MWC Barcelona 2022: Cristiano Amon on the Future for Qualcomm at MWC-B 2/22

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Cristiano Amon 00:59
Thank you so much for coming to a press conference. It's really good to see all of you in person here in back in MWC. This is a very important show for mobile industry and all the other industries that mobile is going right now and really excited to see all of you. Before we start, I like to say a few things about what's happening right now, it's a very sad situation I think we'll witness in Ukraine. We always stand on the side of peace. And, our thoughts and prayers are with all of those who are suffering with this. We were happy to be here, we have a lot of good developments in the mobile industry. And we at the same time, we all hope that this gets resolved as fast as possible and reduce the human suffering.

So with that, I wanted to think about continuing to move forward, we have prepared a great press conference for all of you. We have a lot of announcements. Usually for Qualcomm, MWC is where we have a lot of announcements and technology innovations and new developments in the mobile industry. And, what it makes it so special today is that mobile technology is literally going everywhere. We have a lot to cover.

So let's just get started, I want to start with a reminder of where Qualcomm is right now. We always have been focused and being the company that set the pace of innovation in mobile. But now we see this evolution of mobile technology going everywhere. We see this incredible opportunity for the company in what we call the connected intelligent edge. We're presented this new vision, when we have a capital markets day back in November. We're very happy, that it was well understood, well accepted and is truly a great opportunity. When I was talking with many of our carriers, colleagues about Mobile World Congress, it's easy to look of what's happening with our company right now. It's one of the proxies of the opportunity that exists for the mobile industry. Billions of smart devices are going to be connected to the cloud 100% of the time. If they're not connected, they are not as useful. In this is an opportunity not only for connectivity for but for smart processing, artificial intelligence and everything that is going to happen at the edge. We're positioned ourselves as the company that is going to drive innovation at the edge, empower the connected, intelligent edge. And, it's if you look at what's happening in the cloud, the cloud is going at 35% year over year. You can even argue in the long term, you could say maybe that's an unlimited addressable market, as cloud computation continue to grow, but that grow from the data center required those billions of connected in smart devices. It's

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not only connectivity, its connectivity, and low power, smart processing, being connected with the cloud sending data to the cloud in driving this broad transformation that we see with technology across virtually every industry. So, if you believe in the growth of the cloud, then you believe in it growth of Qualcomm, in the mobile industry in the edge.

I think that's a great opportunity. We have identified one of the largest expansions of addressable markets for a company within the next decade. It's a 10 year growth opportunity from what is present now. 100 billion of addressable market to in excess of 700 billion. It's a 7x expansion of addressable market within a decade. We're very excited about the opportunity. And many of the announcements we're going to have for you today is been showing how we continue to make progress into that opportunity. And, what I like about this most been talking with you all about this and Mobile World Congress: this is not only an opportunity for Qualcomm, this is an opportunity for an entire industry. So, that is how we've been executing and I think that's what very unique to our company, is we have been building this one technology roadmap. It's never about building a specific product for a specific opportunity. But it really pushes the boundaries of very key technologies for the edge from connectivity, from computer vision, processing, graphics, machine learning, and be able to scale that technology across all those different segments, from consumer electronics, from audio wearable devices, all the way to high, highly complex autonomous systems in the automotive industry. It's about understanding that as you connect everything to the cloud, you have an incredible opportunity to rethink about the role of the many of those devices. As on-device intelligence become paramount, context for each one of the data to go to the cloud, ability to sense the world around you, in half, not only high performance computation, but low power computation. And that's the DNA that comes from mobile. So with that, let's get going into the press conference. And I will set some of the announcements. And of course, starting with mobile.

Snapdragon is now front and center in the Qualcomm mobile strategy. We had said back in our capital markets day, I'm going to repeat it right now. Our mobile strategy is about premium and high tier Android devices. And Snapdragon 8 brings the best of our technologies, ultra fast connectivity of 5G and Wi-Fi ability to do new things like 8k HDR, video capture, desktop level gaming features on device AI and much more. We even when we talk about creation, you know this ability to capture video in 8k and make everyone a professional photographer, a professional, you know, a broadcaster, if you will. When we announced Snapdragon 8 Gen 1 in our Tech Summit, we tell 8 Gen 1 has the ability to mint NFTs. So, it's really a very powerful platform and it has been the number one setting the bar for performance with the Android.

And, one of the announcements we're going to have today is going to be talking about how Qualcomm is changing into experiences. Snapdragon has been the leading camera in the industry, the highest DXO scores, also being augmented by artificial intelligence. We have been talking about Snapdragon elite gaming as experiences and there are more experiences we're going to talk to you today. As we keep adding to that, you're going to probably see some new names in this page. I won't spend time on all of them today, but we're going to make some announcements about new experiences for Snapdragon 800. Going back to the conversation of being the platform of choice for premium flagship devices within the Android ecosystem. We have a number of flagship launches we have seen one of the highest design traction, a number of new smartphones launches, including I think the latest one

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from Honor, which is the Magic 4 that just got launched right before the press conference. And when you look of how this is positioned, you know from the latest Unpacked, the Galaxy S 22 Plus Galaxy S 22 Ultra. You see how Snapdragon 8 is directly presented to the customers, customers want Snapdragon 8 and you can see that you know how important it is this Snapdragon capabilities and the brand to mean of our customers. And you can also see this across all of the key device makers from Xiaomi, Motorola, OnePlus, Oppo featuring Snapdragon 8 in how they communicate to their customers. And, there's many more to come. We're very excited about the position in the opportunity we have within the Android with Snapdragon.

And with that, I'm going to make the first announcement of our press conference today. We're announcing Snapdragon Connect. It's about time that we start communicating directly to users what is the true connectivity experience is. And, it's not about just having the best 5G with the highest specs, but the ability to simultaneously provide every single element of the connectivity. And if not, Snapdragon Connect is not just about cellular. It's about cellular Wi-Fi. It's about Bluetooth. It's about position location. We all know today that in in our most beloved device, which is our smartphones, we're using in Wi-Fi in 5G all the time. And it's about really creating a unique experience for premium, for high tier users that Snapdragon can do with Snapdragon Connect. From a user standpoint, it makes sure you have the faster, the most responsive, the highest possible coverage. And, battery life is going to be a key part of our technology evolution going forward. And, we will provide the badge of Snapdragon Connect when you have the best of all of those technologies working together from the cellular all the way to the antenna with RF front end design for user experience for performance. The same thing across Wi-Fi and Bluetooth with all those systems working together.

And, part of the announcements today is significant upgrades on those three technologies for Snapdragon Connect. That's what we're going to focus in the connectivity announcement. Today, we're going to be making announcements across Bluetooth, Wi-Fi and cellular technology. And, I will start with Bluetooth and Snapdragon Sound Audio. We're announcing two new platforms today. The Qualcomm S5 Sound Platform and the Qualcomm S3 Sound Platform. Lossless audio. The ability to do stereo recording, ultra low latency gaming audio, with the Snapdragon Sound capability in our third generation active noise cancellation. It is optimized for audio sharing and for broadcasting. Those are two additions to the Qualcomm Snapdragon sound portfolio.

The second announcement is the world's first in fastest Wi-Fi 7. Wi-Fi 7 will provide peak speeds of 5.8 gigabits. It's 60% faster than our previous generation solution with 50% of the power consumption of the prior generation and the direct impact on battery life, sustained low latency on Wi-Fi of sub-2 milliseconds and the ability to provide Wi-Fi 7 now. We're starting to sample that the FastConnect 7800 today for commercial in the second half of 2022. So, very excited about the industry transition from Wi-Fi 6 to Wi-Fi 7 in a lot of opportunities to improve user experience.

And then of course, a significant upgrade of 5G. We're announcing today the latest edition of the Qualcomm 5G modem family, the Snapdragon X 70 5G Modem RF System. A couple things I want to tell you about is the very first 5G modem RF system with an integrated AI processor. AI is coming to connectivity. Qualcomm is providing a 5G AI suites for AI power optimizations, improved speeds, coverage for millimeter wave, and sub-6 links. Also has new capabilities: 10 gigabit 5G. It has the ability

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to provide for X sub-6 carrier aggregation. And it has the ability to provide carrier aggregation on the uplink for 3.5 gigabits per second speed on the uplink, which we demonstrated live in our Tech Summit. We're very excited about the roadmap of 5G. We could not be more excited. The speed that the roadmap of 5G is developing is faster than any other generation of wireless. And, we're very happy to continue to push technology forward with the X70 modem. So, you heard from Qualcomm about how we think of a modem for the devices. But, I would like to take this opportunity to also welcome to stage a great friend and somebody that has been with us driving the roadmap for 5G, the CEO Ericsson Börje to tell you about that from a network's perspective. Welcome, Börje.

Börje Ekholm 16:31
The collaboration between Qualcomm and Ericsson is critical for driving 5G for the future. And, it's driven the leadership between our two companies that actually enable us to use 5G today. But, let me give a couple of examples. So, at Mobile World Congress in 2016, we actually announced a collaboration on 5G technology and early interoperability testing a year later. That's when we committed to accelerating 5G by one year, which today seems like nothing, but at the time, it was a major commitment to launch for deployment 5G in 2019. We also drove 5G specs in the same year in 3GPP. In 2018, we completed the first 5G call on the smartphone. In 2019, commercialization started to kick off and we at Ericsson introduced numerous innovations such as spectrum sharing, 5G carrier aggregation, extended range, 5G millimeter wave for fixed wireless access. And last October, we all we both joined operators China Unicom, Docomo, Telstra team and Verizon informing GSMA 5G Millimeter Wave Accelerator Initiative to further proliferate 5G millimeter wave adoption globally. And, I would say we are today only at the beginning of 5G when we are here to reaffirm our commitment to drive the 5G ecosystem and innovate together, working faster and harder to bring the full potential of 5G technology to the market. We're also encouraged by a number of technology developments. It includes carrier aggregation and that's of course important to extend 5G coverage. And Ericsson has a unique 5G carrier aggregation implementation that we call coverage booster. It's a versatile 5G carrier aggregation software that delivers about 60% wide the Reach for mid-band TDD. And, that is actually proven in the field. And together with Qualcomm, we are now ready for commercial deployment with flagship devices. In addition, we're also encouraged by other technology enhancements, including low latency capabilities that will lead to many more use cases for 5G in many industries. We also see Cristiano touched upon this, the importance of 5G and AI, but also in smarter networks. So, AI in devices and the network will actually enhance 5G performance. And, we're here we're talking, for example, on more efficient beamforming algorithms. And, that's going to lead to better coverage, better cost efficiency and better energy efficiency. And of course, energy efficiency is really at the top of our agenda. So, we focus our efforts on scaling 5G to meet consumers and industry expectations for new services, managing the fourfold traffic increase that we expect by 2025. But we need to do that while simultaneously lowering energy consumptions where we do more together and I will say we lead the 5G evolution towards 6G, through 5G Advanced. And of course, we're working today on the third set of 5G specifications in 3GPP Release 17. That will include many benefits and innovations that's going to drive 5G adoptions in many verticals and industries. But we're also working together to shape and scope, 5G Advanced. And that's going to proliferate 5G into virtually every device and use case very shortly thereafter. 5G evolution is fast and no longer defined by only smartphones. The ecosystem needs to basically exponentially growing capabilities to serve a far larger marketplace. And one thing is

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for sure. Together, Ericsson and Qualcomm, we will remain at the forefront, investing in R&D and innovation ahead of time to deliver limitless connectivity. Thank you.

Cristiano Amon 21:50
Thank you so much. We're very happy to have you here with us. As you know, we have a long history with Ericsson. And it's really important to continue to drive together the roadmap for innovation. And you also heard about 5G Advanced. That's going to be the next big milestone. And I'm very excited about the ability to create a new major cycle of innovation in 5G with our partners. So, we talked about Snapdragon Connect. And there are a couple things we said today I want to just recap: 5G plus AI, that's a big deal. The ability to use artificial intelligence to make predictions of how the modem is going to behave, how to optimize the interaction with the network, how to think about beamforming, which is a key feature of 5G and how to personalize experiences to you, especially as you think about a word that you're driving multiple different types of connectivity into the device. And I think that broad set of technologies working together going back to our one technology roadmap messages what makes Qualcomm very unique and why we always will continue to work very hard to maintain our leadership in cellular modem technology, in Wi-Fi, in Bluetooth. And, you're going to start seeing the Snapdragon Connect Badge and it's going to describe what is best in possible in the industry for connectivity period. And to give you a little bit of a vision of how that's going to work. I would like to share a short video about Snapdragon Connect.

So now let's talk about my favorite topic: millimeter wave. Millimeter wave is key to realizing the full potential of 5G. 5G was designed to use every single spectrum. I'm going to paraphrase the conversation I have earlier today. There's nothing that's special about the use of millimeter wave spectrum. We need more spectrum and there's plenty of spectrum available in millimeter wave. 5G has been designed to use every single spectrum that existed allocated since the days of analog from 600 megahertz and below. And that's where you see technologies, just DSS that allow 5G to coexist with 4G, then you have the mid band, the 3.5 to 3.6, but also millimeter wave. And when you look at the potential for the mobile industry, with technology, it's very easy to say, all the phones right now with 5G moving to unlimited data, we expect the use of data to continue to increase, we're going to bring connected PCs. The work from anywhere is driving a lot of activity PCs, we're going to have connected XR in you know mixed reality, virtual reality, augmented reality devices, connected cars we're going. Cars are going to send a lot of data and we're going to have a very broader IoT. So, one simplistic way to look at the problem: you're going to run out of spectrum. So, millimeter wave. It's been part of 5G since the beginning because we knew you needed the ability to tap into the millimeter wave spectrum. But there's more. It's the ability to actually drive a lot of the non handset use cases, especially on the enterprise side and industrial that make use of very high speed mission critical capabilities, which are low latency. And you will be a key ingredient of drive industry transformation. So, as you heard from Ericsson, we're very happy with the GSMA 5G Millimeter Wave Accelerator Initiative.

I encourage you to look at MWC, you know, at Hall 4 Booth 4A15. There's also a summit on March 2. And Ericsson is one of the other founding members together with Qualcomm, Telstra, NTT Docomo, Telecom Italia, Verizon, Deutsche Telekom and China Unicom, you will continue to grow. And it's about sharing best practices, use cases, how this technology will reduce the cost per bit and its total cost of ownership performance benefits. So, we continue to be very bullish about millimeter wave. It's a matter

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of time. It's not about having to argue whether you need ubiquitous coverage of millimeter wave. It's designed to be coexisting with the mid-band. It is designed to enable a lot of those new use cases. So, we'll continue to make progress and on the device side, we're pleased to update the number we have 150 5G millimeter wave devices launch or announce across 50 vendors. And it's not only phones, its phones, PCs. We're going to talk a lot about PCs today. Hotspots in modules, which are very important for industrial in new applications of 5G and, of course, customer premise equipment for fixed wireless access using 5G broadband, one of the fastest growth areas for many carriers, which is the ability to use 5G for augmentation in what we call wireless fiber.

And it's a good time to make another announcement in the millimeter wave area. We're announcing a brand new platform for fixed wireless: the 5G Fixed Wireless Access Platform 2nd Generation. Couple features. Very important. It has RF sensing capabilities. So, it basically has the ability to sense its RF environments and adjust beamforming for much higher performance and coverage and also be a self-installed CPE. It also has standalone 5G millimeter wave support. And the reason this is important, this is going to come back later in the presentation. As you think about some of the new use cases, the ability to have a 5G standalone, you can deploy some of the new cases with millimeter wave without necessarily having to fully interoperate with the existing sub-6 network and that will allow speed deployment of some of the new industrial and enterprise 5G use cases.

We're also announcing cooperation, our collaboration with Fastweb in Italy, the first European millimeter wave operation which is using millimeter wave for 5G broadband. And as I mentioned before 150 designs launched or announced with this new platform we're announcing today. We already have 155 designs in development across 40 OEMs. So, very excited about that and continue to see opportunities for millimeter wave. So that's what we had to tell you about mobile. Now I'd like to spend time on the opportunities beyond smartphones.

There's ongoing innovation in this industry and the ones that we talk about it, which is really important and we're going to spend time in the press conference is the opportunity of next generation ARM based PCs. Mixed reality, virtual reality, augmented reality for the upcoming Metaverse, the continuous transformation of the automotive segment, industry 4.0 in the modern 5G network. So, let's start with mobile computing. And I will continue to refer that way. We're driving the inevitable shift to Windows on ARM on PCs. A lot of things we have learned over the past couple of couple years work from anywhere is a reality today. The future of the enterprise productivity is embracing the convergence of mobile and the PC. PC number one use case is communications. The killer application that has been the promise for wireless since I come to Mobile World Congress and we're talking about 3G of video telephony is being realized in today's PC when you think about the productivity. Gaming is becoming a streaming service like 4G eliminated CDs and the 4G and 5G you know completed to eliminate DVDs and blu-ray. I think the next console would be the last console. And game is going to become streaming. Those things will drive an always on connected PC with full conversion of mobile ultra mobility and the ability to do on demand computing, move all the data to the cloud. And we see that as an incredible opportunity for Qualcomm. And the effort right now is to be working with enterprises that are preparing for this transition. So, we are expanding this Snapdragon Computes Enterprise Ecosystem. 200 enterprises testing and deploying Windows on Snapdragon, actually the number right now. It was CS

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200. Now it's 225. It's a growing app ecosystem native on ARM 100 Plus Windows ISVs. The names go from Microsoft of course 365 to Adobe to Zoom to next thing, etc.

Channel relationship is increasing enough that 30 operators supporting Windows on Snapdragon 10 are now focused on driving that to the enterprise. So, we're very excited about the opportunity. We've been working on this for a while. We always believe in the convergence of mobile and PC and that is starting to take shape. And as you think about the enterprise grade, next generation PC, a great example of that is the Lenovo ThinkPad X13s, which is the very first to launch on Snapdragon 8cx Gen 3. Not only the very first arm ThinkPad, it is also the first with our premium 8cx Gen 3 Compute System. To tell you more about this in this incredible opportunity. I'd like to welcome to stage my partner, dear friend, Luca Rossi from Lenovo.

Luca Rossi 35:00
Thank you, Cristiano. And hello, everyone. So, it's very good to be here finally for in person kind of events. So as industry leaders in both the PC and the mobile category, Lenovo and Qualcomm have a long history of collaboration in the recent years, our partnership has helped to reshape the way we connect, we play and we work while fast tracking the promise of true mobility. And now I want to introduce I want to introduce this new beautiful ThinkPad X13s announced just now by Cristiano.

This ThinkPad X13s is the world's first laptop powered by the Snapdragon 8cx generation three compute platform. This device is ultra slim, ultralight fanless, weighing just over one kilogram. It's also sustainable as we built it with 90% of the recycled certified recycled magnesium top and bottom cover.

Thank you. As Cristiano was saying, our conversation with the IT decision makers and the employees around the world in the last two years have shown us that the digital transformation and the hybrid work is definitely here to stay. And we need to ensure that our work technologies adapt to the new employee and the new business needs. And that's why the new ThinkPad X13s offers a truly mobile, silent, always on always connected PC experience. And the Snapdragon 8cx Gen 3, the incredible power efficiency combined with our innovative design allows the peak externus to achieve a battery life of 28 hours on a single charge for a multi-day productivity. Then, the latest generation of Snapdragon 8cx also allows the ThinkPad to switch seamlessly between Wi-Fi 6E, 5G millimeter wave and 5G sub-6 type of connectivity. So, we have also significantly enhanced the new ThinkPad video core capabilities and security features with the Snapdragon technology. This new ThinkPad integrates a communication bar with a five megapixel camera with AI based auto framing, presence detection for faster login, power management and privacy. It also features intelligent noise suppression to block distracting background noise during the course. And we have also integrated our Lenovo ting shield is our end-to-end security platform that secures the devices like this through the entire lifecycle. Going into the conclusion of my speech, the enterprise is evolving to support the hybrid work and Qualcomm and Lenovo, we are looking to bring new solution to modernize productivity, security and collaboration. So, we have developing new solutions.

And this is a new experience is our thing reality, a 3D smart glasses powered by the Snapdragon XR1 allows the end user, the user to leverage multiple visual monitors on this device, increasing productivity and privacy on the go.

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So, this is only the tip of the spear as we continue our collaboration with Qualcomm over a shared vision of building a smarter future where everything is intelligently connected. We look forward to bring you even more innovations that will reimagine the way we work, we live whether at home on the go, or individual spaces of tomorrow, thank you.

Cristiano Amon 40:16
We're incredibly proud of our relationship with Lenovo. There are a couple things I have to repeat that you pay attention: 28 hours of battery life. It's truly incredible 5G sub-6, 5G millimeter wave. It's the ThinkPad for the enterprise. So, I think it's about time to say welcome to 5G connected, you know, enterprise productivity. And it is good to have partners that really understand the space and it also focus on innovation. As I mentioned before, number one use case on a PC right now is communications. So, things like intelligence, noise suppression, the ability to have camera fast uplink is going to make a difference. And we are getting to the PCs for the future of work. So very exciting opportunities to know let me keep going.

We have a lot more announcements to make. And I want to just to recap, we talked about the incredible opportunity for technology innovation happened in smartphone space, a company upgrade of connectivity with Snapdragon Connect with with Bluetooth, Wi-Fi and cellular, we move to talk about the growth opportunities. And first one was the PC but then it was a great bridge. The PC mobile convergence. The experience of having the new device with glasses. That was a great place to talk about the opportunity of augmented reality, virtual reality, mixed reality. We were investing in this technology when it wasn't popular. We have a decade's worth of investment and we're very, very happy. With the opportunity in front of us of connection of physical and digital spaces. This opportunity is real. It's one of the largest expansion of addressable market that we're going to see. Digital twins are happening across many industries. Social interactions is evolving. It's very easy to understand how this will have a role in how we should think about something as simple as communications as a voice call. As you can go from what we see today, in videoconference and collaboration tools to holograms. Applications are vast, especially on the enterprise, fully immersive gaming, the transformation of retail in many more. Snapdragon XR is now powering 50 Plus commercial XR devices in Snapdragon spaces, is now a development platform empowering developers to build applications is not only for consumers. For demanding and enterprise verticals. You know about the opportunity we have today in with our partnership with Meta in how Oculus Quest 2 got significant scale. And we always believe many other ecosystems are going to embrace these technologies and bring scale. So today, we're talking we are announcing our collaboration with bite dance the parent company of TikTok. We're collaborating on hardware software to enable a global XR ecosystem, developing XR device roadmap using the Snapdragon XR platforms. And to tell you more about it, I would like to show you a video. He’s going to be here with us virtually from Rubo Liang from Bytedance

Rubo Liang 44:07
Thank you, Cristiano. And thank you for having us in your MWC 2022 keynote. As you have spoken about Qualcomm’s vision for extended reality technologies. We too are committed to building solutions that empower developers and creators with Qualcomm’s jacketed law extended realities and leadership. We are excited about the fact that we will be working together on hardware, software and

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technology roadmaps to enable the ecosystem for people. We look forward to our future Pico devices that are powered by Snapdragon spaces XR developer platforms

Cristiano Amon 45:00
We're very excited to be working with Bytedance. This is a great opportunity. Maybe over a decade is going to be very significant. It could be as big as phones, especially as augmented reality glasses become an extension of every smartphone. And as we said, besides the Meta, besides the Microsoft ecosystem, a lot of new ecosystems are embracing this technology in how they're going to evolve their apps in in cloud whether it's consumer and enterprise. What do you saw from Lenovo is also happening for other several industries, especially the use of augmented reality in industrial applications, so great growth opportunity for this industry.

And with that, I want to talk about a new growth opportunity for Qualcomm, which is automotive. The auto industry is really evolving at a faster pace and is the one that has been going through more transformations than any other industry, the car is becoming a connected computer on wheels. I chose on purpose, the Cadillac LYRIQ for this slide because it's one great example of the Qualcomm Digital Chassis platform, which is a platform that allow automakers to innovate with capabilities across all key areas of technology, connecting the cart to the clouds, the ability to provide a fully immersive digital cockpit and ADAS and autonomy. We're working with all leading automakers. We have a pipeline now in excess of 13 billion.

And today, we're making two very significant announcements. We're bringing new capabilities to the Digital Chassis platform. The Digital Chassis is a platform. It's the reason Qualcomm is having so much success in a very short period of time in the automotive industry is because we build a platform that the core companies can build on top of it. It is scaled from the premium car down and it is also multi generation. So, with that, understanding the role of technology and how everything changes when you connect to the car to the cloud, we're announcing a connectivity as a service platform provides global connectivity support, integrated analytics, which is very important for the car companies in cloud enhanced applications and services. This is to support the development delivery of new cloud connected digital services which are so important for the car industry. We are also providing two other upgrades to the automotive connectivity platform, Snapdragon Auto Connectivity Platform. A telematics application framework is significant, simplifies application development is the development kits for telematics applications in leveraging the telematics functionality across every other part of the Digital Chassis that we know, that connectivity benefits every other subsystems in the car. And in the process, we're also upgrading to a Wi-Fi 6E automotive grade chipsets that support four stream of dual band simultaneous with integrated Bluetooth and low energy audio. So, as you can see, the automotive digital chassis is also a service platform. And it will enable not only for Qualcomm, but for partners, the ability to start thinking of connectivity as a service. And that's opportunity for carriers is an opportunity for the automakers an opportunity for Qualcomm.

So, moving on. And now I want to talk about the incredible opportunity in industrial IoT. And it's about the pace of digital transformation accelerating across every single industry. It's changing from MC use, with embedded software to advanced platforms. They're cloud connected 100% of the time, they are of low power. They have advance processing capabilities in the ability to do on device artificial

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intelligence. It's really driving transformation across many segments. We have been very focused on retail, smart cities, energy and the broader industry 4.0 we're manufacturing. And it's really supported by a transformation of networks that we also seen which we'll talk about it in the last segment of our press conference.

So talking about industry transformation. You all heard Qualcomm and many of our partners talking about the opportunities for 5G beyond phones. So, we're very proud to be part of the GSMA 5G Transformation Hub initiative. Qualcomm actually contributed more than 10 use cases. And it's been designed to showcase the world's most innovative 5G solutions, across energy, sports industry, travel segments and in smart cities. The ability to create value with 5G technology is really significant.

And as part of this momentum, we're very happy to make two announcements today. One is our partnership with Gridspertise. It's a subsidiary of one of the largest private utility companies in Europe. And now, we're collaborating with them using 5G to transform the electrical grid, smart grid solutions, services to improve resilience, security, and sustainability. You can see the applications of 5G on the smart meters, the ability to get real time data and contextual information from every single point of the grid, the ability to take that all the way to the enterprise and the opportunity to build digital twins of the grid of substations, self-healing ability of the digital twin and many more. It's a very broad partnership. And we're very happy to see 5G making its way to the smart grid. The second one is an announcement we're making with Rexroth. It's a Bosch company which really focus on industry 4.0 with 5G new industrial automation use cases. So, we announced early in the press conference X70. And a Release 16 modem and with enhance ultra low latency, that device is going to be parts also of those mission critical use cases enabled by 5G. So, it is happening. It is a great growth opportunity. I believe in the industrial IoT. We're just scratching the surface of this opportunity. And hopefully, you will see more and more the applications of 5G beyond handset.

And with that I get to the last part of a press conference, which is architecting the modern 5G networks. As you know the networks need to evolve your number of key technologies coming to the networks today. One of course is virtualization of the networks. And the virtualization will benefit public networks, private networks as you move to general purpose computing servers to drive a lot of the digital functions of the network. And that is already the other one is open RAN. And I want to use the opportunity at this conference to make an important—I don't want to say—clarification. I think it was important in addition to the conversation about open RAN. It's very easy to understand when you look from that perspective. And I'll tie it to the conversation about millimeter wave.

There are many new use cases of 5G as we just talked about it and when you go in to see the many of those new use cases are happening in the enterprise. The enterprise always had its own telecom network. It was access. It's digital access for voice and then and then they build their own Wi-Fi network for data. The enterprises already decided this is not a question anymore, already decided that they will have 5G and that's why you see so many activity by local 5G, private 5G license of spectrum dedicated for industrial 5G. It's already decided we're going to have the same technology on both sides. Different enterprises will pick different solutions. It's not only about whether it's a different vendor. It's a different solution that is going to be geared towards that a particular vertical. Open RAN provides an ability for existing operators to participate in the new revenue stream if they have to build a network that

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will require a different architecture or vendor. And that's why standalone millimeter wave is also so important. Because allow those new vendors to be introduced into the network for the enterprise specific campuses specific applications, in addition of the benefits of open RAN, then this is a very important set of technology in the way that I describe it. Technologies such as millimeter wave and open RAN are tools that will enable operators today, whether public or private operators, to capitalize on those new opportunities.

And with that, we have a number of announcements and hopefully everything will make sense. You see how the story works, especially to talk about enterprise. This is a significant announcement. We're announcing a collaboration with Microsoft. It's yet another great partnership between Qualcomm and Microsoft. It's incredible. The number of partnerships that we have with Microsoft. It's a new one for end-to-end chip to cloud solution for deployments of private 5G enterprise networks. It offers pre-integrated 5G Private Network Solutions for vertical use cases, also leveraging the Microsoft Azure ecosystem. It's an easy way to help enterprises scale their 5G ambitions in edge computing ambitions as well. And you can see how this will enable leveraging Microsoft presence on the enterprise to continue to build some of those opportunities for 5G connected enterprises, not only for industrial IoT, but also for the 5G connected PC.

And then we have a series of other announcements a couple we actually have announced about a week ago, very important. HP Enterprise had selected the Qualcomm virtual digital unit data center as, you know, inline accelerator card for their V-RAN and open RAN platforms and they work with carriers around the world. The Qualcomm VDU offers 60% lower operator TCO versus the prior solution. And we're announcing today that Mavenir had selected Qualcomm 5G DU and Rus with massive MIMO for the open RAN 5G deployments. We had announced a couple weeks ago that Rakuten Symphony also selected Qualcomm 5G DU and RU silicon solutions. And today, we're announcing Fujitsu. Back in October 2021, we announced that NEC and selected our solutions for next generation networks and deployed and NTT Docomo as well as globally. Today we're announcing a new addition. Fujitsu also is going to use Qualcomm integrated DU and RU for open RAN 5G deployments, also for NTT Docomo. So, this is very exciting development as we look at how those new technologies is starting to get traction, to get scale, and get to scale and enable all of those growth opportunities.

So, as we get to the end of the press conference, I just want to, this is a call for you to visit our booth. We had organized for this MWC in person a lot of exciting demos and you'll be able to see many of those things in action in the Qualcomm booth. Please, please visit our booth and look at those demos. And then, here's a summary of all the announcements we made today. I don't intend to go to each one of them in detail right now. But please look at our webpage. We're very excited about the speed of innovation in how our partnerships continue to grow. Thank you so much for attending our press conference. It was a pleasure talking to all of you. Thank you.

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