MEDIA DEVELOPMENT AUTHORITY

POLICY AND REGULATORY FRAMEWORK FOR MOBILE BROADCASTING SERVICES IN SINGAPORE

PUBLIC CONSULTATION

ISSUED ON: 21 November 2007

1 The need for a consultation

1.1 What are mobile TV services?

The three mobile operators in Singapore currently offer their subscribers TV services over their 3G cellular networks. But these services are offered on a point-to-point basis, which limits the numbers of subscribers who can use them at any one time[1].

Now new technologies are being used to deliver mobile TV services in countries including China, Germany, Italy, Japan, Korea, UK, USA and Vietnam. Just like traditional fixed TV services, these services use one way point-to-multipoint radio transmission over a dedicated network which is separate from the cellular network. This removes the capacity limitations inherent in use of the cellular network.

We refer to these services as ***Mobile TV services*** or MTVS in this document and use the term ***cellular mobile TV services*** to refer to the point-to-point services offered over the cellular networks.

MTVS provide a range of TV channels to users. They also typically offer audio channels and broadcast data services, often linked to the audio-visual material on offer. The services are typically received on cellular mobile handsets. But there is equipment available which allows them to be viewed on dedicated handheld devices, on laptop computers, or on in-car navigation systems.

1.2 The potential benefits of MTVS

MTVS provide personalised viewing of TV, often with a choice of 10 to 15 channels on an "anywhere anytime" basis without time limitations[2]. In other countries users watch MTVS on their way to work, while waiting[3], or during their lunch breaks. Many even watch them at home, preferring the personalised viewing of MTVS to the more communal viewing of a traditional TV set. Demand is still uncertain. But in Korea more than 5 million of the population of 48 million now use MTVS[4], reportedly watching for about an hour each day.

The evidence to date suggests that MTVS might offer a major new audio-visual platform in Singapore which could enhance the lives of its citizens. They might also foster the development of an industry which produces made-for-mobile audio-visual content in Singapore.

As they develop, there are opportunities to link MTVS to the cellular networks to offer interactive and personalised advertisements and other services. Such developments raise additional regulatory issues. But they also offer further potential for economically useful services in Singapore.

1.3 The scope of the consultation

Given these developments, the MDA has decided to consult on the licensing of MTVS in Singapore. But before services are launched the MDA needs to develop an appropriate regulatory framework for these services. The issues that need to be considered are of four main types:

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[1] A new technology, mobile broadcast multicast service, or MBMS, is in development which will remove this limitation. But the timetable for the future availability of handsets for, and the level of commitment by major handset suppliers to this standard is uncertain.

[2] Unlike cellular mobile TV, the cost of the service is not a function of viewing time.

[3] For example while waiting for a doctor's appointment

[4] As at March 2007

- ***Technology issues:*** Should technology standards be mandated and if so what should they be? What technical definitions of quality of service (that may determine for example coverage and picture quality) should be mandated and if so what should they be?
- ***Licensing framework:*** What kind of licences should be issued? How should the licences be awarded? What should be the duration of licences? Should there be a requirement for Public Service Broadcasts (PSB) and must-carry obligations?
- ***Market structure issues:*** How many operators might the Singapore market support and how many multiplex licences should be issued? Should there be an advertising revenue cap for subscription-based MTVS operators?
- ***Content and advertising regulation:*** Should regulation of programme content on MTVS differ from that applied to existing free-to-air (FTA) and subscription broadcasting services? The specific dimensions of regulation that need to be considered include regulation of the content of programmes and advertisements and the duration, frequency and placement of advertising and sponsorship.

The remainder of this document discusses these questions, provides information on how other countries are dealing with them, sets out the MDA's proposals, and asks for comment on them.

2 Technical Issues

This section considers what standards for MTVS might be deployed in Singapore, whether a standard should be mandated and what measures the MDA might use to regulate service quality for MTVS.

2.1 The standards available

There are many different technology standards for delivering MTVS. No single standard is emerging to dominate MTVS markets worldwide. Instead many technologies are contending for operator support and a multitude of trials are in progress. The main standards are as follows:

- ***DVB-H*** or Digital Video Broadcasting-Handheld is an ETSI standard which has evolved from the DVB-T standard for fixed TV digital terrestrial broadcasting. It can operate at VHF (174 to 230 MHz), UHF (480 to 790 MHz) or in the L-Band (1452 to 1492 MHz) but it is designed to work in the UHF band. A single 8 MHz multiplex can carry 10 to 15 high quality TV channels. Almost all of the major mobile terminal suppliers support DVB-H handsets with GSM capability
- ***T-DMB*** or Terrestrial-Digital Multimedia Broadcasting is developed based on the ETSI DAB (digital audio broadcast) standard. It is designed to work in the VHF bands where a single 1.5 MHz multiplex can carry two or three high quality TV channels. To date only Samsung and LG have made terminals which support T-DMB and GSM
- ***MediaFLO*** is a broadcast system standard developed by Qualcomm. The physical layer is an open standard and Qualcomm is prepared to license other layers of the technology. Designed to operate in the UHF band it can carry 10 to 20 high quality TV channels. It is currently supported by LG, Qualcomm, Motorola, Samsung and ZTE in the handset market
- ***MBMS*** or Mobile Broadcast Multicast Service is a part of Release 6 of the W-CDMA standard. It offers a broadcast mode which enables 3G cellular networks to broadcast high quality TV channels using either paired or unpaired spectrum. The standard was completed in 2004 but there are as yet no handsets commercially available.
- ***ISDB-T***or Integrated Services Digital Broadcasting-Terrestrial. This technology is widely used in Japan but it is not used or supported elsewhere
- ***CMMB*** or China Mobile Multimedia Broadcasting standard. This China-specific standard, developed and championed by the State Administration for Radio, Film and TV, is in an early stage of development. There are as yet no commercial handsets
- ***DAB-IP*** is a variant on the ETSI DAB standard. Only used in the UK, most countries have chosen T-DMB instead when using VHF spectrum for MTVS.

There are also a number of satellite technologies for delivering MTVS. These include ISDB-S, S-DMB, and DVB-SH. Satellite technologies use spectrum in the 2 to 2.6 GHz range and can be useful in two respects:

- They enable wide area coverage at low cost
- Satellite downlinks can be used to distribute MTVS signals to a repeater network for onward transmission – this may enable lower cost links to transmission sites where coverage is required over a large area.

The main deficiency of satellite approaches is their inability to provide services indoors, where the shielding of the building prevents signals from reaching the handset. In Singapore even outdoors there are likely to be reception problems in the central business district because of building reflection of the signals. To overcome this, the network operator must provide terrestrial repeaters. This means that frequencies which are distinct from those used in the satellite links are required for terrestrial transmission.

Benefits arise when the use of satellite is a more cost effective means of providing links than terrestrial alternatives such as microwave and leased lines, or where there is preparedness by the market to accept outdoor coverage only. We do not consider that either of these circumstances apply in Singapore. There is no requirement for coverage of rural areas and there is strong demand for good indoor coverage for other mobile and broadcasting services. Indeed the evidence suggests that a terrestrial network is likely to be much more cost effective in Singapore. Satellite systems are deployed in South Korea in the Seoul area where there are 3000 repeaters deployed within a land area of approximately 1600 km^2. The equivalent number in Singapore (with a land area of 680 km^2) when pro-rated by area would be 1280. In contrast the MDA's consultants estimate a requirement for around 30 repeaters using terrestrial technologies.

Given this analysis the ***MDA does not propose*** to consider the use of satellite technology to deliver MTVS any further.

2.2 Standards and frequencies suitable for Singapore

Many of the possible standards and frequency ranges available for MTVS are not attractive in a Singapore context. For example

- Satellite technologies offer few benefits in Singapore as explained in Section 2.1
- The spectrum available in the VHF bands will only support six TV channels, which makes it challenging for T-DMB operators to offer a commercially attractive MTVS
- L-band is available and has adequate capacity. But there are very few MTVS capable handsets supported in this band
- MBMS technologies are in an early stage of development with almost no handset availability
- The Chinese standards are still in an early stage of development, and a ratified subset of standards has yet to emerge
- ISDB-T is limited to Japan in its deployment, and is not supported by the suppliers of GSM handsets.

Together this analysis suggests that the UHF band is the most suitable for MTVS services in Singapore. MediaFLO and DVB-H are both suitable technologies to deploy in this band.

2.3 Should a standard be mandated?

One of the MDA's principles is to regulate on a technology neutral and platform neutral basis, as far as is practicable after taking account of other regulatory principles. Underlying this principle is the view, now widely adopted globally, that the market is better able to pick standards than the regulator, that intervention risks stifling innovation and competition and that intervention is only ever justified if there is a serious case of market failure or if there are significant public interest considerations.

In the case of MTVS, market choices could, in principle, be distorted if the manufacturer of a technology changes market choices by heavily subsidising network equipment prices offered to a new operator so as to establish a showcase operation in a small market like Singapore. While there may be short term benefits, this may not be in the longer term interests of Singapore consumers if the technology is not open or well supported by equipment vendors.

Lack of co-ordination between operator bids could also result in market failure problems – for example each bidder will not know the technology choice of others and this could lead to an outcome where there are two different technologies used in the market. This could reduce competition between service providers by increasing end-user switching costs. Customers would need to buy a terminal which uses a rival standard when switching service provider.

Whether these problems will occur is uncertain. Market players have expressed a clear preference for the use of open global standards because of the small size of the Singapore market.

One way of addressing these problems without prescribing operators' choices would be to evaluate multiplex licence bids with reference to criteria such as the promotion of service competition, low end-user switching costs, and the existence of competitive, low cost, handset supply.

At the same time:

- It is premature for a small market like Singapore to set any particular standard when there is no obvious global champion
- There is no strong public interest consideration to require MDA to depart from the policy of technology neutrality.

The MDA therefore proposes not to mandate a single standard for MTVS in Singapore but to take account of concerns about market failure in the selection of the appropriate technologies when evaluating the bids for multiplex licences.

2.4 Should the MDA impose quality of service requirements?

Technical quality of service (QoS) has three main components – picture quality, network coverage and consumer service.

The MDA does not propose to mandate objective inputs to ***picture quality*** such as frames per second and picture resolution although it will reserve the right to set QoS on picture quality if necessary. Different picture formats are appropriate for different services. For example, sports channels may require high resolution and a high number of frames per second while low resolution and low frame rates may be acceptable for news broadcasts. It is in the operators' interest to provide good picture quality. Any mandate on picture quality at this instance would limit the flexibility of the mobile TV operator to develop the optimal mix of formats.

Nor does the MDA propose to mandate performance indicators for ***customer service***. Competition for customers (who have a wide choice of media and other entertainment services) should be sufficient to deliver good performance on aspects of customer service, such as billing, customer support, connection and disconnection.

The MDA does however propose to impose minimum network coverage requirements on multiplex licences to ensure that MTVS are offered on a nationwide basis in Singapore.

In setting network coverage requirements the MDA will need to specify the probability of a signal being satisfactorily received at any given location in Singapore. ***The MDA proposes*** to specify a 95% (outdoor coverage) level for multiplex licences for two main reasons:

- International experience suggests that MTVS terminals are likely to be integrated with a mobile phone and many of the interactive services of the future will rely on the mobile communications channel for effective operation. The 95% coverage requirement is similar to IDA's street-level coverage on its mobile operators

- To achieve coverage of higher than 95% probability of coverage may require a significantly greater number of base stations to achieve coverage.

MDA proposes to regulate outdoor coverage in the short to medium term. Network coverage in Singapore can be considered in terms of outdoor coverage, indoor coverage (from outdoor sites), in-building coverage (from in-building systems) and coverage of the Mass Rapid Transit (MRT) tunnels and stations. MDA recognises that huge investments may be required to provide indoor coverage and thus ***proposes not to*** set indoor in-building or tunnel QoS in this instance but will reserve the right to impose these standards on the multiplex licences if necessary.

MDA proposes to let market forces determine indoor coverage. ***It proposes*** to require applicants for MTVS multiplex licences to specify the indoor coverage and the minimum signal strength that they propose to offer and to supply engineering calculations which back-up this choice of value. The MDA will consider these parameters and validate the engineering calculations as part of the multiplex licence tender evaluation. A service that offers better indoor coverage will score higher points in the tender evaluation.

3 Licensing framework

3.1 The types of licence required

International experience shows that digital broadcasting services, including MTVS, involve four activities that need to be licensed:

- Access to radio spectrum which needs to be licensed in order to avoid harmful interference
- The operation of a MTVS network i.e. transmission and distribution infrastructure
- The operation of digital multiplexes i.e. the operation of the multiplex, the sale of multiplex capacity
- The provision of programme services, involving the aggregation of content into a programme channel.

In principle each of these activities could be licensed separately, with radio spectrum and network licences being issued by IDA and multiplex and programme service licences being issued by the MDA. In addition, for subscription services, subscriber management and conditional access services need to be provided. These are likely to be operated by the mobile operators and agreed under contract with content providers. They do not need to be separately licensed because licence conditions imposed on the broadcast and multiplex licensees are sufficient to address any public interest issues.

Digital radio and TV broadcasting services in Singapore are subject to the following licensing arrangements

- A multiplex licence issued by the MDA under the Broadcasting Act which specifies the broadcasting frequencies and the right to use and/or lease digital multiplex capacity for approved radio, TV or programme and non-programme associated data broadcasting services
- A licence issued under the Telecommunication Act (a Facilities Based Operator licence issued by IDA) which is required by any party running a telecommunication system for the operation of the digital TV or radio multiplex broadcasting service[5]
- A Broadcasting Service licence issued by the MDA under the Broadcasting Act which is required by any party (including the multiplex licensee) wishing to offer broadcasting services on the multiplex.

This framework is comprehensive and clear and is commonly used elsewhere – for example in most EU countries. ***The MDA therefore proposes*** that the current licensing structure used for fixed digital broadcasting, involving a multiplex licence and a broadcasting service licence, should be applied to MTVS.

If MTVS service providers are required to work under a broadcasting service licence when they supply services then the question arises as to whether cellular mobile TV service providers should also be required to obtain such a licence rather than continue to operate under the class licence regime. Under the current class licence regime, cellular mobile TV service providers are automatically licensed once their services are in operation. They are not obliged to submit their TV channels for prior approval from MDA but are required to ensure that their content services comply with the class licence conditions. Nor are there any conditions on ownership control.

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[5] See for example MediaCorp's licence for its broadcasting transmission network. http://www.ida.gov.sg/doc/Policies%20and%20Regulation/Policies_and_Regulation_Level3/Individual%20Licences/MediacorpT.pdf

The mobile operators argue that the current arrangements work well and that any requirement for an additional broadcasting service licence represents a significant additional burden. The MDA believes that there are two strong arguments in favour of moving to an individual broadcasting service licensing regime for TV channels offered on cellular networks:

- Such services have the same look and feel as MTVS. A technology neutral approach would suggest that they should be regulated (and licensed) in the same way as MTVS. Adopting a differentiated approach could skew the market in favour of cellular mobile TV services
- Cellular mobile TV services are likely to see high adoption rate among young users and children. Because of their personalised nature these services could also have a major impact on their users. This suggests the need for the regulatory controls using the individual licensing approach which is generally stronger than that of a class licence approach.

The MDA also notes that the European Commission is in the process of establishing the Audio Visual Media Services (AVMS) Directive which governs all audio visual content regardless of the technology and delivery platform – traditional TV, Internet TV, 3G networks etc. The Directive has made a clear distinction between linear and non-linear TV services and has, imposed stronger regulatory controls on the former.

Given these arguments ***the MDA proposes*** to require each cellular mobile TV service provider to obtain a broadcasting service licence before transmitting TV services to its customers in future.

Currently, MDA has adopted a flexible two-tier licensing framework – niche and nationwide licences for IPTV services. ***MDA proposes*** to adapt the two-tier framework[6] to regulate the MTVS operators and cellular mobile operators who wish to provide content services on their cellular network.

As mobile TV services are in their infancy, ***MDA proposes*** to license both the MTVS and cellular mobile TV service providers under the niche licensing framework, details of which can be found in Figure 3.1. The ***MDA does not propose*** to limit the number of mobile TV broadcasting service licences.

[6] To distinguish between a Niche and Nationwide Subscription TV Licence, MDA will use the number of subscribers as a primary criterion. This will be set at 100,000 subscribers. Service providers who have less than 100,000 subscribers may operate under the Niche Licence.

To provide greater flexibility, if a Niche player grows beyond 100,000 subscribers, a list of secondary criteria will then be taken into consideration to assess if such a service can still qualify as Niche. The secondary criteria include:

- Location – whether the service is offered chiefly to specific non-residential locations in Singapore
- Language – whether there is a high percentage of foreign language content
- Reach and impact of the channels

Figure 3.1 Proposed two-tier framework for MTVS and cellular mobile TV service providers		
	Niche Subscription TV Licence	**Nationwide Subscription TV Licence**
Licence duration	5 years, renewable	10 years, renewable
Number of Subscribers	Not more than 100,000 subscribers in Singapore	No limit to the number of subscribers in Singapore
Licence fee[7]	The licence fee will be 2.5% of total revenue subject to a minimum of $5,000.	The licence fee will be 2.5% of total revenue subject to a minimum of $50,000.
Performance bond	$50,000, in the form of either banker's guarantee or cash.	$200,000, in the form of either banker's guarantee or cash.
Ownership	No ownership conditions	Subject to the ownership conditions as stipulated in Part X of the Broadcasting Act
Must carry	No must carry obligations.	
Advertising revenue	No cap on advertising revenue.	
Advertising time limit	14 mins per hour advertising time limit applies for channels with scheduled programming. The 14 mins advertising time limit is not applicable for VOD content and interactive advertising services.	
Content guidelines	Subject to the MDA's programming codes for FTA content, subscription content, video-on-demand (VOD) and other kinds of content.	

3.2 Licence award mechanisms

The MDA anticipates that there could be excess demand for multiplex licences for MTVS. These licences could be allocated by direct award or through a competitive process and, if a competitive process is used, there is a choice between a comparative tender and auction.

In the case of the new MTVS multiplexes, there do not appear to be any overriding public interest reasons for their direct award. On the contrary, given the many uncertainties concerning what in time might prove to be an attractive and successful service, there are good reasons for adopting a competitive approach to licence award.

[7] Mobile TV services are still in its nascent stage, therefore the MDA is proposing to exempt MTVS service providers and cellular mobile TV service providers from paying a licence fee for the first 5 years to facilitate the growth of this service.

The MDA therefore proposes that the multiplex licences available for MTVS should not be issued by direct award. This leaves a choice between auctions and comparative tenders, with intermediate options which combine elements of both.

The best choice depends on the objectives of the awarding authority and the circumstances of the tender. In the case of MTVS in Singapore, the MDA is seeking to obtain the service proposition(s) that best meets consumer interest objectives while being commercially viable.

A comparative tender approach appears to be the best way of meeting these objectives. Using this approach the MDA can

- Keep pre-specified licence conditions on service provision at minimal levels
- Ask market players to offer higher levels of service that meet consumer interest criteria set out clearly in the invitation to tender and which the MDA will use in evaluating the bids
- Leave it to the market players bidding for the licences to make the trade-offs between meeting the MDA's consumer interest criteria in full and maximising the commercial viability of the MTVS they offer
- Evaluate bids and choose those which best meet the MDA's objectives.

The alternative approach is to pre-specify consumer interest requirements at levels chosen by the MDA and then hold an auction to select the licensees. The problem here is that both the cost of meeting these consumer interest requirements and their impact on revenue which MTVS might generate are not known with any certainty by the MDA. This means that there is a risk that either the requirements

- Are set too high in the sense that they undermine the viability of the MTVS service or
- Are set too low in the sense that the operator may just deliver lesser consumer benefit.

Auctions can have clear advantages over comparative tenders in situations when it is difficult to enforce licence commitments entered into through a comparative tendering process. But this is not a major problem in Singapore.

Given this analysis ***the MDA proposes*** to use a comparative tender to select multiplex licensees. Possible evaluation criteria are given in Figure 3.2. The MDA seeks industry comment on whether they are appropriate and what weight should be given to each.

Figure 3.2 Possible evaluation criteria for a comparative tender

Evaluation criteria
Technical measures
Service coverage (indoor and outdoor)
Technical capability of the bidder
Ability to build a cost effective network
Financial and commercial measures
Credibility of the business plan and related to this whether the bidder demonstrates a good understanding of the market (e.g. audience preferences, willingness to pay for services)
Evidence of the attractiveness of the service offering to the target audience
Financial capability of the bidder
A lump sum money bid
Consumer interest requirements
Diversity and quality of the programme offering
Protections to safeguard younger viewers from unsuitable content
Availability of services to most Singaporeans through appropriate distribution arrangements
Stimulus to the competitive development of the broadcast sector
Stimulus to the development of the creative content and digital media sector in Singapore

For broadcasting service licences, as MDA does not limit the number of licences issued, each application will be assessed based on its own merits.

3.3 Licence duration

The choice of licence duration is a balance between giving licensees sufficient time to have a reasonable chance of making a market return but not so long as to unduly limit government's ability to refarm the spectrum when the need arises.

Elsewhere in the world the duration of spectrum licences for MTVS varies considerably - from 3 to 20 years. Modelling of the Singapore market suggests that duration of about 11 years should be sufficient to address viability concerns – 10 years may be too short and 20 years potentially reduces flexibility to refarm spectrum. ***The MDA therefore proposes*** that multiplex licences for MTVS should have a 10 year duration with an option to renew for a further five years.

For broadcasting service licences, in line with our proposal to grant them niche licences, the licence duration will be 5 years, renewable.

3.4 Other licence conditions

In considering the MDA's proposal respondents should note that the MDA intends to specify the following additional licence conditions:

- Television services should comprise at least 65% of the multiplex capacity utilised. In this regard audio streaming (including radio) and data services (except for programme associated data) would be defined as non-programme associated data and limited to 35% of the multiplex capacity
- In setting licence fees for multiplex and broadcasting service licences the MDA will take the same approach it has taken with other broadcast licences for consistency. MDA will charge a licence fee of 2.5% of total income subject to a minimum of $5,000 (for niche licensees) or $50,000 (for nationwide licensees). Mobile TV services are still in its nascent stage, therefore the MDA is

proposing to exempt MTVS service providers and cellular mobile TV service providers from paying a licence fee for the first 5 years to facilitate the growth of this service.

- Websites offering short video clips such as movie trailers and user-generated-content (UGC) are currently regulated under the class licence framework. MDA believes that the same class licence can be applied to such services offered over the mobile TV platform.

4 Market structure issues

4.1 Demand for MTVS in other countries

All of the 14 countries (the case study countries)[8] reviewed by the MDA's consultants have trialled MTVS using a range of technologies. Most started their trials in 2005. Eight have launched commercial services but only two of these, those in Japan and Korea, are more than 12 months old. Both these countries have licensed two competing platforms – one is a FTA advertising funded service, broadcast over terrestrial networks, and the other a satellite-based subscription service. Figure 4.1 shows that demand for the two FTA services is strong while demand for the subscription services is strong in Korea but weak in Japan, despite similar pricing and range of content. Most observers attribute the very different levels of demand to the different distribution channels. In Korea the three mobile operators all sell the subscription MTVS; in Japan none of them do.

Figure 4.1 Demand for MTVS in Japan and Korea

Measure	Japan	Korea
Satellite subscription service:		
Subscribers (000)	70	1130
Growth rate per year	0%	160%
Terrestrial FTA service:		
Users (000)	5000	4000
Growth rate per year	400%	400%

Trials of MTVS consistently suggest that end-user demand is strong. 40% to 70% of trial end-users said that they were willing to pay S$10 to S$20 per month for subscription-based MTVS offering 8 to 15 channels of TV.

International experience also indicates that:

- TV services, rather than audio or data services, are the main drivers of demand for MTVS and their introduction increases TV viewing overall
- MTVS need to provide a significant number of TV channels to be attractive to subscribers. The O_2 trial in the UK suggests a minimum of 10 TV channels
- A mix of standard FTA channels and made-for-mobile content is attractive to viewers. There are no obvious "killer applications" but news, sport, music videos and popular soap operas (often abridged) dominate the MTVS schedules in other countries
- Viewing times for MTVS vary by country from 15 minutes in the US trials to 50 minutes for commercial services in Korea
- Users and subscribers are predominantly in the 20 to 40 age range and the customer base is dominated by men[9]

[8] Namely Australia, China, France, Germany, Hong Kong, Indonesia, Japan, Korea, Italy, Finland, Taiwan, UK, USA and Vietnam.

[9] 65% of subscribers to the Korean subscription service are men

- MTVS are viewed in roughly equal proportions whilst travelling and at home, with a smaller but significant proportion of viewing at work, often during the lunch hour. This pattern of use suggests that MTVS is not a close substitute for traditional fixed television.

4.2 Demand for MTVS in Singapore

Indicators of demand for MTVS in Singapore are less certain.

On the one hand drivers of demand such as commuting times, waiting times and TV viewing are short by international standards, prices for basic pay TV packages and mobile services are low and a survey conducted in 2005[10] indicated that only 11% of Singaporeans are willing to pay between S$5 and S$15 per month for MTVS. These comparisons suggest the demand for MTVS could be lower in Singapore than elsewhere.

On the other hand Singapore has a high handphone penetration rate. It is also worth noting that surveys with demonstrations of an MTVS tend to report much weaker levels of demand than trials lasting several months. A German survey[11] produced similar results to the Singapore survey but European trials suggest demand levels three to four times higher. These considerations suggest that demand in Singapore might be similar to that elsewhere in the developed world.

4.3 The number of MTVS multiplex licences to issue

The MDA is prepared to issue up to two 8 MHz multiplex licences in the UHF band. There is also the possibility of using spare capacity in the UHF multiplex currently used by TVMobile. There is also additional spectrum of up to two 1.5 MHz multiplex licences at VHF band.

The MDA's consultants have modelled the financial viability of MTVS operators using a range of assumptions. This work suggests that:

- Subscription based services are significantly more likely to be commercially viable than advertising based FTA services in Singapore
- A single multiplex operator which offers subscription based services is likely to be commercially viable under a wide range of reasonable assumptions
- There are potentially major competitive benefits from licensing two rather than one multiplex operators in Singapore in terms of one or more services having lower prices, greater innovation and stronger incentives for cost efficiency. But the viability of two multiplex operators is uncertain. Under some market assumptions two operators are commercially viable; under others they are not
- Under most scenarios the business case is highly sensitive to the degree of coverage of the MRT and in-building locations, such as shopping centres.

Given these findings the MDA believes that it is better to leave the final evaluation of the commercial viability of holding one or more multiplex licences to market players, as they are best placed to make this decision. Of course an applicant bidding for more than one licence would need to make a strong case as to why the MDA should make such an award and so forego the benefits of competition.

The MDA is therefore prepared to issue up to four multiplex licences, giving access to two 8 MHz channels at UHF and two 1.5 MHz channels at VHF, and to allow applicants to bid for one or more licences.

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[10] Singaporeans' Awareness, Interest and Readiness to Adopt New Digital Media Technologies, MDA, October 2005

[11] Survey commissioned from Media Kommission by ARD and ZDF, November 2006 which suggested that 13% of Germans were interested in MTVS

4.4 Access to multiplex capacity

Multiplex capacity for MTVS is expected to be a scarce resource. This then raises the issue of whether those entities that receive multiplex capacity should be required to provide access to this resource on non-discriminatory terms and conditions. This approach has been adopted in countries where a single multiplex licence has been awarded (e.g. Finland, Australia and Germany). While the essential resources provision of the Media Market Conduct Code could be used to address access to multiplex capacity there is a risk that relying on this *ex post* regulation could lead to delay and give the owner of the scarce resources an entrenched market position. Against this the presence of *ex ante* regulation could inhibit commercial negotiations and the emerging nature of the market may make the setting of appropriate access terms difficult to achieve.

Given this analysis ***the MDA proposes*** that holders of multiplex licences for MTVS should be obliged to make access to multiplex capacity available to third parties on fair, reasonable and non-discriminatory terms and conditions.

4.5 Advertising revenue cap

The MDA has also considered whether there should be a cap on advertising revenue for subscription funded mobile TV service providers (as applies to fixed subscription TV services in Singapore) in order to protect advertising revenues earned by FTA public service broadcasting. There are three reasons for not imposing such a cap:

- There will be practical issues and associated costs with its application to the service operators where the entities receiving advertising and subscription revenues could well differ
- The MDA wants to give flexibility to operators to develop innovative business models
- There are no examples in the case study countries of advertising revenue caps for subscription services on the service operators.

Given this analysis ***the MDA proposes*** that a cap on the share of revenues earned from advertising by mobile TV subscription service providers should not be applied.

5 Regulation of content

5.1 Regulation of MTVS content in other countries

In general the regulatory authorities in the case study countries apply fixed TV broadcast rules on content to what can be broadcast by MTVS providers. Two main variations from this position are:

- In the USA mobile TV services are classified as information services and do not come under TV broadcast regulation. This ruling was developed for unicast mobile TV. It is not clear if it will remain unchanged for broadcast mobile TV
- In Hong Kong MTVS are traditionally not classified as TV broadcast services because they do not involve broadcasts to specific premises. The Hong Kong Government has consulted on what regulations to apply to MTVS content.

The detailed rules vary from country to country but generally cover protection of vulnerable groups, right of reply, advertising and sponsorship, and cultural values and events. The rules, which apply to MTVS content in the EU are shown in Figure 5.1[12]. They are broadly representative of other case study countries.

A specific issue which arises in the context of mobile services concerns the protection of children, given that these services are likely to see high adoption rate among young adults and children and given that viewing will by definition be personal (i.e. not done in conjunction with adults). In most case study countries children are protected from harmful content broadcast on MTVS in exactly the same way as children watching fixed TV services. In the EU for example the following rules apply:

- Broadcasters must not broadcast material which might impair the physical, mental or moral development of children e.g. through the transmission of pornography
- There are restrictions on advertisements aimed at children. For example advertisements for alcohol must not be aimed at children; advertisements must not exploit the natural credulity or inexperience of children; and member states are encouraged to develop codes of conduct for food advertisements so as to encourage healthy eating by children
- Broadcasters cannot insert adverts in programmes aimed at children more than once every 30 minutes.

In addition there are rules which are country specific. For example in Sweden there is an outright ban on advertising in children's programmes. There are also time-belts, which vary significantly from country to country, during which programmes which contain sexually explicit material violence and/or strong language cannot be transmitted.

[12] Member states can impose stricter rules in their own country if they wish

Figure 5.1 The main rules of the EU's Audiovisual Media Services Directive

Category of rules	***Rules***
Core rules for both on demand and broadcast service providers	Make contact details of the service provider easily available to the end-user.
	Do not impair the physical, mental or moral development of children e.g. through the transmission of pornography.
	Do not incite hatred based on race, sex, religion or nationality.
	Promote European content as far as practicable.
	Make advertisements easily recognised. Do not use subliminal techniques, and ban adverts for prescription medicines and tobacco products
	Restrict adverts for alcohol and those aimed at children.
	Do not allow sponsorship of news programmes, by tobacco companies or of any specific prescription medicines.
	Clearly inform viewers when programmes are sponsored and do not allow the sponsor to exercise editorial control.
Additional rules for broadcast service providers only.	Allow open access to events of major importance to society.
	Allow access on fair, reasonable and non discriminatory terms to extracts of events of 'high interest' to the public which are broadcast on an exclusive basis.
	Broadcast European works for at least 50% of transmission time and works produced by independent production companies for at least 10% of time.
	Do not transmit adverts for more than 20% of any clock hour.
	Respect the integrity of programmes when inserting advertisement breaks.
	Do not insert advertisement breaks in films or children's programmes more than once every 30 minutes.
	Provide a right of reply to anyone whose reputation has been damaged by incorrect facts in a TV programme.

5.2 The framework for MTVS content regulation in Singapore

At present there are two models for regulating broadcast content in Singapore:

- The broadcasting class licence approach adopted for mobile TV on cellular networks and the Internet
- The standard regulatory approach used for fixed FTA and subscription services and the TVMobile service, under specific service licences issued by the MDA.

For the reasons set out in Section 3.1, the ***MDA proposes to*** require the MTVS service providers and cellular mobile TV service providers to obtain a broadcast services licence before transmitting these services. Under these licences the operators would then be subject to the MDA's programming codes for FTA content, subscription content, video-on-demand (VOD) and other kinds of content.

These operators should seek MDA's prior approval before effecting any new services, changes to the nature of the service or any significant changes to the content offered. Approval will be expedited within the shortest time based on the content to be offered - about 2 weeks for channels offering materials such as sports and children's programmes, 30 days for news and entertainment channels, and 60 days for content such as minority languages channels - starting from the receipt of all information and materials required by the MDA.

5.3 Public service broadcasting (PSB) obligations

5.3.1 Obligations for specific programme content

Experience elsewhere suggests that while news programmes will almost certainly be a core part of the MTVS programme offering, this will not necessarily be the case for other types of public service broadcasting programmes (e.g. minority language, children's, educational and cultural programmes) unless these are provided as part of a rebroadcast of a terrestrial PSB channel. So requiring the transmission of PSB programmes other than news will impose a cost on MTVS providers at this developmental stage.

The MDA therefore proposes not to impose PSB obligations at this point in time, such as local content or specific genres, on MTVS and cellular mobile TV service providers (unless these are publicly funded) because they raise the costs of the operators and could have a negative impact on mobile TV viability.

5.3.2 Must-carry obligations

In Singapore must-carry requirements for the six local FTA TV broadcasting services are currently applied under the nationwide subscription TV service licences held by StarHub Cable Vision Ltd. and SingNet Pte. Ltd. Must carry requirements are not applied to other broadcasting platforms.

Of the 14 case study countries, only France has must-carry requirements for public service channels[13]. Elsewhere FTA channels are usually part of the mix of channels offered to consumers but there is no requirement for this to be so. Regulators appear to recognise that the capacity of an MTVS platform is limited and that service providers need to maximise the attractiveness of their content packages if they are to stimulate take up. Must-carry rules limit this process.

The MDA believes that there are public interest reasons to facilitate the six existing FTA channels in Singapore being made available to MTVS users. How might this be achieved? The MDA could:

- Simply impose the must-carry obligation on the commercial multiplex operators or service providers. As discussed above this option could seriously impair the viability of a commercial subscription based operation
- Split the obligation between each multiplex – requiring transmission of three of the local FTA channels on each, so as to spread the burden across operators. This could result in different coverage areas for the local FTA channels if there were differences in network coverage in which case choosing which network carried which channels could be contentious
- Use spare capacity on the TVMobile multiplex to transmit the six local FTA channels. This could involve gifting this capacity to MediaCorp.

This last option has the significant advantage of removing a regulatory burden from the two commercial multiplex operators (as compared with a must-carry approach) and therefore improving the likelihood of a viable business proposition.

[13] MTVS operators must carry the six public service TV channels and allow other FTA channels access on fair, reasonable and non discriminatory (FRND) terms. The FRND requirement means that the MTVS operator can refuse access to FTA channels if it does not have sufficient capacity. But it must carry the public services.

Given this analysis ***the MDA proposes***:

- Not to impose must-carry obligations on commercial MTVS and cellular mobile TV operators because of the negative implications for their viability, potential distortions to technology choices and the fact that the service is unlikely to be the principal means of receiving TV in the near future
- To remain open to the possibility of allowing MediaCorp to carry its local FTA channels on the spare capacity of the TVMobile multiplex[14] if MediaCorp applies to the MDA to do so. In these circumstances the MDA proposes to impose "must enable access" on the commercial MTVS operators to require them to enable the convenient reception of any local FTA service which is available in a standard similar to the one deployed by the operator. This means that if MediaCorp decides to simulcast the local FTA channels based on DVB-H standard, a DVB-H operator cannot block their users from receiving the local FTA services. If the commercial MTVS operator launches a service based on a technology which is incompatible with that used by MediaCorp, the MDA proposes to leave it to the commercial MTVS operator to decide if it wants to include the local FTA TV channels in its suite of channels. If MediaCorp were to launch a subscription-model MTVS, then they would need to tender for a multiplex licence like other players
- Similarly, if the FTA channels were made available on a platform that can be assessed via the cellular network, the cellular mobile TV service providers should not prevent their subscribers from accessing such channels.

5.4 Advertising and sponsorship regulation

At the moment advertising content on all media is regulated on a voluntary basis by the Singapore Code of Advertising Practice (SCAP), while the SPAM Control Act seeks to control mobile spam. These regulations would apply to advertising on mobile TV, including interactive advertising. There is also broadcasting-specific regulation of advertising and sponsorship administered by the MDA, including controls on the amount of advertising airtime, and the identification and separation of advertisements to protect consumers' interests and viewing pleasure. The issue to be considered is whether this regulation should also apply to MTVS and cellular mobile TV service providers.

In other countries MTVS is generally regarded as a broadcasting service and the same advertising regulation applies to MTVS as to broadcast TV services. For example:

- Across the EU the content, duration and placement of advertising on MTVS is regulated. The limits on advertising minutes are more stringent than in Singapore – 12 minutes as compared with 14 minutes per hour – and there are also requirements concerning the maximum frequency of advertisements in children's programmes and films (once every 20 minutes). The range of products that may be advertised is somewhat wider than in Singapore
- Under the EU rules
  - Text advertisements cannot be displayed at the same time as a programme. This would breach the requirements for the separation of programmes from advertisements
  - A sponsor's logo cannot be displayed during a sponsored programme – only at the beginning and end of the programme and during the advertising breaks. A broadcaster's logo is allowed during programmes because this helps inform the viewer as to which channel s/he is watching

[14] Where technologies are derived from the same family of standards then it is often possible for different standards to coexist within the same multiplex. For example, it is possible to incorporate DVB-H channels with DVB-T channels within the same multiplex. Presently, TVMobile is transmitted based on DVB-T.

- In Korea there are more stringent advertising minute controls – 6 minutes per hour on terrestrial TV and 10 minutes per hour on satellite broadcasts.

Applying fixed TV services rules on advertising to MTVS and cellular mobile TV service providers could, in theory, restrict the revenues earned by advertising financed operators. But the fact that they are imposed in countries where companies have been prepared to invest in MTVS suggests that they are not unduly onerous.

The MDA therefore proposes that the current framework for advertising regulation (as specified in the voluntary SCAP code and MDA TV advertising and sponsorship codes) should be applied to MTVS and cellular mobile TV service providers. This would include limiting advertisements and/or trailers to no more than 14 minutes in each and every hour and adherence to the MDA's advertising codes.

6 Next steps

6.1 Invitation to comment

The MDA invites the submission of comments from the industry and public on the proposed policy and regulatory framework for mobile broadcasting services in Singapore. This will allow the MDA to have a better understanding of the views of the interested parties. Specifically, the MDA seeks comments on the following proposals:

- Not to mandate any particular standard for MTVS in Singapore (Section 2.3)
- To impose minimum network coverage requirements of 95% (outdoor coverage) on multiplex operators (Section 2.4)
- Not to impose any quality of service on picture quality and indoor coverage at this instance but will reserve the right to do so when necessary (Section 2.4)
- To require both MTVS and cellular mobile TV service operators to obtain broadcast services licences before transmitting TV services over their networks (Section 3.1)
- To adapt the two-tier IPTV framework to regulate the MTVS operators and cellular mobile TV operators and to license the service providers under the niche broadcasting service framework (Section 3.1)
- To issue 10 year multiplex licences, with an option to renew for a further five years, via a comparative tender process and to issue five year niche broadcasting service licence (Section 3.2 and 3.3)
- To require multiplex licensees to offer capacity to third parties on fair, reasonable and non-discriminatory conditions (Section 4.4)
- Not to impose an advertising revenue cap (Section 4.5)
- To apply MDA's programming codes for fixed TV services (FTA content, subscription content, VOD and other kinds of content) (Section 5.2)
- Not to impose public service broadcasting obligations (Section 5.3.1)
- Not to impose must-carry obligations (Section 5.3.2)
- To require mobile TV operators not to block access by their users to any local FTA channels offered by Mediacorp using compatible technologies (Section 5.3.2)
- To apply the current framework for advertising regulation (as specified in the MDA TV advertising and sponsorship codes and voluntary SCAP code) (Section 5.4).

6.2 Request for comments

The MDA invites the submission of written comments regarding the licensing and regulation framework in the following format:

- A cover page (including the information specified below);
- Table of contents;
- Summary of major points;
- Statement of interest;

- Comments; and
- Conclusion.

Supporting material may be placed in an annex. All comments should be clearly and concisely written, and should provide a reasoned explanation for any propositions. Where feasible, parties should identify the specific proposal on which they are commenting.

All comments should be made on or before 12 noon, 4 January 2008. All comments must be submitted in softcopy (in Microsoft Word format compatible with Microsoft Office Version 2003). Parties submitting comments should include their personal or company particulars, and their correspondence address, contact numbers and email addresses on the cover page of their comments. All comments should be addressed to:

Ms Ling Pek Ling
Director (Media Policy)
Media Development Authority
Email: MDA_MTVS_Comment@mda.gov.sg

The MDA reserves the right to make public all or parts of any written comment and to disclose the identity of the source. Commenting parties may request confidential treatment for any part of the comment that the commenting party believes to be proprietary, confidential or commercially sensitive. Any such information should be clearly marked and placed in a separate annex. If the MDA grants the request for confidential treatment, it will consider, but it will not publicly disclose, the information. If the MDA rejects the request for confidential treatment, it will return the information to the commenting party and will not consider the information as part of its review. As far as possible, commenting parties should limit any request for confidential treatment of information submitted. The MDA will not accept any comment that requests for confidential treatment of all or a substantial part of the comment.

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