Australian
Competition &
Consumer
Commission

Mobile Services Review

Mobile Domestic Inter-carrier Roaming Service

***Draft decision* on whether or not the Commission should declare a mobile domestic inter-carrier roaming service**

October 2004

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1. Introduction

In March 2003, the Australian Competition and Consumer Commission (the Commission) announced that it would conduct a wide ranging review of a number of issues associated with regulation of the mobile services industry. One aspect of this inquiry concerns whether the Commission should declare a mobile domestic inter-carrier roaming service and if so, what form of pricing principle would be appropriate.

Mobile domestic inter-carrier roaming is a service which enables mobile subscribers to use their mobile phones to make and receive calls by means of another network in Australia (the 'visited' network) when outside the coverage of the network to which they subscribe (the 'home' network). The service is a wholesale service supplied by the visited network operator to the home network operator, which is then re-supplied by the home network operator to its subscribers. A copy of the service description for this service is at Appendix A to this report.

The inquiry also involved examining the appropriate form of regulation for mobile originating and terminating access services, mobile international roaming services, and services provided by means of 3G networks. Those services (except international roaming) are the subject of separate reports published by the Commission.[1]

The Commission has conducted this aspect of the inquiry pursuant to section 152AL of the *Trade Practices Act 1974* (the Act) and Part 25 of the *Telecommunications Act 1997*. In order to advance and inform this and other aspects of the review, the Commission released a Discussion Paper on 24 April 2003.

In response to the Discussion Paper, the Commission received 27 submissions from interested parties, of which eight specifically addressed mobile domestic inter-carrier roaming. A list of those submissions is contained in Appendix C of this report.

As part of this process, the Commission also held two public forums to aid consideration of the central issues in this review. These were held in Melbourne on 29 August 2003 and in Sydney on 11 September 2003.

Based on the information available to it at this point in time, the Commission has reached a draft decision not to declare the mobile domestic inter-carrier roaming service. However, the Commission proposes to monitor developments with respect to the provision of domestic inter-carrier roaming services. It is the Commission's draft view that such monitoring should take the form of a record-keeping rule (RKR) requiring mobile carriers to provide information on the terms and conditions upon which domestic inter-carrier roaming services are provided.

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[1] ACCC, Mobile Services Review: Mobile Originating Access Service — Final report on whether or not the Commission should extend, vary or revoke its existing declaration of the mobile originating access service, June 2004 (MOAS Report); ACCC, Mobile Services Review: Mobile Terminating Access Service — Final decision on whether or not the Commission should extend, vary or revoke its existing declaration of the mobile terminating access service, June 2004 (MTAS Report). The Commission proposes to release a report on international roaming by November 2004

1.1. Declaration

Under the Act, declaration of a service creates a requirement for those carriers supplying the service (known as 'access providers') to provide the service, upon request, to other service providers (known as 'access seekers').[2] In doing so, the access provider must take all reasonable steps to ensure that the technical and operational quality of the service is equivalent to that which the access provider provides to itself.[3] Declaration ensures service providers have access to the inputs they need to supply competitive communications services to end-users.

The terms and conditions of supply for a declared service can be agreed through commercial negotiations. If the access provider or access seeker cannot agree on the terms and conditions of supply, either party can seek Commission arbitration of disputes over access terms and conditions for the service. Where a relevant access undertaking (approved by the Commission) exists, an arbitration determination made by the Commission must not be inconsistent with that undertaking.

1.2. Previous inquiry into declaration of mobile domestic inter-carrier roaming services

Approximately six and a half years ago, the Commission held an inquiry into whether to declare services which would enable domestic inter-carrier roaming between existing digital mobile services in the 900MHz band and prospective services in the 1800MHz band and for prospective digital mobile services within the 800MHz band. At that time, the Commission decided not to declare a mobile domestic inter-carrier roaming service on the basis that roaming was likely to become commercially available without the need for regulatory intervention.[4]

Since then, several roaming agreements have been concluded involving the supply of roaming services by Telstra and Vodafone. Nevertheless, during that time, the Commission received one confidential complaint with respect to a carrier refusing to supply domestic inter-carrier roaming and has also received a small number of informal approaches requesting the Commission to reconsider its approach to regulating domestic inter-carrier roaming services. Accordingly, in the context of the mobile services review, the Commission has taken the opportunity to reconsider the matter.

1.3. Structure of this report

The remainder of this report is structured as follows:

- Chapter Two sets out the relevant legislative framework for the inquiry.

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[2] Paragraph 152AR(3)(a) of the Act.

[3] Paragraph 152AR(3)(b) of the Act.

[4] ACCC, Public inquiry into declaration of domestic inter-carrier roaming under Part XIC of the Trade Practices Act 1974, March 1998 (Previous Domestic Inter-carrier Roaming Report).

- Chapter Three addresses issues relevant to the service description for a mobile domestic inter-carrier roaming service.
- Chapter Four discusses whether declaration would promote competition in telecommunications markets.
- Chapter Five discusses whether declaration will promote any-to-any connectivity between end-users.
- Chapter Six discusses whether declaration will promote economically efficient use of, and economically efficient investment in, infrastructure.
- Chapter Seven sets out the Commission's conclusions, particularly in light of the matters in Chapters Four to Six, on whether declaration of a mobile domestic inter-carrier roaming service would promote the long-term interests of end-users.

1.4. Submissions on this report

In accordance with Division 3 of Part 25 of the *Telecommunications Act 1997*, the Commission invites written submissions from interested parties on the draft decision and reasoning set out in this Draft Report. The Commission seeks comment from all industry participants, other stakeholders and the public more generally. It encourages these groups to consider the key issues, and make submissions to the Commission to further assist it in determining whether to declare a mobile domestic inter-carrier roaming service.

To foster an informed and robust consultative process, the Commission proposes to treat all submissions as non-confidential, unless the submissions indicate otherwise. Unless the author of a submission requests that the submission be kept confidential, written submissions given to the Commission will be made available to interested parties upon request. If submissions contain confidential information, then the author of the submission should provide the Commission with a copy that is marked confidential and a masked copy of the submission. This masked copy may be made available to interested parties upon request.

Submissions must be provided by close of business on **29 October 2004** and 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.

Enquiries can be made to Richard York on (03) 9290 1883 or Jess Manahan on (03) 9290 1983.

Following consideration of these issues, the Commission aims to publish a final report setting out its final decision in November 2004.

Further details of the Commission's approach to declaration inquiries is outlined in its paper *Telecommunications services – Declaration provisions, July 1999.*

2. Legislative background

2.1. The access regime

Part XIC of the Act sets out a telecommunications access regime. The Commission may determine that particular carriage services and related services are declared services. Once a service is declared, carriage service providers (CSPs) are required to comply with standard access obligations in relation to any such service that they supply. The standard access obligations facilitate the provision of access to declared services by service providers in order that service providers can provide carriage services and/or content services. In addition to its standard access obligations, a carrier, CSP or related body must not prevent or hinder access to a declared service.

2.2. The Commission's approach to the LTIE test

In order to declare a service, the Commission must be satisfied that declaration will promote the long-term interests of end-users of carriage services or of services provided by means of carriage services (the LTIE).[5] Section 152AB of the Act provides that, in determining whether declaration promotes the LTIE, regard must be had only to the extent to which declaration is likely to result in the achievement of the following objectives.

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

Section 152AB also provides further guidance in interpreting these objectives.

Subsections 152AB(4) and (5) provide that, in interpreting this objective, regard must be had to, but is not limited to, the extent to which the arrangements will remove obstacles to end-users gaining access to listed services. The Explanatory Memorandum to Part XIC of the Act states that:

> ... it is intended that particular regard be had to the extent to which the ... [declaration] ... would enable end-users to gain access to an increased range or choice of services.[6]

Subsection 152AB(8) provides 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, or a

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[5] Paragraph 152AL(3)(d) of the Act.

[6] Explanatory Memorandum for the Trade Practices Amendment (Telecommunications) Bill 1997 (Cwth).

similar service, with other end-users whether or not they are connected to the same network.

Subsections 152AB(6) and (7) provide that, in interpreting this objective, regard must be had to, but not limited to, the following:

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

These matters are interrelated. In many cases, the LTIE may be promoted through the achievement of two or all of these criteria simultaneously. In other cases, the achievement of one of these criteria may involve some trade-off in terms of another of the criteria, and the Commission will need to weigh up the different effects to determine whether declaration promotes the LTIE. In this regard, the Commission will interpret long-term to mean the period of time necessary for the substantive effects of declaration to unfold.

2.2.1. Promoting competition

The first criterion requires the Commission to make an assessment of whether or not declaration would be likely to promote competition in the markets for listed services. The concept of competition is of fundamental importance to the Act and has been discussed many times in connection with the operation of Part IIIA, Part IV, Part XIB and Part XIC of the Act.

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

> In our view effective competition requires both that prices should be flexible, reflecting the forces of demand and supply, and that there should be independent rivalry in all dimensions of the price-product-service packages offered to consumers and customers.
>
> Competition is a process rather than a situation. Nevertheless, whether firms compete is very much a matter of the structure of the markets in which they operate.[7]

[7] Re Queensland Co-operative Milling Association Ltd; Re Defiance Holdings Ltd (1976) ATPR 40-012, 17,245.

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

The establishment of a right for third parties to negotiate access to certain services on reasonable terms and conditions can operate to constrain the use of market power that could be derived from the control of these services. Accordingly, an access regime such as Part IIIA or Part XIC addresses the *structure* of a market, to limit or reduce the sources of market power and consequent anti-competitive conduct, rather than directly regulating conduct which may flow from its use, which is the role of Part IV and Part XIB of the Act. Nonetheless, in any given challenge to competition, both Parts XIB (or IV) and XIC may be necessary to address anti-competitive behaviour. To assist in determining the impact of potential declaration on downstream markets, the Commission will first need to identify the relevant market(s) and assess the likely effect of declaration on competition in each market.

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

The second step is to assess the likely effect of declaration on competition in each relevant market. As noted above, subsection 152AB(4) requires that regard must be had to the extent to which declaration will remove obstacles to end-users gaining access to listed services.

The Commission considers that denial to service providers of access to necessary upstream services on reasonable terms is a significant obstacle to end users gaining access to services. In this regard, declaration can remove such obstacles by facilitating entry by service providers, thereby providing end users with additional services from which to choose. For example, access to a mobile termination service may enable more service providers to provide fixed to mobile calls to end-users. This gives end-users more choice of service providers.

Where existing market conditions already provide for the competitive supply of services, the access regime should not impose regulated access.[8] Regulation will only be desirable where it leads to benefits in terms of lower prices, better services or improved service quality for end-users that outweigh any costs of regulation.

In the context of considering whether declaration will promote competition, it is therefore appropriate to examine the impact of the proposed service description on each relevant market, and compare the state of competition in that market with and without declaration. In examining the market structure, the Commission considers that competition is

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[8] Explanatory Memorandum for the Trade Practices Amendment (Telecommunications) Bill 1997 (Cwth).

promoted when market structures are altered such that the exercise of market power becomes more difficult; for example, because barriers to entry have been lowered (permitting more efficient competitors to enter a market and thereby constrain the pricing behaviour of the incumbents) or because the ability of firms to raise rivals' costs is restricted.[9]

2.2.2. Any-to-any connectivity

The objective of 'any-to-any' connectivity is achieved if, and only if, each end-user of a service that involves communication between end-users is able to communicate, by means of that service or a similar service, with every other end-user even where they are connected to different telecommunications networks.[10] The reference to 'similar' services in the Act enables this objective to apply to services with analogous, but not identical, functional characteristics, such as fixed and mobile voice telephony services or Internet services which may have differing characteristics.

The any-to-any connectivity requirement is particularly relevant when considering services that involve communications between end-users.[11] When considering other types of services (such as carriage services that are inputs to an end-to-end service or distribution services such as the carriage of pay television), the Commission considers that this criterion will be given less weight compared to the other two criteria.

2.2.3. Efficient use of, and investment in, infrastructure

The third objective under section 152AB is to encourage the economically efficient use of, and economically efficient investment in, the infrastructure used for the supply of carriage services.

Economic efficiency has three components.

- Productive efficiency refers to the efficient use of resources within each firm such that all goods and services are produced using the least cost combination of inputs.
- Allocative efficiency refers to the efficient allocation of resources across the economy such that the goods and services that are produced in the economy are the ones most valued by consumers. It also refers to the distribution of production costs amongst firms within an industry to minimise industry-wide costs.
- Dynamic efficiency refers to efficiencies flowing from innovation leading to the development of new services, or improvements in production techniques.

The Commission will need to ensure that the access regime does not discourage investment in networks or network elements where such investment is efficient. However, where it is inefficient to duplicate investment in existing networks or network

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[9] See also *Re Sydney International Airport* [2000] ACompT 1 at paragraph 106 for discussion on when competition is promoted.

[10] Subsection 152AB(8) of the Act.

[11] Explanatory Memorandum for the Trade Practices Amendment (Telecommunications) Bill 1997 (Cwth).

elements, the access regime may play an important role in ensuring that existing infrastructure is used efficiently.

Paragraph 152AB(6)(a) requires the Commission to have regard to a number of specific matters in examining whether declaration will lead to achievement of this objective. Some of these are considered below.

The technical feasibility of supplying and charging for particular services.

This incorporates a number of elements, including the technology that is in use or available, the costs of supplying, and charging for, the services and the effects on the operation of telecommunications networks.

In many cases, the technical feasibility of supplying and charging for particular services given the current state of technology may be clear, particularly where there is a history of providing access. The question will be more difficult where there is no prior access, or where conditions have changed. Experience in other jurisdictions, taking account of relevant differences in technology or network configuration, will be helpful. Generally the Commission will look to an access provider to demonstrate that supply is not technically feasible.

The legitimate commercial interests of the supplier or suppliers, including the ability of the supplier to exploit economies of scale and scope

A supplier's legitimate commercial interests encompass its obligations to the owners of the firm, including the need to recover the cost of providing services and to earn a normal commercial return on the investment in infrastructure. The Commission considers that allowing for a normal commercial return on investment will provide an appropriate incentive for the access provider to maintain, improve and invest in the efficient provision of the service.

A significant issue relates to whether or not capacity should be made available to an access seeker. Where there is spare capacity within the network, not assigned to current or planned services, allocative efficiency would be promoted by obliging the owner to release capacity for competitors.

Paragraph 152AB(6)(b) also requires the Commission to have regard to whether the access arrangement may affect the owner's ability to realise economies of scale or 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 two (or more) products than it is for two (or more) firms to each separately produce each of the products.

Potential effects from access on economies of scope are likely to be greater than on economies of scale. A limit in the capacity available to the owner may constrain the number of services that the owner is able to provide using the infrastructure and thus prevent the realisation of economies of scope associated with the production of multiple services. In contrast, economies of scale may simply result from the use of the capacity of the network and be able to be realised regardless of whether that capacity is being used by the owner or by other carriers and service providers. Nonetheless, the Commission

will assess the effects of the supplier's ability to exploit both economies of scale and scope on a case-by-case basis.

The impact on incentives for investment in infrastructure

Firms should have the incentive to invest efficiently in infrastructure. Various aspects of efficiency have been discussed already. It is also important to note that while access regulation may have the potential to diminish incentives for some businesses to invest in infrastructure, it also ensures that investment is efficient and reduces the barriers to entry for other (competing) businesses or the barriers to expansion by competing businesses.

There is also a need to consider the effects of any expected disincentive to investment with any anticipated increases in competition to determine the overall effect of declaration on the LTIE. The Commission will be careful to ensure that services are not declared where there is a risk that incentives to invest may be dampened, such that there is little subsequent benefit to end-users from the access arrangements.

2.3. Pricing principles for declared services

As a result of changes to the telecommunications provisions of the Act in September 2001, the Commission is now obliged to determine pricing principles (PP) relating to services that it declares.[12] The PPs must be in writing and must be made at the same time as, or as soon as practicable after, the Commission declares a service or varies a declared service.

The PPs may also contain price-related terms and conditions relating to access to the declared service. 'Price related terms and conditions' is defined to mean terms and conditions relating to price or a method of ascertaining price.

Before developing PPs, the Commission must publish a draft version, invite public submissions on the draft, and consider any submissions received. The Commission must then publish the PPs (in such manner it thinks appropriate). The Commission must have regard to the PPs if there is an arbitration in respect of the declared service.

The practical effect of these changes for the Commission is that the Commission should either call for submissions on PPs as part of a public discussion paper on a proposed declared service or conduct a separate public consultation on PPs as soon as possible after a service is declared. Although the Commission is not bound to follow the PPs in any arbitration, in practice it would unless there was good reason not to.

[12] Section 152AQA of the Act.

3. Service description

A fundamental step in determining whether a given service should be declared is to establish how the service in question should be described. This gives interested parties a basis point from which to discuss whether the service should be declared, and gives parties a firm idea of the service that access providers would be required to supply were the service to be declared. It also assists the Commission by giving it a field within which it can meaningfully analyse whether declaration of the service, so defined, would promote the LTIE.

As the note to sub-section 152AL(3) states:

> Eligible services may be specified by name, by inclusion in a specified class or in any other way.[13]

The explanatory memorandum for the Trade Practices Amendment (Telecommunications) Bill 1996 adds:

> 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).[14]

3.1. Principles for developing a service description

When developing the description of an eligible service, the Commission is guided by the object of Part XIC of the Act, which is to promote the LTIE. To this end, the Commission utilises the following principles:

- In most cases, some degree of technical specification is required. However, the Commission's preference is to describe the service in terms which are as functional as possible. In such a situation, the declaration will leave the access provider with flexibility to determine the most efficient way of supplying the service. This also provides more flexibility to the access seeker in the type of service that can be provided within the ambit of the declared service and avoids distorting technological or innovative developments. Technical terms may, however, be appropriate where a functional description would provide scope for ambiguity which could be exploited by the access provider in a manner that hinders access.
- The eligible service should be described in a manner which provides sufficient clarity for application of the standard access obligations.

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[13] See Acts Interpretation Act 1901 (Cwth) s. 46(2).

[14] Explanatory Memorandum to the Trade Practices (Telecommunications) Amendment Bill (1996), item 6, proposed section 1.

- The service should be one for which it is technically feasible to supply and charge. In addition, the service should be one that a potential access provider is supplying to itself or others.

3.2. What is mobile domestic inter-carrier roaming?

Mobile domestic inter-carrier roaming is a service which enables mobile subscribers to use their mobile phones to make and receive calls by means of another network in Australia (the 'visited' network) when outside the coverage area of the network to which they subscribe (the 'home' network). In addition, the Commission understands that satellite operators such as Globalstar use domestic inter-carrier roaming within areas of network coverage because this enables subscribers to reduce call charges by using terrestrial-based mobile services rather than satellite-based mobile services.

In the previous inquiry into domestic inter-carrier roaming, the service was described as:

> the ability for a customer of one domestic network (the home network) to access service from another domestic network (the host network) using the same handset.[15]

The domestic inter-carrier roaming service involves the use of the visited network to make and receive calls. In order to better describe the service, the Commission asked several carriers how the service was defined in their roaming agreements. While there is some variation in terms of the types of calls covered by the agreement (e.g. whether data is covered), the use of exclusion zones and availability of call features (e.g. call waiting, conferencing), there were broad similarities.

When calls are made using the visited network, the visited network operator is usually responsible for organising both origination and termination of the call. Thus, the visited network operator supplies the home network operator with an end-to-end call service. That said, the Commission understands that it may be possible to supply roaming services using an originating service model, whereby the visited network operator originates calls and then hands the call over to the home network operator at a point of interconnection, for the home network operator to organise termination.

When calls are received using the visited network, it is the visited network which is responsible for organising termination. Thus, the visited network operator supplies a termination service.

For roaming to work, the mobile handset must be programmed to search for the visited network when outside the home network area. This may occur automatically, or it may be necessary to manually configure the handset. Also, the location registers of the visited network must be programmed to recognise subscribers from other networks. The Commission understands that while access to the location registers is an integral aspect of roaming, it is not specifically addressed in the service description; rather is treated as an implementation issue (i.e. terms and conditions of access).

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[15] ACCC, Previous Domestic Inter-carrier Roaming Report, p. 4.

3.3. Non-seamless and seamless roaming

Under current roaming arrangements, when a subscriber is on a call and moves outside the home network to the visited network, the call drops out and must be re-initiated. This is known as 'non-seamless' roaming. There is the prospect that seamless roaming will be possible between third generation (3G) networks; however, the Commission understands this is not currently available.

3.4. Scope of the service

The service description is set out in Appendix A.

In developing a service description, the Commission had regard to the following issues:

- geographical dimension of the service;
- network technology; and
- call content.

3.4.1. Geographical dimension

In the discussion paper, the Commission questioned whether the service should be national in scope or limited to instances where subscribers are outside their network area. No submissions specifically addressed this issue.

The Commission considered that a service description which was limited to areas outside access seekers' networks may not provide sufficient clarity or certainty because the scope of the standard access obligations would depend on the identity of particular access seekers. Accordingly, the Commission's preference is to define the service by reference to more certain geographic criteria.

In this regard, the Commission considered that the service could be national in scope, or limited to particular geographic regions where there are fewer networks, and therefore less competition for the provision of roaming services.

The Commission's preference is to limit its service description for roaming to those areas where the competitive forces are likely to be weakest, and therefore the case for declaration the strongest. This suggests that particular metropolitan areas where there are multiple networks should be 'carved out' of the service description.

- With respect to roaming on to CDMA networks, there are two networks in the metropolitan areas of Sydney and Melbourne, but only one network outside those areas.
- With respect to roaming on to GSM networks, there are three networks in the metropolitan areas of major cities, but fewer networks in some provincial and rural areas.
- At this stage, it is not clear how many 3G networks will be deployed. There are five licences for networks in the metropolitan areas of Melbourne, Sydney, Brisbane, Perth and Adelaide and three licences for networks outside those areas.

Consequently, for CDMA domestic inter-carrier roaming, the service description excludes the metropolitan areas of Melbourne and Sydney, so that it covers areas where there is only one CDMA network.[16] Also, for GSM domestic inter-carrier roaming, it excludes the metropolitan areas of Melbourne, Sydney, Brisbane, Adelaide and Perth where there are three GSM networks as well as entry by new 3G network operators.[17]

3.4.2. Network technology

In developing service descriptions, the Commission's preference is to avoid technical specifications. Therefore, ideally, any service description should cover roaming on all digital mobile networks; i.e. second generation (2G) and third generation (3G) networks.

2G networks use GSM and CDMA technology to encode communications. They are capable of transmitting voice communications as well as auxiliary services such as data, facsimile and the short messaging service (SMS). These networks use 'circuit-switched' transmission technology, which means that a dedicated pathway is established for the communication. Enhancements to 2G systems have given rise to 2.5G networks, which are based on 'packet-switched' transmission, a more efficient transmission technology, in order to provide a greater range of services. 2G and 2.5G networks use 900MHz and 1800MHz band spectrum for GSM services and 800MHz band spectrum for CDMA services.

3G networks integrate both circuit-switched and packet-switched technologies, and support much higher data rates, enabling applications such as full-motion video, video conferencing and full Internet access. 3G services are supplied using the CDMA 2000 technology (based on the original CDMA technology) and W-CDMA technology (which is based on GSM technology), and use 2GHz band spectrum.

The Commission received submissions advocating both the inclusion and exclusion of domestic inter-carrier roaming via 3G networks. Optus submitted that 3G networks be included so that the declaration is technology neutral.[18] Hutchison, on the other hand, suggested that it would be premature to include 3G networks until these networks have been deployed.[19]

As noted in the principles for developing a service description (section 3.1.), the Commission's preference is to only declare services which a potential access provider is supplying to itself or others, thus ensuring that the standard access obligations apply to

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[16] That is not to suggest that the presence of two CDMA networks is sufficient to ensure effective competition for the supply of domestic inter-carrier roaming services in Sydney and Melbourne; however, it is the areas outside of those cities where competitive forces are likely to be the weakest.

[17] That is not to suggest that the presence of three GSM networks is sufficient to ensure effective competition for the supply of domestic inter-carrier roaming services in metropolitan areas of the major capital cities; however, it is the areas outside of those cities where competitive forces are likely to be the weakest.

[18] Optus, Optus submission to the Australian Competition and Consumer Commission on Mobile Services, June 2003, p. 68 (Optus Submission).

[19] Hutchison, Submission to the Australian Competition & Consumer Commission: Mobile Services Review 2003, (public version) p. 24 (Hutchison Submission).

that potential access provider once the service is declared. In Australia, domestic inter-carrier roaming is currently provided by means of 2G and 2.5G networks. However given that there is only one 3G network currently in operation, roaming services are not yet supplied by means of 3G networks, and nor is the Commission aware of any request for the supply of 3G domestic inter-carrier roaming. Consequently, the Commission has not included 3G networks within the service description. This does not rule out the consideration of 3G domestic inter-carrier roaming at a future time should it appear that declaration may be appropriate. In this regard, the Commission notes that the proposed joint ventures between Telstra and Hutchison and between Optus and Vodafone for 3G infrastructure sharing (see section 4.2.2.), if successful, may result in the deployment of only two 3G networks in Australia and this may have competitive implications for the supply of 3G domestic inter-carrier roaming services.

At this stage, however, the service description only covers 2G and 2.5G services. This does not mean that 3G network operators would be denied the advantages of roaming, were the domestic inter-carrier roaming service to be declared. Customers of 3G (i.e. WCDMA) network operators can roam on to 2G and 2.5G GSM networks (see section 6.1.2. below). Therefore, the 2G and 2.5G networks covered by the service description could be used to achieve national coverage for some of the services offered by 3G network operators.

3.4.3. Call content

In its report concerning the declaration of the mobile terminating access service, the Commission included voice services, but did not include data services (including SMS) due to their relative immaturity.[20] While roaming services currently supplied in Australia cover voice, SMS and data traffic,[21] the Commission remains of the view that it would be inappropriate at this point in time to include SMS and data services within the service description. Inclusion of voice services is likely to be sufficient to enable subscribers to communicate using their handsets when outside their network area.

[20] ACCC, MTAS Report, pp. 23-26.

[21] For instance, the Vodafone-Hutchison roaming agreement. See Vodafone, *Supplementary Submission to the ACCC Mobile Services Review 2003*, 2 July 2003, (public version) para. 2.16 (Vodafone Submission).

4. Will declaration promote competition in telecommunications markets?

As indicated in Chapter Two, section 152AB of the Act provides that, in determining whether declaration promotes the LTIE, regard must be had only to the extent to which declaration is likely to result in the achievement of the following objectives:

- 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 the economically efficient use of, and the economically efficient investment in, the infrastructure by which telecommunications services are supplied.

Chapters Four-to-Six address each of these objectives in turn.

4.1. The Commission's approach to determining whether declaration will promote competition in telecommunications markets

The Commission believes that declaration can help promote competition in telecommunications markets under a range of different circumstances. A commonly recognised way is where specific market characteristics mean it is more efficient for there to be only one provider of a given telecommunications service. In these circumstances, however, it may be that there is scope for competition to occur in downstream and/or vertically related markets. Without access to the vertically-related service, however, carriers in vertically-related markets will be unable to provide a final service to end-users.

Further, to the extent that access seekers will compete with vertically-integrated access providers in downstream markets, the terms and conditions of such access can impact on the ability of access seekers to compete in these markets. In these circumstances, declaration can help promote competition in relevant markets by ensuring service providers in these markets can gain access at appropriate prices to essential 'natural monopoly' inputs.

Under the Act, declaration of a service can promote competition for the provision of listed services by mandating access to those services that are supplied in vertically-related markets. Further, under certain circumstances, the Act enables the Commission to set terms and conditions for access to these services. In turn, this can help ensure that outcomes in one market (the market in which the 'eligible service' is supplied) do not prevent the development of competition in other related markets.

In most cases, the markets most likely to be affected by declaration are the market(s) for downstream services rather than the market in which the eligible service is supplied (where these markets are separate). This reflects a key rationale for access to essential infrastructure – that of promoting more competitive downstream markets by achieving a supply of essential inputs at reasonable terms and conditions of access. In this regard, the

aim of promoting the LTIE guides the Commission to be particularly mindful of the impact of declaration on the supply of services at the retail level.

In order to determine whether or not declaration is likely to promote competition in telecommunications markets, it is important for the Commission to first understand the existing state of competition in the market within which the eligible service is provided and all other related markets. To assess this, it is necessary in the first instance to assess the boundaries of the markets in which the eligible service and other related services are supplied.

Once the boundaries of the relevant markets have been identified, the Commission can then consider whether the state of competition in these markets will be enhanced by declaration of the eligible service. In this regard, a useful tool for the Commission to use when assessing whether declaration will promote each of the LTIE objectives is the future 'with and without test'. Under this approach, the Commission considers whether competition in identified markets would be likely to be further promoted with declaration as opposed to a structure where the service was not declared. Only by understanding market dynamics and the current state of competition in these markets can a meaningful vision of the likely future state of competition be understood.

In assessing whether declaration of a mobile domestic inter-carrier roaming service is likely to promote competition, therefore, the Commission undertakes a three-stage analysis:

- first, those markets relevant to determining whether declaration will promote competition are identified;
- secondly, the current state of competition and the dynamics that operate within these markets is assessed; and
- thirdly, if the current state of competition in any of these markets is found to be less than effective, an assessment is made regarding the extent to which competition would be promoted, or be likely to be promoted, in the future by declaration of the eligible service.

Each of these stages is undertaken in turn below for the market(s) in which the eligible service and related services are provided.

4.2. What are the relevant markets?

4.2.1. The Commission's approach to defining relevant markets

The process of market definition involves identifying the sellers and buyers that effectively constrain the price and output decisions of firms supplying the service(s) under consideration.[22] To begin the process of market definition for the eligible service, the Commission defines the service under consideration and the firm(s) supplying that

[22] See ACCC, *Anti-competitive Conduct in Telecommunications Markets – An Information Paper*, and ACCC, *Mergers Guidelines,* June 1999*,* for more detail on how the Commission undertakes the process of market definition.

service. In general, this involves identifying the access provider(s) and their supply of the eligible service. For related markets, the market definition process starts with the access seekers and providers and the related services that they would supply using the eligible service.

Once the relevant service and source(s) of supply have been identified, the market boundaries are then extended to include all other sources and potential sources of close substitutes with which the firm supplying the service would compete. In terms of section 4E of the Act:

> ... 'market' means a market in Australia and, when used in relation to any goods or services, includes a market for those goods or services and other goods or services that are substitutable for, or otherwise competitive with, the first-mentioned goods or services.

As noted by the High Court:

> This process of defining a market by substitution involves both including products which compete with the defendant's and excluding those which because of differentiating characteristics do not compete.[23]

The availability of close substitutes (on both the demand and supply sides) constrains the ability of suppliers to profitably divert prices or quality of service from competitive levels.

As the Tribunal commented in *QCMA*:

> A market is the area of close competition between firms or, putting it a little differently, the field of rivalry between them .... Within the bounds of a market there is substitution - substitution between one product and another, and between one source of supply and another, in response to changing prices .... it is the possibilities of such substitution which set the limits upon a firm's ability to 'give less and charge more'.[24]

Generally, a greater range of substitutes points to a broader market in which individual firms have less power, and consequently competition is more effective. Substitutability may be thought of in terms of a price elevation test: what would be the response on the demand side and the supply side to a relatively small percentage increase in the price of a firm's product?

> … in determining the outer boundaries of the market we ask a quite simple but fundamental question: if the firm were to 'give less and charge more' would there be, to put the matter colloquially, much of a reaction?[25]

Where the relevant market should be delineated is a question of degree. The Tribunal stated in *Tooth & Tooheys*:

> ... all competition or substitution does not cease at the outer boundaries of the market; the economy as a whole is a network of substitution possibilities in consumption and production; competition is a matter of degree.[26]

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[23] *Queensland Wire Industries Pty Ltd v. BHP Ltd* [1989] ATPR 40-925, 50008 (Mason CJ and Wilson J).

[24] Re Queensland Co-operative Milling Association Ltd; Re Defiance Holdings Ltd (1976) ATPR 40-012, 17,247.

[25] Ibid., 17,247.

[26] *Re Tooth & Co. Ltd.; re Tooheys Ltd*. (1979) ATPR 40–113, 18,196–18,197.

Markets can be delineated in terms of their product, geographic, functional and temporal boundaries.

In identifying relevant markets, Part XIC of the Act does not require the Commission to take a definitive or determinative stance on market definition as may be the case in a Part IV or Part XIB case.[27] The Federal Court also endorsed this approach in its decision to uphold the validity of certain broadcasting access declarations by the Commission.[28]

Furthermore, over time, declaration itself might affect the dimensions of these markets, particularly in relation to the functional dimension. Accordingly, market analysis under Part XIC should be seen in the context of providing an analytical framework to examine how declaration would promote competition rather than in the context of developing 'all purpose' market definitions.

4.2.2. Defining the market in which the eligible service is supplied

In the context of its previous inquiry into the declaration of a mobile domestic inter-carrier roaming service, the Commission considered that roaming services were supplied as part of the broader mobile services market which included both wholesale and retail activities.

> The Commission considers that the relevant market for both 900/1800 MHz band roaming and 800 MHz band roaming is the national market for the supply of public cellular mobile telecommunications services (PMTS) by means of either digital or analogue technology to service providers and end-users. The functional dimensions of the market are wholesale and retail.[29]

Since that time, however, there have been a number of developments:

- analogue services have been phased out;
- mobile carriers have entered into arrangements for the supply of roaming services to other mobile carriers (whereas, at the time of the previous inquiry these services were not being supplied); and
- in its recent consideration of whether declaration of a mobile originating access service and a mobile terminating access service would promote the LTIE, the Commission was of the view that these services are supplied within wholesale markets separate from the market in which retail services are supplied to end-users.[30]

Overseas, the European Commission has examined the market in which national roaming services are supplied in the context of an inquiry into mobile international roaming charges. National roaming services are, essentially, equivalent to mobile domestic inter-carrier roaming service under consideration in the present inquiry. A working document for this inquiry expressed the view that there was a separate market for national roaming services.

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[27] See ACCC, Telecommunications Services – Declaration Provisions, July 1999.

[28] Foxtel Management Pty Ltd v Australian Competition & Consumer Commission [2000] FCA 589.

[29] ACCC, Previous Domestic Inter-carrier Roaming Report, p. 9.

[30] See ACCC, MOAS Report, pp. 33-36 and ACCC, MTAS Report, pp. 54-55.

In explaining why this market was separate from the market for international roaming, it was stated:

> National roaming to mobile network operators within the same Member State (usually based on regulatory incentives) appear to be distinct from international roaming for the following reasons. Firstly, because national roaming arises in most cases from a temporary regulatory obligation imposed on existing mobile network operators to provide roaming to subscribers of a new entrant network operator, outside of the new entrant's coverage area. Secondly, because tariffs applied for such roaming appear to be lower than IOTs [inter-operators tariffs] applied to foreign operators. Thirdly, because national roaming agreements are not based on the charging arrangements which were developed within the GSM association.[31]

The European Commission has also considered the relevant market as part of its assessment of an agreement between two mobile carriers which provided for national roaming in the United Kingdom and Germany. There, it expressed the view that there was a separate wholesale market for access to national roaming for 3G communications services. This market was separate from markets in which 2G and 2.5G roaming services, international roaming services, and site infrastructure services are supplied.

> Notwithstanding a possible initial overlap between 2G, 2,5G and 3G retail services, from a demand perspective, wholesale access to national roaming for 3G communications services will be distinct from 2G or 2,5G roaming, because the range of both voice and data services that can be provided based on 3G roaming is broader and different, given that significantly higher transmission speeds will be available…
>
> From a supply perspective, only operators of 3G networks or other parties able to provide the relevant type of access to the 3G networks of such operators will be able to supply wholesale access to national roaming for 3G services.[32]

Views of interested parties

Mobile carriers submitted that there are a range of substitutes for domestic inter-carrier roaming services, indicating that these should be included in the market in which roaming services are supplied. These include network sharing (e.g. site sharing),[33] re-supply of mobile services (for example, pursuant to an MVNO relationship)[34] and SIM card manual roaming.[35]

Commission view

As noted above, the process of market definition begins with the service in question, and is then extended to include those services which are substitutes. In the present case, the

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[31] European Commission DG Competition, Working Document on the Initial Findings of the Sector Inquiry into Mobile Roaming Charges, 13 December 2000, p. 14.

[32] European Commission decision of 30 April 2003 relating to a proceeding under Article 81 of the EC Treaty and Article 53 of the EEA Agreement, Case COMP/38.370 — O2 UK Limited/T-Mobile UK Limited ('UK Network Sharing Agreement'), OJ L 200/59, 7.8.2003, paras. 54-55.

[33] Telstra Telstra's Supplementary Response to the Discussion Paper of the Australian Competition and Consumer Commission, July 2003, p. 4 (Telstra Submission).

[34] Vodafone Submission, para. 2.7.

[35] Optus Submission, p. 67.

services in question are domestic inter-carrier roaming using 2G and 2.5G networks. To better understand the market in which these services are supplied, or would be supplied, the Commission conducted market inquiries with the mobile carriers supplying and acquiring them.

Mobile carriers, generally, use roaming to achieve coverage in a particular area where either they lack spectrum, or where they hold spectrum but the volume of traffic in that area is too low to make network deployment commercially feasible. The Commission understands that if an area is sufficiently important in terms of traffic volume, then mobile carriers will prefer to deploy their own networks (assuming they hold spectrum), rather than use roaming, as this enables greater control over service delivery.

Product dimension — substitutes

Suggested substitutes include infrastructure sharing, re-supply of mobile services and SIM card manual roaming. Infrastructure sharing covers several possibilities ranging from the sharing of poles and towers to the sharing of spectrum and base stations.

In the Commission's view, the sharing of poles and towers is unlikely to be a substitute for domestic inter-carrier roaming. First, it is not a substitute for those carriers who do not hold spectrum. Second, the carrier (seeking roaming) still bears much of the cost of network deployment which is unlikely to be attractive in areas of low traffic volume. This appeared to be borne out by market inquiries.

Spectrum and base station sharing, on the other hand, could be a potential substitute for domestic inter-carrier roaming services using 2G and 2.5G networks. By way of example, Telstra and Hutchison have recently announced a proposed network sharing venture whereby the carriers would jointly own and operate a 3G radio access network (i.e. spectrum and base stations) but individually own and operate switches and support systems.[36] This would enable Hutchison to supply 3G mobile services to areas outside its licence area including Canberra and regional centres, thereby reducing its need for inter-carrier roaming in those areas. Optus and Vodafone have also announced a proposed 3G infrastructure sharing venture involving network sites and radio infrastructure, although both carriers already hold nationwide spectrum.[37]

These proposed infrastructure sharing arrangements concern 3G networks and, therefore, the question whether infrastructure sharing is a substitute should be considered from the perspective of those 3G mobile network operators using 2G and 2.5G domestic inter-carrier roaming to extend network coverage. In this regard, the suite of services which it is proposed will be available to end-users as a consequence of the proposed 3G infrastructure sharing ventures is significantly greater than those that can be supplied using 2G and 2.5G roaming. For instance, the Telstra and Hutchison venture would

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[36] Telstra and Hutchison, joint Media Release, *Australia's first 3G network sharing to expand and accelerate customer access to world leading mobile services*, 4 August 2004. See also presentation by Kevin Russell, Chief Executive Officer, Hutchison, *3G Network Sharing Agreement: Hutchison 3G Australia Limited (H3GA), Telstra Corporation Limited*, 4 August 2004.

[37] Optus, Media Release, Optus and Vodafone Australia announce plans to roll out shared 3G network, 26 August 2004.

enable Hutchison to supply high bandwidth data services such as innovative multimedia content, advanced multimedia messaging, music and video streaming, video calling with multiple parties, location-based services such as maps and directories and advanced business applications,[38] thereby over-coming some of the bandwidth limitations of the current GSM roaming arrangements. Thus, it is questionable whether these infrastructure sharing arrangements will be a substitute for 2G and 2.5G domestic inter-carrier roaming services. Rather, it is more likely that they may be a potential substitute for 3G inter-carrier roaming services.

Also, the Commission considers that re-supply of mobile services and SIM card manual roaming are not substitutes for inter-carrier roaming services. Currently, it is not possible to use re-supply arrangements to extend network coverage. Re-supply is 'all or nothing'; thus if a carrier wanted to use re-supply arrangements, it would not be able to carry any calls on its network for subscribers covered by the re-supply arrangements. With respect to SIM card manual roaming, which involves swapping the mobile handset SIM card in order to make calls when outside the home network area, the Commission understands that this occurs on a small scale, but its role is likely to be insignificant suggesting that it is not a substitute for inter-carrier roaming.

Therefore, it would appear that there are currently no substitutes available for inter-carrier roaming services provided by means of 2G and 2.5G mobile networks.

Product dimension — are CDMA and GSM roaming services in the same market?

The Commission considers that competitive dynamics differ significantly between CDMA roaming and GSM roaming — see section 4.3.1. In the main, this is because roaming is not possible between CDMA and GSM networks and consequently, carriers wanting CDMA roaming are largely limited to one supplier, whereas those wanting GSM roaming have three possible suppliers for many areas. While there is competition between CDMA and GSM carriers at the retail level, this does not appear to constrain behaviour at the wholesale level in respect of roaming services.

Functional dimension

Domestic inter-carrier roaming services are wholesale services supplied by one mobile carrier to another, suggesting that the relevant functional level for each of the markets is wholesale.

In some cases, it is inappropriate to separate wholesale and retail activities, for instance, where there are overwhelming efficiencies of vertical integration or where competition at the retail level plays an important role in constraining behaviour at the wholesale level. In the Commission's view, however, there is a significant volume of inter-carrier activity at the wholesale level, not only in terms of roaming services, but also other services such as mobile origination and termination indicating that the efficiencies of vertical integration are not overwhelming. Moreover, it does not appear that there are particular features influencing competition at the retail level which would be over-looked if retail

[38] Telstra and Hutchison, joint Media Release, Australia's first 3G network sharing to expand and accelerate customer access to world leading mobile services, 4 August 2004.

activities were not included within the market. Consequently, in the Commission's view, the relevant functional dimension for each market is wholesale.

Geographic dimension

In some instances, GSM domestic inter-carrier roaming services are provided on a national basis (e.g. the Vodafone/Hutchison roaming agreement), whereas in others they are only provided in discrete geographic areas (e.g. the Telstra/Vodafone roaming agreement for roaming on particular highways in Victoria and Tasmania). While the competitive dynamics are likely to differ in particular geographic areas where there are less than three GSM networks, the Commission has not received sufficient information to enable it to delineate particular geographic markets based on the level of competition in each area. Consequently, the Commission has treated GSM domestic inter-carrier roaming services as being supplied in a national market.

CDMA domestic inter-carrier roaming services are also supplied on a national basis (e.g. the Telstra/Globalstar agreement) as well as a more limited basis (i.e. the Telstra/Hutchison agreement for roaming in all areas of Australia except Sydney and Melbourne). There may be some differences in competitive dynamics in Sydney and Melbourne where there are two CDMA networks. However, for the same reasons, the Commission proposes to treat the market as national in scope.

Temporal dimension

In considering the temporal dimension, the Commission considers whether there are future developments which would be likely to alter market boundaries, or the range of substitutes within the market(s). There are two relevant developments in this regard.

First, there is the prospect of dual mode CDMA/GSM handsets, which will facilitate competition between GSM and CDMA roaming services. This could affect market boundaries, and result in the markets for these services merging. For this to occur, however, there would need to be mass-market take-up of dual mode handsets. At this stage, it is unclear if and when such handsets will become available in Australia.

Second, there is the question relating to whether 3G roaming services will be a substitute for 2G and 2.5G roaming services, and therefore should be included within the relevant markets. While 3G roaming services are not currently supplied, there is the prospect of future supply. For instance, in relation to the proposed 3G infrastructure sharing venture between Hutchison and Telstra, the Commission notes that the supply of 3G roaming services is contemplated and the joint venture enterprise will be able to enter into roaming arrangements with third parties.

For 3G mobile network operators, any substitution is likely to be 'one way' from 2G and 2.5 roaming to 3G roaming in order to take advantage of the wider range of services available on 3G networks.[39] However, for mobile network operators supplying

[39] This is consistent with the European Commission decision (quoted above) which suggests that the market for 3G domestic roaming services is separate from the market for 2G and 2.5G domestic roaming services. See footnote 32.

predominantly voice services and using 2G or 2.5G roaming, 3G roaming may be an alternative source of supply and, therefore, may be a substitute for 2G and 2.5G roaming. This, of course, depends on the terms and conditions on which 3G roaming is offered.

Summary

In summary, therefore, as a result of information received during market inquiries, it appears to the Commission that roaming services are supplied within separate wholesale markets and that there are (at least) two separate markets for roaming services in Australia — the national GSM roaming services market and the national CDMA roaming services market. That said, the Commission does not need to be definitive in its market definition for the purposes of declaration inquiries and accordingly, it proposes to treat them as working definitions only.

4.2.3. Defining other markets in which declaration may promote competition

Often the markets in which competition is likely to be promoted as a result of declaration of the eligible service are downstream markets. In general, the Commission will be interested in identifying only those markets in which declaration of the eligible service is likely to have a material effect. Where there are several markets that could be affected by declaration, it may be sufficient for the Commission to focus its attention only on the main or major markets in which declaration may promote competition.

In the Commission's view, the market most relevant to this inquiry is the downstream market in which retail mobile services are supplied. Declaration may also affect competition in other markets, such as wholesale airtime markets,[40] however, these effects are likely to be captured in the analysis of declaration on the roaming markets and downstream markets.

In its report on the declaration of the mobile terminating access service, the Commission identified the market for retail mobile services as a relevant downstream market for the purposes of that inquiry. In this regard, the Commission described the market as:

> … a national market operating at a retail functional level. It includes retail mobile services provided on 2G, 2.5G and 3G networks and SMS services, but does not include fixed-line services.[41]

Thus, in the Commission's view, at the retail level 3G services currently compete with 2G and 2.5G services.

This is consistent with the approach of the European Commission in its consideration of the downstream markets likely to be affected by an agreement for site sharing and national roaming, although it did note that it is not possible to be definitive about this market definition given the nascent state of 3G services.

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[40] See, for instance, European Commission decision of 30 April 2003 relating to a proceeding under Article 81 of the EC Treaty and Article 53 of the EEA Agreement, Case COMP/38.370 — O2 UK Limited/T-Mobile UK Limited ('UK Network Sharing Agreement'), OJ L 200/59, 7.8.2003, paras. 57-59.

[41] ACCC, MTAS Report, p. 61.

> Because 2,5G services are still emerging, and 3G services are presently only at the planning stages, it is not possible to determine accurately whether they are in the same market or in different markets, whether digital mobile voice and data services are in the same market or whether certain 3G services are in the same market as broadband data services such as WLAN. However, for the purposes of the present Decision, it is not necessary to conclude on whether 2G, 2,5G and 3G data services and/or voice services should be considered separate product markets. The relevant product market definition is therefore left open.[42]

4.3. State of competition in the relevant markets

Having established the relevant markets for consideration, this section now seeks to determine the state of competition in these markets. This gives the Commission an insight into the likely effectiveness of competition in the future if the service ceased to be declared. Further, it can also provide some insights into the likely impact of declaration of the eligible service. That is, if competition in the relevant markets is already effective, then declaration of the eligible service may not significantly promote further competition.

It is important to also note that assessing the effectiveness of competition is not a static analysis limited to a description of current conditions and behaviour. Rather, it is a dynamic analysis concerned with features affecting the competitive supply of services in the future. Nevertheless, current conditions will, in general, provide a solid starting point from which to consider the future effectiveness of competition.

When assessing the effectiveness of competition in a particular market, the Commission examines a range of both structural and behavioural characteristics. From a structural perspective, the Commission considers the linkage between supply of the eligible service and the supply of related services, barriers to entry, concentration levels, and the bargaining power of suppliers and buyers of the relevant services. From a behavioural perspective, the Commission may consider a range of market outcomes, including the level of price competition in the provision of a given service, the price-cost margins available to suppliers of a service, price changes over time, service differentiation, and comparisons with similar services provided in overseas jurisdictions.

Other features the Commission may consider include the regulatory environment and dynamic characteristics of the market (including growth, innovation and product differentiation).

[42] European Commission decision of 30 April 2003 relating to a proceeding under Article 81 of the EC Treaty and Article 53 of the EEA Agreement, Case COMP/38.370 — O2 UK Limited/T-Mobile UK Limited ('UK Network Sharing Agreement'), OJ L 200/59, 7.8.2003, para. 66.

4.3.1. National roaming services markets

National GSM inter-carrier roaming services market

In this market, there are two current suppliers of national inter-carrier roaming services — Telstra and Vodafone. Relevant roaming agreements include:

- Telstra/Vodafone — Telstra supplies roaming services to Vodafone to enable roaming by Vodafone post-paid subscribers[43] on particular highways in Victoria and Tasmania. Call services covered include voice, SMS and data.
- Vodafone/Hutchison — Vodafone supplies national roaming to Hutchison, thereby enabling Hutchison to offer a limited range of services to its consumers in areas beyond its WCDMA spectrum license area of Melbourne, Sydney, Brisbane, Adelaide and Perth. The agreement also enables roaming in areas where Hutchison has deployed its network, but where there is a gap in coverage or a 'black zone'. Call services covered include voice, SMS and data.
- Vodafone/Globalstar — Vodafone supplies national roaming to Globalstar, a satellite network operator. Globalstar subscribers access Vodafone's GSM network using dual mode GSM/satellite handsets. While Globalstar's satellite network is nationwide, the Commission understands that Globalstar uses roaming in preference to its satellite network in areas where there is GSM coverage due to the lower costs of using the terrestrial GSM network. Call services covered include voice, SMS, data and voicemail.

In addition, Vodafone is subject to roaming obligations in respect of network that it has deployed along national highways pursuant to Commonwealth funding.[44] The Commission understands that no roaming agreements have been made under these requirements.

The Commission sought information concerning revenue and volume of traffic in order to estimate the size of this market, relative market shares and market concentration. Carriers declined to provide revenue information to the Commission; however, some information on traffic volumes was supplied, albeit incomplete. Information on traffic volumes indicates that GSM inter-carrier roaming accounted for in excess of [c-in-c] minutes in 2003-2004, indicating that there is a significant volume of roaming traffic.

Despite the absence of data on market concentration, the existence of only two suppliers suggests a high level of market concentration. This would be unlikely to be a concern, however, if the threat of entry can constrain behaviour so that it is consistent with competitive market outcomes.

Sources of potential entry include the other GSM network operator (i.e. Optus), and new GSM network deployment. There are, however, significant barriers to network

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[43] Currently, roaming is not available to pre-paid subscribers because billing information is not provided in 'real time'.

[44] Vodafone Submission, para. 2.17.

deployment,[45] and in this regard, availability of spectrum would appear to provide an absolute barrier to entry. The only available GSM spectrum which can be used for market entry is the spectrum held by One.Tel (in liquidation), and this spectrum is limited to Melbourne, Sydney, Brisbane, Adelaide and Perth, thereby preventing a new entrant from offering national roaming services. Moreover, given that a range of services are supplied by means of mobile networks, if suppliers of roaming services were to engage in behaviour inconsistent with competitive outcomes (e.g. raise prices above competitive levels), then this may not provide sufficient incentive for market entry by means of new network deployment because an entrant would also need to consider revenue streams from other mobile services (e.g. retail services, termination services).

Other potential sources of entry include entry by 3G network operators.[46] In this regard, Hutchison could offer domestic roaming services in areas where it has deployed its network — Melbourne, Sydney, Brisbane, Adelaide and Perth — and entry by other 3G network operators may be possible in the future (see section 4.2.2. for discussion of the temporal dimension of this market).

For the present, however, the main sources of potential entry are Optus (for nationwide GSM domestic roaming services) and Hutchison (for domestic roaming services in those capital cities where it has deployed its 3G network).

Thus, the Commission considered whether competition between two suppliers, plus the threat of entry by a third nationwide supplier (Optus) and threat of entry by a fourth supplier in particular capital cities (Hutchison) would be sufficient to constrain market behaviour to competitive outcomes. The Commission has previously expressed the view that the retail mobile services market is not subject to effective competition despite there being four network operators.[47] This would tend to suggest that the GSM inter-carrier roaming services market is unlikely to be subject to effective competition. Moreover, it is worth noting that, in some rural and remote areas, there may be only one possible supplier of inter-carrier roaming services.

That said, there appear to be few concerns, if any, from those seeking GSM roaming services. Both Vodafone and Hutchison appear to be satisfied with the agreements they have negotiated to roam on to the networks of other carriers. For instance, in its submission, Hutchison stated:

> … a domestic intercarrier roaming service for GSM networks is currently provided on commercially reasonable terms such that acquirers of the service may compete in the mobile service market based on the incumbent carriers [sic] retail prices.[48]

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[45] See, ACCC, MTAS Report, pp. 75-82.

[46] Hutchison's 3G network has been deployed with WCDMA technology and the Commission understands that Telstra also proposes to use this technology for its network deployment as part of the proposed infrastructure sharing venture with Hutchison. Roaming is technically feasible between WCDMA and GSM networks — see section 6.1.2.

[47] ibid., p. 99.

[48] Hutchison Submission, p. 23.

Market inquiries indicate that those carriers acquiring roaming services were satisfied with negotiations and did not consider prospective suppliers to be acting anti-competitively. The ability to play one prospective supplier off against another appears to have played an important role in this regard, particularly once it becomes clear that at least one carrier is willing to supply roaming services.

This outcome appears to reflect the scenario proposed by Stephen King in the context of the previous inquiry into inter-carrier roaming services. There, he acknowledges that roaming may result in increased competition and therefore loss of profits to incumbents, creating an incentive to refuse roaming. However, once one incumbent knows that roaming will be offered by another incumbent, then there will be a race to offer roaming because the revenue from roaming can offset the loss of profits from increased competition:

> An existing carrier will *not* simply weigh up the benefits of extra roaming revenue and greater use of their system compared with the increased competition in overlapping areas, due to a new mobile carrier rolling out a limited network which becomes more attractive to customers with roaming. In addition, when deciding whether or not to provided roaming to a new entrant, each existing carrier will weigh up the potential gain or loss in profit if they offer roaming to an entrant given that the other existing network owners are carrying out exactly the same calculation.
>
> … So long as each existing carrier believes that NO OTHER carrier is going to offer roaming, then it will not offer roaming. However, as soon as any carrier believes that another existing carrier is likely to offer roaming, then it will also want to offer roaming — it is better to offer than not offer if SOMEONE is going to offer roaming.[49]

Thus, while analysis of the structural features of this market, particularly the presence of only two suppliers, with the threat of entry limited to one other possible supplier outside Metropolitan areas, raises *prima facie* concerns about the effectiveness of competition, other indications suggest that incentives may exist for the competitive supply of roaming services, once it is clear that at least one carrier is likely to offer roaming services. At this stage, the Commission is unable to express a view about whether these incentives are sufficient to constrain the terms and conditions (particularly the price) on which roaming services are supplied to reasonable levels. However, the absence of recent complaints by carriers acquiring GSM inter-carrier roaming services suggests that there are unlikely to be significant concerns in this regard at this point in time.

[49] ACCC, Previous Domestic Inter-carrier Roaming Report, pp. 38-39.

National CDMA inter-carrier roaming services market

In this market, there is only one supplier of national inter-carrier roaming services — Telstra. Relevant roaming agreements include:

- Telstra/Hutchison — Telstra supplies roaming services to Hutchison to enable it to offer a limited range of services to its consumers in areas beyond the coverage of its CDMA network. The agreement provides for roaming in all areas, except those where Hutchison has deployed its CDMA network (i.e. Sydney and Melbourne). Call services covered include voice, SMS and data.
- Telstra/Globalstar — Telstra supplies national roaming services to Globalstar, a satellite network operator. Globalstar subscribers access Telstra's CDMA network using dual mode CDMA/satellite handsets. While Globalstar's satellite network is nationwide, the Commission understands that Globalstar uses roaming in preference to its satellite network in areas where there is CDMA coverage due to the lower costs of using the terrestrial CDMA network. Call services covered include voice, SMS, data and voicemail.

As with GSM roaming, the Commission sought information concerning revenue and volume of traffic in order to estimate the size of the CDMA inter-carrier roaming market. Similarly, carriers declined to provide revenue information to the Commission; however, some information on traffic volumes was supplied. Information on traffic volumes indicates that CDMA inter-carrier roaming accounted for in excess of [c-in-c] minutes in 2003-2004.

There is only one supplier of CDMA inter-carrier roaming services. While Hutchison could theoretically enter the market and supply roaming services in Sydney and Melbourne, this is unlikely to be attractive to carriers seeking national roaming. For technical reasons, it is not possible to roam from CDMA to GSM networks, and thus GSM roaming cannot be used as an alternative source of supply. In light of the barriers to network deployment, it is unlikely that the threat of entry would be sufficient to constrain Telstra's behaviour to levels consistent with competitive market outcomes. This suggests that competition in the CDMA inter-carrier roaming market is unlikely to be effective, a conclusion which was supported by confidential information received in submissions and through market inquiries.

These concerns were also reflected in the more cautious tone adopted by Hutchison in its submission:

> … while there are areas of potential concern regarding the terms on which a domestic intercarrier roaming service for CDMA networks is supplied, HTAL currently considers that commercial negotiations have offered the opportunity for efficient commercially negotiated outcomes. For the reasons set out in item 1 in confidential attachment B, in Hutchison's view, the Commission should continue to monitor developments in this area rather than declare the service under Part XIC of the TPA.[50]

[50] Hutchison Submission, p. 23.

4.3.2. Retail mobile services market

Suppliers of retail mobile services can be broadly classified as mobile network operators (Telstra, Optus, Vodafone and Hutchison), mobile virtual network operators (e.g. Virgin Mobile), resellers and agents (e.g. department stores, supermarkets, post offices). Currently, services are supplied by means of three GSM networks (Telstra, Optus and Vodafone), two CDMA networks (Telstra and Hutchison) and one 3G network (Hutchison). Telstra has recently proposed a venture for 3G infrastructure sharing with Hutchison, pursuant to which Telstra would launch 3G services in 2005.[51] Optus and Vodafone have also announced a proposed 3G infrastructure sharing venture[52] and have previously indicated an expectation that they will be able to provide retail mobile services during 2005. Market inquiries indicate that, in the short-term, it is unlikely that these mobile network operators will phase out their 2G networks as their 3G networks become operational.

As at 30 June 2003, there were an estimated 14.347 million mobile phone subscribers, who generated $8.791 billion of revenue during 2002-03.[53] Recent estimates suggest the penetration rate for mobile subscribers on a population basis may be as high as 78 per cent in Australia.[54] While the market is still growing, the rate of growth has slowed since 1999-00 in terms of both subscriber number and revenue.

In its report on the declaration of the mobile terminating access service, the Commission stated that while the retail mobile services market is exhibiting more encouraging market outcomes than the markets for fixed-line telecommunications services, it is unlikely to be effectively competitive as yet. In this regard, the Commission pointed to the relatively high level of market concentration, the high barriers to effective entry, the apparently high levels of profitability of mobile network operators (particularly those with large market shares), the relatively high penetration rate of mobile phones and decreasing (or stabilising) average revenue per subscriber which would appear to dampen incentives for new entry.[55]

In the context of declaration of a mobile domestic inter-carrier roaming service, particular features warranting closer examination are:

- the importance of national geographic coverage in terms of competition; and
- whether there are barriers to achieving national geographic coverage, especially outside of metropolitan areas — for example, spectrum, economies of scale or sunk costs.

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[51] Telstra and Hutchison, joint Media Release, Australia's first 3G network sharing to expand and accelerate customer access to world leading mobile services, 4 August 2004.

[52] Optus, Media Release, Optus and Vodafone Australia announce plans to roll out shared 3G network, 26 August 2004.

[53] ABN-AMRO, Australian Telecommunications 2004, 30 November 2003.

[54] See, for instance, Macquarie Research Equities, Australia Mobile Market Update: Calm on the Surface, Turbulence Beneath, 16 June 2004, p.2.

[55] ACCC, MTAS Report, p. 99.

National geographic coverage

The Commission is of the view that national geographic coverage is an important competitive dimension and the inability of a mobile carrier to offer national coverage to its customers would have a significant adverse impact on its ability to compete:

> … consumers are unlikely to subscribe to a mobile network which limits the regions they could make calls from or to – especially if other carriers offer national coverage for an equivalent price.[56]

A similar view has been expressed by the OECD:

> Consumers seem to care strongly about the geographic extent of the mobile network they have chosen. Mobile networks need to establish significant coverage of the population of a country if they are to provide a competitive service.[57]

The Commission understands that Telstra's CDMA and GSM networks cover 98 per cent and 96 per cent of the Australian population respectively.[58] Optus's GSM network covers more than 94 per cent of the Australian population[59] and Vodafone's GSM network covers approximately 92 per cent.[60]

During its market inquiries, the Commission sought information from mobile carriers on the importance of geographic coverage. Some carriers stated that geographic coverage was no longer an important competitive dimension because it was no longer a major point of differentiation between the three largest mobile network operators, and one carrier suggested that what was currently of greater significance was the depth of cover (i.e. the number of 'black spots').

While geographic coverage may no longer be a major differentiator between the larger mobile network operators, this does not detract from the importance of geographic coverage, particularly from the perspective of facilitating market entry. In the Commission's view, given the nationwide geographic coverage of the incumbents, the inability of a new entrant to provide equivalent coverage is likely to be a significant impediment to its ability to attract customers. Moreover, confidential data provided to the Commission on reasons why customers left a particular mobile carrier indicate that inadequate coverage was one of the top four reasons for leaving.

Barriers to achieving national geographic coverage

There are several features which can impair carriers' ability to achieve national coverage through deployment of their own network.

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[56] Ibid., p. 78.

[57] OECD, Directorate for Financial, Fiscal and Enterprise Affairs Competition Committee, *Competition and Regulation Issues in Telecommunications*, 1 February 2002, DAFFE/COMP(2002)6, p. 10.

[58] http://www.telstra.com.au/mobile/help/blackspot/blackspot.cfm, accessed 29 August 2004.

[59] Optus, *Our Network Coverage*, http://www.optus.com.au/Vign/ViewMgmt/display/0,2627,1008_26456-3_5461--View_360,00.html, accessed, 29 August 2004.

[60] Vodafone, *Coverage Maps*, http://www.vodafone.com.au, accessed 29 August 2004.

- The non-availability of spectrum for particular areas can establish an absolute barrier.
- Economies of scale can limit the number of networks which are economically feasible in areas of low population density.
- Sunk costs can deter network deployment in particular areas.

Each of these features is now considered in turn.

Availability of spectrum

The holders of spectrum which can be used to provide mobile services are summarised in Table 1.

Carrier	Geographic coverage
GSM (900 MHz)	
Telstra	Nationwide
Optus	Nationwide
Vodafone	Nationwide
GSM (1800 MHz)	
One.Tel (in liquidation)	Melbourne, Sydney, Brisbane, Adelaide and Perth
CDMA (800MHz)	
Telstra	Nationwide
Hutchison	Melbourne, Sydney and remote central Australia[61]
AAPT	All areas except Melbourne, Sydney and remote central Australia
3G	
Telstra	Nationwide
Optus	Nationwide
Vodafone	Nationwide
Hutchison	Melbourne, Sydney, Brisbane, Adelaide and Perth
3G Investments (Qualcomm)	All capital cities
CKW Wireless (Arraycomm)[62]	All capital cities

Table 1: Geographic coverage of spectrum for provision of mobile services

Only three carriers hold spectrum sufficient for the provision of national geographic coverage — Telstra, Optus and Vodafone. To achieve national geographic coverage for its CDMA network, Hutchison could seek to acquire the spectrum held by AAPT since closing down its network in 2001. Otherwise, it would be necessary for additional spectrum to be released.

[61] http://www.aca.gov.au/pls/radcom/spectrum_auction.results?pCAT=520 accessed 30 July 2004.

[62] While the spectrum held by CKW Wireless is included in Table 1, this spectrum is unpaired spectrum and, therefore, it may be more suited to asymmetric transmissions (e.g. Internet data) rather than telephony.

For further spectrum to be made available to new and existing carriers, this must be by way of auction conducted by the Australian Communications Authority (ACA). Currently, there appears to be excess capacity and accordingly, the ACA has determined that the auction of further spectrum for mobile services is a 'low priority'.[63]

Economies of scale

Even where a mobile carrier holds spectrum for a particular area, barriers to deployment may nevertheless exist. In areas of low traffic density (e.g. remote areas of Australia), economies of scale associated with mobile networks may mean that it is not economical for the carrier to deploy a network in those areas.

At one extreme, traffic volumes may be so low that it is not economic for any carrier to deploy a network and government subsidies may be required in order for a network to be deployed. By way of example, as part of the mobile phone coverage on national highways project, Vodafone received $23 million in Commonwealth funding towards the deployment of a GSM network along 16 major highways.[64] At the other extreme, traffic volumes may justify multiple networks.

For many areas, particularly those outside the major metropolitan areas, the reality will be somewhere in between and it may be uneconomic to deploy additional networks. In these areas, alternatives to network deployment such as roaming and infrastructure sharing provide an alternative means by which carriers can achieve national coverage.

Sunk costs

Finally, deployment of a mobile network involves considerable up-front costs in establishing base stations, mobile switching centres and transmission links. Many of these costs are likely to be sunk, particularly those incurred in connection with the establishment of base stations, representing a significant barrier to entry. In its report on the declaration of the mobile terminating access service, the Commission expressed the view that sunk costs may be the most significant barrier to entry.[65] By way of example, in closing down its aborted CDMA network, AAPT wrote off $227 million (NZD),[66] representing capitalised project costs, financial losses incurred on equipment disposal and the value of future commitments.

Sunk costs increase the risks associated with network deployment. Consequently, carriers may be unable to obtain financing to fully deploy a nationwide network prior to entry because the risk is too high. Once market entry has occurred and a customer base is established, these risks may be reduced to a level where deployment is feasible. However, without the ability to offer national geographic coverage, the carrier may not enter the market in the first place due to the difficulty in attracting customers.

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[63] ACA, Forward Program of Spectrum Auctions and Conversions, May 2002, p. 14.

[64] See, *Frequently Asked Questions: Mobile phone coverage—national highways*, www.dcita.gov.au, accessed 10 July 2004.

[65] ACCC, Mobile Termination Report, p. 81.

[66] Telecom Corporation of New Zealand Limited, *Annual Report for the year ended 30 June 2003*, p. 72.

4.4. The extent to which competition would be promoted by declaration

Once the Commission has formed a view about the effectiveness of competition in relevant markets, it is then able to compare this to how it believes the future state of competition in these markets will look with declaration.

In section 4.3., the Commission concluded that the level of competition in the retail mobile services market is likely to be less than effectively competitive, and raised concerns about competition in the national inter-carrier roaming markets, particularly the national CDMA inter-carrier roaming services market. The next question, therefore, is whether or not declaration of a mobile domestic inter-carrier roaming service would make any difference to the state of competition in these markets.

While there may be several factors impacting on the effectiveness of competition in particular markets, it is not necessary to address all of these factors in order to determine that declaration will promote competition. Rather, it is necessary to be satisfied that declaration will create conditions or an environment for *improving* competition in those markets.[67]

In this regard, as noted in section 4.3.2., geographic coverage is an important competitive dimension and there are barriers to achieving nationwide geographic coverage — spectrum, economies of scale and sunk costs. Domestic inter-carrier roaming provides a means by which the impact of these barriers can be ameliorated, thereby facilitating entry by mobile network operators as well as enabling existing mobile network operators who do not have national network coverage to compete more vigorously with those operating national networks. Thus, the availability of domestic inter-carrier roaming can improve competition in the market for retail mobile services. Also, it may improve competition in the markets for national inter-carrier roaming if the entrant is subsequently able to supply roaming services to others.

The question, however, is not whether inter-carrier roaming will promote competition, *but rather* whether declaration will promote competition. Declaration of the mobile domestic inter-carrier roaming service can promote competition if it enables access to a roaming service which would, in the absence of declaration, not be supplied. Additionally, even if access would be provided, declaration can promote competition if it would lead to access being provided on terms and conditions which are more reasonable than those that would be offered in the absence of declaration.

In forming a view about the likely impact of declaration on competition, the Commission must consider not only whether declaration would be likely to promote competition but also the *extent* to which this would be likely to occur.[68] This suggests that greater weight ought to be given to a situation where the likely effect of declaration on competition is substantial than to one where the effect is minor.

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[67] *Re Sydney International Airport* [2000] ACompT 1 at paragraph 106.

[68] Explanatory Memorandum for the Trade Practices Amendment (Telecommunications) Bill 1996 – item 6, proposed s. 152AB.

4.4.1. GSM inter-carrier roaming

Views of interested parties

Submissions received by the Commission were generally consistent in rejecting the need for declaration. Hutchison stated that declaration was unnecessary because GSM inter-carrier roaming was provided on commercially reasonable terms.[69]

Telstra provided the following views, which appear to cover both GSM inter-carrier roaming and CDMA inter-carrier roaming:

> The existence of these roaming agreements demonstrates that the larger mobile network operators, such as Telstra, have incentives to reach commercially negotiated arrangements for the provision of domestic inter-carrier roaming services, without a regulatory mandate. Provision of domestic roaming services allows mobile network providers to achieve greater economies of scale through increasing network utilisation in areas where there is excess capacity. Given these incentives and the positive commercial outcomes that have eventuated, there is no valid justification for regulating domestic inter-carrier roaming services.[70]

Vodafone also stated that commercial processes were successful in leading to inter-carrier roaming agreements, and that there was no market failure which justified declaration.[71]

Optus also noted that commercial processes have been successful in producing inter-carrier roaming agreements. In addition, it stated:

> In areas where more than one network provides coverage, it is apparent that infrastructure-based competition is viable and that carriers are investing for capacity. In these circumstances there is no bottleneck and carriers have incentives to compete for termination and roaming services in order to achieve economies of scale on their infrastructure.[72]

Commission view

As noted above, GSM inter-carrier roaming ameliorates the impact of barriers to achieving nationwide geographic coverage and it thus improves competitive conditions in the retail mobile services market. Supply of GSM inter-carrier roaming services, however, is occurring in the absence of declaration and there is no indication that this will change in the foreseeable future.

In most jurisdictions where GSM inter-carrier roaming has been mandated, the concern has been to ensure that new 3G entrants can achieve national coverage while deploying their networks in order to promote market entry by new operators (see Appendix B). In some jurisdictions, roaming has also been mandated due to the refusal of mobile network operators to supply inter-carrier roaming in the absence of regulatory intervention.

The Vodafone/Hutchison agreement has enabled Hutchison to deploy its 3G network without the need for regulatory intervention. Moreover, if the recently proposed venture

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[69] Hutchison Submission, p. 23.

[70] Telstra Submission, p. 4.

[71] Vodafone Submission, paras. 2.2-2.16.

[72] Optus Submission, pp. 68-69.

between Telstra and Hutchison for 3G infrastructure sharing reaches completion, then this may be expected to reduce Hutchison's reliance on GSM inter-carrier roaming in order to achieve national coverage.

On the basis of the information received during this inquiry, the Commission is not able to form a view as to whether the terms and conditions on which these roaming services are supplied are unreasonable. Nevertheless, the absence of recent complaints from carriers acquiring GSM roaming services suggests that this is unlikely to be a significant concern. Consequently, at this stage, the Commission is not able to satisfy itself that declaration would result in terms and conditions which are more reasonable than those currently available.

Therefore, the Commission is not satisfied that the declaration of a mobile domestic inter-carrier roaming service covering GSM networks would promote competition. However, the Commission may re-consider the impacts of declaration on competition if information to the contrary becomes available (for example, through monitoring using record keeping rules).

4.4.2. CDMA inter-carrier roaming

Views of interested parties

Most of the views expressed by mobile carriers opposing the declaration of inter-carrier roaming services did not differentiate between GSM inter-carrier roaming and CDMA inter-carrier roaming.

That said, Hutchison did draw a distinction and in this regard was more circumspect with respect to CDMA inter-carrier roaming. It noted there are areas of potential concern with regard to CDMA inter-carrier roaming and urged the Commission to continue monitoring developments in this area.[73]

Also, Optus, despite submitting that there was no market failure for inter-carrier roaming, suggested that declaration may be warranted in circumstances where there is only one network:

> Optus does not believe that there are any market failures in the mobile intercarrier roaming market. However, mobile roaming is most important from an efficiency point of view, in certain areas where it is unlikely and generally inefficient for facilities-based competition to develop, that is in areas where it is economic for only one network to provide coverage. It is in those areas that there may be a risk of potential market failure.

Commission view

As with GSM inter-carrier roaming, CDMA inter-carrier roaming also ameliorates the impact of barriers to achieving nationwide coverage and thus improves competitive conditions in the retail mobile services market.

While supply is occurring in the absence of declaration, structural conditions in the national CDMA inter-carrier roaming services market do provide cause for concern as to

[73] Hutchison Submission, p. 23.

whether supply will continue in the future and whether the terms and conditions of supply will be reasonable. To date, however, the Commission has not received sufficient information to enable it to form a view on these matters. Thus, the Commission is not in a position at this stage where it is satisfied that declaration will promote competition.

The Commission acknowledges the views expressed by Telstra that incentives exist to provide roaming in order to increase utilisation of its CDMA network and therefore enable it to enjoy economies of scale. That said, CDMA inter-carrier roaming also increases competition from rivals such as Hutchison and this may diminish those incentives, particularly in the absence of competition from another supplier of CDMA inter-carrier roaming services.

If Telstra ceased to supply Hutchison with these services, or charged prices that were unreasonable, it is possible that the Commission could investigate the matter pursuant to Part XIB of the Act and, if there was a contravention of Part XIB, take action as appropriate.

Further, in light of its concerns about CDMA inter-carrier roaming, the Commission proposes to monitor the situation and re-consider declaration should it receive information indicating that supply is threatened or that the terms and conditions of supply are unreasonable. In order to assist in this approach, it is the Commission's draft view that such monitoring should take the form of a record-keeping rule (RKR) requiring mobile carriers to provide information on the terms and conditions upon which domestic inter-carrier roaming services are provided.

4.5. Conclusion

In this chapter, the Commission re-iterated its view, expressed in its report on the declaration of the mobile terminating access service, that competition in the market for retail mobile services is not yet fully effective. The Commission noted that geographic coverage is an important competitive dimension in this market and there are barriers to achieving nationwide coverage — availability of spectrum, economies of scale and sunk costs. Domestic inter-carrier roaming provides a means by which the impact of these barriers can be ameliorated, thereby facilitating entry by new mobile network operators as well as enabling existing operators who do not have national network coverage to compete more vigorously with those operating national networks. Thus, roaming improves competitive conditions in the retail mobile services market.

The Commission expressed the provisional view that inter-carrier services are supplied, at present, in two separate markets — a national market for GSM inter-carrier roaming services and a national market for CDMA inter-carrier roaming services. Competitive conditions appear more favourable in the GSM inter-carrier roaming market and the Commission is not satisfied that declaration of GSM inter-carrier roaming services will be likely to promote competition at this point in time. With respect to CDMA inter-carrier roaming services, the Commission has concerns about whether market conditions provide sufficient incentives for supply of roaming services on reasonable terms and conditions. That said, in the absence of recent complaints about the supply of these services and in the absence of data indicating that the terms and conditions are

unreasonable, the Commission is not able to satisfy itself that declaration will be likely to promote competition. The Commission does, however, propose to monitor the provision of domestic inter-carrier roaming services on GSM and CDMA networks via application of an RKR and will re-consider declaration should it receive information indicating that supply is threatened or that the terms and conditions of supply are unreasonable.

5. Will declaration achieve any-to-any connectivity?

Any-to-any connectivity is achieved where end-users who are receiving the same or similar services are able to communicate with each other, irrespective of whether they are connected to the same network.

During the inquiry, it was submitted that this criterion is not relevant to national roaming. In addition, the situation of mobile customers in rural and remote areas was raised by the Queensland Government.

5.1. Is any-to-any connectivity relevant?

5.1.1. The Commission's previous views

In its report on the previous inquiry into roaming, the Commission stated that it:

> … considers that domestic intercarrier 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. Roaming should be regarded as promoting the related concept of ubiquity.[74]

In their submissions, Telstra, Optus and Vodafone cited this statement in support of their view that any-to-any connectivity was not relevant to roaming.[75] In addition, Optus referred to the explanatory memorandum which states that the concept of any-to-any connectivity is of little relevance when the Commission is considering the declaration of services 'such as carriage services which are inputs to an end-to-end service or distributive services such as the carriage of pay television'.[76]

Optus submitted that:

> To the extent that the connection of person [sic] to a network by means of roaming involves the provision of a carriage service to that person, this connectivity is clearly an input to the end-to-end mobile carriage service and, according to the Explanatory Memorandum, should be given little, if any, weight compared to the other two LTIE criterion [sic] in section 153AB [sic].[77]

While any-to-any connectivity is not a major issue in this inquiry, the Commission believes it was important to re-consider its views on the relevance of any-to-any connectivity, particularly in light of submissions.

5.1.2. Re-consideration of those views

In the Commission's view, on an ordinary reading of the legislation, any-to-any connectivity would seem to be relevant to the present case, because domestic inter-carrier

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[74] ACCC, Previous Domestic Inter-carrier Roaming Report, p. 26.

[75] Telstra Submission, p 5.; Optus Submission, p 69; Vodafone Submission, paras. 2.20-2.21.

[76] Explanatory Memorandum for the Trade Practices Amendment (Telecommunications) Bill 1996, item 6, proposed s. 152AB.

[77] Optus Submission, p. 70.

roaming enables end-users to communicate with each other in circumstances when this otherwise would not be possible.

- Domestic inter-carrier roaming permits a subscriber to make calls when outside his or her network area, thereby enabling the subscriber to communicate with other end-users.
- Moreover, when a subscriber is outside his or her network area, domestic inter-carrier roaming permits the subscriber to receive calls, thereby enabling other end-users to communicate with that subscriber.

Domestic inter-carrier roaming also achieves the related concept of ubiquity. That said, the concepts of 'any-to-any connectivity' and 'ubiquity' are not mutually exclusive and nor does the explanatory memorandum suggest that they should be treated as such.

The explanatory memorandum, however, does give rise to a degree of confusion. Relevantly, it states:

> Any-to-any connectivity is defined in proposed s. 152AB(8) as being achieved when end-users of a service that involves communications between end-users are 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. Reference to similar services is intended to enable consideration of **the need for any-to-any connectivity between end-users** of services which have similar, but not identical, functional characteristics, **such as end-users of a fixed voice telephony service and end-users of a mobile voice telephony service**, or end-users of internet services which may have differing characteristics.
>
> Note that the any-to-any connectivity objective will only be relevant when considering whether a particular service promotes the long-term interests of end-users of a carriage service that involves communications between end-users. When considering **other types of services** (such as **carriage services which are inputs to an end-to-end service** or distributive services such as the carriage of pay television), this criterion will be given little, if any, weight compared to the other two criterion.[78] **[emphasis added]**

One possible reading of the example in the second paragraph in the explanatory memorandum (above) would suggest that where the Commission is considering the declaration of a carriage service which is an input to an end-to-end service then, the concept of any-to-any connectivity will be of little relevance. This, however, would mean that when considering the declaration of services such as terminating services which are inputs to end-to-end call services the concept is of little relevance, a result which is inconsistent with the previous paragraph in the explanatory memorandum.

Moreover, such an interpretation would appear to render the concept of any-to-any connectivity practically meaningless because most services which are considered for declaration are inputs to end-to-end services. Perhaps, a better interpretation would be to read the example in the explanatory memorandum to be concerned with 'other services' that do not involve communication between end-users, such as pay-television services.

In any event, it is only appropriate to have regard to the explanatory memorandum in order to confirm the ordinary meaning of a provision, to determine the meaning of a

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[78] Explanatory Memorandum for the Trade Practices Amendment (Telecommunications) Bill 1996, item 6, proposed s. 152AB.

provision where the provision is ambiguous or obscure, or to determine the meaning of a provision where the ordinary meaning leads to an absurd or unreasonable result.[79]

It is difficult to use the explanatory memorandum to confirm the ordinary meaning of the phrase 'any-to-any connectivity', due to the confusion concerning interpretation of the explanatory memorandum itself. Moreover, the meaning of the phrase 'any-to-any connectivity' would not appear to be ambiguous or obscure, nor does the interpretation proposed above lead to results with are absurd or unreasonable. Accordingly, the Commission proposes to use the ordinary meaning of the concept 'any-to-any connectivity'.

5.2. Rural and remote areas

During the inquiry, the Queensland Government raised concerns about the lack of continuous mobile coverage available in western Queensland. In its view, inter-carrier roaming is necessary to 'enable mobile phone users to make a call wherever there is an appropriate signal'.[80] Particularly, the Queensland Government was concerned that while inter-carrier roaming arrangements exist for CDMA services, there are no roaming arrangements for GSM networks in the region.

5.2.1. Mobile networks in western Queensland

To explore these concerns, the Commission undertook research and sought information from mobile network operators about the extent of network coverage in western Queensland, as well as about plans to extend cover in the region by means of roaming, infrastructure sharing or greenfields network deployment.

The most extensive coverage is achieved by means of satellite networks in the region. Networks such as those operated by Globalstar enable subscribers to make and receive calls anywhere in the region, albeit at higher charges than with terrestrial networks. If subscribers are using dual mode GSM/satellite or CDMA/satellite handsets, roaming arrangements provide for the use of the terrestrial network (GSM, or CDMA, as the case may be) in preference to the satellite network where available.

In terms of terrestrial networks, Telstra's CDMA network, which is also available to Hutchison CDMA subscribers due to a roaming agreement between Hutchison and Telstra, provides coverage for many areas in western Queensland. Information received from Telstra indicates that there are no plans to significantly increase its network in the region. In many cases, low traffic volumes will make network extension uneconomic (in the absence of subsidisation) due to the economies of scale associated with mobile networks.

Less extensive coverage is provided by means of GSM networks. Vodafone recently completed extensions to its network along major highways in western Queensland with the assistance of Commonwealth Government national highways funding. While Telstra

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[79] Section 15AB of the *Acts Interpretation Act 1901* (Cwth).

[80] Submission from Paul Lucas MP, Minister for Innovation and Information Economy (Queensland), p. 1.

and Vodafone have no current plans to increase network coverage in the region, Optus informed the Commission of plans to significantly expand its coverage in the region during 2004-05.

5.2.2. Will declaration achieve any-to-any connectivity in western Queensland

For the reasons set out in section 5.1.2., the Commission is of the view that, on an ordinary reading of the legislation, the provision of domestic inter-carrier roaming services is likely to result in the achievement of any-to-any connectivity.

Particularly, in relation to western Queensland, it is possible that roaming arrangements between GSM network operators could extend the area over which all GSM subscribers can make and receive calls in the region and thereby further the achievement of any-to-any connectivity. The relevant question, however, is not whether roaming would result in the achievement of any-to-any connectivity *but rather*, whether declaration would do so.

As noted in section 4.4.1., GSM inter-carrier roaming has been negotiated in the absence of declaration and there are no recent instances where mobile network operators have refused to provide inter-carrier roaming services. In this regard, the roaming agreement between Hutchison and Vodafone enables Hutchison's 3G subscribers to make and receive calls using Vodafone's GSM network when in western Queensland. Moreover, the Commission has not received information indicating that the terms and conditions for GSM inter-carrier roaming are unreasonable.

In these circumstances, declaration of domestic inter-carrier roaming is unlikely to have any impact in terms of furthering the achievement of any-to-any connectivity for end-users in western Queensland. Even if inter-carrier roaming services were declared, the Commission cannot require mobile network operators to enter into a roaming agreement where both parties do not wish to do so. The obligation to provide roaming services only applies if there is a request from a mobile network operator seeking inter-carrier roaming.[81] Mobile network operators may not wish to seek roaming due to the costs of establishing roaming arrangements (see section 6.1.2.) if the volume of traffic is too low.

Moreover, the main problem experienced by mobile subscribers in western Queensland appears to be that of limited network coverage. However, declaration does not confer power on the Commission to compel mobile network operators to deploy mobile network infrastructure in order to extend network coverage where it doesn't exist or in order to enable other operators to roam on to the network.

Due to technical limitations, it is not possible to roam between CDMA and GSM networks. The prospect of dual mode CDMA/GSM handsets may overcome this limitation and would enable greater communication between end-users in western Queensland if carriers agreed to implement roaming arrangements. However, it is unclear if and when such handsets will become available in Australia.

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[81] Paragraph 152AR(3)(a) of the Act.

5.3. Other areas

The Commission received no information to suggest declaration would further the achievement of any-to-any connectivity beyond that which will be achieved in the absence of declaration. Suppliers of domestic inter-carrier roaming services have reached agreements to supply those services to other mobile network operators, and there appear to be no recent instances where there has been a refusal to supply. The Commission has concerns regarding competitive conditions for the supply of CDMA inter-carrier roaming services. At this stage, however, there is no information to suggest that Telstra will cease supplying these services.

5.4. Conclusion

Contrary to views expressed by the Commission in its previous report on the declaration of a domestic inter-carrier roaming service, the Commission is of the view that any-to-any connectivity is relevant to roaming because roaming enables end-users to communicate with each other in circumstances when this otherwise would not be possible. However, in the context of declaration, the question is not whether roaming would further the achievement of any-to-any connectivity but whether declaration would do so.

Roaming arrangements have been negotiated commercially in the absence of declaration and the Commission received no recent information to indicate that roaming was being withheld despite a request, or that carriers would cease supplying roaming services. Consequently, the Commission is not satisfied that declaration of the domestic inter-carrier roaming service will be likely to result in the achievement of any-to-any connectivity.

6. Will declaration encourage economically efficient use of, and economically efficient investment in, infrastructure?

As discussed in Chapter Two of this report, when deciding whether declaration of a service will be in the LTIE, the Commission is required to consider whether declaration would be likely to encourage the economically efficient use of, and economically efficient investment in, infrastructure. Relevant infrastructure is the infrastructure by which carriage services, and services supplied by means of carriage services, are supplied.

As indicated in Chapter Two, 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 prices of given services reflect the costs of providing these services. In more competitive markets, service providers have a greater incentive to lower prices in order to win market share. Accordingly, this incentive helps push prices towards costs, and thereby improves the efficient use of resources, and therefore infrastructure.

6.1. Efficient use of 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 help it to form a view about the impact of declaration on efficiency. For instance, where the Commission finds that declaration can lead to greater competition in downstream markets by helping to ensure prices for the eligible service better reflect their efficient costs of provision, it is likely such declaration will also help promote efficiency in use of telecommunications services.

By enabling greater competition in downstream markets, declaration would be expected to improve productive and dynamic efficiency in these markets by giving service providers the incentive to find lower-cost means of producing goods and services in downstream markets, and by encouraging them to invest and innovate in ways that will ensure they produce goods and services of a chosen quality at the lowest possible cost in the future. Further, the Commission would expect allocative efficiency to be improved as it would be more likely that the final prices paid for retail services by end-users will better reflect the efficient costs of provision of these services. In the language of paragraph 152AB(2)(e), declaration will be expected to result in the more efficient use of infrastructure used to supply the eligible service. Conversely, a decision not to declare would — on this reasoning — lead to less competition in downstream markets and a less efficient outcome.

A clear implication of this, therefore, is that the level of costs (inclusive of a normal profit) is important in determining whether declaration will lead to a more efficient use of infrastructure. The comparison of costs to prices, and the impact declaration will have on any difference between the two, is a key consideration in whether declaration will lead to a more efficient use of infrastructure.

In addition to this, however, the competitive dynamics associated with a given market structure are also of relevance to considerations of the efficient use of telecommunications infrastructure. In particular, it is important to consider the overall structure of prices across a range of inter-related services when considering whether a particular pricing structure is economically efficient or not, rather than focusing narrowly on the inter-relationship between prices and costs for individual services such as the mobile domestic inter-carrier roaming service alone.

6.1.1. Impact of declaration on efficient use

Views of interested parties

In their submissions, mobile carriers acknowledged that domestic inter-carrier roaming can encourage the efficient use of their infrastructure by enabling them to realise economies of scale, suggesting that these benefits provide sufficient incentives for them to provide roaming in the absence of declaration.

Telstra submitted:

> Provision of domestic roaming services allows mobile network providers to achieve greater economies of scale through increasing network utilisation in areas where there is excess capacity. Given these incentives and the positive commercial outcomes that have eventuated, there is no valid justification for regulating domestic inter-carrier roaming services.[82]

Similarly, Vodafone stated:

> When the ACCC last reviewed the national roaming issue, Vodafone considered that there were strong incentives on carriers to agree to commercial deals. In Vodafone's case, these incentives manifest themselves in the desire for us to maximise the efficiency of our mobile network by developing commercial relationships. Since the ACCC's review, industry developments appear to have strongly backed up this view…[83]

Optus added that these incentives operate, irrespective of whether there are one or several mobile networks on which carriers could seek to roam:

> In areas with only one network, the investment that has occurred has established mobile coverage rather than network capacity. In these areas, the existing mobile network providers already have a very strong incentive to provide roaming (resale services) as a way to utilise capacity on these under-utilised routes. For example, commercial arrangements have developed for roaming between Vodafone and Telstra in rural Victoria and Tasmania.
>
> In areas where more than one mobile network provider has significant short-run spare capacity on their networks then they have strong commercial incentives to offer roaming on their networks in order to achieve greater economies of scale. Indeed, if there is sufficient demand for roaming, they will vigorously compete for roaming revenues.[84]

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[82] Telstra Submission, p 4.

[83] Vodafone Submission, para. 2.4.

[84] Optus Submission, p 68.

Commission view

The Commission accepts the view that the incentive to lower average costs through increasing network traffic does create an incentive for mobile carriers to offer inter-carrier roaming services. That said, this incentive can be diminished if the provision of roaming could lead to increased downstream competition. Moreover, if the provision of inter-carrier roaming services is not subject to effective competition, then prices for domestic inter-carrier roaming services may be above efficient levels.

With respect to GSM inter-carrier roaming, this does not appear to be a significant concern. As noted in section 4.3.1., despite concerns about structural features of the market, it appears there may be an incentive to provide roaming services once it becomes clear that another carrier is prepared to offer roaming services. It is more likely to be an issue where there is only one mobile network which can supply roaming services, such as CDMA inter-carrier roaming. Nevertheless, Telstra has agreed to arrangements for the supply of domestic inter-carrier roaming services using its CDMA network.

Declaration of domestic inter-carrier roaming could encourage efficient use of infrastructure through enabling prices to be set at more efficient levels by means of arbitration processes if efficient pricing were unlikely to be achieved without declaration. However, in the absence of data on roaming prices, the Commission is not able to express a view as to whether prices are above efficient levels.

6.1.2. Technical feasibility

Finally, in considering the impact of declaration of a service on the efficient use of telecommunications infrastructure, the Act also requires the Commission to consider whether it is 'technically feasible' to supply and charge for the eligible service when determining whether declaration would encourage the efficient use of infrastructure.

In this regard, the Commission must particularly consider:

- whether supply is feasible in an engineering sense (i.e. 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.

Views of interested parties

In its submission, Hutchison provided a table showing roaming inter-operability across networks. This is reproduced as Table 2.[85]

[85] Hutchison Submission, p. 24.

	CDMA		CDMA 2000	GSM		WCDMA
	2G	2.5G	3G	2G	2.5G	3G
CDMA — 2G	√	√				
CDMA — 2.5G	√	√				
CDMA 2000 — 3G	√	√	√			
GSM — 2G				√	√	
GSM — 2.5G				√	√	
WCDMA — 3G				√	√	√

Table 2: Roaming network inter-operability (source: Hutchison)

From Table 2, it can be seen that roaming is technically feasible (in an engineering sense) between:

- CDMA networks, including between 2G and 2.5G CDMA networks;
- GSM networks, including between 2G and 2.5G GSM networks;
- GSM and 3G WDCMA networks (which are based on GSM technology);
- CDMA and 3G CDMA 2000 networks;
- 3G WCDMA networks; and
- 3G CDMA 2000 networks.

However, it appears that roaming is not technically feasible between:

- CDMA and GSM networks;
- CDMA and 3G WCDMA networks;
- GSM and 3G CDMA 2000 networks;
- 3G WCDMA and 3G CDMA 2000 networks.

The Commission understands that once a subscriber roams on to another carrier's network in order to make a call, the subscriber may remain 'connected' to that network for up to 30 minutes after the call has been completed, even if the subscriber returns to the home network area within that time.[86]

In terms of the costs involved in supplying roaming services, Vodafone stated that roaming requires specific software, network conditioning, along with dedicated infrastructure for the exchange of billing information, fraud management and lawful interception.[87] The Commission's market inquiries confirmed that these categories of

[86] http://www.vodafone.com.au/rep/coverage/australia.jsp?gs=foryou&hd=coverage&st=australian, accessed 29 August 2004.

[87] Vodafone Submission, para. 2.27.

costs are typically incurred with domestic inter-carrier roaming on GSM and CDMA networks. Currently, billing information is provided daily; if 'real time' billing information were required, additional software would be necessary. In addition, there are labour costs where it is desired to 'carve out' exclusion zones from national roaming, as well as ongoing operational costs.

The Commission sought estimates of these costs. Only estimates of the initial up-front costs were provided and these were less than $10 million per roamed network. In some instances, commercial arrangements may provide for the sharing of these costs between both parties (i.e. the home and visited network operators). The Commission did not seek detailed costing information to verify these costs.

With respect to the services available when roaming, the Australian Telecommunications Users Group provided a position paper from the International Telecommunications Users Group (INTUG) which states that data and value-added services make the technical aspects of national roaming more complex than mere voice. Hutchison notes that although roaming is possible between more advanced networks and less advanced networks, the advanced network services such as video calls may not be available.[88]

Optus raised concerns regarding the impact of roaming on network performance, submitting that if there are unexpected volumes of roaming occurring (for example, due to faults) it may mean that subscribers to the network providing the roaming service may receive a lower quality of service due to congestion.[89]

Commission view

The existence of arrangements for roaming between CDMA networks, between GSM networks, and between WCDMA and GSM networks, confirms that domestic inter-carrier roaming on 2G and 2.5G networks is technically feasible in an engineering sense. The type of roaming available is non-seamless (see section 3.3.). Currently, roaming is not technically feasible between GSM and CDMA networks.

While the Commission only received rough estimates of the costs of supplying and charging for roaming services, the existence of commercially negotiated roaming arrangements suggests that these costs are reasonable. The reasonableness of these costs is likely to depend on the volume of roaming traffic and, therefore, there may be some instances where the volume of roaming traffic is so low that the costs are not reasonable. The Commission did not, however, receive information about the minimum volume of roaming traffic necessary for these costs to be reasonable.

Theoretically, as suggested by Optus, there is the possibility of roaming leading to network congestion and adversely impacting on the operation or performance of the visited network. The Commission is not aware, however, of any instances where this has occurred.

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[88] Hutchison Submission, p. 22.

[89] Optus Submission, p. 73.

6.2. Efficient investment in infrastructure

In examining the likely impacts of declaration on economically-efficient investment, and the extent of such investment, the Commission focuses separately on the effects of declaration on economically efficient investment in:

- infrastructure by which *the* eligible service is supplied; and
- infrastructure by which *other* carriage services, and services supplied by means of carriage services, are supplied.

Central to the consideration of the incentives declaration give to service providers is the impact on their 'build/buy' decisions. That is, carriers operating in related markets will have a choice as to whether they invest in their own infrastructure in order to provide the eligible service (i.e. 'build') in order to provide final services to end-users, or to seek access from an existing provider of the eligible service (i.e. 'buy').

In this regard, the Commission is particularly concerned to ensure declaration would not prevent efficient investment (such as efficient investment in the infrastructure used to provide the eligible service by potential service providers) or encourage inefficient investment (such as excessive investment in related markets or inefficient duplication of 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.

Declaration may distort the access provider's decisions about maintenance, improvement and expansion of existing infrastructure, thus harming the LTIE. For instance, if the access price of a declared service were to be based on a provider's actual incurred costs, then declaration may lead to the access provider over-investing in the existing network in order to raise the access price.

Conversely, if the access price for a declared service was set at an inefficiently low level, it may deprive the access provider of the ability to earn an economic rate of return on its efficient investment in the infrastructure used to provide this service. In this instance, the access provider may be deterred from making efficient investment in the infrastructure used to provide mobile telephony services.

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. Consequently, the Act requires the Commission to consider the likely impact of declaration on the incentives for investment in infrastructure by which the eligible service is supplied.

6.2.1. Infrastructure used to supply the eligible service

As noted above, in order to analyse the impact of declaration on investment, the Commission believes it is useful to focus on infrastructure used to supply the eligible service separately from infrastructure used to supply other services. This is because those impacts may differ.

For instance, declaration may have a neutral impact on incentives for investment in infrastructure used to supply the eligible service, but by improving conditions of supply

for this service, can encourage efficient investment in other infrastructure. In the context of national roaming, this has been a major rationale for regulatory intervention in other jurisdictions; i.e. mandatory provision of roaming by 2G and 2.5G networks in order to encourage investment in 3G networks (see Appendix B).

In this section, the Commission considers the impact of declaration on incentives for investment in infrastructure to provide 2G and 2.5 roaming services. In the next section (i.e. section 6.2.2.) the Commission considers the impact of declaration on incentives to invest in other infrastructure, primarily infrastructure used to supply 3G mobile services.

Views of interested parties

Telstra, Optus and Vodafone each submitted that declaration would impact negatively on incentives for investment in mobile infrastructure by which the domestic inter-carrier roaming service is supplied.

In this regard, Telstra was of the view that declaration would reduce incentives for network expansion because the ability to roam would mean that geographic coverage was no longer a point of product differentiation between mobile carriers.[90] Additionally, Telstra raised concerns about the impact of regulatory uncertainty on incentives for network expansion, suggesting that declaration would increase uncertainty about the recovery of network costs.

Optus submitted that in areas where there are multiple mobile networks, declaration will harm incentives for efficient investment in mobile network infrastructure and lead to resale rather than facilities-based competition.[91] Also, Optus raised concerns that declaration will enable new entrants to 'free ride' off the investment made by existing GSM operators. That said, Optus noted that there may be a case for declaration where it is uneconomic for there to be more than one mobile network in a particular area.[92]

Commission view

The potential for declaration of domestic inter-carrier roaming to dampen incentives for network deployment was a concern in the previous inquiry held by the Commission and has also been a concern for regulators in other jurisdictions. The Commission, however, can minimise the impact of declaration on investment incentives through its approach to access pricing.

The description for the domestic inter-carrier roaming service 'carves out' those areas where the operator seeking roaming would be expected to deploy its own network; i.e. the metropolitan areas of major capital cities. Thus, with respect to CDMA networks, Sydney and Melbourne metropolitan areas are excluded from the service description. For GSM networks, Melbourne, Sydney, Brisbane, Adelaide and Perth metropolitan areas are excluded from the service description. While it may be economic to deploy networks in

[90] Telstra Submission, p. 4.

[91] Optus Submission, pp. 71-72.

[92] Ibid., p. 68.

other capital cities, these are not excluded from the service description because the newer entrants do not hold spectrum in those areas and, therefore, are unable to deploy networks in those areas.

Moreover, the service description is limited to the provision of voice services. This facilitates product differentiation between network operators providing roaming and those seeking roaming, thereby maintaining an incentive for the operator seeking roaming to deploy its own network where it holds spectrum.

With respect to pricing, the Commission is required to publish access pricing principles at the time of declaration or as soon as practicable afterwards.[93] This reduces regulatory uncertainty about the recovery of particular costs and provides an opportunity for the Commission to minimise any potential negative impact of declaration on investment incentives. In the present case, however, in light of the Commission's decision not to declare the domestic inter-carrier roaming service, the Commission does not need to publish pricing principles nor form a view on the appropriate pricing principles.

That said, the Commission notes that there was divergence amongst submissions over appropriate pricing principles the Commission should apply were it minded to declare a domestic inter-carrier roaming service. In this regard, Optus suggested a retail-minus approach would be preferable. Telstra, on the other hand, raised concerns with such an approach (albeit without advocating an alternative approach

6.2.2. Infrastructure used to supply other services

Generally, submissions did not address whether declaration of a roaming service could have a positive impact on incentives for investment in infrastructure used to supply other services, although Vodafone was concerned that declaration could harm incentives for investment in new products and services.[94]

The Commission has previously expressed the view that roaming is important for entry by new network operators.[95] In this regard, the Commission notes that the main rationale for mandatory roaming in other jurisdictions is to encourage investment in 3G networks. Consequently, the Commission was interested to determine the extent to which roaming would be important to the deployment of 3G network infrastructure by the non-incumbent holders of 3G licences — Hutchison, 3G Investments and CKW Wireless.

The Commission understands that roaming has been particularly important for the introduction of 3G services by Hutchison and the deployment of its 3G network given that Hutchison does not hold spectrum outside of Melbourne, Sydney, Brisbane, Adelaide and Perth. However, the roaming agreement between Hutchison and Vodafone was negotiated in the absence of declaration and Hutchison appears to be satisfied with the terms and conditions of that agreement. Moreover, if the recently proposed 3G

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[93] Section 152AQA of the Act.

[94] Vodafone Submission, para. 2.23.

[95] ACCC, Previous Domestic Inter-carrier Roaming Report, p. 33.

infrastructure sharing venture between Telstra and Hutchison[96] is successful, it is unlikely that Hutchison will need to rely on inter-carrier roaming in order to achieve national coverage once the joint network is deployed.

With respect to 3G Investments and CKW Wireless, the Commission did not receive any information indicating that they would need domestic inter-carrier roaming in order to deploy infrastructure.

6.3. Conclusion

In the Commission's view, it is technically feasible to supply and charge for the domestic inter-carrier roaming service. Roaming can occur between GSM networks, between CDMA networks and between WCDMA and GSM networks. It is not, however, currently possible between GSM and CDMA networks.

Inter-carrier roaming encourages the economically efficient use of mobile network infrastructure. Roaming has also been important for the introduction of 3G services and deployment of 3G infrastructure. The Commission, however, did not receive information indicating that declaration is necessary to enable these benefits to be realised. Moreover, the proposed 3G infrastructure sharing venture between Telstra and Hutchison may reduce the importance of inter-carrier roaming for 3G network deployment. Therefore, the Commission is not satisfied that declaration of a domestic inter-carrier roaming services will be likely to encourage the economically efficient use of, and economically efficient investment in, infrastructure at this point in time.

[96] Telstra and Hutchison, joint Media Release, Australia's first 3G network sharing to expand and accelerate customer access to world leading mobile services, 4 August 2004.

7. Conclusion

In this report, the Commission has considered whether declaration of the domestic inter-carrier roaming service (specified in Appendix A) will promote the long-term interests of end-users. In doing so, it has considered the likely impacts of declaration on the promotion of competition, achievement of any-to-any connectivity, as well as on the economically efficient use of, and investment in, infrastructure.

The domestic inter-carrier roaming service is a service provided by means of 2G and 2.5G mobile networks using GSM and CDMA technology. It enables mobile subscribers to use their phones to make and receive voice calls by means of another network when outside their network area, provided that they are in a particular geographic area specified in the service description. These areas are those outside Melbourne and Sydney (for CDMA subscribers) and those areas outside of Melbourne, Sydney, Brisbane, Adelaide and Perth (for GSM subscribers).

In the Commission's view, national geographic coverage is an important competitive dimension of the market for retail mobile services. Domestic inter-carrier roaming provides a means by which the impact of barriers to nationwide network deployment (spectrum, economies of scale, sunk costs) can be ameliorated, thereby improving competitive conditions.

Since the Commission first considered whether to declare an inter-carrier roaming service in 1997-98, a number of agreements have been commercially negotiated for roaming services. These agreements provide for the supply of roaming services to other 2G and 2.5G mobile network operators, as well as 3G network operators and satellite operators. There have been no recent complaints in respect of the failure of a carrier to provide roaming services or in relation to the pricing of roaming services. Due to the structural features affecting the markets in which GSM and CDMA inter-carrier roaming services are supplied, the Commission has concerns about whether market conditions provide sufficient incentives for the supply of roaming services on reasonable terms and conditions. Nevertheless, there have been no recent complaints in this regard.

While inter-carrier roaming is pro-competitive, the question for the Commission is whether declaration is necessary to ensure those competitive benefits are realised. In light of current supply arrangements, and the absence of recent complaints, the Commission is not satisfied that declaration would promote competition.

Similarly, the Commission considers that inter-carrier roaming furthers the achievement of any-to-any connectivity by enabling end-users to communicate with each other in circumstances when this otherwise would not be possible. Also, it encourages the economically efficient use of, and investment in, infrastructure by enabling network operators to realise economies of scale, as well facilitating market entry and network deployment by new entrants. However, the Commission is not satisfied that declaration is necessary for the achievement of these objectives.

Consequently, the Commission is not satisfied that declaration of the domestic inter-carrier roaming service will promote the LTIE. That said, given the Commission's concerns regarding structural features in the markets within which GSM and CDMA

inter-carrier roaming are supplied, the Commission intends to monitor the situation and will re-consider declaration should it receive information indicating that supply is threatened or that the terms and conditions of supply are unreasonable. It is the Commission's draft view that such monitoring should take the form of a record-keeping rule (RKR) requiring mobile carriers to provide information on the terms and conditions upon which domestic inter-carrier roaming services are provided.

This report has not considered whether the Commission should declare a mobile domestic inter-carrier roaming service supplied by means of 3G networks. This was because roaming services are not yet supplied by means of 3G networks, and nor is the Commission aware of any request for the supply of 3G domestic inter-carrier roaming. As indicated above, however, the Commission proposes to monitor developments with respect to the provision of domestic inter-carrier roaming services, and may initiate a further inquiry should it receive information indicating that declaration of a 3G domestic inter-carrier roaming service may be appropriate.

Appendix A — Service description

Mobile Domestic Inter-carrier Roaming service

The **Mobile Domestic Inter-carrier Roaming Service** (**the service**) is an access service provided by GSM and CDMA mobile network carriers that provides for digital mobile service subscribers and satellite telephone service subscribers to make voice calls and receive voice calls when the subscriber is located outside certain metropolitan areas, and is provided for the purpose of permitting those subscribers to obtain telephony services on a network other than their home network

Definitions

Where words or phrases used in this declaration are defined in the *Trade Practices Act 1974* or the *Telecommunications Act 1997*or the *Telecommunications Numbering Plan 1997*, they have the meaning given in the relevant Act or instrument.

A digital mobile service subscriber is a person assigned a digital mobile service number under the *Telecommunications Numbering Plan 1997*.

A satellite telephone service subscriber is a person assigned a satellite telephone service number under the *Telecommunications Numbering Plan 1997*.

A subscriber is located outside certain metropolitan areas if, at the time of making or receiving the call, the subscriber is:

(a) in respect to the service provided by GSM mobile network carriers, outside the areas covered by the 1800MHz band spectrum licences issued by the Australian Communications Authority for the provision of radiocommunications services in Sydney, Melbourne, Brisbane, Adelaide and Perth, and

(b) in respect to the service provided by CDMA mobile network carriers, outside the areas covered by the 1800MHz band spectrum licences issued by the Australian Communications Authority for the provision of radiocommunications services in Sydney and Melbourne.

In enabling subscribers to **make** voice calls, the service includes call origination, carriage and termination (i.e. providing an end-to-end service in respect to the call).

In enabling subscribers to **receive** voice calls the service is limited to call termination.

The service is provided in respect to standard **voice calls** and does not include the provision of SMS or any data services.

CDMA mobile network carriers are carriers that provide mobile network services through a digital mobile network based on Code Division Multiple Access technology using 800MHz band spectrum (a ‘CDMA digital mobile service’).

Digital mobile network is a telecommunications network that is used to provide digital mobile telephony services.

GSM mobile network carriers are carriers that provide mobile network services through a digital mobile network based on the Global System for Mobile Communications (or Groupe Special Mobile) using 900MHz or 1800MHz band spectrum (a 'GSM digital mobile service').

Appendix B — International approaches to national roaming

Europe

2G-2G roaming

In Ireland, the Commission for Communications Regulation has recently proposed to mandate national roaming across 2G networks (by both 2G and 3G network operators) in order to promote competition for wholesale and retail mobile services.[97] In this regard, the Commission noted that despite demand for mobile roaming, the leading Irish mobile network operators have been reluctant to provide it.[98] The obligation would be imposed on those mobile network operators with significant market power.

Roaming across 2G networks (by both 2G and 3G network operators) is mandated in Denmark pursuant to legislation, whereby mobile network operators are required to meet all reasonable requests for national roaming.[99] The charges for roaming are not regulated, however, but subject to commercial negotiation.[100]

3G-2G roaming

In several European jurisdictions, roaming rights have been established by way of licensing requirements to facilitate entry by 3G network operators who do not also operate a 2G network. This has been based on the view that 3G mobile network operators with existing nationwide 2G networks would have a competitive advantage which could adversely affect market entry and the ability of new entrants to compete. Typically, the obligation is imposed on each 2G network operator who also holds a 3G network licence, requiring the 2G operator to provide roaming to the new 3G entrant for a specified period of time. Countries which have adopted this approach include Austria, Belgium, Denmark, France, Greece, Ireland, Italy, Spain, Sweden and the United Kingdom.[101] In order to preserve incentives for network deployment, there may also be a concomitant obligation on the party seeking roaming, for instance to deploy a minimum

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[97] Commission for Communications Regulation, Consultation paper: market analysis — wholesale mobile access and call origination, 27 January 2004, pp. 69-71.

[98] Ibid., pp. 49-50.

[99] Act on Competitive Conditions and Consumer Interests in the Telecommunications Market (Denmark), section 43.

[100] European Commission, 6th Report on the Implementation of the Telecommunications Regulatory Package, Annex 2, p. 118.

[101] Directorate-General Information Society, European Commission, Comparative Assessment of the Licensing Regimes for 3G Mobile Communications in the European Union and their Impact on the Mobile Communications Sector, 25 June 2002, p. 17.

size network (e.g. 20 per cent of the population) in order to take advantage of roaming requirements.[102]

In the United Kingdom, the telecommunications regulator (Ofcom) has recently reviewed the licence obligation, and has proposed that it be discontinued. This is because the new 3G entrant has established an agreement for national roaming on to a 2G network, there is another 2G network operator who would be willing to negotiate for the provision of national roaming, and other regulatory remedies could be used just as expeditiously to deal with a refusal by 2G network operators to provide national roaming.[103]

3G-3G roaming

In general, it appears that 3G network operators are not subject to obligations to provide national roaming services. One exception is Denmark where the legislation dealing with national roaming (described above) applies to all mobile network operators including 3G network operators.

As demonstrated by recent cases involving mobile network operators in the United Kingdom and Germany, roaming may also attract the involvement of regulators for a different reason; i.e. to ensure that roaming agreements do not harm competition.[104] There, two mobile network operators proposed to enter an agreement to provide national roaming services to each other (as well as infrastructure sharing services). The European Commission considered that the proposed agreement would limit the parties' ability to compete in terms of coverage, quality and transmission rates. It did, however, consider that there were pro-competitive benefits during the initial deployment period and that these justified the restriction for approximately five years from the date of its decision.

United States

In the United States, a distinction is drawn between manual roaming and automatic roaming.

- Manual roaming involves the subscriber establishing an arrangement directly with the visited network operator. Valid credit card details are provided in order to make and receive calls using the visited network; also, in order to receive calls, the calling party must use a 'roamer access number'.

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[102] Directorate-General Information Society, European Commission, Comparative Assessment of the Licensing Regimes for 3G Mobile Communications in the European Union and their Impact on the Mobile Communications Sector: Annex to Final Report — Full size exhibits and comparative tables, 25 June 2002, p. 27.

[103] Ofcom, National roaming: a further consultation, 22 July 2004, pp. 12-13.

[104] European Commission decision of 30 April 2003 relating to a proceeding under Article 81 of the EC Treaty and Article 53 of the EEA Agreement, Case COMP/38.370 — O2 UK Limited/T-Mobile UK Limited ('UK Network Sharing Agreement'), OJ L 200, 7.8.2003; European Commission decision of 16 July 2003 relating to a proceeding under Article 81 of the EC Treaty and Article 53 of the EEA Agreement, Case COMP/38.369 —T-Mobile Deutschland/O2 Germany: Network Sharing Rahmenvertrag, OJ L 75, 12.3.2004.

- Automatic roaming involves the subscriber's own network establishing an arrangement with the visited network operator. All the subscriber must do is turn on his or her phone, which is then recognised by the visited network operator's network systems.

In 1996, the Federal Communications Commission (FCC) re-affirmed the requirement for mobile network operators to provide manual roaming and extended the requirement to certain mobile network operators not covered by the original rules.[105] This was on the basis that roaming is highly valued by mobile subscribers and consequently new entrants may be at a competitive disadvantage vis-à-vis incumbents if their subscribers were not able to roam. At that time, the FCC refrained from mandating automatic roaming on the basis that there was insufficient information of any market failure which required intervention at that time.[106]

In 2000, the FCC again considered the matter, seeking views as to whether it should establish rules for automatic roaming, and whether the manual roaming rules should continue.[107] It noted that many carriers had reached automatic roaming agreements without the need for regulatory intervention and that roaming prices have fallen.[108] The Commission also notes it appears roaming prices have continued to decline in recent years.[109] The FCC is yet to finalise its views regarding the need for rule-making with respect to roaming.

New Zealand

In New Zealand, there are only two national networks, each using a different technology — one is a GSM network and the other is a CDMA network. Thus, the provision of national roaming is not subject to competitive constraints.

The *Telecommunications Act 2001* provides that national roaming using 2G networks is a 'specified service', meaning that an access seeker can request the Commerce Commission to make a determination in respect of national roaming. The determination can only cover non-price terms and conditions and must set out network deployment milestones and thresholds which ensure that the access seeker has 'strong incentives' to deploy its own national network in an efficient and timely manner.[110]

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[105] Federal Communications Commission, *In the matter of interconnection and resale obligations pertaining to commercial mobile radio services*, CC Docket No. 94-54, Second Report and Order and Third Notice of Proposed RuleMaking, 27 June 1996, paras. 11-13.

[106] Ibid., para. 16.

[107] Federal Communications Commission, In the matter of automatic and manual roaming obligations pertaining to commercial mobile radio systems, WT Docket No. 00-193, Notice of Proposed RuleMaking, FCC 0-361.

[108] Ibid., para. 13.

[109] Federal Communications Commission, Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services — Eighth Report, 26 June 2003, para. 97.

[110] *Telecommunications Act 2001* (New Zealand), Schedule 1, Part 3.

The Commerce Commission has noted that new entrants are likely to face difficulties in establishing roaming arrangements[111] and this matter has been recently raised with the Commerce Commission.[112] It has not yet decided whether to undertake an investigation into national roaming.[113]

[111] Commerce Commission, Determination pursuant to the Commerce Act 1986 in the matter of an application for clearance of a business acquisition involving Vodafone Mobile Ltd NZ and 900 MHz Spectrum, Decision No. 479, 1 November 2002, paras. 142-145.

[112] Letter from TelstraClear to the Commerce Commission, 8 June 2004, www.comcom.govt.nz, accessed 15 August 2004.

[113] Letter from Commerce Commission to Vodafone, 4 July 2004, www.comcom.govt.nz, accessed 15 August 2004.

Appendix C — Submissions

Listed below are those organisations and individuals who provided submissions addressing domestic inter-carrier roaming:

Australian Telecommunications Users Group

Hutchison Telecommunications (Australia) Limited
Hutchison 3G Australia Pty Ltd

Paul Lucas, MP,
Minister for Innovation and the Information Economy
(Queensland)

PowerTel Limited

SingTel Optus Limited

Small Enterprise Telecommunications Centre Limited

Telstra Corporation Limited

Vodafone Australia Pty Ltd