Australian
Competition &
Consumer
Commission

MOBILE SERVICES REVIEW 2003

An ACCC *Discussion Paper*

April 2003

1. Introduction

In 1997, Part XIC of the *Trade Practices Act 1974* (the Act) was introduced with the objective of promoting the long term interests of end-users (LTIE) of telecommunication services.

At that time, the following mobile telephony services were deemed to be declared under Section 39 of the *Telecommunications Act 1997* and Part XIC of the Act:

- the Global Systems for Mobile (GSM) termination service; and
- the GSM origination service for calls to 13/1300 and 1800 services.

In subsequent years, a number of disputes arising from disagreements over the terms and conditions of access to the declared mobile termination service were notified to the Commission under Part XIC of the Act. As a consequence of its arbitration of these disputes, the Commission developed pricing principles for the GSM termination service.

In July 2001, the Commission released its final report on the pricing methodology for the GSM termination service.[1] The Commission noted in its final report that it would review its pricing methodology in two years. Given that almost two years have now passed and that the mobile termination service declaration and the declaration of the origination service used for calls to 13/1300 and 1800 numbers have not been reviewed since they were deemed to be declared in 1997, the Commission recently decided that a general inquiry into the regulation of the mobiles sector, which will incorporate consideration of these issues, should occur in 2003.

Further, to assist in its consideration of whether regulation of the declared mobile services is still appropriate, the Commission will also take a broad view of its regulation of the mobile industry as a whole by reviewing other mobile services, including domestic intercarrier roaming, international intercarrier roaming and third generation (3G) services. It will consider whether regulation of these services is:

- appropriate under the Act; and
- if so, what form regulation of these services should take.

[1] Following variation of the mobile termination service to broaden its coverage to include Code Division Multiple Access (CDMA) mobile termination services in March 2002, these pricing principles were also broadened to apply to CDMA mobile termination services.

1.1 Purpose

Under Division 3 of Part 25 of the *Telecommunications Act 1997*, the Commission may choose, after deciding to hold a public inquiry about a matter, to prepare a Discussion Paper. A Discussion Paper identifies those issues that the Commission considers are relevant to the matter in question, and sets out background material and discussion of those issues.

The purpose of this Discussion Paper, therefore, is to:

- consider the need for regulation of a range of mobiles markets;
- consider the form that any such regulation should take; and
- seek views on these questions from stakeholders and the public more generally.

Chapter Two of this paper sets out the timetable and process for the public inquiry. Chapter Three discusses the relevant legislative framework for the inquiry, while Chapter Four provides background information on the Australian mobile telephony industry. Chapter Five raises a number of issues on which the Commission will focus its consideration in this review and upon which the Commission seeks comments from interested parties.

2. Timetable and process for the public inquiry

Under Division 3 of Part 25 of the *Telecommunications Act 1997*, the Commission must provide a reasonable opportunity for any member of the public to make a written submission to a public inquiry. In particular, sub-section 500(2) of the Telecommunications Act specifies that a period of at least 28 days is taken to be a reasonable period for the public to make written submissions to the Commission. Given the broad ranging nature of the review, however, the Commission believes a period of greater than 28 days may be necessary for parties to prepare submissions for this review. Accordingly, the Commission requests written submissions by **13 June 2003**.

Section 501 of the Telecommunications Act specifies that the Commission may hold hearings for the purpose of a public inquiry in order to receive submissions or to provide a forum for public discussion of relevant issues. Accordingly, the Commission proposes to undertake a two-week public consultation process, which may involve a series of public hearings around various parts of the country, in early July 2003. The dates of the public consultation process will be released after submissions on the Discussion Paper have been received.

The Commission expects that it will publish a draft report setting out its preliminary findings during September 2003. The Commission will then provide an opportunity to comment on the draft report prior to finalising its report in late 2003.

In summary, the timetable for this inquiry is:

Release of Discussion Paper	April 2003
Deadline for written submissions	June 2003
Public consultation process	July 2003
Draft report	September 2003
Final report	Late 2003

2.1 Making submissions to the public inquiry

The Commission seeks comment from industry participants and from the public more generally. It encourages industry participants, other stakeholders and the public more generally to consider the matters set out in this Discussion Paper, and make submissions to the Commission to assist it in its review of mobile telephony services.

Submissions can be addressed to:

Richard York
Director – Regulatory
Telecommunications
Australian Competition and Consumer Commission
GPO Box 520J
Melbourne VIC 3001

In addition to a hard copy, people making submissions are encouraged to provide an electronic copy of the submission to richard.york@accc.gov.au

To foster an informed and robust consultative process, the Commission proposes to treat all submissions as non-confidential, unless the author of a submission requests that the submission be kept confidential. Non-confidential written submissions given to the Commission will be made available to interested parties upon request.

Enquiries can be made to Richard York on (03) 9290 1883.

3. Legislative framework

For most of this inquiry, the relevant legislation that will guide the Commission in its conduct of the mobiles inquiry is Part XIC of the *Trade Practices Act 1974* (the Act) which sets out a telecommunications access regime.

3.1 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. There is no general right of access to telecommunications services. The Commission must first declare the relevant service.

Access obligations in relation to a particular service are established following the declaration of that service by the Commission. Once a service is declared, access seekers must be provided with that service and specified ancillary services, 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.

It is noted that under transitional provisions associated with new section 152ALA of the Act which came into force in December 2002, the Commission is also required to specify an expiry date for each existing declaration. Once an expiry date has been established, the new provisions also require the Commission to undertake a public inquiry into whether a particular declaration should expire. In proposing draft expiry dates for a range of declared services, the Commission proposed that the declarations for the domestic GSM and CDMA originating and terminating services should expire on June 2004.[2] To the extent that the Commission determines this should be the expiry date for these services in a final decision, the Mobile Services Review will help inform the Commission's decision as to whether or not to extend the expiry date, or to vary or revoke its declaration, of these services beyond June 2004.

3.2 The long term interests of end-users

Before the Commission can declare vary or revoke an existing service declaration, section 152AB of the Act provides that it must be satisfied that the proposed declaration variation or revocation would promote the LTIE of carriage services, or of services supplied using carriage services.

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[2] See ACCC, *Expiry dates for declared services – a Discussion Paper*, February 2003.

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

- promoting competition in markets for listed (that is, telecommunications) 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 the economically efficient investment in, the infrastructure by which telecommunications services are supplied.

In determining the extent to which the objective of encouraging the economically efficient use of, and the economically efficient investment in, the infrastructure by which relevant services are provided is achieved, the Commission must have regard to:

- whether it is technically feasible for the services to be supplied and charged for, having regard to:
  - (1) the technology that is available or in use;
  - (2) whether the costs that would be involved in supplying and charging for the services are reasonable; and
  - (3) the effects, or likely effects, that supplying and charging for the services would have on the operation or performance of telecommunications networks;
- the legitimate commercial interests of the supplier, including its ability to exploit economies of scale or scope; and
- incentives for investment in the infrastructure by which the services are supplied.

The Commission's approach to an inquiry on possible declaration, variation or revocation enables it to form a view about the likely result of it on the achievement of each of these objectives. The Commission will then make an overall assessment of whether such a declaration, variation or revocation will promote the LTIE, having regard to its impacts on the these objectives. Further details and discussion of the Commission's approach to applying the LTIE test can be found in its *Telecommunications services – Declaration provisions* guidelines.[3]

[3] Refer to pp. 34-37 of that guideline.

3.3 Conducting an inquiry

On its own initiative, the Commission may hold a public inquiry into whether to declare a new service, revoke a declaration, or vary the definition of a service that is already declared.[4] Any variation or revocation of an existing declared service can only be made after the Commission has first held a public inquiry. In particular, sub-section 152AO(2) states that:

> 'The Commission must not vary or revoke a declaration under subsection 152AL(2) unless the Commission has held a public inquiry under Part 25 of the *Telecommunications Act 1997* about the proposed variation or revocation. However, this rule does not apply to a variation if the variation is of a minor nature.'

The purpose of holding a public inquiry is to assist the Commission to determine whether it is satisfied that declaring varying or revoking an existing declared service would promote the LTIE of carriage services and services provided by means of carriage services. In this regard, the Commission must:

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

The variation, revocation or declaration must be made within 180 days of the publication of the report.

3.4 Other relevant legislation

The Commission notes that it may not be appropriate or possible to use the access regime to regulate all services considered in this review. For instance, it is unclear, at this stage, to what extent the access regime could be used to regulate international intercarrier roaming services. Nonetheless, the Commission believes that the provision of these services does impact on the LTIE. Accordingly, it is important to review the aspects of the provision of such services and consider whether changes can be made to improve the LTIE of these services. In this regard, the Commission notes that it has general powers to conduct a public inquiry under section 28(1)(c) of the Act. In particular, this section provides that in addition to any other function conferred on the Commission, the Commission has the function to:

> '….conduct research and undertake studies on matters affecting the interests of consumers, being matters with respect to which the Parliament has the power to make laws.'

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[4] See section 152AL and 152AO of the Act.

4 Background to the mobiles industry

This chapter provides background information in relation to the mobiles industry in Australia. It provides a general overview of the key features of the mobile industry and also details key developments and trends in the mobile industry over recent years. Such an overview is useful as it provides background context that will enable the Commission and interested parties to better inform their views on the appropriate level of regulation needed in the mobile telephony industry.

4.1 The nature of the mobile services industry

4.1.1 The main types of service providers

The main types of service providers in the mobile industry can be classified as:

- mobile network carriers – in the Australian mobile services industry there are currently four national mobile network carriers – Telstra, SingTel (Optus), Vodafone and Hutchison Telecommunications. Between them, these network carriers own and operate five mobile networks; and

- carrier service providers (CSPs) – these competitors retail and resell services to the public that are carried on the mobile network carriers' networks.[5] The ACA reports that in the 2001-02 financial year, the mobile industry consisted of 13 mobile CSPs, four of which are the mobile network carriers mentioned above.[6]

It is noted that CSPs can be further categorised broadly into resellers and mobile virtual network operators (MVNOs). While there is some debate as to what constitutes an MNVO, some of the general characteristics of this type of competitor are that it brings an existing well-known consumer brand to a mobile retail operation; uses the network of an existing mobile network carrier, but sets up a technical support layer that replicates the mobile network carrier's mobile switching centre; and has control over the disposition of its customer base. These characteristics, particularly the greater control it has over its retailing operation and therefore its greater capacity to provide different service offerings and prices, differentiates it from a pure reseller.[7] An example of a MVNO is Virgin Mobile, which was the first MVNO to launch services in Australia in late 2000.[8]

The ACA reports that at the end of the 2001-02 reporting period, 10 per cent of the services in operation were billed by resellers, not including those retailed by the mobile network

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5 For example, RSL Com resells Optus' GSM services.

6 ACA, *Telecommunications Performance Report 2001-02*, November 2002, p.161.

7 Also see *Possible Future Regulation to encourage Mobile Virtual Network Operators*, April 2001 and Knott, P & Wilkins, *3G, MVNOs & Acquisitions: Opportunities for Entering New Markets,* for further details on the differences between MVNOs and resellers.

8 Virgin purchases wholesale mobile capacity from Optus.

carriers themselves.[9] This indicates that even despite the presence of numerous resellers, vertically integrated carriers would appear to dominate the retail level of the market.

4.1.2 Mobile networks

In its *Telecommunications Performance Report for 2001-02*, the ACA notes that there are two types of networks that provide mobile telephony in Australia: satellite networks and terrestrial-based digital cellular networks. The ACA also observes that the number of services in operation on terrestrial-based digital cellular services is much higher in Australia (and indeed the rest of the world) compared to those using satellite networks.

Satellite networks provide ubiquitous coverage across large areas and have the technical potential for widespread use in a country like Australia with large sparsely populated areas. However, to date, satellite networks remain a high cost operation and tend to use larger and heavier handsets compared with their terrestrial counterparts. People living and travelling in areas of Australia not serviced by terrestrial networks are able to access four satellite mobile networks – Iridium, Globalstar, Mobilesat and Inmarsat.

It is noted that the remaining discussion in this chapter will focus largely on the features and developments of the digital cellular networks. Unless otherwise stated, mobile networks and mobile network carriers refer to digital cellular networks and digital network cellular operators, respectively.

4.1.3 Mobile network carriers and their market shares

As indicated above, there are four mobile network carriers in Australia - Telstra, Optus, Vodafone and Hutchison. Telstra, Optus and Vodafone each have their own national GSM network, while Telstra and Hutchison both operate Code Division Multiple Access (CDMA) networks.[10] Table 4.1 details the ownership, launch date, coverage and market shares of the current owners of mobile networks in Australia.

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[9] ACA, *Telecommunications Performance Report 2001-02*, November 2002, p.161.

[10] CDMA technology is an access technique for digital wireless communications, including mobile phone and satellite services. The technique employs a bandwidth much larger than the original signal. Each signal is uniquely encoded and decoded, and in this way signals can occupy the same spectrum. (ACA, *Telecommunications Performance Report 2001-02*, November 2002, p.201.)

Table 4.1 Mobile networks in Australia and carrier market shares

Carrier	Network	Launch	Coverage (% of population)	Market Shares*		
				FY2000	FY2001	FY 2002
Telstra	GSM	1993	95.4%	48.2% (45.8%)	46% (45.2%)	47.4% (43.5%)
	CDMA	2000	97.3%			
Optus	GSM	1993	94.3%	33.4% (30.8%)	34% (32.6%)	33.8% (32.6%)
Vodafone	GSM	1993	92%	18.3% (18.2%)	18.8% (16%)	16.9% (18.3%)
Hutchison	CDMA	2000	Melb. & Syd.**	0.1% (5.7%)	1.1% (6.2%)	1.9% (5.6%)
	WCDMA	2003	Melb. & Syd.			

Source:BIS Shrapnel (2001), ACA report (2000-01), Macquarie (2002), mobile network carrier's annual reports.
Notes: in addition to these five terrestrial networks, there are three satellite networks that Telstra, Optus and Vodafone use for mobile coverage.[11]
*the market share estimates not contained within parentheses are based on subscriber numbers of the individual carriers in relation to overall numbers. The market share estimates in parentheses are based on the mobile carrier's revenue figures.
**Hutchison's customers roam onto Telstra's CDMA network when outside Hutchison's coverage area.

Generally, the existing networks currently employ second generation (2G) digital technologies using either GSM or CDMA standards. Hutchison's 3G network, which will utilise the Wideband CDMA (WCDMA) standard, provides 3G telephony services to end-users. It launched its 3G mobile service on 15 April 2003 in Sydney and Melbourne.[12]

The Commission notes that another network, owned by One.Tel and based on the GSM standard, was closed in mid-2001 after its exit from the telecommunications industry. The spectrum used by One.Tel for its network remains under the control of its administrator with no parties interested in its purchase being identified.[13]

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[11] Telstra uses the Inmarsat geostationary satellite network, which is similar to Optus' MobileSat. Vodafone's Globalstar is a Low Earth Orbit (LEO) satellite system. (See ACA, *Telecommunications Performance Report 2000-01*, November 2001, p.78-79). This paper does not include a discussion on satellite mobile services in its analysis.

[12] Market inquiries, 16 April 2003

[13] ACA, *Telecommunications Performance Report 2001-02, November 2002*, p.160.

Table 4.1 shows that, in addition to a GSM network, Telstra has a nationwide CDMA network. Its CDMA network was launched following the closure of its analogue Advanced Mobile Phone System (AMPS) network in 2000.[14] Telstra has been the incumbent player at the wholesale level since the first mobile network launch in 1987, while both Optus and Vodafone entered in 1993 when the mobile market was partially opened up to competition. Hutchison entered the market in 1995 as a reseller for Optus GSM, and launched its own CDMA network in Sydney and Melbourne in July 2000. It ceased GSM reselling in October 2001,[15] but continues to resell Telstra CDMA services.

Two types of market share estimates are provided in Table 4.1 - one based on subscriber numbers and the other on revenue figures.[16] While the two types of market share estimates do vary, these estimates indicate that Telstra has continued to maintain the largest market share over the years, followed by Optus, Vodafone and Hutchison.

The Commission notes that there has not been any new entrants seeking to build their own mobile telephony networks since Hutchison and One.Tel launched their networks in 2000. Indeed, the subsequent collapse of One.Tel has led the Productivity Commission to state that it believes there are significant difficulties faced by new entrants in gaining sufficient market share for their networks in order for such investment to be viable in the mobile industry.[17] In this regard, AAPT indefinitely deferred its entry into the market in May 2001, halting the construction of its CDMA network.[18]

However, it is also noted that the Government's auction of 3G mobile spectrum licenses in the 2GHz band in March 2001 has provided the ability for new entry into the mobile industry, albeit at a high entry cost. While the largest bidders were the incumbent mobile network carriers, the auction also saw the entry of two new entities into the Australian mobile market – Qualcomm and CKW Wireless. 3G Investments (Qualcomm) paid $159 million for spectrum in all capital cities; and CKW Wireless paid $9 million for unpaired spectrum[19] in all capital cities.[20] However, while CKW Wireless has indicated that it plans to use the 3G

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[14] AMPS is a first generation analogue solution, which was initially introduced into Australia in 1987 by Telecom Australia (Telstra).

[15] www.hutchison.com.au, 'Renewal of Optus GSM Resale Agreement', 30 November 2000; *Hutchison Final Year 2001 Report*, p.3

[16] Most analysts base their market share figures on subscriber numbers, however, subscriber numbers can be distorted by competitors introducing new strategies such as changing their mobile plans to increase the longevity of their customer base. In addition, the greater uptake of pre-paid services can also distort measures of subscriber growth, as each recharge SIM card counts as a separate subscriber. Accordingly, market share estimates based on revenues of the mobile network carriers are also provided.

[17] Productivity Commission, *Telecommunications Competition Regulation*, September 2001 p.128 However, it should be noted that One.Tel's financial difficulties also extended beyond the mobile division.

[18] ACA, *Telecommunications Performance Report 2000-01*, November 2001, p.79

[19] Paired spectrum allows for both the transmission and reception of information, with the same bandwidth upstream and downstream. This suits more symmetrical applications like voice. Unpaired spectrum allows for transmission only, generally with asymmetric bandwidth between upstream and downstream directions. This suits the asymmetrical provision of data, particularly services such as the Internet.

[20] Productivity Commission, *Telecommunications Competition Regulation,* September 2001, p.130

spectrum to provide wireless broadband, Qualcomm remains non-committal about its plans at this stage.[21]

4.2 Recent key developments in the mobile industry

Since the mobile telephony industry was opened to full competition in 1997, there have been significant changes and developments in a number of key areas of the industry. The following sections provide background information on:

- subscriber growth and ARPU trends;
- mobile revenue growth;
- retail mobile pricing trends;
- industry capital expenditure; and
- mobile number portability.

Each of these is addressed below.

4.2.1 Subscriber growth and ARPU trends

The Australian mobile industry has experienced rapid growth in less than 10 years. However, since the 2000 financial year, growth in mobile subscriber numbers has been decreasing. Figure 4.1 provides an overview of growth rates in the Australian mobile subscriber base from the 1992-93 to 2001-02 financial years.

[21] CKW Wireless rollout of its network was underway in December 2002. The network focuses on the provision of broadband access to laptops or Personal Digital Assistants (PDAs). Vodafone is one of the partners in the provision of this service (see Ramsey. R, 'Whatever happened to the 3G dream?', *Australian Telecom*, September 2002, p.18, and DCITA, ' Australia leads world in new wireless broadband roll-out', 19 December 2002.)

Figure 4.1

Source: BIS Shrapnel (2001), ACA (2002).

As the graph illustrates, from 1992-93 to 1993-94, mobile subscriptions increased by a significant 128 per cent. Whilst this should not be entirely surprising given it was the period immediately after Optus and Vodafone commenced the provision of mobile telephony services, this was highest growth rate in subscriber numbers, compared to all other periods. After this point, there were progressively declining growth rates until 1998-99, where a growth rate in subscriber numbers of 30.9 per cent was achieved. For the next financial year, the growth rate in subscriber numbers increased slightly to 32.1 per cent. Subscriber numbers were still increasing during 2001 at 10.6 per cent, but was at its lowest growth level compared to any other period. For the 2001-02 financial year, the growth in subscriber numbers increased slightly compared to the previous period to approximately 11.5 per cent.

Ovum reports that the Australian mobile market reached 64 per cent penetration at the beginning of 2002.[22] In addition to declining subscriber growth rates, the composition of new subscribers is changing. The major driver of recent subscriber growth is the growing number of pre-paid users, which is outstripping that of traditional contract customers. This is evident in the fact that company figures reported to the Australian Stock Exchange show that pre-paid mobile user numbers increased by 23 per cent in 2002, compared to the previous year, while post-paid consumers grew by only 4 per cent over the same period.[23] The impact of this development becomes apparent when contrasting the average revenue per user (ARPU) of pre-paid consumers with that of post-paid consumers. In this regard, Macquarie estimate that the ARPU for pre-paid customers is approximately $23 per month, compared to the post-paid ARPU of $70 per month.[24] Therefore, given that new subscribers are increasingly of the pre-

[22] Ovum, *Australia (mobile market)*, 2002, p.1
[23] TeleResources Engineering, *Mobiles*, August 2002, p.1
[24] Macquarie, *Australian Telecoms Sector*, August 2002, p.41

paid type, total ARPU is declining. This has the effect of reducing the value – as measured by revenue - of additional subscribers.[25]

The moderation in subscriber growth, and the increasing proportion of pre-paid subscribers to the total customer base, has a number of implications for profitability levels for the mobile carriers. This is particularly so in light of the fact mobile carriers' revenues and profitability have, in the past, been largely driven by increasing subscriber numbers. The double impact of declining growth in subscriber numbers and an increase in low value customers means that new additional subscribers will have a minimal impact on overall industry revenue growth.

4.2.2 Mobile revenue growth

Over the last few years, the mobile sector has experienced significant revenue growth. In the 2001-02 financial year, mobile revenue has grown to represent approximately 27 per cent of total telecommunications revenue. It has increased to $8.09 billion, up 10.7 per cent from the previous period. According to ABN AMRO, mobile revenue growth has accounted for 40 per cent of the markets overall growth in the past six years. The level of mobile revenue is also second only to basic fixed line revenue, and has been experiencing far greater growth rates.[26]

Recent growth in mobile revenue reflects the trend of subscriber numbers – moderation of growth after rapid expansion. This is illustrated in Table 4.2. It shows that while the 1999-2000 financial year saw a significant growth rate of 20.7 per cent, this slowed to 19.3 per cent in 2000-01. For the 2001-02 financial year, mobile revenue growth moderated even further to 10.7 per cent.[27]

Table 4.2 Trend in industry mobile revenue

	FY1999-00	FY2000-01	FY2001-02
Total revenue (A$m)	6,125	7,305	8,090
Growth (%)	20.7%	19.3%	10.7%

Source: ABN AMRO (2002).
Notes: growth measures are as compared to the previous corresponding period.

Given the moderation in revenue growth, several commentators indicate that future growth in revenue will need to be driven by increased data usage by existing subscribers.[28] The majority of growth in data services has been provided by the short messaging service (SMS), which became available in 1993. The growth in this value-added service has been substantial. For instance, Telstra reports a 57 per cent increase the in annual volume of SMSs

[25] However, the Commission notes that if pre-paid consumers have a lower average volume of use, then a carrier's profitability may actually be higher where the cost of providing mobile telephony services to these consumers is lower.
[26] ABN AMRO, *Australian Telecommunications Market 2003*, 9 December 2002, p.13 and 37.
[27] ABN AMRO, Australian Telecommunications Market 2003, December 2002, p.31-41.
[28] For instance, see Macquarie, *Australian Telecoms Sector*, August 2002.

sent over its network, with 1.01 billion messages sent in the year ending 30 June 2002, compared with 642 million in 2000-01.[29] Optus also reports that more than half of its customers have sent an SMS message and its mobile data revenue is expected to reach 25 percent of its total mobile revenue by 2005.[30] Agreement between carriers for inter-carrier SMS between GSM networks, and then between GSM and CDMA networks, has further enhanced the growth in SMS.[31]

Table 4.3 shows that the data component of average revenue per unit (ARPU) is increasing over time, reflecting the fact that data revenue is progressively being relied upon by mobile carriers to increase mobile revenue levels.

There has been, however, a number of challenges for carriers wishing to increase data revenue growth, such as the slow take-up of high-value data services like the Wireless Application Protocol (WAP),[32] which has failed to live up to industry expectations. For example, the ACA noted that less than 5% of mobile users were using the WAP in 2001.[33] Some analysts believe that major inhibitors to widespread consumer take-up may include limited content and applications, and the high cost of compatible handsets.[34]

Table 4.3 Trend in ARPU components

	FY2000	FY2001	FY2002
Data ($)	0.67	2.30	4.2
Voice ($)	66.79	58.31	51.7
Overall ARPU($)	**67.47**	**60.62**	**55.9**
Change in ARPU (%)		-10.2	-7.8
Mins per sub/mth	94	96	98*
Voice rev/min ($)	0.71	0.61	0.57

Source: Macquarie (2003).
The figures quoted are based on $/month
*expected

[29] ACA, *Telecommunications Performance Report 2001-02*, November 2002, p.167
[30] ACA, *Telecommunications Performance Report 2001-02*, November 2002, p.167
[31] Inter-carrier SMS between GSM networks was agreed upon in the ACIF in April 2000. Inter-carrier SMS between CDMA and GSM networks was agreed upon at the ACIF.
[32] WAP is a free, unlicensed, protocol for wireless communications that make it possible to create advanced telecommunications services and to access Internet pages from a mobile phone. It is an industry standard supported by a large number of suppliers. WAP supports most wireless network standards including CDMA and GSM.
[33] ACA, *Telecommunications Performance Report 2000-01,* November 2001, p.78
[34] JP Morgan *Australian Mobile Industry*, May 2001 p 31; ABN AMRO, *Diverging strategies on Data,* August 12, 2002 p.1

Table 4.3 shows that from the 1999-00 to 2001-02 financial years, voice revenue per minute declined, but minutes per subscriber increased, suggesting that voice revenue has only increased due to the increase in subscribers and their increased consumption of voice minutes. Indeed, some mobile carriers have looked to increasing minute of use (MOU), which is low in Australia by most international standards, to increase their revenue levels.[35] While carriers can decrease voice tariffs in order to increase minutes per subscriber, it is important to note that the effect of a fall in call charges on usage depends on the price elasticity of demand of the carriers' subscribers.

4.2.3 Retail mobile pricing trends

Existing retail price regulation

Since 1989, the Commission (and its predecessor Austel) has regulated the retail prices charged by Telstra for certain telecommunications services by ascertaining whether Telstra (or its predecessors, Telecom and the Overseas Telecommunications Corporation (OTC)) has complied with legislated price control arrangements. The current price control arrangements are set out in the *Telstra Carrier Charges - Price Control Arrangements, Notification and Disallowance Determination No.1 of 2002* (the Determination). One of the telecommunications services subject to the price control arrangements is fixed-to-mobile services. It is noted that while mobile-to-mobile services are no longer subject to the current price control arrangements, they were included in previous price control arrangements from July 1992 to June 2002. The current set of price control arrangements run from 1 July 2002 to 30 June 2005. Generally, the price control arrangements have two major components. The first component is a CPI – X per cent price cap on a basket of telecommunications services.[36] At present, these services include local calls, fixed-to-mobile, national long distance (STD) and international long distance (IDD) services. The "X" factor is currently set at 4.5 per cent per annum. The second component is a number of "sub-caps" on particular services in the broad basket. Mobile-to-mobile and fixed-to-mobile services are not subject to sub-caps.

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[35] ABN AMRO, 'Telecommunications sector- Mobile market- March quarter wrap', 15 May 2002, p.6.

[36] A CPI – X per cent price cap forces a firm to reduce the price of a service, or set of services, by X per cent in real terms each year.

Data on retail price movements

The Commission can gain information in relation to retail mobile price movements from several sources. These include:

- information the Commission collects in order for it to perform its legislative functions with regard to assessing Telstra's compliance with the price control arrangements;
- information the Commission uses to measure changes in the prices paid by consumers of telecommunications services in order to meet its obligations under Division 12, Part XIB of the Act;[37] and
- information obtained for the purposes of implementing the retail benchmarking approach.

Each of these is discussed further below.

Telstra's price control report

Under the Determination, Telstra is required to provide an audited report to the Commission in relation to its compliance with the price control arrangements. The report is required to be provided to the Commission before the end of the three months after the end of the financial year in which the price cap applies. Under subclause 9(3) of the Determination, price movements are to be calculated according to a methodology the Commission establishes in consultation with Telstra. Table 4.4 details Telstra's price movements over the 1999-00 to 2000-01 financial years.

Table 4.4 Telstra's compliance with the price-cap for the first basket

	Price movements for each financial year(%)	
Service	**1999-00**	**2000-01**
Mobile services	-3.6	-14.2
Overall	-6.7	-3.9

Source: Telstra's price control reports

While the information gained from these reports is useful, it is important to note that the Commission has previously identified problems with the methodology used by Telstra in reporting its price movements. In particular, the Commission has expressed concern in the *Telstra price control compliance 2000-01 report* that Telstra is 'increasingly employing methods to determine price movements that are inconsistently applied across the various

[37] Under Division 12, Part XIB of the Act, the Commission is required to report to the Minister for the Communications, Information Technology and the Arts each year on changes in the prices paid for telecommunications services by Australian consumers.

services, without proper explanation. The Commission is of the view that the present methodology allows Telstra a high degree of discretion in evaluating price movements. It would appear that Telstra has taken full advantage of this generous discretion to such an extent that some doubts have been raised as to accuracy of data supplied by Telstra for the 2000-01 reporting requirements.'[38]

In light of these concerns, the Commission has reviewed and implemented a number of necessary changes to the methodology that will apply to assessing Telstra's compliance with its price control arrangements for the next financial reporting period (2001-02). The Commission's assessment of Telstra's compliance with its price control arrangements for the 2001-02 financial year (which will include a measure of price movements for both mobile-to-mobile and fixed-to-mobile services) is due to be released during the course of this inquiry.[39]

The 'Division 12' (Retail Price Changes) Report

Under Division 12, Part XIB of the *Trade Practices Act 1974*, the Commission is required to annually report to the Minister for Communications, Information Technology and the Arts in relation to changes in the prices paid by consumers for telecommunications services in Australia (the 'Division 12' Report). Mobile-to-mobile services and fixed-to-mobile services are included amongst the services reported by the Commission to the Minister.

To fulfil this reporting requirement, the Commission is provided with financial year information for fixed line Public Switched Telecommunications Services (PSTN) by four major carriers - Telstra, Optus, AAPT, and Primus. The Division 12 Report is able to then report on real retail price movements for a range of telephony services, and disaggregate these price movements by residential, small business and other business consumer groups for fixed-line PSTN services (including fixed-to-mobile services).

For mobile-to-mobile services, data is collected from the three largest mobile carriers – Telstra, Optus and Vodafone. The price indexes constructed from this data reflect the movement in the aggregate retail real prices paid by post-paid consumers of GSM services since 1997-98. As with the Commission's report to the Minister on Telstra's compliance with it retail price control arrangements, the Commission's Division 12 Report for the 2001-02 financial year is due to be released during the course of this inquiry. The Commission notes that this report will, for the first time, also include a price index measuring the change in prices paid by pre-paid consumers of GSM mobile-to-mobile services. The Division 12 Report for 2001-02 will also disaggregate the retail price movement for GSM post-paid and pre-paid services by different user groups. The plan types range from very low to very high user groups.

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[38] ACCC, 'Telstra's compliance with price control arrangements', *ACCC Telecommunications reports*, April 2002, p.2.

[39] The Commission's assessment of Telstra's compliance with its price control arrangements will be released after it is tabled by the Minister for Communications, Information Technology and the Arts in Parliament.

A summary of the reported mobile retail price changes in the Division 12 report from 1997-98 to 2000-01 is provided in Table 4.5.

Table 4.5 Year-on-year changes in the retail prices paid for GSM mobile services by consumers from 1997-98 to 2000-01

	Year-on-year % change		
Service	**1997-98 – 1998-99**	**1998-99 - 1999-00**	**1999-00 – 2000-01**
Mobile-to-mobile	-3.8	-12.3	-6.7
Fixed-to-mobile	-5.3	-7.9	-6.2

Source: ACCC, *ACCC Telecommunications report 2000-01*, April 2002.
*base year of the index is 1996-97 where the index equals 100.

The overall index for mobile telephony services has trended downward since 1997-98 indicating that, on average, prices paid by consumers for mobile telephony services have, in real terms, declined by 21 per cent over this time. However, as shown in Table 4.5, the rate of decline slowed from 12.3 per cent in 1999-00 to 6.7 per cent in the 2000-01 financial year.

With regard to price movements for fixed-to-mobile services, the price for this service decreased in each period from 1997-98 to 2000-01, with the rate of decrease of 5.3 per cent during the 1998-99 period increasing to 7.9 per cent during 1999-00. However, the rate of decrease in the average price of fixed-to-mobile calls slowed down after the 1999-00 period to around 6.2 per cent during the 2000-01 financial year. Interestingly, the price decrease has been lower for other PSTN services. Further, it should be noted that the analysis in the Division 12 Report is based on real prices, such that actual nominal prices paid by consumers will not have decreased by quite as much.

GSM retail benchmarking process

The retail benchmarking approach was determined by the Commission, in its final report, *Pricing methodology for the GSM termination service*, to be the appropriate pricing approach in the event of an arbitration in relation to the provision of mobile services. Details on this pricing principle are provided in section 5.1.2 below. In order to implement this approach, mobile carriers provide relevant information to the Commission to calculate retail price movements relative to wholesale price movements.

The three largest mobile carriers – Telstra, Optus and Vodafone – report to the Commission according to the same six-monthly timeframes as the Regulatory Accounting Framework (RAF) reports carriers provide to the Commission, and also contain disaggregation of relevant RAF line items. Further discussion of the results of the Commission's monitoring of carrier price movements is outlined in section 5.1.2.

4.2.5 Industry capital expenditure

Table 4.6 details each mobile carrier's investment in infrastructure needed to provide mobile telephony services in Australia over the period from 1998-99 to 2001-02.

Table 4.6 Carrier expenditure on the infrastructure needed to provide mobile telephony services

	Financial year ($millions)			
	1998-99	***1999-00***	***2000-01***	***2001-02***
Telstra	616	628	390	255
Optus	Not reported	396	405	411
Vodafone	253	349	700	250
Hutchison	Not reported	744.8	659.9	410.5

Source: carrier's annual reports, various analyst's reports
Notes: the accounting period of the carriers vary. For instance, accounting year end for Telstra is 30 June, for Optus and Vodafone it is 31 March and for Hutchison it is 31 December.

Table 4.6 shows that some carriers have been investing heavily in infrastructure needed to provide mobile telephony services since the introduction of the Part XIC access regime in July 1997. In addition, fluctuations in investments over the years can largely be explained by the timing of the commencement and completion of major capital expenditure projects. The following discussion describes the investments by each carrier in detail:

- *Telstra:* Telstra's investment in its mobile division has declined since the 1999-00 financial year. This largely reflects its program to tightly control capital expenditure. More specifically, between 1998-99 and 1999-00, the slight increase in capital expenditure in Telstra's mobile division reflects the capital expenditure involved in rolling out its CDMA network, which was completed in October 2000;

  After the 1999-00 financial year, Telstra's capital expenditure in its mobile division fell. According to a Telstra media release, the fall in capital expenditure for the 2000-01 financial year reflected the completion of major projects such as the rollout of its CDMA network. It's also noted that the capital expenditure figure for the 2000-01 financial year excluded the $302 million spent on buying 3G spectrum;[40]

  In the 2001-02 annual report, Telstra observed that the 34.6 per cent reduction in the mobile division's capital expenditure was heavily influenced by reduced spending on GSM infrastructure. This was due to additional capacity being available following the Olympics and the majority of the GPRS upgrade to the GSM mobile network being completed during the 2000-01 financial year; and

  Recent investments for Telstra has involved an upgrade to its CDMA network – to

[40] Telstra 2000-01, *Financial Highlights*, p.1.

CDMA 1xrtt – offering near 3G speeds for its new consumer mobile service, Mobile Loop.[41]

- *Optus:* In contrast to the trend in Telstra's capital expenditure, Optus' capital expenditure for its mobile division has not changed significantly over the 1998-2002 period. The lack of fluctuation in mobile capital expenditure is in contrast to Optus' overall capital expenditure across all operations which has been declining, particularly in the 2000-01 reporting period where it undertook a cost-cutting exercise. The decline in capital expenditure has continued into the 2001-02 reporting period, where overall capital expenditure fell by 17per cent.[42]

- *Vodafone*: Vodafone's large investment in 2000-01 reflects its investment on the 'Mobile Phones on Highways' Government project.[43] Since this time, it has implemented cost cutting measures which is evident in its reductions in capital expenditure from $700 million in 2000-01 to $250 million for the 2001-02 reporting period. It is expected that Vodafone will continue to reduce its capital expenditure even further in subsequent years.[44]

- *Hutchison:* Table 4.6 shows that during the 1998-2002 period, Hutchison's investment in its mobile division has generally surpassed its competitors. This is most likely due to its later entry into the mobile market with the launch of its CDMA network in 2000;

  Within its mobile division, Hutchison's focus has been on its 3G network in 2003. Accordingly, much of its capital expenditure has been directed toward this project. In the 1999-00 reporting period, total capital expenditure was $744.8 million, out of which $687.5 million represented costs associated with its purchase of 1800MHz spectrum licenses for the commencement of its 3G project. Further, for the 2000-01 period, Hutchison's total capital expenditure was $659.9 million, which included the purchase of the 2.1GHz spectrum licenses for $196.1 million in March 2001. This spectrum will be used for the purpose of providing 3G services.[45] Overall, peak funding requirements for the 3G business have been projected by Hutchison to be close to $3 billion, including the $1 billion equity commitment secured as part of its strategic alliance with TCNZ;[46]

  In contrast to the significant investment in its 3G network, Hutchison has reduced the capital spend on its 2G business. This reflects Hutchison's new strategy implemented in the year 2000, which involved restructuring the Orange mobile business in order to

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41 Kruger.C., '3G to hit the screens.' *The Age*, Next section, 15 April 2003, p.3.

42 *Optus 2001-02 annual report*, p.15.

43 Vodafone won the tender for the $25 million Social Bonus. The project was aimed at improving GSM mobile coverage along 16 major highways, where other carriers could roam on to the base stations built under the project. Also see www.vodafone.com.au, *Continuous coverage road trip starts its 9,500km journey on the Sapphire Coast of NSW*, 17 October 2001.

44 ABN AMRO, *Telecom Networks – Australia – Vodafone Australia*, p. 3.

45 The purchase of this spectrum will allow it to operate in and around Sydney, Melbourne, Brisbane, Adelaide and Perth. The 1800 MHz spectrum license purchased in 2000 covering the same areas will be used for additional capacity on the 3G network.

46 In early 2001, TCNZ, AAPT's parent company, acquired a 20% of interest in a 3G network being developed by Hutchison Australia. (see *Hutchison 2001 annual report*, p.6)

reduce operating costs and deliver higher margins. For instance, Hutchison management commented that the 2G network still has significant capacity before additional network upgrades would be required.[47]

A number of commentators are predicting a lower growth environment for the mobiles industry with the completion of major projects and ongoing cash flow pressure. This may lead to further capital expenditure falls. Nevertheless, while some mobile carriers will look to tighten future capital expenditure, substantial capital spending may be necessary in order to increase existing customer spending and attract new customers to the network. An example of such expenditure is the move by some carriers to invest in 3G technology, such as Hutchison. In this regard, some mobile carriers have already begun the transition from 2G to 3G services with the rollout of 2.5G technologies. For instance, Optus is currently offering services on its GPRS network, while Vodafone is expected to follow in late April 2003 with a GPRS service offering.[48]

Figure 4.2 illustrates the evolution towards 3G, including the bridging 2.5G technology of General Packet Radio Service (GPRS).

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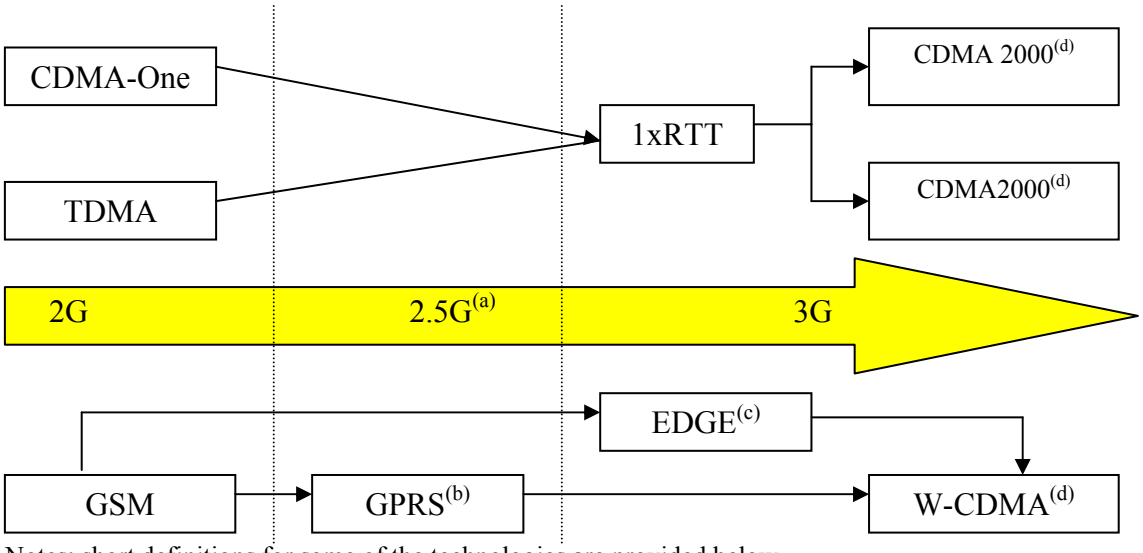
[47] *Hutchison half yearly report 2002*, p.3

[48] Kruger.C., '3G to hit the screens.' *The Age*, Next setion, 15 April 2003, p.3.

Figure 4.2 Evolution of Mobile Systems from 2G to 3G



Notes: short definitions for some of the technologies are provided below.

(a) 2.5G technologies are designed to overlay on top of existing 2G networks with minimal additional infrastructure and investment. Generally, 2.5G uses existing spectrum and are packet-based technologies.

(b) GPRS (General Packet Radio Services) is a packet-linked technology that enables high-speed wireless Internet and other data communications using existing infrastructure and spectrum. GPRS will offer a tenfold increase in data throughput rates, from 9.6kbits/s to 115kbits/s. Using packet data service, subscribers are always connected and always on-line so services will be easy and quick to access.

(c) Beyond GPRS, mobile operators have the option of implementing EDGE (Enhanced Data Rates for Global Evolution) or migrating directly to W-CDMA. Like GPRS, EDGE is a technology that uses existing infrastructure and spectrum. EDGE gives GSM the capacity to handle services for the 3G network, and enables the transmission of large amounts of data at a high speed, 384 kilobits/s. Operators without 3G licenses may be able to offer GPRS or EDGE instead, although some operators may prefer a direct 3G implementation over additional infrastructure costs in association with EDGE.

(d) Essentially two 3G standards exist - W-CDMA (Wideband Code Division Multiple Access) which is supported by current GSM-centric countries and CDMA2000 which is supported by current CDMA-centric. Although both technologies are CDMA-based, major differences exist between them. W-CDMA systems work on a RF bandwidth of 5MHz which is much wider than the CDMA2000 size of 1.25MHz. The wider bandwidth serves to enhance performance under multipath environments (ie. the receiver can better separate the different incoming signals) and increase diversity. W-CDMA also reduces inter-operator interference and offers seamless inter-frequency handover, a useful feature in high-subscriber density areas.

Source: ABN AMRO (2002), BIS Shrapnel (2001), July 2001, www.ericsson.com/about/telecom/part-a/a-0.shtml.

3G is a different category of mobile services as it based on broadband technologies, whereas 2G technologies are based on narrowband technology. The widening of the bandwidth will enable even greater volumes of data to flow to mobile receivers, thereby enabling full broadband services such as full colour screens and video conferencing.

GSM operators have the option to implement GPRS and/or EDGE prior to 3G rollout. GPRS provides a relatively easy upgrade of existing 2G networks to support higher bit rates. It requires the upgrading of existing packet nodes, as well as the addition of new nodes in the existing 2G GSM network. For the most part, GPRS coverage corresponds with that of GSM, with minor location exceptions. According to JP Morgan, the introduction of GPRS is a relatively low capital expenditure item, due to the fact it avoids the need to upgrade base

stations. These upgrades are estimated at around 80 per cent of the total annual mobile-capex bill, which is approximately $300-350 million for GSM operators in Australia.[49]

In comparison to 2.5G, the cost of upgrading to 3G is relatively expensive. ABN AMRO estimate that it would cost Telstra $1 billion to upgrade its GSM network, and $350 million for its CDMA network, to enable it to provide 3G applications.[50] In addition, peak funding for Hutchison's 3G network is projected at $3 billion and would require a subscriber base of approximately 1 million users to get a satisfactory return on its 3G network.[51]

With the exception of Hutchison, all of the carriers have invested in GPRS, so as to ease the transition from 2G to 3G services. Investment in 2.5G technology appears to be driven by a number of factors, the main reason being to increase the efficiency of providing value-added data services - a potential source of highly profitable revenue. Capital expenditure in 2.5G also serves as a transition tool to encourage subscriber migration towards more advanced multimedia services, whilst deferring the need to invest in the more expensive 3G option in the short-term. In this regard, GPRS is considered a lower risk investment than 3G, where the potential of 3G technology and its applications is uncertain.

However, evidence to date suggests that the GPRS subscriber take-up has been slow. JP Morgan considers that technologies such as GPRS and EDGE are only enablers for mobile content, and the key to increasing the uptake of applications on the GPRS platform is better content.[52] In addition, ABN AMRO report that the take up of Optus' GPRS offering still remains low due to limited content and handset availability.[53] Other mobile carriers have also experienced lower than expected take-up rates for this technology.

Some analysts have commented that they believe the take-up rate for 3G services will be slow. Macquarie estimates a gradual take-up for 3G services in Australia, building from 21,000 by the end of the 2002-03 financial year, to 829,000 (5.2 per cent of total subscriber base) in 2005, and 5.7 million (30 per cent of the total subscriber base) by 2010.[54]

Despite the barriers to rolling out a 3G network, all current mobile network carriers have acquired spectrum capable of providing 3G services. In March 2001, the Government auctioned 1.9GHz spectrum licenses for 3G services, which netted in excess of $1.16 billion, less than half of the $2.6 billion forecast.[55] Table 4.7 outlines the successful bidders, spectrum bought, geographic coverage and the cost of the license.

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[49] JP Morgan, *Australian Mobile Industry*, May 2001, p.36
[50] ABN AMRO, 'Downplaying 3G: a risky strategy', 6 June 2002, p.4
[51] *Hutchison 2001 annual report*, p. 6. Also see JP Morgan, *Australian Mobile Industry*, May 2001, p.4
[52] JP Morgan, *Australia Mobile Industry*, May 2001, p.31
[53] ABN AMRO, 'Telecom Sector – Australian mobile review: Diverging strategies on data', 12 August 2002, p.5
[54] Macquarie, *Australian Telecom Sector*, August 2002, p.42
[55] BIS Shrapnel, *Telecommunications Infrastructures in Australia 2001*, July 2001, p.100

Table 4.7 Spectrum Holders of 3G licenses

Operator	Cost	Spectrum	Coverage
Telstra	$302 million	15MHz paired spectrum in all capital cities 10MHz paired spectrum in regional areas 5MHz unpaired spectrum in all capital cities	National
Optus	$248 million	10MHz paired spectrum in all capital cities 5MHz paired spectrum in regional areas 5MHz unpaired spectrum in 5 cities	National
Vodafone	$253 million	15MHz paired spectrum in all capital cities 5MHz paired spectrum in regional areas 5MHz unpaired spectrum in all capital cities	National
Hutchison	$196 million	15MHz paired spectrum in Sydney and Melbourne 10MHz paired spectrum in Brisbane, Adelaide and Perth	5 Major Cities (Sydney, Melbourne, Brisbane, Adelaide and Perth)
3G Investments (Qualcomm)	$153 million	10MHz paired spectrum in all capital cities	All capital cities
CKW Wireless (Arraycomm)	$9.5 million	5MHz unpaired spectrum in all capital cities	

Source: BIS Shrapnel (2001)

Notes: Paired spectrum allows for both the transmission and reception of information, with the same bandwidth upstream and downstream. This suits more symmetrical applications like voice. Unpaired spectrum allows for transmission only, generally with asymmetric bandwidth between upstream and downstream directions. This suits the asymmetrical provision of data, particularly services such as the Internet.

It is noted that some analysts believe evidence to date with regard to the progress of 3G networks overseas does not appear to be encouraging. According to ABN AMRO, technical problems, lower than anticipated speeds, lack of compelling content, roaming difficulties and lack of handset availability are all adversely affecting the take up of 2.5 and 3G services.[56] In addition, Forrester Research claim that European 3G operators are only likely to reach break-even by 2014.[57] These difficulties with 3G overseas have resulted in the other Australian

[56] ABN AMRO, 'Telecom sector - Australia mobile review: diverging strategies on data', August 12 2002, p.2
[57] Communications Day, 'European 3G operators will be profitable by 2014: Analyst', 16 October 2002, p.3

mobile carriers taking a more cautious approach towards investment in 3G, particularly given the recent slow-down of growth in the industry.

4.2.5 Mobile number portability (MNP)

On 30 September 1999, the Commission issued directions to the ACA under s. 458(2) of the *Telecommunications Act 1997* requiring that number portability for mobile telephone services be mandated in the Numbering Plan.

Mobile number portability (MNP) allows customers to:

(a) change from one carriage service provider (CSP) to another CSP, irrespective of whether the CSPs are on the same mobile network or different mobile networks, and retain their mobile service number(s); and

(b) receive equivalent service as defined in s. 11.4 of the Numbering Plan.[58]

The ACA estimates that customer churn rates were at around 4 per cent per month for the 2001-02 financial year.[59] This is only slightly higher than the 2 per cent per month churn rate for the 2000-01 financial year.[60] This differs from some overseas experiences where full term MNP created higher churn levels, particularly amongst business users.[61] However, it should be noted that the porting statistics provided by the ACA do not include intra-carrier ports (that is, ports between service providers on the same carrier network). Hence, for example, the churn figures would not recognise the churn of a customer away from RSLCom to DigiPlus who both resell on the Optus GSM network. Further, the anticipated churn rates are likely to have been affected by the existence of fixed-term mobile contracts, early termination charges and porting fees. Further, the Commission notes that MNP has been in place in Australia for under two years, such that it may be too early at this stage to determine its full effect on churn rates.

That said, some industry participants consider that MNP has not had the impact that was expected. For instance, Telstra has been successful in retaining market share since the introduction of MNP, and has also commented in its annual report for the 2001-02 financial year that MNP '..has not had a material impact on services in operation since its introduction, with our deactivation rate declining 2.6 per cent over the period to 14.7 per cent.'[62]

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58 See ACCC, *Pricing Principles for Mobile Number Portability*, May 2001.

59 ACA, *Telecommunications Performance Report 2000-01*, November 2001, p.78

60 ACA, *Telecommunications Performance Report 2001-02, November 2002*, p.11; ACA, *Telecommunications Performance Report 2000-01*, November 2001, p.78.

61 ACA, *Telecommunications Performance Report 2000-01*, November 2001, p. 78.

62 *Telstra 2001-02 annual report*, p.16

5. Matters submissions should address

As noted previously, the purpose of this review is to consider:

- the need for regulation of a range of mobile services markets;
- the form that any such regulation should take; and
- to seek views on these questions from stakeholders and the public more generally.

The Commission will consider these issues in relation to the following mobile telephony services:

- the domestic GSM and CDMA terminating access service;
- the domestic GSM and CDMA originating access service;
- the domestic intercarrier roaming service;
- the international intercarrier roaming service; and
- 3G services.

To assist in its consideration, the Commission invites interested parties to make submissions addressing the issues raised in this chapter in relation to these services. Issues relating to each of the five services outlined above are set out, in turn, throughout the remainder of this chapter.

Given the broad ranging nature of this review, the Commission is also interested in whether interested parties believe any other mobile telephony services should be considered as part of this review.

5.1 Domestic GSM and CDMA Terminating Access Service

5.1.1 Introduction

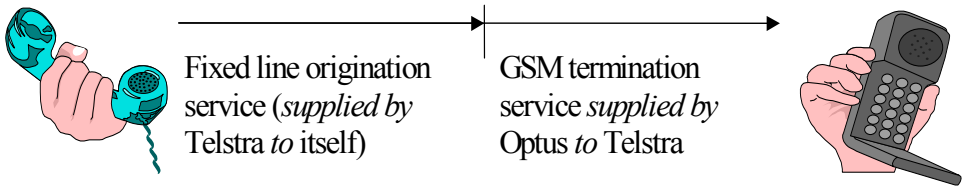
When a mobile telephone call is made between end-users on two different networks, it will involve two essential elements – origination and termination. Origination refers to the carriage of a call from the end-user who makes, or originates, the call to a point of interconnection with the network on which the called party is connected. Termination refers to the carriage of the call from the point of interconnection to the end-user who is receiving the mobile phone call.

The domestic Global System for Mobiles (GSM) and Code Division Multiple Access (CDMA) terminating access service (mobile termination service), therefore, provides carriage of voice and data from a point of interconnection to the end-user connected to a GSM or CDMA network, and is an essential input for the provision of fixed-to-mobile and mobile-to-mobile call services between end-users on different networks.

An example of how the mobile termination service is used in the provision of a fixed-to-mobile call is depicted in Figure 5.1 below. In this example, Telstra purchases access to Optus' mobile termination service in order to provide a call from a Telstra fixed line end-user to an Optus mobile end-user.

Figure 5.1 – The domestic GSM and CDMA terminating access service

Call from fixed-line end user to mobile phone end-user



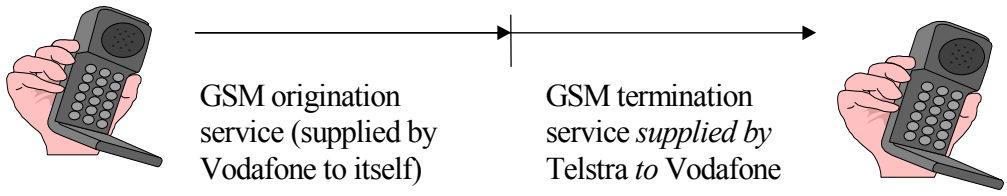
Use of the GSM termination service to supply a fixed-to-mobile call

In this regard, the Commission notes that the ACA modified its 'pre-selection' determination in 1999 to include fixed-to-mobile calls in the pre-selection basket of national long distance and international calls. Following from this, an end-user jointly pre-selects a carrier for national long distance, international and fixed-to-mobile calls. For this reason, pre-selected carriers now also purchase the mobile termination service from mobile carriers (in order to supply fixed-to-mobile calls). For example, if AAPT is a pre-selected carrier chosen by an end-user who makes calls to mobile subscribers connected to Telstra's GSM or CDMA networks, then AAPT would need to purchase the mobile termination service from Telstra in order for its pre-selected end-user to be able to make these calls. AAPT may also need to purchase the fixed line origination service from the carrier to whose network the pre-selected end-user is connected.

An example of how the mobile termination service is used in the provision of a mobile-to-mobile call is depicted in Figure 5.2. In this example, Vodafone purchases access to Telstra's mobile termination service in order to connect a call from a Vodafone mobile end-user to a Telstra mobile end-user.

Figure 5.2 – The domestic GSM and CDMA terminating access service

Call from mobile phone end-user
to another mobile phone end-user



Use of the GSM termination service to supply a mobile-to-mobile call

5.1.2 The Commission's approach to regulating this service to date

In 1997, the GSM termination service was deemed to be declared under Section 39 of the *Telecommunications Act 1997* and Part XIC of the Act. At that time, the Commission considered that the GSM termination service should be deemed for the purpose of achieving any-to-any connectivity between end-users of a GSM network and end-users of any other telephony network.[63]

In subsequent years, a number of disputes arising from disagreements over the terms and conditions of access to the GSM termination service were notified to the Commission under Part XIC of the Act. As a consequence of its arbitration of these disputes, the Commission developed pricing principles for the GSM termination service which it released in July 2001. The Commission determined that it would adopt a retail benchmarking pricing methodology in its arbitration of access disputes in relation to the service. Details of this particular pricing principle are outlined below. After the release of the pricing principles, the three remaining GSM access disputes were withdrawn. While the Commission was not required to apply its pricing principles in resolving any of these disputes, the Commission believes the issuing of pricing principles served a useful purpose in helping parties resolve disputes.

In March 2002, the Commission released a report examining a proposed variation to the GSM termination service declaration to make it technology neutral. The report resulted in the definition of the service being extended to include termination on CDMA mobile networks.

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[63] Deeming of Telecommunications Services. ACCC, 30 June 1997, p.19

In its report, the Commission also put forward its view that the price of the mobile termination service was above the efficient cost of providing the service. Separately, the Commission considered providers of mobile termination services had the ability to set prices for mobile termination above their cost of provision because:

- once an end-user is connected to a mobile network, the terminating mobile carrier has control over access to mobile termination for that end-user; and

- a lack of consumer awareness allows the mobile carrier to increase access prices for mobile termination without feeling the full effect of the increase. This is because an end-user calling can do no better than base calling decisions on estimates of the average access price for mobile termination.[64]

As a result of the variation to the service declaration, the Commission released a report, in September 2002, setting out its pricing methodology for the combined GSM and CDMA mobile termination service.

The Commission concluded that the retail benchmarking approach was still the most appropriate pricing methodology for use in arbitrating disputes in relation to the redefined mobile termination service.

In reaching this decision, the Commission determined that mobile termination should not be classified as a "separate market" due to the interdependencies between the wholesale and retail elements necessary to provide a mobile call. It noted that revenue streams from the mobile termination service, mobile access services and outgoing call services are interdependent, such that with effective competition, a change in one revenue stream will, in the long term, be associated with an offsetting change in another stream.

The Commission agreed with its earlier assessment in its report on the proposed variation to GSM service declarations to make them technology neutral, that control over access to the end-user and a lack of consumer awareness enable mobile network operators to sustain above-cost access prices for mobile termination.

While the Commission was of the view that some factors somewhat mitigate control over access and a lack of consumer awareness, such as closed user groups, it did not believe that these overcome the ability and incentive of mobile network operators to sustain above-cost access prices.[65]

The Commission also noted that sustained above-cost access prices for mobile termination are more likely to be a problem when the service is supplied in relation to fixed-to-mobile calls rather than mobile-to-mobile calls. This is because, in the case of mobile-to-mobile calls where uniform traffic patterns exist, reciprocal access prices between mobile carriers are equally a revenue stream and a cost. Therefore, unless traffic patterns are unbalanced or mobile carriers engage in price discrimination, generally no competitive advantage exists in

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[64] ACCC, Pricing Methodology for the GSM and CDMA termination service, September 2002, p.3-4.

[65] Closed user groups refer to a group of people, being aware of the benefits of keeping calls on one network, group together and decide to be on the same network.

sustaining above-cost mobile termination prices for mobile-to-mobile termination – except to the extent that by keeping them at the same level as when the service is supplied in relation to fixed-to-mobile calls, mobile carriers will circumvent any possibility of other carriers transiting calls via alternative (lower cost) termination paths. Accordingly, the Commission took the view that it was sufficient for any regulatory focus to be on access prices for mobile termination in relation to fixed-to-mobile calls only.

Retail benchmarking approach

In determining the appropriate pricing methodology for the mobile termination service, the Commission considered three pricing methodologies based on the legislative criteria in section 152CR of the Act.[66] The three pricing methodologies it considered were:

- forbearance (no regulation);
- cost based approaches such as total service long-run incremental cost (TSLRIC); and
- retail benchmarking.[67]

The Commission concluded that the forbearance approach did not meet the legislative criteria given the level of competition in the mobile services market, particularly in its termination element.

While the Commission considered that there were benefits associated with the use of a cost-based methodology, such as limiting opportunities for anti-competitive behaviour by integrated carriers, it considered that the cost of implementing a cost-based approach outweighed its benefits.

Having regard to the legislative criteria, the Commission concluded that a retail benchmarking approach was the most appropriate pricing approach to adopt in the arbitration of disputes over access to the mobile termination service.

The retail benchmarking approach provides that changes in each mobile carrier's access prices are benchmarked against the retail price movements of its overall mobile package (including access and outgoing calls). The initial starting point for the glide path created by this pricing rule is the lowest current access prices for the mobile origination and termination services in the market. The approach was aimed at using a proxy for the efficiency improvements and competitive pressures on mobile retail prices – the price fall in the retail segment of the market - to provide a safety net that access price falls continue to occur, particularly for the mobile termination service. At the time, it was considered this approach

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[66] Section 152CR of the Act requires the Commission to take into account a number of factors when making a final determination in the context of an arbitration. Note that the Commission can also take into account other factors it considers relevant.

[67] A detailed discussion of these pricing principles is provided in Chapter 6 of the *Pricing Methodology for the GSM termination service – Final report*.

was likely to reduce the opportunities for anti-competitive pricing and improve allocative efficiency.

The Commission noted, however, that its decision that the retail benchmarking approach would likely be used in access disputes to determine the access prices for mobile origination and termination services was 'on balance' and that the pricing principle (including forbearance) which best promotes the LTIE may change over time. In particular, the Commission recognised the limitations of the retail benchmarking approach in terms of addressing anti-competitive pricing. It noted that if continued retail price decreases did not eventuate, or if price squeezing was observed in the fixed-to-mobile market, the Commission may need to reconsider its use of the retail benchmarking approach at the time of the next review. Accordingly, the Commission proposed the implementation of a monitoring program in conjunction with the retail benchmarking approach, which would involve:

- monitoring each mobile carrier's retail price movements for the overall mobile package using the yield method to facilitate ongoing commercial negotiation; and

- monitoring changes in retail prices for fixed-to-mobile calls and access prices for mobile termination to determine whether there is any anti-competitive behaviour.

The Commission also indicated that it would closely monitor the extent of any structural change that promotes consumer awareness.

As indicated in Chapter Four of this paper, the Commission has since this time, been collecting revenue and usage data for a range of retail mobile services including;

- access services;

- outgoing calls;

- handset provision; and

- service connection.

The results of this monitoring to date are concerning in that the carriers are reporting large increases in the retail price of mobile telephony services. That said, close examination of the data provided by carriers has led the Commission to hold concerns about the data provided to the Commission by carriers and the application of the appropriate methodology. In particular, the Commission notes that the price movement increases reported by carriers in the context of monitoring prices for mobile termination are well in excess of price movements estimated by the Commission for the purposes of the 2001-02 Division 12 Report. Further, there seems to have been a misapplication of aspects of the pricing principle with regard to the treatment of handset subsidies that appears to be biasing the results of the monitoring program. The Commission intends to release aggregated data outlining the results of its monitoring program once the two year monitoring period is completed later in this review.

That said, the Commission is of a general belief that the rate of decline in mobile telephony prices has slowed down in recent years.

5.1.3 International developments regarding the mobile termination service

A number of overseas telecommunication regulators have recently concluded inquiries into the price of mobile termination in their respective jurisdictions.

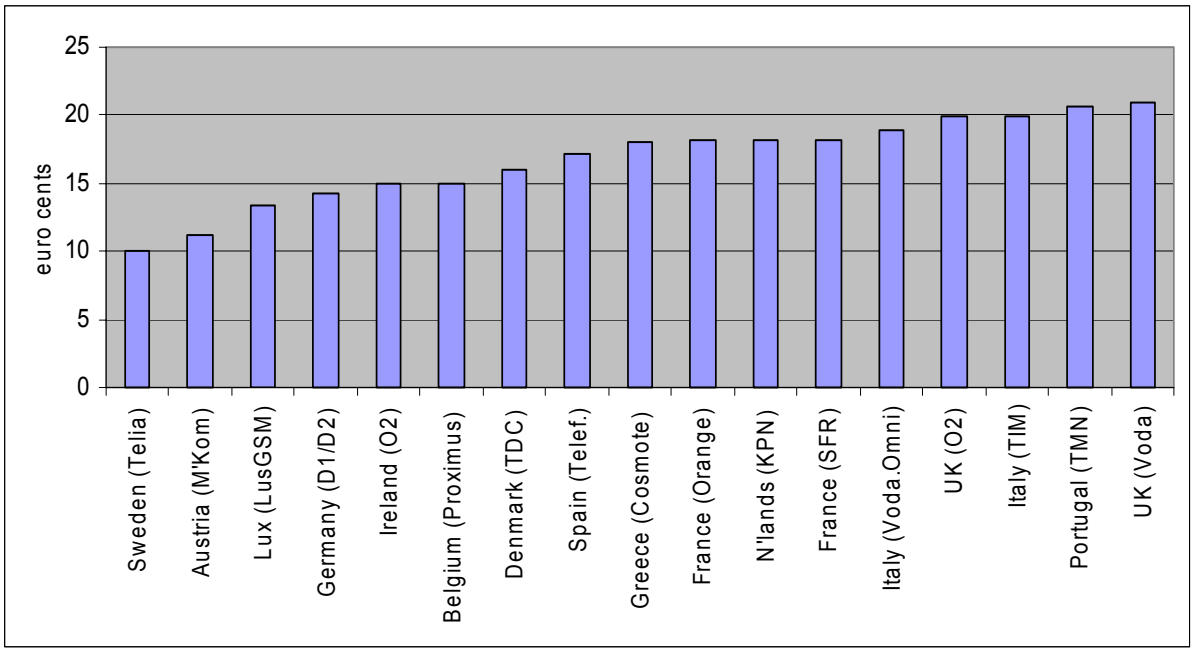
Many of the reviews were instigated by new European Union (EU) Directives requiring National Regulatory Authorities to conduct reviews of competition in communications markets, including the relevant market/s for mobile termination, by July 2003.

The UK, Italian, French, German, Dutch and Portuguese telecommunication regulators have all recently announced decisions resulting from analysis undertaken into their respective mobile telephony markets. In this regard, the UK, French, Italian, Dutch and Portuguese regulatory authorities have decided to introduce significant CPI - X per cent price cap reductions for mobile termination services that mobile network operators will be obliged to implement over the coming years. In contrast, the German regulator announced that it would not impose mobile termination charge reductions in the immediate future.

In this regard, the Commission notes that comparisons between mobile termination rates currently being charged in Australia and overseas jurisdictions indicates that mobile termination rates in Australia are not at excessively high levels by international standards. For instance, market inquiries indicate that the prices being charged for mobile termination in Europe range from between approximately 10 Euro cents per minute in Sweden to as high as approximately 21 Euro cents in Portugal. The Commission understands that in Australia, mobile termination rates are currently at around 24 cents per minute. In this sense, therefore, on a purchasing power parity basis, Australia's mobile termination rates may not currently compare unfavourably with those in European jurisdictions. However, with European regulators looking to significantly lower the prices mobile operators can charge for the mobile termination service in the near future, the Commission will need to consider whether the lower rates in some European jurisdictions may better reflect the cost of providing mobile termination services than the rates currently being charged by mobile operators in Australia.

Termination rates charged in European countries as at September 2002 are set out in Figure 5.3. A brief summary of the key findings in a number of European jurisdictions is provided below.

Figure 5.3 Termination rates charged in Europe as at September 2002



source: Cullen International, September 2002

United Kingdom

The UK regulator for the Telecommunications industry, the Office of Telecommunications (Oftel), has been active in the area of mobile termination charges in recent years. In 1999, it imposed a price cap of RPI - 9 per cent on the mobile termination rates of Vodafone and BT Cellnet.[68]

In 2000-01, Oftel reviewed the broad mobile market and the mobile termination market separately and proposed a further annual charge cap of RPI – 12 per cent for each of the four years from 2001-02 to 2005-06 for the four main providers of mobile telephony services in the UK.[69] These providers are Vodafone, O2 (previously BT Cellnet), T-Mobile and Orange. The mobile network operators rejected Oftel's proposal and the issue was referred to the UK Competition Commission for consideration.

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[68] *Director General's Statement on the Competition Commission's Report on Mobile Termination Rates*, UK Competition Commission, 22 January 2003. RPI refers to Retail Price Index and is broadly equivalent to the CPI in Australia.

[69] Oftel proposed this cap as its model estimated the LRIC price for mobile termination (inclusive of a mark-up to account for network externalities) should be 6 pence per minute by 2005-06. The charge set for mobile termination by most carriers in 2000-01 was 10 pence per minute. Oftel considered an RPI-12 per cent price cap would see prices converge to LRIC by 2005-06.

In January 2003, the Competition Commission released its final verdict regarding Oftel's analysis and proposals in relation to mobile termination charges. In summary, the UK Competition Commission agreed with Oftel's view that:

- the mobile termination service in the UK requires regulation;
- the imposition of cost reflective termination rates is the most appropriate form of regulation; and
- the correct market to examine is that for termination on each individual network.

It found that each mobile network operator (MNO) has a monopoly with regard to call termination on its own network. This is because there are currently no practical technological means of terminating a call to a given mobile user other than on the network of the MNO to which the called party subscribes, and none that seems likely to become commercially viable in the near future. There are also no ready substitutes for calling a mobile phone at the retail level, such as calling a fixed line instead.

The UK Competition Commission considered whether competitive pressures on the MNOs at the retail level constrained call termination charges in any way, or forced the MNOs to pass excess termination revenues to retail customers in the form of lower prices for mobile services. It concluded that competitive pressures at the retail level did not constrain termination charges.

The Competition Commission found that there is rigorous competition among MNOs to attract and sign up subscribers to their networks, for example through the payment of incentives and discounts to retailers, and handset subsidies to customers. However, the Competition Commission found that this is funded by excess returns from termination charges. It found that this structure of incentives, put in place by the MNOs, distorts the volume and direction of traffic on the network. In turn, the Competition Commission found this leads to a distorted pattern of usage by customers.

It concluded that termination charges should, in principle, be cost-reflective and that the most appropriate method for determining the costs of termination was long-run incremental cost (LRIC). The Competition Commission estimated that the termination charges for 2002-03 of the four biggest MNOs in the UK are 30 to 40 per cent in excess of its estimation of a "fair charge" and it recommended that:[70]

- For each of O2, Vodafone, Orange and T-Mobile, there should be two price caps, set at the same level, to regulate termination charges for fixed-to-mobile calls and termination charges for off-net calls. In this way, the MNOs cannot load charges disproportionately on to either call type.
- O2, Vodafone, Orange and T-Mobile should each be required to reduce the level of its average termination charge by 15 per cent in real terms before 25 July 2003.
- O2 and Vodafone should be subject to further reductions in their average termination charges of RPI - 15 per cent in each of the periods 25 July 2003 to 31 March 2004; 1 April 2004 to 31 March 2005; and 1 April 2005 to 31 March 2006.
- Orange and T-Mobile should be subject to further reductions in their average termination charges of RPI - 14 per cent in each of the periods 25 July 2003 to 31 March 2004; 1 April 2004 to 31 March 2005 and 1 April 2005 to 31 March 2006.

These mobile termination price controls concern calls made on GSM networks only.

France

In November 2001, the French telecommunications regulator, Autorite' de Regulation des Telecommunications (ART), imposed obligatory fixed-to-mobile termination price reductions on mobile network operators Orange and SFP. These operators were considered by ART to have significant market power in the interconnection market. Orange and SFP were required to decrease fixed-to-mobile termination rates by 40 per cent over three years such that the average termination price for a fixed-to-mobile call must decrease to 14.94 euro cents by 1 January 2004. In accordance with these measures, in September 2002, Orange and SFP submitted their pricing proposals for 2003. ART found that mobile termination rates have decreased as required and that the proposed prices for 2003 conform with its 2001 decision.[71]

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[70] *Reports on References under Section 13 of the Telecommunications Act 1984 on Charges made by Vodafone, O2, Orange and T-Mobile for Termination Calls from Fixed and Mobile Networks*, UK Competition Commission, January 2003

[71] *Decrease of the Price of Fixed-to-mobile Calls*, press release, Autorite de Regulation des Telecommunications, 6 November 2002

Italy

In March 2003, the Italian telecommunications regulator, Autorita' per Garanzie nelle Comunicazioni, announced a decision mandating maximum charges for fixed-to-mobile termination rates for calls made from Telecom Italia's fixed network to first and second generation mobile networks operated by Telecom Italia Mobile and Vodafone Omnitel. The maximum termination price, that was mandated to become effective within 30 days of the decision, was set at 14.95 euro cents per minute.

The fixed operator, Telecom Italia, was then required to notify its customers, within 30 days of the date on which its termination charges were reduced, of reductions in its retail prices for fixed-to-mobile calls.[72]

The Netherlands

In March 2002, the Dutch regulatory authority, the Independent Postal and telecommunications Authority (OPTA), released policy rules for the level of mobile termination tariffs. These rules outline maximum tariffs that mobile network operators are allowed to charge for mobile termination. The rules mandate that operators reduce mobile termination rates to the level of European "best practice", calculated by averaging the termination prices charges by European mobile operators with high performance levels, but who are not subject to cost oriented regulation. The reductions were required to be implemented by April 2003.[73]

In August 2002, the Netherlands Competition Authority released a report on the definition of the market for the termination of calls on mobile telephone networks. The report formed part of the Competition Authority's investigation into possible infringements of the Dutch Competition Act by mobile operators. The report's key findings were:

- the geographical market for mobile termination is the national territory of the Netherlands because licences required for the construction and operation of mobile networks are granted at the national level and the coverage area served by a mobile operator therefore coincides with the national territory;

- in defining the wholesale product market, it is necessary to take into account possible competitive constraints exerted through the retail market(s);

- mobile operators do not appear to experience significant competitive constraints in setting their tariffs for the termination of calls, neither from the wholesale tariffs of each of the other operators, nor from the retail tariffs of other operators; and

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[72] *Deliberation Number 47/03/CONS*, Authorita per le Garanzie nelle Comunicazioni, 5 March 2003

[73] *Policy Rules Regarding the Regulation of Mobile Terminating Tariffs*, Independent Post and Telecommunications Authority, 28 March 2002

- qualitative arguments and quantitative tests point to a separate relevant market for the termination service per operator, that is, they point to a "single operator" market definition.[74]

Portugal

In May 2002, the Portuguese telecommunications regulator, Anacom, intervened in the market for mobile termination in response to requests from mobile network operators. Consequently, Anacom set maximum mobile termination rates that would serve as the basis for interconnection agreements between mobile operators. The maximum average price for mobile-to-mobile termination was set at 18.70 euro cents per minute with per second billing, and was mandated to take affect from 30 June 2002. This amount was calculated on the basis of the average price charged for mobile-to-mobile termination in European Union countries. Mobile network operators were then required to reach agreement on mobile termination charges within 10 days of the announcement.[75]

Germany

Contrary to the decisions of the UK, French, Italian, Dutch and Portuguese regulators, in February 2003, the German Regulatory Authority for Telecommunications and Posts announced that there was no need for it to impose price reductions for mobile termination charges in Germany. It noted that termination rates were still less expensive in Germany than in the UK, despite the price reductions imposed so far by Oftel.[76]

To date, domestic mobile termination charges have not been a primary focus for regulatory authorities in the US, Canada and Asian nations such as Singapore and Japan.

5.1.4 Issues for discussion

At a general level, the Commission believes there are two key issues it would like to address in its review of the mobile termination service:

- whether the Commission should continue to regulate, via declaration, the mobile termination access service (or some variant of it); and

- if it considers continued regulation to be in the LTIE, what form should any future regulation take.

Issues relating to each of these questions are raised below.

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[74] *Report on the Definition of the Market for the Termination of Calls on Mobile Telephone Networks*, Netherlands Competition Authority, 1 August 2002

[75] *Prices for national termination in the mobile network of calls originated in mobile terminals,* ANACOM, 29 May 2002

[76] *German Telco Regulator Won't Impose Termination Charge Reductions*, Europemedia, 14 February 2003

5.1.5 Whether the Commission should continue to regulate the mobile termination service

As discussed in chapter 3, the Commission can only regulate the terms and conditions of access to a given service if it decides to declare the service. Once a service is declared, those supplying the service are subject to standard access obligations which require the access provider, upon request, to provide the service to access seekers. Part XIC of the Act specifies that the test for declaration is the LTIE test. That is, the Commission must be satisfied that making a declaration will promote the LTIE of carriage services or services provided by means of carriage services.

As indicated above, the GSM termination service has been deemed to be declared since July 1997, and varied to include calls terminating on CDMA networks since March 2002. In relation to the mobile terminating access service, therefore, the first key question is whether the service should continue to be declared in its current form into the future. If not, the Commission can either revoke or vary its declaration of the service. The Commission will make a decision on whether to vary, revoke or continue the current declaration based on its consideration of whether declaration is in the LTIE.

In considering whether declaration of a service will promote the LTIE, section 152AB of the Act provides that the Commission must consider the extent to which declaration is likely to result in the achievement of the following objectives:

- the objective of promoting competition in markets for carriage services and services supplied by means of carriage services;
- the objective of any-to-any connectivity; and
- the objective of encouraging economically efficient use of, and economically efficient investment in, the infrastructure used to supply the service.

For further details of the process which the Commission undertakes in determining whether declaration of a service is in the LTIE, see the Commission publication, *Telecommunications Services – Declaration provisions*, published in July 1999.

Promotion of competition

In relation to the objective of promoting competition, the Act directs the Commission to consider the market or markets in which competition may be promoted.

The Commission will conduct its assessment by following the same steps that it has taken in its assessment of the potential for declaration to promote competition in previous declaration inquiries. This involves first defining the service and then considering the market in which the eligible service is or would be supplied and other related markets in which competition may be promoted. The Commission notes that often it is competition in downstream markets that benefits most from declaration of a given service. In order to consider the likely overall effect that declaration is likely to have on competition in these markets, the Commission will consider the current state of competition in these markets and how this might change in the future with or without declaration of a mobile termination service.

Service description

When the GSM termination service was deemed to be declared in 1997, it was described as

> "...an access service for the carriage of telephone calls (i.e. voice, data over the voice band) from a point of interconnection to B-parties assigned numbers from the GSM number ranges of the Australian Numbering Plan and directly connected to the Access Provider's network."[77]

As a result of the Commission's inquiry into making GSM service declarations technology neutral, in March 2002 the service description was broadened to include CDMA. The declared GSM and CDMA termination service is now described as:

> "…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 and CDMA number ranges of the Australian Numbering Plan and directly connected to the Access Providers network."[78]

The Commission's consideration of the service will include an assessment of whether the service description should be varied in any way. In this regard, however, the Commission notes that the service declaration was varied only twelve months ago, in March 2002.

That said, and as discussed further in section 5.5 below, the Commission believes it is important to consider, given the expected introduction of 3G networks in 2003, whether the service description should be expanded to include termination on 3G networks.

The market in which the termination service is supplied

Once the Commission has defined the relevant service, it then moves to define the market in which the service is or would be supplied by including the service and all those sources, and potential sources, of close substitutes which effectively constrain the price and output decisions of the supplier (or suppliers) of the eligible service.

In defining the market, the Commission considers its product, geographic, functional and time dimensions. Over time, declaration of a service might affect the dimensions of a market (or markets), particularly in relation to the functional dimension.

The Commission notes that the market in which the mobile termination service is supplied was not defined in the deeming statement of June 1997. Nor was it explicitly defined in the Commission's report on the pricing methodology for the mobile termination service. As indicated in section 5.1.2, however, in its September 2002 report on appropriate pricing principles for the mobile terminating access service, the Commission determined that mobile termination should not be classified as a "separate market" due to the interdependencies between the wholesale and retail elements necessary to provide a mobile call.

It is clear, therefore, that the Commission considered the market to be broader than the definition adopted in recent decisions on mobile termination made in some EU countries, for

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[77] Deeming of Telecommunication Services, Australian Competition and Consumer Commission, June 1997, p.47

[78] *Variation to make the GSM Service Declarations Technology-Neutral, Final Report*, Australian Competition and Consumer Commission, March 2002, p. 58.

instance, in the UK and the Netherlands, as indicated in section 5.1.3. For instance, in its recent decisions on mobile termination charges, the UK's Oftel and Competition Commission applied a "single operator" market definition for the GSM mobile termination service. Effectively, this means that each mobile network operator is considered the sole supplier in the mobile termination service market. Clearly, the more narrow the market definition, the more likely it is the Commission can show each mobile carrier has market power with respect to the mobile termination service. The Commission invites interested parties to put forward their view on this market definition for the mobile termination service.

Other related markets in which competition may be promoted

Often the market or markets in which competition is likely to be promoted as a result of declaration of a service will be downstream markets. In regard to the mobile termination service, two key downstream services are the fixed-to-mobile telephony service and the mobile-to-mobile telephony service. The Commission invites interested parties to inform it of any downstream markets where they consider competition may be effected by declaration.

The Commission also notes a trend in the retail price offerings of mobile carriers to offer differentiated prices for mobile calls made to customers directly connected to a carrier's own network. That is, mobile carriers will generally offer a lower price when consumers make a call to other consumers on the same network. This type of call is often referred to as an 'on-net' call, while calls made to consumers on another network are referred to as 'off-net' calls. The Commission is interested in whether there are any competition concerns relating to differential pricing between on-net and off-net calls.

Overall effect of declaration of the service on competition

In its pricing methodology for the mobile termination service, the Commission noted that control over access and, to some degree, a lack of consumer awareness, allow mobile carriers to sustain above cost access prices for the mobile termination service. The Commission will reassess these issues in its review.

Given that the mobile termination service is already a declared service, the Commission will consider the overall effect that a *revocation* of the declaration would be likely to have on competition. It will do this by first considering the likely effect that revocation of the service would be likely to have on the wholesale price of the mobile termination service and then by considering the effect of the price change on the downstream markets.

In its consideration of the effect on competition in the downstream fixed-to-mobile market, the Commission will assess the issue of 'fixed-to-mobile pass through'. Fixed-to-mobile pass through refers to the relationship between changes in the wholesale mobile termination price and the retail prices charged to end-users for fixed-to-mobile services.

The Commission notes, however, that it may not be necessary to demonstrate that any reductions in the charges for wholesale inputs (i.e. the mobile termination service) will be passed on to end-users in order to consider that such reductions would be in the LTIE. The LTIE test under section 152AB of the Act requires consideration of the extent to which declaration promotes competition and encourages efficiency. The test does not require that the declaration of itself actually causes increased competition or efficiency. Declaration

might put in place necessary preconditions for improved competition and efficient use of and investment in infrastructure. Putting into place those preconditions can itself be in the LTIE, even if the necessary pre-conditions are not taken advantage of. Clearly, however, it would be preferable that any decrease in the price of a mobile termination service is passed on to end-users in the form of lower fixed-to-mobile retail prices.

The Commission invites interested parties to comment on the issues associated with fixed-to-mobile pass through. In particular:

- to what extent is there a lack of fixed-to-mobile pass through in Australia;
- what implications does it have for the Commission's consideration of whether declaration of a mobile termination service is likely to be in the LTIE; and
- how could concerns regarding the level of fixed-to-mobile pass through be addressed by other regulatory means?

Any-to-any connectivity

Section 152AB of the Act states that the objective of any-to-any connectivity "is achieved if, and only if, each end-user who is supplied with a carriage service that involves communication between end-users is able to communicate, by means of that service, with each other end-user who is supplied with the same service or a similar service, whether or not the end-users are connected to the same telecommunications network".

When the mobile termination service was deemed to be declared in 1997, the Commission considered that declaration was necessary for the purpose of achieving the objective of any-to-any connectivity. The mobile termination service is a necessary element in connecting a call which terminates on a mobile network. The Commission determined it was necessary to declare the mobile termination service to ensure that mobile network operators would provide termination for all calls made to their service, including those originating from other operators.

The Commission seeks views regarding whether circumstances have changed since the service was deemed to be declared such that any-to-any connectivity would now be likely to be achieved in the absence of declaration.

Economically efficient use of and investment in infrastructure

When considering whether continued declaration of the mobile termination service would be likely to encourage economically efficient use of infrastructure, and economically efficient investment in infrastructure, the Commission will consider the following issues:

- the likely impact of declaration on the efficient use of infrastructure;
- the likely impact of declaration on efficient investment in infrastructure (including incentives for investment in the infrastructure used to supply the mobile termination service and incentives for investment in other infrastructure); and

- the legitimate commercial interests of access providers, including the ability of access providers to exploit economies of scale.

Each of these issues is discussed in detail below.

Impact on efficient use of infrastructure

The Commission considers that efficiency has three major components – allocative, productive and dynamic. In general, each of these forms of efficiency is enhanced when the retail prices of given services reflect the costs of providing these services. In competitive markets, service providers have a greater incentive to lower retail prices in order to win market share. Accordingly, this incentive helps push prices towards cost, and thereby improves the efficient use of resources, and therefore infrastructure.

Where declaration is likely to promote competition in markets for carriage services or services provided by means of carriage services, the Commission's competition analysis will generally enable it to form a view about the impact of declaration on efficiency. For instance, if declaration is likely to lead to prices being closer to cost for the eligible service, then it will be expected to improve efficiency in the market in which the eligible service is supplied. In the language of subsection 152AB(2)(e), declaration will be expected to result in the more efficient use of infrastructure used to supply the eligible service. This is because, to the extent this leads to lower unit costs for suppliers in downstream markets, declaration can help ensure the final price paid by end-users for final services reflects underlying costs which in turn result in more efficient consumption of final services. This would then be expected to lead to more efficient use of all infrastructure used to provide final services to end-users.

A clear implication of this, therefore, is that the level of costs is important in determining whether declaration will lead to an efficient use of infrastructure. The comparison of costs to prices, and the impact declaration has on any difference between the two, is a key consideration in whether declaration will lead to a more efficient use of infrastructure. In this regard, there are costs associated with the supply of the mobile termination service and accordingly, these costs need to be considered in deciding whether to continue to declare the service. Accordingly, the Commission is interested in revisiting the cost drivers necessary to provide a mobile termination service, including the costs of network configuration for the service.

In relation to the mobile termination service, an efficient use of the infrastructure used to provide this service will be promoted when the price of the service moves closer to the cost of providing it. It follows, therefore, that the closer the price of the service is to the cost of providing the service, the greater will be the efficient use of the infrastructure used to provide this service.

The level of efficiency in the wholesale termination market/s also affects the level of efficiency at the downstream level, such as in the provision of fixed-to-mobile and mobile-to-mobile services. For example, if the price of the mobile termination service is above the cost of providing the service, then the retail price of a fixed-to-mobile call in the fixed-to-mobile market is also likely to be greater than cost.

The level of efficiency in use at the downstream level in the provision of fixed-to-mobile services is also affected by the level of 'fixed-to-mobile pass through'. As noted earlier, fixed-to-mobile pass through refers to the relationship between changes in the wholesale price of the mobile termination service and the retail price charged to the end-user for a fixed-to-mobile call. If a reduction in the wholesale mobile termination price is not passed through to the end-user of fixed-to-mobile services, the price of the-fixed-to mobile service will remain above the cost of providing the service resulting in inefficiency in the use of infrastructure used in providing the fixed-to-mobile service.

In its pricing methodology for the mobile termination service, the Commission put forward its view that access prices for mobile termination were above cost. Consequently, at the time of its report, the Commission believed that a level of inefficiency existed in the consumption of wholesale mobile termination and downstream services.

The Commission notes, however, that during the course of the UK Competition Commission's consideration of mobile termination rates in the UK, some carriers agreed that above cost pricing of mobile termination may generate some efficiency benefits due to the presence of network externalities. A view was put forward that end-users of fixed line and mobile networks benefit from a consumer's decision to take up a mobile subscription and that this externality needed to be priced into mobile termination rates. Operators argued that the positive effect of this externality is increased when the level of revenue from providing the mobile termination service allows handsets to be subsidised because this leads to a greater number of mobile subscribers.

The Commission notes that Oftel included a mark-up above cost for network externalities in its original 1999 decision on appropriate rates for mobile termination. The Commission also notes, however, that such a form of pricing for mobile termination implies a cross-subsidisation from mobile termination revenue to handset prices. The Commission is keen, throughout the course of this inquiry, to consider the merits of this argument and its implications for efficiency in use of infrastructure used to provide telecommunications services.

When determining whether declaration would encourage the efficient use of infrastructure, the Act also requires the Commission to consider whether it is 'technically feasible' to supply and charge for the eligible service. In this regard, the Commission is required to consider:

- whether supply is feasible in an engineering sense (ie. having regard to the technology that is in use or available);
- the costs of supply and whether the costs are reasonable; and
- the effects, or likely effects, of supply on the operation or performance of telecommunications networks.

The Commission notes that the mobile termination service is currently in use and is therefore technically feasible.

If a service is declared, access providers are subject to standard access obligations that may impose 'compliance' costs on them. In considering these costs, the Commission will take

account of the direct costs of complying with the standard access obligations. It will, however, not take account of consequential costs that the access provider may incur as a result of increased competition in the markets in which it competes.

Once the Commission has identified the compliance costs, it will then consider whether these costs are 'reasonable'. The Commission will evaluate reasonableness within the context of the LTIE test. This will involve considering the significance of the costs to the access provider relative to the direct benefits and the extent to which the costs are likely to be passed-on to end-users in terms of higher prices.

In this regard, the Commission requests views from service providers on the cost of compliance with the current mobile termination service declaration.

Impact on efficient investment in infrastructure

The Act also requires the Commission to consider whether declaration will encourage economically efficient investment in the infrastructure by which communication carriage services, and services provided by means of communication carriage services, are supplied.

Efficient investment in infrastructure makes an important contribution to the promotion of the LTIE. It can lead to more efficient methods of production, foster increased competition and lower prices, and enhance the level of diversity in the goods and services available to end-users.

Accordingly, in examining the likely impacts of declaration on economically efficient investment, and the extent of such investment, the Commission will look at the likely impact on economically efficient investment in:

- infrastructure by which the eligible service is supplied (upstream market); and
- infrastructure by which other communications carriage services, and services supplied by means of communications carriage services, are supplied (downstream markets).

For instance, continued declaration of the mobile termination service is likely to affect investment in both mobile telephony networks and in other telephony infrastructure used in connecting services to mobile telephones.

Central to the Commission's consideration of the incentives declaration provides to service providers to invest is the likely impact declaration would have on their 'build/buy' decisions. That is, carriers operating in downstream markets will have a choice to invest in their own upstream infrastructure (ie. build) in order to provide services to end-users, or to seek access from an existing upstream provider of the eligible service (ie. buy) if the service is declared. In this regard, the Commission is particularly concerned to ensure declaration wouldn't prevent efficient investment (such as efficient investment in upstream and downstream markets by potential service providers) or encourage inefficient investment (such as additional inefficient investment in downstream markets or inefficient duplication of upstream network infrastructure). To a large extent, creating the right incentive for service providers to make an

efficient build/buy choice is a matter of determining appropriate pricing principles for a declared service.

The Commission is particularly interested, therefore, in incentives generated for:

- building the infrastructure needed to provide a mobile termination service; and
- investment in infrastructure needed to provide downstream services.

Each of these is discussed in turn below.

Incentives for investment in infrastructure needed to provide a mobile termination service

From an access provider's perspective, investment in infrastructure needed to provide the eligible service can be deterred if the price it is allowed to charge for access is too low such that it is unable to recover the efficiently incurred costs of providing access. In the case of mobile termination, this could be the case if a mobile network operator was forced to provide termination to other operators on terms that did not allow it to recover its efficiently incurred costs.

Further, while inefficiently low pricing may not have an impact on previous sunk investments in existing infrastructure, it may distort the access provider's maintenance, improvement and expansion decisions. This would lead to inefficient investment in existing infrastructure, which would be to the detriment of the LTIE. This is not to say, however, that the price of access to termination on a mobile operator's network should necessarily be determined with direct reference to the actual incurred network costs. That is, if the price of mobile termination were to be based solely with reference to the actual incurred network costs, this could lead to the access provider over-investing in the existing network in order to raise the price it could charge for access (also known as 'gold plating'). In this regard, therefore, it is important to focus on efficiently incurred costs rather than merely actual costs. In other situations, the access provider may have an incentive to under-invest in order to limit the scope for third party access to its network.

Incentives for investment in other infrastructure

In addition to considering the impact of declaration on incentives for investment in the infrastructure by which the eligible service is supplied, declaration may also facilitate efficient investment in infrastructure which was previously 'locked up', and thus promote the LTIE. Accordingly, the Commission will consider the likely impact on investment in infrastructure used to supply other communications carriage services, or services provided by means of communications carriage services.

The Commission notes that in the Oftel inquiry into mobile termination rates in the UK, mobile network operators claimed that action to reduce termination rates would delay the rollout of 3G networks. Oftel and the UK Competition Commission concluded that there was no reason why this should be the case. They both agreed that the business case for 3G should stand on its own merits and that, as a matter of principle, 3G investment does not justify

termination charges that are above a reasonable estimate of their cost, particularly if those charges are ultimately derived from fixed line customers.[79]

Legitimate commercial interests of the access provider

The Act requires the Commission to consider the legitimate interests of potential access providers. The Commission will be particularly interested in examining whether access to the eligible service under consideration can be provided while maintaining the legitimate commercial interests of the access provider. Where this is not possible, declaration is likely to have an adverse effect on incentives for economically efficient investment in infrastructure.

The legitimate commercial interests of access providers include their ability to exploit economies of scale and scope. Economies of scale arise from a production process in which the average (or per unit) cost of production decreases as the firm's output increases. Economies of scope arise from a production process in which it is less costly in total for one firm to produce given quantities of two (or more) products than it is for two (or more) firms to each produce separate products.

Furthermore, the legitimate commercial interests of mobile network operators supplying the mobile termination service include the ability of carriers to make a commercial return on prudent investment, commensurate with risk, and is unlikely to extend to achieving a higher than normal commercial return. The Commission's preliminary view is that the consideration of the legitimate commercial interests of access providers is best dealt with when determining the relevant pricing principles for this service. That is, if an appropriate price is set for the service, the legitimate commercial interests of the access provider should be met.

5.1.6 Appropriate form of regulation for the mobile termination service

If continued declaration of the mobile termination service is considered to be in the LTIE, the Commission will then need to consider what form of regulation would be the most effective with regard to promoting the LTIE.

A review of the retail benchmarking pricing principle previously determined by the Commission as being appropriate for the declared mobile termination service would be a key part of any consideration of how to best regulate the service, if continued declaration is considered to be in the LTIE.

In considering what form of regulation would be most appropriate, the Commission will also have regard to the extent to which any such pricing principles might affect fixed-to-mobile pass through.

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[79] Director General's Statement on the Competition Commission's Report on Mobile Termination Charges, Oftel, 22 January 2003, p.6

Pricing principles

As mentioned previously in this chapter, the Commission previously determined that a retail benchmarking approach is the most appropriate methodology for the mobile termination service.

When the pricing principles were introduced in 2001, the Commission considered retail benchmarking to be the most appropriate methodology for the mobile termination service as it expected that continued competition in the provision of retail mobile telephony services would lead to continued price decreases for this service. To the extent that retail price decreases could then be translated into the prices set for the mobile termination service, this could help ensure the price of this service was gradually driven down towards cost.

The monitoring program established by the Commission, when the retail benchmarking pricing principle was adopted in July 2001, allows it to test the validity of the underlying assumptions it made about future movements in the price of mobile telephony services at the retail level. In practice, however, the Commission's retail benchmarking monitoring program indicates that the retail prices being charged by mobile carriers may, on balance, have increased over the monitoring period. As indicated earlier in the Discussion Paper, however, the Commission is concerned that the price changes reported by carriers may have been overestimated. Further, the Commission is concerned that the price movements observed under the retail benchmarking monitoring program appear at odds with those observed by the Commission in its forthcoming Division 12 and Price Control Compliance Reports. This said, the Commission is concerned that mobile telephony prices have not, at the retail level, declined as much as the Commission expected they would over the two year period since July 2001. Whilst the retail benchmarking pricing principle has not been applied by the Commission in practice since the Commission released its pricing principles in July 2001, the Commission is concerned that it may not have had its desired impact if practically implemented at any stage since July 2001.

Further, the Commission notes that the retail benchmarking pricing principle has been subject to some criticism from Oftel, which has argued that:

- the retail prices – to which charges for mobile termination are linked – do not appear to have fallen in Australia since the approach was announced, and this has limited the impact of the benchmarking approach compared to that which was originally envisaged; and

- the approach is unlikely to correct the perceived imbalance between retail origination prices and termination charges in the longer term, regardless of whether termination charges are reduced by the same as a basket of retail prices or a mobile operator's own retail prices.

The Commission also notes that the pricing principle is different to that adopted in most European jurisdictions. In particular, the Commission notes that Oftel adopted a LRIC methodology as the basis for determining fair charges for mobile termination in its 2000-2001 review of mobile termination charges in the UK. The UK Competition Commission subsequently agreed with the adoption of this methodology in its recently completed review of Oftel's analysis. It concluded that the pricing principle used in assessing mobile call

termination charges should be based on the LRIC of call termination (including fixed and common network costs) and a mark-up for relevant non-network costs. The UK Competition Commission also concluded that there should be a small mark-up for the network externality derived from the caller having a large, accessible pool of people to call and be called by. In the UK Competition Commission's view, the caller should make a contribution to the recruitment and retention of marginal subscribers. Rather than mandate immediate cost-based pricing, however, the UK Competition Commission chose to smooth the path of termination prices towards cost gradually over time. As indicated above, this involved the imposition of a series of CPI – X per cent price reductions for each of the four major mobile carriers in the UK over the next few years.

Further, the Commission notes that regulatory decisions concerning the mobile termination service have recently been made in a number of other European Union countries, including France, Italy, Portugal and the Netherlands. Regulators in these counties have taken a more interventionist approach than the Commission in regulating the service. In particular, like the UK, most have adopted cost based pricing principles and mandated CPI - X per cent reductions in the price of the service. The one exception in Europe is Germany, which has decided not to intervene in the setting of current mobile termination charges. This is because the German regulator believes mobile termination prices are at sufficiently low levels already, without the need for further regulatory intervention.

While the Commission believes there may be good reasons to believe the lack of price decreases at the retail level in Australia may be due to short-term factors that may not persist in future years (such as carriers seeking to protect their ARPUs and consolidate revenues during the recent capital constrained period), it is none-the-less interested in whether interested parties believe the retail benchmarking pricing principle should be abandoned in favour of some alternative form of pricing principle.

In this regard, the Commission notes that in July 1997, it released *Access Pricing Principles Telecommunications – a guide* (the APP paper). The guide concluded that, in the usual case, the Commission would apply the total service long-run incremental cost (TSLRIC) methodology for determining access prices. It considered TSLRIC was, in the usual case, the methodology that would best promote the LTIE.

In August 2000, the Commission released the ULLS Discussion Paper in which it concluded that TSLRIC was the appropriate pricing methodology to apply when determining an access price for the ULLS. In addition, it concluded that TSLRIC should be supplemented by a contribution to take account of a common cost attribution reflecting the fact that the ULLS shared a number of costs with the provision of other telecommunications services. This form of TSLRIC was referred to as TSLRIC+.

In its pricing methodology for the mobile termination service, the Commission noted that it considered TSLRIC to be a better pricing benchmark than short-run marginal cost pricing. In this respect, it noted that while a capacity-unconstrained short-run marginal cost price may appear to be efficient in the short-run, it does not provide for the recovery of fixed and common costs. At that time, the Commission also considered that, while it would be possible to vary the price in line with capacity constraints, this could result in large price fluctuations and potentially higher transaction costs for all parties. The Commission concluded that despite the benefits that a cost based approach could provide, such as limiting opportunities for anti-

competitive behaviour by integrated carriers, at that time, the cost of implementing the approach outweighed its benefits.

The Commission also concluded in the APP Paper that it would consider on a case-by-case basis which pricing principles were appropriate if it were asked to set an access price for a given declared service. In this regard, the Commission notes it has previously used an alternative "retail-minus avoidable cost" (RMAC) pricing methodology for the declared local carriage service (LCS). Under this alternative approach, the access price for a service is calculated by subtracting a portion attributable to marketing, billing, collection and other costs that would normally be avoided by the access provider in providing the service to a service provider.

The Commission is interested, therefore, in whether interested parties believe alternatives such as TSLRIC and RMAC would be appropriate for pricing a declared mobile termination service.

Questions to assist parties preparing submissions:

1. *In order to achieve the objective of promoting the LTIE, should the domestic GSM and CDMA terminating access service declaration continue unchanged, be varied or be revoked? Please explain your answer with reference to the objective of promoting the LTIE.*

2. *If the service description were varied, should it be broadened to include termination of calls on 3G networks?*

3. *In which market/s is the mobile termination service supplied? Does a "single operator" market definition apply to this service? What are the relevant downstream markets?*

4. *To what extent, if any, should the Commission be concerned about differential pricing between mobile-to-mobile "on-net" and "off-net" calls?*

5. *To what extent are consumers ignorant of the network a party they choose to call is directly connected to?*

6. *How would continuing the existing mobile termination declaration, varying the declaration or revoking the declaration affect competition in the market in which the service is supplied and in the relevant downstream markets?*

7. *To what extent have past decreases in the price of mobile termination services been passed through to end-users in the form of lower fixed-to-mobile prices? To the extent they have not, what implications does this have for declaration of mobile termination services? Would regulation still be in the LTIE if there was no guarantee of "pass through"?*

8. *How could concerns regarding the level of fixed-to-mobile pass through be addressed through other regulatory means?*

9. *How would continuing the existing mobile termination declaration, varying the declaration or revoking the declaration affect the achievement of the objective of any-to-any connectivity?*

10. *How would continuing the existing mobile termination declaration, varying the declaration or revoking the declaration impact on the efficient use of and efficient investment in infrastructure?*

11. *What are the costs of providing mobile termination services?*

12. *How significant do network effects continue to be when determining an appropriate price for mobile termination?*

13. *What are the costs of compliance of the mobile termination service?*

14. *Have retail charges for mobile services increased, as indicated by the data collected under the Commission's monitoring program? Is the retail benchmarking pricing methodology still an appropriate pricing principle for use with this service?*

15. *If the Commission were to determine that continued declaration of a mobile termination service were in the LTIE, which pricing principle would be the most appropriate for determining a price for this service? Why?*

16. *If the Commission were to move to some form of cost-based pricing principle such as TSLRIC, should it construct a cost model to estimate costs, or benchmark against overseas measures of cost? Further, what, if any, mark-ups should be adopted to a pure TSLRIC measure if TSLRIC were to be used as the appropriate pricing principle for a mobile termination service?*

5.2 Domestic GSM and CDMA originating access service

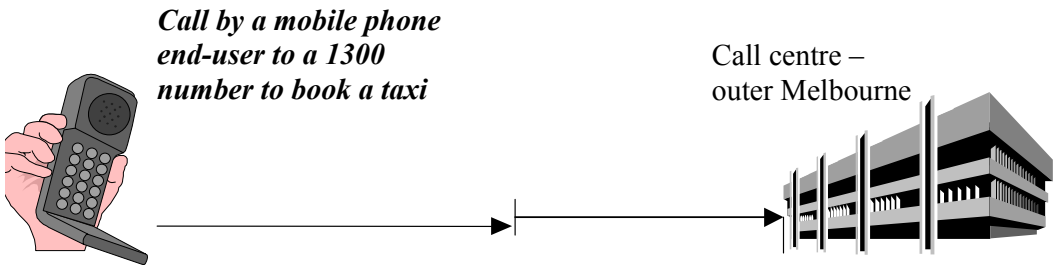
5.2.1 Introduction

In 1997, the Commission deemed a GSM origination service. However, unlike the GSM termination service which declared GSM termination irrespective of where the call originated, the GSM origination service was far more limited in its scope. In particular, the declared GSM originating access service only applies to calls made to numbers such as 13/1300 and 1800 call services.

In 2002, as a consequence of the Commission's examination of a proposed variation to make the domestic GSM origination and termination services declaration more technology neutral, the service description was varied to include origination on CDMA networks for the purpose of connecting to 13/1300 and 1800 services.

Hence, the declared GSM and CDMA originating access service (the mobile origination service) only applies to a limited range of call types. An example of its application would be 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. This is shown in Figure 5.4. below.[80]

Figure 5.4 – The GSM originating access service: use of the GSM/CDMA originating access service to supply a 13/1300 or 1800 call



As with the mobile termination service, declaration of a mobile originating access service has not been subject to a full review since it was deemed to be declared on 1 July 1997, and is therefore due for review.

[80] The Commission notes Primus might also need to purchase a fixed line terminating service from another carrier in this example if it does not have its own fixed line network.

5.2.2 Issues submissions should address

In general, the Commission believes there are two key issues that should be considered in relation to the mobile origination service. Firstly, should the Commission revoke, vary or continue its current declaration of the mobile origination service? With regard to varying the current declaration, the Commission is particularly interested in determining whether the current declaration should be expanded to include other mobile origination services, such as the origination service used to originate calls from mobiles to other mobiles.

Further, the Commission is also interested in whether the current service description should be expanded to include any other special number services, or any anticipated special services likely to be supplied on 3G mobile telephony networks.

Secondly, if the Commission determines that declaration of a mobile origination service continues to be in the LTIE, recent legislative changes now require it to specify appropriate pricing principles for use in an arbitration of any future disputes arising from access to any such declared service. Hence, if the Commission determines it appropriate to continue to declare a mobile origination service, it will be required to develop pricing principles for this service.

A more detailed discussion of factors relating to each of these services is provided below.

5.2.3 Whether declaration of a mobile originating access service is in the LTIE

In order to determine whether a mobile origination service should be declared, the Commission must be satisfied that declaration will promote the LTIE. As outlined in section 5.1, in its consideration of whether declaration will promote the LTIE, the Commission must have regard to the extent to which declaration is likely to result in the achievement of the following objectives:

- the objective of promoting competition in markets for carriage services and services supplied by means of carriage services;
- the objective of any-to-any connectivity; and
- the objective of encouraging economically efficient use of, and economically efficient investment in, the infrastructure used to supply the service.

Issues which the Commission will consider in relation to each of these objectives are outlined below.

Promotion of competition

Service Description

A key first step in determining the likely effect on competition of declaring a service is to define the service in question. When the domestic GSM originating access service was deemed to be declared in July 1997, the Commission defined it as:

> "…an access service for the carriage of telephone calls (i.e. voice, data over the voice band) to a POI from end-customers assigned from the GSM number ranges of the Australian Numbering Plan and directly connected to the Access Provider's GSM network." [81]

As a result of an inquiry into varying the GSM service declarations to make them technology neutral, the service description was later broadened to include CDMA technology. The declared mobile origination service for calls to 13/1300 and 1800 services is now described as:

> "…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 Telecommunications Numbering Plan 1997 and directly connected to the access provider's GSM or CDMA network." [82]

As indicated above, this service description is much narrower in its focus than the domestic mobile termination service described in section 5.1.

The process which the Commission undertakes in determining if declaration of an origination service is likely to be in the LTIE will involve assessing whether the existing service description should be revoked or varied. As indicated above, the Commission is interested in determining whether interested parties believe the existing service description should be varied to include origination services supplied on 3G networks and/or whether origination services used for mobile calls to numbers other than 13/1300 and 1800 numbers should be declared.

The market or markets in which competition may be promoted

In determining whether declaration is likely to promote competition in the markets for carriage services, or services provided by means of carriage services, the Commission must first define the boundaries of the market for the eligible service, and all other relevant markets which may be affected by declaration. The Commission does this by considering whether there are close substitutes for the service that constrain the price and output decisions of the access provider.

As well as the market in which the declared service is supplied, the Commission also considers the likely effect of declaration in other related markets.

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[81] Deeming of Telecommunication Services, Australian Competition and Consumer Commission, June 1997, p.42

[82] *Variation to make the GSM Service Declarations Technology-Neutral, Final Report*, Australian Competition and Consumer Commission, March 2002, p. 54.

The most immediately identifiable related markets in relation to the existing declared mobile origination service are the markets for the supply of 13/1300 and 1800 services. If the description of the declared service were broadened, the amount of downstream markets in which the effect of competition would be required to be assessed would be likely to increase.

The Commission invites interested parties to identify the markets they consider to be the relevant downstream markets for the existing declared service and for any other variation of the existing mobile origination service which they may consider should be declared.

The effect of declaration of the service on competition

In considering the effect of continued declaration of the mobile origination service on competition, the Commission will assess the current state of competition in the relevant markets.

The Commission will then consider the likely effect on competition in the relevant markets of revoking the existing service declaration. In particular, it will consider the likely effect on the price of the service and compare this with an estimate of the cost to the access provider of supplying the service.

The Commission will also consider the likely effect that broadening the service description of the declared service would have on competition in the relevant markets.

The Commission invites interested parties to comment on the current state of competition in the relevant markets and to comment on how they consider a revocation of the declared service, or a broadening of its description to include other mobile origination services, would impact on competition in the relevant markets.

Any-to-any connectivity

When the mobile origination service used for calls to 13/1300 and 1800 services was deemed to be declared in 1997, the Commission specified in its deeming statement that this service should be deemed to be declared as it was likely to help promote the achievement of any-to-any connectivity.[83]

As with the domestic mobile terminating access service, a key issue is whether parties have incentives to interconnect on their own, such that any-to-any connectivity would no longer be promoted by declaration.

In its assessment of whether declaration is still required for any-to-any connectivity to be achieved, the Commission will consider whether any-to-any connectivity would be achieved in the absence of declaration. The Commission therefore invites interested parties to comment on the likely effect on any-to-any connectivity of revoking the existing mobile origination declaration. The Commission also invites parties to comment on the impact on any-to-any connectivity of not varying the service to include calls made to special numbers not originating on 3G networks.

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[83] *Deeming of Telecommunications Services*, ACCC, June 1997, p. 19.

Economically efficient use of and investment in infrastructure

Impact on efficient use of infrastructure

As noted in section 5.1, the Commission considers that efficiency has three major components – allocative, productive and dynamic – and that, in general, each of these forms of efficiency is enhanced when the retail prices of given services reflect the costs of providing these services. In competitive markets, service providers have a greater incentive to lower prices in order to win market share. Accordingly, this incentive helps push retail prices towards cost, and thereby improves the efficient use of resources, and therefore infrastructure.

In relation to the mobile origination service, an allocatively efficient use of the infrastructure used to provide the service will be likely to be achieved when its price reflects the underlying cost of provision of the service. It follows, therefore, that the closer the price of the service is to the cost of providing the service, the greater will be the level of allocative efficiency.

The level of allocative efficiency in the provision of wholesale mobile origination services will also affect the level of allocative efficiency in the provision of downstream services, such as the 13/1300 and 1800 services. For example, if the price of the origination service for calls to 1300 services is above the cost of providing the service, then the retail price of calls to 1300 numbers will also be likely to be greater than their overall cost of provision. In turn, this disassociation between prices and costs would be likely to lower consumption of these services below efficient usage levels, and lead to a sub-optimal level of consumption of these services.

When determining whether declaration would encourage the efficient use of infrastructure, the Act also requires the Commission to consider whether it is 'technically feasible' to supply and charge for the eligible service. In this regard, the Commission is required to consider:

- whether supply is feasible in an engineering sense (ie. having regard to the technology that is in use or available);
- the costs of supply and whether the costs are reasonable; and
- the effects, or likely effects, of supply on the operation or performance of telecommunications networks.

The Commission notes that the mobile origination service is currently available and, therefore, appears technically feasible to supply.

As with its consideration of the mobile termination service, the Commission will also consider the compliance costs associated with the mobile origination service and assess whether it is reasonable within the context of the LTIE test. In this regard, the Commission requests views from service providers on the cost of compliance with the current domestic mobile origination service declaration. The Commission is also interested in whether the price for this service reflects its underlying cost of provision.

Incentives for investment in infrastructure needed to provide a mobile origination service

As noted in section 5.1, the Act also requires the Commission to consider whether declaration will encourage economically efficient investment in the infrastructure by which communication carriage services, and services provided by means of communication carriage services, are supplied.

Efficient investment in infrastructure makes an important contribution to the promotion of the LTIE. It can lead to more efficient methods of production, foster increased competition and lower prices, and enhance the level of diversity in the goods and services available to end-users.

Accordingly, in examining the likely impact of declaration of a mobile origination service, the Commission will assess its likely impact on investment in:

- infrastructure by which a mobile origination service is supplied; and
- infrastructure by which downstream markets are supplied.

For instance, continued declaration of the domestic GSM and CDMA mobile origination service is likely to effect investment in both mobile telephony networks and in other telephony infrastructure used in connecting services to mobile telephones.

As previously mentioned, central to the Commission's consideration of the incentives declaration provides to service providers to invest is the likely impact declaration would have on their 'build/buy' decisions. In this regard, the Commission is particularly concerned to ensure declaration wouldn't prevent efficient investment in the market/s for mobile origination services, or encourage inefficient investment in relevant downstream markets. The Commission is particularly interested, therefore, in incentives generated for:

- building the infrastructure needed to provide a mobile origination service; and
- investment in other downstream services.

As noted in relation to the domestic mobile termination service, the Commission considers the development of appropriate pricing principles is important for ensuring that distortions leading to an inefficient level of investment do not occur.

Legitimate commercial interests of the access provider supplying the mobile origination service

The Commission will be interested in examining whether access can be supplied to the mobile origination service while maintaining the legitimate commercial interests of the access provider.

In particular, the Commission will consider the likely effect of declaration of the mobile origination service on mobile network operators' ability to make a return on prudent investment in the infrastructure used to provide the origination service.

Appropriate form of regulation

Pricing principles

If the Commission determines that declaration of a mobile origination service is in the LTIE, it will then consider what pricing principles would be appropriate for determining a price for this service.

This is particularly relevant given recent legislative amendments to the Act which require the Commission to determine, by writing, pricing principles relating to the price of access to the declared service at the time the Commission declares the service or as soon as possible thereafter.

The Commission briefly considered the declared mobile origination service in its inquiry into pricing principles for the mobile termination service. The Commission's economic consultants to that inquiry, Gans and King, noted that exactly the same issues as arise for fixed-to-mobile termination charges arise for origination charges when origination is used for the purpose of providing access to 13/1300 and 1800 services. They commented that each mobile operator has an incentive to overprice origination charges for this service.[84]

The Commission invites interested parties to submit their views regarding which pricing methodology would be the most appropriate for the Commission to apply if it were to determine that declaration of a mobile origination service was in the LTIE.

[84] An Evaluation of Regulatory Pricing Options for Mobile Termination Services, J. Gans, p.22

Questions to assist parties preparing submissions:

1. *In order to achieve the objective of promoting the LTIE, should the domestic GSM and CDMA originating access service declaration continue unchanged, be varied or be revoked? Please explain your answer with reference to the objective of promoting the LTIE.*

2. *If the service description were varied, should it be broadened to include origination of calls made using 3G technology?*

3. *If the service description were varied, should it be broadened to include origination of calls using all mobile technology?*

4. *If the service description were varied, should it be broadened to include the origination of calls to special numbers other than 13/1300 and 1800 numbers? If so, which other numbers (for example, other fixed line numbers, mobile numbers etc)?*

5. *In which market/s is the mobile origination service supplied? Does a "single operator" market definition apply to this service? What are the relevant downstream markets?*

6. *How would continuing the existing mobile origination declaration, varying the declaration or revoking the declaration impact on competition in the market in which the service is supplied and in the relevant downstream markets?*

7. *How would continuing the existing mobile origination declaration, varying the declaration or revoking the declaration affect the achievement of the objective of any-to-any connectivity?*

8. *How would continuing the existing mobile origination declaration, varying the declaration or revoking the declaration impact on the efficient use of and efficient investment in infrastructure?*

9. *If the Commission were to determine that continued declaration of a mobile origination service were in the LTIE, which pricing principle would be the most appropriate for determining a price for this service? Why?*

5.3 Domestic intercarrier roaming

5.3.1 Introduction

Domestic intercarrier roaming is a service that allows the customers of one domestic mobile network to use their handsets to make and receive calls in Australia from another mobile network.

An example of domestic intercarrier roaming may be where a customer's provider has no network coverage in a particular area. In this case, domestic intercarrier roaming could enable the customer to consume a mobile telephony service by roaming onto another carrier's network. Domestic intercarrier roaming is particularly useful for new entrants and niche market participants who initially roll out networks in limited geographic areas.

Domestic intercarrier roaming is not currently a declared service in Australia. The Commission understands that there are only a very limited number of domestic intercarrier roaming agreements between carriers. These tend to apply in areas where one carrier has no network coverage. In the past, potential entrants have argued that roaming is necessary to compete against incumbent mobile carriers that have already rolled out extensive national networks.

5.3.2 International developments

The EU has opted not to include intercarrier roaming in its new regulatory package, preferring to emphasise infrastructure-sharing agreements. However, many EU members have developed legislation in this area. In Italy, Denmark, Spain and Sweden, intercarrier roaming is mandated under competition law. In the UK, intercarrier roaming on existing mobile networks is mandated for new 3G entrants.

In the US and Canada, intercarrier roaming is solely negotiated on a commercial basis. Recent evidence suggests that there have been a number of agreements signed between mobile network operators in these countries. However, it should be noted that (particularly in the US), roaming agreements are mainly between carriers who do not have overlapping networks.

5.3.3 Commission's approach to date

The Commission commenced a public inquiry ("Inquiry") under Part XIC of the Act in November 1997 to consider whether to declare services to enable domestic inter-carrier roaming:

> (i) between the existing GSM digital mobile services in the 900 MHz band and new services which may be offered in the 1800 MHz band; and
>
> (ii) between digital mobile services which may be offered in the 800 MHz band.[85]

In March 1998, the Commission reached a final decision not to declare domestic intercarrier roaming.[86] In coming to its decision, the Commission considered that roaming was likely to be commercially provided without the need for regulatory intervention. In addition, the Commission noted that declaring roaming may have an adverse impact on investment incentives.

At the time, the Commission also stated that it would monitor the mobile services market and '...that indications of anti-competitive conduct by the incumbents such as refusal to provide roaming in a timely manner will result in action by the Commission which could include early action under Part XIB and/or review of the declaration decision at that stage.'[87]

Since the conclusion of the Inquiry, the Commission has received one confidential complaint with regard to a carrier refusing to supply domestic intercarrier roaming services to another carrier and a small number of informal approaches requesting the Commission reconsider its approach to regulating this service. The Commission has also received a small number of complaints directly from consumers who wanted to use their handsets to roam onto other networks but were not allowed to do so by their carrier.

While the Commission is not, at this stage, aware of any compelling reason to change its decision not to regulate this service, it believes it is important to give interested parties an opportunity to raise any concerns they may have with regard to the way in which domestic intercarrier roaming is currently being provided.

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[85] After the Government announced on 9 July 1997 its intention to auction spectrum in the 800 MHz and 1.8 GHz bands, the Minister for Communications and the Arts requested in September 1997 that the Commission consider whether to hold a public inquiry into declaring services to enable intercarrier roaming between digital networks.

[86] See ACCC, *Inquiry into domestic intercarrier roaming declaration*, March 1998.

[87] ACCC, ibid., p. 33.

5.3.4 Issues submissions should address

At a broad level, the Commission believes there are two key issues that should be considered in relation to domestic intercarrier roaming during this review:

- should the Commission regulate any form of domestic intercarrier roaming service; and
- if so, what is the appropriate form of regulation for such a service.

Should the Commission regulate any form of domestic intercarrier roaming

Legislative requirements for declaration

As indicated in Chapter 3 of this Discussion Paper, the Commission can only declare a service if it is satisfied that declaration will promote the LTIE. In reaching such a decision, it must consider the extent to which declaration is likely to result in achieving:

- the objective of promoting competition in markets for carriage services and services supplied by means of carriage services;
- the objective of any-to-any connectivity; and
- the objective of encouraging economically efficient use of, and economically efficient investment in, the infrastructure used to supply the service.

In its previous Inquiry into the declaration of domestic intercarrier roaming, the Commission considered that the LTIE are likely to be promoted where the following factors were present:

- the existing level of competition in the mobile market is inadequate;
- new carriers will not be able to compete unless they can roam onto an existing network because national coverage is considered to be of critical importance to consumers;
- the incumbent mobile carriers will not provide roaming to entrants on reasonable terms and conditions in the absence of regulatory intervention;
- it is technically feasible to provide such a service; and
- the benefits to consumers in terms of promoting competition from declaration are not outweighed by any longer term costs such as that of discouraging investment, particularly relating to innovative services.[88]

The Commission notes that these factors are also likely to be relevant in its current consideration of domestic intercarrier roaming. Interested parties are invited to provide their views on these issues.

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[88] ACCC, ibid., p. xi.

Promotion of competition

As already detailed in sections 5.1 and 5.2 of this Discussion Paper, a key step for the Commission in relation to the objective of promoting competition is to define the boundaries of the market for the eligible service. This involves defining the service, considering the market in which the service is supplied and the market or markets in which competition may be promoted. The Commission then considers the likely overall effect that a declaration would have on the state of competition in these markets by considering the level of expected competition with or without declaration.

Description of domestic intercarrier roaming

Domestic intercarrier roaming is broadly defined as allowing the customers of one domestic mobile network to use their handsets to make and receive calls in Australia from another network. In the Commission's 1997 Discussion Paper announcing the Inquiry, the following definition of domestic carrier roaming was provided:

> The ability for a customer of one domestic network (home network) to access service from another network (the host network) using the same handset.[89]

The Commission notes that this definition is fairly broad in nature in that it places few restrictions on the circumstances under which an access obligation relating to the provision of domestic intercarrier roaming would apply. This reflected the Commission's technical advice (at the time) that a number of different forms of roaming are possible which may have differing impacts on the LTIE.[90]

One issue regarding a possible definition of domestic intercarrier roaming is whether such a definition should be restricted to include a service provided where a customer's own network does not have coverage. That is, should the definition of domestic intercarrier roaming be restricted to apply only in instances where the customers of one domestic mobile network use their handsets to make and receive calls in Australia where their own network has no coverage.

The Commission seeks the views and comments from interested parties on how domestic intercarrier roaming should be defined and what restrictions, if any, should be put on a description of domestic intercarrier roaming services for the purpose of defining a specific service for declaration.

Further, if a domestic intercarrier roaming service were to be considered for possible declaration, should its scope be limited to specific network types? That is, should the service description be broad such that it applied to roaming across a range of network types (i.e. GSM, CDMA and 3G) or be limited only to specific network types (e.g. GSM)?

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[89] ACCC, *Discussion Paper on Domestic Intercarrier Roaming*, November 1997, p. 8.
[90] ACCC, *Inquiry into domestic intercarrier roaming declaration*, March 1998, p. 4.

The market in which domestic intercarrier roaming is supplied

Section 4E of the Act defines a market for a particular good or service to include a market for other goods and services which are substitutable or otherwise competitive with the service in question. This involves identifying the buyers and sellers that constrain the price and output decisions of firms in the market.

The market in which domestic intercarrier roaming was provided in the previous Inquiry was the market:

> …for both 900/1800 MHz band roaming and 800 MHz band roaming in the national market for the supply of cellar mobile services.[91]

The Commission notes, however, that in determining appropriate pricing principles for the mobile termination service, the Commission indicated it believed there were strong interdependencies between a range of retail and wholesale mobile telephony services. This might imply a broad market definition is appropriate for mobile telephony services. The Commission seeks the views from interested parties as to whether it is appropriate for a broad market definition to be used for domestic intercarrier roaming or whether a more narrow definition, such as that used in the 1997 Inquiry, should be used.

The other markets in which competition may be promoted

Often the market or markets in which competition is likely to be promoted as a result of the declaration of an eligible service will be downstream markets. In regard to domestic intercarrier roaming, the Commission expects that the mobile-to-mobile, mobile-to-fixed and mobile reseller services are key downstream services likely to be affected by declaration of domestic intercarrier roaming services.

The Commission invites interested parties to inform it of downstream markets in which they believe competition may be promoted as a result of declaration of this service.

Current state of the market for the eligible service

Presently, the Commission understands that consumers connected to Australia's three GSM networks are generally not able to roam from their 'home' network to another GSM network except to make calls to emergency services.

While the GSM standard allows network roaming, Australian GSM network operators do not generally have agreements in place to allow this to occur. One exception the Commission is aware of relates to an agreement between Vodafone and Telstra who have negotiated a roaming agreement which allows Vodafone customers to roam onto Telstra's GSM network in certain areas of Victoria and Tasmania where Vodafone does not have network coverage.

For CDMA users, the Commission is aware that a roaming agreement exists between Hutchison and Telstra allowing Hutchison's CDMA services to roam onto Telstra's CDMA network when outside Hutchison's licence area in the greater Sydney and Melbourne areas.[92]

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[91] ACCC, ibid., p. 9.

As mentioned earlier in this section, the Commission has received one confidential complaint regarding the refusal of a carrier to provide roaming services to another mobile carrier since it conducted its Inquiry into the declaration of domestic intercarrier roaming.

Overall effect of the declaration of domestic intercarrier roaming on competition

The effect of a declaration of domestic intercarrier roaming services on competition depends on the structure of the relevant market and conduct of the participants in the market. Possible benefits from the declaration of this service might include lower prices and a greater range of service offerings for end-users in downstream markets.

If access to domestic intercarrier roaming services is essential for effective new entry, then roaming is likely to have a significant effect on promoting competition in downstream markets. This may be related to the importance of national coverage to new entrants' ability to compete with incumbent carriers with extensive national coverage. If national coverage is important, then the question of whether roaming is being, and/or will be, commercially provided needs to be considered.

In 1998, the Commission considered that it was likely that the future level of competition would be promoted to a degree without declaration of domestic intercarrier roaming services. This was because there were indications that carriers would provide intercarrier roaming on a commercial basis such that there would be opportunities for effective entry for niche mobile services without national coverage. Further, in submissions to the Inquiry, mobile carriers indicated a preference for commercial processes. The Commission considered that commercial processes should be given a chance to work first.

Interested parties are invited to comment on whether commercial processes have been successful in the provision of domestic intercarrier roaming services to date and what impact, if any, they have had on competition in downstream markets. Clearly, to the extent that interested parties believe current commercial arrangements are appropriate and reflect outcomes one would expect in competitive markets, it is unlikely that declaration would further promote competition in the market for the eligible service or downstream services.

Further, the Commission is interested in whether parties believe commercial incentives exist for incumbent carriers to provide roaming services to new entrants or carriers whose networks do not have national coverage, and whether such access would be provided on reasonable terms and conditions.

Any-to-any connectivity

In 1998, at the conclusion of the Inquiry into the declaration of domestic intercarrier roaming, the Commission did not consider that the declaration of roaming was relevant to the achievement of any-to-any connectivity as this had been provided for in the mobile context by the deeming of GSM access services. The Commission considered that domestic roaming is unrelated to any-to-any connectivity as it involves the connection of a customer to a network rather than communication between two customers who are already connected.

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[92] Australia Communications Authority, *Telecommunications Performance Report 2001-02*, p. 169.

Accordingly, it was considered that roaming should be regarded as promoting the related concept of ubiquity.[93]

The Commission is interested in whether interested parties believe circumstances have changed since its previous Inquiry regarding this issue and seeks the views of interested parties on whether any-to-any connectivity is relevant to domestic intercarrier roaming.

Economically efficient use of and investment in infrastructure

As detailed in previous sections, when considering whether or not to declare a service, the Commission will consider the effect declaration is likely to have on the efficient use of, and investment in, infrastructure used to provide telecommunications services and the legitimate commercial interests of access providers. These issues are discussed in turn below.

Impact on efficient use of infrastructure

In the 1998 Inquiry report, the Commission noted that domestic intercarrier roaming may encourage the economically efficient use of infrastructure where it leads to the use of otherwise unused capacity.[94] In this respect, appropriate pricing of roaming is important to encourage the efficient use of existing networks as it may lead to more cost-reflective pricing in the downstream markets which rely on the domestic intercarrier roaming service.

The Commission seeks the views of interested parties as to whether declaration of roaming is necessary for the efficient use of infrastructure. Further, the Commission is interested in whether the current market for GSM and CDMA services, and the future market for 3G services, will provide roaming on reasonable terms and conditions that will maximise efficient use of infrastructure without declaration of this service.

With regard to whether it is technically feasible to provide the domestic intercarrier roaming service, the Commission understands that domestic intercarrier roaming is technically feasible using current network technology and is able to be restricted to selected areas where a customer's usual or 'home' network does not have coverage**.**

Impact on efficient investment in infrastructure

In deciding whether to declare a service, the Commission must consider whether declaration of domestic intercarrier roaming will encourage economically efficient investment in infrastructure. Efficient investment is important because it can lead to more efficient methods of production, increase competition and a more diverse range of goods and services being available at lower prices. Earlier parts of this Discussion Paper provide discussion on how the incentives for investment can be affected by regulation.

In 1998, the Commission's Inquiry considered that if roaming was not likely to be commercially provided by incumbent carriers, efficient entry may be deterred and facilities based competition would not occur. However, the Commission also considers that regulation

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[93] ACCC, *Inquiry into domestic intercarrier roaming declaration*, March 1998, pp. 25-6.
[94] ACCC, ibid., p. 26.

may discourage investment in new facilities or the enhancement of existing facilities which may be caught by regulation.[95]

To the extent that current prices for domestic intercarrier roaming might not reflect the underlying costs of providing the service, however, the Commission is concerned this might distort carriers build/buy incentives. For instance, if the price of domestic intercarrier roaming was, in the absence of regulation, significantly higher than cost, it may provide incentives for carriers to extend their network roll-out to areas where it is inefficient to duplicate the network roll-out of existing networks.

Interested parties are therefore invited to provide views regarding whether current terms and conditions for domestic intercarrier roaming are distorting carriers' efficient build/buy decisions.

The Commission's view is that if the service is declared, development of appropriate pricing principles would be required to limit any such distortions to the efficient level of investment in infrastructure used to provide services associated with domestic intercarrier roaming.

Impact on the legitimate commercial interests of suppliers of the service

The Act also requires the Commission to consider the legitimate commercial interests of the potential suppliers of domestic intercarrier roaming. This includes maintaining their contractual commitments, and being able to use their own networks – including their ability to exploit the economics of scale and scope.

The Commission seeks comments from interested parties as to whether declaration of domestic intercarrier roaming would have any negative affects on the interests of carriers who would be supplying the service.

Appropriate form of regulation

If declaration of domestic intercarrier roaming is considered to be in the LTIE, the Commission will also need to consider what form of pricing principles would be most appropriate for this service.

The role of pricing principles and the LTIE is discussed in earlier chapters. The Commission considers that there are a number of methodologies, such as TSLRIC and RMAC, which could be applied to pricing domestic intercarrier roaming services if declared. TSLRIC is the incremental or additional costs the firm incurs in the long term in providing a service, assuming all of its other production activities remain unchanged. TSLRIC consists of the operating and maintenance costs the firm incurs in providing the service, as well as a normal commercial return on capital. [96] Under a RMAC methodology, the access price is determined by deducting the access provider's retail costs from the retail price for a given service.

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[95] ACCC, ibid., p. 29.
[96] ACCC, *Access Pricing Principles*, July 1997, p.28.

Avoidable costs are regarded as costs that an access provider would avoid, or can avoid if it ceased provision of retail activities completely, in respect of the service in question. [97]

The Commission seeks the views of interested parties on the relevant pricing principles in the event of declaration of domestic intercarrier roaming. Would the costs of implementing a cost-based pricing model outweigh the benefits? Would the development of pricing principles encourage parties to negotiate commercial agreements?

[97] ACCC, *Local Carriage Service pricing principles and indicative prices*, April 2002, p. 10.

Questions to assist parties preparing submissions:

1. *Should the domestic intercarrier roaming service be regulated?*

2. *How should domestic intercarrier roaming services be defined?*

3. *Should the domestic intercarrier roaming service description be limited to only apply to areas where a carrier has no network coverage? Should the service description be limited to apply to only a subset of mobile telephony networks (i.e. GSM, CDMA or 3G)?*

4. *Is a broad market definition, such as that implemented for the GSM/CDMA termination service appropriate for domestic intercarrier roaming? Or should a narrower market definition be applied (e.g. 1800 MHz)*

5. *Would declaration of domestic intercarrier roaming promote competition in any downstream markets? If so, in which?*

6. *Have commercial processes been successful in the provision of domestic roaming services to date? Have these had any impact on competition in downstream markets? Are current prices for domestic intercarrier roaming cost reflective?*

7. *Is any-to-any connectivity relevant to intercarrier roaming?*

8. *Would the declaration of domestic intercarrier roaming encourage economically efficient use and investment in the infrastructure used to provide the service and/or any downstream services?*

9. *What impact would declaration of domestic intercarrier roaming have on the legitimate commercial interests of carriers who would be supplying the service?*

10. *Is it technically feasible to provide a domestic intercarrier roaming service? Is its application limited only to certain types of network*

11. *If declared, what form of regulation would most effectively promote the LTIE?*

12. *What pricing principles should be applied for a domestic intercarrier roaming service in the event of declaration? Would the costs of implementing a cost-based approach outweigh any benefits?*

5.4 International intercarrier roaming

International intercarrier roaming (international roaming) can be described as "a facility, supported by commercial arrangements between operators or service providers, which enables a subscriber to use his/her mobile phone in another country on any other network which has entered into a roaming agreement for both outgoing and incoming calls".[98]

From a functional perspective, international roaming has both retail and wholesale levels.

At the retail level, the provision of international roaming services consist of mobile operators selling the service to end-users to allow these users to take their mobile handset to another country where it can be used to make and receive voice calls, voice messages and send/receive short message services (SMS).

At the wholesale level, the provision of international roaming services consist of mobile operators or service providers in different countries buying and selling roaming rights to each other to enable the provision of the service in the retail market. That is, before mobile carriers can provide the international roaming service to their domestic subscribers, they first need to establish roaming agreements with mobile carriers in other countries. As these agreements are bilateral arrangements and subject to negotiation between participating carriers, there is no universal set of agreed terms and conditions for the provision of international roaming services.

5.4.1 International intercarrier roaming services in Australia

'Inbound roaming' refers to the situation where subscribers of foreign mobile operators visit Australia and roam on a domestic mobile network. 'Outbound roaming', on the other hand, refers to the situation where Australian mobile subscribers travel overseas and roam on the networks of foreign mobile operators.

For inbound roaming, international roaming services are currently available only on GSM networks. Australian GSM networks operate on the 900 MHz and 1800 MHz bands. The Commission understands that, typically, GSM handsets used in Australia are either single-band or dual-band. A single-band GSM handset will only operate on one frequency band and can only be used to make and receive calls in countries that operate within the 900 MHz frequency. A dual-band handset will switch automatically between the 900 MHz and 1800 MHz radio frequencies. Both types of handsets can be used in many countries worldwide, as the majority of mobile end-users worldwide are connected to GSM networks. [99]

The countries where dual-band handsets are unable to be used include Canada and Chile.[100] In these countries, mobile networks operate within the 1900 MHz frequency. As a

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[98] Based on *Green Paper on a Common Approach in the Field of Mobile and Personal Communications in the EU, COM (94)145 final, p.225* as cited in European Commission DG Competition, *Working Document on the Initial Findings of the Sector Inquiry into Mobile Roaming Charges*, 13 December 2000, p. 14.

[99] Australian Communications Authority, *Telecommunications Performance Report 2000-01*, p. 81.

[100] Telstra Mobile, International Roaming User Guide, available at: www.telstra.com.au/mobilenet/introam/outbound/outbound.cfm.

consequence, a tri-band GSM handset is required to enable a roaming Australian end-user to connect to a network operating within the 1900 MHz radio frequency.

For outbound roaming, Australian end-users, prior to travelling overseas, need to arrange with their service provider for the provision of the international roaming services to ensure they have access to the overseas network(s) they need. A lead time of between two and ten days is usually required for mobile carriers to arrange access to the overseas network(s). On arrival at their destination, customers simply turn their handset on and wait about 30 seconds until it automatically connects to the visited network. Alternatively, some handsets may need to be manually logged on to the visited network. [101]

Information about making and receiving calls, the use of voicemail and other mobile services are provided by mobile carriers to end-users in the form of fact sheets (or guides) that can be obtained from retail outlets or from the mobile carrier's website. The Commission is interested in whether interested parties believe the content and distribution of this information assist end-users to make informed choices when using international roaming services, and assist competition in the retail market.

Telstra, Optus and Vodafone provide inbound roaming and outbound roaming services. As previously mentioned, inbound roaming services are only available to customers connected to GSM networks. As such, Hutchison, which currently only operates a CDMA network,[102] does not offer international roaming services (both outbound and inbound) because a technical solution is yet to be developed for CDMA services. [103]

Telstra's international roaming service is known as 'ReadyRoam'. This service allows customers to use the Telstra MobileNet® GSM Digital Mobile Service in over 100 countries around the world. Optus's international roaming service, called 'AutoRoam', enables customers to use their Optus Mobile Digital Service with 176 overseas networks in 86 countries worldwide. Vodafone's international roaming service is known as 'Global Roaming'. Vodafone has automatic roaming agreements with 142 networks in 74 countries around the world. In some countries, Vodafone Australia does not have roaming agreements with mobile operators. However, Vodafone UK has roaming agreements with operators in these countries. In these instances, Vodafone Australia can provide customers with a Vodafone UK subscriber identity module (SIM) card. This service is known as 'plastic roaming'. While this allows customers the ability to use their own handset, they are assigned a different mobile number.

In terms of market size, an annual survey of the ACA in 2001 indicated that 9 per cent of household consumers of telecommunications services used international roaming, compared

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[101] Telstra Mobile, International Roaming User Guide, available at www.telstra.com.au/mobilenet/introam/outbound/userguid/dig_gui.htm; Optus Mobile, International Mobile Services 'yes' International Optus AutoRoam brochure or at the website www.optus.com.au.

[102] At the time of release of this Discussion Paper, Hutchison had only just launched its 3G mobile network.

[103] Australian Communications Authority, *Telecommunications Performance Report 2001-02*, p. 169. Neither of Australia's CDMA network operators (i.e. Telstra and Hutchison) has roaming agreements with overseas CDMA networks to allow Australian CDMA end-users to use outbound roaming. As at 30 June 2002, CDMA inbound roaming was available only for visitors from Hong Kong, Japan, Korea and New Zealand.

with 17 per cent of small business consumers.[104] In the previous year, 4 per cent of household consumers of telecommunications services used international roaming compared with 14 per cent of small business consumers.[105] The annual survey, however, does not include large corporate consumers.

5.4.2 Worldwide pricing structures for international intercarrier roaming services

The wholesale pricing principles for international roaming services are laid down by the GSM Association. The Association claims to be the world's leading wireless industry representative body, consisting of more than 500 2G and 3G GSM network operators, key manufacturers and suppliers to the GSM industry, regulators and administrative bodies. Membership of the Association spanned 160 countries and areas of the world in 2000. [106]

Since 1998-99, the GSM Association has put in place charging principles for wholesale mobile roaming agreements between GSM network operators. Under these principles, each GSM operator applies a uniform Inter-Operator Tariff (IOT) to all its roaming partners that use its network. The IOT is formally defined as a tariff between mobile network operators, and it is charged by the visited network operator to the home network operator for the use of the visited network.[107] Network operators may offer incentives, such as volume discounts, on a bilateral basis to their counterparts in order to attract more roaming onto their networks. A network operator typically adds a mark-up on top of the IOT in determining the charge to its roaming partner. The operator's mark-up for each roaming partner is subject to bilateral agreement and can vary between networks and between countries. The GSM Association is not involved in the operators' bilateral arrangements.

The IOT pricing regime laid down by the GSM Association does not deal with international roaming agreements between mobile operators and organisations that are not licensed network operators, such as carriage service providers and mobile virtual network operators. In effect, therefore, access to the wholesale roaming market is restricted to licensed network operators.

Further, the pricing principles of the GSM Association do not govern the pricing of retail roaming services. In the absence of specific regulation by governments in specific countries, therefore, each operator is free to set the level of its end-user tariffs without any restrictions. Typically, the home network operator will add a mark-up on top of the wholesale roaming price charged by the operator of the visited network when determining a final price for the end-user who purchases an international roaming service (i.e. for outgoing calls whilst roaming). According to the European Commission, this mark-up can range between 10 per cent and 35 per cent.[108]

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[104] Australian Communications Authority, *Consumer Satisfaction Survey 2000-2001*, January 2002, p. 9.

[105] Australian Communications Authority, *1999-2000 Telecommunications Consumer Satisfaction Survey, Miscellaneous Data* , November 2000, pp. 51-2 (also available at http://www.aca.gov.au/aca_home/publications/reports/satisfaction/cons_satis_miscdata2000.rtf)

[106] GSM Europe Code of Conduct for Information on International Roaming Retail Prices, p. 1. Information about the GSM Association is available at the website www.gsmworld.com.

[107] European Commission DG Competition, op. cit., p. 8.

[108] ibid., p. 9.

The final retail price for the international roaming service is therefore the sum of:

- the visited network's IOT charge;
- the visited network's mark-up over the IOT;
- the end-user's home operator mark-up over the visited network's charge; and
- fluctuations in currency exchange rates.

For instance, under Telstra's current Standard Form of Agreement, the rate it charges end-users travelling overseas for calls made on their mobile phone is made up of:

- a call charge levied by the overseas GSM carrier (inclusive of any mark-up levied by the overseas carrier); plus

- a mark-up over and above this rate, where the mark-up is set at 30% of the call charge levied by the overseas GSM carrier. [109]

The Commission also understands that, unlike a mobile end-user making a call within Australia and paying for that call, a charge is levied on both the end-user making and the end-user receiving the call for international roaming services. Outgoing call charges are based on the visited network's IOT and mark-up and the home operator's mark-up, as discussed above. For incoming call charges, specifically in the case of a mobile end-user who receives a call from Australia whilst roaming overseas, the calling party pays a charge for a normal mobile call within Australia and the receiving party pays a charge for the call to be re-directed from Australia to the country where the receiving party is located.

5.4.3 Overseas developments relating to international roaming

Overseas, consumers and national regulatory authorities have expressed concerns about perceived problems with international roaming services. For instance, the International Telecommunications Users Group (INTUG) has argued in several international forums that: [110]

- wholesale international roaming charges are not cost-oriented;
- there are no market pressures on wholesale prices – they are determined by administrative means among operators (i.e. through the GSM Association and bilateral agreements rather than through competitive processes);
- home operators add excessive charges to the wholesale prices before billing their retail customers; and
- home operators do not make pricing information readily available and understandable to users.

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[109] Telstra Public Mobile Telecommunications Service (PMTS) Section of the Standard Form of Agreement, Table 6.1 International Roaming, http://www.telstra.com.au/sfoa/

[110] INTUG 2002, Submission to the Comision Interamericana de Telecomunicaciones (CITEL).

Further, the Commission notes that the European Commission's (EC) Directorate-General Competition commenced an inquiry into international roaming charges in January 2000 and released its findings on 13 December 2000. [111] The EC undertook its inquiry into mobile roaming charges because of its concern that prices for mobile roaming (both national and international) were rigid and there appeared to be a lack of competitive offers.[112] Some of the findings from the EC inquiry relevant to the markets for international roaming were that:

- there is a lack of price competition in the retail market as a consequence of similarities in mark-ups over the wholesale IOT rate (in the majority of EC Member States, the home operators in the same market applied mark-ups of between 10 and 35 per cent over the IOT, resulting in similar retail prices within that market. This contrasts with considerable variations in retail prices for non-roamed calls within the Member States);[113] and

- consumers receive little information about the price for international roaming at a time which would allow them to manually switch between different networks.[114]

The EC expressed its concern that the excessive level of international roaming prices and the uniform mark-up may reflect coordinated pricing behaviour or tacit collusion between competitors within Member States.[115] The EC was also concerned that the structure of the wholesale market appears to give mobile operators collective dominance. Features of the wholesale market structure which may give them collective dominance include high concentration ratios; a homogenous product in roaming; similar cost structures; high barriers to entry; and low price elasticity of demand. The oligopolistic structure of the wholesale market is reinforced by GSM Europe's standard international roaming agreement (STIRA).[116]

The EC inquiry also revealed that GSM Europe introduced the IOT in 1998-99 to replace the Normal Network Tariff (NNT) which GSM Europe also determined. The NNT was the wholesale charge for international roaming, and mobile operators added a maximum mark-up of 15 per cent to arrive at retail prices. The inquiry found that, since the introduction of the IOT in 1998-99:[117]

- wholesale charges for international roaming calls at both peak and off-peak times had increased by up to 126 per cent;

- there was a convergence towards a higher overall level of IOTs between 1997 and 2000. That is, mobile operators with relatively lower IOTs have increased their IOTs while those with higher IOTs have reduced their IOTs; and

- retail prices for international roaming had consequently increased while prices for other mobile services had generally fallen.

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[111] European Commission DG Competition, op. cit.
[112] ibid, p. 1.
[113] ibid, pp. 21-2.
[114] ibid, p. 24.
[115] ibid, pp. 20-1.
[116] ibid, p. 21.
[117] ibid., p. 18.

Oftel also undertook a review in late 2001 of the prices paid by UK mobile end-users for international roaming calls. This review was prompted by growing consumer concerns about these prices compared with the prices for other mobile services. Oftel's study revealed that UK mobile users were paying twice as much as users in France, Germany, Sweden and Italy in using their prepaid mobile overseas, and that these extremely high prices suggest that UK operators are able to exploit a lack of consumer awareness about international roaming charges.[118]

In September 2001, Oftel also released a report on competition in the mobile market. As part of this report, Oftel found that the price for international roaming calls is "high and static" relative to other mobile call types.[119]

Oftel considered that competitive pressure on the price for international roaming calls was weak and can be attributed to the lack of consumer awareness about the price and the structure of the wholesale international roaming market.[120] With regard to the price of international roaming, Oftel conducted a consumer survey which found that:[121]

- 23 per cent of consumers had knowledge of the price of using their mobile phones overseas when they first purchased their phone; and
- of those consumers who use their mobile phones overseas frequently:
    - 21 per cent have no knowledge of whether they pay for incoming calls; and
    - 10 per cent were certain they did not have to pay for incoming calls when roaming overseas (when all consumers who receive incoming calls while abroad do have to pay for that incoming call).

In relation to the structure of the wholesale market for international roaming, Oftel believed that for consumers to fully benefit from competition at the retail level, mobile operators in the UK must be able to negotiate lower wholesale rates with foreign operators. At the retail level, Oftel considered that there does not appear to be many barriers to competition as SIM-only providers of international roaming services exist and may place competitive pressures on international roaming prices. Oftel believes, therefore, that the lack of competitive incentives occurs mainly at the wholesale level.[122]

Given the apparent large mark-up at the retail level here in Australia, the Commission questions whether the same retail pricing constraints exist in Australian markets. In this regard, the Commission is interested in whether consideration should be given to including retail international roaming charges under retail price control arrangements in Australia.

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[118] Oftel's international benchmarking study of mobile services is available on Oftel's website at www.oftel.gov.uk/publications/research/2001/benc1101.htm. Oftel's advice to UK consumers on getting best value when using their mobile phones overseas is available on Oftel's website at www.oftel.gov.uk/publications/mobile/roam1001.htm.

[119] Oftel, *Effective competition review: mobile*, 26 September 2001, p. 18.

[120] ibid., p. 38.

[121] ibid., p. 18.

[122] ibid., p. 78.

5.4.4 The Commission's approach to date

The Commission is aware that there has been increasing global and local interest in international roaming services since 2000.

The Commission has received complaints and representations from Australian consumers and user associations such as the Australian Telecommunications Users Group (ATUG) about the size and lack of transparency associated with retail pricing structures for international roaming services.

The Commission notes, however, that international roaming prices are not regulated under current price control arrangements in Australia. However, with the increasing importance of the international roaming issue, both locally and internationally, the Commission considers it important to take a proactive approach towards ensuring that the markets for international roaming services become transparent and subject to more competitive pressure.

In this regard, the Commission has initiated liaisons with, and has sought the views of, a number of national regulatory authorities in the Asia-Pacific Economic Cooperation (APEC) region in order to explore coordinated regional approaches to international roaming issues.

Questions to assist parties preparing submissions

1. *What is the structure of international roaming charges in Australia?*

2. *Is there competition at the wholesale level for international roaming services for inbound roaming services?*

3. *Is there competition at the wholesale level for Australian carriers negotiating international roaming arrangements with overseas carriers for outbound roaming services?*

4. *What is the size of the mark-up over and above the IOT rate typically paid by Australian mobile operators when purchasing outbound roaming services for their directly-connected end-users in Australia?*

5. *What is the size of the mark-up charged by Australian carriers over and above the IOT rate in negotiating with overseas carriers whose end-users purchase inbound roaming in Australia?*

6. *What is the size of the retail mark-up charged by Australian carriers over and above the overseas carriers' relevant charges for Australian end-users roaming on to overseas carriers networks when abroad?*

7. *Is this mark-up cost orientated? If so, why?*

8. *To what extent are Australian consumers aware of the structure of international roaming charges?*

9. *To what extent do Australian consumers purchase international roaming services when travelling abroad? Does the content and distribution of international roaming 'fact sheets' assist end-users to make informed choices when using these services, and assist in promoting competition in these markets?*

10. *What is the size of revenues of Australian carriers from providing outbound roaming services and inbound roaming services?*

11. *Is regulation of international roaming services needed in Australia?*

12. *If so, what form should it take?*

5.5 3G Mobile Services

5.5.1 Introduction

Third generation (3G) mobile telephony encompasses a set of technologies[123] that allow voice and high speed data transmission via radio spectrum. 3G networks should provide data rates to at least 300 kbps, and as fast as 2.0 Mbps. Typical second generation (2G) networks provide a data rate of 9.6 kbps.

A key characteristic of 3G data is that it will no longer be solely originated from circuit-switched networks, but is likely to include content sourced from the Internet and other packet based networks. 3G devices are capable, amongst other things, of transmitting:

- text;
- digitised voice;
- video; and
- multimedia.

3G network development has been based on the International Mobile Telecommunication 2000 standard. This standard was developed by the International Telecommunications Union (ITU) to ensure inter-operability with existing mobile technology standards including GSM and CDMA.

5.5.2 International developments

In June 2002, the European Commission (EC) released a report on assessing the licensing regimes for 3G mobile communications in the European Union (EU) and their impact on the mobile communications sector. The EC conducted a comparative assessment of 3G licensing in the member states of the EU and made recommendations on how spectrum should be assigned and regulated in the future. The recommendations included encouraging national regulators to speed up deployment of 3G networks by harmonising planning rules and streamlining procedures for acquisition of sites.

The EC has also considered the question of infrastructure sharing between 3G operators. Infrastructure sharing may be as simple as sharing masts; or as complex as setting up geographically distinct networks inter-operated under roaming agreements. It is pertinent to note that Oftel has mandated domestic intercarrier roaming on existing mobile networks for subscribers of new entrants Alternatively, infrastructure sharing can be as extensive as carriers fully sharing a network, including frequencies, the Radio Access Network, and core network elements such as mobile switching centres (MSCs). Also, pending third party comment, the EC intended to permit network sharing arrangements, albeit with appropriate safeguards in place.[124] In the UK, this has resulted in the mobile operators disclosing "clear, transparent and accountable criteria" against which they report to Oftel for it to publish. Additionally, proposals to enter into agreements for infrastructure sharing must be able to

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[123] These include Universal Mobile Telephone Service (UMTS) and extensions of CDMA
[124] See EU Press Release IP/02/1277 of 10 September 2002

demonstrate that there are consumer benefits from earlier delivery of services provided at lower prices that outweigh any lessening of competition that might result in poorer service quality or coverage.[125]

5.5.3 Commission's approach to date

In 2002, the Commission engaged the Centre for International Research on Communication and Information Technologies (CIRCIT) at RMIT, to prepare a discussion paper on the future of interconnection arrangements in Australian Telecommunications networks. [126]

Subsequent to the release of the discussion paper, the Australian Communications Industry Forum (ACIF) convened an industry seminar on 16 May 2002 to provide an opportunity for widespread industry discussion on issues relating to the introduction of next generation networks (NGN), including 3G, in Australia.

An ACIF NGN Framework Options Group (FOG) was also established to manage technical, commercial and regulatory issues arising from the introduction of NGNs, including issues directly impacting on the successful interconnection of different networks. The NGN FOG comprises representatives of the telecommunications industry, policy makers, regulators, carriers, service providers, equipment suppliers and consumers. It is due to release its final report in the second half of this year. The Commission actively participates, in an advisory capacity, in meetings of the NGN FOG.

5.5.4 Issues submissions should address

For the purposes of this review, the Commission is interested in determining whether the provision of 3G services is likely to require access regulation under Part XIC of the Act. If so, the Commission is also interested in determining what specific regulatory approach would be appropriate for a declared 3G mobile service.

In the first instance, if the Commission is to declare any type of 3G mobile service under Part XIC of the Act, it would need to determine that such regulation is in the LTIE. In this regard, the Commission is required to consider whether declaration would be likely to promote the objectives of:

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

Prior to addressing these questions, however, the Commission would first need to define an eligible service. In this regard, the Commission notes that the definition of 3G is not widely

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[125] See "*3G Mobile Infrastructure Sharing in the UK – Note for Information*", May 2001, available at http://www.oftel.gov.uk/publications/mobile/infrashare0501.html

[126] Circit, "*The Future of Interconnection Arrangements in Australian Telecommunications Networks*", 4 April 2002.

agreed. For instance, the ACIF NGN FOG has considered whether mobile and fixed networks should be included in the definition of 3G. In this regard, the NGN FOG has considered whether 3G is simply a network architecture that will supersede today's PSTN, Internet and mobile networks.[127] In contrast however, the marketing departments of various mobile carriers refer to 3G in terms of a range of advanced application services that 3G networks will be used to provide. For its part, the ITU defines 3G as having:

> "*… higher capacity and enhanced network functionalities, which allow advanced services and applications, including multimedia*"[128]

The EU considers that 3G communications:

> "*... combine[s] mobile technology with high data transmission capacities ... [and] promise access to Internet services specifically tailored to meet the needs of people on the move, via multimedia applications using image, video, sound, as well as voice.*"[129]

The Australian Communications Authority (ACA) has reserved the 2Ghz and 800 MHz bands of the radio frequency spectrum for the delivery of 3G services, and this could form the basis of a service description. As earlier outlined in chapter 4, this paper views 3G as a set of broadband network technologies that allow significantly greater data flow between end-user devices.

The preceding discussion highlights the need to distinguish between the services that will be provided over 3G mobile networks, and the underlying network carriage service. In terms of the access regime under Part XIC of the Act, the Explanatory Memorandum (EM) to the *Trade Practices Amendment (Telecommunications) Bill, 1996* that introduced the regime noted that:

> In making a declaration of an eligible service, the ACCC will have a high level of flexibility to describe the service, whether it be in functional or any other terms. This will enable, where appropriate, the ACCC to target the access obligations (which are triggered by a declaration) to specific areas of bottleneck market power by describing the service in some detail, or to more broadly describe a service which is generally important (such as services necessary for any-to-any connectivity).[130]

As the EM indicates, a key aim of the access regime, therefore, is to target access obligations – via declaration – to specific areas of bottleneck market power. Accordingly, in order for the Commission to consider declaration of a 3G mobile service (or services), it is important to first identify if there are likely to be any specific aspects in the provision of 3G mobile services that might lead it to believe give rise to bottleneck market power.

Further, and as indicated earlier in this Discussion Paper, the Commission is also interested in determining, in the event it determines regulation is required, whether 3G requires a separate service description, or may be included as an extension to the existing service descriptions for the mobile origination and termination services.

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[127] See http://www.acif.org.au/ngn_fog/files/FOG03_001.pdf

[128] See http://www.itu.int/osg/imt-project/docs/What_is_IMT2000-2.pdf

[129] See EU Press Release IP/02/1277 of 10 September 2002

[130] Explanatory Memorandum for the Trade Practices (Telecommunications) Amendment Bill 1996 — item 6, proposed section 152AL.

In this regard, the Commission notes that existing mobile services such as voice and mobile text messaging will be provided on 3G networks. 3G networks will also allow for the introduction of new mobile services that, due to transmission capacity limitations, are not currently able to be offered using GSM and CDMA networks. These new services, such as Internet applications, are not currently regulated, unless it is purely in terms of network access.

Hence, just as the Commission believes providers of certain mobile originating and terminating services on GSM and CDMA networks have control over access to critical inputs needed to provide traditional 2G mobile services such that access regulation of these services is required, it may be that 3G network operators have control over essential network elements used to provide 3G mobile services.

Another consideration is whether the drivers of 3G development may represent sources of market power that may be utilised to limit access to certain classes of end-user. Relevant drivers include content such as that found on the Internet, application services such as Multimedia Messaging Services (MMS), and proprietary protocols or technologies that are used to deliver these. Vertical integration is already a factor in other market sectors such as Internet service provision and Pay TV, and the Commission wishes to consider whether there is scope for similar types of issues found in those sectors to also affect the development of the 3G services sector.

Once an eligible service has been defined, the Commission can then proceed to address whether declaration of such a service would be likely to promote the LTIE. Key to this consideration will be the likely impact of declaration on the level of competition in the provision of 3G applications and the need to ensure any-to-any connectivity between

- customers on the different 3G mobile networks;
- customers on 2G and 3G mobile networks; and
- customers on fixed and 3G mobile networks.

Equally important is the need to consider the impact declaration of 3G services would be likely to have on the efficient use of and investment in telecommunications infrastructure. In this regard, the Commission notes that many governments have allocated or auctioned spectrum for the provision of 3G services. In Australia, the spectrum auctions for 3G raised over $1 billion, with 6 carriers being allocated a variety of spectrum lots. Consequently, while 3G may still be in its infancy, the number of carriers that have invested in spectrum, if not yet in network rollout, indicates that access to other networks will be required in the future.

That said, the Commission also notes that only one of the six carriers that purchased spectrum for the delivery of 3G services has commenced construction of its 3G network. The slow implementation of 3G services in Australia may be contrary to the LTIE, if it is considered that the rollout of 3G offers long-term advantages and benefits to Australian businesses and consumers.

Further, it should also be borne in mind that 3G application and network services are still largely under development. At time of writing, Hutchison Telecommunications had only just

launched its 3G network in Australia, and overseas experience suggests that some carriers have had difficulties in ensuring reliability with respect to the provision of 3G mobile services. In this regard, the Commission is interested in what implications declaration of 3G services would be likely to have on incentives for efficient investment in, and use of, 3G mobile infrastructure and whether it is too early to consider regulating 3G services.

If it is appropriate for the Commission to declare 3G services, then it will need to consider what pricing principles would be appropriate for such services.

While this paper has already discussed potential pricing principles for a range of other mobile telephony services, there is another layer of complexity in relation to interconnection of 3G networks that needs to be addressed before appropriate pricing principles can be finalised. This complexity comes about because of the packet based nature of some 3G services and the differences between existing interconnection arrangements common to circuit-switched 2G mobile networks and those common to packet based networks such as the Internet. 2G mobile networks are generally interconnected on a per-minute termination payment basis.[131] However, Internet networks interconnect on either a 'sender keep all' basis[132] or on a per-megabyte delivery charge basis.

Consequently, as 3G services result in an increase in traffic that originates on packet based networks, there is likely to be a clash of the different interconnection models. The Commission will need to consider whether the two models can co-exist, or if not, the most appropriate pricing principles to apply under the circumstances – if it were to determine pricing principles for a declared 3G mobile service.

[131] Under a termination model, the carrier whose directly connected customer originates a call makes a payment to the carrier whose end-user receives the call. This payment is intended to cover the cost of terminating the call on the receiving end-user's network.

[132] 'Sender keeps all' refers to a pricing principle whereby interconnecting parties freely exchange traffic between their networks. This model is also sometimes referred to as a peering model.

Questions to assist parties preparing submissions

1. *What is the appropriate service definition for 3G mobile services?*

2. *Are there likely to be any bottlenecks associated with the provision of 3G services?*

3. *If the Commission were to consider declaring 3G mobile services, should the Commission declare a separate 3G service or vary the existing service description for other mobile services to include 3G mobile services?*

4. *Would declaration of a 3G mobile service (or a variation of the existing mobile service descriptions to include 3G mobile services) be in the LTIE?*

5. *Would declaration of a 3G mobile service be likely to promote competition in the market for 3G mobile and/or related services?*

6. *Would declaration of a 3G mobile service be likely to promote any-to-any connectivity in relation to carriage services that involve communication between end-users of 3G mobile services, either in terms of making or receiving calls?*

7. *Would declaration of a 3G mobile service be likely to promote the economically efficient use of, and the economically efficient investment in, the infrastructure by which 3G mobile services are supplied?*

8. *Are there particular risks for the development and uptake of 3G services arising from vertical integration in the provision of network services, 3G applications, and content services? How might these risks be reduced?*

9. *Should the Commission engage in regulatory forbearance until such time as the 3G services industry is more mature?*

10. *What is the most appropriate commercial interconnection model for governing the exchange of traffic generated by 3G mobile services?*

11. *What pricing principles would be appropriate for a declared 3G mobile service, if one were to be declared?*