Demystifying 5G

Speaker:

Erik Ekudden, Chief Technology Officer, Ericsson

Interviewer:

David Kirkpatrick, Techonomy

(Transcription by RA Fisher Ink)

Kirkpatrick: So this next thing is a two-part session where I'm going to interview Erik and then he's going to stay up here and be part of a panel we're going to have on connecting the world. But we're going to start out talking about 5G, which Erik is one of the world's leading experts on. He's the chief technology officer at Ericsson, which is a global telecomm equipment company, and one of the real inventors of the mobile infrastructure that we use every day, and they've been very aggressively working to take it to the next level, which is 5G.

So Erik, tell me, when we ordinary people think about what 5G means, what should we be thinking about?

Ekudden: Well, 3G was about data and web, 4G really about video. 5G is about enabling this instant society.

Kirkpatrick: Wow.

Ekudden: Yes, that's big words. Big words. But you could think about it also in the crossroads of really great speeds, five gigabit per second paired with five millisecond latency, what can you do with that? And then of course it's both for consumers as well as enterprises. So on the consumer side, I think we all realize that more speeds is good but with a low latency you can create great user experience, much better than we have today. Move some of the processing from your smartphone into the network and lower the cost, increase the battery life on the device, and all that. About a billion five-year subscriptions in only five years' time on the consumer side.

Kirkpatrick: Well, that's your projection.

Ekudden: Yes, that's our projection, five years out.

Kirkpatrick: A billion from now.

Ekudden: A billion five-year subscriptions in only five years' time.

Kirkpatrick: Okay. Well, there's none yet, right?

Ekudden: No, there's none yet. Well, soon.

Kirkpatrick: But very soon.

Ekudden: Very soon.

Kirkpatrick: How soon will we start seeing it?

Ekudden: Well, this year, 2018.

Kirkpatrick: By the end of the year.

Ekudden: Certainly here in the U.S., yes, by the end of 2018.

Kirkpatrick: But it has a number of other qualities that are quite interesting. First of all, talk about the security and privacy thing, because I know that's very interesting as a differentiator. I mean, you talk about the internet we have today and the internet that we could have in a 5G world. Explain that.

Ekudden: Yes, well, first thing is to think about 5G not as this consumer thing. So it's great what I said but it's really about those enterprises, industries that are using 5G as a tool for changing everything from business processes to how they buy services, cloud-based services, network-based services in a completely new way. And then it's actually true, exactly what you said, that 5G also enables better security—better security for IoT, all the way from endpoint devices through the networks all the way to the backend servers. And anything built. This is not security that we are bolting on afterwards from more of a traditional on premise or IT way of working. This actually comes with a standard, it comes with the products, and it's rolled out on a global basis. So security, high performance, and also the ability to separate flows, so separate one industry from another and still share the same infrastructure, all of these things, they are sort of built into 5G from the get-go.

Kirkpatrick: So in other words, we might even be able to have like a shipping sort of intranet, or a retail intranet, in effect, on 5G that are truly autonomous sort of ecosystems that we couldn't have now, is that what you're saying?

Ekudden: Well, they would certainly coexist on the infrastructure, share the infrastructure to lower the costs, make it more efficient to roll out these specific services. So that's kind of in-built again.

Kirkpatrick: But the security would be differentiated somehow?

Ekudden: And the security would be differentiated and it would be anchored all the way into the devices, harder routes of trust and ways that actually would make it secure end to end.

Kirkpatrick: Well, this makes a huge contrast to the internet we have today, which basically has no privacy and no security built in. So basically, when we have an internet that is built on 5G, which is what we will have because ultimately everything's going to be wireless, and 5G also, interestingly, will replace a lot of the last mile stuff. So basically, would you say it's correct to say, let's say in 15 years, or certainly 10—whatever the number is, you tell me—pretty much the entire internet will probably be 5G. Is that a reasonable expectation?

Ekudden: Well, that's a reasonable expectation. I think if you go five years out, we're only talking about maybe 20 percent of the world will be covered by 5G. Actually, today you have around 25 percent of the world covered by 4G. So it means a more rapid buildout of 5G than even 4G, which has kind of exploded. So yes, you can assume that in the 10-year timeframe, then of course you will have a combination of 5G and 4G, where 5G will be a very big part.

Kirkpatrick: So today, I have my 4G phone, my LTE phone, but I also have fiber at the home and that's a different kind of internet. In effect, our home internet will also be in most cases 5G, for a variety of reasons which we don't need to go into now, but wouldn't you say that's reasonable?

Ekudden: Well, I think that's to stretch it a little bit because of course there will be multiple technologies to reach homes and fixed places always have a special need that can be served with non-5G technologies. But 5G is more than just this access. 5G is this core network that handles all the services. 5G is also these network slicing capabilities, it's all the things that has to do with security that you mentioned and that would certainly reach the homes.

Kirkpatrick: So it would be at the high end, like—well, I mean, Verizon at Techonomy in November, Lowell McAdam talked about how they intend to use 5G more or less to replace fiber in the last mile over time. But that might be more of the developed world scenario or whatever, okay.

Ekudden: Well, it's actually also in emerging markets but it's not the whole market. It's not everywhere. So I think it's a good complement and it's starting to be feasible. It wasn't that way in previous generations. Technology or capacity wasn't there to serve the fixed use cases. Now it is, at a reasonable cost, and I think that's why Verizon is really pushing ahead with that.

Kirkpatrick: So you think that the lives that we lead in a digital society will essentially be different because of the privacy and security that can be built in at the hardware level when we go to a 5G ecosystem?

Ekudden: Well, I think these are big questions and I wouldn't claim that the infrastructure that we are putting in place—4G today and 5G with in-built security and handling privacy and so forth—will solve all the issues. But it will actually have as a foundation, the network platform that we're building around the world, it will have the security and privacy by design and I think that's a big difference. And one way to think of it is of course that the internet as we've known it so far has been a fantastic innovation journey and it has really brought all the great

applications on top. But the infrastructure that we're now coming back to, building coverage and building good capacity and performance around the world, it is a fundamental part of ensuring security and privacy that also respects local regulation, also respects national borders, and of course 5G is well-equipped to handle that.

Kirkpatrick: At the moment, we're bolting it on to the old ecosystem—

Ekudden: Instead of bolting it onto what's available, and in most case, endpoints are not secure in today's internet, unfortunately.

Kirkpatrick: Yes. I know one of the things that's very different and that Ericsson has experienced is that the industrial response to this shift in mobile standards is different from the ones in the past, the 3G and 4G. Talk about that.

Ekudden: Well, it comes back a little bit to these non-consumer use cases and I think having lived through and built the technologies from 2G, 3G, 4G, we were consumer-focused in the requirements in terms of bringing the technology to a global base and the smartphones and everything we've come to expect of mobile. That's there so we'll continue with that. But we added all these requirements that really made it a suitable platform for any enterprise.

In fact, we have sort of commissioned and worked with studies on how much of industry enterprise digitalization that can be addressed with the kind of infrastructure that 5G has. And it's a very big part, actually. We've gone through the 10 biggest industries and seen what kind of cost reductions, what kind of efficiency in automation gains by just leveraging this 5G platform that you could get. And that's I think the beauty of 5G. We used to sort of wait for the first smartphone, that was the launch of 3G or 4G. Now we get a lot of inbound interest from the enterprises and industries coming to us and asking, when can we start to use 5G because we want to use it for smart manufacturing automation, we want to use it for smart transportation, cities, and of course tracking and tracing. Those are big application areas where we are getting a lot of inbound interest—

Kirkpatrick: Which was not at all the case with 4G?

Ekudden: It was not the case with 4G, partly because it was so consumer-centric. But I would say also because the technology was not really there when it came to some of the performance requirements, in terms of the resilience, reliability, in terms of availability, and of course speeds and latency are really critical in this as well.

Kirkpatrick: So when we think about why 5G has gotten industry excited—and I know you have like 30 test things with all different industries around the world, which you never did before in any of these transitions—but is it really, in effect to summarize, because of the internet of things and the way 5G will be able to facilitate a more robust emergence into that kind of a world?

Ekudden: Yes, it is really this combination of 5G and IoT, I think you put it very well. IoT really starts today, obviously, and IoT is more than access. IoT is really about this core network; the things that actually handle all the millions and billions of devices. It's about those things that you don't do on the access. But it's also about the fantastic available, low-cost access around the world. That's why the LTE systems are now being upgraded, software upgrades to existing infrastructure to handle what you call massive IoT or massive machine-type communication. That's really the first step into 5G. And then you make further upgrades to the access, getting access to new spectrum, mid-bands and high bands, that would give you higher capacity, obviously, also better performance in terms of latency. So the IoT journey really starts now by upgrading the current 4G system.

Kirkpatrick: And I know 5G allows the network to be sort of intelligent with regard to what the end nodes are so it cannot devote excess bandwidth to an agricultural sensor but it can give sufficient bandwidth to a video receiver or whatever.

Ekudden: Yes.

Kirkpatrick: Quickly, one last question before we bring the panel up to join us and talk about bringing the world online. The ZTE ruling that the U.S. government recently made was a big, big change in U.S. government policy. They're one of your biggest competitors. How does that change the landscape for Ericsson?

Ekudden: Well, I wouldn't say they are one of the biggest. What a question.

Kirkpatrick: Sorry.

[LAUGHTER]

Ekudden: So Ericsson, we are a big company in our industry, leading in technology, but we are from a country on the kind of outskirts of Europe so it's always been very export-heavy and of course regulatory compliance and export compliance is core to what we do so of course it's a given. I wouldn't say that the current situation with ZTE has a major impact on us, actually.

Kirkpatrick: Okay, good. I'm going to shift one seat over, you stay where you are. Could we get the other two panelists to join us up here? Thank you so much, Erik, that was excellent.