

**LEGISLATIVE COUNCIL PANEL ON  
INFORMATION TECHNOLOGY AND BROADCASTING**

**CONSULTATION PAPER ON  
DIGITAL TERRESTRIAL BROADCASTING**

**INTRODUCTION**

Annex This paper briefs Members on the key policy proposals set out in the consultation paper entitled “Digital Terrestrial Broadcasting in Hong Kong”, copy at Annex, which was published on 1 December 2000 for a three-month public consultation.

**BACKGROUND**

2. All existing terrestrial broadcasting services (i.e., the four free-to-air terrestrial TV channels and the 13 radio channels) are transmitted in analogue format. While this technology has been used for the past decades, it has its inherent technical limitations, e.g., inefficient use of radio spectrum and susceptibility to interference.

3. Digital technology provides a new and more effective means of transmitting broadcasting services. The industry and consumers would benefit from the application of this technology to broadcasting. For the industry, more spectrum capacity will be made available for the introduction of new, innovative services. For consumers, they can expect improved sound and picture quality. In the longer term, it may be possible to switch off existing analogue services, thus releasing the radio spectrum for broadcasting or other uses.

4. In recognition of these benefits, the Government has in the 1999 Policy Address undertaken to explore the introduction of digital terrestrial television (DTT) and digital audio broadcasting in Hong Kong. In conjunction with the three radio broadcasters, the Government has completed technical trials of digital audio broadcasting. Meanwhile, a

consultant had been commissioned to conduct an economic study on digital audio broadcasting to help us formulate relevant policy proposals. As regards DTT, a Government-Industry steering committee was set up in 1999 to co-ordinate the conduct of technical trials. A frequency planning study had also been commissioned to identify suitable frequencies for DTT services. With the benefit of the results of the technical trials and the consultancy studies, the Information Technology and Broadcasting Bureau has drawn up policy proposals for digital terrestrial broadcasting services in Hong Kong. A summary of the policy proposals is listed on pages 3 to 9 of the consultation paper. Our considerations for the major issues are set out in the following paragraphs.

## **PROPOSAL**

### **Policy Objectives**

5. The policy proposals seek to advance our broadcasting policy objectives, which are to: -

- (a) widen programming choice to cater for diversified taste and interests of the community;
- (b) encourage investment and innovation in the broadcasting industry;
- (c) ensure fair and effective competition in the broadcasting market; and
- (d) promote Hong Kong as a regional broadcasting hub.

### **Digital Terrestrial Television**

#### ***DTT Standard***

6. The objective of the DTT technical trial is to compare the

features and performance of the three prevailing DTT standards<sup>1</sup> with a view to determining the most suitable standard for the Hong Kong environment. The major findings of the technical trial are summarised in Annex 2 to the consultation paper. In brief, the technical trial confirms that the performance of the three DTT standards is much better than the existing analogue system in terms of picture and sound quality. The three standards can also transmit television programmes in both the standard definition<sup>2</sup> and high definition<sup>3</sup> format. In addition, DVB-T and ISDB-T have the additional features of supporting mobile reception<sup>4</sup> and single frequency network (SFN) operation<sup>5</sup>.

7. Apart from the above technical trial, the Office of the Telecommunications Authority (OFTA) had commissioned a frequency planning study to ascertain the number of frequency channels that will be made available under the three DTT systems respectively. The study found that during the period when both digital and analogue services are simulcast and subject to the outcome of frequency coordination with the Mainland authorities, DVB-T and ISDB-T can support a maximum of six multiplexes<sup>6</sup> while ATSC can support a maximum of three multiplexes. Further details of the study are provided at Annex 4 to the consultation paper.

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<sup>1</sup> Advance Television Systems Committee (ATSC) standard of the United States, Digital Video Broadcasting – Terrestrial (DVB-T) of Europe and the Integrated Services Digital Broadcasting – Terrestrial (ISDB-T) of Japan.

<sup>2</sup> The frequency bandwidth used for transmitting a standard analogue television channel can transmit several standard definition digital television channels with better sound and picture quality than the analogue services.

<sup>3</sup> High definition television requires more bandwidth for transmission than standard definition television but delivers cinema-quality pictures and hi-fi surround sound.

<sup>4</sup> With digital television, viewers can receive television transmissions by TV receivers in cars, trains, etc. and even hand-held television sets.

<sup>5</sup> Single Frequency Network operation means the use of a single frequency block by transmitters at different locations in order to achieve a wide coverage area. This permits substantial frequency economy and allows more services to be transmitted.

<sup>6</sup> Multiplex means the combination of several television programme channels and/or data signals within one frequency channel by means of digital compression.

8. With the benefit of the above information, we arrived at the preliminary view to select DVB-T as the DTT standard for Hong Kong having regard to the following considerations -

- (a) DVB-T and ISDB-T both support SFN operation and provide more multiplexes than ATSC during the simulcast period. These two standards will better meet new demand for broadcasting services and enable easier frequency planning and transition from analogue to digital broadcast environment;
- (b) DVB-T and ISDB-T support mobile reception which is a desirable, though not essential, feature;
- (c) DVB-T is compatible with the 8 MHz channel plan currently adopted in Hong Kong and does not require special design of transmission equipment and TV receivers or set-top boxes<sup>7</sup> for receiving the signals;
- (d) DVB-T is adopted by many European countries and a number of Asian countries including Singapore and Australia. A full range of DVB-T products are already available in the market. ISDB-T is only adopted by Japan so far. DVB-T therefore provides better economies of scale as compared to ISDB-T; and
- (e) DVB-T is part of the DVB family which covers satellite (DVB-S) and cable (DVB-C) operation as well. These standards have common features that allow the transfer of programmes from one mode of transmission to another. Regarding ISDB-T and ATSC, while they also have related standards for satellite and cable transmission, such standards are not as widely adopted as those in the DVB family.

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<sup>7</sup> Set-up boxes decode digital TV signals and convert them into analogue forms for reception by existing analogue television sets.

### ***Licensing Regime***

9. At present, using analogue technology, frequencies are allocated to individual broadcasters. A whole frequency channel (8 MHz) is needed for the transmission of one television channel. Under digital environment, several television channels and / or data signals can be digitally combined (called “multiplexing”) before they are transmitted on the same frequency channel. With the advent of this new technology, three distinct kinds of DTT service will come into play, namely multiplex service<sup>8</sup>, television programme service<sup>9</sup> and additional service<sup>10</sup>.

10. Following the 1998 Television Policy Review, the Government has made the policy decision to separate the licensing of “transmission” and “provision” of television programme services. This would encourage the emergence of separate markets for the operation of transmission facilities and the provision of content. In line with this policy decision, we propose to separately license the three kinds of DTT services, that is, multiplex services and additional services under the Telecommunications Ordinance (Cap. 106) and television programme services under the Broadcasting Ordinance (Cap. 562). Frequency channels for DTT will not be allocated to broadcasters but will be allocated to the operators of multiplexes which bring together, through commercial arrangement, a package of television programme services and additional services on each frequency channel. This “separate licensing” approach allows more flexibility for commercial operators with different expertise to exploit the full benefits of DTT. For example, television programme service providers who do not wish to be involved in, or have no expertise in, multiplex operation could focus on programme production. This

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<sup>8</sup> A multiplex operator is responsible for the roll-out of the DTT transmission network, management of the allocation of channel capacity of the multiplex to television programme services and/or additional services and transmission of these services.

<sup>9</sup> A television programme service provider provides television programme service including programme-associated data. The operator will assume programme responsibility of the content.

<sup>10</sup> An additional service provider provides non-programme associated services, such as home banking, home shopping, multi-media and interactive services.

would help promote the development of multifarious services and innovative products to the benefit of consumers.

### *Frequency Allocation for Multiplex*

11. Under the above “separate licensing” approach, multiplex operators will play a crucial role in the development of DTT. They will be responsible for rolling out the DTT transmission network and packaging television programme services and data services for consumers. We need to ensure that multiplex frequencies are allocated in a fair and competitive manner which would maximize consumers’ choice and support the successful development of DTT in Hong Kong. To this end, we propose to invite interested parties to submit applications for multiplex frequencies which should contain proposals on arrangement for the line-up of services to be carried on the multiplex.

12. To meet our broadcasting policy objectives, we need to adopt a set of extensive criteria to assess applications for multiplex frequencies. In particular, we have to ensure that the launching of DTT will provide a diversity of services catering for different tastes and interests of the community. It is also important that DTT services should be rolled out as fast as possible so as to release the valuable frequency spectrum, which are currently used for the transmission of the existing analogue services, for broadcasting or other uses. Having regard to overseas experience<sup>11</sup> and bearing in mind our policy objectives, we consider that the following criteria should be taken into account in assessing applications for multiplex licences -

- (a) proposed timetable and geographical coverage of the DTT network roll-out;
- (b) proposed business plan for promotion of the early take-up of digital television (e.g. investment to encourage the early take-up of set-top boxes or digital receivers); and

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<sup>11</sup> The UK has adopted a similar set of criteria to assess applications for multiplex licences. In the case of the US and Australia, DTT multiplexes have been/will be allocated to existing TV broadcasters who are required to return the analogue frequencies to the Government within a certain time frame.

- (c) proposed arrangement for the line-up of services to be carried on the multiplex (e.g., proportion of television programme service and additional service to be carried on the multiplex; proportion of domestic free and domestic pay TV services to be carried on the multiplex; whether HDTV or mobile TV services will be carried on the multiplex, etc.).

13. A multiplex operator will be required to hold a multiplex licence (which will be categorized as a carrier licence under the Telecommunications Ordinance) to operate digital multiplexing services. We propose that the general conditions of the licence should require a licensee, among others, to lease multiplex capacity in a non-discriminatory way; ensure that all services carried on the multiplex are licensed under the Broadcasting Ordinance or Telecommunications Ordinance; conform with relevant technical standards; and fulfill the commitment on network coverage, investment and arrangement for the line-up of services as contained in its application.

### ***Programme and Additional Service Licences***

14. All television programme services carried on a multiplex are required to be licensed under the Broadcasting Ordinance. We propose that our established evaluation criteria for television licences<sup>12</sup> should continue to be applicable to television services transmitted on a DTT multiplex. The licence conditions should also be similar to the general conditions (e.g., positive programming requirements) in the existing domestic free or domestic pay television programme service licences, as the case may be. Additional services (e.g., home-shopping, e-commerce), being telecommunications services in nature, should be licensed under the Telecommunications Ordinance and subject to the provisions thereunder.

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<sup>12</sup> The evaluation criteria include, among others, compliance with statutory requirements (e.g. residence requirements), shareholding and corporate structure of the applicant, programming proposals and business plan.

### *Transition from Analogue to Digital*

15. Our long-term objective is to switch off the existing analogue television transmission network as soon as possible so that the radio spectrum could be released for other uses, including possibly further digital broadcasting services. This can only happen if the existing terrestrial services currently provided in analogue format is equally widely available to viewers on digital TV. To this end, we propose that the existing four terrestrial television channels should be simulcast in analogue and digital format with a view to encouraging consumers to move to digital and facilitating the development of digital broadcasting in Hong Kong.

16. We have considered the following two main options for simulcast –

- (a) The two terrestrial broadcasters will each be allocated a multiplex automatically for transmission of their existing services on the digital platform. Any spare capacity available on the multiplex may be used by them for carrying new TV channels or leasing to other service providers; and
- (b) The two terrestrial broadcasters will each be reserved guaranteed slots on a multiplex for transmission of their existing services. In other words, a “must carry” obligation will be imposed on two of the multiplex operators.

17. While the existing free-to-air analogue television services should be carried on the digital platform, we consider it important that there should be an open and competitive licence selection process for all multiplexes available, particularly when the amount of spectrum available for digital broadcast is still limited at the simulcast stage. Under the spirit of separate licensing (paragraph 10 above refers), the two terrestrial broadcasters should not be mandated to operate a multiplex although they should be welcome to submit applications if they so desire. We therefore propose that the preferred option is for guaranteed slots to be reserved on a multiplex for each of the existing terrestrial broadcasters (i.e. option (b) above).

## Digital Audio Broadcasting

18. The digital audio broadcasting technical trial confirms that such technology is technically feasible in the Hong Kong environment. In addition to providing better sound quality, digital audio broadcasting is capable of delivering non-programme associated services, such as data broadcasting, radio paging and still picture/graphics. A summary of the results of the technical trial is at Annex 8 to the consultation paper.

19. While the results of the technical trial are positive, the economic study reveals that the market price of digital audio broadcasting receivers is likely to maintain at the current level<sup>13</sup> for quite some time unless and until its worldwide production volume is significantly increased. Given the high price level of digital audio broadcasting receivers, its worldwide penetration is still at a very low figure<sup>14</sup>. Our consultant assesses that digital audio broadcasting would unlikely be commercially viable in the short term because of high investment cost vis-à-vis the potential advertising revenue. The long-term viability of digital audio broadcasting is also doubtful in view of the competition from other technologies such as third-generation mobile services, Internet and DTT. A summary of the consultancy report is at Annex 9 to the consultation paper.

20. Since the price of digital audio broadcasting receivers currently stands at a high level, the launch of such service at this stage would probably mean a high cost for consumers to enjoy digital audio broadcasting services. We believe that consumers' interest would be best served when digital audio broadcasting service is introduced at a time when the service is commercially viable and digital audio broadcasting receiver is affordable to the general public. It is also prudent that the Government would need to have a better grasp of the market potential of digital audio broadcasting services for the formulation of a long-term

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<sup>13</sup> The current price of a digital audio broadcasting receiver is approximately \$4,000.

<sup>14</sup> As at September 2000, about 400 digital audio broadcasting receivers have been sold in Singapore. In the UK, about 10,000 – 15,000 digital audio broadcasting receivers have been sold since its launch in 1995 while in Germany, more than 5,000 receivers have been sold.

policy and regulatory framework conducive to the development of the service. Against this background, we propose that the Government should consider inviting applications for digital audio broadcasting services when the following market situations materialise –

- (a) the market potential of digital audio broadcasting and the associated non-broadcasting applications becomes clearer;
- (b) the price of digital audio broadcasting receivers comes down to an affordable level for consumers; and
- (c) the worldwide penetration of digital audio broadcasting services picks up momentum.

However, we would be prepared to reconsider the above approach should the market respond by indicating that operators are prepared to put in the necessary investment for digital audio broadcasting services, with commitment over investment amount and service roll-out, etc.

21. Whether and when the above situations will happen depend very much on worldwide market demands and development of digital audio broadcasting technology vis-à-vis others such as third-generation mobile services, Internet and DTT. Pending a firm decision on the introduction of digital audio broadcasting services in Hong Kong, we propose that the existing sound broadcasters should be allowed, under their respective licence conditions, to continue to make use of the AM/FM frequencies for analogue broadcast.

### **Other Regulatory Proposals for Sound Broadcasting**

22. To pave the way for the launch of digital audio broadcasting and to enable analogue radio services to take full advantage of convergence in technologies, we propose that existing transmission-based regulatory framework for sound broadcasting should be revamped.

23. We have already established a technology-neutral licensing and regulatory framework for television broadcasting services through the enactment of the Broadcasting Ordinance since July 2000. To facilitate

market-led developments under a technological convergent environment, we propose that the regulatory frameworks for the “transmission” and “provision” of sound broadcasting services should be provided for separately under the Telecommunications Ordinance and the Broadcasting Ordinance respectively.

24. To enable diversification and cross-fertilisation of the telecommunications and broadcasting markets, we have suitably relaxed the restrictions on ownership<sup>15</sup> of and investment<sup>16</sup> by television broadcasting licensees. We propose that corresponding relaxation should be made applicable to sound broadcasting licensees. Our detailed proposals are set out in paragraphs 9.6 to 9.10 of the consultation paper. With the opening up of the broadcasting market and the proliferation of new services under the digital environment, we propose that a review should be conducted, say, three years after the launch of DTT, with a view to determining whether the existing cross-media ownership restrictions which are based on the traditional segmentation of the television/radio market should be revamped.

25. To further the policy objective to provide a level-playing field for the market players, we have already enshrined competition provisions in the Broadcasting Ordinance which are applicable to all television programme service licensees. We propose that sound programme service licensees should be subject to the same provisions.

26. At present, audio services on the Internet are not regarded as sound broadcasting under the Telecommunications Ordinance. These services are vibrant, competitive and developing rapidly. We believe that these services complement, rather than substitute, traditional broadcasting services and their continued development would stimulate the growth of the content production industry. This would further our policy objective

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<sup>15</sup> We have already removed from the “disqualified person” list for television programme service licensees “companies which in the course of business supply material for broadcasting by a licensee” and “companies which in the course of business transmit sound or television material in or outside Hong Kong”.

<sup>16</sup> The statutory provisions restricting television broadcasting licensees from engaging in other businesses not associated with broadcasting have been removed after the enactment of the Broadcasting Ordinance.

to widen choice of quality services for the community. We therefore propose that audio services on the Internet should continue to be exempt from the application of the Broadcasting Ordinance for the time being, unless and until their mode of operation draw much closer to broadcasting and the question of effective enforcement can be addressed.

## **IMPLEMENTATION**

27. Subject to the outcome of the consultation exercise, we propose that work on the legislative amendments should commence as soon as possible so as to provide a technology-neutral regulatory regime for sound broadcasting services. Meanwhile, we will closely monitor the development of digital audio broadcasting in the worldwide market to determine whether and, if so, when such technology should be introduced in Hong Kong.

28. As regards DTT, we propose that applications for multiplex licences should be invited as soon as possible following policy endorsement with a view to commencing simulcast of analogue and digital terrestrial television in end 2002 / early 2003. We believe that the development of DTT should be market-led and commercial-driven. We do not consider it appropriate to set a switch-off date for analogue broadcast now. Rather, we propose that a review should be undertaken in 5 years following commencement of simulcast or when the penetration of digital terrestrial television reaches 50% of all television households, whichever is the earlier, whether and when a switch-off date should be set for analogue broadcast.

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