Abstract

Chris Hancock was appointed in 2004 as chief executive officer of AARNet, Australia’s Academic Research Network that brought the first Internet connection to the nation in 1989. The not-for-profit AARNet Pty Ltd now manages the Australian Research and Education Network (AREN) providing high capacity infrastructure and services to research, education, training, cultural and scientific institutions. Hancock’s previous experience spans senior management positions in the telecommunications sector including as managing director, Optus Wholesale and Optus Data & Business Services (1998-2004); and executive positions at Vodafone Australia, Seven Network and Sarah Lee Corporation. He holds a Bachelor of Arts (Social Science) degree from Charles Sturt University and a Master of Business Administration (Executive) from the Australian Graduate School of Management. His board positions include as a director of the Institute for a Broadband-Enabled Society (IBES), the Smart Services Cooperative Research Centre, and AARNet Pty Ltd. Freelance communications journalist, Liz Fell, spoke with Hancock for the TJA in mid-October at AARNet headquarters in Binary House, North Ryde, Sydney.

Introduction
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**TJA:** What attracted you to the CEO position at AARNet?

**Hancock:** Well, I had been working in the commercial sector. I came from Optus, where I for five years had been running Optus Wholesale and Optus Business and, before that, I was at Vodafone. The attraction was more inquisitiveness at first because AARNet had a lot to do with the development of the Internet in Australia. And I thought it would be interesting because the role didn’t have the strong commercial flavour that I was used to at Optus.

**TJA:** Had Optus become SingTel Optus when you joined?

**Hancock:** No, I joined in 1998 when we were owned by Cable & Wireless and then we floated. So in five years we did what people don’t do in 20 years. It was just fantastic: we had an ownership structure, a majority owner, an IPO and then a sale!

**TJA:** And I see that your new employer, AARNet Pty Ltd., has a telecommunications carrier licence. Do you describe the company as a carriage service provider or as a wholesaler or as an internet service provider?

**Hancock:** We’re a carriage service provider officially. We’re owned by 38 universities and the CSIRO, and we retail directly to our customers. Our customers are shareholders, which makes us an interesting beast!

**TJA:** So the company’s revenue comes from...

**Hancock:** ... our subscriptions that are charged to the universities. That’s how we get our revenue that allows us to re-invest etcetera. They pay for their membership and their traffic and their services generally. As well as that, we have a lot of customers underneath them.

**TJA:** Just leaving aside these customers 'underneath' for the moment, what about the Federal government funds or grants you have received?

**Hancock:** We don't rely on regular government grants of any kind. The big grant we had was in 2003, which allowed us to purchase part of the Nextgen backbone or to build our backbone.
TJA: Was that when Brendan Nelson was Minister for Education, Science and Training?

Hancock: That’s correct, and this year we have another government program called the National Research Network Project that has led to seven or eight projects for which we will get funding to actually build for the sector. One of those projects is building fibre around Sydney, the Sydney Basin fibre rings, because we previously had the universities and the research and education institutions connected by a Uecomm lease. So we’re now in the process of building three fibre rings around Sydney. That’s an example of one of the grants that we got. There are several others as well.

TJA: Which Federal department offered these grants?

Hancock: That came from what is now the Department of Industry, Innovation, Science, Research and Tertiary Education.

TJA: Quite a mouthful isn’t it! Did AARNet request the funding?

Hancock: No, it was part of a review right across the sector talking to all major research players, and out of that review came the need for about eight projects. We gave a lot of input to that review. I call the areas that need work the research and education ‘black spots’.

TJA: Were the funds subject to a competitive tender process?

Hancock: No, the projects were nominated, and they didn’t all go to us. There were one or two that went to others. In fact, none of them went directly to us. It’s a bit convoluted, but they were contracted through the University of South Australia and awarded to the member communities. For example, the Sydney fibre rings project was awarded to the Sydney universities, and we became the supplier of that. In other words, we’re building that fibre pipe for them.

TJA: What were the other projects that received government funds?

Hancock: There were eight in all. The second was a Perth fibre ring; the third, which came directly to us, was upgrading our Adelaide to Perth backbone capacity.

The fourth was building tails to join our backbone in far North Queensland - Rockhampton, Gladstone, Cairns; the fifth was a Brisbane metropolitan fibre extension on the fibre we already own there to complete a ring; the sixth was some funding that went to VERNet, the state fibre network in Victoria.

The seventh was a Tasmanian project to give them some capacity on-island for the University of Tasmania and the CSIRO and to link with the Basslink fibre we have; and the eighth and final one was for a project at the University of Queensland called RDSI, Research Data Storage Infrastructure, which is basically about collecting nodes from around the country, and some of that money will also go towards the networking and joining up with high speed optical circuits around the country.

TJA: Did this funding package come from the government via Minister Kim Carr?

Hancock: Yes, it was when he was the Minister.

TJA: Were you personally involved in the actual lobbying for these funds?

Hancock: We lobbied into the review to convince that review that these were the right projects.

TJA: The capacity required by a research institution like CSIRO must be huge, and I think that NICTA is also a big customer?

Hancock: Yes, NICTA is a customer. They are probably the two big research bodies as such.

TJA: Then you have a number of other customers in addition to these two big research bodies and universities. Do you call them subscribers?

Hancock: We call them customers but they’re members of the network.

TJA: And these new customer groups include training institutions or TAFEs and also museums and schools...
Hancock: Basically we have four areas: schools, TAFEs, the health precincts, and what we call the 'culture club' which is really libraries or the Powerhouse museum or Questacon.

TJA: Do you keep track of the precise number of customers or end-users?

Hancock: There's probably a roughly a million end-users such as staff and students, but in terms of customers, there's probably only several hundred I suspect. I actually don't know the number.

TJA: Still, that number must be much larger than when you arrived!

Hancock: Yes. The reason we do that, by the way, is because we want to maintain our not-for-profit status and those four areas I have mentioned revolve around and service and collaborate with the university higher education sector. The Bradley review was really one of the drivers for that. It actually drove the inter-connections like TAFEs working with schools and TAFEs working with universities and doing Pathways programs and things like that.

TJA: When you arrived at AARNet in 2004 I understand your major role was to lead the implementation of AARNet3...

Hancock: Initially, yes.

TJA: I have read that you have since built and leased capacity to create one of the largest network footprints in the world with 19 POPs...

Hancock: ... Points of Presence, yes.

TJA: Plus some 100 kilometres of fibre. Indeed, I assume the footprint is even larger now since that information on footprints was written several years ago.

Hancock: Yes, it probably is more now. We haven't bragged about it for a while!

TJA: Well, you don't need to brag about it surely?

Hancock: No, we just get on and do it. We often sail under the radar a fair bit and that's not a bad thing. At the end of the day, we're Australia's National Research and Education Network. We're not a commercial organisation that needs to sell. So when we go to see people who want to talk to us, we're delighted if they want to join us but we don't push them if they don't.

TJA: So in implementing AARNet3 or the third generation, you have essentially 'built' your own network capacity using backbone fibre from companies such as Nextgen...

Hancock: That's right, we leased Nextgen's backbone, but we had to connect customers to that backbone and that's why we built the tails. We started up a division internally that managed the build of fibre from the Parkes Telescope, for example, to our backbone and, because that didn't pass by the front door, we built the tails. Our biggest tail, which we've just finished, is for the SKA [Square Kilometre Array] in Western Australia from Geraldton to Boolardy Station which is some 300 to 400 kilometres.

TJA: Did the division that you started actually construct these tails?

Hancock: No, when we say we 'built' it, we mean that we contracted it out. But we manage all of that, which is no mean feat.

TJA: And I think AARNet has leased Telstra's backbone fibre in the Northern Territory and parts of Tasmania, for instance?

Hancock: Yes, bits of that.

TJA: I enjoyed reading the book you commissioned, *AARNet: 20 years of the Internet in Australia 1989-2009* [5], particularly the anecdote about your first board meeting where, asked about your priorities, you replied, 'GOO ...Get Off Optus'. It reads like there was no love lost there!

Hancock: Did we print that? Oh god! Yes. That was a signal that we were really leasing capacity and now we were standing on our own two feet.
TJA: Was the reason for getting off the Optus network because of the service or the cost?

Hancock: No. That was a big turning point for AARNet because we then became an infrastructure owner. By having a long-term backbone and then building fibre, we didn't need any longer to just take a service from Optus and pass it on.

TJA: But don't you lease the backbone fibre?

Hancock: Yes. It's a long-term lease though, so I argue it's like ownership.

TJA: Wouldn't that have been the case with Optus?

Hancock: No, I think at that point we were just buying capacity, as opposed to having dark fibre with Nextgen.

TJA: So you said farewell to Optus?

Hancock: Yes. My head said 'yes' but my heart said 'no' because I had a great five years with Optus.

TJA: By early 2006, I understand that you had 17 contracts to build dedicated dark fibre links to almost all the legs in the AARNet network. It must have been a huge exercise?

Hancock: Well, we've always prided ourselves on being nimble and small. We have about 60 people now, and we had 12 back then.

TJA: And someone has to design the network?

Hancock: Yes. We have a number of people here, what we call 'pits and pipe' type people. They do all that.

TJA: In the case of your alma mater, Charles Sturt University, which is based in Bathurst and has expanded around regional NSW, it must have been a huge job to join up all the campuses and coordinate companies like Soul and Transgrid as well as building the tails?

Hancock: Yes, we managed the build of that. Charles Sturt was a great example because of the bringing together of probably between five to eight rural campuses including Albury, Wagga, Goulburn Police Academy, Orange, and Bathurst.

TJA: Is the Goulburn Police Academy a university campus now?

Hancock: Yes, Charles Sturt University took it over and so they needed connectivity. I'm sure you remember the old CAE or College of Advanced Education in Bathurst. In bringing together the CAE as one university, technology is the way to do it.

TJA: Are you a director of Charles Sturt University?

Hancock: I was. I stepped down several years ago.

TJA: In the case of the CSIRO, which is a customer or, indeed, a shareholder. What is the right descriptor here?

Hancock: One of our shareholders, yes.

TJA: Does the CSIRO lead the demand for super-fast broadband links across the country and internationally?

Hancock: The astronomers, for example, really drive that space, but there are many other groups across the country who drive high speed demand too.

TJA: And does the CSIRO use its own funds to pay AARNet for its network?

Hancock: Yes, just like they pay for power and water, they have to pay for their data. If they didn't have us, they would have to go with a commercial provider. The thing about these organisations is that you can't really do this on commercial networks because of the nature of research and what we do.

TJA: At a recent ACMA Radcomms conference you argued that innovation flourishes under a research and education approach as opposed to a commercial approach. Were you suggesting it is the public service culture that enables innovation rather than commercial, profit-focused companies?
Hancock: Well, I wouldn't be that definite, but that's my view. My view is that particularly universities, and organisations like the CSIRO, drive the innovation agenda. I think that has been shown in technology with Facebook and Google and whatever is coming out of universities like Stanford and MIT. Even the wireless work that came out of the CSIRO was world-breaking when you look at it. So I think we do things with a number of the researchers that allow their community to develop technologically, and we would say that sometimes the commercial world is anywhere between five and seven years behind in terms of whether they commercially put together some of these products.

TJA: I think you said in your Radcomms address that the commercial world tends to offer small pilots to test new technologies which don't provide enough scale or real world conditions.

Hancock: Yes.

TJA: Why don't you refer to AARNet as a public service institution rather like the ABC?

Hancock: That is an interesting question. I think you can be a not-for-profit but be commercially focused, and that's what we are. The expectations of big institutions like universities and the CSIRO these days are that we've got to deliver a service with service level agreements for them. I think that AARNet has moved from being a ‘club’ to being a commercial provider for a sector.

TJA: Does the structure of the AARNet board reflect this commercial style?

Hancock: Yes. We have a board structure, we have elections, and we have four independents, three vice chancellors, three CIOs, myself, and a dedicated CSIRO director. We rotate ever three years.

TJA: And one of those independents is John Rohan, who is well-known in the telecommunications world.

Hancock: Yes, John Rohan was my boss at Vodafone actually.

TJA: Moving to the services provided by AARNet, it appears that video – including ultra high definition video – has become the most important service you have been developing and delivering. Is that accurate?

Hancock: Yes, it's one of them. I guess there are three service categories: collaboration services which are usually based around video; content delivery service where, for instance, we have designed a large file transfer service; and mobility services such as eduroam.

TJA: What is eduroam?

Hancock: Eduroam is a wireless authentication service that we deliver to the sector. The wireless end-points exist already in the universities: we simply put an authentication service over it that becomes something that operates for all higher education people. Eduroam is global and we operate it in Australia.

I was at a lunch recently with the Queensland Health minister and the vice chancellor of the University of Queensland where we've put eduroam into five or six hospitals. For University staff going into those hospitals all the time, and staff from the hospitals coming into universities, if they walk in with their device, they're eduroam-enabled. They can walk into the campus of the University of New South Wales, or MIT, or Oxford and don't need to put in a password! It simply authenticates your device.

TJA: What about the Unified Communications Exchange service that I understand was developed in-house using your IP-based network?

Hancock: That's part of collaboration services.

TJA: Does this service include IP voice and IP video?

Hancock: That's another cutting edge technology. In simple English, it allows me to pick up a phone, dial someone in Swinburne, and immediately have a video conference on that phone with the vice chancellor. We don't need to go to a room, we don't need to go through an MCU [Multipoint Control Unit] or to dial into a video system.

TJA: And what about the CloudStor service?
Hancock: Yes, that's a large file transfer service. As a researcher, if you need to send large volumes of climate change data, you can do it over CloudStor.

TJA: Finally, can you talk about the use of high definition video?

Hancock: It varies from big room systems back to the desktop. I think the days of standard definition are just about gone. Everything is high def these days. You can't run some of these walls of big video screens you see in that book unless you've got high bandwidth capacity!

TJA: The example given is often of a surgeon using high definition video to show every detail of an operation to students watching a screen that is thousands of kilometres away.

Hancock: Correct. It's about getting it up as well, and having a big screen that you wouldn't have normally.

TJA: Do you have much demand for the level of detail required for medical surgery or diagnosis?

Hancock: I would have to say that it's patchy. Some people use it every day, others rely on normal video, some institutions even rely on Skype for communication, and there are some researchers who want to show their research on large screens!

TJA: I see that AARNet is signing up private schools such as Abbotsleigh in Sydney as customers. Do these schools use a video service?

Hancock: They wouldn't use something like the huge wall screen, but they do use high definition video, and more of them are using it much more regularly. The schools join AARNet because the universities want them to do joint projects, but they also want to be part of the overall global community such as bringing NASA into the classroom for Abbotsleigh girls.

TJA: I thought I saw a grab of the Abbotsleigh girls exploring the Antarctic or somewhere like that!

Hancock: Well, there it is. You've seen it all!

TJA: I understand that the universities are using a lot of videoconferencing these days which suggests students have accepted the technology?

Hancock: For the generation at university now, I think a videoconference is second nature. Sometimes, it's not as good as in-person teaching, but with Telepresence and some of the systems that exist it's certainly very, very good. And if you've got a great network, you can almost do this in real time and it works!

TJA: You are a director of the Smart Services Cooperative Research Centre which, I think, is doing some creative work on video. Is that correct?

Hancock: Yes, they're doing some great things in video technology: their TableTop surface technology is an extension of what iPads are about but on a bigger scale. My reason for being involved in them is because they are a source of innovation for us. We can't replicate the CSIRO's and the NICTA's and Smart Services CRC, nor should we, but we can certainly work with them to trial their services and push some of their services out to some of our customers.

TJA: Is the CSIRO's SKA contract serving as a driver of high volume pipes?

Hancock: That's one of the highlights, and the Large Hadron Collider in CERN as well as Geoffrey Taylor in Melbourne who has driven some of the work behind the discovery of the Higgs boson.

TJA: Do you charge the university customers based on volume?

Hancock: No. We used to be on a volume charging model back in the early days and we changed that very quickly as we could see growth. So you pay a subscription and then go for it.

TJA: Can individual students gain direct access?

Hancock: Our connection goes to the front gate of the university. From there, it's up to the university to manage that network.
TJA: So if students late at night decide to dial up a copyrighted movie from a site like Pirate Bay ...

Hancock: ...the university needs to get on to that. But having said that, we've brought in off-peak, which means that we've extended it from 5 pm until 9 am the next morning because it was so popular. It's all on-net so it's unmetered traffic! And we have also decided to offer a new product to the universities using our own NOC? Network Operations Centre? which monitors traffic flows and how the network is performing in Sydney and Perth, basically on a minute-by-minute basis.

Rather than paying commercial providers to do this for us, we will now provide that as a product with people 24 X 7 in either Perth or Sydney. Now the universities are seeing that they could reduce their costs and saying to us, 'Gee, I wouldn't mind you monitoring our network and some of the things we're doing.'

TJA: It sounds like a good revenue source! I understand you are a partner of the Institute for a Broadband-Enabled Society (IBES) in a research project that also involves the NBN?

Hancock: Yes, some of the work that Kate Cornick from IBES is doing is great. We've been helping out in the Brunswick project, 'Ageing Well at Home with Broadband'. We're actually a retail service provider of the NBN just like Telstra or Optus and the 12 or 13 or so others.

TJA: What stimulated AARNet's decision to become one of the early NBN retail service providers?

Hancock: We entered that arena because we knew that the NBN was going to go to places that probably we're never going to go to. There are pockets of researchers all over the country? they could be at a solar farm in Moree or wherever? and the NBN will eventually go there, so we can be a service provider by purchasing an NBN circuit and providing that to them.

TJA: Do you envisage the reverse, namely, that NBNCo may purchase capacity or circuits from AARNet in some circumstances?

Hancock: No. It's not intended. At the end of the day that would be a matter for our shareholders and, at present, they are keeping AARNet as it is.

TJA: Still, it would be an interesting move if NBNCo sought to save costs by making use of AARNet!

Hancock: They could, but I don't think that's the objective of NBN. I've never had that discussion with the Minister, Stephen Conroy.

TJA: You never know!

Hancock: That's right. You never know what's going to happen, I suppose!

TJA: Indeed, in some ways AARNet would appear to be competing with NBNCo since your shareholders and research customers are the really heavy users of capacity. Isn't there a competitive edge to the relationship?

Hancock: Well, we don't see it that way. We see it as being complementary, quite frankly.

TJA: Isn't AARNet already providing retail services on NBN's network!

Hancock: Yes. In Armidale, which is an NBN first release site, we are the retail service provider for PLC [Presbyterian Ladies' College]. We're also at the Cathedral School in Townsville which was opened by Wayne Swan [Deputy Prime Minister], Townsville being James Cook University and one of the first release sites for NBN as well. They're only 'one offs', and we'll try to do some really interesting things with them. We're not there to sign up every school. It's really just a question of using exemplars.

TJA: Does AARNet compete with NBNCo on products like multicasting?

Hancock: Well, we have multicast on our own network. I haven't really gone into detail on that.

TJA: So would you suggest that a customer sign up to the multicasting product offered by an NBN retail service provider if AARNet itself has a product?

Hancock: Yes, we would if they had locations that we couldn't help them with. We see it as very natural. It might be
a CSIRO group of researchers somewhere like Willuga, and NBN fibre is going to go in there, therefore they're better off. Our job is really not competitive in that sense. It is to make this all come together so the end user gets the benefit.

**TJA:** Having led and completed AARNet3, are you now preparing for AARNet 4?

**Hancock:** It’s begun. We haven’t had a launch so don’t be disappointed that the invitation is not in the mail! But AARNet4 starts now, and it is really about having a more flexible and diverse network that allows us to go to 100 Gbps as a backbone for a start and to really up the ante. I guess everything needs modernising over a period of time.

**TJA:** I read somewhere that you were planning some 4000 satellite dishes at the Square Kilometre Array site!

**Hancock:** I think it was 3000 originally, but anyway those numbers have all changed because of the way the SKA has been divided between South Africa and Australia. In Australia, the ASKAP [Australian Square Kilometre Array Pathfinder] project is going from about 30 to about 90, so that’s another 60 dishes, and the other part for Australia will be the low frequency work out of Curtin University.

**TJA:** AARNet offers a global reach for its customers with undersea fibre capacity on cables and international POPs. Do the customers ask for advice from you, especially the universities who are facing a whole range of new risks and opportunities in this global market with all the new technologies?

**Hancock:** Yes, there’s no doubt about that. We just had a meeting for the first time ever. It was meant to be the G20 ? or modelled on the G20 ? but it ended up being 13 CEOs of the major National Research and Education Networks around the world, so China and Korea among others. AARNet was there representing Australia. We actually talked about this and about a global topology because we are all interlinked. When the physicist, Geoffrey Taylor in Melbourne, has to send data or work with his colleagues at CERN in Geneva, it should be seamless at very high speed, high capacity. That’s what research networks are really good at, and that’s what we have been doing on a global basis.

**TJA:** What steps is AARNet taking to support and inform its shareholders and customers in this changing global market?

**Hancock:** Well, we’ve just restructured in the last three months and we’ve started up a new unit called Enterprise Services. In English, it’s Consulting Services. The universities are wanting assistance, not from a commercial vendor, but someone who is going to give them an independent assessment of where they’re going, and review their video systems or their exchange systems and things like that.

**TJA:** Does AARNet charge for this service?

**Hancock:** Yes, we’ve only just started up this service because we were doing a lot for free previously, and workload-wise we can’t just keep doing that. We’ve even done that for the Federal government who are wanting to understand because we try to keep in tune to work with all of the vendors.

**TJA:** Meanwhile, competition from mainly US universities is arriving with these MOOCs ? Massive Open Online Courses ? and some Australian universities are setting up similar open courses...

**Hancock:**….it’s the old conundrum of collaboration versus competition.

**TJA:** But the competition is taking place in a global context?

**Hancock:** Yes, there are no boundaries. If you look at where people can access courses from and what they can do, it doesn’t have to be in their own state or suburb.

**TJA:** Or even country!

**Hancock:** Yes, that’s why research networks are going to be more important in the future to enable this. I went to a conference in Melbourne several weeks ago and the technology people who presented at it were the ‘Big Four’ plus us: Google, Microsoft, Cisco, Amazon and AARNet. I think that all the messages were similar: the NBN is going to get into the student’s home.
TJA: Is AARNet considering getting into student homes?

Hancock: We could provide to the home as an NBN service provider, but that’s really going to be at the discretion of the universities. Quite frankly, the NBN and the commercial service providers will provide the large majority of all those services, but if you had academics at home who, because of time zones, want to chuck large amounts of data at night over AARNet, then we could do that through the NBN.

TJA: So could AARNet at some stage decide to go after student customers at home?

Hancock: No, because at the end of the day we’re concerned about what goes on at the campus. My view is that’s for the commercial market. ENDS

Endnotes


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