PROPOSED VARIATION TO MAKE THE GSM SERVICE DECLARATIONS TECHNOLOGY-NEUTRAL

An ACCC *Discussion Paper* examining a proposed variation to make the Domestic GSM Originating and Terminating Access Service technology-neutral with respect to technologies currently in use

September 2001

1. Introduction

In accordance with s. 152AL and s. 152AO of the *Trade Practices Act 1974* (the Act), the Australian Competition and Consumer Commission (the Commission) has decided to hold a public inquiry under part 25 of the *Telecommunications Act 1997* to determine whether the domestic GSM originating and terminating access service declarations (the GSM service declarations) should be varied to become mobile technology-neutral. A mobile technology-neutral declaration will include only mobile technologies that are currently deployed or in use in Australia. The Commission understands that GSM and CDMA are the only mobile technologies presently deployed and in use in Australia.

The Commission has initiated this inquiry following its decision that a form of retail benchmarking approach is the most appropriate pricing methodology for the domestic GSM terminating access service (the GSM terminating service).[1] In reaching this view, the Commission noted that many of the issues relevant to the GSM terminating service may equally apply to other mobile technologies that are currently deployed or in use in Australia, such as CDMA, which the Commission regarded as a close substitute to GSM, but which is currently not regulated. Consequently, the Commission is to consider whether the GSM service declarations should be varied to become technology-neutral with respect to these mobile technologies, having regard to the legislative criteria, as outlined in section 4 of this Discussion Paper.

The proposed variation is intended to remove the possible distortionary effects of having one mobile technology regulated while the other technology currently in use (with the same degree of functionality and similar characteristics) remains unregulated. In this regard, the Commission is seeking views on the functionality that is, or should be, provided for in the service descriptions.

It should also be noted that, in the *Pricing Methodology for the GSM Termination Services* (the GSM pricing principles), the Commission expressed its intention to review the appropriateness of retaining mobile regulation in two years, given the circumstances at that time.[2] This could result in the full or partial removal of mobile regulation.

After receiving and considering submissions to the Discussion Paper, the Commission will make a preliminary decision and issue a draft inquiry report, on which further submissions will be sought.

If the Commission determines that varying the GSM service declarations to include other mobile technologies that are currently deployed or in use in Australia is in the long-term interests of end-users (LTIE), access providers supplying GSM and other existing mobile technologies to themselves, or another person, must also supply the services to access

[1] *Pricing Methodology for the GSM Termination Service*, Australian Competition and Consumer Commission, July 2001, pp. 5-6.
[2] Ibid, p. 95.

seekers, upon request. Provision of such access may promote competition, particularly in the downstream fixed-to-mobile services market, ensure any-to-any connectivity between mobile and fixed line networks and encourage economic efficiency in the provision of mobile and fixed-to-mobile services.

Declaration ensures access seekers have access to the inputs they need to supply competitive communications services to end-users in accordance with the standard access obligations in s. 152AR of the Act. The terms and conditions of supply can be agreed through commercial negotiations. If the access provider or access seeker cannot agree on the terms and conditions of supply, either party can seek Commission arbitration of disputes over access terms and conditions to regulated services. Where a relevant access undertaking (approved by the Commission) exists, an arbitration determination made by the Commission on access by the access seeker to the declared service must not be inconsistent with that undertaking.

1.1. Purpose

The purpose of this Discussion Paper is to:

- identify the issues which, in the Commission's opinion, are relevant to the decision whether to vary the GSM service declarations; and
- set out background material about, and discussion of, those issues which the Commission thinks should be considered in a public process and on which the Commission seeks comment from industry participants, other stakeholders (including end-users) and the public generally.

The Discussion Paper is structured as follows:

- **Section Two** summarises the process for declaring a service, or varying an existing service declaration and outlines the process for this public inquiry.
- **Section Three** discusses the existing GSM service declarations under consideration and the proposed variation of the service declarations.
- **Section Four** sets out the Commission's approach to the LTIE test and its application to the proposed variations to the existing GSM service declarations with which it would like submissions to deal.
- **Section Five** describes overseas experience in the regulation of mobile services.
- **Attachment A** sets out the current service descriptions for the domestic GSM originating and terminating access service.
- **Attachment B** sets out the proposed service descriptions for the technology-neutral mobile services.

- **Attachment C** contains a summary of the market definition of mobile and fixed-to-mobile services markets.

- **Attachment D** contains a summary of the competition analysis for the mobile and fixed-to-mobile services markets.

1.2. Issues for Comment

The following issues are raised in the Discussion Paper for comment:

General

- Are the issues raised in the recent GSM pricing principles paper in relation to the GSM terminating service (that is, control over access and consumer ignorance) equally applicable to other mobile technologies currently deployed or in use?

- Are there any technologies, other than CDMA, which are currently deployed or in use? Are there any other technologies (with similar functionality) which are likely to be deployed or used in the future?

Functionality

- What functionality is currently provided for in the GSM service declarations? What functionality should be provided for by the proposed service declarations? For example, should the service descriptions provide that end-users are able to be fully mobile and send and receive voice calls as well as data (i.e to utilise the functionality provided for by 2.5G technologies)?

- Is the functionality of delivering a SMS message currently provided for in the current GSM service declarations? Should the functionality of delivering a SMS message fall within the proposed service declarations? Why, or why not?

- The proposed service declarations make references to tables GOASD1 to GOASD7 and tables TGASD1 to TGASD5 (of Telstra's ordering and provisioning manual). Are these references relevant to the proposed service declarations?

Market definition and competition analysis

- Are the mobile services market and the fixed-to-mobile services market, as detailed in the GSM pricing principles, the relevant markets for consideration? If not, what are the relevant markets for consideration?

- Is the Commission's analysis of the current state of competition in the mobile services market and the related downstream fixed-to-mobile services market accurate? If not, why not?

Long-term interests of end-users

- Will the proposed variation of the GSM service declarations promote competition in the mobile services market and/or the related downstream fixed-to-mobile services market? Why, or why not?

- Will the proposed variation of the GSM service declarations impact on the achievement of any-to-any connectivity? Why?

- Do those mobile carriers with CDMA networks currently supply, and charge for, CDMA services similar to the GSM originating and terminating services? Are these services supplied to other mobile carriers and/or fixed line carriers?

- Would the proposed variation of the GSM service declarations impact on the legitimate commercial interests of access providers supplying the CDMA services? How?

- Would the proposed variation of the GSM service declarations have an effect on the investment decisions of new entrants or existing carriers?

- How would the proposed variation affect decisions to invest in the downstream fixed-to-mobile services market?

- How would the proposed variation affect the allocative efficiency in the downstream fixed-to-mobile services market?

- Would the absence of the proposed variation of the GSM service declarations adversely impact on allocative and dynamic efficiency? If not, why not?

Mobile regulation overseas

- What are the perspectives of mobile regulation overseas and do they have implications for Australia's mobile regulatory regime?

2. Process for declaring a service or varying an existing service declaration

2.1. The access regime

Part XIC of the Act establishes a regime for regulated access to carriage services and services which facilitate the supply of carriage services. Access obligations in relation to a particular service are established following the declaration of a service by the Commission. These require that a declared service must be provided, along with specified ancillary services, to an access seeker on request by any access provider supplying, or proposing to supply, those services to any person (including to themselves).

The access regime thus enables access seekers to supply carriage or content services to their customers without the (potentially anti-competitive) restriction of key services by access providers. In addition, the Commission has the power to vary or revoke an existing declaration.[3]

The Commission may hold a public inquiry into whether to declare a new service or vary or revoke an existing service declaration. Although the Commission can declare a service on the recommendation of the Telecommunications Access Forum (TAF) without the need to hold a public inquiry, any variation or revocation, unless it is of a minor nature, can only be made after the Commission has first held a public inquiry. The purpose of a public inquiry is to assist the Commission to determine whether it is satisfied that declaring the carriage service under consideration, or varying or revoking a declaration of that carriage service, would promote the LTIE of carriage services or of services provided by means of carriage services.

In summary, the Commission must:

- hold a public inquiry in accordance with Part 25 of the *Telecommunications Act 1997* on whether to make the proposed declaration, variation or revocation;
- prepare and publish a report setting out the Commission's findings as a result of the public inquiry; and
- be satisfied that declaring the service, or varying or revoking an existing service declaration, will promote the LTIE of carriage services or of services provided by means of carriage services.

[3] Subsection 152AO(1) of the Act stipulates that subs. 33(3) of the *Acts Interpretation Act 1901* applies to the Commission's declaration powers under s. 152AL of the Act. Subsection 33(3) of the *Acts Interpretation Act 1901* provides that the power to make, grant or issue an instrument shall be construed to include a power to repeal, rescind, revoke, amend or vary such an instrument.

Section 152AB(2) of the Act provides that, in determining whether a proposed declaration, variation or revocation promotes the LTIE, regard must be had to the extent to which the proposed declaration, variation or revocation is likely to result in the achievement of the following objectives:

- promoting competition in markets for carriage services and services provided by means of carriage services;
- achieving any-to-any connectivity in relation to carriage services that involve communication between end-users; and
- encouraging the economically efficient use of, and investment in, the infrastructure by which carriage services, and services provided by means of carriage services, are supplied.[4]

The Commission's general approach to an inquiry on a proposed declaration, or variation or revocation to a service declaration is to form a view about the likely result of the declaration, variation or revocation on the achievement of each of these objectives. The Commission will then make an overall assessment of whether the proposed declaration, variation or revocation will promote the LTIE, having regard to the impacts on the three objectives.

The Commission generally uses a 'with and without test' to assist in the above assessment. That is, the Commission considers the future without a proposed declaration, variation or revocation and compares this to the future with a proposed declaration, variation or revocation. The 'with and without test' is not a determinative test in its own right, but is rather used to identify the effects which are likely to occur as a result of a proposed declaration, variation or revocation.

Further detail and discussion of the Commission's approach to applying the LTIE test is in its *Telecommunications services – Declaration provisions* guidelines.[5] Application of the LTIE test to the proposed variation is outlined in section 4 of the Discussion Paper.

2.2. Timetable and process for the public inquiry

Part 25 of the *Telecommunications Act 1997* stipulates that the Commission must provide a reasonable opportunity for any member of the public to make a written submission to the Commission about the matter to which the public inquiry relates. The Commission considers that four weeks represents a reasonable opportunity for the return of written submissions to this inquiry. Accordingly, the Commission requests written submissions by no later than **5.00pm, 12 October 2001**.

[4] Referred to as 'secondary objectives' in the Commission's *Telecommunications services – Declaration provisions* guidelines.

[5] *Telecommunications services – Declaration provisions*, Australian Competition and Consumer Commission, July 1999, pp. 34-37.

It has been the Commission's experience that submissions have not always addressed the issues identified in the Discussion Paper. Persons considering making a submission to the inquiry may consider discussing their proposed submission with the Commission at an early opportunity, to facilitate the provision of relevant information that meets the Commission's needs in the inquiry.

To foster an informed and robust consultative process, the Commission proposes to treat all submissions as non-confidential, unless the submissions indicate otherwise. Submissions will be made publicly available on the Commission's website at www.accc.gov.au.

At this stage, the Commission does not propose to hold a public hearing but may consider doing so in light of the written submissions.

The Commission expects that it will publish a draft report setting out its preliminary findings by the end of November 2001. The Commission will then provide an opportunity for the public to comment on the draft report prior to finalising the inquiry report.

In the event that the Commission is satisfied that it would be in the LTIE to vary the GSM service declarations, the Commission proposes to give effect to the varied service declarations as soon as possible after the release of the final report.

2.3. Making submissions to the public inquiry

The Commission seeks comment from all industry participants and from the public generally. It encourages industry participants, other stakeholders and the public generally to consider the matters set out in this Discussion Paper, and to make submissions to the Commission to assist it in determining whether to vary the GSM service declarations. As noted above, these submissions should be provided by no later than **5.00pm, 12 October 2001**.

Submissions can be addressed to:

Mr Doug Campbell
Director – Regulatory
Telecommunications Group
Australian Competition and Consumer Commission
GPO Box 520J
Melbourne VIC 3001
Fax: (03) 9663 3699

In addition to a hard copy, people making submissions are requested to provide an electronic copy of the submission to kha.phan@accc.gov.au

Enquiries can be made to Doug Campbell on (03) 9290 1861.

3. Mobile services

3.1. Overview

In Australia, public mobile telecommunications services are currently provided by means of five cellular networks:

- three digital GSM networks of Telstra, Cable & Wireless Optus and Vodafone;[6] and
- two digital CDMA networks of Telstra and Hutchison.

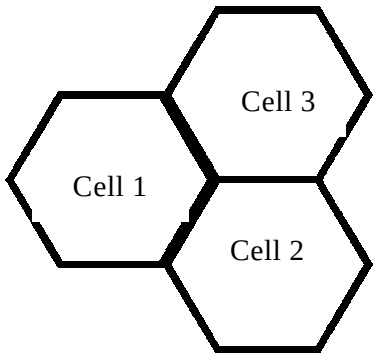
These carriers are able to provide mobile-to-mobile and mobile-to-fixed calls. In addition, the networks may be used to provide fixed-to-mobile calls.

While there are some differences between each of the five public mobile telecommunications networks currently in use in Australia, the Commission understands that the network architecture for each is broadly similar and is described below.

The geographic area that is covered by a network is divided into 'cells' (as illustrated in Diagram 1) which provides continuous uninterrupted geographical coverage. The cellular characteristics of mobile systems also allows spectrum to be reused resulting in high traffic capacity and better spectrum utilisation, since spectrum is a finite resource.

Within each cell is a base station consisting of a radio transmitter and a receiver. Each base station is connected to a mobile services switching centre (MSC) by cable or microwave, with each MSC serving a number of cells.

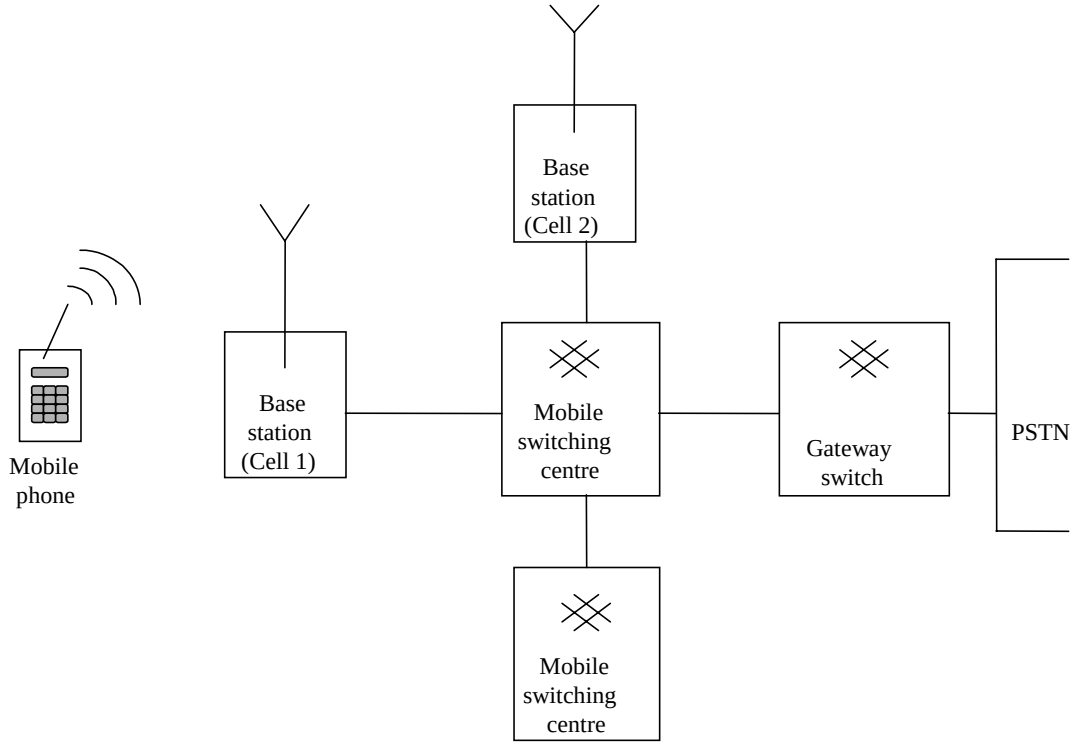
Diagram 1 – Mobile network cells



[6] It is noted that One.Tel also supplied public mobile telecommunications services using a digital GSM network, prior to going into administration.

Calls made to and received from mobile phones are transmitted via the base station as illustrated in Diagram 2. As a mobile user moves towards another cell (for example, from cell 1 towards cell 2 in Diagram 1), the signal to the base station in the initial cell becomes weaker and the signal from the base station in the second cell becomes stronger. Eventually, the call transfers to the second base station, which then takes over the call. The transfer of an ongoing mobile call between different cells is commonly known as intercell hand-over. To the mobile phone user, this transfer is seamless.

Diagram 2 – Mobile Network Architecture



Each MSC controls the switching functions for incoming and outgoing mobile phone calls.[7] To switch calls, an MSC refers to a database known as the visitor location register. This database temporarily stores the information necessary for all mobile phones within cells served by the MSC to make and receive calls. This information is sourced from a central database, known as the home location register (which contains the entire customer information for the network), whenever a mobile phone is in the MSC's area of coverage.

[7] MSCs are connected with other MSCs, with at least one MSC acting as the mobile carrier's gateway switch linking the mobile networks to the fixed network or other mobile networks.

As noted above, these network components and their set-up are applicable to both GSM and CDMA networks. It is the Commission's understanding that the key differences that exist between GSM and CDMA networks pertain to:

- the spectrum required: GSM operates in the 900 MHz and 1800 MHz bands, while CDMA operates in the 800 MHz band;
- cell size: in general, CDMA cells can have a radius of 50 kms compared to the maximum 30 kms radius for GSM cells;
- cell coverage: the larger radius of a CDMA cell means that fewer base stations are required for a CDMA network, relative to a GSM network, to achieve the same coverage;
- how the spectrum is used to transmit information: CDMA uses the spread spectrum technique while GSM uses a combination of FDMA and TDMA; and
- spectrum re-use: CDMA networks can re-use the same spectrum in adjacent cells while GSM networks can re-use the same spectrum but only if the cells are not adjacent.

3.2. Existing GSM service declarations

The domestic GSM originating and terminating access services (the GSM originating and terminating services) as provided for in the GSM service declarations are wholesale inputs used by carriers and service providers to supply retail services to end-users.

Both the GSM originating and terminating services were deemed to be declared under s. 39 of the *Telecommunications (Transitional and Consequential Amendments) Act 1997*. The full GSM service declarations were detailed in the statement, *Deeming of Telecommunications Services* (the deeming statement), and are provided at Attachment A.

The GSM originating and terminating services were deemed to be declared by the Commission because:

- at that time, GSM, and AMPS, were the only existing technologies utilised to provide mobile services to end-users; and
- the GSM originating and terminating services were covered by registered access arrangements between the existing carriers and considered to be necessary for the purpose of achieving any-to-any connectivity.[8]

In the deeming statement, the domestic GSM originating access service was described as:

[8] *Deeming of Telecommunication Services*, Australian Competition and Consumer Commission, June 1997, p. 19.

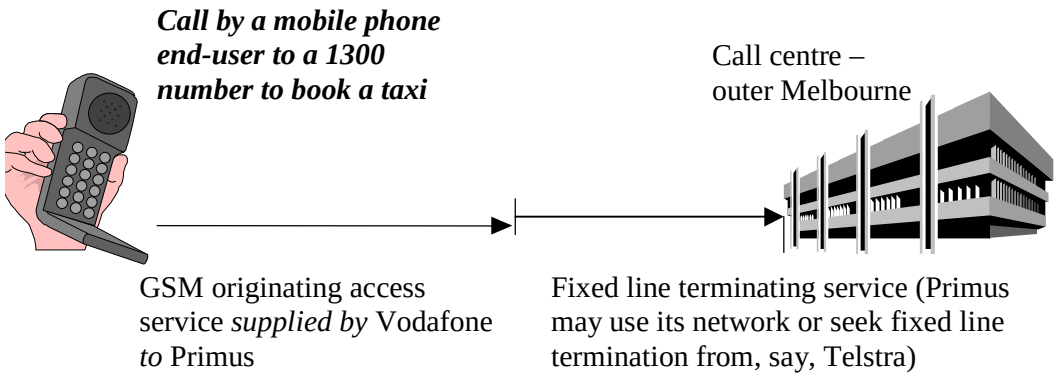
> an access service for the carriage of telephone calls (i.e. voice, data over the voice band) to a POI from end-customers assigned numbers from the GSM number ranges of the Australian Numbering Plan and directly connected to the Access Provider's GSM network.[9]

The domestic GSM terminating access service was described as:

> an access service for the carriage of telephone calls (i.e. voice, data over the voice band) from a POI to B-parties assigned numbers from the GSM number ranges of the Australian Numbering Plan and directly connected to the Access Providers network.[10]

The domestic GSM originating access service is used to originate calls from GSM mobile phones to 13/1300 and 1800 services. It is supplied by mobile carriers to themselves and other carriers to enable mobile subscribers to make calls to 13/1300 and 1800 services. For example, if a mobile subscriber (who is connected to Vodafone's GSM network) wants to book a taxi service using a 1300 number, and Primus provides the network ability for the taxi company to run the 1300 number service, Primus would need to purchase the domestic GSM originating access service from Vodafone for the mobile subscriber to be able to make the call. It may also need to purchase a fixed line terminating service from another carrier where it does not have its own network.[11] This is shown in Diagram 3.

Diagram 3 – The GSM originating access service: use of the GSM originating access service to supply a 13/1300 or 1800 call

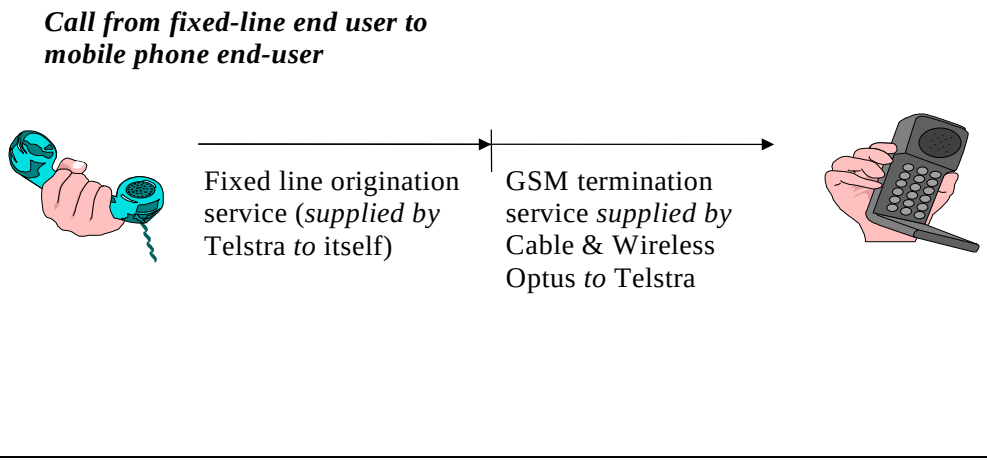


The GSM terminating service, on the other hand, is used to terminate calls to mobile subscribers. Essentially it enables mobile subscribers to receive calls from end-users connected to other networks (a fixed line network, another mobile network, or the same mobile network). The service can be used to supply fixed-to-mobile calls, or mobile-to-mobile calls. It is supplied by mobile carriers to themselves and to other carriers. For example, in the case of a fixed-to-mobile call if an end-user connected to Telstra's fixed

[9] Ibid, p. 42.
[10] Ibid, p. 42.
[11] It is noted that Vodafone disagreed with this interpretation of the GSM originating access service in the context of developing the GSM pricing principles. Rather, it considers that in delivering a call to a 13/1300 or 1800 service it purchases the PSTN terminating service from Primus.

line network wants to call a mobile subscriber connected to the Cable & Wireless Optus's GSM network, Telstra would need to purchase the GSM terminating service from Cable & Wireless Optus in order for the fixed line end-user to be able to make the call. This is shown in Diagram 4.

Diagram 4 – The GSM terminating service



3.3. Proposed mobile service description

The Commission has decided to hold a public inquiry to consider varying the GSM service declarations such that they are mobile technology-neutral with respect to technologies currently deployed or in use in Australia. While the Commission is proposing service declarations which are inclusive of all technologies currently deployed or in use, it understands that this only encompasses GSM and CDMA services. As such, it is anticipated that the proposed service declarations would, at this point, only include GSM and CDMA services.

As noted above, at the time the GSM originating and terminating services were deemed to be declared, they were covered by registered access agreements between the existing carriers and considered necessary for the purpose of achieving any-to-any connectivity. Other digital mobile technologies, such as CDMA, had not been rolled out and accordingly were not deemed to be declared. Subsequent technological and market developments have seen the deployment of two digital CDMA networks in Australia. These are not encompassed by the existing GSM service declarations.

In its recent report on the GSM pricing principles, the Commission concluded that a degree of regulatory intervention (retail benchmarking) was appropriate at this point in time. The Commission noted that in forming this view for the GSM originating and terminating services many of the issues considered may equally apply to other mobile technologies currently deployed or in use (e.g. CDMA services). These issues included control over access and consumer ignorance (which allow mobile carriers to sustain above-cost access prices and

restrict competition in downstream markets) as well as the broader competition in the mobile services market. The Commission considers it likely that control over access and consumer ignorance are not specific to particular mobile technologies but rather, in the current market, relevant to all mobile technologies deployed or in use. Regulation of only one mobile technology while another technology with similar characteristics remains unregulated would appear to be inconsistent, may lead to inefficiencies and could allow for uncompetitive behaviour.

In previous public inquiries, the Commission has expressed a preference for specifying services in functional, rather than technology-specific, terms.[12] It is considered technology-specific declarations may have distorting effects upon investment decisions as well as technological and innovative developments. While a proposed variation to make the GSM service declarations mobile technology neutral with respect to technologies currently deployed or in use would retain a technology-specific distinction, as it would include GSM and CDMA services (as well as any other technologies currently deployed or in use) it would likely still afford neutrality effects in relation to currently deployed mobile services.

For these reasons the Commission is proposing a variation to make the GSM service declarations mobile technology neutral with respect to technologies currently deployed or in use. As noted above, the Commission understands that the only technology currently deployed or in use other than GSM is CDMA. Further, it does not anticipate the introduction of any other technologies (providing the same degree of functionality) in the future. Therefore, it is proposing to vary those elements of the GSM service declarations that refer only to the GSM technology such that they also include references to CDMA services. The proposed service declarations are at Attachment B and the Commission has marked the document using 'track changes' to assist in identifying where changes are being proposed.

3.3.1. Functionality

Currently, the GSM service declarations provide that the GSM originating and terminating services are used 'for the carriage of telephone calls (i.e. voice, data over the voice band)'. The Commission understands that this essentially allows for the provision of (digitised) voice calls. Further, where a physical connection is made between a mobile phone, a computer and a dial-up modem, end-users have the ability to send and receive data. This primarily occurs through interaction with the Internet where end-users may for example access e-mail or download a web page. The extent of mobile interactivity is, therefore, limited to situations where an end-user has proximity to a computer. It is understood that the standard speed for the transfer of such data is about 9.6kbps.

The Commission understands this essentially describes the functionality of second generation (2G) mobile technologies, such as GSM and CDMA services. However, in addition there are now two and a half generation (2.5G) as well as the promise of third generation (3G) technologies. These provide functionality beyond that of 2G technologies.

[12] See p. 14 of the *Declaration of a technology-neutral subscription television carriage service*, Australian Competition and Consumer Commission, October 1999.

The 2.5G technologies enable end-users to be fully mobile and send and receive voice calls as well as data. For example, without physically connecting to a computer and a dial-up modem end-users can connect to the Internet and check their e-mail, make an airline reservation or receive information on stock prices, weather reports, etc. The speed for the transfer of data using such technologies is expected to be greater than 9.6kbps. This functionality is currently provided by General Packet Radio Service (GPRS)[13] and Wireless Application Protocol (WAP). There has been limited rollout of such technologies in Australia to date. In addition, Enhanced Data Rate for GSM Evolution (EDGE) will likely provide similar functionality in the future. It is noted that while utilising GSM and CDMA services 2.5G technologies also incorporate further intelligent network infrastructure by overlaying a packet-based air interface.[14] Further, a new handset is required by the end-user to derive this functionality.

It is not yet clear what the full functionality of 3G technologies will be, although it is expected that they will enable higher speed mobile interactivity with the Internet and allow for the carriage of still images, video, audio streaming, software, etc. These services are not yet deployed but are likely to be rolled out in Australia over the next eighteen months to five years. It is noted that the 3G technologies will be provided using new network infrastructure (i.e. the network infrastructure use to provide existing GSM and CDMA services will not be utilised).

SMS messages

The Commission understands that SMS messages use part of a GSM or CDMA network's control channels in being sent and received, as opposed to the traffic channels (or voice band). In particular, a paging channel is used, which is generally used to let end-users know they have an incoming call. Control channels, including the paging channel, may quite often have under-utilised capacity and this excess capacity can be harnessed for the purpose of delivering SMS messages. It is noted that SMS messages are not instantaneous; they are stored and then forwarded when the network has capacity available.

It is not clear to the Commission, therefore, whether the functionality of delivering a SMS message falls within the current GSM service declarations. This is because the GSM service declarations provide 'for the carriage of telephone calls (i.e. voice, data over the voice band)' whereas SMS messages are actually carried over the control channels. Views on this issue are sought below in order to clarify the matter and, so, avoid future doubt regarding whether the delivery of SMS messages involves the use of the declared service. If the delivery of SMS messages do not fall within the current GSM service declarations, the Commission seeks views on whether it should be part of the proposed variations.

[13] Currently realistic rates for the transfer of data using GPRS are between 10-40kbps.

[14] This is similar to the way in which broadband data services are provided over fixed lines. For example, the unbundled local loop and the public switched telephone network are the core infrastructure to which additional infrastructure or electronics (such as xDSL or ISDN technologies) are added in order to allow for the provision of greater bandwidth.

Issues upon which comments are sought:

- The Commission's preliminary view is that the issues raised in the recent GSM pricing principles paper in relation to the GSM terminating service (that is, control over access and consumer ignorance) may equally apply to other mobile technologies currently deployed or in use. Is this likely to be true? If not, why not?

- The Commission proposes to vary the GSM service declarations such that they are technology-neutral with respect to technologies currently deployed or in use. Proposed service declarations are provided at Attachment B. Are there any comments in relation to the proposed variations?

  - Are there any technologies, other than CDMA, which are currently deployed or in use? Are there any other technologies (with similar functionality) which are likely to be deployed or used in the future?

  - What functionality is currently provided for in the GSM service declarations? What functionality should be provided for by the proposed service declarations? For example, should the service descriptions provide that end-users are able to be fully mobile[15] and send and receive voice calls as well as data (i.e to utilise the functionality provided for by 2.5G technologies)?

  - Is the functionality of delivering a SMS message currently provided for in the current GSM service declarations? Should the functionality of delivering a SMS message fall within the proposed service declarations? Why, or why not?

  - The proposed service declarations make references to tables GOASD1 to GOASD7 and tables TGASD1 to TGASD5 (of Telstra's ordering and provisioning manual). Are these references relevant to the proposed service declarations?

[15] That is, to not require a physical connection to a computer and dial-up modem.

4. Long-term interests of end-users

As noted in section 2, in deciding whether to vary the GSM service declarations the Commission must have regard to whether the proposed variation would promote the LTIE of carriage services or services provided by means of carriage services. Submissions should, therefore, address this matter, where possible, to assist the Commission. Outlined below are specific issues that the Commission considers may be pertinent in determining whether varying the scope of the current GSM service declarations is in the LTIE.

4.1. Will varying the declarations promote the LTIE?

Section 152AB of the Act provides that in determining whether varying the GSM service declarations will promote the LTIE, the Commission must consider to what extent the proposed variation is likely to result in the achievement of the following three objectives:

- promoting competition in markets for carriage services and services provided by means of carriage services;
- achieving any-to-any connectivity in relation to carriage services that involve communication between end-users; and
- encouraging the economically efficient use of, and investment in, the infrastructure by which carriage services, and services provided by means of carriage services, are supplied.

The Commission will then consider the likely result of the proposed variation on each objective and make an overall assessment of whether the cumulative impacts on each objective will promote the LTIE.[16]

The matters outlined above are interrelated. In many cases, the LTIE may be promoted through the achievement of two or all of these criteria simultaneously. In other cases, the achievement of one of these criteria may involve some trade-off in terms of another criteria and the Commission will need to weigh up the different effects to determine whether or not varying the declarations promotes the LTIE. In this regard, the Commission will interpret long-term to mean a balancing of the flow of costs and benefits to end-users over time in relation to the criteria. Thus, it may be in the LTIE to receive a benefit for even a short period of time if its effect is not outweighed by any longer term costs.

[16] *Telecommunications services – Declaration provisions*, Australian Competition and Consumer Commission, July 1999, pp. 35-36.

4.2. Will varying the declarations promote competition?

4.2.1. Principles

The concept of competition is of fundamental importance to the Act and has been discussed many times in connection with the operation of Part IIIA, Part IV, Part XIB and Part XIC.

In general terms, competition is the process of rivalry between firms, where each market participant is constrained in its price and output decisions by the activity of other market participants. The Trade Practices Tribunal (now the Australian Competition Tribunal) stated that:

> In our view effective competition requires both that prices should be flexible, reflecting the forces of demand and supply, and that there should be independent rivalry in all dimensions of the price-product-service packages offered to consumers and customers.
>
> Competition is a process rather than a situation. Nevertheless, whether firms compete is very much a matter of the structure of the markets in which they operate.[17]

Competition can provide benefits to end-users including lower prices, and a better quality and range of services over time. Competition may be inhibited where the structure of the market gives rise to market power. Market power is the ability of a firm, or firms, to profitably constrain or manipulate the supply of products from the levels and quality that would be observed in a competitive market, for a significant period of time.

The establishment of a right for third parties to negotiate access to certain services, on reasonable terms and conditions, can operate to constrain the use of market power, which could be derived from the control of these services. An access regime such as Part XIC, or Part IIIA of the Act, attempts to change the structure of a market, to limit or reduce the sources of market power and consequent anti-competitive conduct, rather than directly regulating conduct which may flow from its use, which is the role of Part IV and Part XIB of the Act.

To assist in determining the impact of the proposed variation of the GSM service declarations, it is considered appropriate for the Commission to consider the market in which the eligible service is, or would be, supplied.

Section 4E of the Act provides that the term 'market' includes a market for the goods or services under consideration and any other goods or services that are substitutable for, or otherwise competitive with, those goods or services. The Commission's approach to market definition is discussed in its *Merger guidelines*, June 1999 and is canvassed in its information paper, *Anti-competitive conduct in telecommunications markets*, August 1999.

[17] Re Queensland Co-operative Milling Association Ltd and Defiance Holdings Ltd (1976), *Australian Trade Practices Reporter* 40-012, at 17,245.

It should be noted, however, that the Commission's approach to market definition in relation to the proposed variation of the GSM service declarations does not require the determination of a definitive or determinative market definition as is the case in a Part IV or Part XIB case.[18] This approach was also endorsed by Wilcox J in his decision to uphold the validity of certain broadcasting access declarations made by the Commission.[19]

The second step is to assess the likely effect of the proposed variation on competition in each relevant market. Section 152AB(4) requires that regard must be had to the extent to which the proposal will remove obstacles to end-users gaining access to carriage services.

The term 'obstacles' is best read, in the Commission's view, as a reference to barriers facing new entrants in the markets for services arising from the need to use the network infrastructure services to be able to compete. In this regard, an access regime can remove those obstacles by facilitating entry and therefore providing end-users with a choice of suppliers from which to obtain services.

Where existing market conditions already provide for the competitive supply of services, the access regime should not impose regulated access.[20] This recognises the costs of providing access, such as administration and compliance, as well as potential disincentives to investment. Regulated provision of services will only be desirable where it leads to benefits in terms of lower prices, better services or improved service quality for end-users which outweigh any costs of regulation.

In the context of considering whether the proposed variation of the GSM service declarations will promote competition, it is therefore appropriate to examine the impact of the potential service declarations on each relevant market and compare the state of competition in that market before and after the proposed variation. The question of whether competition will actually improve or increase will be highly relevant but is not determinative of this issue. The key issue when considering the proposed variation is whether it will assist in establishing conditions by which such improvement will be more likely to occur. This interpretation of promoting competition was endorsed by the Australian Competition Tribunal, which stated that the concept of promoting competition:

> …involves a consideration that if the conditions or environment for improving competition are enhanced, then there is a likelihood of increased competition that is not trivial.[21]

It is, however, not enough to determine if the proposed variation will promote competition by simply examining their impact on the competitive process in the market. Rather, the extent to which the proposed variation promotes competition should be examined from the end-users'

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[18] See the Commission's *Telecommunications services – Declaration provisions*, July 1999, report.

[19] Refer to Federal Court of Australia transcript of Foxtel Management Pty Ltd v Australian Competition and Consumer Commission [2000] FCA 589 at p. 65.

[20] *Trade Practices (Telecommunications) Amendment Act 1997*, Explanatory Memorandum.

[21] Re Review of Declaration of Freight Handling Services at Sydney International Airport (2000), *Australian Trade Practices Reporter* 40-775, at 107.

perspectives; that is, to have regard to the likely results from increased competition in terms of price, quality and service diversity.

4.2.2. Market definition

As noted above, the Commission first needs to identify the relevant market(s) in order to determine the impact of the potential variation of the GSM service declarations on competition.

In the GSM pricing principles the Commission defined two markets that were relevant to its considerations - the mobile services market and the fixed-to-mobile services market.[22] A summary of this analysis is provided at Attachment C. The mobile services market was defined as the market in which mobile calls are supplied. This was viewed as a national market involving distinct wholesale and retail functional elements and, importantly, including the supply of mobile originating and terminating services to service providers (and ultimately end-users). The fixed-to-mobile services market was defined as the retail market in which fixed-to-mobile calls are supplied. It was viewed as a related downstream market to the mobile services market.

The Commission considers these markets are also the relevant markets for the purpose of considering the impact of the proposed variation of the GSM service declarations on competition. Substitute mobile technologies, which the proposed variation allows for, such as CDMA, are included in the mobile services market definition and are wholesale inputs into the fixed-to-mobile services market.

Issues upon which comments are sought:

- Are the mobile services market and the fixed-to-mobile services market, as detailed in the GSM pricing principles, the relevant markets for consideration? If not, what are the relevant markets for consideration?

4.2.3. Impact of the proposed variation on competition

As noted above, in considering whether the potential variation is likely to promote competition in the relevant markets, the Commission will first examine the effectiveness of competition in those markets without the variations. This involves analysis of features such as market shares and barriers to entry, along with market conduct in terms of pricing and supply.

In the GSM pricing principles the Commission assessed the extent of competition in the mobile services market and the fixed-to-mobile services market.[23] A summary of this

[22] The full market definition analysis is set out in *Pricing Methodology for the GSM Termination Service*, Australian Competition and Consumer Commission, July 2001, pp. 24-31 and 43-45.

[23] The full competition analysis is set out in *Pricing Methodology for the GSM Termination Service*, Australian Competition and Consumer Commission, July 2001, pp. 32-42 and 45-50.

analysis is provided at Attachment D. It concluded that there appears to be an increasing level of competition in the mobile services market, particularly the retail element of the market. The GSM pricing principles noted that the market is characterised by high concentration levels and barriers to entry. Further, at the wholesale level of the market the Commission expressed concerns that the competitive pressure on the GSM terminating service is relatively weak (because of control over access and consumer ignorance). However, it was noted that there are signs that the level of competition is intensifying, with some successful (and some unsuccessful) new entry, continued growth in the market, increased product offerings and reductions in retail prices for mobile calls.

In relation to the competitiveness of the fixed-to-mobile services market, the GSM pricing principles noted that definite conclusions are difficult to make. It noted there appears to be a degree of market concentration with one large player, but also a relatively large number of carriage service providers, competing for market share, and low barriers to entry. Further there is some evidence of declining prices for fixed-to-mobile calls. That said, the Commission noted the extent of price reductions appear to be limited by the lack of competitive pressure on access prices for the GSM terminating service.

The Commission considers that the proposed variation may promote competition in the fixed-to-mobile services market. This is because mobile technology-neutral service declarations may remove potential barriers (such as, lack of access) facing those carriers or carriage service providers operating in the fixed-to-mobile services market. That said, this barrier may be minimal in relation to currently deployed or in use technologies, such as CDMA, as the Commission understands they are currently supplied by access providers to access seekers.

However, the Commission noted in the GSM pricing principles that it would have particular concerns with anti-competitive pricing under a forbearance approach to regulation. As the Commission considers it likely that the GSM and CDMA networks have similar characteristics these concerns also exist if CDMA services were not regulated. In particular, the Commission noted the potential for integrated mobile carriers to engage in anti-competitive pricing in the fixed-to-mobile markets. This might occur if an integrated mobile carrier charged itself a lower internal access price (for, say, the CDMA services) than it charged its fixed competitors preventing the entry of efficient competitors into the fixed-to-mobile market.

Issues upon which comments are sought:

- Is the Commission's analysis of the current state of competition in the mobile services market and the related downstream fixed-to-mobile services market accurate? If not, why not?
- Will the proposed variation of the GSM service declarations promote competition in the mobile services market and/or the related downstream fixed-to-mobile services market? Why, or why not?
  - Is access already supplied for CDMA?

4.3. Will varying the declarations achieve any-to-any connectivity?

4.3.1. Principles

The objective of any-to-any connectivity is to ensure that an end-user who is supplied with a communications service can communicate, by means of that service with other end-users who are supplied with the same, or a similar service, even if they are connected to different networks. This allows end-users to communicate with each other, irrespective of the network to which they are connected. The reference to similar services in legislation enables the application of this objective to services with similar, but not identical functional characteristics, such as fixed and mobile voice telephony services.

4.3.2. Impact of the proposed variation on achieving any-to-any connectivity

As noted above, the GSM originating and terminating services were deemed to be declared for the purpose of achieving any-to-any connectivity. The Commission considered that this was necessary to ensure that end-users of a GSM network were able to communicate with end-users of any other network.[24]

Any-to-any connectivity is also important for end-users of other mobile technologies that are currently in use, such as those using CDMA networks. The Commission understands that despite CDMA networks not being declared services, end-users connected to them still enjoy the benefits of any-to-any connectivity. Carriers and carriage service providers who do not provide such connectivity would find it difficult to attract end-users and grow their market share.

[24] *Deeming of Telecommunication Services*, Australian Competition and Consumer Commission, June 1997, p. 19.

In this light the Commission considers that the proposed variation of the GSM service declarations are unlikely to impact, either adversely or positively, on the achievement of any-to-any connectivity. Having said that, the variations may provide regulatory certainty to industry regarding access to networks and services irrespective of the technology.

Issues upon which comments are sought:

- Will the proposed variation of the GSM service declarations impact on the achievement of any-to-any connectivity? Why?

4.4. Will varying the declarations encourage economic efficiency?

4.4.1. Principles

The objective of economic efficiency has two components – the economically efficient use of and investment in infrastructure by which carriage services and services supplied by means of carriage services are supplied.

Economic efficiency has three components.

- Productive efficiency refers to the efficient use of resources within each firm such that all goods and services are produced using the least cost combination of inputs.

- Allocative efficiency refers to the efficient allocation of resources across the economy such that the goods and services that are produced in the economy are the ones most valued by consumers. It also refers to the distribution of production costs amongst firms within an industry to minimise industry-wide costs.

- Dynamic efficiency refers to the efficient deployment of resources between present and future uses such that the welfare of society is maximised over time. Dynamic efficiency incorporates efficiencies flowing from innovation leading to the development of new services, or improvements in production techniques.

The Commission must ensure that the Part XIC access regime does not discourage investment in networks or network elements where it is efficient. However, where it is inefficient to require investment in a number of networks or network elements, the access regime may play an important role in ensuring that existing infrastructure is used efficiently.

Efficient infrastructure investment can lead to more efficient methods of production, fostering increased competition and lower prices, as well as enhancing the level of diversity in the goods and services available to end-users. In this respect, it is noted that there is also a strong relationship between competition and efficiency. The Commission's analysis of the likely impact of the proposed variation on competition will, therefore, also influence its analysis of the impact on efficiency. For instance, if the Commission comes to a view that supply of the

eligible service is not yet subject to effective competition, then it could conclude varying the service declarations would:

- facilitate the provision of the eligible services to access seekers at a price which is closer to underlying costs, resulting in a more efficient allocation of resources; and
- prevent inefficient duplication of infrastructure used to supply the declared service.

Regulation, however, may have other impacts on efficiency, both positive and negative. For instance, while proposed variation may promote efficient investment in downstream markets, it may also result in costs as potential access providers comply with the standard access obligations, or discourage efficient investment in infrastructure used to supply the declared service.

Furthermore, in interpreting the objective of encouraging economic efficiency, subs. 152AB(6) of the Act provides that, regard must be had to, but is not limited to, a number of specific matters. These are discussed below.

Firstly, the Commission must have regard to whether it is technically feasible to supply and charge for the particular service. This incorporates a number of elements, including the technology that is in use or available, whether the costs that would be involved in supplying, and charging for, the services are reasonable and the effects, or likely effects, that supplying, and charging for, the services would have on the operation or performance of telecommunications networks. In many cases, the technical feasibility of supplying and charging for particular services given the current state of technology may be clear, particularly where there is a history of providing access. The question will be more difficult where there is no prior access, or where conditions have changed.

Secondly, regard must be given to the legitimate commercial interests of the supplier or suppliers of the service, including the need to recover the cost of providing services and earn a commercial return on the investment in infrastructure. The Commission must also consider whether the access provider has the appropriate incentives to maintain, improve and invest in the efficient provision of the service. In addition, regard must be had to whether the access arrangement may affect the owner's ability to realise economies of scale or scope.

Finally, the Commission must have regard to the impact on the incentives for investment in the infrastructure by which the service is supplied. Various aspects of efficient investment have been discussed already. It is also important to note that while access regulation may have the potential to diminish incentives for some businesses to invest in infrastructure, it also ensures that investment is efficient, reduces the barriers to entry for other (competing) businesses, or barriers to expansion by competing businesses.

4.4.2. Impact of varying the declaration on the economically efficient use of infrastructure

As noted above, only the GSM originating and terminating services are declared and, therefore, subject to regulation although the Commission understands CDMA services are

also currently supplied and charged for. It, therefore, appears to be technically feasible to supply and charge for CDMA services, implying the provision of access to these services under the proposed variation of the GSM service declarations is possible.

The proposed variation of the GSM service declarations will impact on the access providers currently supplying CDMA services, Telstra and Hutchison. The Commission is conscious that CDMA services to date have not been regulated and that extending the regulatory framework to these services will impact on the commercial interests of these access providers. It is, therefore, interested in industry views as to what, if any, the impact may involve.

The Commission notes that in its GSM pricing principles it concluded that the current lack of effective competition in the supply of the GSM originating and terminating services appears to lead to higher prices for fixed-to-mobile calls than would be justified by looking at the cost of supply for the larger carriers. That is, there was concern that the larger mobile carriers may be earning excessive returns beyond their commercial interests. The pricing principles noted that as a result there may currently be either:

- allocative inefficiencies caused by cross-subsidisation of mobile phone subscribers by fixed line subscribers; or

- allocative inefficiencies caused by excess profits being earned by (larger) carriers.

It was, therefore, considered that reductions in access prices would improve allocative efficiencies. If CDMA services have similar characteristics as the GSM originating and terminating services the absence of the proposed mobile technology-neutral service declarations may raise similar concerns.

Issues upon which comments are sought:

- Do those mobile carriers with CDMA networks currently supply, and charge for, CDMA services similar to the GSM originating and terminating services? Are these services supplied to other mobile carriers and/or fixed line carriers?
- Would the proposed variation of the GSM service declarations impact on the legitimate commercial interests of access providers supplying the CDMA services? How?
- Would the proposed variation of the GSM service declarations have an effect on the investment decisions of new entrants or existing carriers?
- How would the proposed variation affect decisions to invest in the downstream fixed-to-mobile services market?
- How would the proposed variation affect the allocative efficiency in the downstream fixed-to-mobile services market?
- Would the absence of the proposed variation of the GSM service declarations adversely impact on allocative and dynamic efficiency? If not, why not?

5. Mobile regulation overseas

This section briefly looks at whether other countries have mobile technology-specific regulation.[25] All the regulatory jurisdictions surveyed do not have technology-specific regulation. Mobile regulation occurs either at the carrier level or on a regional basis. Regulatory obligations may also be triggered by the license granted to the mobile operator.

European Union

Telecommunications regulation in countries belonging to the European Union is not technology-specific. Rather, the regulatory authorities in the Member State, including the United Kingdom's regulatory authority, Oftel, apply a significant market power (SMP) test to determine whether a telecommunications carrier should be bound by regulation.[26] A carrier's market share and its experience in, and influence over, the market is some of the key criteria by which regulatory authorities must follow in determining if a carrier possesses SMP. Therefore, the SMP test is not technology-specific and applies to both fixed line and mobile markets.

United States of America

In the United States (US), the mobile telephony market is regulated on a regional basis with five mobile operators for each major trading area within the US. The mobile license permits the operator to establish a service area within the boundaries of the area determined by the license. Mobile operators can only offer services within their respective service areas. Like the European Union, mobile regulation in the US is not technology-specific.

Singapore

Singapore is another country where regulation of the mobile telephony market is not technology-specific. The type of license awarded determines whether a mobile operator falls within the bounds of regulatory obligations. There are two types of licenses awarded. The Facilities-Based Operations (FBO) license is awarded to operators with the mobile infrastructure to provide mobile services to end-users. The Services-Based Operations (SBO) license is awarded to operators who do not own the necessary infrastructure, but leases the network elements from the FBO licensees to provide services to third parties or to resell the services of FBO licensees. Operators with an FBO license are required to ensure all telecommunications operators are interconnected and have access to its networks.

[25] The information in this section is sourced from *Country Profiles 2001*, Interconnect@Ovum, 2001. The European Union section is sourced from *Regulating Mobile Operators: The Road to Effective Competition, Volume 3: Mobile Termination Rates*, Ovum, 2000.

[26] The SMP test is set out in Article 4(3) of the EC Interconnection Directive.

New Zealand

There is no mobile technology-specific regulation in New Zealand (NZ), where the mobile operator's status determines whether it is bound by regulation. A mobile operator may have a 'management right' obtained through an auction process controlled by NZ's regulatory authorities. A management right entitles the owner of that right to grant spectrum licenses, but this right does not extent to limiting the use of spectrum licenses to specific telecommunications or broadcasting applications. NZ's regulatory authority is responsible for creating the 'management right' and deciding whether it wants to retain that 'management right'. The spectrum license only authorises the transmission of radio waves or ensures that interference levels do not exceed those specified.

Conclusion

It is apparent from the jurisdictions surveyed that regulation of mobile services differs with the jurisdiction. Having said that, the jurisdictions surveyed do share one commonality and that is that they do not regulate mobile services based on the type of technology used. Rather, regulation is based on the extent of the mobile carrier's market power (European Union), or the type of license awarded to mobile carriers (Singapore, NZ), or the geographic area within which they operate (US).

Issues upon which comments are sought:

- What are the perspectives of mobile regulation overseas and do they have implications for Australia's mobile regulatory regime?

Glossary

2G	In mobile telephony, second generation (2G) protocols use digital encoding and include GSM, CDMA and TDMA. 2G networks are currently used around the world and support high bit rate voice and limited data communications. They are capable of offering auxiliary services such as data, fax and SMS.
2.5G	In mobile telephony, two and a half generation (2.5G) protocols extend 2G systems to provide additional features, such as packet-switched connection and enhanced data rates.
3G	In mobile telephony, third generation (3G) protocols support much higher data rates, measured in megabits per second, intended for applications other than voice, such as full-motion video, video conferencing and full Internet access. 3G networks are expected to be available in Australia within the next eighteen months to five years.
Access provider	Carrier or carriage service provider who supplies declared services to itself or other persons - see s. 152AR of the *Trade Practices Act 1974*.
Access seeker	Service provider who makes, or proposes to make, a request for access to a declared service under s. 152AR of the *Trade Practices Act 1974*.
Base station	Radio transmitter and receiver used for transmitting and receiving calls to or from mobile telephones in a particular cell.
Code division multiple access (CDMA)	A digital wireless telephony transmission technique. CDMA allows multiple frequencies to be used simultaneously (spread spectrum). CDMA operates in the 800 MHz band.

Declared service	An eligible service declared by the Commission under s. 152AL of the *Trade Practices Act 1974*. Once an eligible service is declared, access providers are required to supply the service to service providers (that is, access seekers) upon request - see s. 152AR of the *Trade Practices Act 1974*.
Digital	A way of encoding information. On digital networks, data does not need to go through the extra step of being converted to analog signals, while voice is sampled and coded in a way similar to how it is recorded on a CD. Digital networks include GSM, CDMA and TDMA mobile systems.
Enhanced data rates for GSM evolution (EDGE)	An enhanced modulation technique designed to increase network capacity and data rates in GSM networks. EDGE should provide data rates up to 384 kilobits per second.
Eligible service	This term is defined in s. 152AL of the *Trade Practices Act 1974*. An eligible service is a carriage service between two or more points (at least one of which is in Australia), or a service that facilitates the supply of such a carriage service.
General packet radio service (GPRS)	A radio technology for GSM networks that adds packet-switching protocols, shorter set-up time for ISP connections, and offer the possibility to charge by amount of data sent rather than connect time.
Global system for mobile (GSM)	The first European digital standard developed to establish cellular compatibility throughout Europe. GSM operates at the 900 and 1800 MHz band
Home location register	Database for information on subscribers, such as serial number, base station number and mobile phone location.

Mobile services switching centre (MSC)	Switching centre controlling a particular service area, and contains several base stations, in order to control all the switching functions for mobile phones located in any of the cells.
Packet switching	Technique whereby the information (voice or data) to be sent is broken up into packets, or at most a few kilobytes each, which are then routed by the network between different destinations based on the address within each packet.
Service provider	Defined in s. 86 of the *Telecommunications Act 1997*. The term refers to a carriage service provider or a content service provider.
Short message service (SMS)	The service is available on digital GSM networks allowing text messages of up to 160 characters to be sent and received via the network operator's message centre to the mobile phone.
Time division multiple access (TDMA)	A digital wireless telephony transmission technique. TDMA allocates each user a different time slot on a given frequency.
Universal mobile telecommunications service (UMTS)	UMTS is a 3G standard supporting a theoretical data throughput of up to 2 megabits per second.
Visitor location register	Database for temporary storage of information on subscribers
Wireless application protocol (WAP)	A set of communication protocol standards designed to make accessing online services from a mobile device simple.

Attachment A: Current Service Description

3. Domestic GSM Originating Access Service

The following service description is provided for Domestic GSM originating access and applies to the provision of Domestic GSM Originating access service by any AP to any AS (AS).

The Service as described comprises a number of different elements as follows:

a) Access via a AS number ranges required to achieve the objective of any-to-any connectivity unless the AP has not sought or is not seeking terminating access to the end - customers in question

b) Call Barring

c) POI Location

d) Signalling

e) CLI provision

f) Provision of Switchports

g) Network Conditioning

h) Fault Handling -

i) Inter C/CSP Billing

Restrictions on availability and others factors relating to the provision of Access are further described below.

In accordance with the Trade Practices Act Part XIC these elements
- may not be available from all APs
- may have restrictions in their availability

Domestic GSM Originating Access" is an Access Service for the carriage of telephone calls (ie. voice, data over the voice band) to a POI from end-customers assigned numbers from the GSM number ranges of the Australian Numbering Plan and directly connected to the AP's GSM network.

3.1. Availability

The availability of the services may vary depending on the geographic and technical capability of the AP's network at the time at which a request for the service is made or the service is delivered.

The AP will make available to ASs documents describing the availability of this service on its network. See 3.3 & 3.4

3.2. Channel Capacity

The service will establish a connection for the purposes of voice communication with the standard bandwidth of 3.1kHz.

3.3. Services

3.3.1 The service is provided on a call that is made with AS specific codes including Special Services codes and number ranges (with some exceptions) as per table GOASD7, in accordance with the Australian Numbering Plan.

3.3.2(blank)

3.3.3 Service Restrictions

At least annually, the AP will advise of end-customer services that may restrict the provision of this service in a Table GOASD5.

3.3.4 Barring

The AP may provide a service that will allow barring of service codes at the request of the end - customer.

End-customers may request generic barring services which may restrict access to these services.

The AP should detail this barring in a table GOASD6.

3.4. Interconnection Handover arrangements

The AP and the AS are each responsible for the provision, installation, testing, making operational and monitoring of all the network on their respective sides of the POI.

3.4.1. POIs

"**Point of Interconnection**" or "**POI**" means an agreed location which:

(a) is a physical point of demarcation between the networks nominated by the AS and the AP; and

(b) is associated (but not necessarily co-located with) with one or more gateway exchanges of each of the networks nominated by the AS and the AP.

Calls originated by the A-party will be handed over to the AS at Points of Interconnection agreed by the AS and the AP in respect of POIs nominated by the AP in accordance with 3.4.1.1 and 3.4.1.2.

3.4.1.1 POI locations

The AP will provide a table (Table GOASD1) listing of POIs where this service may be provided. This listing will be updated at least annually. The AS may request a point of interconnect with the AP's network at a location other than one specified by the AP. The AP must, to the extent technically and operationally feasible, permit the location of a point of interconnect at that location.

3.4.1.2 Number ranges

The AP will provide a table of the GSM number ranges to which this service will give access. (Table GOASD2)

The POIs GOASD1 will be the POIs for "near end handover" of calls.

3.4.2. Signalling

3.4.2.1. Signals for this service will use CCS#7 signalling. Unless otherwise agreed, this CCS#7 signalling will be in accordance with the NIIF/ACIF Interconnection-ISUP specification.

3.4.2.2 The AP will provide a table (Table GOASD4) of the locations where the AS may interconnect its CCS#7 signalling network with that of the AP for the purpose of accepting this service.

3.4.2.3 Signalling interconnection may not be provided at all POI's. These POIs of 3.4.1.1 may provide for interconnection of voice circuits only. Control of voice circuits where direct signalling interconnection is not provided, will be via "quasi-associated signalling" using Signalling Transfer Point (STP) operation, with signalling via a nominated other gateway where signalling interconnection is provided.

3.4.3. CLI

The CLI of the A-party will be provided as part of the CCS#7 signalling.

3.4.4. Nature of switchports

At POIs the calls will be delivered to the AS at 2.048Mbit/sec Switchports. The switchports will operate at 2.048Mbit/sec in accordance with the ITU Recommendations G.703, G. 704 and G.732 (Blue Book).

3.4.5. Send and receive speech levels

The send and receive levels for speech will be -13 dBr unless specified otherwise in the Australian Network Performance Plan.

3.4.7. The AP will provide Echo Control as per normal practice for GSM calls between the end customer and the AP's gateway exchange.

3.5. Interconnection Forecasting, ordering and provisioning arrangements

3.5.1 Forecasting and planning requirements

3.5.1.1. Forecast of port requirements

For each POI the AS should provide forecasts, at least half yearly, of switchport requirements for 6, 12, 18, 24, 30 and 36 months from the time of the forecast. Forecasts should be provided on dates to be agreed between the AP and the AS and forecast the switchport requirements from operative dates of 31 December and 30 June. Forecasts will be discussed by the AP and the AS with a view to agreement within 30 Business Days. Forecasts will be used by the AP for network planning and not for charging purposes.

3.5.1.2. Forecast of network capacity requirements

For each POI and for each charging district of the AP the AS should provide forecasts, at least half yearly, of traffic requirements for 6, 12, 18, 24, 30 and 36 months from the time of the forecast. These forecasts should provide daily and weekly profiles for the traffic forecasted and advice of any material non-uniformities in the dispersion of the sources of originating access traffic. Forecasts should be provided on dates to be agreed between the AP and the AS and forecast the traffic requirements from operative dates of 31 December and 30 June. Forecasts will be discussed by the AP and the AS with a view to agreement within 30 Business Days.

3.5.1.3. Ordering of Switchports.

The AP will accept orders for switchports up to the level of the agreed forecasts for each POI. The AS should order switchports allowing 6 months for their provision.

3.5.1.4. The AP will provide access up to the level of the agreed traffic forecasts for each POI.

3.5.1.5 The AS may request and the AP will give reasonable

consideration to, and use reasonable endeavours to provide such provision, but is under no obligation to provide access or switchports above the level of the agreed

forecasts. If such access is provided, delivery times may be longer than those specified in 3.5.1.3.

3.6. Interconnection Ordering Requirements

3.6.1. Compliance testing

The AS will be required to demonstrate compliance with the agreed CCS#7 Signalling System prior to the provision of the service.

3.6.1.1 The AP and the AS will develop an agreed test plan and the AS will provide results of tests to this plan from an appropriate test house or other such party. The AP will provide the results of such tests if it is not otherwise seeking a switch access service from the AS.

3.6.1.2 The AP and the AS shall review the test results of 3.6.1.1. within 20 business days and if the AP accepts that the test results of 3.6.1.1 are satisfactory then the AP and the AS will agree a date for commissioning tests.

3.6.1.3. The test results of 3.6.1.1 will form the prime documentary basis for ongoing operations, fault analysis and fault management of signalling between the AP and the AS.

3.6.2. Network Conditioning

Network Conditioning of the AP's network will be required before the provision of the service.

3.7. Operational and Fault handling arrangements

The AP will provide a contact point for the Operation and Maintenance of the service. Faults may be reported to this centre which will manage the clearance of these faults.

3.8 Inter C/CSP Billing frequency

The AP will invoice the AS on a monthly basis.

3.9. Provision of Tones and Network Announcements

Where calls attempting this service do not progress to the POI the call may be connected to tones as per AUSTEL Technical Standard TS002 or to a network RVA in the AP's network.

3.10 Customer Billing

Customer billing should be in accordance with an approved telecommunications access code.

4. Domestic GSM Terminating Access Service

The following service description is provided for Domestic GSM terminating access and applies to the provision of Domestic GSM terminating access service by any AP to any AS.

The Service as described comprises a number of different elements as follows:

a) Access for calls forwarded for termination in the AP's GSM network

b) POI Location

c) Signalling

e) CLI provision

f) Provision of Switchports

g) Network Conditioning

h) Fault Handling -

i) Inter C/CSP Billing

Restrictions on availability and others factors relating to the provision of Access are further described below.

In accordance with the Trade Practices Act Part XIC, these elements:
- may not be available from all APs
- may have restrictions in their availability

Domestic GSM Terminating Access Service is an Access Service for the carriage of telephone calls (ie. voice, data over the voice band) from a POI to B-parties assigned numbers from the GSM number ranges of the Australian Numbering Plan and directly connected to the AP's network.

4.1. Availability

The availability of the services may vary depending on the geographic and technical capability of the AP's network at the time at which a request for the service is made or the service is delivered.

The AP will make available to ASs documents describing the availability of this service on its network. See 4.3 & 4.4

4.2. Channel Capacity

The service will establish a connection for the purposes of voice communication with the standard bandwidth of 3.1kHz.

4.3. Services

4.3.1 The service is provided on a call that is handed over for termination to a customer directly connected to the AP's GSM network..

4.3.2 (Blank).

4.3.3 Service Restrictions

At least annually, the AP will advise of end-customer services that may restrict the provision of this service eg. Services barred from accepting Reverse Charge Calls in a Table TGASD5.

4.4. Interconnection Handover arrangements

The AP and the AS are each responsible for the provision, installation, testing, making operational and monitoring of all the network on their respective sides of the POI.

4.4.1. POIs

"**Point of Interconnection**" or "**POI**" means an agreed location which:

(a) is a physical point of demarcation between the networks nominated by the AS and the AP; and

(b) is associated (but not necessarily co-located with) with one or more gateway exchanges of each of the networks nominated by the AS and the Access.

Calls originated by the A-party will be handed over to the Access Provider at Points of Interconnection agreed by the AS and the AP in respect of the POIs nominated by the AP in accordance with 4.4.1.1 and 4.4.1.2.

4.4.1.1 POI locations

The AP will provide a table (Table TGASD1) listing of POIs where this service may be provided. This listing will be updated at least annually. The AS may request a point of interconnect with the AP's network at a location other than one specified by the AP. The AP must, to the extent technically and operationally feasible, permit the location of a point of interconnect at that location. Handover will be at the POI closest to the A Party

4.4.1.2 Number ranges

The AP will provide a table of the GSM number ranges to which this service will provide access.(TGASD2).

4.4.2. Signalling

4.4.2.1. Signals for this service will use CCS#7 signalling. Unless otherwise agreed, this CCS#7 signalling will be in accordance with the NIIF/CIF Interconnection-ISUP specification.

4.4.2.2 The AP will provide a table (Table TGASD4) of the locations where the AS may interconnect its CCS#7 signalling network with that of the AP for the purpose of accepting this service.

4.4.2.3 Signalling interconnection may not be provided at all POI's. These POIs of 4.4.1.1 may provide only for interconnection of voice circuits. Control of voice circuits where direct signalling interconnection is not provided, will be via "quasi-associated signalling" using Signalling Transfer Point (STP) operation, with signalling via a nominated other gateway where signalling interconnection is provided.

4.4.3. CLI

Unless otherwise agreed the CLI of the A-party should be provided as part of the CCS#7 signalling for this service.

4.4.4. Nature of switchports

At POIs the calls will be delivered to the AP at 2.048Mbit/sec Switchports. The switchports will operate at 2.048Mbit/sec in accordance with the ITU Recommendations G.703, G. 704 and G.732 (Blue Book).

4.4.5. Send and receive speech levels

The send and receive levels for speech will be -13 dBr unless specified otherwise in the Australian Network Performance Plan.

4.4.7. The AP will provide Echo Control as normal for GSM calls between the end customer and the AP's gateway exchange.

4.5. Interconnection Forecasting, ordering and provisioning arrangements

4.5.1 Forecasting and planning requirements

4.5.1.1. Forecast of port requirements

For each POI the AS should provide forecasts, at least half yearly, of switchport requirements for 6, 12, 18, 24, 30 and 36 months from the time of the forecast. Forecasts should be provided on dates to be agreed between the AP and the AS and forecast the switchport requirements from operative dates of 31 December and 30 June. Forecasts will be discussed by the AP and the AS with a view to agreement within 30 Business Days. The forecasts will be used by the AP for network planning and not charging purposes.

4.5.1.2. Forecast of network capacity requirements

For each POI and for each charging district of the AP the AS should provide forecasts, at least half yearly, of traffic requirements for 6, 12, 18, 24, 30 and 36 months from the time of the forecast. These forecasts should provide daily and weekly profiles for the traffic forecasted and advice of any material non-uniformities in the dispersion of the terminating access traffic. Forecasts should be provided on dates to be agreed between the AP and the AS and forecast the traffic requirements from operative dates of 31 December and 30 June. Forecasts will be discussed by the AP and the AS with a view to agreement within 30 Business Days.

4.5.1.3. Ordering of Switchports.

The AP will accept orders for switchports up to the level of the agreed forecasts for each POI. The AS should order switchports allowing 6 months for their provision.

4.5.1.4. The AP will provide access up to the level of the agreed traffic forecasts for each POI.

4.5.1.5 The AS may request and the AP will give reasonable consideration to, and use reasonable endeavours to provide, such provision, but is under no obligation to provide access or switchports above the level of the agreed forecasts. If such access is provided, delivery times may be longer than those specified in 4.5.1.3.

4.6. Interconnection Ordering Requirements

4.6.1 Compliance testing

The AS will be required to demonstrate compliance with the agreed CCS#7 signalling system prior to the provision of the service.

4.6.1.1 The AP and the AS will develop an agreed test plan and the AS will provide results of tests to this plan from an appropriate test house or other such party. The AP will provide the results of such tests if it is not otherwise seeking a switch access service from the AS.

4.6.1.2 The AP and the AS shall review the test results of 4.6.1.1. within 20 business days and if the AP accepts that the test results of 4.6.1.1 are satisfactory then the AP and the AS will agree a date for commissioning tests.

4.6.1.3. The test results of 4.6.1.1 will form the prime documentary basis for ongoing operations, fault analysis and fault management of signalling between the AP and the AS.

4.6.2. Network Conditioning

Network Conditioning of the AP's network will be required before the provision of the service.

4.7. Operational and Fault handling arrangements

The AP will provide a contact point for the Operation and Maintenance of the service. Faults may be reported to this centre which will manage the clearance of these faults.

4.8 Inter C/CSP Billing frequency

The AP will invoice the AS on a monthly basis for this service.

4.9 Provision of Tones and Network Announcements

Where calls attempting this service do not progress to the end customer the call may be connected to tones as per AUSTEL Technical Standard TS002 or to a network RVA in the AP's network.

4.10 Customer Billing

Customer billing should be in accordance with an approved telecommunications access code.

4.11 Interconnect Call Records

If required by the AS to carry out distance based charging of calls made using this service, the AP will provide, at the request of the AS, interconnect call records to the AS which will include the following information:

(a) time and date of answered communication;

(b) communication duration;

(c) charge zone in which the relevant mobile number is taken to have been located;

(d) switch identifier;

(e) calling party number;

(f) called party number;

(g) any other information agreed between the AP and the AS.

Interconnect call records will be provided at times and by electronic means to be agreed between the AP and the AS.

Attachment B: Proposed service descriptions

3. Domestic GSM and CDMA Originating Access Service

The following service description is provided for Domestic GSM and CDMA Originating Access and applies to the provision of Domestic GSM and CDMA Originating Access service by any AP to any AS (AS).

The Service as described comprises a number of different elements as follows:

a) Access via a AS number ranges required to achieve the objective of any-to-any connectivity unless the AP has not sought or is not seeking terminating access to the end - customers in question

b) Call Barring

c) POI Location

d) Signalling

e) CLI provision

f) Provision of Switchports

g) Network Conditioning

h) Fault Handling -

i) Inter C/CSP Billing

Restrictions on availability and others factors relating to the provision of Access are further described below.

In accordance with the Trade Practices Act Part XIC these elements
- may not be available from all APs
- may have restrictions in their availability

Domestic GSM and CDMA Originating Access is an Access Service for the carriage of telephone calls (ie. voice, data over the voice band) to a POI from end-customers assigned numbers from the GSM or CDMA mobile service number ranges of the ~~Australian~~ Telecommunications Numbering Plan 1997 and directly connected to the AP's GSM or CDMA network.

3.1. Availability

The availability of the services may vary depending on the geographic and technical capability of the AP's network at the time at which a request for the service is made or the service is delivered.

The AP will make available to ASs documents describing the availability of this service on its network. See 3.3 & 3.4

3.2. Channel Capacity

The service will establish a connection for the purposes of voice communication with the channel capacity approximately equivalent to that which would support the standard bandwidth of 3.1kHz.

3.3. Services

3.3.1 The service is provided on a call that is made with AS specific codes including Special Services codes and number ranges (with some exceptions) as per table GOASD7, in accordance with the Telecommunications ~~Australian~~ Numbering Plan 1997.

3.3.2(blank)

3.3.3 Service Restrictions

At least annually, the AP will advise of end-customer services that may restrict the provision of this service in a Table GOASD5.

3.3.4 Barring

The AP may provide a service that will allow barring of service codes at the request of the end - customer.

End-customers may request generic barring services which may restrict access to these services.

The AP should detail this barring in a table GOASD6.

3.4. Interconnection Handover arrangements

The AP and the AS are each responsible for the provision, installation, testing, making operational and monitoring of all the network on their respective sides of the POI.

3.4.1. POIs

"**Point of Interconnection**" or "**POI**" means an agreed location which:

(a) is a physical point of demarcation between the networks nominated by the AS and the AP; and

(b) is associated (but not necessarily co-located with) with one or more gateway exchanges of each of the networks nominated by the AS and the AP.

Calls originated by the A-party will be handed over to the AS at Points of Interconnection agreed by the AS and the AP in respect of POIs nominated by the AP in accordance with 3.4.1.1 and 3.4.1.2.

3.4.1.1 POI locations

The AP will provide a table (Table GOASD1) listing of POIs where this service may be provided. This listing will be updated at least annually. The AS may request a point of interconnect with the AP's network at a location other than one specified by the AP. The AP must, to the extent technically and operationally feasible, permit the location of a point of interconnect at that location.

3.4.1.2 Number ranges

The AP will provide a table of the GSM or CDMA mobile services number ranges to which this service will give access. (Table GOASD2)

The POIs GOASD1 will be the POIs for "near end handover" of calls.

3.4.2. Signalling

3.4.2.1. Signals for this service will use CCS#7 signalling. Unless otherwise agreed, this CCS#7 signalling will be in accordance with the NIIF/ACIF Interconnection-ISUP specification.

3.4.2.2 The AP will provide a table (Table GOASD4) of the locations where the AS may interconnect its CCS#7 signalling network with that of the AP for the purpose of accepting this service.

3.4.2.3 Signalling interconnection may not be provided at all POI's. These POIs of 3.4.1.1 may provide for interconnection of voice circuits only. Control of voice circuits where direct signalling interconnection is not provided, will be via "quasi-associated signalling" using Signalling Transfer Point (STP) operation, with signalling via a nominated other gateway where signalling interconnection is provided.

3.4.3. CLI

The CLI of the A-party will be provided as part of the CCS#7 signalling.

3.4.4. Nature of switchports

At POIs the calls will be delivered to the AS at 2.048Mbit/sec Switchports. The switchports will operate at 2.048Mbit/sec in accordance with the ITU Recommendations G.703, G. 704 and G.732 ~~(Blue Book)~~.

3.4.5. Send and receive speech levels

The send and receive levels for speech will be -13 dBr unless specified otherwise in the Australian Network Performance Plan.

3.4.7. The AP will provide Echo Control as per normal practice for GSM and CDMA calls between the end customer and the AP's gateway exchange in relation to the relevant mobile network.

3.5. Interconnection Forecasting, ordering and provisioning arrangements

3.5.1 Forecasting and planning requirements

3.5.1.1. Forecast of port requirements

For each POI the AS should provide forecasts, at least half yearly, of switchport requirements for 6, 12, 18, 24, 30 and 36 months from the time of the forecast. Forecasts should be provided on dates to be agreed between the AP and the AS and forecast the switchport requirements from operative dates of 31 December and 30 June. Forecasts will be discussed by the AP and the AS with a view to agreement within 30 Business Days. Forecasts will be used by the AP for network planning and not for charging purposes.

3.5.1.2. Forecast of network capacity requirements

For each POI and for each charging district of the AP the AS should provide forecasts, at least half yearly, of traffic requirements for 6, 12, 18, 24, 30 and 36 months from the time of the forecast. These forecasts should provide daily and weekly profiles for the traffic forecasted and advice of any material non-uniformities in the dispersion of the sources of originating access traffic. Forecasts should be provided on dates to be agreed between the AP and the AS and forecast the traffic requirements from operative dates of 31 December and 30 June. Forecasts will be discussed by the AP and the AS with a view to agreement within 30 Business Days.

3.5.1.3. Ordering of Switchports.

The AP will accept orders for switchports up to the level of the agreed forecasts for each POI. The AS should order switchports allowing 6 months for their provision.

3.5.1.4. The AP will provide access up to the level of the agreed traffic forecasts for each POI.

3.5.1.5 The AS may request and the AP will give reasonable

consideration to, and use reasonable endeavours to provide such provision, but is under no obligation to provide access or switchports above the level of the agreed

forecasts. If such access is provided, delivery times may be longer than those specified in 3.5.1.3.

3.6. Interconnection Ordering Requirements

3.6.1. Compliance testing

The AS will be required to demonstrate compliance with the agreed CCS#7 Signalling System prior to the provision of the service.

3.6.1.1 The AP and the AS will develop an agreed test plan and the AS will provide results of tests to this plan from an appropriate test house or other such party. The AP will provide the results of such tests if it is not otherwise seeking a switch access service from the AS.

3.6.1.2 The AP and the AS shall review the test results of 3.6.1.1. within 20 business days and if the AP accepts that the test results of 3.6.1.1 are satisfactory then the AP and the AS will agree a date for commissioning tests.

3.6.1.3. The test results of 3.6.1.1 will form the prime documentary basis for ongoing operations, fault analysis and fault management of signalling between the AP and the AS.

3.6.2. Network Conditioning

Network Conditioning of the AP's network will be required before the provision of the service.

3.7. Operational and Fault handling arrangements

The AP will provide a contact point for the Operation and Maintenance of the service. Faults may be reported to this centre which will manage the clearance of these faults.

3.8 Inter C/CSP Billing frequency

The AP will invoice the AS on a monthly basis.

3.9. Provision of Tones and Network Announcements

Where calls attempting this service do not progress to the POI the call may be connected to tones as per ACA~~USTEL~~ Technical Standard TS002 until 1 January 2003, or AS/ACIF S002/2001 thereafter, or to a network RVA in the AP's network.

3.10 Customer Billing

Customer billing should be in accordance with an approved telecommunications access code.

4. Domestic GSM and CDMA Terminating Access Service

The following service description is provided for Domestic GSM and CDMA Terminating Access and applies to the provision of Domestic GSM and CDMA Terminating Access service by any AP to any AS.

The Service as described comprises a number of different elements as follows:

a) Access for calls forwarded for termination in the AP's GSM or CDMA network

b) POI Location

c) Signalling

e) CLI provision

f) Provision of Switchports

g) Network Conditioning

h) Fault Handling -

i) Inter C/CSP Billing

Restrictions on availability and others factors relating to the provision of Access are further described below.

In accordance with the Trade Practices Act Part XIC, these elements:

- may not be available from all APs
- may have restrictions in their availability

Domestic GSM and CDMA Terminating Access Service is an Access Service for the carriage of telephone calls (ie. voice, data over the voice band) from a POI to B-parties assigned numbers from the GSM or CDMA mobile services number ranges of the Telecommunications ~~Australian~~ Numbering Plan 1997 and directly connected to the AP's GSM or CDMA network.

4.1. Availability

The availability of the services may vary depending on the geographic and technical capability of the AP's network at the time at which a request for the service is made or the service is delivered.

The AP will make available to ASs documents describing the availability of this service on its network. See 4.3 & 4.4

4.2. Channel Capacity

The service will establish a connection for the purposes of voice communication with the channel capacity approximately equivalent to that which would support the standard bandwidth of 3.1kHz.

4.3. Services

4.3.1 The service is provided on a call that is handed over for termination to a customer directly connected to the AP's GSM or CDMA network.

4.3.2 (Blank).

4.3.3 Service Restrictions

At least annually, the AP will advise of end-customer services that may restrict the provision of this service eg. Services barred from accepting Reverse Charge Calls in a Table TGASD5.

4.4. Interconnection Handover arrangements

The AP and the AS are each responsible for the provision, installation, testing, making operational and monitoring of all the network on their respective sides of the POI.

4.4.1. POIs

"**Point of Interconnection**" or "**POI**" means an agreed location which:

(a) is a physical point of demarcation between the networks nominated by the AS and the AP; and

(b) is associated (but not necessarily co-located with) with one or more gateway exchanges of each of the networks nominated by the AS and the Access.

Calls originated by the A-party will be handed over to the Access Provider at Points of Interconnection agreed by the AS and the AP in respect of the POIs nominated by the AP in accordance with 4.4.1.1 and 4.4.1.2.

4.4.1.1 POI locations

The AP will provide a table (Table TGASD1) listing of POIs where this service may be provided. This listing will be updated at least annually. The AS may request a point of interconnect with the AP's network at a location other than one specified by the AP. The AP must, to the extent technically and operationally feasible, permit the location of a point of interconnect at that location. Handover will be at the POI closest to the A Party

4.4.1.2 Number ranges

The AP will provide a table of the GSM or CDMA mobile services number ranges to which this service will provide access. (TGASD2).

4.4.2. Signalling

4.4.2.1. Signals for this service will use CCS#7 signalling. Unless otherwise agreed, this CCS#7 signalling will be in accordance with the NIIF/CIF Interconnection-ISUP specification.

4.4.2.2 The AP will provide a table (Table TGASD4) of the locations where the AS may interconnect its CCS#7 signalling network with that of the AP for the purpose of accepting this service.

4.4.2.3 Signalling interconnection may not be provided at all POI's. These POIs of 4.4.1.1 may provide only for interconnection of voice circuits. Control of voice circuits where direct signalling interconnection is not provided, will be via "quasi-associated signalling" using Signalling Transfer Point (STP) operation, with signalling via a nominated other gateway where signalling interconnection is provided.

4.4.3. CLI

Unless otherwise agreed the CLI of the A-party should be provided as part of the CCS#7 signalling for this service.

4.4.4. Nature of switchports

At POIs the calls will be delivered to the AP at 2.048Mbit/sec Switchports. The switchports will operate at 2.048Mbit/sec in accordance with the ITU Recommendations G.703, G. 704 and G.732 ~~(Blue Book)~~.

4.4.5. Send and receive speech levels

The send and receive levels for speech will be -13 dBr unless specified otherwise in the Australian Network Performance Plan.

4.4.7. The AP will provide Echo Control as normal for GSM and CDMA calls between the end customer and the AP's gateway exchange in relation to the relevant mobile network.

4.5. Interconnection Forecasting, ordering and provisioning arrangements

4.5.1 Forecasting and planning requirements

4.5.1.1. Forecast of port requirements

For each POI the AS should provide forecasts, at least half yearly, of switchport requirements for 6, 12, 18, 24, 30 and 36 months from the time of the forecast. Forecasts should be provided on dates to be agreed between the AP and the AS and forecast the switchport requirements from operative dates of 31 December and 30 June. Forecasts will be discussed by the AP and the AS with a view to agreement within 30 Business Days. The forecasts will be used by the AP for network planning and not charging purposes.

4.5.1.2. Forecast of network capacity requirements

For each POI and for each charging district of the AP the AS should provide forecasts, at least half yearly, of traffic requirements for 6, 12, 18, 24, 30 and 36 months from the time of the forecast. These forecasts should provide daily and weekly profiles for the traffic forecasted and advice of any material non-uniformities in the dispersion of the terminating access traffic. Forecasts should be provided on dates to be agreed between the AP and the AS and forecast the traffic requirements from operative dates of 31 December and 30 June. Forecasts will be discussed by the AP and the AS with a view to agreement within 30 Business Days.

4.5.1.3. Ordering of Switchports.

The AP will accept orders for switchports up to the level of the agreed forecasts for each POI. The AS should order switchports allowing 6 months for their provision.

4.5.1.4. The AP will provide access up to the level of the agreed traffic forecasts for each POI.

4.5.1.5 The AS may request and the AP will give reasonable consideration to, and use reasonable endeavours to provide, such provision, but is under no obligation to provide access or switchports above the level of the agreed forecasts. If such access is provided, delivery times may be longer than those specified in 4.5.1.3.

4.6. Interconnection Ordering Requirements

4.6.1 Compliance testing

The AS will be required to demonstrate compliance with the agreed CCS#7 signalling system prior to the provision of the service.

4.6.1.1 The AP and the AS will develop an agreed test plan and the AS will provide results of tests to this plan from an appropriate test house or other such party. The AP will provide the results of such tests if it is not otherwise seeking a switch access service from the AS.

4.6.1.2 The AP and the AS shall review the test results of 4.6.1.1. within 20 business days and if the AP accepts that the test results of 4.6.1.1 are satisfactory then the AP and the AS will agree a date for commissioning tests.

4.6.1.3. The test results of 4.6.1.1 will form the prime documentary basis for ongoing operations, fault analysis and fault management of signalling between the AP and the AS.

4.6.2. Network Conditioning

Network Conditioning of the AP's network will be required before the provision of the service.

4.7. Operational and Fault handling arrangements

The AP will provide a contact point for the Operation and Maintenance of the service. Faults may be reported to this centre which will manage the clearance of these faults.

4.8 Inter C/CSP Billing frequency

The AP will invoice the AS on a monthly basis for this service.

4.9 Provision of Tones and Network Announcements

Where calls attempting this service do not progress to the end customer the call may be connected to tones as per ACA~~AUSTEL~~ Technical Standard TS002 until 1 January 2003, and AS/ACIF S002/2001 thereafter, or to a network RVA in the AP's network.

4.10 Customer Billing

Customer billing should be in accordance with an approved telecommunications access code.

4.11 Interconnect Call Records

If required by the AS to carry out distance based charging of calls made using this service, the AP will provide, at the request of the AS, interconnect call records to the AS which will include the following information:

(a) time and date of answered communication;

(b) communication duration;

(c) charge zone in which the relevant mobile number is taken to have been located;

(d) switch identifier;

(e) calling party number;

(f) called party number;

(g) any other information agreed between the AP and the AS.

Interconnect call records will be provided at times and by electronic means to be agreed between the AP and the AS.

Attachment C: Market Definition

The process of market definition begins with identifying the service(s) or product(s) under consideration and the firm(s) supplying that service. Once the relevant service and sources of supply have been identified, they are described in terms of their functional, geographic and temporal dimensions. The market boundaries are then extended to include all other sources, and potential sources of close substitutes with which the firm supplying the service would compete, and which would effectively constrain the price of that service.

C1. Mobile Services Market

Product dimension

Delineation of the relevant product market requires identification of the goods and/or services supplied. Following this, the market is expanded to incorporate close substitutes, or potential substitutes, that end-users could turn to in the event of a small but significant and non-transitory increase in price.[27]

The Commission considered the relevant product to be a mobile call. It noted the provision of mobile calls are made up of the following elements:

- the mobile origination service (which allows a mobile subscriber to make a mobile call);
- the mobile termination service (which allows a mobile subscriber to receive a mobile call);
- the mobile access (subscription) service including connection, a handset and monthly access; and
- outgoing call services, which use a combination of GSM origination services, possibly GSM termination services or PSTN termination services (depending on whether the call is made to a mobile or fixed line), and mobile access services.

Without the interaction of all these elements a mobile call cannot be provided.

The Commission noted that the revenue streams flowing from these elements are interdependent. The revenue sources associated with the provision of these joint services are:

- access prices for mobile termination services, from fixed network and mobile network carriers;
- charges for mobile access services from mobile subscribers; and
- charges for outgoing call services from mobile subscribers.

The Commission considered that, due to the interdependencies between these revenue sources, the pricing decision of a mobile carrier for each element of a mobile call take into consideration the prices of the other elements. Therefore, to define these elements as separate

[27] *Merger guidelines*, Australian Competition and Consumer Commission, June 1999, p. 33.

markets might ignore the fact that the pricing decision of one element affects the pricing decision of other elements.

Substitutes for a mobile call

GSM and CDMA services

A GSM mobile network uses the 900 MHz band to transmit calls from, and receive calls to, the mobile handset. A mobile network utilising the CDMA technology uses the 800 MHz band to perform the same function. While the technologies used to make and receive calls are different, and have distinct network elements, they both enable the provision of a mobile call. In its report on *Competition for long distance mobile telecommunication services* the Commission considered that both types of networks would provide mobile services which were close substitutes for one another.[28] The Commission also supported this assessment of the substitutability of in the GSM pricing principles.

3G mobile services

A mobile network utilising 3G technology uses the 2.1 GHz band to provide mobile services. 3G technology combines high-speed radio access and IP-based services to provide continuous connection from the handset to the network.

The Commission noted in the GSM pricing principles that, while carriers are planning to construct 3G mobile networks, 3G services are at least two years away from being widely available. While the Commission acknowledged that 3G services might become a substitute for the GSM services in the future, the degree of this substitution will depend on the way the technology is implemented, the services offered and the 3G applications consumers demand, which presently remain unknown.

Fixed line

As noted in the GSM pricing principles, the ability to make and receive calls from any geographic location was considered by the Commission to be a key feature of mobile services that is absent from fixed line services. While the Commission acknowledged that there is likely to be some substitution of fixed line services for mobile services, the Commission considered that such services are unlikely to constrain the prices charged for mobile calls to such a degree that they should be considered in the same market.

Pre-paid packages

In the GSM pricing principles, the Commission also considered whether pre-paid mobile packages, where the end-user pays an up-front fee and purchases a SIM card with call 'credits', are in the same market as the post-paid (ie. contract) packages. The Commission's view in that report was that the two packages appeared to be targeted at different end-users and, while some degree of overlap was thought to be likely, the end-users were treated as separate but overlapping segments of the same market.

[28] *Competition for long distance mobile telecommunications services*, Australian Competition and Consumer Commission, January 2000, p. 18.

Short message services

Short message services (SMS) incorporate an element of mobility absent in fixed line services since SMS enable communication, via text messaging, to and from mobile phones. The Commission, however, noted that SMS offers a truncated form of communication that is not simultaneous, which is likely to limit substitution possibilities. The Commission, therefore, did not consider SMS to be an effective substitute for mobile calls in the GSM pricing principles. In the event of an increase in the price of mobile calls the Commission believed the extent of substitution would be small, although growing.

Other

The Commission noted in the GSM pricing principles, that other possible substitutes for a mobile call include e-mail, facsimile and paging. However, mobility is a key feature of mobile services, which is also absent in e-mail and facsimile services. Mobility also exists in paging services, but the Commission's view was that, again, these services did not allow two way simultaneous communications and, as such, the extent of substitutability appeared to be limited.

Functional dimension

Delineation of the relevant functional market requires identification of the vertical stages of production and/or distribution which comprise the relevant arena of competition. This involves consideration of the efficiencies of vertical integration, commercial reality and substitution possibilities at adjacent vertical stages.[29]

Generally, it will be appropriate to include two (or more) stages of production in the same market where there are overwhelming efficiencies of vertical integration. In such a situation, market coordination between buyers and sellers would be superseded by in-house coordination.

In the GSM pricing principles, the Commission considered that the wholesale and retail elements of the market constitute separate functional levels within the same market. In support of that view the Commission noted that there were seven carriers offering mobile calls only at the retail level. For example, resellers such as AAPT and Virgin Mobile are able to offer retail services, without entering the wholesale market. There have been five mobile carriers offering services at the wholesale and retail level. Two of these, One.Tel and Hutchison, entered at the retail level, but later moved into the wholesale level. [30]

Geographic dimension

In delineating the geographic dimension of the telecommunications markets, factors such as the area over which major suppliers operate (supply-side) are considered to ensure that the relevant arena of competition is described.

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[29] *Merger guidelines*, Australian Competition and Consumer Commission, June 1999, p. 38.

[30] In May 2001, One.Tel announced that it had gone into administration and subsequently the administrator (Ferrier Hodgson) has ceased operation of the network. The sale of network assets has not yet occurred. The Commission understands, however, that there is a possibility that there will continue to be five mobile carriers operating at a wholesale level.

In the GSM pricing principles, the Commission considered that the geographic dimensions of the market in which mobile calls are supplied to be a national one. The wholesale and retail elements of a mobile call are currently supplied nationally by three carriers (Telstra, Cable & Wireless Optus and Vodafone) to other carriers and service providers, and to end-users.

Since One.Tel, which had previously supplied wholesale mobile services using its 'NextGen' network, is no longer operating in the market, there is now only one carrier with networks in distinct geographical locations. Hutchison supplies the wholesale and retail elements of a mobile call in only Sydney and Melbourne. Notwithstanding this, the Commission understands that they provide a national mobile service. This is made possible through roaming agreements with the three national mobile carriers.

Conclusion

The Commission's view in regards to market definition for the mobile services market, and as stated in the GSM pricing principles, is that the relevant market is that in which a mobile call is supplied. This is a national market, involving distinct wholesale and retail functional elements allowing for the supply of mobile telecommunications services to service providers and end-users. It includes the supply of the mobile origination and termination services (supplied by GSM and CDMA networks), mobile access services and outgoing call services.

C2. Fixed-to-Mobile Market

Product dimension

The Commission considers that the relevant product in this market is a fixed-to-mobile call. That is, a call originating from a fixed line network and terminating on a mobile network and which enables an end-user to contact a mobile subscriber regardless of that mobile subscribers' location.

There are a range of services which may be considered substitutes for fixed-to-mobile calls. These services may include fixed line calls, mobile calls, SMS, Web-based SMS, WAP, and e-mail to the mobile since these services are all choices facing an end-user when seeking to make contact with other end-users.

Fixed line

The Commission formed a view in the GSM pricing principles that fixed line calls are unlikely to be substitutes for fixed-to-mobile calls as fixed line calls (calls which originate and terminate on a fixed line network) do not provide an end-user with the ability to contact another end-user regardless of that end-user's location. In this respect, such calls are unlikely to offer substitution possibilities to end-users in the case of an increase in the retail price of fixed-to-mobile calls.

Mobile

While the extent of substitution between mobile calls and fixed-to-mobile calls is not immediately clear, the Commission noted in the GSM pricing principles that the less than full

penetration rate of mobile phones is likely to limit substitution possibilities between the two services. In the event of a small but significant and non-transitory increase in the retail price of fixed-to-mobile calls, the Commission did not believe that end-users are likely to consume fewer fixed-to-mobile calls and more mobile calls due to the less than full penetration rate.

SMS

In the GSM pricing principles, the Commission considered that the extent of substitution of SMS (and web-based SMS) for fixed-to-mobile would be relatively limited. In particular, given web-based SMS is a relatively new product its ability to constrain the price of fixed-to-mobile calls is, at this point in time, likely to be quite small. Further, as noted in the product market definition for the mobile services market, SMS does not allow for simultaneous communication between the end-user calling and the mobile subscriber, which may limit the extent of substitution.

The pre-selection determination

The Commission noted in the GSM pricing principles that fixed-to-mobile calls are a part of the pre-selection basket, with national long-distance and international calls, and that pricing of fixed-to-mobile calls may also impact on competition for these call types. The Commission, however, did not consider that long-distance and international calls are in the same market as fixed-to-mobile calls. Rather, it noted that the competitive forces on long-distance and international calls may have some impact on the provision of fixed-to-mobile calls. This is because pre-selection means new entrants are likely to consider their competitiveness and profitability in the provision of all three call types and not just fixed-to-mobile calls. The result is that with increasing competition at the retail level in the provision of long-distance and international calls it is not clear what the extent of new entry into the fixed-to-mobile market would be if, say, access prices for mobile termination were lowered.

Functional dimension

In the GSM pricing principles, the Commission considered that the relevant functional level of the market for fixed-to-mobile calls is the retail level. The Commission did not believe that competition at the retail level for fixed-to-mobile calls can constrain the access prices for these services. In support of this conclusion, the Commission noted that PSTN origination is regulated and that there are particular features of mobile termination which mean that the competitive forces in place are relatively weak, allowing mobile carriers to set access prices above cost. The Commission, therefore, considers that fixed-to-mobile calls are provided at a retail level and that the wholesale PSTN origination and GSM termination services are a part of separate markets.

Geographic dimension

The Commission considered in the GSM pricing principles that the geographical market for the provision of fixed-to-mobile calls is a national one. As the Commission noted, all providers of fixed-to-mobile services offer a national product, with the only limitation being the geographic coverage of the mobile network being called.

Conclusion

As noted in the GSM pricing principles, the Commission considered the relevant market to be the national market for the provision of fixed-to-mobile calls at the retail level. It is noted that the fixed-to-mobile market is a related downstream market of the mobile services market.

Attachment D: Competition Analysis

D1. Mobile Services Market

This section considers the level of competition in the mobile services market. Firstly, the level of concentration at the wholesale level is considered. Following this, the Commission assesses:

- whether the market is open to competition, by assessing the barriers to entry; and
- whether the characteristics of competition are present, by analysing *inter alia* price changes over time and product differentiation at the retail level.

Assessing the effectiveness of competition is not, however, a static analysis limited to a description of current conditions and behaviour. It is a dynamic analysis concerned with features affecting the supply of services in the future. Nevertheless, current conditions will, in general, provide a starting point from which to consider the future effectiveness of competition.

Market concentration

A concentrated market, assessed in terms of market share, is a necessary but not sufficient condition to enable the exercise of market power. Market share information in the context of the mobile services market is often presented in the form of the number of subscribers per network.

As noted in the GSM pricing principles, the mobile services market is highly concentrated. Recent figures indicate that the three largest mobile carriers, Telstra, Cable & Wireless Optus and Vodafone, account for 99 per cent of the mobile services market[31] at the wholesale level, in terms of subscribers.[32]

However, some new entry into the wholesale element of the mobile services market occurred during 2000, with One.Tel and Hutchison both rolling out new mobile networks. As noted in Attachment C, however, One.Tel is no longer active, and its network assets may be sold in the future.

The Commission understands that the network rollout of Hutchison is restricted to Sydney and Melbourne and that other areas are serviced by a roaming agreement with Telstra. This agreement enables mobile subscribers connected to Hutchison's networks to roam onto Telstra's network outside Sydney or Melbourne to make or receive a mobile call. One.Tel had a similar roaming arrangement with Telstra.

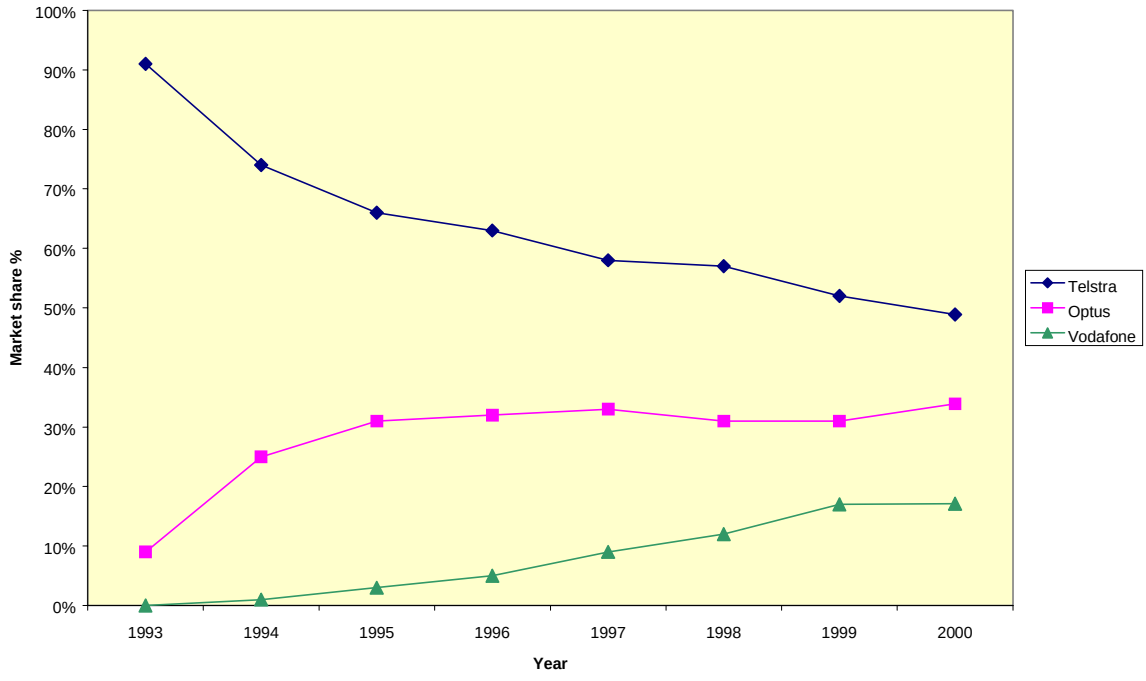
[31] In the Commission's merger guidelines, a market is considered highly concentrated where the combined share of the four largest firms in the market is 75 per cent or greater. This is clearly the case in the mobile services market, regardless of whether the wholesale or retail dimensions are considered.

[32] As at December 2000.

In the GSM pricing principles, the Commission also found that the size of the market appears to be growing as the latest mobile subscriber figures indicates that the size of the market is continuing to increase and new entrants are gaining market share. For example, it was reported that Orange One has increased its subscriber base from 39,000 in October 2000, to 102,000 in March 2001. Figures released by Vodafone also indicate an increase in subscribers from 1,960,000 in December 2000, to 2,111,000 as at March 2001.[33] Against this, a recently released report by analysts ABN-AMRO suggests market growth has recently plateaued.[34]

While the market is highly concentrated, relative market share has been changing over the past few years, with Telstra's market share declining and that of Cable & Wireless Optus and Vodafone increasing as reported in the GSM pricing principles. Figure D1.1 depicts the market shares of the mobile carriers over the period 1993-2000.

Figure D1.1: Market share of major carriers



Source: *Australia – Mobile Communications – Subscriber Statistics*, Paul Budde Communication, 2000

Recent network subscriber figures available to the Commission include One.Tel and Hutchison's entry into the market and are provided in Table D1.1. The figures, however, do not reflect the role of resellers, such as AAPT, in the retail element of the market. As noted in the Commission's report on *Competition for long distance mobile telecommunication services*, resellers held approximately 15 per cent of the market at a retail level, which serves

[33] Communications Day, 27 April 2001, p. 1.
[34] Ibid, 4 July 2001, p. 2.

to demonstrate that vertically integrated mobile carriers account for the majority of subscribers at the retail level.

Table D1.1: Mobile network subscribers as at October 2000

Mobile carrier	Digital GSM	Digital CDMA
Telstra	4,030,000	400,000
C&W Optus	3,420,000	
Vodafone	1,960,000	
Hutchison (Orange)	80,000	39,000
One.Tel[35]	100,000	
Total subscribers	**9,590,000**	**439,000**

Source: *Australia - Mobile Communications – Subscriber Statistics*, Paul Budde Communication 2000.

Barriers to entry

High concentration levels do not necessarily mean that competition is ineffective. Where the market is characterised by low barriers to entry, incumbent firms may be constrained to act as if operating in a competitive market due to the threat of entry. If, however, there are significant barriers to entry, this may indicate that the threat of entry is unlikely to be effective in terms of competitive outcomes. The Commission considers the following to be potential barriers to entry to the mobile services market:

- the importance of geographic coverage;
- the need to obtain spectrum;
- sunk costs; and
- brand loyalty.

Each of these is discussed below.

The importance of national geographic coverage

In the GSM pricing principles, the Commission was of the view that national coverage is essential for a new mobile carrier, whether it is achieved by rolling out a network or through roaming agreements. The Commission noted that the three major mobile carriers currently have network infrastructure that provides mobile coverage for over 90 per cent of the Australian population. Details of network coverage for Telstra, Cable & Wireless Optus and Vodafone are given in Table D1.2.

[35] The Commission notes that the One.Tel network has ceased operation and it is expected most customers will have transferred to other carriers.

Table D1.2: Coverage of incumbent networks

Carrier	Population coverage (%)
Telstra (GSM)	94
Telstra (CDMA)	95
Cable & Wireless Optus	94
Vodafone	93

Source: *Telecommunication Infrastructures In Australia: A Research Report for the ACCC*, BIS Shrapnel, July 2001.

As noted above, the roll-out of Hutchison's mobile network has to date only occurred in Sydney and Melbourne, but its roaming agreement with Telstra gives its mobile services national coverage. Without the roaming agreement and a mobile network limited to specific geographic regions, the Commission believes that Hutchison would find it difficult to attract mobile subscribers (and would only offer limited competition to the major mobile carriers). It is likely that very few mobile subscribers would join a mobile network that limited the regions they could make calls from or to – particularly where other carriers offered national coverage for equivalent price.

The need to obtain spectrum

Spectrum in the 800 MHz, 900 MHz and 1.8 GHz ranges is used to provide mobile services. Typically, spectrum is licensed through an auction process, with licences effective for up to 15 years. In the GSM pricing principles, the Commission considered that the need to acquire spectrum, and the process by which it is acquired, limit the extent to which the threat of entry can constrain the behaviour of the major mobile carriers. Without an auction process to allocate spectrum licences prospective new mobile carriers cannot enter the mobile services market.

There are currently seven carriers with spectrum licences that enable them to provide mobile calls in Australia, with four of those carriers actually providing such services. The Commission notes that mobile spectrum auctions in the past three years have allowed new carriers to enter the mobile market. Where significant holdings of spectrum are not currently being utilised, as is particularly the case with AAPT and One.Tel, there is the possibility that these holdings may be sold to a new carrier.

Sunk costs

As noted by the Commission in the GSM pricing principles, while sunk costs associated with establishing a mobile services network may limit the extent of contestability in the market, evidence suggests that these sunk costs may not be so significant as to deter all entry.

The Commission notes that in setting up a new network it is possible to minimise the number of base stations by starting with relatively large 'cells' and then dividing these into smaller cells through the establishment of additional base station sites as necessitated by service

take-up. Mobile carriers can also reduce commercial risks by setting up local networks and negotiating domestic roaming arrangements with other mobile network operators.[36]

The Commission also understands that one base station in a CDMA network is capable of handling as much as five times the traffic of the GSM system.[37] Given this, the Commission would anticipate lower barriers to entry (because of lower sunk costs) associated with rolling out new CDMA networks, as compared to GSM networks.

Further, considering the number of competitors in the mobile services market at this point in time, it is likely that a secondary market exists, for at least some components of a mobile network, such as spectrum. For example, with the demise of One.Tel, its mobile spectrum and network assets may be sold to a competitor or new entrant. This may serve to reduce the sunk cost nature of the assets. However, the Commission recognises that selling components of a mobile network, such as base stations, to competitors is limited by differing network structures and their technological compatibility.

Brand loyalty

In the GSM pricing principles, the Commission noted that the environment for brand loyalty to act as a barrier to entry may be increased with the bundling of services. The Commission noted the recent bundling of services by carriers that participate in the wholesale level of the mobile services market, as well as the wholesale level of the long distance and local call markets. For example, some carriers offer special (retail) deals, which involves a discount on the 'total bill' for all three services, provided the customer uses the one carrier for each of those services. This may increase brand loyalty and hence the barriers to entry at the retail level of the mobile services market.

Market growth

Whether a market is growing, or declining, can have significant implications for the potential erosion of market power over time. Markets which are growing rapidly are more likely to see new entry and the erosion of market power.

The Commission noted in the GSM pricing principles that, to date, the mobile services market has been characterised by relatively high growth rates. This has been driven by increasing penetration levels (ie. the total number of subscribers compared to the total population) as distinct from, say, increasing applications for mobile phones. Recent figures indicate that penetration rates have experienced a further increase with some industry commentators predicting this figure to exceed 80 per cent in the coming years.

As subscriber growth begins to decline, however, overall market growth may begin to slow. A recently released report by analysts ABN-AMRO suggests market growth has recently plateaued.

[36] Although the degree to which this reduces commercial risk will depend on the terms and conditions of the roaming agreements.

[37] *Communications Day*, 24 August 2000, p. 2.

Product differentiation

Economic theory suggests that markets with oligopolistic structures are less susceptible to coordinated conduct if there is a high degree of product differentiation.

In the GSM pricing principles, the Commission considered that the wholesale element of the mobile services market appears to be largely homogenous. Different mobile carriers essentially use similar mobile origination and termination services to provide the ability to make and receive a mobile call, although there may be some differences between networks in terms of coverage, call drop-out rate, and clarity of the call.

Product differentiation is more likely to occur at the retail level of the market, where mobile carriers, and/or resellers, sell the service to mobile subscribers. These differences are essentially 'financial' in nature reflecting a price trade-off between various elements.

The key areas where the Commission believed product differentiation occur are:

- Length of contract offered – most contracts are offered on an 18 to 24 month basis.
- Type of handset offered – there are a variety of brands of handset offering a range of functionality. They are generally offered over a range of prices, depending on the call plan they are bundled with. In some cases the handsets are offered free of charge.
- Extra, or cheaper services offered by the carrier – these appear to differ between carriers. For example, Telstra offers a discount service for calls between a mobile subscriber's fixed line and mobile phones, provided both services are on the same bill. Cable & Wireless Optus offers 'Yes time' where mobile subscribers can talk for free for the first 20 minutes of any mobile call between two Cable & Wireless Optus mobile subscribers from 8pm to 12pm. Virgin Mobile offers free voice mail recovery.
- Structure of call charges – for example a number of mobile carriers offer one second mobile call charges as opposed to charging for 30 second blocks (or part thereof).

Price conduct

A competitive market can be expected to deliver goods and services to consumers at minimum cost. In principle, prices are said to be at competitive levels where they are close to or at cost, allowing for a normal rate of return.

In the GSM pricing principles, the Commission presented evidence to suggest that retail prices may be becoming competitive with a decline in retail prices for GSM mobile calls between 1996/97 and 1999/2000. The Communications Research Unit (CRU) of the Department of Communications, Information Technology and the Arts has recently undertaken work for the Commission on pricing of certain telecommunications services. This included the extent of retail price movements for GSM mobile calls over the last four years. These retail price movements are outlined in Table D1.3 where a series of indexes are used to illustrate these movements, for the overall mobile package (mobile access services and outgoing call services), over a variety of pricing plans.[38]

[38] It is noted that these indexes only reflect aggregate retail price movements for the three main mobile carriers, Telstra, Cable & Wireless Optus and Vodafone.

Table D1.3: GSM retail price movements (postpaid plans – using real prices)

Elementary aggregate indices	1996/97	1997/98	1998/99	1999/2000
Very Low	100.00	94.55	74.60	53.00
Low	100.00	95.69	87.99	72.37
Average	100.00	95.92	94.20	81.00
High	100.00	95.57	89.25	78.80
Very High	100.00	97.21	95.28	84.38
Index for GSM Postpaid	**100.00**	**96.55**	**92.82**	**81.11**

Source: *Changes in the price paid for telecommunications services in Australia*, Australian Competition and Consumer Commission, April 2001, p. 28.

The Commission also noted that many carriers are no longer charging a $65 connection fee. This fee was a one off fee payable upon the connection of a mobile phone to a particular mobile network. This fee was charged each time a consumer changed mobile carriers.

Another indication of the level of price competition among the carriers is the amount of churn experienced.[39] Churn is where a mobile subscriber changes carrier at the end of their contract, or before, due to perhaps a better price being offered by another mobile carrier or more favourable terms and conditions. In regards to this, the Commission presented evidence to suggest that churn rates have increased since 1996 indicating that customers are willing to change carrier at the end of a contract term.

Profitability

In a competitive market carriers would be constrained to earning 'normal' profits – that is, sufficient funds to both cover the costs of operating and capital expenditure plus a return covering the opportunity costs of funds.

In the GSM pricing principles, the Commission was not able to assess with accuracy carriers' profitability due to the limited mobile-specific financial information put forward by carriers, other than Vodafone, during the public process to determine the appropriate pricing principles for GSM termination.

The Commission, however, considered that carriers are likely to differ markedly in their profitability due to differences in operating efficiency, the scale of the carriers and the costs of market entry in terms of licence fees and spectrum costs. The most recent results of some of the larger carriers suggest that current returns on capital are in excess of operators' cost of capital for their mobile business units. This would suggest they are currently earning excess profits, although this would depend on the extent of cumulative operating losses from previous years.

[39] The Commission notes that churn may also occur because of non-price terms and conditions such as customer service.

Conclusion

In the GSM pricing principles, the Commission was of the view that the level of competition in the mobile services market, particularly in the retail element of the market, appears to be increasing. In this regard it is noted that while the mobile services market is characterised by high concentration levels and barriers to entry, there are signs that the level of competition is intensifying, with some successful (and some unsuccessful) new entry, continued growth in the market, increased product offerings and reductions in retail prices for mobile calls.

D2. Fixed-to-Mobile Market

Market concentration

The Commission noted in the GSM pricing principles that there appears to be in excess of ten carriers providing retail fixed-to-mobile services as part of the pre-selection basket. The Commission also considered the market shares for national and international calls because, under the pre-selection determination, when a consumer pre-selects national and international calls they also pre-select fixed-to-mobile calls. These are provided in Table D2.1.

As there appears to be several providers of (only) international calls, who rely on use of override codes, and hence do not compete to provide national or fixed-to-mobile calls, the market share figures for international calls are considered to be less relevant for determining fixed-to-mobile market concentration. Therefore, the market share figures for national calls appear to be of greater relevance and these illustrate that there is a degree of concentration with Telstra providing a significant proportion of the calls.

Table D2.1: Estimated share for national and international services, June 2000

Carrier	National	International
Telstra	75%	48%
Cable & Wireless Optus	16%	18%
AAPT	6%	6%
One.Tel	2%	5%
Other	1%	23%

Source: *A report on the assessment of Telstra's undertaking for the Domestic PSTN Originating and Terminating Access services*, Australian Competition and Consumer Commission, July 2000, p. 32.

Barriers to Entry

In the GSM pricing principles, the Commission considered that the barriers to entry to the fixed-to-mobile market are minimal, as is evidenced by the large number of carriers operating in the market. The Commission also noted that to provide the fixed-to-mobile call service, carriage service providers need only purchase PSTN origination and GSM termination from

carriers without rolling out significant amounts of their own infrastructure. This would suggest that there would be minimal sunk costs associated with entry into this market. It is noted, however, that carriage service providers purchasing wholesale inputs at above cost access prices may find it difficult to compete with integrated carriers who face lower internal transfer prices.

The Commission also noted in the GSM pricing principles that a decision to enter the fixed-to-mobile market means that a carriage service provider must also provide long-distance and international calls (given the pre-selection determination). The Commission, however, did not consider this to be a barrier to entry as carriage service providers are able to purchase the relevant wholesale services to provide these call types without rolling out significant additional amounts of their own infrastructure. Furthermore, to the extent that carriage service providers were already providing long-distance and international calls they may have established brand awareness.

Price Conduct

The Commission has some information about the cost of providing fixed-to-mobile calls (comprising the cost of PSTN origination, transmission and GSM termination[40]) and considered that retail prices are high relative to costs.

The CRU analysed the pricing of certain telecommunications services including the extent of retail price movements for fixed-to-mobile calls over the last five years. The CRU's calculations, based on information collected from Telstra, Cable & Wireless Optus, AAPT and One.Tel, indicated that, while the price of fixed-to-mobile calls decreased by 7.9 per cent between 1996-97 and 1999-2000, the decrease is less than the decrease of retail prices for mobile calls over the same period.

Conclusion

In the GSM pricing principles, the Commission considered that definite conclusions about the competitiveness of the fixed-to-mobile market were difficult to make. There appears to be a degree of market concentration with one large player, but also a relatively large number of carriage service providers competing for market share and low barriers to entry. Further, there is some evidence of declining prices for fixed-to-mobile calls.

[40] Information on the cost of GSM termination was outlined in Chapter 4 of the *Pricing Methodology for the GSM Termination Service*, Australian Competition and Consumer Commission, July 2001.