The Past and Future of Australian Innovations in Information and Communication Technology (ICT)

Oral History Interview

21

Robin Eckermann

Interviewed by:

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Project Summary

This interview is part of a series of oral history interviews undertaken by the Pearcey Foundation and the University of Sydney as part of the project 'The Past and Future of Australian Innovations in Information and Communication Technology (ICT)'. The series interviewed recipients admitted into the Pearcey Hall of Fame from 2003 to 2020. The hall of fame recognizes outstanding life-time contribution to ICT in Australia in business, research and government. Each oral history captures a short biography of individuals who made an outstanding contribution to ICT in Australia. They also collect insights on aspects that had a lasting effect on ICT innovations in Australia, positive as well as negative from approximately the 1960s to the 2010s. Interviews lasted about 60-90 minutes and were conducted by Sebastian Boell, Graeme Philipson, Peter Thorne, Kai Riemer, Sandra Peter and Belinda Wang. The complete set of interviews in this series is archived by the Pearcey Foundation.

Key Points Covered in this Oral History

1. Innovative aerial bundle conductor technology to roll-out hybrid-fibre cable in Canberra by ACT Electricity and Water, which is before NBN.

2. The government-triggered competition in telecommunication mode is wrong as for providing socioeconomic beneficial externalities. The government should also give consideration to rural telecom development and uphold an open network principle to avoid duplicate telecom infrastructures.

Biography

Robin Eckermann AM

Principle of Robin Eckermann & Associates
Pearcey Hall of Fame in 2016

Entrepreneur, Adjunct Professor, ICT consultant

Robin Eckermann is an independent telecommunications consultant and an Adjunct Professor in network/communications technologies, business models and project management at the University of Canberra. From 1996 to 2000, he led the development of TransACT through its incubation phase, and from 2000-2003 during the rollout of TransACT's FTTK/VDSL network, served as the Company's Chief Architect.

Since 2003, he has been actively involved in most of the pioneering FTTP (Fibre to the Premises) initiatives in Australia, and has contributed to policy deliberations at Commonwealth, State and Local Government levels. He was a member of the 2011/2012 and 2014/15 Regional Telecommunications Independent Review Committees, reporting to Parliament on conclusion of the reviews. Robin is a Fellow of Engineers Australia and delivered the 2006 Charles Todd Oration.

Adjunct Professor Robin Eckermann has been a pioneer in the Australian telecommunications industry for over twenty years. He led the establishment of Canberra's own telecommunications provider TransACT and continues to share his knowledge and expertise in his role as an Adjunct Professor at the University.

Robin began his UC experience with his Graduate Diploma in Computing Studies in 1974, after completing an Arts degree in Philosophy and Computing at Adelaide University.

Since graduating, Robin has had many satisfying chapters in his career including running his own businesses in the fields of software design and development. Most notably, from 1996 Robin led the establishment of TransACT, Canberra's own telecommunications company. At the time TransACT was Australia's most advanced broadband network, with Robin in the role of Chief Architect during the network rollout from 2000-2003. As a result of the hard work, determination and creative thinking from Robin and his project team, a large part of Canberra was equipped with advanced high-speed fibre-to-kerb network technology. Additionally, the business model Robin introduced for TransACT was ahead of its time and pioneered open network communication principles that have since become widely adopted across the industry. More than a decade later, the National Broadband Network initiative was created to reflect similar principles on a national scale.

Following his success with the establishment of TransACT, Robin continued to be a leader in the fields of network communications and broadband infrastructure. From 2012-2013 he served as President of SmartGrid Australia, an organisation advocating for the modernisation of Australia's electricity grid. Additionally, Robin has participated in two Regional Telecommunications Independent Review Committees, reporting to Federal Parliament, with

his efforts contributing to assisting regional Australia to harness the opportunities that can be unlocked by using advanced communication technologies.

Through leadership in his chosen field, Robin also became an Adjunct Professor for the University of Canberra in 2005, and provides advice and education in the fields of network and communication technologies, telecommunication business models and project management.

In 2001 Robin was presented with a Distinguished Alumni Award for his achievements and leadership in the field of network communications and in 2013 was represented by UC students as part of the University of Canberra's Peoplescape project, further recognising his contributions to the university and telecommunications industry in Australia.

Interview Transcript

Date of interview: Wednesday 25 November 2020

For the record can you fill us in your career and take 20 minutes if you wish, we might prompt you a bit with years and such like, but how did you get into the industry, what was your education, and what were the key moments in your career?

So, I was born and raised on a little farm in South Australian, a dairy farm, where my father was a prominent Jersey breeder, and apart from the fact that I got hay fever I probably would have been a farmer in life, but I had noble aspirations as a young man to be a minister of religion.

In what religion Robin?

It was Lutheran.

I was going to say probably Lutheran in South Australia.

Yes, Barossa Valley heritage. So I was sent off to boarding school at the age of 12, was subjected to a few too many long sermons and decided a minister wasn't for me. I didn't want to inflict that on other people. So I lowered my sights a bit and thought I'd be a teacher and I went through high school, planning to go to teachers college at the end of that, but was fortunate to win a scholarship, and so trundled off to Adelaide University in 1970. I had a very simplistic approach to study. The structure of a degree at Adelaide University at the time was four units first year, and then three in the second year, and two, which ended up being your majors, as your final year. So I started off doing maths, philosophy, psychology, and history, and to refine that in the second year, I just dropped the subject I got the lowest score in. So I'd done well in maths and philosophy, got distinctions in those, so history went under the hammer, and in the second year, they introduced computing into the maths course, I found it absolutely fascinating.

Sorry, you froze briefly there, that last sentence again?

They introduced computing into the maths course, and I found it absolutely fascinating, it was all based around an old Cyber-6400 from memory, but these days there's probably more power in my wristwatch than that.

Yes, so what year was that, about…?
'71.

'71.
And I revelled in computing. And so in the final year, I reluctantly dropped psychology because I found that pretty interesting and ended up with majors in computing and philosophy. Looking back, probably the philosophy course has been one of the most valuable things I did at university. It was a great subject because if you saw the problem you'd pass, and if you saw the problem and could write lucidly about it you got a credit, and if you went to the library and bothered reading up what other people said about the subject, you got a distinction. But there were no facts, there were no rights and wrongs, and so it was a great contrast to computing, where everything was absolutely ones or zeros and it either worked or it failed. So, at the end of the degree, like most people in my year, we applied for jobs in the public sector. I applied for one and again was a bit lucky to score a job, with what was then the Department of Interior as a programmer in training. That Department of Interior subsequently became the Department of Capital Territory, and then eventually the ACT government. So, at the tender age of 20, I migrated from South Australia to Canberra, thinking I'd come over for a year and then return to South Australia. But here I am still, 48 or so years later. It also precipitated getting married; my wife's father was a minister so the option of living in sin wasn't exactly palatable. And so we got married, moved over to Canberra, and had our family over here and it became home. Still is.

Yes, I remember Canberra in that era, my best mate went to ANU and I used to visit him up there a lot and I remember Canberra in the mid-70s, it has grown a lot since.
Yes, it has, some for the better and some for the worse. So, that started the programming career and in those days it was COBOL. I hated COBOL, I had learnt Fortran at university, but the machine that we used was a Burroughs 6700, another ancient machine.

I was an operator on one of those in my early 20s.
Oh, were you? So, our Department shared use of one at Fyshwick and these were the really early days of computing. We would have a time slot at 10 o'clock. You'd turn up at the computer, lift the roller door and there was the computer sitting in a fairly industrial environment. You watched your clock until 10 o'clock and then you killed every job of the previous Department that was still running, and you took control of the computer. So that was my early introduction. But I had a bias towards technical computing and so picked up ALGOL and started playing and built some of the very first online systems.

For the Department?
Yes, for the Department, so in those days it tended to be all batch processing. With literally punch cards, big listings that would go to the client, and terminals were just coming in, online terminals.

What year are we and what real-time system would you have needed for the Department of Interior back then?
Sorry, can you clarify your question there Graeme?

Sorry, what year were you first?
Okay, so this would have been about 1975.

Yes, and what sort of online systems would the Department of Interior have wanted back then?

Well, the one that was most interesting was the motor vehicle registration system which was being redeveloped. There were no sort of online tools in those days on the Burroughs computer and so I ended up writing a kind of message-switching system which sat in the middle of an array of terminals and switched messages to an array of services. And that worked for probably the next 15 years as the ACT motor vehicle registry system. So that was all done in ALGOL and was a fascinating chapter of my life. It was the very earliest days of online computing. These days you'd expect most of, well within a few years, most of the sort of functionality I'd written became standard and offered by the manufacturers as part of their system. Anyway, in that era I observed many, many public servants who, over tea breaks, would talk about getting out and starting their own business. And after five years in the public service I thought gee, I'm one of those, I'm not going to be here in 50 years still talking about it. If I want to get out, time to get out. So I left in '78 and joined a little consulting engineering firm as their only IT person. Got involved for the next three years in transport planning and traffic engineering projects. And probably the most memorable project in that era was for the Department of Main Roads in Sydney where they have an adaptive traffic light control system and it was always done on PDP-11s. The way they would test it would be introducing your software and then people would go out and see what happened on the street, and of course if you had a bug it wasn't always the optimum testing way. So I wrote a network simulator that allowed their control system to plug into a theoretical network of vehicles moving around streets and they could observe delays and what happened: to do a level of testing before it was let loose on the public of Sydney. So that was one of I guess two notable things. The other side it was more on the transport planning side, where I did some overseas projects in the Philippines looking at socioeconomic modelling and what happens when you put a new highway in and how traffic patterns change and that sort of thing. The principal of that business wanted me to become a partner, this was in 1980, 1981, and he probably made a very generous offer: that I would take up 10 percent of the business. All I could see was I would become equally liable for the business debts if it ever got into trouble. I thought, he's 20 years older than me, I don't have the experience to match and play an equal part in this, and I thought the only way I'll get that is start my own business. And that's what led to the decision to start my business back in 1981. So it struggled to get off the ground and then took off, and I employed a few people…

What was the basis of your business, what was your elevator pitch?

It was really the early days of client-server computing, building on PCs, and so the Apple had wet my feet in PCs. I had a range of clients in areas that were interested in shifting some of their computing frontend onto PCs, but connecting with backend databases. So we built some tools like a backend database system and a form system, and from that you could cobble together applications fairly quickly.

This was mostly on Digital gear, was it?

No, it tended to be, well the very first ones were on Apple gear and then it became IBM PCs typically.

Oh yes…

Yeah, or LSI-11, little, small Digital machines. But programming in Pascal.

Yes.

In the course of that I happened to be located in a building next to a branch of Techway, if you remember Peter Jones, he's probably….

Yes I do, I think he was the first biography I wrote for the book.

Okay.

I do remember him too.

Yes, he's passed away now, but I had a long discussion because of the transport and traffic background with Pak-Poy & Kneebone, a big consulting engineering firm that didn't have an IT practice. They'd seen how IT had taken off when I worked in a consulting engineering firm and so there was a flirtation going on about possibly acquiring the business. Peter Jones heard about this, and he immediately wanted to buy the business and we ended up doing a deal in 1989 and I sold the business to Techway. Six months later Peter came up and he put his arm around me one-day and he said, "Now Robin, you're going have to tell me what your business does". So it was an emotional buy. Peter went on his trust in people and so on. So that started that a chapter from 1989 with Techway and it was centred initially on my own software business which grew to about 30 people. Then they asked me to take on the other two parts of Techway's business in Canberra, which were a network company, selling hyper-channel and very high-speed mainframe connectivity, IBM connectivity. Also that was the early days of the Defence DESINE contract and a little company called Mica that Techway had purchased, surprisingly won the sole supply of PCs to Defence, working under IBM as the prime contractor. Now you can imagine that was a fairly challenging environment where IBM would have rather been selling its PCs and had to deal with this tiny little micro company in Fyshwick, assembling PCs from imported components. So, a challenging era but we ended up consolidating that business. We ended up expanding into manufacturing in Penrith to get a much higher quality environment.

What did Techway manufacture in Penrith, was it PCs?

PCs, it also did other contract manufacturing for all sorts of companies, but the PC assembly was one of its customers.

Yes, and they were Techway branded PCs, weren't they?

They were, but like all PCs if you strip them open there's hardly, you're lucky if there's a bit of BHP steel in them, and this was true whether you bought IBM or there was another rival Australian brand that was claiming 70 percent Australian content. Well no PC has 70 percent Australian content.

I remember building my own PCs just personally back then so yes, well it was just all commodity bits and pieces, wasn't it?

Yes, that's right, and at most it was the assembly labour, ongoing support, and things like that.That era ended in 85. We saw the business in Canberra grow from 5 to 15 million and we consolidated the role with Defence, became a major supplier under IBM, but along with a couple of others which were admitted to the contract. I guess another milestone in that era, probably the big milestone, was Techway listed in I think it was '83, it might have been '84.

Yes, I've got the details somewhere.

Yes, and I had a sense of running out of challenge and I went to the CEO at the time, who was Dick Webb, and I said to Dick: "I think it's time for me to move on and I feel I've been here and done this long enough." His answer was to give me a new challenge, to look after acquisitions and mergers in growing Techway. And so in that era we bought a company called Tangent in Sydney, Rick Anstey's business.

I knew Rick very well, still know him well actually.

Yes, he's a gentleman, white shoe brigade now up in Queensland.

Yes, that's right, venture capitalist.

Yes.

He was a partner in our publishing company, when we started Strategic Publishing in '92, he owned a bit of the business. He got some equity by giving us a free office, one of his spare offices for a year.

Oh, is that right? Yes, small world. So that was a fun chapter, doing a bit of acquisition and merger. I related really well to Rick because I'd had my own business. I'd sold it to Techway and you kind of knew all of the emotions of a small business - that you're king of the business but there are kind of growth ceilings which are very hard to break through. And when I sold to Techway, nothing really changed except my psychology and I had this sense of underpinning of a big company and it really allowed me to play much more aggressively, which was the right thing for me, I'm probably conservative by nature. And so we grew with that real or illusory sense of underpinning by Techway. So that was good chapter in '83 or '84 with Tangent. And then we had a change of CEO. And with the new CEO coming in it was no longer appropriate to pursue acquisitions or anything until he found his feet. So I started exploring kinds of strategic mergers and ended up discovering a little company in North Carolina called Broadband Technologies. And these guys were way ahead of the curve with a pre-standard's version of VDSL that they were putting together little DSLAMs and over 300 meters maximum CAT5 copper, they could deliver 50 megabits downstream and 1.5 upstream. This was revolutionary at the time.

Just before you go on Robin, can we just clarify some of the dates…?

I think I'm a decade out.

You're a decade with some of them.

Yes it was '93, '94, so this was '94.

He still had Tangent in '92 when he became partners in our business.

Yes, sorry, I was a decade out on some of those dates.

Ten years, what's ten years?

At my age not much anymore.

You're only a couple of years older than me mate. So we're in the early 90s.

Yes, we're now getting to the mid-90s and Broadband Technologies wanted an agent in Australia and...

That was this company's name?

Yes BBT, Broadband Technologies, and so I kind of hosted some of their visits to Telstra and others. It was way too early to market, these were the days of 28 kilobit dial-up, so to demonstrate 50 megabits was just mind-boggling. Anyway, in that era I went to CeBIT. In 1995 I think it was. And one of the things that really fascinated me was a robot for laying fibres in sewers and this was like a little thing that would crawl along a sewer with a set of stainless steel rings on its back, would pause every so often, expand a ring and it would lock into place, clamped against the outer shell of the sewer with a little clip at the top and then it would put a cable into it. So I came back, and I talked to one of my very first clients, who happened to be with ACT Electricity and Water, about this technology. ACT Electricity and Water or ACTEW was responsible for electricity, water, sewer, sewerage, and so on in Canberra. And I said "You guys could run fibres through sewers here." So I coined the project name Tenparc, which if you spell it backwards is crapnet, and took this idea, briefed a group of senior ACT Electricity and Water people and sadly it wasn't an instant hit with them, so crapnet was sort of, Tenparc as it was called, was shelved. But I left Techway in '95 to take a break, travelled with my daughter overseas. And early '96 that same client, Wayne Harris contacted me, and he said: "What do you know about broadband?" Well, he got full bottle on how exciting this was and it was going to change the world. He invited me to come in and talk to a little team who were part of an executive development program that actually ran with its up-and-coming managers. And this little team of three, Joe Ceccato, Robert Clarke and Jane Taylor had picked up the idea of running fibre in along with power cables around Canberra. The previous team had discovered that when you have to refurbish electricity runs there was a technology called aerial bundled conductor and it's where instead of having your power spread across a cross-beam with separate wires, you had insulated conductors twisted together with a fibre running in the middle. And the previous team had got excited about this and the team that I engage with was following it up to see what could be done with this. That happened to coincide with the start of hybrid-fibre cable in Australia, and Telstra and Optus were engaged in this crazy rollout of…

Pay TV.

…pay TV, and both Telstra and Optus had come to ACTEW and said: "Could we hang our wires on your poles?" Anyway, it turned out it's not practical to support two sets of wires on the poles and…

You didn't have poles did you in the ACT? Wasn't all the electricity underground?

No, interesting thing. Part of Burley Griffin's original plan for Canberra was to put power in the backyard and so a lot of people think it's underground. But it's actually running through the backyards, and then over time progressively they put more and more underground.

Oh, so they run down the back of the house and between the blocks rather than…

Actually, through the blocks.

Oh right.

So there's no laneway, literally you find power poles with chicken coops built up against them and all sorts. And that also meant that Optus and Telstra weren't in a rush to build Canberra. They just wanted to secure the rights to use the poles when they were finished with the bigger markets. But it triggered a line of thinking in Actew: do we give it to Telstra, do

we give it to Optus? And that's where I became engaged in the project, and we mulled over, we looked at the technologies, and we came up with the vision that there was only scope for one set of wires due to clearances and weight and all sorts of other constraints, and if there was only going to be one set of wires it should be open to everybody. So that's where this concept of an open access network emerged.

And you're an independent consultant at this stage, right?

Yes. I think I'd been engaged to lead the project, firstly an independent consultant, and I think within a year, I was engaged to lead the project on a semi-fulltime basis. I think all other consulting dried up during that era.

Okay, so you were engaged by ACTEW.

Yes. So the vision that emerged if there was to be only one set of wires, it should be open to everybody, it should be a full-service network capable of voice, video, and data, not biased towards video as pay TV was at the time And open, full service, and advanced, it should take a big leap into the future. Because of that this Broadband Technologies was quite interesting with 50 megabits, and we ran an expression of interest process and had lots of overtures from hybrid-fibre coax companies, We also had BBT showing interest, now they were on the other side of the table. Out of that we eventually concluded BBT and VDSL was a better proposition than hybrid-fibre coax, and we put up a case to the Board that we should do a prototype in a laboratory to see if all the technology worked. That was approved. And in late '96, I think it was, we went ahead and built a prototype. It all worked, we were able to put on stunning demonstrations downloading multi-megabit files in seconds, and we then came to the crunch whether we take this any further? And the next step was a pilot, Ultimately, we got that off the ground in the suburb of Aranda. And we rolled the network out past some, I think it was about 900 homes, and we ran demonstrations. Then it came to the next crunch, do we go ahead and actually build the network? So my role kind of shifted, from the technology to drumming up the money and raising the investment, convincing investors, building the business model. But all of that came together and we were up and running by late 1990, and I got involved then in recruiting a CEO…

Late 1990?

Sorry, 2000. Yeah, 1990…

Ten years in your life are missing somehow Robin.

1999 this was.

So when you say up and running that means you covered all of Canberra?

No, this was just getting the proposition to do it up and running, '99 was the year. And in mid-'99 the decision was made we'll form a company. I helped recruit the first CEO, Richard Vincent, I'm sure you know of him.

Yeah, so you were employed as a consultant to ACTEW during this period, from about '96, that would have been pretty well, full-time work for you though, wouldn't it?

It was very close to full time. I looked after a few other clients, but it was token, minimal, token effort. And I thought once I recruited Richard that would be the end of the role for me. I interviewed him and gave a blessing on it, but the decision was ACTEW's board ultimately. So they formed a company, I thought that would be the end of my role, but Richard

persuaded me to come on then as an employee. As chief architect. So from '99 through to 2003 I served as chief architect and guided the rollout.

And that company was called Transact, right?
Yes.

And was that the period then of you said rollout, so by the end of that period was Canberra pretty well wired?
No, our target was: we built a list of suburbs in diminishing proportion of overhead power infrastructure, because as it got underground it got prohibitively expensive. So we targeted from 100 percent overhead in the older suburbs and our target was down to 96,000-odd homes, which took us to about 70 percent aerial infrastructure, and there was about 30,000 we were going to miss with the funding that had been raised. As it turned out. we'd underestimated some costs dramatically, ran short of capital, and the rollout finished at about 65,000 premises, which was a little over half of Canberra. And it's sort of the oldest half where there's a lot of overhead power. And a few years later, when fibre to the home became viable technology, Transact resumed its rollout with fibre to the home in the newer suburbs and it also augmented its coverage footprint with ADSL like all other ISPs did. So it had 100 percent coverage of Canberra, but with a mix of technologies.

So, this is all obviously pre-NBN?
Yes, about a decade before the NBN. And we got tremendous take-up, we took away about a third of Telstra's market, we had door knockers selling it. In many cases they'd knock on a door and because of the press surrounding Transact, people would say: "Forget all that sales crap, where do I sign up?" So it went from enthusiastic responses like that, to typical: "had to be persuaded". But we ended up capturing about a third of the market, which again was an unprecedented success in taking away the big guys' market share.

Yeah, so what happened then, when did you leave Transact?
I left at the end of 2003, I actually phased out during 2003, because as the rollout matured or progressed (I should say, "as the rollout progressed") Transact matured from kind of start-up with major construction and everything on its agenda, through to an operational company. And I thought that's not my cup of tea. So I agreed with the CEO to phase out progressively and left at the end of 2003. I did a little bit of work for Transact ten years later when iiNet was looking at it. When the original technology was dating, and looking at the options for upgrading, but I returned to my own consulting practice from 2003. With most of the work being around advanced broadband and getting fibre-to-the-home into greenfield premises.

So who were your clients as a consultant then?
They ranged from developers who were developing real estate patches…

Only in Canberra or all around the place?
All around the place. I think about 40 different fibre-to-the-home projects ranging in almost every state, Darwin, Queensland, New South Wales, Victoria.

So what year are we now?
This is the period generally from 2004 to about 2010.

Okay so Rudd announced the initial NBN around what, 2008?
2009.

2009, yes, so this is still pre-NBN essentially?
Yes that's right. And lots of projects, a lot of developers wanted to differentiate their product by having fibre to the premises and so there was an enthusiastic interest in that amongst developers. And the models evolved, became quite robust, and when NBN was announced it had no clear plan for, so I did some work for NBN in around 2010 and 2011. And the mandate from the Minister was to really look at how you work with those greenfield developers, the likes of OptiComm and others who were building solutions…

It was Conroy back then, right?
Yes Conroy, yes, NBN I felt at the time was heavily over-engineering on a technical perspective and that was pushing costs way up and so I was concerned about it technically. I was concerned about its capacity to move into new developments. But, it decided it would move in and do greenfields itself, and through a sub-contractor. It appointed a sub-contractor but it was all a bit of a catastrophe and so I gracefully extracted myself from that. It's the only time I've ever retracted from a client because I didn't want my name all over what I thought would be a bit of a disaster, and greenfields in the early days was a disaster for NBN Co. It wasn't ready when customers moving in, costs blew out, there were horrendous delays, but they eventually got on top of that.

Yes, I remember that period. Who was the CEO then? Quigley.
Quigley, yes.

Yeah, and then of course Abbott was elected.
Yes, add change to the mixed technology mode amongst other things.

Malcolm Turnbull mode, and the rest as we know is history, but you got out well before that.
Yes, it's the only time I've ever left a client, but I just felt that their approach to greenfields was so wrong.

What year was that, still probably during the…?
2011, about 2011.

Yes, so Gillard was elected what, 2010, and we had that whole period, okay. Now, and you then became president of Smart Grid Australia.
Yes, that was a little diversion, Smart Grid, I had become passionate about the environment.

Paul Budde set that up, didn't he?
Yes, he was the original founder but the two of us spoke long before he created Smart Grid Australia, so some of the ideas were seeded in our discussions. Way back in about 2004, I think, the ACS had engaged me to deliver a set of lectures around the country on broadband and the environment, and I'd become quite passionate about climate change and the threat it posed and the potential for telecommunications to do something constructive. And I ended up giving this set of lectures around the place. In the course of that, talking to Paul Budde about the energy sector and how archaic it was in its use of technology. So, we sort of cobbled

together some thoughts on that and Smart Grid was formed. I was one of the foundation members and eventually became President for a period. The goal was simply to get grid innovation and upgrade onto the radar for the big utilities, and by 2013 we felt that had been achieved and Smart Grid Australia was wound up. And there has been some positive progress, a lot of the focus centred on smart meters. But that's really a bit like: hybrid-fibre coax was to the broadband industry, smart meters are to the electricity industry, part of the solution, not the whole story by a long way.

Yeah, I did quite a bit of work myself in that area in market research back around that period.
Okay.

Yes, so what have you been doing since then?
Okay, so really an independent consultant from 2004 to now. But I'm now in a phase-down stage. Perhaps the big landmark…

Semi-retirement, phase-down?
Yes, semi-retirement.

You'd be about 68, right?
Exactly to the day. Not to the day, but yes to the year. And yesterday I outlived my father, a very momentous milestone.

I've got three years to go.
Have you? Good luck.

My mother is still alive, she's 90 next April.
Oh, we have very similar aged mothers. Mine is 90 and a half.

Well, there you go.
You start counting half years at that age.

That's right.
I think the big impact on me was I was recruited to serve on the 2012 Regional Telecommunications Review. And that was under Conroy.

Yes. I remember that.
So a fantastic insight into the challenges of rural telecommunications. But the big thing that really struck out above all through that process and that committee was the importance of mobile telecommunications in regional areas. And to give you an idea of some of the insights we gained; we talk with one mother who had lost one of her sons in a car accident. And the two boys, I think they ran off the road or something, but one of them was critically injured, the other was torn between staying with his dying brother and rushing off to try and find mobile phone coverage to call for help. So you saw really heart-rending stories like that, and so whilst all the focus was on NBN, broadband, what really struck me is that regional Australians that don't have mobile coverage are at a serious disadvantage. We'll never get country-wide coverage, but with about a third of the landmass coverage, a third of the landmass is covered at present, we could do a lot more with huge socioeconomic benefits. So

whether it's a farmer and his tractor breaks down in a field and he needs to find out how to fix it on the spot, or whether it's getting prices for stock, there's tremendous socioeconomic value. And our model I think is fundamentally wrong in relying on the market to address these areas. Now the market works fantastically in urban areas where you've got high population density, and all three carriers compete to win customers, but then as you get out of the urban areas into rural Australia the population density and traffic and revenue isn't there to inspire investment. So some people would call it market failure, it's just the market doing what makes sense and is natural: you don't invest where you can't get the revenue. However, socioeconomically the benefits for Australia are significant in those areas and it's just that the carriers can't monetise them. Our model I believe is fundamentally wrong there because the government still is promoting competition at the fringes of the network. You don't need competition because if I buy a mobile plan here in Canberra, I benefit from the abundant competition and then I can wander throughout Australia, and I still benefit from the same pricing that they had to offer it to win my business in the city.

I forget the terminology and I was covering it reasonably closely at the time, but I forget a bit of it now, just a couple of years there was a bit of a kerfuffle about the, what was the term, piggybacking that Optus and Telstra could…
Co-location, tower share.

Co-location, that's it.
Yes. If it doesn't make sense for one carrier to put up a tower without a government subsidy, it's silly to have two of them put up a tower and fight.

Or three.
Or three. So I served on that one under Conroy and on the subsequent one, I'm the only person to have done two of them under Turnbull. And the same thing emerged in 2015 that mobile communications was the big issue, and I did put in a dissenting letter to the Department expressing concern that our model was wrong and it wasn't reflected fully in our report.

Yes, so that's probably what we need for your illustrious career, brilliant career, now can we change the emphasis a little bit, of all that stuff you've done, and I probably know the answer to this, but what do you think is the most innovative thing you ever did in terms of either technology or business model?
I think the open network principles were the most innovative.

What were your guiding, what were our influences in building that philosophy?
It was really just common sense I guess. And there's a parallel with the electricity industry that we want competition and we want efficiency, but no-one in their right minds would say let's put up a second set of power poles to deliver your electrons.

A second set of water pipes to deliver…
Your water, exactly, so the idea that you needed competing sets of wires was never part of the original vision when Telstra and Telecom was a government public service. It crept in along the way and it brought some benefits in forcing the pace of change with the introduction of ADSL and that, but you still only had one set of wires at that point in time. And when you saw what broadband could deliver, these fat pipes that had for all practical

purposes no constraints on capacity, you had to say why would we spend all that money building two sets of last mile networks or three sets of last mile networks when one can do the job? Rather let's think of how you make that one available to everybody.

Yes, well I remember even at the time when both Telstra and Optus were laying that HSC what an outcry there was about the stupidity of it all.

Yes, that was just a classic catastrophic by-product of a market that had evolved in the wrong direction to put emphasis on duplicating infrastructure.

And back to your, the innovation, the innovativeness of your open network model with the initial Transact, did you see examples, you're giving examples of other utilities, but examples of other networks…?

No, it was to our knowledge there was no-one doing it quite the way we were planning, but we were just following our nose and following what seemed common sense at the time.

Must have been keeping an eye on international developments.

We were but most of them were still very much operating like Telstra, de facto monopolies with limited little chunks of competition emerging with wireless and things like that, and we were slammed. I remember a fellow called Fred Buddemeyer, who was behind the rollout of pay TV in Ballarat suggesting…

Where sorry, Ballarat?

Ballarat, suggesting that we must be smoking something to think that open access would work. And I can remember Kim Williams slamming the technology that we were using to think that the game was all about data and so on. So we had lots of critics along the way.

Kim Williams, the TV guy.

Yes, he was running Foxtel at the time, and he was critical of this open access approach. And the approach we developed is subtly different from what NBN Co embraced a decade later, in a slightly different form. NBN Co went for a wholesale, retail split, there's a fundamental problem with that. You may recall that on the original modems, and I think on most of them, the idea was you would have a second retail service provider could hire the second port, and so you could have two different retail service providers. The problem with the wholesale retail model is that for a second retailer to come and conscript that port, he has to buy another wholesale service, and so NBN Co would be getting two pieces of wholesale revenue for the one piece of infrastructure. That's cost prohibitive to the end user, and so the approach we had in Transact which was just subtly different, most people wouldn't appreciate the difference, was a split along the lines of access and services. So Transact retailed the access pipe to the end customer and then service providers, one or more, could come and add their services…

Yes, I hadn't ever appreciated that, I understand now, you explained that very well.

It became really important because we were offering telephony, video, and data, and so we had people like Foxtel involved in our pilot and other video providers…

There used to be an acronym or a term describing that, I forget what it was when you're offering, triple play.

Triple play, yes.

Triple play, that's right yes. I used to know all this shit.

You can imagine if you've got this full-service network capable of triple play, you're going to have probably a different telephony operator to a video operator. So, for example, Video-Ezy came on as a service provider, they had no capabilities or interest in providing telephony. So you had to have an access model which said, made it affordable where they didn't buy three chunks of access to get to one customer. Having said that, the way we did it was never well understood by customers and I wouldn't do it that way again. Transact retailed the pipe to the customer so they got one bill for the pipe.

Sorry, front door, carry on Sebastian.

Okay.

So Sebastian, they got one bill for the pipe and then they got a bill from each of their service providers, and that was confusing why you got two bills. If I were to do it again, I would say the first retail service provider charges the access fee and the others don't repeat that access fee. It's a bit like if you work for two employers you tick the box to say which one you claim your tax-free threshold and you can only do that with one of them. In the same way, you could imagine you could have five retail service providers and you pay the access fee through one of them and they bill it and it's made very clear that that's why that bill is more expensive.

So Transact was not only innovative in its technology but also in its business model?

Yes, I was saying to Sebastian, sorry Sebastian.

Where did you get the inspiration for this business model?

If you just follow the logic through from raw common sense you'll arrive at something not too far from where we did. Set aside, remember I approached this not as someone who had ever worked in Telstra, and I probably knew more about milking cows than I knew about telecommunications when I started this. So you start with just a blank sheet of paper, and you look at the problems like how do we support multiple different retailers on one network, and it becomes logical that you need to recover the cost of the infrastructure, but you only need to recover it once. So you need a model that allows multiple service providers without multiple charging for the infrastructure. NBN Co could change this by the way, a good example of something that I would be entitled to is the use of AARNET, because I'm an adjunct at University of Canberra and AARNET has a whole different price performance model for academics. Now under the present NBN Co model the only way I can get to AARNET is over the top of my present retail service provider which is, let's say it's iiNet. But that means I've already gone through all the pipes and constraints that iiNet put in my circuit before I get to the different world of AARNET. If I were to get the full benefit of AARNET I'd want them to be a separate port on my modem and for me to be able to choose that I'm now doing university stuff, so I'm going to go AARNET with all the different sort of connectivity that that brings with it. That's not possible under the NBN model at present because nobody's going to pay two lots of, two retail service providers, each of which bundle a full wholesale fee.

So how does NBN coexist with Transact now? Was Transact in some way incorporated into the NBN or was ACT given special dispensation or how did it work?

So firstly the parts of Canberra that came after my time where they built fibre to the home, and in that era I was a consultant now on the other side of the table guiding developers and Transact happened to be the provider of fibre to the home. NBN Co bought all that fibre to the premises infrastructure that was built between about 2005 and onwards. As regards the original network, iiNet purchased it in about 2012 and by then the original electronics were 15 years old from their design…

And iiNet was subsequently acquired by TPG, wasn't it?

Yes. So iiNet looked at refurbishing the electronics.

That was Mike Malone iiNet, wasn't it?

Yes.

Yes, Mick Malone.

Yes, nice guy.

I saw him get very drunk once at his Christmas party, his journalist Christmas party.

Oh, is that right? I've only met him once; I had a coffee with him once in Sydney.

He is a very good guy. I digress.

Yes. Transact network, we designed it for a curious reason as fibre to the kerb, so we took fibre down to within 300 metres of every home and because we had no deal with Telstra we then rolled out CAT5 data-grade cabling for the last 300 metres, and in the original incarnation, we had a little mini-DSLAM at that 300-metre point. We also had copper as well as fibre feeding that DSLAM, because we couldn't get a mini-telephony equipment that would match the broadband equipment. So we had a telephony multiplexer upstream, maybe up to another 900 metres away, and so you got your telephony from the upstream node, and you got your broadband from the 300-metre node, and they were combined into the cable at the 300-metre point.

And what's going to happen with the NBN Robin?

NBN overbuilt Transact and so those people in the 65,000-home footprint have a choice of NBN or Transact. The point of that description about the technology there, Graeme, was that iiNet effectively de-engineered Transact's network back to a fibre to the node configuration, by pulling out the mini DSLAMs at the 300-metre point, putting in a big DSLAM back at the 900-metre point, and conscripting the copper that was originally purposed for telephony. So they de-engineered it to a fibre to the node thing, which is exactly what NBN Co rolled out. So you have two equivalent networks, but in the most recent upgrades iiNet has started reinstating little mini DSLAMs back at the 300-metre point, selectively. And so they already have fibre down to that point and better copper for the last 300 metres. So as the battle unfolds between them, iiNet has the marvellous choice of putting little upgrades and blitz the performance that NBN offers or, if they want to, they can jump ship to NBN anytime they want. So it's the best of both worlds.

Yes. So when you built Transact, obviously that was, ACTEW was owned by the ACT government, were there any further government incentives at the federal level?
No, it was, ACTEW ended up being, I've forgotten the percentage, but probably about a 40 percent or so stakeholder in Transact and it took on some other investments.

So who owned the rest?
There was a telecommunications venture group out of Hong Kong, Ed Sippel and co, they were significant investors in it, there was some local investment, I think the Hindmarsh Group had some, I've forgotten the exact split.

It wasn't ever floated though, was it?
No.

No, so those investors were what, approached because you needed funding?
Yes, the Board had decided that they would base their confidence and the initiative on the willingness of other investors to invest.

Oh, fair enough.
I can tell you about some interesting anecdotes along the way, but…

There was a few interesting anecdotes in your little unpublished book which I've read. And it's because of those interesting anecdotes that you don't want to publish the book. It's sort of died I think you told me.
Yes, that's right.

So was there any sort of research grant or tax incentives or anything else like that that you had access to?
No. Much credit goes to the CEO of ACTEW when we first commenced, a fellow called Mike Sargent, who was a bit of a visionary. And he always believed that a big corporation like ACTEW needed a kind of skunk works that kept producing radical ideas, and so he was supportive of Transact and it took root in his era. He retired, and his successor John Mackay came on, and I think John's instinct would have been to can Transact, but already we had gained enough traction with the people of Canberra and stirred up enough interest that it was not politically palatable to can Transact at that stage.

Was it a commercial success?
Not from an investor point of view, but Transact would be turning over probably 100 million a year revenues of that order now. But when iiNet bought it they bought it at a discount to what the investors had put in. That is a sobering lesson I think for the NBN. The NBN hopes to make this viable and I think the truth of the matter is it's very hard to balance affordability and getting a return on investment on an access network.

It's like any utility, isn't it, how do you measure return on investment that's a necessity?
Yes. So one of my strong views on the NBN is that it should remain on public ownership. Because it is an essential utility and only the government can monetise the sort of indirect socioeconomic benefits through the tax system. If they sell it to a private organisation, that organisation has to make money purely on selling the lines at a wholesale basis, and that will

mean either they fail, or they push the prices up so high that people can't afford it and they fail that way.

Yes, well we will see what happens the next few years won't we?
Yes.

Okay, we'll change the tack a bit now if we may?
Sure.

We're over the hour. Sebastian has got some specific innovation questions…
I have a specific question, you said…
Why don't you take over for a while Sebastian?
All right, thank you Graeme. So I think what you said when you went to university philosophy was in hindsight possibly very valuable to you and you also mentioned when you looked at Transact and come up with the business model it was looking at the problem from a blank piece of paper approach. Now when you, over the years I'm sure you hired some people or were involved in the hiring of people in this project, what were you looking out for…? Sorry, maybe one question, what do you look out for when you hire people, how did you make decisions?
It's a good question and I haven't always made good decisions. I have learnt that interviewing, having a woman interview with you is a very valuable counterpart. I think as a man you're very left-brain oriented typically and so you will focus in on technical skills and capabilities. And occasionally I've interviewed people and I've had a woman join me in the interview and she said at the end of the interview: "There's something about that guy that I don't like or something about that person I don't like." and they've always been right, and I've not picked it. Going back to the more technical qualities I've not thought about that, but a top of the head answer is that you're always looking for a certain technical competence and key skills and experience. And on the personality side you're looking for somebody who is going to fit into the team and can play a team game. Some of the failures I've had are where people have come in and they've had an agenda of building an alternate power-base or leading the project in a way that enhances their particular set of expertise, and that's absolutely counter-productive. If you think of team forces all going in one direction, hopefully, if you get someone pulling in the opposite direction they not only aren't contributing but they're actually countering the effort, if you think of it as forces, they're countering the effort of that person if they are pulling in that direction. So we've had a few like that along the way where you've had to cull them, because they couldn't play the team game and that's highlighted to me the importance of teams.

So, being a team player and being able to work in a team is an important skillset?
Yes.

And what about thinking outside the box? You use your own example of the advantage of your philosophy studies, have you actively looked for people who might have different skills?
I have and some of the most I guess inspiring examples have been, I've worked with one or two people who are probably well down the Asperger's scale and think absolutely laterally. And going back to Defence days with the PCs, Techway was once accused of introducing a virus into Defence because one of the computers had a virus. I happened to say to one of the

guys I'd recruited Bruce, I said "Bruce, wouldn't it be nice if you could find the fingerprint of the disc that wrote the virus." This was a guy that was sort of towards the Asperger's end of the spectrum. He went home that night, next morning he came to me and he said look at this, and he'd broken out a floppy disc, he got some of that magnetic fluid that you'd remember Graeme that you paint on to see the bits, and he showed my how a 40 track disc had 40 thick tracks, an 80 track disc had 80 thin tracks, and then he showed me a 40 track drive on which the boot sector had been overwritten with an 80 track drive and it was a noticeably thin segment. Anyway, that was the clue to cracking this problem and proving we hadn't introduced the virus because we only had 40 track drives. We went into Defence and one of the top Defence guys in IT had kept one of the infected discs right at the outset of this outbreak, he pulled it out of the safe, we snipped it open, and everybody is on the floor on their knees around the coffee table, painting this fluid on the discs. And it conclusively proved that Techway hadn't introduced the virus, and coincidentally the head of security used to boast that he had 40 viruses on his home computer and was an expert in understanding them, and I think the finger quickly pointed in that direction. So that was an example of someone who always thought laterally, and I absolutely valued that skill. Willingness to set aside pre-conceptions and think laterally. And I think to your question that you sort of partly articulated there Sebastian, the thing about philosophy is there are no right answers.. One of the classic questions in philosophy is: are we as people nothing more than a sophisticated bio-electrical machine, we're made of neurons that are all firing according to the laws of physics and it's totally a deterministic process, or do we have some non-physical mind if you like? No right answer, there is no science which can resolve that. But the ability to see both sides of that and to argue why this side might be correct and also argue why the other side might be correct is I think a great skill that philosophy teaches. That's the secret to getting a credit, to see both sides of the problem.

We will put it in ellipses and…

So it's important for, say if implications for education it's important to educate people that they can see, think more about what's the problem and understanding the problem from multiple angles?

Yes, that's a good description of I think a skill that's really valuable. There's conventional wisdom that often hamstrings people. If we had succumbed to conventional wisdom in the TransACT day, TransACT would never have eventuated. Conventional wisdom said it couldn't be done technically, it couldn't be done commercially, but here it is 20 years on, and I'm talking to you over Transact's network at the moment.

Now, another innovation type question, it's not really innovation, it's more about a different focus if you like, what external factors have helped or hindered you in your career? Things like external financial or economic circumstances or pure luck or political situation, are there any such things and which ones stand out?

That's a hard question to answer. I think I've been very lucky in my career because I found it engrossing, enjoyable, fascinating. I think I'm probably fortunate to be able to communicate with enthusiasm and passion and I think that often opens doors. It's infectious. If you meet people who are excited about a vision, that's an infectious skill. And so you could call me a conveyor of bullshit or a salesman, but having an element of that has helped me, going right back to that project Tenparc. Being able to talk about the excitement, the fibre across the city, the things that could unlock, that left an impression on people that got me an invitation back six months later to talk to a little team and TransACT resulted several years later.

Well that was a very innovative concept back then, most people would not have heard of it, so to even get them to get their brain around it you would have had to have been pretty convincing I would think.

Yes, I think so.

Enthusiastic and capable of explaining what's essentially a difficult concept.

Yes, I think another thing that I've benefited from is I am fairly technically minded. I'm not sure I'm a geek. I might be a geek at one end of the spectrum, but for example, at the moment I'm playing around with little bits of electronics here and building something to electrify my bird feeder, as a little hobby project. So I can work comfortably down at the code level having a background in programming and I've never learnt anything about electronics, but there's so much on the Web that you can work at that technical level, all the way through to Board level. And to be able to try and articulate something for a Board member who has no sense of technology has been very helpful I think in progressing on fronts that have interested me. External things, I've been lucky, I've never been economically challenged, I had employment in my early years, my business had a slow start for three months over Christmas, but kind of took off, and I've never had any financial crisis to worry about, so I don't think that's been a big factor. Politically, we all think of ourselves as being in the middle and everybody else is either right or left of us. I've been scathing about aspects of both Labour in Liberal policies in my field of telecommunications and I haven't been afraid to voice those views, hopefully fairly graciously, but possibly not always.

Yes, now you've dealt with a lot of people, you've done a lot of, you've been innovative within Australia with technology you've developed yourself. are there any aspects of the Australian psyche, now you're a country boy from rural South Australia, you've dealt with the big end of town, do you see any characteristics about the Australian makeup, Australians, that are peculiar to us, our ability to innovate or not innovate?

I think yes, I used to think a lot about this. I find that Australians are generally much liked by, for example, Americans. They see us as unconventional, well this is an observation about my interactions with a range of US companies, they see us as unconventional, surprising at times. And when I think what is it in our national psyche that has led that, if I go back to my farm days, when you started to harvest you had to get the harvest off at the right time of the year and if your expensive new Holland Harvester broke down, there was no way you could stop the harvest and wait three weeks for a part to come from wherever. So Australians were very creative at finding solutions to problems. And I remember we had a guy working with us throughout my youth on the farm, and if something broke down he would carve it out of wood and wire and whatever and he would get the machine going again. And so there was a kind of resourcefulness that I think was bred by being remote from the world and slightly less influenced by conventional thinking.

Yes, I was about to ask you why and you just answered the question, this idea of remoteness, what sometimes is called the tyranny of distance, we've had that as a theme. We're about halfway through these 40 interviews Robin and we ask everybody that question and there's a real commonality of view coming through.

Yes, it's maybe wrong to call it the tyranny of distance, it's almost the benefit of distance, but I also think that's reducing because of the way the world is coming together with communications and so on.

Yeah, everywhere is becoming a bit more like everywhere else.
Yes.

And one day it will be all amorphous.
You said about mobile coverage, maybe still a bit off on the country side, unfortunately.
Yes, you'd probably find a greater degree of resourcefulness and inventiveness out in the back blocks.

Do you have any other questions before our uplifting final question Sebastian?
No, I'm fine.
Let's go to our uplifting final question then.
Yes.

What are your big disappointments Robin, if any, in your professional life or for the industry?
I guess in my professional life probably one of the bigger ones is the failure thus far to convince the government that the model for mobile coverage in Australia, which relies purely on the market, is wrong. We have such a disparate market, ranging from extremely remote to very dense cities, and a one-size fits all competition model doesn't work, it works at one end of the spectrum, it fails catastrophically at the other. And in the 2012 Regional Review and also in 2015 I failed to make an impact on that thinking. There are a range of solutions to it, one of which happily is starting to come onto the agenda now, I sat in on a Telsoc presentation of their NBN futures group. There was one little glimmer in there which I thought: "This is good stuff" and that was we have a "wholesale only" vehicle in Australia called NBN, let it offer wholesale mobile coverage in areas where no-one else will go, and there's a multiplicity of efficiencies in that. Firstly, all three mobile operators would probably happily use a white label wholesale service from NBN Co, so you'll get three times as much traffic on that tower from the three operators. Fourthly, NBN Co itself it's fixed wireless solution, it's essential a nobbled mobile one so you could integrate a fourth line of revenue. And finally, the satellite service with its inherent limitations of latency will increasingly run out of capacity over time and the ideal is to have a terrestrial offload. So shift, push the boundaries of mobile coverage out under NBN Co's banner and let that also be a way of providing a terrestrial alternative to satellite. So, from a professional point of view that's one of the things I feel I've failed at common sense prevailing. Probably on a personal note, doing something like Transact is very all engrossing and I worked 12 hours a day, five and a half, six days a week, and that was right at a period in the peak of my career when my children were very young and I think missed a lot of opportunities with family. I'm not sure how you resolve that conflict.

Yeah, a lot of people I think have that problem; I think I did also.
Yes, I try to make up for it now with the grandchildren, it's a different chapter of life, and I regard time spent with them as very precious.

Yes, that's fabulous, any other observations, comments Robin?
Can't think of any off the top of my head, if I have then I'll drop you an email.

End