Network Transformation

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Thank you to Comms Day for inviting me to speak today, and a very happy birthday for the last 20 years.

Today I wanted to talk to you a little bit about what Mr Turnbull mentioned which is - now we're focusing today on building pipes, but what's next. A little bit about what's the last 20 years or maybe the last 10 years been about, and then focus on what the next 10 years is going to be like.

Going back a few years ago, just before I arrived in Silicon Valley, there was a Mobile World Congress talk put on by Google. One of the guys spoke about how there are three big major super trends happening in the industry at once, which is very unusual. Because normally you only get one big super trend happening at a time, it might be say 3G coming along, or now maybe 5G coming along. Around about 2006 – 2007, there were actually three big super trends happening. Compute, you know, Moore's Law - more computing power doubling every year. Cloud was happening around about that time and Connectivity of course with the mobile operators rolling out more plumbing, high speed mobile networks, high speed data networks and more broadband coming along.

What we saw then was a major initiative from Apple. Steve Jobs - bless his soul - saw these trends coming and wanted to do something about it. He decided to create the iPhone and the iPhone was the joining together of all of those bits and pieces into a - if you like a customer experience that was borne out by the iPhone.

Remember: we all used to have the Nokia phones, we used to go through the menu structure and we used to always complain when we swapped one phone to another, from a Nokia phone to a Sony Ericsson phone or whichever phone. We had to relearn the menu structure.

What Steve Jobs did was turn that into an icon based graphical interface, which is now today a much better experience. But perhaps the biggest thing, the biggest change that he introduced to all of us was the user experience of applications. What he did was he created the App Store, and what that does is it means that instead of having one or two applications that we can choose from, we've got thousands of developers that are working on applications that we can all use going forward.

So the operators role in this, the Telecom operators role in all of this obviously has been to get the products out there, to get the plumbing out there, the connectivity. So that we can connect between the applications and the Clouds and the mobile devices. But what does that mean, what has actually happened there?

So in the old world, the world before the App Store, what we used to do as operators, is we used to work with the application companies and deal with those applications behind our garden walls. We'd spend 12 months specifying what the requirements were, and 12 months building those applications and 12 months testing those applications, so that we knew that they worked. So that they were seamless end to end, so that things like battery life, things like connectivity always worked for our users, on our networks.

In the new world now, what's happened is we've got the application companies with the androids and the Apple app stores, we've got the networks and the Clouds, and we've got the devices, they're all three separate things. So we need to work better in the industry to make sure we build the end to end experience back in. So this is the end result, when you don't have end to end experience. Things like when you want to use that video on the train on the way to work, it sometimes doesn't work.

When I was working with Ericsson in Silicon Valley, actually we built a tool that allowed you to test your application and see what was happening on the network at the same time. So that you could actually create a "network aware application" or an "application aware network" by making these two things work together. And by working with that, working with many application companies actually we could optimise the user experience end to end. And working with one of the largest streaming video companies on the globe, we were able to optimise the battery performance on an iPhone by 70 per cent. So - network aware applications mean a much better user experience when you bring the networks and applications together.

So what does this mean for the future, how do we move from building pipes, building the 4G coverage to something new, something beyond that. The networks of the future need to be - they need to be always there. Ubiquitous 4G coverage for all Australians is absolutely essential and we continue to build that out, that's our number one priority. But also our networks need to become simple and scalable, it needs to be easy for the application companies to use the networks so that they can discover the relevant bits and pieces in the network that build back that end to end user experience. The networks need to be open and programmable, you need to join these things together, you need to have an API that speaks to the network so the application companies can use to make their applications more easier to use for the users and a more pleasant experience.

Obviously as we do that, as we open up the networks to be more programmable, to join together this experience between the application companies, devices and network, then we need to make sure that they're secure. We don't want to just have open networks and have security holes open up, so its very important to build in security, and they need to be real time.

So an example of real time might be at the moment on your device, the device will naturally choose Wi-Fi where Wi-Fi is available, but that's not always the best experience. So the networks need to determine in real time what does the performance look like on Wi-Fi versus LTE and put you on to the network that's the most appropriate for what you're doing at the time. That might not be appropriate for reading emails, but it might be very appropriate when you're downloading or streaming a video, that you might want to be on 4G instead of Wi-Fi.

So that's what we think the network of the future looks like, but what this requires is a mindset change. This is not just about pipes, this is not just about technology, this is about how we think about how we connect these things together, this is about re-skilling our people. So we've got the right people to deliver the skills within the companies that deliver that new experience, getting them together.

We need to move from monolithic systems to software applications, we need to move from static and slow and complex networks to flexible simple and quick networks. We need to move from closed telco standards and systems to open systems and open technologies. We need to move from telco control to programmable networks, where the enterprise companies and the application companies can program the network. They can use their own slice of the network and deliver the end to end experience that they want of the network, not just where everybody links to the network.

We need to move from our current project waterfall process, that step by step processes to "Fail Fast", using the Silicon Valley way to make sure we try things out. And if it works use it, if it doesn't work than fail it,

And we need to move from a telecom engineers to software engineers. So there is a mindset change, there's a re-skilling that we need in the industry. We need to work together with the education facilities and make sure we've got that in place.

So, then how do we get there? Of course 4G network everywhere is very important, ubiquitous coverage is where we are today, that's what we're talking about, the end to end roll out that we talk about with the mobile networks. That's fundamentally important, you need to be able to use broadband when you're sitting in your lounge room chair, beyond days of talking on the phone and walking over to the window just don't exist anymore. So we do need to make sure we've got ubiquitous coverage everywhere.

Virtualisation and Cloud, might be buzz words that you hear around the industry, but what that means is that we can move to lower cost cheaper hardware in our networks, and we can move to applications in the Cloud that are much more flexible, easier to get to, and much more accessible from the enterprise companies and applications companies, for anyone to connect to the network. Software design networking is the ability to actually connect from the Cloud to the network capability. It's turning the network into a programmable network, so your connectivity is programmable by the people who run the Cloud, and the people who have those applications in their Cloud's.

Intelligent networks are using networking analytics in the network to understand what the customer is doing at the time and apply the best use of experience for the customer. And lastly we need to re-skill our workforce, as I said we need to work with industry, we need to work with the education facilities to re-skill our people.

One example of how this will come together, that we actually worked on when I was located over in Silicon Valley. There's a company called Incoming Media, they're an Australian company doing

well in San Francisco. They're a video recommendation service, and their proposition is actually to work together with the network providers, they work with the likes of AT&T and Verizon. They've got a video recommendation service that allows you to decide whether you want to stream a video or download videos overnight, so you can watch it on the train on the way to work. And they fundamentally believe that of course there are times when the streaming video and even the download - downloading the video is not so good because the networks not always available at the time people want to do that, where they want to do it.

They believe that in joining together the network with their video recommendation service, becoming “network aware”, they’re able to provide a vastly superior video delivery service to their customers and it's starting to work. As I said trialling and implementing services that offer a far superior service, just by the fact that now the application knows what the networks doing, and it can work out when to stream and when to download.

So for me, that's it, that's a little bit of a look at where the future might head to, the networks of the future, beyond just the pipes & plumbing.