'yes' OPTUS

Paul O'Sullivan, Optus Chief Executive

Zunz Lecture

5 June 2008

Competition: The catalyst for innovation and new technology in telecommunications

Introduction

It is a great pleasure to be with you this morning to deliver the eighteenth Zunz lecture.

Given the significant role the profession plays at Optus, I'd like to thank Professor Archie Johnston and Doctor John Nutt for providing me with this opportunity to talk to the people who make the telecommunications industry so exciting.

Today I'll be focusing on the importance that the engineering profession plays to the telecommunications industry and in particular to a company like Optus, which was born to innovate and bring much needed competition to the market.

My role, and indeed my challenge as chief executive is to make sure that when Optus builds an engineering concept – and we spend over a billion

dollars a year on new investment – we can be confident that it will generate sufficient revenue to recoup the cost of building and generate the required financial return.

So the discussion usually moves from whether it is wonderful technology – and it almost always is – to whether it will deliver a service that our customers want.

A big part of our task is to anticipate the needs of our customers. That includes helping our customers to use technology in ways they had not thought about before. We call it behavioural marketing.

Today I want to argue that the interplay between devising great technology, and meeting the needs of customers, is at the core of sustainable innovation.

I want to start by talking about the cycle of innovation, and the role of customer preference in that cycle. Next, I will argue that competition is a powerful catalyst for innovation; and talk about how at Optus we work to bring innovative products and services to the marketplace.

That will bring me to some predictions about what Australians will be seeing and experiencing on their PDAs, PCs and plasmas. Finally, I want to make some reference to the current policy battles going on in telecommunications – and their implications for both competition and innovation.

The Role of the Marketplace and the User in Innovation

So let me turn first to talk about the cycle of innovation and the role of customer preference in that cycle.

If you look at the extraordinary success of the IT industry in the US – such companies as Microsoft, Dell, Apple, Hewlett-Packard, IBM, Sun, Google and Yahoo, and thousands of others of all sizes – it is clear that fundamental technical excellence has been absolutely critical.

There is a very strong collaboration between the industry and academic institutions like Stanford and MIT.

And the industry employs huge number of engineers. In 2005, the US semiconductor industry employed 450,000 workers, and over a quarter were in engineering and computer occupations. [1]

But technical brilliance is only part of the picture. What matters just as much is the sales and marketing process – in devising innovative products that customers want, and in bringing them to market effectively.

If you look at Apple, for example, it has succeeded with clever customer interfaces – and with effective marketing.

Consider the Apple iPhone, which has achieved remarkable customer take up since it launched in the US last year. As a mobile phone, the

---

[1] Is There a Shortage of Engineering Talent in the U.S? Clair Brown and Greg Linden, Center for Work, Technology, and Society, IRLE, University of California, Berkeley, December 2007, p 4

applications on the iPhone are available on many other manufacturers' phones as well.

But it has been put together in a clever package which is easy and intuitive to use – and is very attractively designed.

Just as importantly, customers trust the Apple brand as one that rewards them with improved technology and lifestyles if they are prepared to make the necessary behavioural changes asked by Apple.

I am pleased to say that Optus will be launching the iPhone in Australia later this year. [2]

The best way to think about innovation, I believe, is as a cycle.

The invention of a piece of new technology is a key stage in the cycle.

But then it needs to be turned into a product and taken to market.

Customers will then respond – in some cases taking up the product enthusiastically; in other cases ignoring it.

Or they will use it in ways that the provider had not imagined.

It has to be a dynamic process – because all too often when we are launching a product we simply do not know how it will be received.

There are many examples of demand for a product or technology being forecast incorrectly.

---

[2] 'Optus, SingTel, Bharti Airtel and Globe to bring iPhone to the region', Optus Media Release, 12 May 2008

In the early eighties management consultants McKinsey forecast that the total global market for mobile phones would be around 900,000 in the year 2000 [3] – in fact there were around 400 million mobile phones sold in the year 2000. [4]

McKinsey was not alone. When the original Optus business plan was put together by the bidding consortium in 1992, mobile was really seen as a sideshow. The big money was going to be in long distance.

Indeed, people who were around at the time tell me that the consortium only acquired a mobile licence because it was a condition imposed by the Government. Today, the majority of our revenue comes from mobile.

The mobile sector has continued to surprise us.

Eight years ago Telstra, Optus and Vodafone made arrangements for cross-platform SMS – so if you sent an SMS you knew it would get to the recipient regardless of which network they were on. We were all surprised by the jump in SMS traffic which followed. In the 2001 financial year there were 642 million SMS messages sent; by the 2006 financial year this had risen to 10.2 billion! [5]

More recently, we've seen this with the introduction of 3G technologies. Even though wireless broadband is proving to be a popular product riding

[3] The Economist, October 9, 1999
[4] 'Gartner Says Mobile Phone Sales Will Exceed One Billion in 2009', Gartner Media Release, 20 July 2005
[5] 'Twenty Years Ago – First Mobiles Used in Australia', AMTA Media Release, , 20/2/07

off the 3G network, video-calling on the other hand has proven to be less popular despite being first predicted as the "hero" 3G product.

So the experience of the telecommunications industry is this: good technology alone is not enough.

You must anticipate how to successfully incent customers to interrupt their behaviour and start using technology in a different way.

Success for a company like Optus depends on getting these calls right more than we get them wrong.

This is why the process of innovation must involve a feedback loop between the new technology, and the behavioural marketing required to get the customers to use that technology.

Competition as a driver of innovation in the telecommunications sector

This leads me to my next argument: competition in the marketplace has a vital role to play in making customers focus on that feedback loop.

In Australia, as in most countries, telecommunications has only been open to competition in the last twenty or so years.

Until 1992, Telecom Australia had a statutory monopoly. It was a government organisation with a very strong engineering led culture. There was an absolute focus on network integrity, and a solemn conviction that Telecom knew what was best for customers.

Indeed, until the late eighties, every handset needed to be approved by Telecom and it was an offence to connect a non-approved handset.

When people talk about why the market was opened up to competition, they tend to emphasise price – and it is certainly true that competition delivers lower prices.

But stimulating innovation is just as important a rationale.

When Optus entered the market in 1992, we brought a strong sales and marketing culture and a passion for customer service. It is easy to forget now how revolutionary this was – but let me see if I can remind you.

In a happy accident of history, the mobile sector was only just taking off in Australia when competition began. So for almost the whole of its history, mobile in Australia has been fiercely competitive.

This has delivered powerful benefits to consumers, firstly in continuing price reductions, as these figures from a recent ACCC report show.

But equally important to my argument today, competition in mobile has delivered ferocious and continued innovation: from SMS and MMS messaging services, to third generation mobile networks, and now enhanced data services such as high speed packet access or HSPA – which are already delivering data speeds of over 7 Mbps on mobile phones, with an upgrade path to over 40 Mbps.

As chief executive, my focus is to get new technology based on behavioural insights into the market as quickly as possible – in the hope

that Optus can get ahead of our competitors.   My counterparts are thinking the same way.

That is why I say the fierce competition in the mobile sector has driven the rapid technological innovation in the market.

By contrast, as I will show later, the rate of innovation in the fixed sector has been much less.

At Optus we are driving this innovation hard. Just last month we announced that our mobile network would be expanded to cover 98 per cent of the population – at a cost of $315 million.

When the upgrade is completed, our total 3G mobile network coverage will exceed one million square kilometres. [6]

Our mobile network will operate at a combination of frequencies: 2100 MHz in the cities, and 900 MHz in rural Australia – where the longer range which is possible at the lower frequency means better coverage from a given base station rollout.

In fact, Optus chose to wait a few months to confirm our technology choice in rural areas – so we could see the way that standards were moving internationally. By doing so we will deliver a better experience for our customers.

It is a nice example of marketing and technical considerations pointing in the same direction.

---

[6] 'Optus sets new milestone with the expansion of mobile network coverage to 98 per cent', Optus Media Release, 7 May 2008

Right now, there is another good example in the mobile broadband market. As all of the operators have rolled out third generation mobile networks in the last three to four years or so, our capacity to deliver high bandwidth services to mobiles has greatly increased.

This means that users can get video services and other rich media services on their mobile handsets. They can also connect to the internet, or other networks, from their laptop computers while out and about.

The rate of take up of these services in the past year has surprised many of us in the industry.

It is not just happening in Australia. I recently hosted a visit from the CEO of global telecoms vendor Ericsson. He said to me that during the last European summer in Sweden there had been a huge rush on wireless broadband modems.

All the Swedes wanted to get high speed broadband so they could use their laptop computers at their summer houses. So big was the rush that the telcos actually ran out of modems.

In Australia Telstra took a largely political decision to roll out a national 3G network in the 850 MHz range – which as a side effect let it take an early lead in mobile broadband. But Optus and others are fighting back vigorously. Our pricing is much more attractive than Telstra's – and we are generating pleasing take up.

We have also introduced some significant innovations in 3G, such as the fixed substitute product delivered by our subsidiary Virgin – which I will talk about a little later.

This is an example of the dynamic process by which competition spurs innovation.

When one company launches a product that meets a consumer need, others will quickly move to respond – and indeed to improve the offering.

When you look around the world in telecommunications, you see a clear pattern.

Competition between operators spurs them to identify new ways to meet customers needs.

And that in turn encourages research and development – to deliver the innovations that customers want.

The markets where the latest technologies have been adopted most widely are those where vigorous competition drives competitors to innovate – or face extinction.

You can look at the drivers of fibre to the home in the US. Telco giant Verizon faced powerful competition from cable television networks offering broadband services over cable modem. Verizon's response has been a massive investment to build a fibre to the home network – which

passed almost 10 million households by the end of 2007, delivering speeds of up to 50 Mbps. [7]

If competitive markets drive innovation, the converse is also true. In markets where competition is weak, the rate of innovation, both in product and in technology, is conspicuously slower.

There is a textbook example of this in the recent history of the Australian fixed broadband market, which was for most of the first half of this decade effectively a Telstra monopoly.

Telstra kept prices high – only dropping them in 2004 when Optus and competitors entered the market. [8]

It imposed a 'one size fits all' approach, capping consumer DSL speeds at 1.5 Mbps.

Indeed in a 2006 survey by respected industry consultants Spectrum, Telstra offered the lowest broadband speeds – but despite this, charged the third highest prices – in a sample of incumbent telcos in 15 countries.

When the next generation of ADSL2+ came along, Telstra again suppressed take-up. It delayed the introduction of ADSL2+ and kept the majority of its exchanges on older, slower technology until early this year.[9]

---

[7] Verizon Investor Quarterly, Q4 2007, p 8, downloaded 20/2/08 from http://investor.verizon.com/financial/quarterly/vz/4Q2007/4Q07Bulletin.pdf; Denny Strigl, President & Chief Operating Officer, Verizon, Presentation to Citigroup 2008 Global Entertainment, Media and Telecommunications Conference, January 10 2008, Downloaded 20/2/08 from http://investor.verizon.com/news/ 20080110/20080110.pdf, slide 5

[8] 'New Telstra Bigpond plans to stimulate greater demand for internet access', Telstra Media Release, 22 January 2002 and 'Bigpond Broadband at dial-up prices', Telstra Media Release, 15 February 2004

[9] 'More high-speed broadband after Government removes roadblock', Telstra Media Release, 6 February 2008 and 'Telstra keeps ADSL2+ under wraps' Renai LeMay, ZDnet Australia, 25 August 2006

But while the incumbent clung to the past, the challenger brought an innovative new service to the marketplace. Optus entered the market with services over our own network in early 2006 - and began offering ADSL2+ straightaway.

As Optus began our deployment, we found that each time we went into an exchange and turned on ADSL2+, Telstra would do the same. But in the exchange down the road, Telstra would maintain the older service!

How Optus drives innovation

At Optus, we thrive on this kind of vigorous competitive exchange in the marketplace.

We were born in competition, and we are proud of our role in bringing innovative products and services to the market.

Let me try to give you a sense of what we do to succeed in this vigorous competitive marketplace.

The first thing that is critical is our culture and our people.

We are a company with a sales and marketing culture, and with a focus on the customer. By contrast, Telstra's culture when we entered the market was much less sensitive to customer needs.

This is a very common pattern when you deregulate an industry, particularly a capital intensive one. You see the same story in gas, electricity and airlines.

But although Optus has a sales and marketing focus, I would not want you to have the impression that engineering is devalued in our company. The opposite is true.

Between our networks division and our IT division, we employ over 3,500 people – about a third of our total workforce - and this does not include the countless others we employ indirectly via our Network and IT suppliers and partners.

A great many of our Network people are degree qualified engineers and some of them among Australia's leading specialists in their field.

Our satellite technical staff, for example, have a depth of expertise which makes them a critical national resource for Australia. Our radio engineering skills are without parallel.

And we have strong engineering skills throughout our company, not just in the 'factory' of networks and IT. Many of our marketers and other managers come from an engineering background.

If I were to summarise what I think is special about the way we work at Optus, I believe it is how well we understand the link between what is technically achievable – and what will have an effect on customer behaviour.

We are huge believers in the potential of technology to deliver benefits to users. But very often those benefits are not realised – because for example the technology is not easy to use, or customers cannot see how it will help them in their daily lives.

The Optus brand really stands for unlocking the potential of technology –
through easy to use products and through attractive pricing.

I'll highlight just a few.

In the late nineties we revolutionised mobile marketing by introducing a
product called 'YesTime.' The idea was that after eight o'clock at night,
an Optus customer could call anybody else on an Optus mobile in
Australia for up to twenty minutes at no charge.

We developed this product through the interplay of two insights, one
technical and one marketing. The technical insight was that our network
was designed to meet peak traffic levels during the business day – but it
had a large amount of spare capacity at night.

The marketing insight was that if we could offer customers substantial
value for Optus to Optus calls, we could turn our customers into advocates,
persuading their friends and family to join up to Optus as well.

YesTime was phenomenally successful; it changed the way that
Australians use – and pay for – mobile services. And we communicated
this landmark Mobile product with this TV commercial:

Another example is SIM backup – a product where we allow customers to
save onto our servers all of the personal contact information they build up
on their mobile phone. This means that if they lose their phone, they can
quickly recapture the information. [10]

---

[10] 'Optus first to launch innovative mobile back-up service', Optus Media Release, 3 November 2005

Again, we had a marketing insight: as people increasingly use their mobile phone as the organising tool for their whole life, then losing it becomes much more serious – so if we could offer a solution, that would be welcomed by customers.

The technical insight was that it was actually quite straightforward for us to offer this backup service – whereas for the customer, remembering to back up their sim card, even if they know how to, is tedious and complex.

So in all of these examples, Optus has been successful because we have married customer insights together with strong technical capability.

What is more, thanks to our culture, we have increasingly broken down the traditional silos between networks people and engineers, who think about the technology, and sales and marketing people, who think about the customer.

Many of our best ideas come from our technical people. They see what the technology can do and set out, with considerable passion, to demonstrate to our sales and marketing people how it can be turned into a product.

There is another very important aspect of our behaviour in meeting customer needs.

We respond quickly to changes in the marketplace and in customer preferences.

In contrast, if we look at Telstra they have a huge base of fixed line customers, and this creates what we call 'the incumbent's dilemma.'

Often it is reluctant to introduce new products because of a fear of cannibalising existing revenue streams which translate into disproportionate profit pools as shown by this slide.

At Optus, much of our success in our early years came because we did not have the same vested interests, so we were always eager to try new things and introduce new products.

Even today, we are much more ready than Telstra to exit or downscale existing product lines because customer preferences have changed.

A very good example is our push into internet protocol based products in the business market – such as integrated IP networks offering both voice and data. In many cases they allow businesses to meet their communications needs much more cheaply and simply than with traditional products.

We have been selling the IP based products aggressively in the business market – even though it has undercut our existing products. Telstra has not been able to match us, because its installed base is much bigger. The result is that our revenue in business services has grown at a faster rate than Telstra for the last two years.

Similarly, our youth focussed subsidiary Virgin has pushed aggressively into delivering broadband services over our 3G mobile network. This allows a customer to buy the modem in a box, go home, set it up immediately with no wires or connections, and have broadband.

The product looks like a fixed line phone, and customers get a fixed line number – but it is delivered entirely over our mobile network.

The Virgin product works particularly well for renters; for people who do not have a fixed line telephone service; and for people who do not want to lock into long term contracts. All of these characteristics describe young people very well.

Let me play you one of Virgin's ads so you can get a sense of how they are positioned in the marketplace.

This is another example of a service based on a combination of technical and marketing insights. The technical insight was that we could provision our mobile network to deliver a broadband service.

The marketing insight was that many young people would like a broadband service that was easier and quicker to set up, and involved less long term commitment, than a traditional fixed line broadband service.

The prize for Australia's consumers

So I think you can see that competition has played a very important role in spurring innovation in many parts of the Australian telecommunications market.

At Optus we believe that the pace of innovation is only going to increase.

The technology is there to deliver an extraordinarily rich future.

The speeds available on mobile are increasing all the time, and as I mentioned there is an upgrade path towards mobile broadband speeds exceeding 40 Mbps within several years.

In fixed line, too, millions of Australians can now receive ADSL2+, offering speeds of up to 20 Mbps. What happens next however is, at this stage, rather uncertain. The Government is calling for bids to build a national broadband network offering ubiquitous speeds of 12 Mbps to 98 per cent of the population – but it is far from clear how this process is going to play out.

What is safe to predict is that you will see high speed broadband much more widely available in Australia. At the same time you will see vigorous competition at the applications layer – helping us all to find things to do with all that bandwidth!

In Singapore, our parent company SingTel is already delivering the kind of integrated home gateway services that this bandwidth will make possible.

From high definition video direct to your wide screen television, to high bandwidth internet offering downloads of songs and clips and ultra fast website access, to the integration of television and computing, the range of possibilities is enormous.

Let me play you a short video clip giving you a sense of what is possible on SingTel's MIO service. [11]

Getting the current policy process right

---

[11] 'SingTel launches mio TV on Mobile', SingTel Media Release, 20 may 2008

What I have shown you so far is that technological innovation by itself is not sufficient to have an impact in the marketplace. You also need a vigorously competitive market.

And the market must be populated by companies which think about delivering products in a way that gives consumers a reason to change their behaviour.

This fact has important implications for the current public policy process concerning a new national broadband network. In this last part of my speech I want to make some comments about this process.

What we are doing now will define the competitive structure of the broadband market for the next ten to twenty years – and in turn the degree of innovation in services that we can expect to see.

At Optus we are very much in support of the Government's stated aim – delivering a ubiquitous national broadband network offering guaranteed speeds to 98 per cent of the population.

The Government has called for proposals, and we are working furiously, together with other members of an industry consortium called Terria, to prepare a compelling proposal. [12]

But there are dark clouds on the horizon.

Telstra sees a new national broadband network as an opportunity to re-establish its monopoly.

---

[12] 'TERRiA Off and Running', Optus Media Release, 21 May 2008

It wants to build and operate the network as a vertically integrated player.

And it wants to be free of the 'access rules', which let companies like Optus buy capacity on bottleneck infrastructure between the exchange and the customer home.

Telstra's plan should not be taken up. Let me give you three reasons why.

Firstly, given Australia's population and geography, and the natural monopoly characteristics of telecommunications, there will only be one national broadband network built. That means we must guard against it being locked up under monopoly control.

Secondly, there is a simple way to do this: to break up Telstra into constituent parts so it is no longer a vertically integrated monopoly.

There are some compelling international precedents.

In Britain, the Government recently mandated a tough separation regime for British Telecom – over fifteen years after BT was privatised. In New Zealand, the Government has imposed separation on Telecom New Zealand – recognising that its dominance was holding back the growth of a healthy broadband market.

In Singapore, which is building a new national broadband network under a public-private process, the Government has insisted on different parties owning the physical network layer, the network control layer, and the retail layer.

Thirdly, if Telstra will not accept such rules, there are other bidders who will.

Certainly, Optus and our fellow members of the Terria consortium are very happy to grant access to the network that we build.

Moreover, we are very comfortable with the principle that the new national network should not be majority owned or controlled by any one retail telco.

If Telstra is to build the network, it must accept the same principle.

This means that it must be structurally separated so that its retail business is under separate ownership.

If Telstra were allowed to build and own this network as a vertically integrated monopolist, the result would be higher prices – and less innovation in broadband.

This is an issue in which the engineering profession has a significant stake. If you want to see innovation maintained and enhanced, you should have serious concerns about the model that Telstra is proposing.

Conclusion

Let me conclude by thanking you for the opportunity to make some remarks about the role of competition in delivering innovation in telecommunications.

It has been a pleasure to participate in this important lecture series.

The engineering discipline has been critical to the success of the telecommunications industry. We could not do what we do if you did not do what you do.

With your help, our industry has delivered a steady flow of innovative products and services to Australian consumers – and I am optimistic that the rate of innovation is only going to increase.

Thank you.