JULIE McCROSSIN: As that last photo was taken, I'd like to move on if I may to our next speaker, because we're going to hear about the mobile nation, the 5G future. Some of you will have seen the competition we had yesterday to explain what 5G meant. I'd like to welcome the CEO of the Australian Mobile Telecommunications Association, Chris Althaus who's going to talk about productivity benefits and, of course, the Australian Mobile Telecommunications Association is the peak industry body representing the mobile telecommunications sector. For fun today, I'm talking about people's backgrounds and Chris's background is in science, economics and business, so please make him welcome. (APPLAUSE)

CHRIS ALTHAUS: Good morning and thank you for having me today. I was in the middle of a radio interview a couple of days ago and a lady dialled into the interview and no surprise, we were talking about 5G. And she dialled in and said, "Oh for goodness sake, I'm just getting used to 4G and I think it's good. It does everything I need to do; do we really need to take the next step?" I was a bit taken aback and I said, "Well, yes" and she said, "I disagree, I think we're in good shape." She refused my offer of steak knives as an incentive. She was resolute. Change is not going to affect her, but change is constant, and it made me reflect. Some of Andy's comments are also along these lines. It's less than a decade ago that we began the 4G Smartphone mobile broadband era and if you look back and look at your own behaviour and device and your usage of it and the data you consume it will give you an idea of how relentless change is. Go back to those early days and think about what you were doing compared to what you were doing today. So, we're all pretty keen on our devices. We use them avidly and it brings a key perspective, and there's a bit of death by PowerPoint going to go on, so I do apologise. For us now, mobile sits at the heart of this ecosystem that is really uniting a whole bunch of worlds -digital, physical and biological -and that's going to be the theme from here on. We are increasingly in a convergent space, so when I talk about 5G it's really you spend all of your time just on the technology, because you can't talk about 5G without referencing fixed and then the entire system, whether it's some Wi-Fi, fixed wireless, mobile obviously, it's this convergent environment that serves everybody's needs and the reality is mobile is in the centre of that and 5G is going to obviously be very influential. This is the reality, though. We have an insatiable appetite for data. Video drives a lot of that. I think in the ACMA's reporting in years 2014 to 2018 data increased by a factor of five and it will again from 2019 into the mid-20s. Interestingly, though, while both graphs are going skyward, the volume is very telling. There's 95 per cent of that download activity is taking place over fixed infrastructure, so mobile is a central player, adds mobility to the equation, but there's certainly a lot going on in fixed and other platforms. This is all taking us towards this reality, a network society, a connected community. It's something that will feature in most facets of how we live and that is going to be central to a 4G-5G partnership. The other thing it's important to realise is there's no hard boundaries here. Generations overlap constantly. 3G is still in play, it will fade out. 2G has. 4G and 5G will be the partnership for the foreseeable future and that's a good thing, because there's a lot of extension of 4G that will take place as 5G evolves. On the global scene we are a leader in 5G and there's any number of ways you can measure this, but in this particular study we're in the top group. There's no doubt that the US, China, South Korea, some of the smaller European and Scandinavian nations are right up there as well, but this is a global race to lead and there you'll see the first reference forgive me, to 6G and that's being talked about more and more. We're not afraid of the hype cycle and getting it well out ahead of reality, but the interesting thing here is that governments around the world are looking at this next era and saying, "Okay, what are the things that are going to make our economies and our societies operate more efficiently with greater productivity, with greater connectivity?" Many of the things that Andy was talking about before, and that all gets summarised in this industry 4.0 agenda and this is not an optional thing for us as a nation. This is happening and 5G will be a central player here. In fact, the DNA of this industry 4.0 agenda will be data and the data analytics and algorithmic power that goes with understanding what we're doing on-line and servicing that combined with networks and artificial intelligence. Those three things will be core drivers. Now, we know that nations are keen on the productivity implications here, so we asked Deloitte's Access Economics to look at the Australian industry and try to estimate and give us a forecast measure as to what's going on. These measures are for the mobile sector entirely, not 5G alone by any means, but 5G will figure more and more in the future and okay, we're a decent-size industry. We employ 116,000 people. We have a contribution in terms of value-add around 23 billion and generate around $25 billion in revenue, so that's all good, but the really over the horizon, the interesting stuff is here when we look at the impact of the mobile sector on GDP. The numbers spell out that we're talking about a $65 billion uplift by 2023. 23 is a very short distance away. This is a sense of the immediacy of mobile in our economy and in our communities. The estimates around $2500 per person, so this is a major, major impact. It's any wonder governments are interested if you listen to the economic debate now about our economy bumping along. This sort of uplift is something well worth pursuing. We also asked Deloitte's to take a look at some social issues within our report and, of course, no surprises here really. 94 per cent of people take their phone when they leave home. They call friends and family once a week, 70 per cent feel safer when they've got their device with them. Interesting, 36 per cent said yeah, connectivity was great, 40 per cent said, "It's distracting but annoying" and I think that's probably something we've all experienced. Overwhelmingly, it's something that's in our life, we use it well and it does good things for us with some challenges along the way. So, in the 5G space what are you going to get, what does it mean? Well, it will be more responsive, it will connect a lot more things, it will be faster, latency will be lower, its responsiveness will be very good. Probably summarised in three use cases. One of the difficulties about talking about a generation of technology as it's just being evolved is there's not a lot of rubber on the road here. A lot of these are conceptual theoretical use cases that have been described, but people aren't doing them yet or if they are, they're only just starting to. Enhanced mobile broadband will be the first cab on the rank, though, and that's going to play out mostly in our entertainment space, but it also wraps itself around augmented reality, virtual reality and so on and have some profound implications. I'm showing my age, because I saw a presentation the other day about e-gaming and I couldn't get my head around masses of people going into a stadium to look at a stage at people on computers playing e-games. I don't know, that's probably just beyond me, but they like it and it's a huge industry.

JULIE McCROSSIN: Can I just say, they're advocating for it to be an Olympic sport.

CHRIS ALTHAUS: Absolutely. I quite like synchronised swimming! But it's this movement that's happening now... well, it's breaking new barriers, forging into new applications. We're also getting to mission critical and massive machine to machine or Internet of things applications which are going to really change the way we live, and technology will be central. So, the key things are, there's a transformative time coming. I think Andy said it well. We'll never change at a slower pace than we are today. Again, it's going to speed up. Industry 4.0 will lead that, and I think the interesting thing is that the word "industry" is now in the conversation. We used to talk about mobiles in many different ways, but it is now very much an industrial Internet application, as well which will drive a great many things. Partnerships will be key, including with government and, of course, that from an AMTA point of view is where we're putting a lot of effort and I'll come to that again just in a minute. So, you're getting the picture of this rapid change and it's going to -and I'll whiz through a couple of slides here -it will be absolutely in our homes and cities. I went to the local government general assembly earlier this year and councillor after councillor from all parts of Australia stood up and lamented two things. One, they were broke. Two, they wanted every opportunity to increase productivity in how they dealt with their responsibilities. Roads, rates and rubbish they said to me, we've got to do that smarter. Technology will be a central theme there. Similarly, in transport and logistics, smart cities, the need for efficiency and productivity will be at all levels including for us as individuals. It will happen in farms, it will happen in factories and we're used to seeing it in factories, but farms are a different story, but that is just such a booming sector. In the UK they've recently announced their first hands-free hectare. This is a hectare of land that is being productive in producing a crop without human intervention from start to finish. Now, that's an extreme example, but there's no question that many aspects of agriculture will be looking for productivity uplift here. How we educate and train people -same deal. Technology involved in classrooms, et cetera right now and universities, remote courses are all part of a modern education sector and technology will be central. Just a sidebar on that, you see a lot of debate about mental health of young people, overuse of Smartphones in the school place and among other places and we as an industry take an active view of this and look to work with partners on what solutions might look like, because it's really, really important. However, some governments around are looking at what I describe as a lazy policy option. You can't ban technology and hope that the problem goes away. It's not going to work. It hasn't worked in the past; it won't work if you try it again. It's not the answer, but there's a problem there that needs one, so we should all work together on that. Health care is something that Andy mentioned, and it will be a dominant. Whether it's remote or whether it's just the precision of robotics in health care. Whether it's wearables. I personally look forward to the day if I'm running down the street and my wearable device says, "Stop running, you might blow a fuse, go to the doctor, something's going wrong", that all sounds quite helpful to me. But it's going to be, again, integrated at all levels from the extreme remote surgery. This year in 2019 Mobile World Congress there was an operation conducted on stage by a surgeon and the patient wasn't there. He was in a hospital on the other side of the city. So, it gives you a sense of the Jetson's moment in all sense of sectors. Entertainment will be huge. We will be entertained and entertained and entertained. The bottom slide with the SKAT Batman suit comes with the caption "You can be Batman", very immersive, virtual reality and augmented reality will really, really take you a long way. I've got to speed up. Can you buy a device? Yes, you can. A lot of them, not a great deal, but they're more and more coming. It's a standard sort of evolutionary path that starts slow and builds up. For us as an industry, we've only got three things to do to handle the volume of data. We buy more spectrum, we build more network and we use the latest technology and, of course, we do all three. It's costly, but you've got no choice. From a spectrum point of view, 5G is up and running. We have three mid-band spectrum, 26-millimetre wave will come in 2020 and that will bring a change in network architecture. We will need denser networks, we'll need macro cells, but we'll also need layers of smaller cells and that's part of the network of the future. That brings with it, though, concern. There are a whole bunch of people who are looking at this change and it's pretty rapid and it's pretty tetchy and they're saying, "Hang on a second, I'm not sure I'm comfortable with this. What can you tell me that's going to make me feel comfortable with what you're about to do in my community? " I've heard you using millimetre wave and I know that's extremely powerful. No, it's not, it's high frequency, it's not high power, so you've got to separate the highs in that debate. Look, we've been researching mobile technology since the very get-go, so there are decades and decades of research and the peak health agencies around the world haven't been able to find a negative health outcome as a result of mobile and we're not alone in the space. When you look at RF, mobile is just another function using radio waves along with a whole heap of other things like television and radio, like micro waves and baby monitors and Wi-Fi routers and garage door openers, airport scanners -these are all using the wave lengths that are in the non-ionising space which are regarded as harmless. Standards recognise that our standards are conservative, so I guess the theme here is 5G is not different. It's new, but it's not really different we're just using different waves and doing mobile applications and services with them. Network architecture will change, no doubt. So, in summary... phew, you'll say, he's going to stop! Convergence -this is the world's busiest slide by the way. Have you got an award for PowerPoint? Convergence is here, it's here to stay and it will be increasing. So, mobile will be seamless in amongst a whole bunch of other stuff and will rely heavily on the fixed environment without doubt. We're heading for this connected community. Network society. We will see this happen in our homes; we'll see it happen in our cities. It will keep us healthy, healthier. It will also be part of how we learn, how we entertain ourselves. Certainly, how we get around, although the much-discussed driverless car autonomous vehicle is a good way off yet. Fear not. But it is being trialled and it will arrive in due course as will platoons of trucks, because that's where productivity gains are possible. Of course, we'll see it in factories, but we'll also see it in an incredibly relevant space for Australia in agriculture and it is a pay day and a pay day that governments will seek and pursue and we've got to get that pay day right and the only way we do it is by having the Gs in play and that will mean the right network architecture, the right spectrum et cetera. If you look at the future, this sort of statement hits home. When you've got billions of people globally with enormous power in their hands via a Smartphone, the potential and the opportunities are limitless. Let me close by saying congratulations Teresa, Deidre, boards of ACCAN past and present. I was in the room when ACCAN was formed. Long debate, sometimes heated, but the outcome's been very successful. Credit to you Teresa, you were there at the get-go and well done on a new decade. (APPLAUSE)

JULIE McCROSSIN: Thank you so much. I'm sorry there's no time for questions, but he was here when it was born. Do you want to give him another clap? (APPLAUSE)