appropriate linking between the education campaign and the availability of DTTB equipment.

It is interesting to note that at the time colour television was introduced in Australia, the predecessor to the Australian Broadcasting Tribunal - the Australian Broadcasting Control Board (ABCB) - was also concerned to ensure

the timetable for the introduction of colour television was planned in a manner which prevented consumer confusion. For this purpose, the ABCB gave 18 months' notice for the starting date for colour television, produced information leaflets, organised demonstration displays, and carefully prescribed the number of colour test transmissions allowed, holding the view that 'the orderly planning of station licenses, manufacturers, importers and retailers would be disrupted if the official date for the commencement of colour transmissions on 1 March 1975 was pre-empted, and a premature demand for receivers was created'¹⁸.

HOW WILL VIEWERS BE AFFECTED BY THE CUT-OFF DATE?

To date, two approaches have been highlighted in relation to the termination of analog services.

In the US, the FCC has made a preliminary decision to implement a 15 year conversion period for ATV (although there is provision for review of the adequacy of this time period). Based on various submissions, the FCC has concluded that this period would allow 'equipment manufacturers, broadcasters and consumers sufficient time to accept conversion without significant market disruption or uncertainty'¹⁹. Together with the specific dates required for the simulcast and construction of ATV facilities [as noted above], the FCC considers this will 'lend the degree of certainty necessary for the parties' while also acting as a substitute for 'market forces', which might otherwise have operated to speed ATV implementation, for example, if new ATV entrants had been allowed to compete against existing broadcasters²⁰.

Canada, on the other hand, has indicated that an 'enforced time frame for ATV implementation is not required or desired' believing that 'decisions for ATV implementation should be based upon competitive market forces'²¹. A pre-determined time frame for conversion could lead to disruptions in services and impose too great a burden on broadcasters. In line with this approach, the additional cost of broadcasting in both NTSC and ATV formats would act as a natural incentive for broadcasters to cease NTSC transmissions as soon as

possible.

For consumers, the two approaches hold different benefits and advantages. The government-driven US model tries to ensure that consumers will have access to HDTV sooner, rather than later, and contains built in protection for consumers towards the end of the conversion period, through the 100 per cent simulcasting requirement. The market-driven Canadian model, which provides for a potentially longer conversion period, could provide greater security against conversion being forced upon an immature market, in which digital receiver penetration has not yet peaked. As NAB's Senior Vice President John Abel commented at the 1993 Montreux International television Symposium, in relation to cut-off periods for NTSC transmission in the US, 'there will be great political pressure to continue with NTSC broadcasting if a proportion of homes - likely to be low income earners - have not acquired new equipment'²².

In attempting to assess how consumers in Australia might fare under the different approaches, a number of factors could be taken into account. In relation to a government-prescribed period, a 15 year conversion period might be optimistic. As noted in the ABA DTTB Specialist Group's paper, the average life expectancy of PAL television sets is between 10-15 years. However, if a longer time-frame was adopted for the cessation of PAL transmissions, a definite date could give greater guidance as to how to plan and make investment decisions for DTTB.

It is interesting to note that the Australian government's decision to introduce digital mobile phones allowed eight years advance notice of the closure of analog services and set a final termination date for these services (1 January 2000).

On the other hand, a more open final termination date for PAL transmissions could give greater flexibility to take into account various factors which could affect the likely pick-up rate of digital equipment, such as the cost and availability of digital equipment and the perceived benefits of the second channel (for example, more attractive programming, multichannel capabilities).

In this context, it is interesting to note that in the US, the slow start of colour television in the 1950s was largely attributed to the high cost of television sets in the initial period and the small amount of colour programming provided by broadcasters²³.

WHAT WILL BE THE COST FACTORS?

The cost of set-top converters and new digital television sets will most likely have a significant impact on consumer conversion to DTTB.

Initially, in the absence of digital television sets, the cost of set-top converters will be critical in establishing an initial audience for DTTB. If the cost of set-top converters is too high, there might be insufficient incentive for consumers to switch to DTTB, particularly in light of the expected proliferation of new pay TV services which have the potential to provide many other attractive viewing options.

Once digital television sets become available, the success of DTTB might also largely depend on the cost of a new digital television set. Commentators in the US have indicated that digital television sets might need to be priced between US\$2500- \$4000 to reflect what might be the maximum price American consumers would be prepared to pay for new digital television sets. Traditional pricing strategies employed by manufacturers introducing new consumer products is to set high initial costs to recover research and development (R & D), then to reduce the price as sales volume grows. Overseas administrators and broadcasters interested in introducing DTTB are trying to convince manufacturers to adopt pricing strategies that might spread R & D costs recovery over a longer period, so as to offer lower prices from the start and

encourage more rapid adoption of DTTB²⁴.

The importance of appropriate price setting is critical for the success of any new consumer product, as evidenced by the Japanese experiment with analog HDTV. As noted above, the Japanese Hi-Vision system offers better picture clarity, with a wider television screen. Despite attempts to promote Hi-Vision, however, the technology has failed to generate significant consumer interest in Japan. To date, Hi Vision has failed to secure even 10 per cent of the Japanese television market²⁵. This is widely believed to centre on the extremely high cost of the set (falling initially from US\$33 000 to US\$8000, together with few perceived programming advantages to justify such a high cost (for example, the service provides only eight hours of programming per day)²⁶.

WHAT ARE THE HARDWARE-RELATED ISSUES?

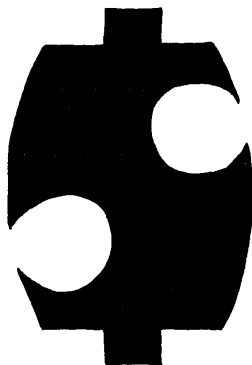
When making a decision about any switch to DTTB, consumers will need to make informed decisions about hardware needs. In this context, a number of issues arise centred around standards, compatibility with new services, the adequacy of existing outdoor antennas, dual PAL/DTTB television sets and the possibility of integrating set-top functions into digital television sets.

Standards

A standard will need to be adopted for broadcast television signals, digital set-top units and television sets to remove any confusion in the market place about different equipment being required for different services. At present, such a standard exists for analog television (PAL) and there is no reason to believe that this would be any different for DTTB.

The DTTB Specialist Group's paper further raises the issue of the relevance of pay television standards to DTTB and notes that a DTTB standard could be set which reflects world standards, 'but adapted to suit Australian requirements'.

For consumers, it would be desirable for DTTB equipment to be com-



Continued on p.18

Continued from p. 17

able for DTTB equipment to be compatible with other new pay TV services. International developments indicate that a world-wide standard for digital technology is progressing and likely to be accepted by those in the cable, satellite and terrestrial broadcasting industries around the world, through the work of MPEG (Motion Pictures Experts Group)²⁷. The adoption of an Australian standard for DTTB, reflecting these developments, would make it easier to change between service providers, and could help lead to the eradication of problems associated with a proliferation of set-top units.

Antennas

The ABA DTTB Specialist Group's paper indicates that it is likely existing outdoor television antennas will be adequate for DTTB. However, this is provided the services to be delivered will be in the same band and assumes that the antenna is in a satisfactory technical condition. This may not be so in some areas, particularly in long-established capital city markets, where antennas are possibly quite old²⁸. The cost of replacing these antennas could be an issue of concern for consumers.

Dual PAL/DTTB television sets

In the interim period, set-top converters will be provided, to be followed by new DTTB television sets. As noted by the ABA DTTB Specialist Group, initially, dual PAL/DTTB sets might be desirable. This could help to ensure that those consumers who have converted to DTTB in the early stages of the transition period are not disadvantaged by their inability to access PAL programming, which, if different in part to the DTTB channel, might continue to be attractive to some consumers.

However, the cost of dual receivers would need to be considered, to assess whether this would be viable. The FCC, for example, is seeking comment from manufacturers about the issue of dual receivers before making a final decision, to ensure that the FCC does 'not

establish manufacturing requirements that may overly or prematurely burden consumers'²⁹.

Integrated television sets:

In the long term, it would also be important to consider the feasibility of integrating set-top functions into digital television sets to remove the need for different set-top units for different types of services.

Such a development is unlikely in even the medium-term future, however, and will hopefully not be used as a reason to delay further the development of a digital television set³⁰.

CONCLUSION

DTTB has the potential to provide a superior terrestrial television service for the consumer - not only in relation to technical improvements over PAL, but in relation to the provision of an increased variety of media services and greater diversity of programming.

Yet, in assessing the most fair and equitable means of introducing DTTB, and its likely acceptance by consumers, one must take into account a number of factors, including the type of service which will be adopted, the range of programming which will be provided, the cost of the new technology, how the consumers will be informed of the cross-over to DTTB and the rate at which it will be expected to change to digital.

In relation to these issues, a number of conclusions could be made:

- In any transition stage, consumers might benefit most if broadcasters have the flexibility to pursue and explore both the simulcasting option and the option to provide new programming (in light of the added incentive this could give consumers to switch over).

- All parties involved in the transition to DTTB will need to participate in the education process. This includes the television broadcasting industry, manufacturers, importers, retailers and regulators. Certain issues, in particular, will need to be highlighted, including why DTTB is being introduced and

how it is different from other new services, the time frame for conversion and the type of improvements which can be expected at various stages in the process.

- A premature, forced conversion to DTTB would create unnecessary disruption. Any conversion period would need to take into account the life expectancy of PAL television sets and give some idea of the time period involved to allow consumers to plan and make investment decisions for DTTB. Flexibility to assess the state of the market at various stages of the conversion period would also need to be built-in to the process to prevent PAL services being cut off prematurely.

- The cost of digital set-top units and television sets will play a crucial role in the success of any means of conversion to DTTB.

- Standards will need to be devised for DTTB equipment. Further, for the consumer, it would be desirable for DTTB equipment to be compatible with other new digital television services.

- The need to possibly replace existing outdoor television antennas will need to be factored in as a potential cost for some consumers.

- As noted by the ABA DTTB Specialist Group, initially, dual PAL/DTTB sets might be desirable, pending cost considerations.

- In the long term, while set-top units might be necessary in the interim period, digital functions should be incorporated into the television set to help remove the need for different set-top units for different types of services.

In closing, it is interesting to note again that case studies provided by the introduction of colour television, or Hi-Vision in Japan, underscore the importance of ensuring that a transition period for any new technology takes into account the interests of the consumer.

It is in this context that the Government, regulators and the industry will need to make decisions about how to implement DTTB.

- ¹ *Digital Terrestrial Television Broadcasting in Australia - Issues and Options*, Australian Broadcasting Authority (ABA) Digital Terrestrial Television Broadcasting Specialist Group, November 1993.
- ² *Ibid.*
- ³ For further discussion of the relative advantages of terrestrial transmission over satellite or cable transmission, see *The Need for Terrestrial Broadcasting*, European Broadcasting Union, 22 February 1993.
- ⁴ *The Digital Revolution in Broadcasting - a Report on the IIR Conference Broadtech 1993*, Colin Knowles, Director Planning, ABA, 28-29 September 1993.
- ⁵ The Independent Television Commission (ITC) makes this point in its Discussion Document on Digital Television and includes comment about various technical issues surrounding the implementation of DTTB. For further reference, see *ITC Discussion Document on Digital Television*, Independent Television Commission, June 1993.
- ⁶ For further discussion about the systems to be adopted by the United States and Canada, see the *Second and Third Further Notice of Proposed Rule Making in the matter of Advanced Television Systems and Their Impact upon the Existing Television Broadcast Services*, Federal Communications Commission, 17 September 1992 and the *Principles for Guiding Advanced Television Implementation in Canada*, Advanced Broadcasting Systems of Canada Inc, 30 April 1993.
- ⁷ *High Definition TV - a \$13bn Dud*, Ben Hills, *The Sydney Morning Herald*, 19 March 1994.
- ⁸ The ABA, for example, is currently conducting research into the public's view on current radio services and their demand for new or different radio services.
- ⁹ *ITC Discussion Document on Digital Television*, op cit.
- ¹⁰ *View of the Future*, Jean-Luc Renaud, Spectrum, Autumn 1993.
- ¹¹ As also raised by the ITC in its *Discussion Document on Digital Television* when discussing the relative advantages and disadvantages of opening up DTTB for new players.
- ¹² *Planning Broadcasting Services and Future Demands For Spectrum*, Colin Knowles, published in ABA Update, January 1994.
- ¹³ *Third Further Notice of Proposed Rule Making...*, op cit.
- ¹⁴ *Second and Third Further Notice of Proposed Rule Making...*, op cit.
- ¹⁵ *Third Further Notice of Proposed Rule Making...*, op cit.
- ¹⁶ *Principles for Guiding Advanced Television Implementation in Canada*, op cit.
- ¹⁷ *ITC Discussion Document on Digital Television*, op cit.
- ¹⁸ *26th Annual Report*, Australian Broadcasting Control Board, 1974.
- ¹⁹ *Third Further Notice of Proposed Rule Making*, op cit.
- ²⁰ *Ibid.*
- ²¹ *Principles for Guiding Advanced Television Implementation in Canada*, op cit.
- ²² *View of the Future*, op cit.
- ²³ *The Impact of Colour Television in Australia*, Martin Koffel, 1970 and *HDTV: How, Why and When?*, Dr Joseph Flaherty, Royal Television Society Shoenberg Lecture reprinted in the *Journal of the Royal Television Society*, November 1993.
- ²⁴ Colin Knowles, General Manager, Planning and Corporate Services, ABA, May 1994.
- ²⁵ *Digital Television*, J.J. Bigeni, Australian Broadcasting Corporation, October 1993.
- ²⁶ *High Definition TV - a \$13bn Dud*, op cit.
- ²⁷ *MPEG - Development of Digital Compression Standards*, Reji Mathew and Murray Delahoy, published in *ABA Update*, March 1994.
- ²⁸ Colin Knowles, General Manager, Planning and Corporate Services, ABA, May 1994.
- ²⁹ *Third Further Notice of Proposed Rule Making*, op cit.
- ³⁰ The Communications Futures Project Second Work in Progress Paper, *Delivery Technologies in the New Communications World*, March 1994, contains a useful discussion about issues centred around set-top units, both about the likely short-term problems of different services requiring different types of units and about the mooted answer to this problem - a 'universal black box'. The paper argues that while the standardisation of set-top units might appear to provide greater consumer convenience and lower costs from higher production runs, the development of a 'universal' black box could in fact mean tripling the cost of a set-top unit and preclude other development paths in this area, most notably in the integration of set-top functions into digital television sets.



TPS 23

Continued from p. 9

duction had experienced some growth during recent years, despite the recession'.

The survey went on to say, 'the growth in the number of new commercials is estimated to be at least seven per cent' and 'the increase cannot be attributed to the inclusion of foreign commercial, which accounted for less than two per cent of CAD approvals'.

Furthermore the survey found, 'the estimate supports a value of \$315 million for commercial production in 1991-92 and revised estimates of \$305 million in 1990-91 and \$295 million for 1989-90'.

The AFC's 1992-93 survey has again

revised its estimates for the value of commercial production. The 1992-93 survey reports that indicative values for commercial production in previous years have been revised, as a result of a report it commissioned from Mervyn Smythe and Associates.

The CFPA commissioned several reports from Mervyn Smythe and Associates which were submitted to the ABT's public inquiry into Australian content in advertising.

The AFC survey states 'preliminary results indicate this sector is now smaller than previously estimated, with a total value between \$168 million and \$203 million.' The AFC adopted the mid-point of these figures, \$185 million, as the indicative value of advertising pro-

duction in 1992-93.

The ABA notes that the Australian Bureau of Statistics is preparing to conduct a service industry survey of the film and video production industry for 1993-94. This should provide information to enable a more reliable analysis of the commercial production sector of the industry to be done.



NEW DX BOX NO.

The ABA has a new DX box number:

DX Box 13012

MARKET STREET SYDNEY