FINAL REPORT

The technical feasibility of Foxtel providing access seekers to its Digital Set Top Unit service (DSTUS) with the capability to equip existing channel offerings with genuinely interactive features

A Report by Convergent Consulting

Convergent Consulting

... when decisions matter

24 July, 2006

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Disclaimer

Convergent Consulting has prepared this report using information obtained from a number of parties involved in this ACCC process. Although we have endeavoured to ensure that the supplied data is reliable and to cross-check this whenever possible, we cannot take responsibility for the accuracy or completeness of the information provided to us by third parties.

It will be evident in reading this report that its conclusions are based on assumptions that have had to be made in the light of information not supplied by Foxtel, or due to various market, technical and regulatory uncertainties. In particular, it should be noted some of these assumptions could change to a sufficient extent such that the derived outcomes and conclusions change materially.

1 Executive Summary

The key technical issues of this consultancy are driven by the fact that Foxtel's current STU population is not capable of simultaneously receiving and decoding more than one multiple program transport stream (MPTS) at a time. Therefore, an interactive application that operates in conjunction with a particular video channel must be transmitted in the same MPTS. This simple requirement raises the key technical and operational questions underpinning this consultancy.

Specifically, there are three potential scenarios for deploying transmission arrangements when an interactive application and video channel must be carried in the same MPTS.

Deployment Scenario	**Transmission Responsibility**		**Example**
	Main Video Channel (3.5-4MB)	**Interactive Application (0.2-2MB)**	
1. An existing Foxtel channel provider' s main video channel is singularly illuminated	Foxtel	Foxtel	Foxtel's 17 existing interactive channels
2. An existing Foxtel channel provider' s main video channel is dual illuminated	Both Foxtel & the Access Seeker	Access Seeker	None
3. A non-Foxtel channel provider singularly illuminates its main video channel	Access Seeker	Access Seeker	TVN

Foxtel argues that the Special Access Undertaking (SAU) was only meant to cover Scenarios 2 and 3: Scenario 2 for existing channel providers and Scenario 3 for new (non-Foxtel) channels. Conversely, TwoWay TV argues that Scenario 2 is not cost-efficient for existing channel providers as the main video channels are 'dual illuminated' for no apparent consumer benefit and, therefore, the SAU should be expanded to cover Scenario 1 for existing channel providers. Foxtel, in turn, argued that Scenario 1 is unfeasible, for what we see are three principal reasons. These are:

1. From a legal/regulatory perspective, the scope of the SAU should not be expanded to include access to Foxtel's transmission capacity;
2. Foxtel's available transmission capacity is currently fully utilised and it cannot adequately provision for unpredictable demand from future Access Seekers; and
3. Requiring Foxtel to carry an Access Seeker's interactive application in the same MPTS as the existing video channel to which it relates, imposes significant technical and operational constraints and issues.

We note the merits and efficacy of the first point are largely competition and broadcasting policy matters for the ACCC and ACMA to consider. Hence, we put aside these threshold legal/regulatory issues and focused on the two technical reasons advanced by Foxtel.

To assess the validity of the Foxtel capacity constraints claims, implicit in the second and third points, would have required Foxtel to provide detailed information on how it currently utilises its leased capacity as well as its future plans to acquire and utilise further capacity. In this regard, we are unable to either verify or dispute Foxtel's claims, as this detailed data was not provided.

Having said that, we believe that if the future demand by Access Seekers was restricted to the capacity required for an existing channel provider's interactive data application only, then the situation for Foxtel is considerably more manageable than, for example, if Foxtel was obliged to provide every Access Seeker (e.g. new video channel providers) with capacity. Our main reasons for believing this are:

1. Interactive applications, generally, utilise considerably less capacity that video channels;
2. Existing channel providers constitute a finite and 'knowable' market; and
3. Foxtel appears to have already planned for the likelihood that existing channels will consume some of its existing capacity for interactive applications data.

We agree with Foxtel's argument that the introduction of an Access Seeker's application data within its MPTS might introduce a 'loss of efficiency' for its own services due to the reduced amount of capacity available for statistically multiplexing Foxtel's main video channels. Again, however, to fully assess the impact of this issue would have required access to Foxtel's current and future plans for its MPTS configurations.

Notwithstanding, if it were proven that there were current, or future, capacity constraints on a particular Foxtel MPTS, then there is likely to be some flexibility for Foxtel to mitigate this issue by moving video channels to another MPTS that isn't full or by the commissioning of additional MPTS from Optus and Telstra. We also believe that it would be possible for Foxtel to estimate the cost of carrying the Access Seeker's application data on a particular MPTS and to estimate the additional cost imposed by any 'loss of efficiency' Foxtel encounters if there was no flexibility to move video channels to other MPTSs.

Foxtel would be required to acquire new capacity (form Telstra and Optus) under Scenario 1 in a situation where it ran out of leased capacity for its own use and that of Access Seekers. However, as mentioned previously, if the future demand by Access Seekers was restricted to the capacity required for an existing channel provider's interactive data application only, then this is unlikely to be a frequent occurrence, or be of as significant an impact to Foxtel's operations, as might be the case if access to Foxtel's capacity was open to any access seeker.

We are unable to see how Foxtel would be forced to renounce any of its capacity under any of the three access scenarios described. This argument seems embedded in a situation where Foxtel and an existing Channel Provider fail to negotiate under a Buyer-Supplier relationship, rather than as a result of any access provisions as such.

2 Terms of Reference

Task

The Consultant will report to the ACCC Communications Group on the technical feasibility of Foxtel providing access seekers to its Digital Set Top Unit service (DSTUS) with the capability to equip existing channel offerings with genuinely interactive features.

Background

Foxtel Management Pty Ltd, for and on behalf of the Foxtel Partnership and Foxtel Cable Television Pty Ltd (together Foxtel), submitted a special access undertaking (SAU) to the Australian Competition and Consumer Commission (ACCC) pursuant to section 152CBA of the Trade Practices Act 1974 (Act) on 6 October 2005.

The SAU relates to a service described by Foxtel as the Digital Set Top Unit Service (DSTUS). The DSTUS is described by Appendix 1 of Foxtel's SAU. In brief, it includes:

- Set Top Unit Services;
- Conditional Access Services, including Service Information (SI) services and Smartcard Authorisation Verification Information Services;
- Electronic Programming Guide (EPG) services; and
- Modem Services.[1]

Pursuant to s. 152CBC of the Act, the Commission must either accept or reject Foxtel's SAU. The Commission is currently considering this issue.

Under s. 152CBD of the Act, one of the matters that the Commission must consider in reaching its decision is whether the terms and conditions of the SAU are reasonable. It is in relation to this question that the Commission seeks the Consultant's advice.

On November 2005, the Commission published an Issues Paper in relation to Foxtel's SAU. At the same time, the Commission sought the views of interested parties as to whether it should accept or reject the SAU.

One of the submissions received in response to the Issues Paper was from Two Way TV Australia Limited (Two Way), which noted that the SAU would not provide for suppliers of existing channels to Foxtel access to modem services, such that these suppliers could add interactive features to those channels. Two Way provided several examples of potential interactive features, such as games, wagering, video on demand and interactive advertising. Two Way noted that, to add such interactive features, channel providers would need to negotiate an entirely new access agreement with Foxtel for all the services included in the DSTUS bundle.

Two Way argued that the SAU should provide for third party channel suppliers to add such features to their existing channels. A copy of Two Way's Non-Confidential Submission is **attached**, along with a description of Two Way's current interactive offerings.

[1] These services will allow channels to provide point-to-point services that use a return path and allow subscribers access to interactive content/applications.

In response, Foxtel claimed that adding interactive features to existing channels would be technically unfeasible. Foxtel argued that its STUs can only 'tune in' to one multiple program transport stream (MPTS) at a time, with ten channels typically being provided on a single MPTS. According to Foxtel, a genuinely interactive function would need to be broadcast in the same MPTS as the channel to which it relates.

Therefore, adding interactive features to existing channels would require Foxtel to reorganise its ordering of channels into MPTS units. Foxtel submits that, if this were required of it,

- Foxtel would need to give up some of its own satellite or cable capacity;
- Foxtel would need to return some of its cable (to Telstra) or satellite (to Optus) capacity;
- Foxtel might be constrained in the services it could offer to its existing subscribers; and
- Foxtel would be required to acquire additional capacity and effectively become a capacity reseller.

Two technical submissions from Foxtel are attached. The first, dated 13 October 2005, provides background technical information that may be of use. The second, from 29 March 2006, provides Foxtel's response to the submission of Two Way TV. Therefore, this submission contains the material that is likely to be most cogent to the Consultant's analysis.

Specific Questions for the Consultant to Answer:

1. Is Foxtel technically capable of offering this interactive functionality to access seekers?
2. To what extent would Foxtel need to change, upgrade or realign its existing technical capabilities in order to offer this functionality to access seekers?
3. What would be the estimated costs to Foxtel of providing this functionality?
4. Would it be feasible for Foxtel to clearly identify those costs associated with any upgrade referred to in (3) above and recover those costs from the access seeker requesting the additional functionality?
5. To what extent would any of the costs/technical problems identified above also relate to the provision of interactive features in relation to new channels?
6. Is it correct, as Foxtel claims, that adding interactive features to existing channels might require Foxtel to renounce some of its existing capacity, or be forced to acquire and resell new capacity? Or could channel providers simply acquire any required additional capacity for themselves?

Other Information

The ACCC may rely on the Consultant's written report in its decision on this matter pursuant to s. 152CBA of the Act.

Attachments

Attachment 1: Foxtel Engineering Submission 13 October 2005
Attachment 2: Foxtel Engineering Submission 29 March 2006
Attachment 3: Two Way TV Submission 17 February 2006

3 Our Methodology

Our process for completing our work was expected to be as follows:

1. Review the key documentation pertaining to this issue, including the Draft Access Undertaking, ACCC Discussion Paper and the submissions of Foxtel, TwoWay TV and any other relevant parties to this process. At this stage, we will also research and review any international sources of information and evidence.
2. Advise Foxtel and TwoWay TV of our appointment, provide them with our Terms of Reference, as well as a list of supplementary information we are seeking;
3. Meet with Foxtel and TwoWay TV to gather information and probe on key issues;
4. Research key technical issues and 'market costs';
5. Present our 'interim' findings verbally to the ACCC;
6. Meet again with Foxtel and TwoWay TV seeking any further clarification/information (if required) and to 'test' our conclusions;
7. Write final report and submit to the ACCC for comment.

It should be noted that, at the conclusion of Step 5, it was clear that further information was required from Foxtel in order to fully assess its claims. Much of this information was requested in our meeting with Foxtel and was then formally requested by the ACCC under a separate follow-up letter. We understand from the ACCC that Foxtel advised that it would not be providing any further information and so a second meeting with Foxtel was not carried out.

4 Introduction - Enabling Interactive Functionality

Depending on the exact nature of the interactive services provisioned, then some, or all, of the following capabilities are required to be provided by Foxtel:

1. **An 'invitation icon' insertion into the feed forward Transport Stream**. This icon is usually imposed over a video channel to alert a viewer that an interactive application is available and instructions on how to access it via the remote control device.
2. **'Application data' insertion into the appropriate feed forward Transport Stream (MPTS).** This data contains the software, images and data required for the application to function in the STU.
3. **Modem access services**. This service, provided by Foxtel, enables the interactive application to use the STU's PSTN modem to communicate and exchange data with another (centrally located) modem.
4. **Return path services**. Centrally located modem banks are required to communicate with all of the STUs that might be requesting to communicate over the PSTN.
5. **Billing and Subscriber Management.** This service is generally required if customers are being billed and/or for application specific transactional reasons (e.g. gambling, home shopping etc.).
6. **Applications testing and verification services.** This service, provided by Foxtel, ensures that the application will effectively operate in the Foxtel hardware and software environment before it is released to viewers.

It should be understood that interactive services vary in their specific needs. For example, some interactive services do not require a return path and the 'illusion' of interactivity is simply enabled between the viewer's remote control and the STU (e.g. the use of an EPG or a multi-view application). In this case, none of items 2, 4 or 5 in the above list will be required.

Further, some applications may, or may not, require an 'invitation icon' to be inserted in the feed forward transport stream. This is likely to depend on whether the viewer instinctively knows if an interactive application is available or not at the time.

Applications may also vary in sophistication and complexity. This in turn affects the bandwidth capacity that must be provisioned in Item 2: the feed forward Transport Stream (MPTS). For example, a small application might require a digital stream in the order of 200 kbps rising to, say, 2 Mbps for an application requiring complex graphics and fast response times. We typically expect most applications to be around 500 kbps.

Finally, some interactive applications may stand alone (e.g. games applications), or relate (and interact with) existing video channels. In the later case, there is an implicit requirement that the interactive application data is carried in the same feed forward multiple program transport stream (MPTS) as the main video channel. This is so that the associated interactive application data can be accessed by the viewer's STU at the same time as the main video channel.

This requirement was explained in Foxtel's Engineering Submission 29 March 2006 and its consequences are vital to this analysis. We recommend that readers unfamiliar with this concept refer to this report.

5. Questions for the Consultant to Answer

1. Is Foxtel technically capable of offering access to interactive functionality to existing channel providers on the Foxtel digital platform?

Foxtel is capable of providing interactive functionality to existing channel providers. As clear evidence of this, we note that Foxtel currently provides interactive functionality for 17 existing channels, of which 14 also utilise return path (and modem) services[2].

We note, from a commercial perspective, that the current channel providers are considered suppliers to Foxtel and not Access Seekers as such. In this regard, Foxtel advised that it currently negotiates on a case-by-case basis with its channel providers as to the specific commercial and technical arrangements for each interactive service. Negotiations include dealing with technical issues, such as interactive applications development responsibilities, as well as key commercial issues such as revenue and cost sharing arrangements.

2. To what extent would Foxtel need to change, upgrade or realign its existing technical capabilities in order to offer this functionality to access seekers?

As explained in the Question 1, Foxtel already possesses the technical capabilities required to provide interactive functionality for a selection of existing channels (i.e. channels where it has struck a commercial agreement with its channel suppliers). However, as can be seen in Table 4.1, the capabilities not provided to Access Seekers under the proposed SAU, that FOXTEL might need to change, upgrade or realign are:

- Application Data insertion into the appropriate feed forward Transport Stream (MPTS)
- Return path services
- Billing and Subscriber Management

Table 4.1: Capabilities to provide interactivity functionality

Key Capabilities to provide interactivity functionality	**Covered under proposed FOXTEL SAU**	**Provided by FOXTEL for 14-17 existing channels**
An 'invitation icon' insertion into the feed forward Transport Stream	✓	✓
'Application data' insertion into the appropriate feed forward MPTS	×	✓
Modem access services	✓	✓
Return path services	×	✓
Applications testing and verification services	✓	✓
Billing and Subscriber Management	×	✓

[2] Foxtel letter to the ACCC dated 23/3/06, Q3(c) and Q5(a)

In our view, both Return Path services and Billing/Subscriber Management are not services that should be obligatorily provided by FOXTEL under an SAU, for the following reasons:

- **Return Path Services**. While access to the Foxtel modem banks and associated data management systems is possible at a technical level, third party use was not included in the SAU, due to Foxtel concerns about data security and modem demand forecasting.

  Regardless of the merits of this concern, we also note that the Foxtel STUs can, under the SAU, be configured to dial other non-Foxtel modem banks (e.g. an ISPs). This would seem to provide an adequate alternative for Access Seeker as there is a relatively competitive and open market for these types of modem bank (return path) services. Another reason not to include this capability in the SAU is that, as noted previously, not all interactive applications require a return path and the mandatory inclusion of these services in the SAU may not be in all Access Seeker's interests.

- **Billing and Subscriber Management.** This service is only generally required if customers are being billed and/or for application specific transactional reasons (e.g. gambling). Again, these services can be supplied competitively by a number of parties and the mandatory inclusion of these services in the SAU may not suit all Access Seeker's interests or requirements.

There is, however, a key unresolved question as to who should provide the transmission capacity for the interactive application data stream, particularly in cases where the data must be transmitted in the same feed forward Transport Stream (MPTS) as the main video channel. In this case, there are three potential scenarios for deployment:

Deployment Scenario	**Transmission Responsibility**		**Example**
	Main Video Channel (3.5-4MB)	**Interactive Application (0.2-2MB)**	
1. An existing Foxtel channel provider' s main video channel is singularly illuminated	Foxtel	Foxtel	FOXTEL's 17 existing interactive channels
2. An existing Foxtel channel provider' s main video channel is dual illuminated	Both Foxtel & the Access Seeker	Access Seeker	None
3. A non-Foxtel channel provider singularly illuminates its main video channel	Access Seeker	Access Seeker	TVN

Scenario 1 reflects the arrangements for the 17 existing channels where Foxtel transmission capacity is currently used to carry both the interactive applications data and

the associated main video channel. In this case, Foxtel uses its leased satellite transponder capacity (from Optus) and HFC cable capacity (from Telstra). This capacity would then be used to transmit both the main video channel and the interactive applications data in the same MPTS (if required).

Under Scenario 2, an existing Foxtel channel provider would need to make separate arrangements to procure additional satellite transponder capacity and HFC cable capacity. This additional capacity would then be used to transmit both the main video channel and the interactive applications data in the same MPTS. In essence then, the main video channel is transmitted twice (dual illuminated): once in the Foxtel suite of channels (without the applications data) and then again under these separate arrangements with Optus and Telstra (with the applications data).

Scenario 3 would be used in cases where the main video channel provider was not a Foxtel channel provider and, therefore, was not carried over Foxtel's leased transmission capacity. In this case, the channel provider would directly procure satellite transponder capacity and HFC cable capacity. This capacity would then be used to transmit both the main video channel and the interactive applications data in the same MPTS for reception by the Foxtel STU. Note, deployment under Scenario 3 is not further covered in this report, as it does not relate to existing Foxtel channels providers.

In our meeting, Foxtel argued that the SAU was only meant to cover Scenarios 2 and 3. That is, where Foxtel provided access to its STU and associated modem services, but not to its transmission capacity for the purposes of carrying the interactive application data and/or the associated main video channel. Foxtel noted that, if a commercial arrangement cannot be struck with an existing channel provider, as is currently the usual process, then access can be facilitated under Scenario 2. Conversely, TwoWay TV argued that Scenario 2 is not cost-efficient for existing channel providers, as the main video channels are 'dual illuminated' for no apparent consumer benefit and, therefore, the SAU should be expanded to cover Scenario 1 for existing channel providers.

However, in our meetings and in its submissions, Foxtel argued that Scenario 1 is unfeasible, for what we saw as three key reasons. These are:

1. From a legal/regulatory perspective, the scope of the SAU should not be expanded to include access to Foxtel's transmission capacity;
2. Foxtel's available transmission capacity is currently fully utilised and it cannot adequately provision for the unpredictable demand from future Access Seekers; and
3. Requiring Foxtel to carry an Access Seeker's interactive application in the same MPTS as the existing video channel to which it relates, poses significant technical and operational problems

We review each of these reasons as follows:

1. From a legal/regulatory perspective, the scope of the SAU should not be expanded to include access to Foxtel's transmission capacity

As previously stated, Foxtel argued, in our meeting, that the SAU was only meant to cover Scenarios 2 and 3 and that the use of its own transmission capacity should continue to be facilitated through Foxtel's direct commercial negotiations with its channel providers. One of the main reasons put forward was that Foxtel was "not in the business" of providing transmission capacity and that this was Optus' and Telstra's business.

Further, despite that the fact that viewers are typically unaware of the transmission arrangements between broadcasters and their Foxtel STUs, Foxtel indicated that, if it were obliged to carry an Access Seeker's interactive application over is own leased transmission capacity, it is likely to be legally responsible for the application under the Broadcasting Services Act (BSA) and would, therefore, be taking on these obligations over which it had little control.

We note the merits and efficacy of this rationale appears to be largely *Competition* and *Broadcasting* policy matters for the ACCC and ACMA to consider under the TPA and BSA respectively. Further, these issues raised by Foxtel do not fall within the Terms of Reference for this report. Hence, we put aside these threshold legal/regulatory issues and focus on the following two technical reasons advanced by Foxtel for rejecting Scenario 1.

2. Foxtel's available transmission capacity is currently fully utilised and it cannot adequately provision for the unpredictable demand from future Access Seekers

Foxtel advised that it currently has access to 14 digital Transport Streams on both the Optus satellite (36MHz / QPSK) and Telstra HFC (8MHz / 64QAM) delivery platforms. We note that this capacity should support up to 140 full video channels on each platform, as each MPTS can support around 10 video channels. Or, alternatively, in terms of total transmission capacity available its represents 532 M bps of capacity (i.e. 14 X38MB).

In our meetings, and through its submissions, Foxtel appears to be making two principal claims in relation to the use and availability of its transmission capacity:

1. Foxtel's current leased capacity, on both its Optus Satellite and Telstra HFC delivery platforms, is fully utilised by its existing and planned channel demand; and
2. Should Foxtel be required to provide Access Seeker's transmission capacity, it would need to lease additional capacity from Optus and Telstra and that it would have difficulty adequately planning for this, as future demand from Access Seekers was largely unpredictable and outside its control.

To assess the validity of the first claim, however, would require Foxtel to provide detailed information on how it currently utilises this leased capacity, as well as its future plans to acquire further capacity and utilise this further capacity. In this regard, we are unable to either verify or dispute Foxtel's claim, as we understand that Foxtel chose not

to provide any further information following its submission of 27 June 2006 in response to the Commission's formal information request of 31 May 2006.

The validity of the second claim is largely dependent on the first claim (i.e. that Foxtel's existing capacity is fully utilised) and one's view of the likely future demand from Access Seekers. With regard to the latter point, we believe that if the future demand by Access Seekers was restricted to the capacity required for an existing channel provider's interactive data application only, then the situation for Foxtel is considerably more manageable than, for example, if Foxtel was obliged to provide every Access Seeker (e.g. new video channel providers) with capacity. In this regard, we note Foxtel's Engineering submissions could be interpreted as stating this worst-case scenario.

Our main reasons for believing that, in restricting Foxtel's capacity access to that required for the existing channel provider's interactive data applications, would result in a more manageable situation are:

1. Interactive applications generally utilise considerably less capacity that video channels. That is, we typically expect most interactive applications will utilise less than 0.5MB[3] of capacity, while video channels comparatively absorb 3.5-4MB of capacity. Hence, if capacity demand were restricted to interactive applications only, then the problems imposed on capacity utilisation are considerably less than if Foxtel had to provision for 'unexpected' video channel demand from Access Seekers;
2. Existing channel providers constitute a finite and 'knowable' market. If access to Foxtel's transmission capacity was restricted to Foxtel's existing channel providers only, then third party demand would be considerably more restricted. Further, we believe Foxtel is in a much stronger position to predict future demand, particularly as Foxtel is quite familiar with the market positioning of these channels and the prospects of these channels launching viable interactive applications in the future;
3. Foxtel appears to have already planned for the likelihood that existing channels will consume some of it existing capacity for interactive applications data. In this regard, Foxtel advised us that it had set aside 1MB of capacity in each MPTS for interactive applications data, while its implementation of 17 interactive channels to date suggests that it can successfully provide capacity for this these types of services on its existing capacity arrangements.

3. Requiring Foxtel to carry an Access Seeker's interactive application in the same MPTS as the existing video channel to which it relates, poses significant technical and operational problems

In our meetings and through its submissions, Foxtel claimed that, if it was required to carry an Access Seeker's interactive application in the same MPTS as the existing video channel to which it relates, it would pose significant problems, including being:

1. forced to acquire additional capacity from Optus and/or Telstra, or 'drop' its own services;
2. constrained in being able to 'efficiently' use existing capacity for its own use;

[3] Although, we note, in the case of TwoWay TV, Foxtel claim that its wagering application consumes 2MB of capacity

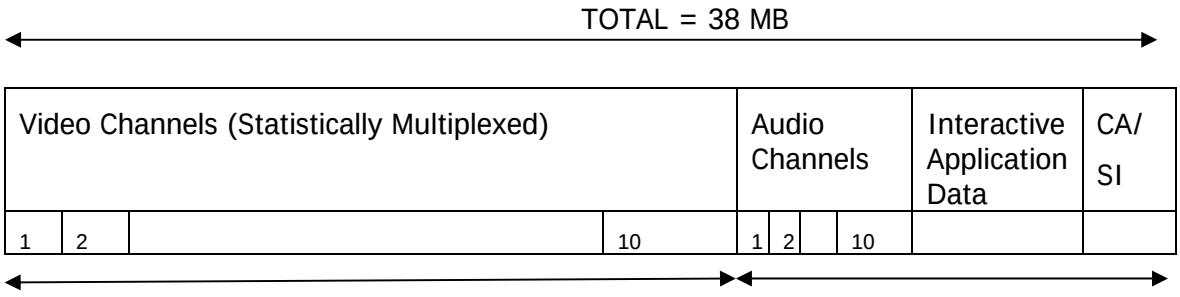
3. in breach of its contracts with Optus and Telstra in re-selling this capacity.

The first problem, regarding capacity constraints, was covered in the last Section.

With regard to the second problem, we agree that there would be a degree of inefficiency introduced, although we believe that this would only have a significant effect when Foxtel was close to using up its total transmission capacity across all transport streams. Our key points are:

- Based on the information provided by Foxtel, it is apparent that the current STU population is not capable of simultaneously receiving and decoding more than one MPTS, except for PVR purposes. We, therefore, agree with the technical assessment of Foxtel Engineering that an interactive application operating in conjunction with an existing video channel, must be transmitted in the same MPTS;
- Within an MPTS, audio, application data and housekeeping data (e.g. SI and CA data) are set up to occupy fixed amounts of digital capacity within the stream (see Figure 1). The remaining digital capacity of each Transport Stream is shared on a dynamic basis between the video feeds that are statistically multiplexed to reduce the amount of transmission capacity required. Further, by operationally managing the 'mix' of video channels in each MPTS, Foxtel can ensure that the efficiencies gained through this statistical multiplexing process can be optimised. For example, by mixing low-bit rate video channels, such as News Reading, with high-bit rate services, such as Sports. Overall, through this process of statistical multiplexing and the managing of channel mixes, Foxtel claims to gain 40% 'extra' capacity.

Figure 1: Foxtel Multiple Program Transport Stream (MPTS)



Source: Foxtel Meeting

Foxtel's key argument seems to be that introducing an Access Seeker's applications data reduces the fixed amount of available capacity for statistically multiplexing and restricts its ability to optimally mix the right combination of channels on any given MPTS. Therefore, it loses some of this 40% efficiency gained in its transmission arrangements.

We would agree with Foxtel's argument that the introduction of an Access Seeker's applications data within the MPTS might reduce the fixed amount of capacity available for statistically multiplexing the video channels. Whether or not this has any effect on Foxtel's efficient use of its transmission capacity depends on a number of factors including:

- whether the MPTS is near its full capacity of 10 video channels;
- the actual capacity taken up by the Access Seekers interactive application; and
- the actual capacity already taken up by audio, CA/CI and Foxtel's own interactive applications;

We note that the combination of the above factors is quite specific to the existing configuration of any particular MPTS and that we do not have Foxtel's current or future plans for any of its MPTS configurations.

Notwithstanding, we believe that, in any case, there is some flexibility to mitigate an over-capacity issue on a particular MPTS by moving video channels to another MPTS that isn't full. While we believe this should be possible in most instances, we acknowledge that moving video channels between MPTSs might not always be possible, as some MPTSs might carry several video channels that must remain together in order to be accessed by a particular interactive application. An example of this might be a 'multi-view' application that shows six sports channels on the same screen, in which case, the interactive application and the six video channels must remain in the same MPTS. If this issue could not be dealt with by moving video channels between MPTSs, until all of Foxtel's current 14 MPTSs are full, the next step would be to commission an additional MPTS from Optus and Telstra.

We believe that it would be possible for Foxtel to estimate the cost of carrying the Access Seeker's application data on a particular MPTS and to estimate the additional cost imposed by any 'loss of efficiency' Foxtel encounters, if there was no flexibility to move video channels to other MPTSs (See next Section).

3. What would be the estimated costs to Foxtel of providing this functionality?

4. Would it be feasible for Foxtel to clearly identify those costs associated with any upgrade referred to in (3) above and recover those costs from the access seeker requesting the additional functionality?

5. To what extent would any of the costs/technical problems identified above also relate to the provision of interactive features in relation to new channels?

We believe Foxtel should be able to readily identify the costs of providing this additional functionality. Again, the main functional requirements are:

1. An 'invitation icon' inserted into the feed forward Transport Stream
2. 'Application data' inserted into the feed forward Transport Stream
3. Modem access services
4. Return path services
5. Applications testing and verification services
6. Billing and SMS

We understand the costs associated 1, 3 and 5 are already part of the SAU. The cost of 4 and 6 depends on the nature of services required, but, as previously discussed, can be bought on the 'open market' by access seekers and, therefore, is not specifically a cost to Foxtel that needs to be passed on to Access Seekers.

Hence, the main cost differences between the scenarios relate to incremental transmission capacity costs that Foxtel may be required to provide, as shown below in Table 2.

Table 2: Indicative Transmission Costs[4]

Scenario	**Transmission Provision (cable and satellite)**		**Incremental Transmission Cost p.a.**
	Main Video and Audio (3.5-4MB)	**Interactive Application (0.2-2MB)**	
1.Existing Foxtel video channel with single illumination	Foxtel $1.4m	Foxtel $0.2m-$0.7m	Foxtel: $0.2m-$0.7m Access Seeker :$0m
2. Existing Foxtel video channel with dual illumination	Foxtel & Access Seeker ($1.4m+$1.4m)	Access Seeker $0.2m-$0.7m	Foxtel:$0m Access Seeker:$1.6m-$2.1m
3. New non-Foxtel video channel with single illumination	Access Seeker $1.4m	Access Seeker $0.2m-$0.7m	Foxtel:$0m Access Seeker:$1.6m-$2.1m

[4] We have not included backhaul, miscellaneous set up nor costs for items necessarily provided by the Access Seeker such as application streamers – as theseare likely to be the same under each scenario. Backhaul costs are those costs associated with delivery of the application data and, where relevant, video / audio to the playout and head-end locations required for emanation on cable and satellite. Delivery of application data would be a cost to the Access Seeker in any scenario.

Note, the indicative costs in Table 2 are based upon those provided by Foxtel in its Engineering Report dated 13 September, 2005:

Optus C1 Satellite Carriage (4MB)	$450,000-560,000 pa
Telstra Cable Carriage (4MB)	$750,000 pa

It should be noted that costs are not directly proportional to the capacity carried. Lower capacity applications (e.g. 0.2MB) will disproportionately cost more (per bit carried) than larger applications (e.g. 2 MB). It should also be noted that Foxtel is likely to pay less for its capacity from Telstra and Optus, than compared to a 'casual' customer seeking small amounts of capacity. This is because Foxtel is the dominant user of Telstra's HFC capacity and Optus' C1 satellite capacity. Hence. the costs to Foxtel under Scenario 1 could be over-stated.

Under Scenario 1, Foxtel bears the extra $0.2-$0.7m cost of carrying the applications data over its leased satellite and HFC capacity. This would need to be passed on to the Access Seeker. This cost may also need to be higher as it excludes the potential impact of the reduced statistical multiplexing efficiency Foxtel encounters.

Under Scenarios 2 and 3, all additional transmission costs ($1.6-$2.1m p.a.) are carried directly by the access seekers through direct arrangements with satellite and HFC transmission providers. Hence, there are no additional costs to Foxtel.

7. Is it correct, as Foxtel claims, that adding interactive features to existing channels might require Foxtel to renounce some of its existing capacity, or be forced to acquire and resell new capacity?

Based on what Foxtel advised us is their contractual arrangements with Telstra and Optus, it would be deemed a 'reseller' of capacity to access seekers under Scenario 1. Whether or not this is important, or puts Foxtel in breach of its contractual conditions, we cannot advise without viewing these contracts. We would also note that intermediaries (such as Globecast) operate in the market as resellers of Optus' satellite capacity, so it would seem somewhat of an open question as to why Globecast would be permitted to resell capacity and Foxtel not.

Foxtel would be required to acquire new capacity under Scenario 1 in a situation where it ran out of leased capacity for its own use and that of Access Seekers. However, as mentioned previously, if the future demand by Access Seekers was restricted to the capacity required for an existing channel provider's interactive data application only, then this is unlikely to be a frequent occurrence, or be of as significant an impact to Foxtel's operations as might be the case if access to Foxtel's capacity was open to any access seeker.

Foxtel would not be required to acquire new capacity or resell capacity under Scenarios 2 and 3.

We are unable to see how Foxtel would be forced to renounce any of its capacity under any access scenario. This argument seems embedded in a situation where Foxtel elects of its own accord to remove an existing channel provider from its overall channel package. For example, this might occur where an existing Channel Provider cannot reach a commercial agreement with Foxtel on a revenue/cost sharing arrangement for an interactive application associated with its main video channel. In this situation, the channel provider might refuse to go on supplying its main video channel to Foxtel and then go on to seek access under Scenario 3 for both its main video channel and the interactive application. Under this scenario, Foxtel transmission capacity would be freed up, but it would be the result of Foxtel and the Channel Provider failing to negotiate under a Buyer-Supplier relationship, rather than as a result of any access provisions as such.