Danielle Rios: [00:00] 6G is going to be the first G with AI in the room. And so what do you think operators are going to be able to do with AI that they could not do before?

Stefan Pongratz: [00:08] I would say our base case is that 6G is going to be evolutionary more so than revolutionary. But thanks to AI, the likelihood that it will be more than just another G is greater now than it was with any other G.

Announcer: [00:26] This is “Telco in 20,” a podcast that helps telco execs achieve a competitive advantage with AI and the public cloud. It is hosted by Danielle Rios, also known as DR. Today we're talking to Stefan Pongratz, Vice President of RAN and Telecom CapEx Research at Dell'Oro Group.

Danielle Rios: [00:45] Hi guys, I'm DR. To G, or not to G? That is the question. It's the biggest call in the industry. Not including spectrum, operators have spent $2.5 trillion on their networks over the last 15 years. Every G arrives with big promises. On 4G and 5G, operators were looking for new revenue growth. What they got was more capacity and a lower cost per bit with the same revenue line. Now 6G is coming into view, but this time something's different. AI is in the room and it's not just changing how networks run, it's changing who uses them. Agents and machines are becoming network customers and traffic is about to change shape. The last time that happened, the smartphone, and it rewrote every network plan on the planet. Now, because of AI, the odds that the next G is more than just another G are higher than they've ever been.

[01:45] Today I'm talking with Stefan Pongratz, Vice President of RAN and Telecom CapEx Research at Dell'Oro Group. He's tracked network span through 16 years and three G cycles. We dig into what it actually costs to move to a new generation, the signals that tell operators when it's time to make the leap and why AI might make this G different from every G before it. So let's take 20. Stefan Pongratz is a mobile infrastructure analyst at Dell'Oro Group. Hi Stefan. Welcome to “Telco in 20.”

Stefan Pongratz: [02:19] Hi DR. Thank you so much for having me.

Danielle Rios: [02:21] I am super excited to learn a lot about how mobile network operators decide to move to the next G. I've never really talked about this on the podcast and I don't know that

much about it, but I think we're right in that moment where the 6G noise is starting to get a little bit louder. And as we go into MWC 2027, I can only imagine it's going to be a bigger topic obviously than last year as operators start to think about this decision. And so you've been at Dell'Oro Group for 16 years watching telcos around the world decide when they're going to move, if they're going to move and what they're going to do about the next G. And so how many network generations have you helped operators decide?

Stefan Pongratz: [03:02] You're right. I started in 2010 when I came on, 3G was dominating. We were just in that transition from the 3G phone to smartphone and 3G to 4G. So I was fortunate enough to live through the 4G era, saw the first half of 5G. Now we're talking about 6G and as I look back and review all the learnings that we've gathered over the past couple of Gs here, one common theme is that the expectations are always very big at first and there's always a little bit of a disconnect between expectations and what actually unfolds, especially from a use case perspective. But our base case is that 6G is going to be evolutionary more so than revolutionary, still of course faster, better, more efficient. But what I would say, one difference with this G relative to all the other Gs is that it is somewhat uncharted territories here when it comes to understanding how AI can impact the broader mobile network vision. And that makes it all the more exciting.

Danielle Rios: [03:56] And do you think that when we moved to 3G, that was really the explosion of usable data on the handset? And so people have this weird expectation of remember that time, that massive data growth, revenue growth went with it. And so then every subsequent G, people are like, why can't we have that again? Do you think that's what the diction comes from?

Stefan Pongratz: [04:17] That is probably part of the role. And I say, well, we are more rational now. Expectations came down because we remember some of the 5G expectations and where we fell short and therefore we should be more rational. And I'm not sure necessarily that it is an overly bad thing to have a little bit of a hype and build momentum, but if it's too far detached and it's not communicated clearly, there definitely can be disappointments.

Danielle Rios: [04:40] Yeah, let's talk numbers. Telco spend the majority of their CapEx budget on the network. I think that's a well-known

fact. What does it actually cost an operator to move to a next G, like the one that we're about to see with 6G?

Stefan Pongratz: [04:51] Yeah, it's a good question. And I think my main point I want to get across is that it's extremely expensive to launch another G, but it's also extremely expensive to not launch another G. This is a very capital intense industry. Operators spend a lot of money on CapEx, net profit margins are in the 10% range. Over the past 15 years, you add it up, the operators spend roughly $2.5 trillion on wireless CapEx. That actually excludes the spectrum piece itself.

Danielle Rios: [05:20] Wow.

Stefan Pongratz: [05:20] So that's 150 to $170 billion globally annually. That averages about 16 to 17% of the approximately $1.1 trillion in revenue. That's been fairly flat.

Danielle Rios: [05:32] It's actually like 15% of each operator's revenue. Is that pretty consistent?

Stefan Pongratz: [05:36] Yeah, pretty consistent. That's an average. It tends to go up a little bit when it is some technology buildups in the most intense rollout phase, and then it's going to come down depending on the state of the network and other factors. That's where we are right now. And now the overall CapEx in general is roughly 20% below. So you're more in the capital intensity, the CapEx revenue ratio is more in the 13 to 14% range. And that's proportional when you look at the mobile infrastructure RAN revenue trends as well. And that's partly because, especially in 5G, there was a very large capacity boost that we got from deploying 5G in the upper mid-band. So the operators now are in a fairly good position to take a little bit of a breather. But even when they take a breather, they're still spending billions of dollars.

[06:19] And that's my point is that it's not a binary choice between spend on 6G and don't spend on 6G. The alternative basically to spending money on the next G is not spending zero, it is spending money on an old G. Sometimes we'll get lost in the conversation because we already see it as, “Well, how can you justify investing in another G when 5G did not produce any incremental revenue?” It's true, 4G or 5G did not produce any incremental revenue, but at the end of the day, if traffic keeps compounding while revenue doesn't, the network essentially

has to become progressively cheaper when it comes to delivering each bit. And so a new generation doesn't necessarily need new revenue streams to produce an economic return.

[06:57] I would say one difference as I'm speaking with operators now versus let's say one or two years ago with 5G where I think some of the things got detached was that the ratio between what's paying the bills today and what's paying the bills tomorrow, that was perhaps off and the expectations were too much on what's paying the bills tomorrow. I feel like right now operators understand the business case needs to stand on its own, focus more on what's paying the bills today. Of course, extremely important to keep searching for something that can grow at the top line, but the expected value that will materialize should be considerably lower.

Danielle Rios: [07:30] Well, let's talk about that. When you're in the boardroom with the executives and they're making this decision to green light the next generation, what information are they using to make this decision? Is it purely like we're at capacity? Is it our competitor moved first? Is it a vendor is really pushing us and giving us a good deal so we should go ahead and do it? First mover advantage maybe. What are the axes of the chart that they're considering when they decide to go ahead and do this?

Stefan Pongratz: [08:01] That's a good question. I think it's a lot of the things you mentioned. The first part is that you do have to decide, do you want to play the game or do you not want to play it? The rules of the games are fairly known at this point and one should not expect the rules to change significantly just because we're moving to a new G. So once you know the game that this is a slow growth industry, very high barriers to entry, lot of CapEx and net profit margins in the 10% range, then you decide. And if you decide to play the game, you got to look at some of the end user fundamentals. Mobile data traffic, it is slowing, but it is still growing. It's not growing at the exponential rate that we were in the future phone to smartphone transition and in the early days of 5G, but it's growing, I would say 20% per year still over the past two years, fairly stable. And the midpoint of baseline projection is 17% of annual growth of the next five years.

[08:43] So right now they're in a pretty good position. They have spare capacity, so they can take a little bit of a breather, but coming end of the decade, at some point if this continues, they're going to run out. And then at that point, if your decision

was to play, you have to ask yourself, “What are the options?” Okay, I can add capacity, I can throttle my users or I can basically lose market share to someone with a better network. So I think it's the return of 6G relative to the return of not deploying 6G. Of course, once you decide to play and once you earn that, you're going to make decisions based on some of the things you mentioned. Capacity and the state of the network is extremely important, obviously. Some of the operators are going to be early adopters regardless of the state of the network. There's some in South Korea and China and parts of India, they're going to move fast.

Danielle Rios: [09:23] Yeah, first.

Stefan Pongratz: [09:24] Yeah, yeah. But the competitive dynamics is extremely important and I would say the technology maturity as well, that's going to play a role. And I think in this case with 6G, because like I said, it is the first time we might run into significant changes from an end user behavior perspective, I would say that end user changes could be a driving force as well. So I'm talking here about the mix between machines, agents and humans and how they change not just the traffic volumes, but also the traffic patterns.

Danielle Rios: [09:50] Yeah. It's not just humans watching movies anymore, it's agents executing.

Stefan Pongratz: [09:54] Yeah, not just about capacity. We see that some of them would just want to modernize their network, have a more agile network so they can dimension it for significant changes and be ready. So I think you can play around with the timing, 3GPP standard is ready 2029. We expect commercial deployments starting in that timeframe, 2029, 2030. How fast you go at that point will depend on some of those factors.

Danielle Rios: [10:15] Yeah. And so why does Asia move faster? Is it just their networks are more full and they reach capacity before the rest of us? Or is it they're innovative or is it first mover advantage? And so my basic question here is once one of them upgrades in your country, one of your competitors moves, does that really force other people's hands and now everyone's forced to do it?

Stefan Pongratz: [10:37] Yeah, those are two different questions, but the first one, why specifically Asia? I mean, yeah, actually that is

probably a podcast in itself to answer why. But the second question then, if someone moves-

Danielle Rios: [10:47] If one operator moves, does it force your hand?

Stefan Pongratz: [10:49] Yes and no. Or yes, but maybe not immediately and maybe. There most certainly are cases. For example, we have the European 4G, we had Vodafone Spring, they got their hands on some money and that kind of changed the game, the competitive dynamics in Europe. We have examples in the US with T-Mobile and India, Reliance Jio 5G. So clearly that's very important. But my caveat here is that some of them are going to be more risk-takers and being second is not necessarily a bad thing, but I think being second is a bad thing once the leader demonstrates an improved user experience or that they can realize better cost per bit or more agility or AI related capabilities or that they're seeing some market share gains. That could change the competitive dynamic.

[11:25] And I think the same thing here, you have the early adopters, but then you have the early majority, late majority type of operator. And I think some of them will wait and assess, but once it shows tangible improvements in some of those areas, I think yeah, it could start slowly, but then I expect it with other Gs to accelerate very quickly. But in general, you're right, the operators tend to behave maybe a little bit like a herd, and once competitive differentiation becomes visible, then-

Danielle Rios: [11:47] It really starts the clock moving.

Stefan Pongratz: [11:48] Yeah.

Danielle Rios: [11:49] I find that operators, no one wants to be the first to experiment with new ideas like that. It's going to have to take a very brave operator to skip a G. So you mentioned this, 6G is going to be the first G with AI in the room. First time we're going to have AI either part of the decision or new use cases. And so what do you think operators are going to be able to do with AI that they could not do before?

Stefan Pongratz: [12:11] This is a very good question. And the way I think about it is I'm stealing the slogan from some of the suppliers here, but basically we have AI for networks and networks for AI. Those are the two high level ways to think about AI. But for me as an analyst, I always think in terms of probabilities. When it comes

to the operators using AI to help them become more efficient, obviously still early days with some of them, but in general, the operator's always been on a quest to do more with less. Automation is a very important piece. If you look at the TM Forum, like the road to networks level 4.

Danielle Rios: [12:42] The autonomous networks.

Stefan Pongratz: [12:43] Yeah, yeah. So that is important. And we're still, of course, learning in terms of some of the efficiency gains, but I feel like we have some visibility. We're going to be off, but we're not going to be off that significantly. When it comes to the other one in terms of how AI from an end user perspective can impact what the networks will look like, that one is the one I feel like the visibility is simply not as good.

Danielle Rios: [13:04] Yeah, I agree.

Stefan Pongratz: [13:04] Because right now, for example, we look at total mobile data traffic volumes, AI is not necessarily moving the needle that much. But as we dive further into AI, the ratio between humans, AI agents and machines will evolve. When I joined Dell'Oro back in 2010, Ericsson had just launched the $50 billion machine IOT vision. It was laughed at back then in 2008, 2009. But now I feel that in the conversations it's coming back. We're saying, “Oh, you know what? Maybe Ericsson wasn't so wrong. They were just-”

Danielle Rios: [13:35] Too early.

Stefan Pongratz: [13:38] Ahead of the time. And now it's really the first time that some of the operators are talking about this network vision that basically you do need to start preparing for that these machines can comprise a greater share over the overall traffic and the implications that we'll have, like I said, not just on volumes, but also the traffic patterns throughout the days because they're not going to sleep at night, et cetera. And that is something that I think could have significant impact on the overall network.

Danielle Rios: [14:02] Yeah. I run a software company and my coders have their agents running overnight. It's a very big thing that we do. We mostly work remotely, work from home, so we're not using the mobile networks. But even when I'm on the go, I'm building little apps and I'm sending stuff over the network. I'm saying, “Hey, go do some coding for me and deploy it.” I'm using data. It

used to be for email. Or maybe go look at Instagram and now I'm kicking off a Perplexity build to go build an app and deploy it. And so my own patterns have dramatically changed. So it'll be really interesting. But I think the big takeaway here is you really think that the mobile operators should be focusing on making their networks more efficient and maybe applying AI to those concepts rather than looking for the next big use case to generate more revenue.

Stefan Pongratz: [14:47] Yeah. I mean, I think it can impact both. It is kind of like you know what you can control and one you don't know that you can control.

Danielle Rios: [14:52] Exactly.

Stefan Pongratz: [14:54] They know what they can control, so they need to focus on that. Then of course you need to also prepare for things that can change. And that's the piece that actually a lot of people are getting excited about is that this is really the first time we're going through a major transformation in society and a major change, and no one actually really knows what the world will look like five years or 10 years from now.

Danielle Rios: [15:12] Exactly.

Stefan Pongratz: [15:12] I think also AI can change what is sold as well. So operators, they used to sell bits and now that would impact how their focus could shift towards more token and outcomes. But putting it all together, I would say we operate in probability. So our base case is still that 6G is evolutionary and just another G leveraging the existing investments, the macro grid as much as possible. But I would end with thanks to AI, the likelihood that it will be more than just another G is greater now than it was with any other G.

Danielle Rios: [15:40] Yeah, pretty exciting. Well, you're an analyst and I also recently found out that you're actually a very good pickleball player. In fact, I may not be the best pickleball player in telco, it might be you. I know it's not your nature and I know it's not your culture, but just to brag on you a little bit, you've won gold at a national tournament in the United States in singles, an incredible feat. But given your analyst background, in this sport, we're saddled by the DUPR algorithm, right? It's a machine learning algorithm that rates all the players. And so from your analyst hat, what do you think of the DUPR algorithm?

Stefan Pongratz: [16:15] Oh, that is a curveball. I mean, it's not perfect. I hear a lot of people complain about it. I would say over time, if you feed it a lot of data, I think it's hard to come up with something better. The one thing I know that we had a lot of conversations on was about points.

Danielle Rios: [16:29] The DUPR forecast.

Stefan Pongratz: [16:30] Yeah, that one I'm not so sure. You could actually beat someone and DUPR goes down because you didn't beat them with enough delta.

Danielle Rios: [16:37] You didn't crush them hard enough and your DUPR goes down.

Stefan Pongratz: [16:40] Yeah. Yeah. But when I look up the people I play with, I can't argue because I feel like it's right. I have some people that always beat me and they have a high DUPR, and some people I beat more often and they have slightly lower DUPRs. It actually worked pretty well. Yeah.

Danielle Rios: [16:54] Yeah, it's directionally correct. And so I do agree that over the long arc of time, DUPR is bad for everyone and it's good for everyone. This is the algorithm and this is what we're using. And so it is what it is.

Stefan Pongratz: [17:05] Yeah.

Danielle Rios: [17:06] Well, Stefan, this was an awesome conversation, not only about pickleball, which I could talk about for hours, but also learning about how operators make the move to a new network generation. So thank you so much for coming on the podcast. This was awesome.

Stefan Pongratz: [17:19] Thank you so much for having me.

Danielle Rios: [17:20] Awesome. Stick around. We end each podcast with a “Telco in 20” takeaway. I've got two minutes to tell you something you need to know. Stefan said it. It's extremely expensive to launch a new G and also extremely expensive not to. Either way, it's billions out the door. The only question is what those billions buy you. He walked us through the boardroom analysis, spare capacity, competitive dynamics, technology maturity, subscriber demand. Notice what's not on the list. Revenue. Operators decide where to spend based on

where the network is busy, but the busiest sites aren't always the most profitable ones. So ask a different question. What if you optimized spending from the get-go? Not by traffic, by revenue. I'm talking about generating a live P&L for every cell site ranked by the profit it actually earns across every line of business.

[18:24] Operators pour about 15% of revenue into their networks every year. Shave just one point off that with smarter allocation and you free up $11 billion annually industry-wide. Totogi has a customer in Latin America doing this right now, using the Totogi ontology to rank every site by revenue and letting that decide where to upgrade the network. Want to use AI to optimize your network investment? DM me on LinkedIn or X @TelcoDR and let's talk. You can also catch my keynote and another great party at Telecom TV's AI-Native Telco Forum, September 8th and 9th in Düsseldorf. And come find me at TM Forum's Innovate Americas on October 6th in Dallas. Ryan Alvarez, CEO at VIVA Bolivia will be joining me on stage to talk about how he's using Totogi to create a P&L at the site level to build a more profitable network. Until then, tune into more “Telco in 20” episodes. Like and follow and leave us a five-star review. Don't forget to sign up for my must read email newsletter on TelcoDR.com and check out our awesome YouTube channel and hit that subscribe button. Later nerds.