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Official Committee Hansard

**HOUSE OF
REPRESENTATIVES**

STANDING COMMITTEE ON COMMUNICATIONS,
INFORMATION TECHNOLOGY AND THE ARTS

Reference: Wireless broadband technologies

MONDAY, 1 JULY 2002

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HOUSE OF REPRESENTATIVES

**STANDING COMMITTEE ON COMMUNICATIONS, INFORMATION TECHNOLOGY AND THE
ARTS**

Monday, 1 July 2002

Members: Mr Pyne (*Chair*), Mr Hatton (*Deputy Chair*), Mr Baldwin, Mr Ciobo, Ms Grierson, Mr Johnson, Mr Pearce, Mr Sercombe, Mr Tanner and Mr Ticehurst

Members in attendance: Mr Ciobo, Ms Grierson, Mr Johnson and Mr Pyne

Terms of reference for the inquiry:

To inquire into and report on the current and potential use of wireless technologies to provide broadband communication services in Australia, including regional Australia, having particular regard to the following:

- The current rollout of wireless broadband technologies in Australia and overseas including wireless LAN (using the 802.11 standard), 3G (eg UMTS, W-CDMA), bluetooth, LMDS, MMDS, wireless local loop (WLL) and satellite;
- The inter-relationship between the various types of wireless broadband technologies;
- The benefits and limitations on the use of wireless broadband technologies compared with cable and copper based broadband delivery platforms;
- The potential for wireless broadband technologies to provide a 'last mile' broadband solution, particularly in rural and regional areas, and to encourage the development and use of broadband content applications;
- The effect of the telecommunications regulatory regime, including spectrum regulation, on the development and use of wireless broadband technologies, in particular the Radiocommunications Act (1992) the Telecommunications Act (1997), and Parts XIB and XIC of the Trade Practices Act;
- Whether Government should make any changes to the telecommunications regulatory regime to ensure that Australia extracts the maximum economic and social benefits from the use of wireless broadband technologies; and
- Likely future national and international trends in the development and use of wireless broadband technologies.

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Committee met at 9.09 a.m.

CHAIR—I declare open this hearing of the House of Representatives Standing Committee on Communications, IT and the Arts. Today the committee will take evidence as part of our inquiry into wireless broadband technologies. In simple terms, broadband allows for high-speed data transfer, providing vastly improved Internet access with a far higher level of interactivity. Broadband also enables services such as digital video on demand, simultaneous phone and data and a range of applications and content that can reduce the cost of doing business and delivering government services. Wireless technology can be used to provide broadband services over the airwaves, thereby providing unwired networking and online services, mobility and convenience for business users, an alternative to existing wired networks and a new range of specialist applications.

The committee is examining current wireless broadband technologies in Australia and overseas and the likely future national and international trends in their development and use. We are looking at the interrelationship between the various types of wireless broadband technologies and examining their benefits and limitations compared with cable and copper based broadband delivery platforms. The committee is particularly interested to explore the potential for wireless broadband technologies to provide a last mile broadband solution in rural and regional areas—that is, to connect businesses and households which are currently unable to receive broadband services. We are also looking at how wireless technologies can encourage the development and use of broadband content applications. In addition, the committee is examining the effect of the telecommunications regulatory regime, including spectrum regulation, on the development and use of wireless broadband technologies.

[9.11 a.m.]

BURGESS, Mr Colvin, Technical Director, AirNet Commercial Australia Ltd

FORTUNATOW, Mr Peter, Director, Sales and Marketing, AirNet Commercial Australia Ltd

KARIDIS, Mr Peter, Director, Operations, AirNet Commercial Australia Ltd

TAYLOR, Ms Grace, Consultant, Media and Marketing Research, AirNet Commercial Australia Ltd

CHAIR—Welcome. Thank you for coming today. We received your submission on Friday, which has not given us time to read it. Would you like to make an opening statement?

Mr Karidis—Yes. AirNet would like to commend the committee in regard to its vision to tackle one of the most contentious issues in the IT industry in Australia today. We believe that, after reading our submission, the committee will take wireless very seriously in Australia. Wireless is just like wire line; it just happens not to be a physical medium. Our opening statement reflects on a nightmare. We have a dream that has become reality. We would like to see broadband go to the masses of this country, in a realistic fashion. As such, we ask this inquiry, through the regulations and all the other submissions, not to let broadband, the dream, become a nightmare.

Spectrum is a limited resource. Some of the spectrums that are talked about in most of the submissions and in regard to the terms of reference are free to air. That does not mean that you can use them for communication purposes without a carrier's licence. There are some grey areas in the ACA regulations. As such, we feel that spectrum is a commodity—a very limited one at that—and that it needs to be addressed very carefully. It needs efficient coordination between all parties: the ACA, the carriers and the community groups. There are many knockers in regard to the wireless local loop, be they vendors who want to push their own equipment for various technologies or be they community groups who want to use the spectrum for their benefit.

We, AirNet, are a living, breathing example. We may be one of few. We are a company of approximately 30 employees that was built over approximately three years, and we are cash flow positive. In this day and age in telecommunications, that is extremely difficult to do, especially with the recent happenings in the US et cetera and the downturn in the IT industry. We have battled through because we had a realistic business plan. We deliver broadband to our customers at realistic prices, with quality of service as well. Of course, as the old adage goes, 'You get what you pay for,' therefore we offer many levels of service all the way from dial-up to broadband. We have competitive products which compete heavily against the incumbents and provide as good as if not better quality than some of their carriage mediums and at lower price points. Even on that, we have built a successful business.

One of the other points we would like to stress is that the ACA does not have the funding or the resources to actually put into practice its regulations in regard to the Telecommunications

Act. The ACA is not able to police the airwaves; therefore, spectrum being a limited resource, there is interference irrespective of the spectrum. We all need help so we can coordinate the airwaves efficiently. This might include something like a wireless association put together by second-tier carriers, the ACA and possibly even community groups so we can all work together to enforce those regulations for the benefit of the Australian community.

Over the past few weeks, AirNet have put their minds together to develop a brand new model, a model that does not exist in the IT&T industry today—that is, a flexible model. We offer a flexible broadband model. We launched this yesterday. From midnight last night to this morning we have had approximately 30 registrations. Our broadband model was based on community groups. We have been in discussions with various community groups. Part of one of those discussions is included in the appendix to the submission you have in front of you. We have had discussions with other community groups since then. Even in the 48 hours since we put in our submission, we have gathered more than enough interest in our community model to say that it is believable. It is credible. It is realistic and ethical. That is what people on a certain web site forum have said. Our broadband model applies whether it be regional, rural or metropolitan based. We can use the same model irrespective of location. Of course, we need enough customers to sign up, but that is nowhere near what the large telcos require, because our model is realistic.

The last-mile potential of wireless local loop provides the benefits and the price point that the customers, the community, small-medium enterprises, government and education require. Those are the people that we provide our services to today. May we stress that wireless is not the answer to everything, and that has been in our business plan since day one. We use wireless where appropriate; the right application uses the right medium. Most of all, it is the people who put it together that make it work.

The present telecommunications industry is deregulated to a certain extent. It was deregulated numerous years ago. This has been great for competition but in regard to some of the regulations that the ACA, or maybe even this committee, is looking to water down, they will have a great impact on the carriers that exist today—the second and third tier carriers; carriers like us who have only just made our business successful, carriers like us who have only just provided realistic broadband at realistic prices to the customers and to the community.

We ask that this inquiry, with the ACA, look seriously in regard to not deregulating the telecommunications industry any further, in order to give companies like ourselves an opportunity to exist. We will find it very difficult should some of these regulations be lapsed. We are more than keen to work with all groups—whether it is this committee, the ACA or community groups—to develop a successful model which can benefit everyone.

CHAIR—In your opening statement, you talked about the potential relaxation of some of the regulations. Which particular aspects of the current regulatory policy do you think are important for the government to keep in place and what do you know of suggestions that they be deregulated?

Mr Karidis—We were shocked recently by a media release from the ACA because we had no idea of any discussions with carriers to lapse some of these regulations but, that aside, we were more than agreeable to discuss that with them. Some of these regulations are grey areas;

there are areas in the Radiocommunications Act that state you do not require a carrier's licence to use airwaves, for instance, to distribute information and there are other areas in the Telecommunications Act which state you do. There are areas in the Telecommunications Act which state that if you are using wire line, such as cable in the ground, you have to have a 500-metre rule that allows you to join two offices or buildings that you might own yourself. Some community groups, individuals and businesses are using that example for the wireless part of the act. It actually does not refer to the wireless part of the act; it is quite a grey area.

You can have numerous interpretations after speaking to various people at the ACA. As such, one of the major points is that you are not allowed to use the airwaves for profit without a carrier's licence. The ACA is looking to lapse some of these regulations to allow for not-for-profit organisations. We believe that is a good idea but it requires coordination between the carriers, the ACA and the community groups. Otherwise some of these community groups—and one in particular that put in a submission has said this—will not take responsibility for any profit that is made from such a wireless network. One of the other groups that made a submission that we have talked to has said specifically they will not make profit.

As a business, we do not worry about the profit side of it in regard to the community groups. What we are worried about is a limited resource—a resource for which we pay \$10,000 a year and part of our gross revenue. If others want to make a profit from it or a sustainable business, they should pay such a levy as well. It should be fair.

CHAIR—Do you think the spectrum is being filled up or potentially could be filled up with a whole lot of players that are not regulated properly and not trying to earn a profit but are just having a bit of fun?

Mr Karidis—Yes. I will hand over to Colvin for a moment.

Mr Burgess—The main concern is coordination. The ACA has some very good regulations, as far as radiation outputs and those types of areas for ISM bands are concerned. If they are adhered to, we can get massive density in the community. However, we have come across some installations where people do not understand the regulations, and why they are there, and they use power amplifiers and other equipment which can make it very challenging to work in the ISM bands. I do understand that it is an unregulated band; that is the whole point. However, to date we have had very good responses from people whom we have approached and who we have found were breaching the areas that the ACA has put down in ISM bands.

Another concern is community networks wanting to create large-scale networks, which are more interconnecting separate network units. This brings in a question of interception capability for a lot of the law enforcement agencies, which I believe has been overlooked quite heavily. The big issue here is that these networks can potentially become quite large. They are capable of carrying voice over them as well. All it would require would be some different numbering schemes to come up and then there would be a completely independent system in operation, being run by hobbyists and not-for-profit organisations. The temptation to run other commercial services across those networks, I imagine, would be quite high. At the moment the general consensus and the mood from these community groups is that they want to do the right thing. But it would just take a few members to inject their own access to public networks into the community network to make a mockery of some of these rulings that are being proposed. My

biggest concern is that the ability to police and regulate such an environment—and interception capability—would be extremely challenging, if it were possible.

As a carrier, we have reasonable obligations as far as interception capability goes. We have invested quite a bit of time and effort in ensuring that our network can meet these interception capabilities, which also adds substantially to the cost of the network. I believe this would be overlooked by a lot of community networks if they are not educated correctly or given incentives to go down this path.

CHAIR—When you say it is an unregulated part of the spectrum, it was always to be left as an unregulated part of the spectrum, but for specific purposes, wasn't it?

Mr Burgess—Yes; it was basically for industry and scientific purposes.

CHAIR—Yes. It is being used for a lot of other things nowadays. In fact, you could argue that in some ways they could be killing the goose that laid the golden egg, in years to come, because some of the technologies that are using this spectrum will fill it up eventually and the interference will be such that the product they have created will no longer be very useful. Do you think that is a potential problem?

Mr Burgess—I am not too concerned with that, essentially because there are technologies to work around it. We are not concerned too much about the ISM band utilisation or the cliff effect—where, all of a sudden, everything just stops working. There are other technologies. People are focusing on 2.4 gigahertz. There are other ISM bands available and new technologies coming out, such as ultrawide band. It is very similar to CDMA in that you can have the same frequencies operating within the same areas; you just have to pay attention to power levels. That is addressed quite well with the current regulations within the ACA. Essentially, the question is: are people going to adhere to the regulations that already exist? To me, the model is quite good.

What we are attempting to address is the second tier carriers that have been able to come in since deregulation. It has been only a number of years since players have come into the field. I believe that second tier carriers need more time to prove that the existing model works. It appears that it has been well thought out and a lot of work has gone into it. It would be, in my mind, premature to go ahead and change things based on a few requests. I think people get confused between the ISM spectrum and carriage licensing, between network units and the obligations required in those.

CHAIR—Last Friday we took evidence from the ACA in Canberra and they said that they thought there were biases in the act towards wire line and against wireless and that that needed to be addressed. You thought that there were biases in the act against wireless and in favour of wire line.

Mr Karidis—Yes.

CHAIR—That is probably a feature of the rapidly changing technology, which people would not have considered. Even if you were doing it today, in 12 months time you would be thinking, 'Gosh, that's already obsolete.' Is there a way around that problem or is it just a matter of the government trying to keep up all the time with changing technology?

Mr Karidis—Generally wireless and wire line will cover most things that we can think of today. For some reason there might be some new medium we have not thought of that emerges in years to come. As long as the ACA coordinates with carriers we believe that the regulations can stay up to date. But it does need coordination and we as a company are looking to further part of our submission with the ACA later this week, and that is with regard to some of these biases. We feel that we should take a proactive step in talking with the ACA quickly.

CHAIR—I have not had the benefit of the transcripts from Friday but my memory says that the ACA were talking about this 500-metre rule in the act and how that was one of the glaring changes that could be brought about. They were quite helpful in terms of trying to remove any discrepancies that gave an advantage of wire line over wireless.

Mr Karidis—We believe the ACA is a very good body to put the regulations in place. We believe its biggest downfall is that it does not have the resources, the funding or the number of people to coordinate the regulations properly.

CHAIR—They will be pleased to hear that—government bodies are always asking for more resources.

Ms GRIERSON—You still use some fixed cable where it is available, so you integrate the services. Are there any problems accessing fibre optics that are already there? Are there any problems with interfacing in that way?

Mr Karidis—The major problems at the end of the day are really our cost and the lengthy processes between carriers. There is an unwritten rule that carriers help each other, but some of the incumbents tend to take a bit longer than they are supposed to.

Ms GRIERSON—Is it a market that is monopolised and therefore you do have to pay higher costs, or is it a cooperative market as you suggest?

Mr Karidis—It is not as cooperative as it could be.

Ms GRIERSON—It is still essential to have that flexibility for some time?

Mr Karidis—Yes, it is. That would help second-tier carriers like us immensely. Our network really covers metro Adelaide and, to a great extent, an area of approximately 30 kilometres in radius outside Adelaide. We will be setting up similar systems interstate and that will start before the end of the year. But to help our network, cable et cetera, at the end of the day, helps the backbone in regard to connecting some of our base stations and interconnecting the various states as well. We are looking at other options which include satellite.

Ms GRIERSON—Is there a role for government in improving access or is it a commercial sector role?

Mr Karidis—There is a role, which we believe is under way now between the ACCC, the telecommunications department and Telstra.

Mr JOHNSON—First of all, can I compliment your firm; it seems to have become cashflow-positive in a couple of years and it is doing very well. You intend going to my state of Queensland. I am looking to have zero unemployment in my electorate, so if you wish to come to my electorate, I would be happy to accommodate you!

You made some comments about spectrum. I want to get your thoughts on the allocation or distribution of it. We have heard a fair bit about that aspect of it. I want to get your thoughts on the current process.

Mr Karidis—I might let Colvin Burgess answer that, if that is okay.

Mr JOHNSON—That is fine.

Mr Burgess—I think that, with appropriate use, it can be leveraged quite heavily. We demonstrated that at the World IT Congress in February, here in Adelaide. We were asked to have a network within one building, to which 500 portable clients could connect. Many other people have tried to do this but have failed. We just applied some of the fundamental principles with spread spectrum technology and it worked very well. In that case, there were 70 access points within the one area. Each client could see over 20 access points, and function quite well. What that means with respect to spectrum use is that essentially you could have 20 independent competitors working within the same space, delivering services to their client, as long as they coordinate what they are doing. There were other people who tried to get their networks going within this conference. We approached them and said, ‘Let’s coordinate.’ They tried setting up and their equipment just did not work. So they basically wound the power up. We noticed that we had some segments that were falling down, so we had to approach them. Finally, they listened; we coordinated it and it worked for everyone.

Mr JOHNSON—What amount of time was spent on this? It sounds a bit messy.

Mr Burgess—Yes, it was for two weeks—we had to get in and get out for the exhibition. But that was a demonstration of the incredibly high density ISM network.

Mr Karidis—Further to what Colvin has been saying, effectively spectrum is a limited resource, and the fact was we could coordinate because it was controlled to a limited extent in a given area—within the confines of a building. But when you are talking about the confines of a suburb, city et cetera, you need coordination. Spectrum is limited. There is noise out there from other equipment that we cannot control—for instance, in the ISM band. We can work with that, but what makes it difficult to work with is someone attaching a high-gain antenna with a power amplifier, and adding extra noise out there—using the power amplifier because they do not actually have the technical experience to deploy that system properly. So they up the power levels because they cannot align the antenna properly. It might be five degrees out. We have to deal with issues like those. We do not use power amplifiers in any of our equipment. Under the regulations, we are only allowed to get up to a certain power level. We hardly meet that. We have a very efficient network.

Mr JOHNSON—Can you give me some idea of your current customers? I presume that you are more urban focused.

Mr Karidis—I might hand over to Peter Fortunatow to answer that.

Mr Fortunatow—Typically, the profile of our clients is in the small to medium enterprise area. We deal with a number of local governments and we also deal with the education sector. So they are our three client bases.

Mr Karidis—With regard to spectrum, one of the key issues I might reflect on, having regard to my opening statement, is that some registration system needs to be put in place. Nothing exists at this stage. I am referring to something that could be coordinated between second-tier carriers like ourselves and the ACA which could actually help the ACA, the carriers and community groups. Whether it would be available for full public access or limited access would be a matter for vital consideration, but there needs to be something which might involve a database, a web site, maybe even an association, to coordinate the spectrum efficiently, so that we can have a register of links. For instance, if there were a link on this building, we would be able to register the position, maybe the latitude and the longitude, the height and the direction of the link, including the power levels and possibly even the equipment used. They are some ideas with regard to a database of sorts that would help companies like ours.

Mr JOHNSON—Is that to try to level the playing field?

Mr Karidis—It is not really to level the playing field; it is to coordinate the spectrum efficiently so we know exactly where links are, the direction in which they are pointing and the power levels. If we have to put a link in another similar position, we can coordinate our link properly. There is an unwritten rule between carriers: if a carrier is on a building and a second carrier comes along, the second carrier has to make their equipment work without interfering with the first carrier. We do that by talking to their technical staff and finding out exactly what frequencies they are on and the directions in which they are pointing et cetera. We can do that because we know who the carrier is and that they exist; but, if there are other systems in the area, we have no idea, if they do not belong to a carrier. It adds levels of complexities to the issue.

Ms GRIERSON—Is the industry trying to form any association or some way of having databases that show that? Or is that too commercially insensitive?

Mr Karidis—The industry is talking about it; nothing has been done formally as yet. Since we started, we have been working in conjunction with one of our competitors with regard to this type of spectrum efficiency, but that is only between two companies in Adelaide. We have no idea about some of the community groups that might exist that might not have put forward submissions. So, yes, there is still a level of complexity.

Ms GRIERSON—That would compromise your service in that you would be putting in a service without full information of what factors you have to take into account.

Mr Burgess—It makes it more challenging, because then we have to track down—basically we go out and do a bit of a look around, look at the spectrum and find areas that are free. If it is very noisy, we try to find the noise source. It is a very time and resource intensive exercise.

CHAIR—Are these the people with the Pringles cans and things like that?

Mr CIOBO—What do you see as the trade-off between spectrum pollution versus regulating something as a consequence of over regulation, perhaps dampening invention and innovation in the area?

Mr Karidis—We see coordination between all groups—the ACA, the carriers and the community groups. We have started that process ourselves with community groups, and we will be following up with the ACA later this week and next week. We feel that coordination between all the parties will help to clarify a lot of the regulations and, if we have to ease any of the regulations, they will be eased to the benefit of all concerned. We are not an incumbent. We are not asking to have the airwaves to ourselves. We are not asking for the regulations to be bent for our benefit. We are asking that the regulations work in a manner that helps deliver broadband realistically at a realistic price point to the masses.

Mr CIOBO—Is the pollution you speak about a result of experimentation in that bandwidth?

Mr Karidis—It is coming from some vendors who have put in place some links which cover grey areas—they could be legal or illegal—some vendors using power amplifiers where they do not need to because they do not have the level of expertise required, some community groups that are putting up their own systems without consulting the ACA and a range of individuals. I will hand over to Colvin.

Mr Burgess—This is an issue where people do not apply commonsense and they even make it hard for themselves. There have been links that we have come across, where we have had to come in because it is not working, and—lo and behold!—there is a power amplifier there and they are just getting reflections off their own target. As far as innovation and those types of things are concerned, we certainly do not wish for any stifling of that to occur. The reason we are around is because of innovation.

Mr CIOBO—So it is more the coordination?

Mr Burgess—It is mainly the coordination so we can all live happily together.

Mr CIOBO—It is more an agency function. I apologise for missing your opening statement about interception capabilities, because you obviously made some comment then. I am keen to get more of a statement on that.

Mr Burgess—We can quite easily envisage that, when community networks, hobbyists and non-profit organisations start rolling out their own networks, without some form of scale restriction, they could become quite large and have wireless islands around the place that begin peering with each other and start using voice and other technologies across these networks.

The ability to intercept this information for some of the law enforcement agencies that we are having to work with requires further infrastructure, investment and some planning. I do not see community networks doing that and certainly if they are hobbyists and non-profit, they are generally scratching to save as much money as they can. As Mr Pyne put it, they are using Pringles cans, literally, in some cases to help save money. There are also things to save money like soldering directly to components on transceivers instead of using connectors. How do you do impedance matching correctly with that? There are all those types of things that they are forced to

do based on budget. Yes, they are being very innovative but unless they understand the innovation they could also be making it difficult for other areas of innovation to deliver a good product to the public community.

Mr Karidis—Some areas of interception might include paedophilia, drug running, immigration and other areas against the national interest of this country. Of course, that is why interception was put in place originally.

Ms GRIERSON—Would a standards framework help or hinder?

Mr Karidis—A standards framework would help—a standards framework that has been coordinated between all parties concerned.

Mr CIOBO—It is well and good for government to prescribe a framework but the practical application of that is an entirely separate issue. How do you go about it and what do you envisage is the actual process for enforcement of that framework?

Mr Burgess—I believe trying to enforce it with an iron fist would be very challenging. Community groups are quite often strong minded but they have a strong spirit as well. If they can see that people are trying to help them, they will take these different entities on board. We have had good success to date working with community groups. They have concerns about working with other carriers because they see carriers as just wanting to earn a big buck and they have had some not so friendly experiences with some of the larger incumbents. I believe some of the second-tier carriers, including ourselves, can work with community groups case by case in a fashion that works for some of these scenarios.

At the moment, there is a lot of 2.4 gigahertz ISM equipment out there. There will be some more 900 megahertz and 5.8 and some ultrawide band, and I think if we put a framework in place and try to implement some standards it will detract from what is actually allowing this to occur. It is a band where it is a free-for-all and people are having to work together and I think that is a very good thing to happen. We just need to make sure that we can monitor it so that, if it does get out of control, some levels of pressure can say, 'Hey, work together please.'

CHAIR—That might be an example for question time behaviour in the future if we can all get along with each other. If there are no further questions from the committee, thank you for making your submission and for attending today's hearing. If we have to ask you anything further, we will get in touch with you.

Mr Karidis—Some of the points we would like to sum up are interception, spectrum efficiency; the contentious issues in regard to the regulations; the fact that AirNet, as an Australian company, has invested a considerable amount of time, effort and resources, including money, into putting into practice our business plan to deliver such broadband services to the public; and coordination between all parties concerned. We feel that coordination is, at the end of the day, the most important part. If we need to leave here with one idea in our minds, it is coordination between all parties concerned. One other thing: we released a media release yesterday. If the committee would like any copies of that, we have copies to hand out. Thank you very much for your time.

CHAIR—We will take that from you and include it in the evidence. Before we move to Integrity Data Systems, there is a motion to pass.

Resolved (on motion by **Mr Ciobo**):

That the committee receive as evidence and authorise the publication of the submissions 44, from Mr Karidis, Director of Operations, AirNet Commercial Australia, and No. 45, from Mr Kevin Johnson-Bayde, of Mardec Technologies Pty Ltd.

[9.54 a.m.]

CHISWELL, MR Ross, Chief Executive Officer, Integrity Data Systems

CHAIR—Welcome, Mr Chiswell. Are you planning on making an opening statement?

Mr Chiswell—A brief one.

CHAIR—You obviously have some things to show us.

Mr Chiswell—It is a bit of a show and tell.

CHAIR—We will take that as an opening statement.

Mr Chiswell—The submission that Integrity, as a company, put before the committee was as a result of our involvement since 1996 in wireless technology that can be used to deliver broadband bandwidth to different types of organisations. Our background is all around this particular issue. It focuses on one particular wireless type of technology and our expertise lies in that area. We wanted to point out in our submission that the technology exists now to deliver these types of services. It is not a future technology; it is possible right now. The technologies that are available tend to use unlicensed bands and, as the committee would already be aware, there are issues and some lessons we can learn from our historical use of unlicensed bands in Australia. We should not repeat them in the next band that is coming to the marketplace which is the 5.8 gig band. We could also look at some areas which could be changed within the regulations that would allow carriers or Internet service providers to use licence-free equipment over greater distances in Australia. If they could use high bandwidth point to point products over greater distances, they could more economically deliver their services. That is what we would like to talk about this morning.

The first thing I might do is show the committee how easy it is to go from an internal wireless LAN card. It would go in my laptop or computing device. I have a connector capability, especially on the 2.4 gig product, so I connect it into a cable like so. Once I get to this standard radio frequency connector, which is called an n-type connector, I can then go to this type of cable or heavier.

CHAIR—What is that type of cable called?

Mr Chiswell—It is a low loss radio coaxial cable. I can then go to directional antennas—this an example of one. So now I start beaming that energy in particular directions. With the combination of those particular products, I could quite easily break the current regulations around the 2.4 gig band. I could have too much energy emanating from this particular antenna, and it is very easy for me to get these particular components and put them together. I can then make it even worse and go to an omnidirectional antenna. This is a high gain omnidirectional antenna that will send a signal over quite a large distance. The worst scenario would be if I then amplify it. We have found in Australia that this happens a lot, because people do not realise they are breaking the regulations associated with the 2.4 gig band. Therefore, they put out more

energy, pollute the environment and the spectrum so that other people, be they carriers or other users, cannot effectively use that band.

CHAIR—They would be doing that for what purpose precisely?

Mr Chiswell—One of the biggest uses of community networks is gaming. They game between each other, because they get fast access to bandwidth so it makes their games. In fact, community networks around the world using this technology have ridden on the back of initial gaming. It could be peering from an Internet point of view or just a sharing of bandwidth. Typically, they are trying to link to a peer or someone else who wishes to access higher bandwidth at a virtual no cost rate that is somewhere within a five or 10 kilometre radius.

CHAIR—It seems to be a bit of a theme this morning, because the AirNet people talked about pollution and interference as well in the spectrum. We heard from a community based person in Sydney this morning who was of course very enthusiastic about this idea and did not envisage there being any difficulties or problems. Obviously, that is not the view of a lot of people who are currently working in the market.

Mr Chiswell—The issue has really come to the fore: if you look at what is already happening in Australia, there are parts around Melbourne where you can no longer use the 2.4 gig band because the pollution levels, the noise floors, are so high that now it is not available to anybody. This technology is very good at coexisting as long as people stay within the rules. What happens is that some people either blatantly break the rules for their own gains or break the rules without even knowing. They do not know that the combination of products that they put together breaches the class licence that is applicable with that particular band. That is the sort of issue that happens. There is no real policing. There is a class licence, but there is no-one who watches over that. There is not enough information, in some respects, imparted to the general community so that people even know they are breaking the rules.

CHAIR—The problem, from what I understand, is not so much the use of the band but the power and the amplification that are put into it.

Mr Chiswell—Yes, those two issues. They could use the band, as long as they stay within the rules.

CHAIR—If you were a member of this committee and you had the opportunity to make some recommendations on the use of these sorts of products and technology and the spectrum, what would you suggest?

Mr Chiswell—I think community group type people should be able to access it; it should be for non-commercial and non-profit use. Their access to the particular products should be part of a mandate. I do not think they should be able to use omnidirectional antennas. What they are trying to do is set up small peering groups, so they should be restricted to point-to-point systems. That minimises their ability to amplify and swamp a particular area. There should be no amplifiers—make it a mandatory thing that they do not tap into amplifiers, because they are too open to people buying the wrong product and going way beyond the regulations associated with the band.

A basic licence should be required. As an analogy, take the 2.4 gig band as a finite resource, which it is, and compare it to a river. A river is open for everyone to use, but if you wish to use a boat on the river in South Australia you need to apply for a licence that demonstrates that you have at least understood the rules and regulations about driving a boat on the river. Then you can go ahead and use it just like everyone else. We would like the same type of thing for people who wish to use the band for their own personal use, such as a community network. They should pass a test that imparts the basic information: 'Do you know that you should not exceed these things, this particular regulation?' So if they do blatantly break the rules, we know that at least at the beginning they passed a test and obtained a licence to use the band. It would be at a very low cost but it would at least make sure that they do have that knowledge.

CHAIR—The big picture there, of course, is that you want to see the use of this part of the spectrum for wireless broadband technology and you are worried that if this continues to proliferate—

Mr Chiswell—It is too late. I think the 2.4 gig band has already been destroyed. We have worked with one particular first-tier carrier in Australia where we got to a scenario where they were considering the use of 2.4 gig based technology for deployment to about 1,500 sites. Two things ultimately shelved the deployment: the collapse of investment within the telecommunications industry itself and the carrier's concern about interference issues. Their concern was that anybody could go along, buy the technology with no controls and whack up an antenna: suddenly the infrastructure that they are using to deliver this technology very economically is blown out of the water from an interference point of view. They then cannot guarantee that service to their clients. I think the 2.4 gig band is a good learning ground. We could clean it up and perhaps be able to get more use out of it but, realistically, large deployment using that particular band at the moment, from people who have the money to actually roll it out, will not happen.

Mr CIOBO—On the directional antenna, if it is an unamplified signal what sort of range is that?

Mr Chiswell—On the directional antenna, depending on the bandwidth you are using, you are still talking about up to 20 kilometres.

Mr CIOBO—What about on the omnidirectional antenna?

Mr Chiswell—On the omnidirectional, the maximum amount would be about eight kilometres.

Mr CIOBO—What about if you amplified that?

Mr Chiswell—If you break the rules, you could really achieve great distances. Effectively, you would have to use far more expensive cable to get that eight-kilometre mark. With cheaper cable that is probably more within the reach of a community group—we are talking probably three kilometres. If you look at the Internet sites that these community groups use, they are already designing antennas which are home-made versions of this. This is our Australian design. They get Milo tins and convert them into antennas. There are articles in magazines on how to do this.

CHAIR—In Sydney it was put to us that Pringles cans were very useful for this sort of thing.

Mr Chiswell—Yes, I have heard of Pringles cans being used.

Mr CIOBO—All that stuff is from Dick Smith, Tandy Electronics?

Mr Chiswell—Not quite, but from radio component wholesaling. Again, the community groups widely publicise these. If you look at this and look to the 2.4 gig band, this product is a subscriber unit that operates in the 5.8 gig band. It is the next ISM up. This particular unit sits up on a roof and has a cable that comes out of it and that is all. The bandwidth it is capable of taking in, depending on the model, is 20, 40 or 60 megabits per second. Some of the submissions I have seen say that the technology does not really exist. This is the other end, the base station. This mounts up on a pole very much like a cellular tower for a mobile phone. This one base station can deliver out 20 megabits per second in aggregate or 60 megabits per second in aggregate. It can actually cover 60 degrees of beam width, so to do 360 degrees I put six of these on a tower and I get full coverage. Then I connect to thousands of these out in the field. This is again using unlicensed bands, so it is very economical for the second-tier carrier or the ISP to deliver the service because they have had not to pay large amounts of money for the spectrum.

CHAIR—So a company like Unwired, for example, have purchased their own part of the spectrum and they are doing that sort of thing, but they have their own share of spectrum so they do not actually have to worry about the interference issues. Is that right?

Mr Chiswell—Yes.

CHAIR—What sorts of companies are doing that in the unregulated spectrum?

Mr Chiswell—The type of company that would use it in South Australia is, for example, Agile or Internode. They are looking at deploying this. We have tests being done with Western Australian, New South Wales and Queensland companies—various organisations around Australia. This is only new to the market, so they are implementing their trials and seeing what the capability and scope for this particular product are. It does exist. This is in the 5.8 gig band. You talked about wireless LAN being an 802.11A product that has come into the marketplace. If you look at those particular products, they are from a range of different companies that are already starting to enter the marketplace. I could provide these to the committee.

CHAIR—Lisa from the secretariat will collect those from you and we will take them as an exhibit.

Mr Chiswell—This particular company has three models of the products in question. Two have integrated antennas. You cannot get to a connector like this and use external antennas. But one of them has an external antenna connector. This particular band is not able to be used in the outdoor market but already we have products that have the capability to have that done to them. Our concern is that these products will come into the market by various means.

CHAIR—And it is just a matter of time before they start being used.

Mr Chiswell—This is straight off a web site from one of the wireless freenet organisations in Perth. One of the particular articles that has been posted on that web site says, ‘Cheap 802.11A equipment.’ It is posted by a particular person. He says, ‘This stuff is getting accessible already.’ He talks about a particular product and says it can now be purchased cheaply from Amazon. Then he says, ‘Woo hoo—some cable, some antennas, same connectors and five to six times the speed we get with 802.11B.’ So they are already talking about looking to use it outdoors when it is currently illegal to use it outdoors. But what is going to stop them? You cannot actually use the same antennas because it is in a different band, and that demonstrates a bit of lack of knowledge from the person who posted this up on the particular web site. He also makes the statement, ‘I did not think Amazon would ship electronics overseas. Has anyone tried or succeeded to get the stuff sent over?’

There is a bit of a rogue element in the community networks which is really anti-establishment, anti-control, and says, ‘Let me get the stuff; I’ll put up my own antennas. I’ll do it. You can’t control me.’ That, to me, is a real danger for the broad use of this technology that can benefit a whole range of Australians, not just a select few who are technically very aware.

Mr JOHNSON—What sorts of costs are involved in setting up the full benefits that you have, with all the different contraptions?

Mr Chiswell—The cards can be about \$200, but you can get cheap fire sale ones for under \$A100. This cable probably costs \$25. This other cable probably costs \$60 to \$120, depending on the length. Regarding the cost of the antennas, the Pringles cans are \$1.65 from Shell service stations. How much you spend depends on the antenna you use.

Mr JOHNSON—For the backyard user—the anti-establishment rebel you are talking about—to get the benefits, such as the point to point or friends within a certain radius or a certain activity that they might be involved in, what sorts of costs are they looking at?

Mr Chiswell—In summary, it is probably \$300 to \$400.

Mr JOHNSON—So the damage they can do is pretty considerable.

Mr Chiswell—There has been damage done already. We have already had people who had the money to invest in a large infrastructure roll-out shy away from this because they foresee too much risk in being able to guarantee service.

Ms GRIERSON—How affordable and realistic would it be for that to be monitored and regulated in some way?

Mr Chiswell—It would be similar to sitting a boat licence test. A boat licence costs you \$60 once.

Ms GRIERSON—Yes. The licence is fine; it is the people who still do not obey the rules who probably are very hard to get to.

Mr Chiswell—That is probably where the government, rather than leaving everything to self-regulation, needs to spend some money on inspectors to ensure that this resource is looked after.

Ms GRIERSON—I imagine that, rather than the regulators, the serious players would locate the ones who are polluting or interfering and would pass that information on.

Mr Chiswell—It is actually quite hard to find them, unless you have the vans with the directional antennas on top. One of the further things we would like to see in the community-type environment—and, in fact, in all links—is that they register the links, so that there is a national database. Then, if you had a problem of interference occurring in a particular location, a government body could go to the database and say, ‘There is this particular link here. Maybe we could look into it.’ At least they would have somewhere to go and look. In registering, all people would have to do is show that they comply with the class licence rules. They would need to hand in a piece of paper that says, ‘These are the bits I have used. Here is my calculation. It shows that I am legal.’ This would get rid of the idea that ‘It doesn’t matter, because no-one is watching me.’ If you have to fill in a form, you have more of a mentality of ‘I could be checked on; maybe I’d better not break the rules.’ It would be a simple thing and quite inexpensive to implement.

Ms GRIERSON—Would I be right in suggesting that, because our market is so unstructured and unpredictable at the moment, there is no-one locally manufacturing products; it is all imported?

Mr Chiswell—Yes. The only thing we have done is in the 2.4 gig band. We mentioned in the submission a device we call the OB500. We assemble that from different people’s technologies, add in some of our own firmware code and build our own product. So we are not making it from scratch, but we are assembling some technology of our own.

Ms GRIERSON—Would you envisage that Australia would ever manufacture that sort of equipment?

Mr Chiswell—Australia should be manufacturing it.

Ms GRIERSON—I agree with you.

Mr Chiswell—Integrity Data Systems have a very strong desire to head in that particular direction. We have already prototyped combining technologies that use satellite, Internet point of presence capability and then wireless technology to distribute that satellite down-feed to a particular community. We believe that is a very innovative product that could be used in rural settings but also could be exported all over Asia. We have taken some steps in the development of that ourselves. The hardest thing for us, as a small organisation, is having the funds to take it further. A lot of our people who have the knowledge have gone overseas to work in the companies that are doing this.

Ms GRIERSON—I would think that, in an unregulated environment, it is fairly risky to put all your eggs in one basket not knowing what the future could be.

Mr Chiswell—Yes.

CHAIR—I will be the devil’s advocate for a moment, Mr Chiswell, and ask: why should the government care about this spectrum issue in the unregulated band? What is in it for the

government? The idea was that there should be unregulated spectrum, that people would use it and that some might use it for community things, which they are. Now, some businesses want to use it because they have discovered that they can do things with wireless broadband and they do not want to buy their own piece of spectrum. The government has spectrum which they sell to people through auctions. People buy it and have control of it, and the government earns revenue from it. Wireless broadband will be delivered that way, through regulated spectrum which is owned by people. We are not going to be denying people wireless broadband so why should the government care about this unregulated spectrum?

Mr Chiswell—The economics behind it. The strong argument is that investment in infrastructure in Australia, for other than some of the large players, is very difficult. If you do not have the money to buy the spectrum, you are out of the whole game—forget about it. If we want to increase competition, the area in which people can very economically deliver broadband services is in using unlicensed wireless technology. It is in the interests of the government to protect, look after and nurture that particular resource so that smaller Australian companies—such as AirNet, Agile, Cortel or the plethora of them around the country that do not have access to big funds—can access technology in a reasonable way to deliver those types of services. It will increase competition. It will allow people to take it out to the bush more readily. The larger players who have the spectrum are realistically going to go after the main suburban areas first anyway, and then possibly think about the bush. This type of technology really allows someone in Coober Pedy to be able to set up and bring services to the community very effectively, right now, using an economical model that he can afford and that subscribers can pay for. It is in the interests of the government to make sure that this area can be deployed effectively for second-tier carriers or WISPs, as they are called—wireless ISPs—so that those things can happen very readily.

Ms GRIERSON—Would you suggest that those who have purchased spectrum have not led in the industry or have not diversified or provided flexibility and the breadth of service that one would have hoped for?

Mr Chiswell—I think they are still recovering from paying for the spectrum.

Ms GRIERSON—It was expensive.

Mr Chiswell—Realistically, while the government has been able to make money out of that, if you take places such as Sweden where they have very cheap spectral costs, they have a far vaster deployment of broadband services because it is easy for the people. They do not have to investment so much money in the spectrum; they can investment the money in infrastructure. ISM on an unlicensed product gives us the analogy that they do not have to investment money in the spectrum; they can investment money in the infrastructure.

Mr JOHNSON—Does the government not have an obligation on behalf of the people to get us much revenue as they can from a limited commodity?

Mr Chiswell—From the players who can pay for it, yes. I do not think there is anything wrong with having two levels of service. You can have the organisations that can pay for the spectrum being able to offer a service at a higher level with no interference risk and a higher guarantee of availability. Then you can have a second level of providers who provide the next

step down, which is perhaps more affordable and goes to a wider range of the community. Why not have two tiers?

Mr JOHNSON—You mentioned Sweden earlier. Can you give me some idea at least, why you think that they have gone down that route?

Mr Chiswell—They understand that making broadband technology widely available to the community as a resource dramatically affects business. It is life changing. If you look at what has happened in America, which has had a far greater take up of broadband technology than Australia, it is life changing. Once you have a connection that is full time—it is always on—into a home, you change the way you use that particular type of service. You interact with it in a different way.

Mr JOHNSON—Does a different market affect the two countries, in the sense that they may be more of a concentrated market and we are not?

Mr Chiswell—We are very concentrated around the cities, so I would argue that our model is probably very good; it is similar, in that instance. The other thing is that we have the tyranny of distance. With these types of technologies, if some of the constraints are taken off them, you can actually overcome the tyranny of distance. From what Swedish people have told me, the Swedish government adopted the approach that if they made the delivery of bandwidth inexpensive, that would benefit both the community and businesses by enabling them to be more effective and competitive. So rather than making the money at the front end from a licence, they are making the money from the growth of their companies.

Mr JOHNSON—It is a longer-term perspective?

Mr Chiswell—Correct.

Mr JOHNSON—Can you give us any models other than Sweden that are operating on that visionary, I guess, approach?

Mr Chiswell—I am sure there are. These are only the ones I can directly comment on because I have had discussions about what some of the differences are.

Mr JOHNSON—You have got Swedish clients?

Mr Chiswell—We represent a Swedish manufacturer, and we have discussed the differences between Australia and Sweden.

Mr JOHNSON—You would encourage us to consider that as a model to keep in the back of our minds?

Mr Chiswell—I think we already have that capability, that there already are the unlicensed technologies. This one here is a very capable product. I can deliver from one cell site 360 megabits per second of bandwidth. That is a lot of bandwidth. And I can do that very economically—this device is worth about \$3,000 and it is capable of 20 megabits per second. I

could effectively connect an IP telephone to this and use IP telephony, so I could take IP telephony to a business or a rural environment and jump them over what we use in the cities. It is a very capable technology. But there is a constraint on investment in this country. It is very hard for people trying to implement infrastructure, from a carrier or wireless Internet provider, to get access to funds. This is quite a cost-effective way for them to do that, so I think we already have the capability to do it now. We just perhaps need to look after the particular spectrum we have got to stop a few elements in there wrecking the resource for us all.

Ms GRIERSON—Can you tell us anything more about SatPOP itself?

Mr Chiswell—That is our particular name; it stands for satellite point of presence. It involves a combination with satellite technology that tends to be quite expensive—I know the committee has already had a submission that talks about \$6,000 to get a downfeed. Take a scenario of 15 locations in an area of 10 to 20 kilometres where I want to pull some bandwidth in a very remote location. Rather than spending \$6,000 15 times, I can spend \$6,000 once, then wrap some other product around it—which is our intellectual property—and then use something like this to distribute it. With the economies that I can achieve, my end point has gone from \$6,000 to \$3,000, so I can more effectively spend my money and perhaps deliver it to more people in that community.

Ms GRIERSON—What communities in particular would that be relevant to?

Mr Chiswell—The SatPOP is designed for where terrestrial services are very hard to get and therefore there is just no bandwidth. So it could be very remote communities, communities in the middle of nowhere—

CHAIR—Like your Coober Pedy people?

Mr Chiswell—Exactly. By the time that ADSL gets to Coober Pedy I do not think we will be talking about this anymore. It would allow them to have a satellite point of presence; it is basically a box with an antenna pointing up and some other antennas that are used to distribute it wirelessly. So it is a good blend of two different technologies to economically delivery bandwidth.

CHAIR—That seems to be a theme from lots of people giving evidence, that wireless broadband is going to rely on a whole range of technologies that operate together, that complement each other; that there is no one technology that is going to be the wireless broadband technology of the future.

Mr Chiswell—I think it makes sense—you have different clients with different requirements, therefore they would use different products and therefore different technologies. It is really a question of: what are you trying to achieve? If you look at it purely as an economic, buck for bandwidth scenario, this type of unlicensed product offers a very good option for Australia to use. But, as I said, there are real risks associated with it. There are also some conditions.

I have samples that I will give to the committee, which look at the way America has regulated the 5.8 gig band. In the 5.8 gig band, which this one uses, we have a one-watt EIRP—Effective Isotropic Radiated Power. It is the amount of power at the actual antenna. We are allowed one

watt. In New Zealand, it is four watts. A fourfold increase does dramatically change the types of things I can start doing with that particular product in a point-to-point scenario.

In America, they have a different rule. They have one-watt output power at the particular device and there is really no limit on the amount of gain they use with a directional antenna. That means they can have quite a high powered antenna that is very narrow and directs that radio signal quite a long distance. In another document that I would submit, basically, you can see the differences that a 5.8 gigahertz radio product in a point-to-point scenario can achieve in Australia and in America. In Australia, under the one-watt regulation we can achieve about 16 kilometres. In America, under their ruling since 1998, they can achieve 80 kilometres. If you look at that, from the point of view of a carrier or an organisation that is trying to get bandwidth over a great distance, this product is a lot cheaper than the licensed microwave product. It is about 40 per cent, if not more, cheaper than the alternate technology.

At the moment, in Australia, I am constrained to use it only over 16 kilometres—it is being used in other parts of the world—when I can show on paper that it is being used over distances of 80 kilometres. We have tried to talk to the ACA about changing the regulations to fall in a bit more with what the world is doing, and I think this issue needs to be looked at. Again, it economically delivers bandwidth over distance, and Australia is a place of distance. It makes great sense for us to review what is going on there.

Mr CIOBO—Given that 5.8 gig is unlicensed, and you say let us boost up the power, how do you resolve the same issues in 5.8 gig that occurred in 2.4?

Mr Chiswell—Quite easily. The risk comes from wireless LAN products, which are IEEE 802.11A based. The product I am talking about that has the ability to do point-to-point 45 megabits per second does not use that standard and does not use that framing characteristic. The simple way to do it would basically be to say that, if it is an IEEE based product, it is for indoor use only, no outdoor antennas, no directional antennas or amplifiers. It is only used for wireless LAN, which is what it was intended for in the first place. So stop the use of it in a point-to-point environment. If it is non-IEEE 802.11A based, it can comply with a four-watt classification. Our submission was to have different rules within the city as opposed to rural environments. The most ideal thing would be to have no EIRP restriction in the rural environments.

Mr CIOBO—Does that require line of sight?

Mr Chiswell—Yes. You can still achieve 80 kilometres, but you just have to start going up because the curve of the earth starts to get in the way. The analogy I put forward on that is important for another product that I would like to submit to the committee to look at. This is another technology from a manufacturer which has been available in America for some time and we cannot use it in Australia. It is a point-to-point technology that offers 420 megabits per second in bandwidth in both directions at once; 420 through the air is a lot of bandwidth that somebody can use. It uses dual bands: the 5.8 gig band and the 5.3 gig band. The 5.3 gig band is restricted to 100 per cent indoor use in Australia. That is the area that is covered in the wireless LAN arena.

We could change the regulations slightly to say that, if it is 802.11A based, it can only be used indoors. But if it is not 802.11A based and is an outdoor product, we can allow it to be used

again under the same type of restrictions that are available and currently imposed in the states. Suddenly, I could bring a very high bandwidth product to this country, but at the moment I cannot. Why is it that Australian companies, second-tier carriers, ISPs et cetera, cannot tap into a technology like this that is already available? Because we have not really looked at the way it can be used to benefit this country.

Mr CIOBO—You made the comment before that, basically, it is working fairly well; it is just that we have a couple of cowboys. My concern is that you are always going to have a situation where we are going to be unable to capture the cowboys, unless we have wireless police roaming the streets. How are we ever really going to address your principal concern? The model currently seems to work, based on what you have said, except for these few anti-establishment types. How are we ever going to capture those people?

Mr Chiswell—I am saying the model is not working in the 2.4 gig band because it is unusable as a resource in some parts of Australia already. I would say that it has not worked. Yes, there are parts of it that are okay, but I think there are areas where people break the rules and do not realise.

CHAIR—How are we ever going to capture that, though? As Ms Grierson said, you can have the licensing in place. Are you saying there should be punitive costs associated with, for example, broadcasts of 802.11 for outdoor use and amplifiers and that kind of thing and you actually start whacking people who are breaching it?

Mr Chiswell—If you look at the committee networks, it is about sharing bandwidth over short distances. For short distances you do not need amplifiers or big antennas, so they can still get access to it. At least if you make sure they have passed a licence requirement and they understand that they cannot do these things and break the rules, they have more understanding out there. If you make them simply say where those particular links are, not a cost associated with a licence, when there are issues that pop up from a rogue element, they can look in the area and say, ‘Okay, we know these people are here. We can check them out very quickly and easily. It is not them, it is someone else. Let’s hunt them down and make them stop it.’ You only need to do that a few times, slap someone on the wrist, and it gets around that you cannot do this. In the 5.8 gig band, in which we have higher bandwidth products available, I think it should be mandatory that, if it is 802.11A based, you cannot use it outdoors, zip, not at all. It is along those lines at the moment, but perhaps it should be that you cannot bring technology into the country that allows you to disconnect the antenna system. The only reason you would want to do that is to do outdoor links, so let us remove that.

CHAIR—As there are no more questions, thank you, Mr Chiswell, for coming in this morning. If we need to speak to you again, we will be in contact with you.

Mr Chiswell—Can I submit this as additional information? This basically reinforces some of the arguments that I have spoken about today. There are six copies of it.

CHAIR—Is it the wish of the committee that the committee receive as exhibits for the inquiry, firstly, the document received from Mr Peter Karidis, his media release; secondly, the nine documents received from Mr Ross Chiswell, three of which we have titles for and we will

have titles for the other six very soon. There being no objection, it is so ordered. Thank you very much.

Proceedings suspended from 10.33 a.m. to 10.45 a.m.

COUTTS, Professor Reginald Paul, Director, m.Net Corporation

EKIERT, Mr Andrew, Chief Executive Officer, m.Net Corporation

MILLER, Professor Michael Joseph, Chair, Board of Directors, m.Net Corporation

CHAIR—Welcome. Although the committee does not require you to give evidence under oath, I advise you that the hearings are legal proceedings of the parliament and warrant the same respect as the proceedings of the House. The giving of false or misleading evidence is a serious matter and may be regarded as contempt of parliament. If you would like to proceed with your opening statement, we will then proceed to questions.

Prof. Miller—The ICT industry is facing some very challenging times. Key decisions have to be made—decisions that are going to influence and affect the way manufacturers, telcos, users and governments are going to see the ICT industry in a new and different light. In Australia there are some strategic decisions that, in part, will be guided by what goes on in other parts of the world, but our unique geography and social structures require that, in many respects, Australia needs to determine its own view of the future directions for ICT. It needs to seek to influence world standards, especially those standards that affect the way we deal with countries that are sparsely populated and have geographical and social structures similar to ours. Australia also needs to aim to position our ICT industry to be better able to benefit from the turmoil that is going on at the present time.

I would like to explain what I believe is happening in terms of these challenges to the ICT world. In the past decade, the telecom and IT or computing industries have suddenly realised they need to converge—they have converged simply because the Internet has come upon us. The Internet technology can do all that the old telecom technology could do, but it offers a cheaper way of doing it and it offers a totally new set of additional ways that humans and businesses can communicate. The whole area of information communication technology planning—ICT planning—is now dominated by the Internet technology.

The second aspect which is important to realise is that it is only in the past decade or so that the whole telecom industry has been transformed by the take-up of cellular radio technology. It is not that long ago that we had 1G—the first generation—and lost it. We have 2G at the moment and we already have good ideas about what will be our third generation or 3G technology. The mobility issue of communications has transformed not only the way that we do business but also the way that, socially, we communicate with one another. Mobility is the key development that we need to take into account when we are talking about broadband applications. It seems to me that mobility is important for people at home. It is important to realise that the future household requirements are not just going to be one computer plugged into a wall that one person in the house will use but we might need many. We might need the ability for our children or ourselves to be wandering from room to room with whatever technology we wish to use to access information in order to communicate in many different ways.

Mobility is a key issue in the office. People are used to plugging their computers into the wall but, as laptops, palmtops and all those devices have their own wireless interface, it becomes essential that, if you choose to walk out of your office and down to the conference room, you take all your communications facilities with you. Therefore, you need a wireless type of interface for pretty well everything that is done in the office and, in another context, you need higher speed mobility for vehicles and for being able to walk and so forth. In fact, it turns out—as I am sure you are aware—that, as soon as you start to talk about high-speed mobility, the technical problems of broadband wireless become more challenging. We could talk about that in more detail if you would like.

In summary, we need Internet services, so we need broadband services to make that happen, but we also need mobility and therefore we need wireless access, wireless interfaces. So what are the future directions for wireless? In the submission we have tried to give you a quick summary of what we see as some of the strengths and weaknesses of the current solutions. We have many technical solutions but we do not really have a clear way ahead as to how this is all going to work out. I guess the question is: why is this? Before I try to answer that, I will just comment that the present situation is very different from previous evolutions in telecommunications technology. There have been lots of changes from analog to digital and so forth. But they have always been changes where the telcos have known that, if they introduced new equipment and upgraded their systems, people would flock to them in droves because they were providing basically the same sorts of services. They were providing telephone services, basically, and a bit of a data service, perhaps. But this is all changing now because the services that we will need have not yet been determined, so this is the critical decision point right now. Broadband Internet offers just about an unlimited array of services and possibilities—video, voice data, music and all the rest of it—but, until we obtain a clearer view about what services we actually need and will pay for, we do not know how to plan our networks, especially for nationwide distribution, we do not know how to plan the manufacturing of our terminals and our equipment and we do not know how to choose which wireless technologies are going to be the right ones. It seems to us that service requirements in Australia, which may be different from other countries, need to be addressed very much at the forefront of reaching any decisions about what technology is needed to match those services.

We have also come to realise that fixed and mobile applications via broadband communications is a key issue facing our whole community, not just people in one part of the community. m.Net believes that the access problem for Australia at large will not be solved by a single technology. I think there is far too much emphasis at the present time on cabled systems using things like ADSL technology. As the Chairman knows, I am on the Broadband Advisory Group and I can tell you that that dominates the thinking at the moment. There are good reasons for that but I think that mobility issues will determine that wireless technology, wireless LAN, 3G and satellites will all have a role to play. m.Net is trying to help industry and governments work together to find out what is the way ahead, to make a significant study of the service requirements that will have applications in the local context, within a city in particular but also within country regions, and also to make a study of what technologies, particularly in the wireless domain, will offer the most promise for the future. We are not trying to focus on any one technology. As we indicated in the paper; we are trying to examine as many technologies as possible. We already have a network in Adelaide—which you will hear more about over lunch—which enables us to do some very interesting experimental things. We look forward to assisting the inquiry as we attain more information from the network and from the service

application studies that we are doing. At this stage, I would simply say that we would encourage the committee to take account of this national initiative whereby the m.Net label represents a large consortia of companies, universities and government agencies coming together in what I think is a very innovative and, so far, very effective way to solve some of the problems that the nation needs to solve before it can determine what the way ahead will be in terms of wireless broadband.

CHAIR—Thank you, Professor Miller. There are a couple of things that you mentioned in your opening statement that I would like to pick up on. The first was the issue of the dominance of ADSL thinking in government and advisory groups and industry. Does that have the potential to be a limiting rather than a liberating feature of this debate, that Australians might concentrate on what they know and understand right now and then, in a few years time, realise that they have missed out on opportunities for more liberating technology? You do not have to answer; any one of you can answer the questions.

Prof. Miller—I would just begin by commenting that if one focuses on today's technology in a field where change is occurring so fast, then of course it is a very limiting way to approach the whole issue. ADSL is a useful way to think of something because we know the bit rates and we know how it is done and all rest of it, but in fact it is actually very old technology. It is just using old telephone lines that are still stuck in the ground and were not designed for that purpose. And, very cleverly, people have been able to find ways to get lots of bits of data through those wires. But it is today's technology and, in my view, we have to look to what the future can offer, not only in terms of optical fibres and other systems but the technologies that will become available through satellite and wireless systems. We are just seeing the tip of the iceberg.

Prof. Coutts—I think we have got to be very careful not to focus on single technologies and lose the objectives. What are the objectives? The objectives are to provide, as Mike referred to, essentially new broadband services and that they are not only broadband but, where there is an opportunity, mobility is an important attribute one can provide if possible. I think it is completely understandable that everyone is particularly focussing on the pricing of ADSL and how it is delivered to the marketplace now. There will be further generations of both fixed and wireless technologies that will introduce diversity. But, at the end of the day, it is the services on the top and the content that is provided that is the important issue for the market. You can provide the best ADSL that you like at the lowest price you like, but if there is no access to services that people are prepared to pay for there is not a lot of point.

CHAIR—Do you want to comment, Mr Ekiert?

Mr Ekiert—I agree with what Professor Coutts was saying. The issue is content; the issue is services. Value-adding services will sell. Services which are delivered in the most cost-effective way and the technology which is most cost effective for a particular application will win.

CHAIR—The Canadians have done a report not dissimilar to our terms of reference, which you kindly pointed out to me when we first chatted about this, Professor Miller. Their thinking is quite broad about potential technologies; they have not limited themselves to ADSL at all. Also, their government has made a commitment about networking broadband to all their public libraries, hospitals, schools and government offices by 2004 or thereabouts. The Australian

government has not made that commitment yet. Is there the danger that Canada, South Korea and other countries will get so far ahead of Australia that we will be in danger of being a backwater for this kind of technology? What recommendations would you suggest that we make as part of our report that would encourage some government involvement in the provision of these services, or will the market determine it? My only concern, if the market is determining it, is will it therefore fall back on ADSL because it is already there?

Prof. Miller—We have to be cautious about drawing conclusions from what has happened in other countries. I will just comment on the Canadian and Korean examples. The Canadian goal is an eminently sensible goal except that it is going to cost a lot of money. It is well documented now that it looks like it is going to cost \$4½ billion to give broadband access to the last 20 per cent of the population.

CHAIR—It is a mere bagatelle, Professor Miller!

Prof. Miller—It sounds like it!

Mr JOHNSON—Is that in Australian dollars?

Prof. Miller—It does not matter much, in Canadian and Australian dollars terms. The Canadian government was so dissatisfied with the suggestion that came out of that committee that, as I understand it, the minister is no longer the minister. In fact, I doubt that the government is going to take that matter up as recommended by the committee, because it is just so expensive to do what was being proposed. In the same way, if we try to model what we do on the Korean situation, we are forgetting the fact that Koreans live in high density housing in large buildings in which reticulation of services is much more cost effective. To suggest that we ought to just try to follow the Korean model would be a bit incautious, to say the least, in terms of getting support from government. However, I do think we ought to be setting ourselves some goals that are achievable within our time frame.

For example, in certain service sectors—we keep coming back to services, as I am sure the committee will find—we are becoming aware that there are some very big opportunities, in health and education in particular but also in other sectors, which Australia probably should take advantage of because the service sectors need them and also because it opens up opportunities for the Australian software houses and applications developers to get some business out of it. It seems to me that if any of our public schools do not have access to broadband Internet services these days, there is something wrong. At the present time, schools in South Australia in general do not have access to any more than about 64 or 128 kilobits per second for the whole school. The suggestion that kids might be able to share resources is just laughable. Not only that but the resources are usually represented by three or four computers stuck against one wall, and students have to take it in turn to access those computers. At the same time, most schools that I know of that are trying to be forward thinking in this area are encouraging their students to buy laptops and bring them in. So they should have wireless cards on them. It costs almost nothing these days to have wireless cards. I think we ought to be setting goals for Australia to have wireless-enabled Internet access levels for students that meet reasonable needs of those students and staff. You would need to work out what that is, and it will probably mean at least an ADSL line into the school and then wireless distribution within the school or something like that. Again, I do not think the technology should be an issue for

this committee. The committee ought to say, 'We believe there is a case for having mobile Internet access for our school students and staff.'

In the same way, we in m.Net are becoming very closely involved with a number of representatives from the health sector, many of whom are practitioners as well as working in the area of telehealth. They are telling us that it is absolutely vital for them to be able to deliver appropriate, modern services to the bedside, in hospital settings and so forth, to have mobile access to databases and output what they are doing back into those databases, to get access to X-rays, images and all the rest of it, and to deliver services into country areas. On 12 August we are going to open a node of our m.Net network in Whyalla. The first product we are going to trial up there is what we call the clinician's mobile companion—a name made up by our medical colleagues—which will enable them, in the country environment, to have mobile palmtop access to all sorts of information associated with patients as well as access to advice from practitioners in the city and so forth. There are areas like that where wireless is vital because mobility is vital for the medical profession. It would be good for this committee to say, 'Australia ought to have a certain level of capability in this area.'

We could talk about four or five other areas that we are concentrating on at m.Net. We could say that areas like e-commerce, tourism and conventions, and intelligent transport should have some targets set for what Australia is aiming to achieve. Governments ought to try to do what they can to promote, by all sorts of mechanisms, ways in which we can achieve those targets. This would benefit Australian industry in assisting them to design and implement the applications that we will need to deliver the services.

CHAIR—Since you have mentioned tourism and conventions, Professor Miller, you might explain what m.Net did with the World IT Congress as a trial for the technologies.

Prof. Miller—I will get our CEO to briefly summarise what we did there. He is more familiar with all the details.

Mr Ekiert—This is behind us, so we are talking about the experience we had there. Without getting into the technical details, we attempted to test the technology which would be used for the purpose of delivering services, rather than just for the sake of accessing the Internet. This is the most critical issue. We have been talking about how to wire up people's houses—which technology to use. It is infrastructure talk. It is technology talk. The real issue is value adding services. As long as we are talking about the only service which we provide, which is access to the Internet, we are not adding sufficient value for that type of offer to attract a large number of prospective customers beyond the number of customers who are already in the market. If we use that bandwidth for the purpose of watching videos, what sort of value propositions are we putting on the table, not only for the end user but also for society? However, if we look at how the technology can be applied through opening new opportunities in several industries—not only tourism, health and education—opportunities to change the processes of delivering the service and accessibility to it, we are talking about value added service and creating demand for this service. Demand for the service will create demand for infrastructure and broadband as such.

At the congress, we built a wireless local area network which was designed in such a way that it would support the concept of mobile service delivery. Wireless LAN comes from a different

direction; it was invented by the IT industry. Its main purpose was to reduce the cost of hooking up computers in the office. The mobility issue was never considered at the time this technology was invented. It was always assumed that there would be a stationary piece of equipment sitting somewhere connecting to the network. Now we are talking about using the technology to provide value adding services which means that people would be using the technology on the move.

We are already talking about different applications of this technology. At the congress, we also assembled a small group of local application developers so they could develop applications to provide content and gain some experience. We have learnt a lot, but one thing is certain, there are still a number of challenges in front of us, and we can learn much more in the future.

Prof. Coutts—To come back to your original question, I think your opening remark was whether we should leave it to the market or follow the Canadian example. The Korean example is probably even more apt. The challenge is, if you leave it to the market, so to speak, the market only knows what it has experienced. The difficulty is to not just deal with what the market sees as possible now but not to spend millions and millions of dollars on the principle of ‘build it and they will come’. That is where m.Net is a unique model to essentially provide the opportunity to build, in a very targeted way, a platform for experimentation and learning so that both industrial players and government, through health and education, can start to get underneath what may be possible in terms of how they deliver services—that is not, as many in the medical field will tell you, being given a presentation by a single technology provider about the marvellous things that a single piece of technology is going to do for them.

As we have all been saying, fundamentally, it is not about technology—in some ways, that is the easy bit—it is about how we learn to target whatever technologies are about to deliver services, to change processes and to have more effect on those industries and users. m.Net is a model of a consortium building some infrastructure in a targeted way as a testbed to try out new services. I am very confident that m.Net will be able to deliver some of these initiatives on a national scale. The approach that we are taking is something we can be proud of. In sinking millions of dollars, as in Singapore’s experience, to bring optical fibre to the home, the problem is, funnily enough, that the services have not arrived because you cannot just put in technology and expect it to happen. So there is a role for government and it is to facilitate consortia, of the m.Net type, to bring together technology suppliers—we have a number in the m.Net consortium—and to build a testbed to develop some of these innovative new services based on new technology capability.

Mr JOHNSON—Professor Coutts, I am not sure that I follow whether you have answered Mr Pyne’s question. I endorse your views about the government facilitating the market. Then you said that m.Net is a good model. Aren’t you part of the market?

Prof. Coutts—Yes.

Mr JOHNSON—In the sense that we are facilitating it, are you saying that we should not leave it to the market, that the government should facilitate?

Prof. Coutts—There is an approach called ‘action research’ where you become involved in the experiment. We are part of the market; that is correct. If you regard the market as out there

and you are just observing it, that is one approach. Whereas, m.Net is about people rolling their sleeves up, both researchers in universities and industrial parties, testing and giving target customers an opportunity to try some of these new services.

Mr JOHNSON—So the government facilitates the market of which you are a part, but you are not facilitators? Are you facilitating it as well?

Prof. Coutts—Yes.

Prof. Miller—We in m.Net are very much driven by an agenda which has been agreed with government. Government is providing the major funding to this project. We have an agreed set of targets and they are about facilitating the development of applications and services and trialling them in the network context. We are very much about aiding all our partners to go forward, so we are not in the competitive situation that you would normally think of, where, if you say you are in the market, you are trying to beat everybody else. That is not what this is about. This is about a national approach to finding a common way forward which will aid Australian industry partners, but very much with an agenda that has been set in consultation with government. What we are also saying is that there ought to be more of it.

Mr JOHNSON—Okay.

Prof. Miller—If we really want to have applications developers and their service industry partners coming together and effectively developing new applications, we need to do something. At the moment you have little software houses all over Adelaide in particular, and in other states as well. I am sure their software writers have many skills, but they probably do not understand the markets and the health or education sectors very well. On the other hand, you have people in those markets, in those service areas, who have lots of ideas about things they would like to do, but they do not have knowledge of the technology. Initiatives that governments can bring about, with some funding support, can close those loops and lead to significant benefits. One of the things that ought to be targeted is government services, an application area that can justify government putting money into initiatives like m.Net.

Mr JOHNSON—As a test bed.

Prof. Miller—Yes. Let us get into the education area; let us get into the health area. These are public services.

Mr JOHNSON—Is there room in our market, in our economy, for several of the relationships that m.Net is part of?

Prof. Miller—We are very conscious that, whatever we do, we have to have a global view. Clearly, we are trying to develop applications that will have apply in the global market. You cannot just focus on the local economy. Certainly the local economy gives you a way of identifying what the market is, at least in the local scene, and what the drivers are. It is a very good test bed to be able to begin, but you have to have a global view. That is why at the moment we are in very detailed discussions with a government body in Singapore, for example, that I think has some significance in that context. Maybe Andrew can tell you about that, because I think the Singaporean government is approaching this problem in a interesting way. We are also

looking at connections into Asia and Europe so that, whatever we do, we can position ourselves to provide global opportunities to our partners and, when they develop these products, we can get out there and sell them in a global sense.

Mr JOHNSON—I want to go back to this model idea. Professor Miller, you mentioned not following Korea, perhaps, because they are a little different in terms of the way they exist. Is there any market or any other model that we can follow?

Prof. Coutts—I have seen this year after year. We must learn from the models that are used, whether they are in Scandinavia or elsewhere, but there is no model that you can just take that will instantly fit. It does not work that way. We really must look at the model in Korea in the context of Korea—their policy framework and their industrial structure—and similarly in Canada. The classic question that is discussed a lot in our area is: what has happened to Japan with iMode? You get this black and white view. One side says, ‘iMode consumer services worked in Japan; it must work here.’ Conversely, you hear, ‘That is the Japanese; they are totally different. It has no relevance to Australia.’ Both propositions are clearly ridiculous. One needs to unpick those elements that potentially are relevant to the Australian context. Professor Miller commented on the quite different population distribution.

Mr JOHNSON—We would distinguish between the high density of an Asian city, for example, and an Australian city.

Prof. Coutts—Yes. You could say that Japanese kids like pulling down clips and playing games on computers, but that is just Japanese kids. If any of you have had teenagers, you cannot tell me that that does not have a possible take-up in an Australian context. It will be different, so you need to translate those things. How you do that is the challenge. You can analyse until the cows come home, but at the end of the day you really have to try things. You have to be prepared to innovate, particularly at the service application end, and to help software application developers to do that. At the moment you have small companies over here, with three or maybe six people with an idea for a technology. Then you have the Telstras and Vodafones over here. It is David and Goliath. They find it impossible to tango, so to speak, to bring some of those services to market. An m.Net model—and Telstra is quite well aware of this—provides an opportunity in this milieu to see some of those services come to light and be tried.

Mr Ekiert—Mr Johnson, you asked whether m.Net is part of the market. What market? I would say that for a market to exist you need to clearly define two sides—the supply side and the demand side. At this stage, if you analyse where we are in this very early stage of development, it would be extremely important to make sure that we focus on what we are talking about. We are talking about broadband. DoCoMo is a totally different story; it has nothing to do with broadband. Several examples which have been used have nothing to do with broadband. So let us focus on the broadband market. What market? There is no supply of services, there is no demand in the marketplace for services, there is no understanding how the technology can be used, so there is no market. We are creating the market. We facilitate the process which will identify demand, which will facilitate the supply side of the market. We are working with six industry sectors because they have all the know-how, they know what is required in their industries. We are just helping them to discover these applications. We are helping them to create demand. At the same time we are working with application developers to give them an opportunity to take advantage of the outcomes of the work done in the industries

and develop technology required to deliver those services. We create supply. But this is still in the making.

Mr JOHNSON—I suppose I could be a bit more specific and say potential market.

Mr Ekiert—Yes, very much so.

Ms GRIERSON—I probably differ with what you have said. I think there is an unlimited market and unlimited demand and your role may be in shaping, directing and servicing it. Perhaps we differ in the way we approach that. I raise a concern I have in terms of a government service, education. If you are providing a service to the education market across all public schools in this state or wherever, there seems to be a tendency to take one solution for every school across that whole system. That would seem to me to be a limiting factor. There also seems to be a tendency where a lot of money is invested by government. Therefore, that service has to last for a long time, but it can become outdated very quickly. What would you suggest can be done to make sure that schools get the right option and the right service for them in their location and their context, in a way that allows them to keep advancing and using that technology in new and different ways?

Prof. Miller—I think all those issues you raised strike a lot of chords because we have seen this happening, partly because of the way people actually order equipment and get into the grips of multinational companies that supply them—

Prof. Coutts—And how it is funded.

Prof. Miller—Yes, how it is funded. I would say on education facilities, if that is what we are focusing on, that when governments work with them to agree on some sort of level of provisioning you must divorce yourself from the hardware infrastructure that is going to make it happen. You have to say what it is you want the kids and teachers to be able to do in what sort of environment, and then let the school systems have the freedom to go with what is a very rapidly changing scenario in the whole technology area. There is no point in buying today what you think is the best and hope that that will last you for five years. It might be that, for example, you have to go and lease some things so that you can upgrade your technology as you go.

Part of the problem, of course, is having people expert enough to be able to work at this higher level. It is much easier for us to say, 'Look, go and buy a laptop from Texas Instruments,' or whatever because we know it. We know what that is all about and it is easier to persuade our peers or our bosses, I suppose, if you talk in terms of technology. We really have to have people advising the education system who focuses on IT services requirements. Within the Department of Education system they do have some very good IT people here in this state—and we in m.Net are familiar with them—who are now beginning to understand that in m.Net the service provision issue is what has to be targeted. You should set standards for service and one of those standards in my view ought to be a wireless enabled service. You would not state it that way, you would say it needs to facilitate mobile access in a certain environment, and then simply focus on the level of performance you expect out of the system.

CHAIR—A lot of the people that we have heard from have talked to us about their technologies. What you are talking about is forgetting about the technologies and asking what we want

this to be able to do. Hospitals, schools or whatever have access points. You do not care so much about the access point but rather what we are trying to facilitate. You are the first group that has appeared before us that has not talked about the products and technologies and how these are fantastic. You are actually talking about it from the opposite end.

Prof. Miller—I can give you a specific example: in the third generation wireless mobile area the standards are set—there are books and books of them and it is all going to be CDMA, we think. We know about the technology, or we think we do. But we have got our hands on only two or three terminals, yet we are the biggest operator in this country in terms of being able to do trials. The number of terminals that is available is almost zero. We have managed, as I said, to get a handful. The reason is that there will be hundreds of different types of terminals in 3G technology. Some of them will be in your car, sitting underneath the dashboard, some will be in your pocket, some will be shaped like a pencil, some will be in your fridges at home and there certainly will not be a single phone type terminal. What technology exists today for 3G is almost zero. What will exist in five years time could be hundreds of different types of terminals. The problem for terminal manufacturers is to try to predict where that technology is going to go for users like schools and health. This is very difficult. All they can do is, perhaps, take advantage of organisations like ours to help them find their way, and for us to try to spell out to the manufacturers our trial results showing what we think the market needs. Then manufacturers will be better placed to go and build some terminals to meet those needs.

I would say that we should not overlook the fact that this diversity of terminal types provides an opportunity for Australian industry for the first time to get into the marketplace. Mobile phone technology is such that, with very few exceptions, it is a commodity item best produced by huge multinational companies that can use economies of scale to make it happen. Where we are talking about specific special purpose devices like the sort of thing you need by the bedside, which will be totally different from what you will need in an ambulance or in a school, there are some real opportunities for Australian companies to get into the marketplace. One of the things we must not do is specify the technology as we have traditionally done and say, 'It has to be a wireless enabled thing from Motorola,' for example. We must not do that because there are some big opportunities in niche areas for Australian industry to get involved.

Mr CIOBO—I agree with you about the specification of technology, and that makes good sense in terms of government purchasing policy. I certainly endorse your comments in that regard. In a broader context, though, I get the distinct impression you are taking a command economy type overview where you are saying, 'Let's try to predict where demand is going to take us and then look at developing the technology to suit that application.'

That sits quite uncomfortably with me because, more often than not, we do not know what we want until we see it. The way that you promote that sort of demand is typically generated from a supply side. I think you get that interplay between demand side and supply side that ultimately leads to the outcome that suits. I get a little concerned if we seek to then predicate investment in technology on the basis of where we see things going, especially from a regulatory point of view, because more often than not that can result in a misallocation of resources. If you have the marketplace operating, whether it is in a potential marketplace environment or in an actual marketplace environment is largely irrelevant because you get commercial outcomes dictating whether or not investment in any particular technology is the best way forward. Granted, sometimes you get market failure, but it is certainly a lot less costly, according to the theory that

I believe, than it is to try to predict in which direction we want to be going. I wanted to make that statement, Chair, in terms of the difference between a purchasing policy per se and predicting the outcome.

The impression I get from m.Net's submission is that you are about promoting applications, That is good, but with respect to a specific application about which you say, 'Okay, we think we want to head in that direction,' how do you then feed that back into the development of technology to support that application? I would be interested to hear your comments on that.

Mr Ekiert—Firstly, we do not develop applications; we facilitate the development of applications. The traditional model which we have had in the telecommunications industry for a while was that applications were invented by software engineers, software houses and content providers. They would shower the market in anticipation that one of them would work. They were targeting primarily the consumer market. It was very exciting but it was of very little value to the economy—it was probably of value to the entertainment side but otherwise it was of very little value. We are not supporting this model. We are looking at capabilities of technology, not at particular technology, not at UMTS, CDMA2000 or wireless LAN, because all of them are capable of doing the same things and providing similar services.

We are looking at the overall capabilities of those technologies and how the capability can be put to productive use in order to make a significant impact in terms of reducing costs, improving quality of service, making people's lives easier and, in the end, stimulating the economy. This is where our focus lies. Application developers are here to make it happen. This is what stimulates the market. Some people may call the application 'technology', and that can be slightly confusing. I was referring to technology as the infrastructure. As Professor Coutts said, it is a commodity at this stage.

Prof. Miller—It is a question of emphasis. You were saying that the supply side has in the past given a stable base from which you can work out the way forward in terms of purchasing of technology. What that really means is that whoever were the key suppliers of the latest computing software could normally be expected to win simply because of pricing and because some of the facilities looked quite nice. What is happening now is that applications implementation is more about the way you present to the user the things on the screen. The hardware is much less significant in terms of what you need to use because there is plenty of hardware out there; there is plenty of technology available. In the congress we used Compaq iPAQ terminals which were brand-new types of terminals, but there are plenty of other alternatives around now.

The key issue now, I think, is to swing the emphasis a little more towards the market itself and ask: what can people who live and do business in that marketplace tell us about how the application should look, how the software, commerce or whatever could be made more effective. And, looking from a government's perspective, what does government need to do to make sure that Australian enterprises have a chance to play in that marketplace? I think they will get to play in that marketplace only if we set some goals which reflect our local view as to how the applications ought to look.

Mr CIOBO—It almost sounds like a market research—

Prof. Miller—Yes, it is very much part of that. But you have to have something on the table first so that you know what to research. There are six different industry areas. Part of what we in m.Net are doing is to get steering teams together who represent good thinkers in those areas, come up with the needs, come up with some trial applications, and then do some market studies to see what people think about them and what they are going to pay for them.

Prof. Coutts—It is a combination not just of traditional market research but of having a really good handle on technology capability and, as Andrew was saying, those innovative companies that are in that application software space and then having a testbed on which to test the market. So it is a combination of both the supply and the demand side of the equation. Our view is that that is what you need to do to get the cost benefit.

CHAIR—Finally, m.Net is the only research project on broadband wireless that has been funded under the Networking the Nation program—and there have been only three funded under that program altogether. What is your government funding for the project over the period in question? What is the amount of money?

Mr Ekiert—The total amount grant which we have received under the advanced network program is \$9.23 million over a period of three years.

CHAIR—So the government is essentially saying that they would like m.Net to concentrate on exactly what we have been talking about this morning—rather than worrying about technologies and products, talk about how wireless broadband will be able to be used in the future?

Mr Ekiert—Interestingly enough, to do this work we needed to spend a significant portion of that grant buying the technology.

CHAIR—The Whyalla outreach aspect of this fits in with the government's desire to find out how to fulfil the last mile. We have not discussed that at all this morning, which is a shame, but could you very briefly talk about how the Whyalla aspect of the project is working?

Prof. Miller—We could make part of that presentation over lunch.

CHAIR—I am happy to do that but it will not be on the *Hansard* record. For the purposes of doing our report, I would not mind having something on it in the *Hansard* record.

Prof. Miller—Perhaps we could just say that, in a wireless network, first of all you need a central control and switching station and you need a number of base stations to represent the local regional distribution of the system. We have already established within Adelaide, in Weymouth Street, a very powerful switching and control system. It was supplied from France, and it is potentially capable of a much broader set of functions—including perhaps serving almost the whole of the city of Adelaide if we had enough money to buy all the other base stations we would need to make it happen. One of the things we can do is to control base stations located in other parts of the country—we can put them in regional areas and in other capital cities, and we can even put them in overseas cities—as long as we hook them back via some sort of line, to our switching and control centre. That is what we are doing at Whyalla. We have also done something similar in Sydney in recent times to demonstrate to others what we

are capable of doing. But in Whyalla we are putting one base station in the vicinity of the hospital, because we want to concentrate on what applications can be trialled in the medical area both within the hospital and within the university campus, which has a centre for remote and rural health in which we will be researching the ways in which wireless enabled technology can help develop better health services to the rural community. We have a group of telehealth people producing the first phase of a product that will be a very serious health services aid, one that they can trial in Whyalla as from next August.

CHAIR—Thank you very much for coming today. We look forward to catching up with you more informally in the next hour or so.

Resolved (on motion by **Mr Johnson**):

That this committee authorises publication, including publication on the parliamentary database, of the proof transcript of the evidence given before it at public hearing this day.

Committee adjourned at 11.40 a.m.