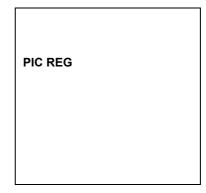# Interview with Reg Coutts

Liz Fell

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Dr Reg Coutts has been influential in guiding the development and growth of the mobile communications business in Australia since 1983 when he was in the Telecom Research Laboratories. He is currently Professor of Telecommunications and Associate Dean, Industry Linkages, in the Engineering Faculty at the University of Adelaide, South Australia.

On accepting his professorial chair in 1993, Coutts became Foundation Director of the Centre for Telecommunications Information Networking (CTIN). With funding from industry, CTIN undertook applied R&D and consultancy on wireless/ mobile policy, business strategy and regulatory issues in Australia and the Asia Pacific until it closed in May 2002.

At Adelaide University, in 2000 Prof Coutts was instrumental in establishing a new Masters in Science and Technology Commercialisation course in partnership with the University of Texas, and he represented the University on the South Australian Consortium for Information Technology & Telecommunications (SACITT) that was set up to explore collaborative IT&T research and development. He is Director of Technology Strategy at m.Net Corporation, and an Alternate Director of the Smart Internet Cooperative Research Centre.

Before joining the University, Prof Coutts spent 17 years with Telecom Australia and later Telstra Corp. He was National Manager, Strategy and Business Development of the new Mobile Communications Business Unit (1988-1993) where he led the technology, commercial and regulatory directions of Telstra's business. Previously, he was employed in various positions at the Telecom Research Laboratories (1976-1988).

Coutts holds Bachelor of Science, Bachelor of Engineering (Hons) and PhD degrees from the University of Adelaide. He is a Senior Member of the Institute of Electronic & Electrical Engineers (IEEE) and the Institution of Radio & Electronic Engineers (IREE), and a Fellow of the Institution of Engineers, Australia (IEAust).

This is an edited version of an interview with Coutts conducted for the TJA in early March by freelance journalist, Liz Fell.

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TJA: Wireless Internet is touted as the next big phase in mobile communications, Is this phase still mainly hype or is it a reality?

Coutts: Certainly a couple of years ago it was completely hype and no reality. Now I think the hype has subdued and the reality, like all new technologies, is emerging because fundamentally wireless Internet does involve a very different way for people and companies to use their mobile device and access the Internet. So it's going to be a slow diffusion.

TJA: Does mobile wireless Internet involve a convergence of mobile communications and Internet Protocol and if so, what is the nature of this convergence?

Coutts: It's certainly a convergence of mobile and the Internet, but it's also a convergence of the telecoms and IT industry, so there's an element of industry and product convergence.

TJA: Are you talking about an IP network at the core?

Coutts: Well, the initial wireless Internet implementations don't actually exploit the IP paradigm.

TJA: It might be clearer to drop 'wireless Internet' until there is full convergence!

Coutts: I think that's a fair judgement. You really couldn't say the wireless Internet has arrived until you see the exploiting of a common Internet Protocol on the mobile platform.

TJA: Taking another associated buzz word, namely m-commerce, is that mainly hype given e-commerce hasn't really taken off on the fixed network?

Coutts: It has actually, although with some correction of the phrase 'taken off'. There are areas of business with e-commerce, airline bookings and book purchasing for example, where essentially the transactional platform being the Internet has significantly eroded the traditional way of doing business.

TJA: What about m-commerce?

Coutts: It's not a reality at the moment, no.

TJA: Is there a view that m-commerce will follow fixed e-commerce?

Coutts: This is the key point of departure from the way that I'm looking at the evolution of m-commerce. The common assumption is that mobile commerce will in a sense follow e-commerce.

TJA: In the sense that the Internet was meant to follow voice?

Coutts; Yes, and the fact is that it didn't. The Internet did not follow voice, and in the same way I don't see m-commerce following e-commerce. The reason is that the nature of e-commerce is very wedded to the notion of a fixed terminal, very much a fixed location with transactions from something like a PC over a fixed network with very large bandwidth. Whereas our contention is that we should look at m-commerce as really evolving more from that mobile platform, which is much more of a personal platform.

The mobile platform is seen by some as almost an extension of themselves. It's just so personalised. In an interview the other night an anthropologist commented that the paradox of today, particularly for young people, is that people have never been so networked in terms of calling each other, checking things with each other, you know, to be alive you've got to be in touch; yet they crave their individuality so that, for example, the level of single-person households keeps going up. Our potential to network outside our physical space is just so much greater than it has ever been.

TJA: Do you argue that the wireless Internet will transform the role of the Internet and the value of some Internet-based services as mobile telephony has transformed the role of the phone and associated short messaging services?

Coutts: I believe so, yes, it is transformative. What I find curious personally is that I don't think Telstra fundamentally understands that.

TJA: Isn't it quite difficult to understand this potential transformation?

Coutts: Well, the corporate view of Telstra, the requirement for a consistent way of presenting things – which is partly related to keeping the market happy and which I know the people in the mobiles area absolutely hate – is that mobile is an access technology. To me this is a complete misunderstanding of what is happening.

TJA: So are you saying the first efforts towards building the wireless Internet have been directed at emulating the functionality of the wired network?

Coutts: Yes. I think that's a flawed premise on which to operate.

TJA: And you see an evolution over time to an application environment that is different from the wired world?

Coutts: Yes, so the unknown future is about, I guess, the nature of applications that actually exploit that personalisation and the quite different mobility.

TJA: And is it the packaging of applications that will deliver the value for operators?

Coutts: Absolutely. It's the bundling of the application and the content with the mobility.

TJA: Is there an issue of substitution of wireless for fixed access?

Coutts: Well, we are seeing that. There are segments of the population that don't have a fixed phone.

TJA: When applied to fixed versus wireless Internet access do you expect some substitution?

Coutts: Probably the same way as voice. Really the substitution of the fixed phone is limited, as long as we don't include cordless and things like that. If we're talking about cellular it is only a substitution for certain market segments. It's the same way for data. It will be a combination of substitution for certain things but it will really open up other possibilities. I don't see substitution as a strong issue.

TJA: What about the technical arguments around wireless versus fixed wire...

Coutts: That is a wrong-headed discussion!

TJA: Yet leaving aside mobility, aren't there technical issues that suggest wireless is slower, noisier, more insecure, and more expensive than fixed?

Coutts: This is an old observation, but I see it every time at the airport terminal, and you see the consequences at the Qantas lounge for example. The Qantas lounge provided all these fixed phones for its customers where you could make calls for nothing, yet everyone sat there using their mobile phones. If you look at the Qantas lounge today, I think you will find the number of fixed phones has dramatically dropped.

TJA: So what about differences in speed, noise, security and cost?

Coutts: Wireless will always be limited compared to the fixed network in terms of bandwidth or speed. But that's why I go back to the mobile voice paradigm. The early statements about mobile were that it was a niche product, it was never as good technically, it was expensive, et cetera. In time, with later generations, you will see the speed increasing, though not to the point where it's as good as the fixed network, and certainly the cost will drop dramatically. The costs of data on mobile phones are currently extremely high, particularly at this point in the industry's state where they're very conservative, and I think they really are pricing in a very risk-averse manner. At the end of the day for the data to really take up, they have to reduce price and they have to achieve the promised reductions in cost of delivery. That's the battle with the suppliers who are trying to recover their costs.

TJA : When did you first develop an interest in mobile or was it wireless communications?

Coutts: I actually prefer the American term 'tetherless'. I got interested in tetherless communications in about 1984.

TJA: Were you involved in wireless research at the Telecom Research Labs (TRL) when the first mobile network was launched in 1981?

Coutts: Not until about 1983 when discussions started about Telecom adopting cellular because that 1981 mobile was very much car-bound, it was a huge thing, it was proprietary, it was real niche product stuff. I don't think it was particularly exciting for the customer, or Telecom or anybody. So we started working with Engineering in thinking about the new generation of cellular technology that was first rolled out in the United States in a trial in late 1983. At that stage we looked at what was happening in Scandinavia, in the United States, in Japan,

and advised on what was the best technology standard to go for and that sort of thing.

TJA: Were they pretty heady days when the TRL was actually rewarding innovation?

Coutts: No. The dominant ethos in Engineering at that time was, 'Tell me how many systems they've installed in Germany and then I'll listen to you'. It was extremely conservative on a whole range of fronts whether it be digital exchanges, the use of optical fibre, or mobile. What was interesting about mobile was that there was a lot of political pressure coming from a number of people within the Corporate area of Telecom and also outside in the Department of Communications. Think of Telecom at the time: it had to be actually bludgeoned in many respects into introducing new technology.

TJA: Isn't that still the case with Telstra given new technology costs?

Coutts: Yes, it's a different dynamic though. The argument now on broadband, for example, would be , 'We want you to roll out broadband', and Telstra would say, 'Where's the business case?'. Back in 1983, they would say, 'You should roll out mobile', and they wouldn't quite know how to spell 'business case'. They would say, 'We'll wait until the rest of the world has picked it up'. A different dynamic was operating.

TJA: Well, not counting the limited 007 mobile service, the AMPS cellular analogue mobile service was launched in 1987.

Coutts: Yes, and we had by then moved on pretty quickly in the Labs to looking at the next generation beyond analogue.

TJA: Yet soon after the analogue launch didn't you transfer to Telecom's new mobile unit?

Coutts: That's right. We started the mobile business unit in 1988, which was the beginnings of opening up Telecom to competition and the setting up of AUSTEL who were going to have a review on competition. At the time of that first round of deregulation – and this wasn't public – on the Friday the Government was going to introduce competition in mobile as one of its measures and, by the Monday, the Government wasn't going to do that! As I understand it, the Communications Workers' Union convinced the then Minister not to proceed with competition. The Government had been lobbied very heavily by our friends from BellSouth to introduce competition and this would have been based around AMPS.

TJA: Did you play a role in AUSTEL's review of mobile competition?

Coutts: When AUSTEL started to undertake the review, it was my job to develop the strategy for Telecom to maintain a monopoly, while Terry Cutler was simultaneously arguing – behind closed doors at that stage – that Telecom should be more welcoming of competition and in that way it could control the agenda! When we were formulating the best strategy to retain the monopoly, we argued that a duopoly was no better than a monopoly, and that Telecom had done a pretty good job with a monopoly network if you looked at penetration and everything. We had only launched two years before, the mobile service was marketed quite well, and take-up in those early years was very good by world comparisons; though if the truth be known part of the reason was that we had introduced it three years after the UK and US so the product was much more mature.

The mindset of the Government at that stage was to retain the monopoly of the overall network and to open up mobile to competition. If mobile was going to be a niche product, that would be arguable. But what we argued, and in fact we used the other submissions to support this, was that mobile was going to be bigger than Ben Hur, it was going to be huge. Our notion of huge at that time was maybe one and a half million users in Australia. So the argument was you couldn't deregulate mobiles without deregulating overall network competition.

TJA: And you eventually lost that one?

Coutts: Well, we were doing alright until the Government announced its Review of Structural Arrangements and the argument just went out the window.

TJA: What were the early challenges in the Mobile unit?

Coutts: They were mainly regulatory and marketing.

TJA: I think you have said that you worked out the marketing strategies over a cup of coffee initially. Did you have a business plan?

Coutts: Yes, I had a big part in the first business plan in 1998.

TJA: With your background as a research engineer, I assume business plans were not part of your training at that stage?

Coutts: No. I didn't know anything about marketing until I started, and what I discovered was that people who had trained in marketing didn't know anything either, which was terrifying! They knew about selling but not about marketing.

TJA: And were there Telecom staff who didn't want to join the Mobile unit because they were worried there wasn't a future in it?

Coutts: Yes, in fact, it was seen as very risky. Also there was a widespread rumour that if competition was introduced, then Mobiles would be hived off as a separate company. What was interesting was that this was an incentive for the people who joined Mobiles, whereas for others it was a reason not to join because this could be a nasty private organisation.

TJA: Yet while the mobile business was seen as risky, didn't it expand in revenue terms very quickly?

Coutts: Very quickly. Yet even when the revenue was in the order of $1 billion, I think it's fair to say that we were still regarded within Telecom as a sort of bit-piece player.

I remember going to meetings where I would be the only person from Mobiles with six to eight people from the rest of the organisation. All their discussion was about how they had to reduce expenses and they couldn't understand why we weren't focussed on the same things. It was literally like we were from two different planets!

TJA: And a third operator, Vodafone, had arrived just as you left in 1993?

Coutts: In fact, I was involved in the arguments for the third competitor and spectrum and all that.

TJA: In hindsight, was GSM the best path for Australia?

Coutts: Yes no question in my mind!.

TJA: Even though some critics have pointed out that it was designed for the European environment rather than the distances found in Australia?

Coutts: That's true. But in terms of going digital back in 1990, as history showed, there was no real alternative. CDMA was a fledgling system, and the only other option was TDMA which has turned out to be a dead-end technology. Secondly, CDMA and TDMA would not have supported more than two operators without modifying every single terminal that came into Australia. So I recommended GSM as part of our strategy. From Telecom's point of view it was ideal, because with either the CDMA or TDMA option, which were dual-band AMPS, competition would have started straight away and eroded Telecom's AMPS space. Once it was digital with GSM, it was like a level playing field. Given we were the only operator with customers, it put Telecom in the best position to exploit its space. Also as it

turned out, GSM was really the only platform supported by multiple suppliers that would support multiple operators.

TJA: When did you first encounter third generation or 3G mobile technologies?

Coutts: Probably at the Vancouver meeting of the working group of the International Telecommunication Union in May 1986.

TJA: So you were involved with the standards process and IMT-2000 when you were at the Mobile unit?

Coutts: That's right. It became IMT-2000 after 1992. It was called FPLMTS before that.

TJA: And what about UMTS?

Coutts: UMTS is the terminology used in Europe. There are two versions of Wideband CDMA. There is the version that arose out of UMTS, and then there's the North American version. The important thing is the time it takes to develop a standard. Probably the early work on AMPS in terms of the system standard started in the late '60s and early '70s, but it didn't actually get into the field until 1983-84, so you're talking 14 years. In the same way, the early discussions for 3G started in 1986, and the first commercial service was FOMA, NTT DoCoMo's service in 2002.**.**

TJA: When you were involved in the ITU standards process, was 3G envisaged as mobile Internet ?

Coutts: No.

TJA: Were you trying to achieve one 3G standard?

Coutts: It's funny. I think first of all we were trying for one standard as opposed to multiple standards, but there are less 3G standards than 2G standards and what's interesting is that they are both very close to each other. Both of them use a common chip set, the same generic technology, and a lot of the application developers will be making for both. So while they're not the same standard, they're so close that they really is a lot of commonality in supplier technology.

TJA: Is speed the major advantage of 3G over 2.5?

Coutts: One element is certainly speed. The initial implementations of 3G all give more speed and, for a certain percentage of the service, being digital is actually cheaper. If it was 50 per cent voice and 50 per cent data, then a 3G platform is a cheaper delivery platform than 2G.

TJA: Was WAP a major mistake for operators? I've seen WAP described as the Wrong Approach to Portability.

Coutts: I think what we saw happen prior to the later phase of 3G development was that the standards process and the technology standard definition were driven by the operators. The suppliers gave their input but they didn't have a stronger influence. When it came to really developing the 3G standards, because of the whole deregulatory process, the operators had been deskilling in many ways. They had been cutting back the research labs, cutting back on really their ability or skill set to determine the next technology, and they were adopting the strategy of relying on suppliers.

So increasingly in the early '90s they started to defer to the suppliers who started to determine the technology standards. WAP is a good example of that because it was actually an agreement between a number of handset suppliers to use a common protocol. But what was driving them was not the service but rather another flavour to sell more mobile phones. From a Nokia or Motorola point of view, all they wanted to do was flog a phone which had WAP labelled on it. The fact that you couldn't use it for anything useful was quite secondary, because that was not their business model. To me, that's where the operators got caught out because they slavishly responded to this supplier push.

TJA: With the exception of Hutchison, it looks like operators in Australia plan to offer something less than 3G initially. Is that a fair summary?

Coutts: At present the different operators are scared or at least risk-averse because the industry is in a quagmire, so while they're trying to keep their options open, some carriers have more options than others.

TJA: I read that David Thodey from Telstra told ATUG's annual conference that Telstra's CDMA1x network would not be 'the killer platform'.

Coutts: That's a bit of a non-statement because i-Mode is probably the most boring platform you could come up with, and most of the good news out of Japan is about i-Mode which is 2.5. But that was the point: they actually focused on making the i-Mode platform pretty simple. The bad news is about FOMA, which is 3G and just hasn't achieved its targets. The most successful 3G at the moment is probably in Korea with not only 1xRT but the next evolution EV-DO (Evolution-data only) which was launched at the time of the World Cup.

TJA: Can any lessons be learned from NTT DoCoMo's FOMA ?

Coutts: The lesson certainly from FOMA was that I think they underestimated the transition from i-Mode. Essentially, the i-Mode services and applications were all consumer narrowband with the maximum bit rate of 9.6 kbit/s. So the problem for the Japanese is that in trying to go to 3G there was a whole new range of lessons which they didn't have any experience with, and nobody has yet. They got it right with i-Mode but that doesn't necessarily transfer.

TJA: So are there consumer applications that actually require 3G speeds?

Coutts: At this stage, no.

TJA: Are there lessons from SK Telecom, which I thought was not quite 3G?

Coutts: Well, this is the debate. Qualcomm managed to convince the ITU that they could call it 3G. So they actually use 3G to refer to 1xRT and EV-DO.

TJA: Do you regard them as 3G?

Coutts: No. It's all sleight of hand.

TJA: What about lessons from NTT DoCoMo relating to walled gardens and to operators also providing the content?

Coutts: Well, firstly NTT DoCoMo elected very early not to have a walled garden so allowing open access to users. Secondly they recognised that they were no good at content. They allowed "many flowers to bloom" so to speak by providing incentives for application developers giving them revenue share.. Thirdly, a unique thing they could do in Japan, which you can't do in other than, say, Korea, they drove handset development.

They knew that a sexy handset with colour screens and brighter displays was going to be fundamental. So they could sit down all the handset suppliers and say,' We want sexy handsets and we want them by such and such a date.' What was interesting was that the Scandinavians had some very similar innovative ideas at the time but couldn't get the "local" suppliers, Ericsson and Nokia, to provide the terminals. The reason is that there wasn't a large enough domestic base. Those suppliers said, 'Come back to us when you can provide us with a million'. That's the unique thing about Japan and Korea: the vertically integrated industries on the supplier side.

TJA: So is it important for operators to learn to leave the provision of content or applications to others?

Coutts: I think you've got a dilemma there. It's not just as simple as being or not being in content. The argument that is running now is that there are some forms of content applications that it would make sense for an operator to be in, and there are some where it makes no sense. Let me give an example. There is an argument certainly in terms of developing applications for vertical markets in certain types of security services. They're more network-based services rather than terminal specific.

TJA: Does that include billing and managing services for providers?

Coutts: Yes, all those things that are potentially within the skill set of an operator.

TJA: Do you refer to these services as content?

Coutts: Well. when you look at the whole package they're an important component of the total content package.

TJA: Or perhaps an applications package? It's still difficult to delineate the meanings given to terms like 'content' or 'applications'.

Coutts: I know. It's not like broadcasting where you can talk about content.

TJA: Moving to m.Net, the 3G and wireless LAN test bed in Adelaide, has that provided any insights on the various wireless technologies jostling for a market?

Coutts: A fundamental premise on which m.Net was founded is that the test bed should consist of a number of network technologies. Ideally, m.Net would like to have a 3G network of the UMTS style, plus it would like to make use of a 1xRT network, in other words, m.Net would like cellular networks that it could actually trial applications on, as well as non-cellular, for example, the wireless LAN. So we've rolled out the 3G network, we rolled out 70 access points of the wireless LAN for the World Congress, and we're now in the process of redeploying that to establish an Adelaide-wide WiFi. That will essentially be spearheaded by m.Net with a joint venture of two of our smaller partners who are going to operate it.

TJA: I understand m.Net is also searching for global alliances of partners?

Coutts: It is. We're going to establish a number of commercial opportunities for m.Net. By October 2004, when our funding runs out, the revenue stream is not likely to be sufficient to sustain m.Net as it is now. It doesn't intend to be a carrier in competition with other operators. What it intends to be is a test bed for working with application

developers, and also a service aggregator for carriers.

TJA: Was m.Net part of South Australia's strategy to build up a wireless Internet industry research cluster?

Coutts: It was very much the focus of our part of the Horizon bid for the ICT Centre for Excellence.

TJA: And Horizon was not the winning bidder. Still, the University has the Centre for Internet Technology Research that is attached to the CRC for Smart Internet Technology in which you are involved.

Coutts: Yes.

TJA: And, of course, you did have the Centre for Telecommunications Information Networking (CTIN). What happened there?

Coutts: It was unsustainable with the state of the industry.

TJA: Was CTIN's closure related to the Government's decision to drop the carriers' Industry Development Plans (IDPs)?

Coutts: A strategy we adopted was to target new carriers and, in particular, to target new carriers in their Industry Development Plans. So we had at one stage about $2 million in contracts. Of course, they all dropped away because the Government had gone cold on IDPs and the Productivity Commission thought it was all a waste of time and the Government said, 'Yes, we know that'.

TJA: I see that you did some work for OneTel on auction support and mobile number portability, a GPRS study for Nokia and Optus, and a 3G study for Nortel. There must be some very valuable research in that work that you can publish?

Coutts: Yes. Some of that work we did with Nortel is continuing and being picked up by the Smart Internet CRC.

TJA: One research area that has interested you is the consumer market which has tended to respond to products and applications in ways that operators did not anticipate.

Coutts: That's true. That was one of the angles that I and some others pushed for the Smartnet CRC.

TJA: I think you pointed to the lack of operator understanding of the popularity of SMS services.

Coutts: Oh, I know. One of the basic drivers of SMS for many people is saving money on making voice calls. It's actually less costly.

TJA: Is e-commerce likely to be a 'river of gold' for operators?

Coutts: Well, e-commerce is about transactions. Certainly e-commerce is happening now, but not to the degree that the banks would like. Some markets would like to see greater use of the Internet for transactions because it costs them less and so on. One of the things the Smartnet CRC is looking at is the reasons why people are not picking up e-commerce, and the particular area that we're looking at in Adelaide is looking beyond e-commerce. Some of the early results indicate that maybe the relationship people have with their mobile provides an opportunity for a different way of looking at that: if you can develop an ease of use of your mobile platform to really use that device normally not only to check your accounts but to move money, to buy things and so on.

TJA: Are engineers mainly working on that or are they drawing on other expertise?

Coutts: Most of the people in the research program are not engineers. They're anthropologists and so on.

TJA: What about consumers themselves?

Coutts: Consumers don't do research, but certainly they can be researched.

TJA: In an earlier TJA interview, Geoff Huston from Telstra talked about the Internet, being built for silicon, that is, devices chattering to devices rather than people. Do you have any thoughts on that idea?

Coutts: I don't think it's an either-or situation. As the cost structure of these packet transactions goes down, then the potential is to enable intelligent devices to talk to each other.

TJA: So that would increase the traffic for operators and perhaps they don't need to manipulate people's behaviour?

Coutts: They would certainly need to manipulate the people who decide to do it.

TJA: Such as car manufacturers?

Coutts: Well, the latest cars are now coming out with Bluetooth as a way of connecting their electronics devices. Bluetooth can be the radio piece.

TJA: And that helps to identify the position or state of the vehicle's electronics?

Coutts: That's right. Bluetooth is at the moment the most likely candidate for essentially that cheap device-to-device technology.

TJA: Given the parlous state of the telecoms industry, do you expect operators around the

world to implement 3G networks in the near future?

Coutts: At the end of the day operators will go to 3G because it will become the most cost-effective way to deliver just the ordinary services we know today, namely voice.

TJA: And what about 4G? Is there work on this technology?

Coutts: Yes, they're working on 4G in the same way as when GSM was first introduced in 1992 we were starting to talk about 3G in 1986. It's the same with 4G. The researchers are all working on 4G but I wouldn't expect to see it in the marketplace until maybe 2010.

TJA: As early as 2010?

Coutts: Yes. I'm an optimist!