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CES 2023: Lead at the speed of life
Smart home and workspaces: On the road to green

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Jefferson Wang [00:00:05] All right. Welcome, everybody, to CES day three. Hope everybody has had a wonderful show and is ready to go. So we are super excited about this next session, which is around "Smart Home and Workspaces on the Road to Green". So hopefully everybody is ready and they've got they're listening ears on. Reason is we've got the opportunity to answer some quiz questions and the opportunity to win some prizes. So hopefully folks are all set to go with that. First thing we want to do is really introduce kind of our speakers and it's a really diverse group, but a really high-powered group. So, just wanted to show that Kirti Gupta from Qualcomm who's the Chief Economist. We've got Smita Khare from Johnson Controls, who is the Senior Vice President of Global Engineering. And then my good friend, Vik Viniak, who's our Senior Managing Director of Accenture Strategy. So today what we wanted to do and talk about this is all of the theme of day three is really around sustainability and what that means and all the impacts to talent and all of the different ways that we measure sustainability. So just to give you an idea of where we are statistically on this, if you think about home energy consumption in general, it's incredibly fragmented. So you think about your thermostat, it has its own separate app. You think about energy management, it has its own separate app. And you think through the focus is really on just reduction, but none of it's really working together. So that's part of the problem we're trying to address in this session. And what are the things that we can do around that? Just statistically speaking, your home and all of our homes collectively actually account for 33%, over 33% of all the CO2 emissions. If you look at kind of the world's land mass, the crazy part about this is while it's only 2% of the actual land mass of the cities, it accounts for over 50% of the actual carbon emissions in the world. So it's a big problem and it's actually concentrated and solvable if you kind of look at workspaces and homes, which is going to be the topic today. So really what we want to do now is kind of walk you through a quick quiz. So hopefully everybody gets their phones out and we can scan this QR code for a moment. And I'll give everybody a chance to do this. So we will reveal the winners at the end of this and hopefully we'll have a nice moment where we can share with you kind of a sustainability gift and how we can all make a big difference. So I'll give a moment to let everybody bring this down. Okay, why don't we get to the first question? Now, we've only touched on a few of these topics, so there'll be some that you will have to think through on. All right? And can we pull up the first question oh, it is behind me, not over here. All right, so there's about 20 seconds to answer this. I can give you a hint. The people who are leading are probably right. All right, the next question. So let's see what the next question comes up as. Oh, this is the same question. All right, here we go. This we just touched on. We should expect 100% results on this one. That's a good sign. All right, here we go. Let's see how some people I literally just said greater than 33%, 30 in the morning. It is early. This is day three. Our feet hurt. Our ears are still going here. All right, let's go with question three. But I like the energy. All right, this we did not touch on,

but we will talk about this in the session. You're guessing 40. Oh, you've seen the video. Most people who saw the prep video to this would have gotten this. All right, let's go to the next one. So CO2 emissions from the buildings, 40%. Okay, this one's fun. Smita, you should 100% get this. And we're going to talk a lot about what the answer is and what are the capabilities and how we've actually partnered with our good friends at Johnson Controls around driving sustainability at a very large and recent event. I have no comments for any of your answers out there, but we will work through this together. I know, I think it's a trick question. It's a trick question with sustainability. All right, let's go to the next one. Here we go. Last question. Here's your chance to win a set of great prizes. Good luck. Oh, this one's hard. Kirit is going to talk all about this to everybody. Oh, well done. Give yourselves a round of applause. Excellent job. We will revere the winners at the end of the session. Okay, so what I'd love to do is to have our wonderful speakers give a quick headline on themselves so you get to know them and you kind of understand where their point of view is. So, Kirti, my good friend, if you wouldn't mind.

Kirti Gupta [00:06:18] Thanks, Jeff. Thanks for having me here on this panel. So I'm the Chief Economist at Qualcomm, also a recovering engineer, and from Qualcomm, I think the relevant thing here is we we are the leaders in mobile technologies, and generation of wireless is not like any other, and its goals towards sustainability are really notable. And I'm going to speak about that.

Jefferson Wang [00:06:44] Wonderful. Thank you for joining us, Kirti. Smita.

Smita Khare [00:06:49] This is working. Yeah. Oh, it's working. Good morning, everyone. I am responsible for technology and engineering of several digital products at Johnson Control. A little bit about my company, we have 130 plus years of history in building performance and building management. We produce HVAC security, fire equipment. We are also reimagining the future, the blueprint of the future on sustainability and building performance. So I get to be part of the sustainability goals of my company and also of several of our clients.

Jefferson Wang [00:07:23] Excellent. Thank you.

Vikrant Viniak [00:07:25] Hi. Vikrant Viniak. I go by Vic. I have the honor of working with JCI on their journey towards this greener Healthy Planet healthier Planet, as we call Healthy Spaces. Healthier Planet. And I've been working with the JCI leadership team and Smita and others to paint that vision on how JCI can pivot from being an industrial company to a digital company that is making an impact at the core of what this world needs, which is sustainability.

Jefferson Wang [00:07:54] That's great. And Vic, maybe let's start with you. And just to level set everybody, when we think through the word sustainability, we hear the terms ESG, we think about all these different terms. How would you define sustainability when it comes to kind of home and workplace?

Vikrant Viniak [00:08:08] Sure. So when we talk about sustainability, there are really like four aspects you need to look at food, water, waste, and then the energy efficiency. Many times when we talk about sustainability, we just focus on the energy efficiency part because that makes the biggest difference. But when we talk about home, let's not forget that there are these other aspects as well, which is around the water waste, the waste component in homes, as well as the food waste. When we talk about buildings, commercial buildings, what is in our control is typically the energy, the efficiency. So when we are focused on efficiency of the buildings, that's the aspect that we really focus on because it's the utility. Smita talked about HVAC. Typically within a building, 50% to 60% of the energy efficiency or energy is consumed by HVAC. And we are also accustomed to living in our homes where temperature is regulated no matter what the weather is. I was telling that I was in India a couple of weeks ago, if you're inside the home, there is no central heating in most of the homes, 90 95% of the homes do not have that. It's super cold. So you can imagine the comfort table world we are in. But then it also creates an impact on the environment because we are using 50 50% of energy to create that environment.

Jefferson Wang [00:09:31] Yeah, it's a great level set for us. So what I'm super excited about is, Johnson Controls. We're very proud partners with Johnson Controls, and if anybody saw the World Cup, in my opinion, is one of the most exciting World Cups we've ever seen. But

there was an incredible complexity to the stadiums. So in any World Cup, this was, between five to ten different stadiums. Typically, you generally manage them separately and you actually manage the people flow, the actual consumption, the energy management, all those things separately. This was the first time under Johnson Controls leadership that it was centralized in one place under the Open Blue platform that a majority of you said open Green and lets us resolve that. So, Smita, 1st thing, can you define Open Blue for us? And then what were some of the capabilities at the World Cup?

Smita Khare [00:10:23] And let me thank Accenture for the partnership with Johnson Control for the World Cup. When two powerful companies come and have passion for sustainability and building management and performance and climate change, we deliver good results. And that's what happened in World Cup. We connected eight stadiums. And I do not know how many of you are kind of in the aisles of Venetian thinking about how is this thing running. Like the complexity of it. There's thousands and thousands of sensors, your fire security or your temperature control. There's so much going on in the building that we do not realize, and there is so much complexity in the stadiums as well. So what we did together at World Cup, this was the first time a state of the art technology, all backed by Johnson Control Open Blue platform, where we connected eight stadiums on one technology platform, on a unified data platform. Everything flowed centrally to what we call as a unified command center. I think the visual was cool because it

was based on digital twin technology. So we created 3D models of all the stadiums so that the operators and the facility managers were able to kind of visualize virtually go at any pockets. You could see the alarm management, the thread, the air quality, the water consumption, the energy. Cool thing, Jeff, was that not only we just displayed what the data and thousands of the sensors were telling us, we also connected that through very powerful AI driven models on predictive maintenance. So that we are proactive about where the issue is, right. Nobody wanted to miss the final football game, no interruptions. And that's what we did at the command center. Very customizable HD screens, one center, you could see where the alarms are happening, where the issues are happening, what's the temperature, live video feeds on security, occupancy data all set up. We could count the number of fans, which gates they were entering from and everything. And we also connected that to what we call as a work order management system. So when we found an issue, either proactively or through a live feed, we were able to kind of quickly resolve it. So we resolved the incident resolution time. It's kind of natural to expect in such a large, complicated ecosystem, something there's a lot happening. And all of that was done on Johnson control Open Blue platform.

Jefferson Wang [00:13:00] What an amazing story. And if you just look at the consolidation in the past, if you had eight different knocks or eight different operations centers, that's more energy usage, more real estate taken. Just simplifying that in general, under a common digital platform and common terminology has an incredible amount of savings. So personally, what's really important to me is 5G and connectivity and the need for modernization of that I think a lot of times we now take those things for granted. And we expect connectivity to be there. We expect connectivity to be reliable, we expect to be secure. But when it's not there, that's when we notice it the most. So, Kirti, as the leader in 5G and under Qualcomm's leadership, how do you see modern 5G being a driver to sustainability and enabler sustainability?

Kirti Gupta [00:13:47] Yeah, so I thought Smita, you gave a great segue for that. So 5G is our fifth-generation wireless technology is the most recent generation of wireless. So every G, we call it, G in our industry comes around ten years later and it takes around 10-15 years of R&D time to develop it. Everything that Smita just described that level of complexity. Now, it's a microcosm of a world that is far more complex when everything, everywhere is connected. Smart homes, smart factories, smart stadiums, and so on. So 5G was designed with that in mind. It isn't just about the previous generations where we were thinking about connecting people to people, me to you with cell phones, but 5G is about connecting everything, everywhere. Thousands of intelligently connected devices everywhere. It truly connected world in the future. And for doing that, we also had to, first of all, it's a technology marvel of its own. You can't do any of these things without fast, reliable, efficient wireless communications with very low

latency, very high reliability. But how do you make that sustainable so that it can scale when the world becomes fully connected everywhere? That was the challenge. So in the engineering of 5G, we have devoted ourselves to ideas where there's this really nice chart out there from the Ericsson Mobility Report that shows that the energy consumption with 2G, with 3G, with 4G kept growing exponentially and it would have gone, kept going up like that. But we really almost like we didn't just make it steady, we brought it down. Because we put features in the network, in the design of the technology that allowed us to be more sustainable, like separating data and signalling, like reducing the signalling for hand offs, for billing, for operations like that. So that we can actually use less energy, like customizing network infrastructure for different use cases so that you can put different energy efficiency profiles for different types of data traffic. So there are many other deeply technical reasons why 5G is way more efficient, as I think Ericsson, Nokia and others have put in their reports, and we have too, that it's 90% more efficient than 4G. And we did this study, we looked at exactly how is it more sustainable? And let me just share some very quick numbers with you. Reducing the greenhouse gas emissions by 400 plus million metric tons every year by 2025. Okay, so these are the big numbers. What does it mean? It's like removing 81 million vehicles off of the road in the US every year. It's also better, like you mentioned, water. It's also better water optimization for, I think, 400 billion gallons, less water usage by detecting leaks and quickly enabling

fixes. And that's equivalent to water usage of 4 million households. And I can go on about changes to agriculture using drone technology. You can identify where you need pesticides, when you need pesticides and how much to use it. And that cuts pesticide usage by 50%. So there are like use case after use case after use case when we apply 5G connected cars car to everything CV Two X technology, car to everything connectivity technology, you can optimize routes, you can reduce fuel usage. That reduces fuel usage by 20%. So I view when, as we get ushered into this fully connected world, 5G being sort of that centralized foundation enables a more sustainable future. So I'm excited about that.

Jefferson Wang [00:18:03] Yeah, it's an incredible story when you think through, Kirti to what you just mentioned on the use cases. But then modern connectivity of 5G layer to be able to enable a cloud layer, the cloud layer, as it moves from cloud to edge and close to where the data is produced, how does it enable a common data platform like Open Blue to be able to orchestrate all of this? And then from that platform, how do we actually build these use cases of sustainability off of it? So it really is a really large effort.

Kirti Gupta [00:18:33] It's the foundation, it's the layer above it and then all the applications.

Jefferson Wang [00:18:38] And each of these are multibillion dollar stacks we're talking about. So none of these are happening on their own.

Kirti Gupta [00:18:45] Right.

Jefferson Wang [00:18:46] So I think now let's get to the how. So now we've talked about a little bit about the importance of the space. We've talked about the opportunity that's ahead of us and how we can leave the world better than how we left it. How? So Vic solved this strategist for us. What is the how? How do we think about this?

Vikrant Viniak [00:19:05] Sure. So if we look at the sustainability part, there are really three things that we need to know. First is customer experience. So we're all sitting here, it's warm, cozy. You go in that corner, it's cold. Suddenly the customer experience goes very different. The second is the cost to keep the customer experience going where you have a certain level of airflow, certain quality of airflow, as well as the right temperature, it can cost more. And the third thing is the emissions. So historically it was hard. You could only optimize one thing if you wanted to save energy. Well, let's put the home to 68 degrees because that will cut down the utility bill. That means that you're going to have to wear an extra layer within the home. Now with Open Blue and technology is there where actually you can optimize all three. So, Smita, was talking about thousands of sensors which are operating even in this space today. So the sensor in the corner will say, hey, Open Blue, this space, there is nobody there. Like I see that corner, there's no human being there right now. Let's cut down the airflow to this space because we do not need airflow in this space. And the temperature can be little low because there's nobody here. But the moment someone goes in there, suddenly the sensors will kick back on and the airflow will continue. That way you can optimize the airflow and the customer experience and make sure that the experience is optimal. We went through a two-year period where we were not going to work. Home was work, work was home. As people are going back to workplace, we've done studies that actually the productivity really improves if you have the right customer experience through the temperature, through the airflow. I was mentioning earlier, I was in India and I looked at my phone, the air quality was 386. Poor. Very, very poor. In the hotel there was an indicator, it said indoor air quality 15. Open Blue can actually give you that indoor air quality. So you can tell the difference that the air that you are breathing, how clean that is. Not only that, actually I'm a big believer charity begins at home. Accenture we are piloting indoor air quality with Open Blue in our offices. So as our employees come back, they can have that better optimal customer experience. And you all already know that we have made commitments to be net zero by 2023, I believe end of 2023. So we're almost there. So that's how the world is changing where the technology is now, making sure that we can optimize all three together.

Jefferson Wang [00:21:48] Yeah, that's fantastic. So if anybody comes into center office, big deep breath in, you're in a better spot for that. One moment here so as we want to keep this as interactive as possible, it's day three, we got to keep the energy up. Questions that you have, we're going to keep going up here, but here's a moment please. Feel free to ask questions. They'll be anonymized.

You don't have to feel like you're going to show your name, but please feel free to ask questions. While we keep going, we'll leave this up and then we'll answer them at the end. So Vic super interesting on the how when we think about sustainability in the key areas you talked about, one thing Smita you had mentioned is when we unify and harmonize this on a common data terminology and a common platform, automation becomes important. It seems like something natural that comes up. What's Johnson Controls and your engineering department doing around automation with this data?

Smita Khare [00:22:42] Yes. So automation when you have a high complex environment and thousands and thousands of sensors and each sensor emitting so much data and keeping you touched on it.? Like the backbone of it, like the 5G, the communications and, and everything what do you do with, with all of this data? You have to be very smart. So not only you have to standardize it and, and hold it, you have to curate it, you have to integrate that with other sources. Because even when you connect all the sensors, it's holistic, it's powerful, but you have to also marry that to, let's say, the weather data, right. Or any other event data, right. CES is happening. Occupancy will look very different. If it's raining, Occupancy is going to look very different. So there are thousands of use cases where when you have the power of integrating the data, you optimize the building performance very differently and all of that needs to be automated. And Jeff, you touched on it, I think we had very rich set in silos. We had technology usage in silos. Fire

systems, security systems, building optimization systems in silos are very good. But the power today isn't integrating it all and making sense of it as a whole. And that's what Open Blue does. The Open Blue platform does. Think of if a building starts to observe the behavior of occupancy, Like Vic you were talking about with the Airflow example just a minute ago. If the building learns over time that every time it rains, the occupancy falls by, let's say 30%. So maybe we should shut down pockets of parking, maybe we should inform the cafeteria, maybe we should optimize energy a little differently. There are so many use cases that you can achieve through the automation. So I would say is automation the only answer? No way. There's a lot more that needs to happen in the ecosystem. The devices are becoming smarter, data is one answer. But I would say without automation, I kind of imagine a scenario where you're almost like in a bike chasing a Formula One car, trying to solve world's largest problem. And that's how important automation is. And that's what Open Blue is doing by integrating it, using AI, real time live feed data, predictive modelling, combining the knowledge of what Johnson control has for the last 130 years of all the sensors and the equipment, we already have that expertise. Now we combine that with the technology to enable some of that. So it's front and center in our mind. Open Blue is all about automation and holistic and integration.

Jefferson Wang [00:25:26] Yeah, I hope it's clear. Like these are big tectonic trends that are colliding from kind of what everybody's talked

about on stage. There's this connectivity trend that's completely reinventing itself to focus more on the actual improvements of these use cases and being more reliable and secure. On the 5G side of things, there's an entire data revolution that's happening. When you've got unstructured data and structured data, you've got this tsunami of information. But how do we actually draw out results? And that's not just a tech super cycle that's happening. There's a policy and a business case to that. I mean, there's kind of a reason why these silos exist. Naturally, these value pools are separate. Naturally, folks want to kind of hold on to this. And there isn't an incentive yet until as Open Blue and Johnson Controls works through this, it's not just the tech to be able to collect, structured and unstructured cleanse it and move it, but it's also what's the incentive for Johnson Controls and everybody to work together so that we can get value out of this. And then there's this massive cloud and edge opportunity that's actually coming together and enabling all this stuff. So I think that's the really exciting part about all of this. When we think about when you look at kind of where this is going Kirti, this word naturally comes up as ecosystem. I mean, these are big trends. So what can all of the ecosystem do with 5G? Is that core foundation around sustainability?

Kirti Gupta [00:26:54] So Jeff, I have to start by agreeing with you. I was just thinking like how do these tech function shifts happen in technology and in the world? And Smita is talking about smarter and Vic to compute and I'm talking about stronger connectivity and the two go hand in

hand. You have this abundance of intelligently connected devices creating more data than ever before. And now you need to collect it, transmit it, intelligently fast, reliable and then you need to be able to process it in a way that you can utilize it in all these different smart ways to frankly better everybody's lives and achieve sustainability goals in the meantime. And I'm an economist, so I will say to answer your question, show me the incentives and I will tell you the outcome. And the incentives aren't always aligned to make these step function shifts happen, like we often call these. I wouldn't argue that there is a market failure, at least in the kinds of technologies we are discussing here. But some new technologies often get stuck in what we call negative equilibrium. Let me give you an example, I remember like 10-15 years ago I was working on mobile payments and when we would go to the retailers and we would say hey, update your point of sale terminals, they will say well, why? Because the phones don't have the new NFC chip in it. And you go to the phone makers and say update your phones with the chip to do payments and they'll say why the retailers don't accept it. So you were kind of stuck in that equilibrium. And then everybody has to jump shift at the same time. And I think 5G and all these different platforms that are utilizing this stronger connectivity with smarter compute can be accelerated with the right incentives, with network deployment that is faster, more focused towards important use cases that enable this paradigm shift. And I'm being specific here. For example, we have the infrastructure act in the US. We

can't just be focusing that on broadband connectivity using fiber. We have to be thinking about 5G too, we have to be thinking about the ride incentives for 5G deployment. When the OTT providers, the content providers, are putting tons of data in the network, but they're not necessarily having to pay for the network upgrades the network operators do. So how do we incentivize a balance in payments? How do we incentivize a balance in investment? So these are the big questions I think we need to be asking for our policy makers and also in the ecosystem so that we make sure this market failure doesn't happen.

Jefferson Wang [00:29:53] That's really important to think about on not only policy incentive structure, technologies working together, harmonization, how do we bring that together? I think ecosystem is one of those terms that means something and nothing at the same time. And if we don't define it correctly, we'll get there, it'll just take a lot longer. But if we can actually kind of define it better and move forward, then we have a chance to accelerate this and it's worth accelerating. So I guess when you look at Open Blue and data, we've always described data as like the most important capability, but naturally the network how we get the data from place to place, how responsive it is. When you think about if you had data and you're trying to act on it but it took too long to get there, you've missed the opportunity to make an impact. If you have data but you actually can't get it in the right sequence. Even when we work on IoT, the sequencing makes a lot of difference. People don't think

about that. That when data is coming in at different sequences, you miss the trendline and you can't act on that. What are some things that Johnson Controls are doing around kind of the capabilities on Open Blue?

Smita Khare [00:30:59] Yes, and I'll touch on sustainability since we are talking about that topic. The sequencing of data and where you tackle it is so important. So in Open Blue platform, we do a lot with the edge computing. There's a lot you can do at the edge itself. And that's the fastest and the most secure way. We haven't touched on security as much. Nobody wants their buildings or temperature controlled remotely managed by somebody else. And Johnson Control brings that edge computing, that powerful computing at the sensor itself, at the equipment itself, in a very secure way. And we can talk to thousands and thousands of sensors not just from Johnson Control, but from a non-Johnson Control provider as well. So that's one important capability. We have a foghorn acquisition. We have bridge software that actually automatically discovers and captures all of that data. That's one, the second layer is taking all of that. This data was generally in a very private cloud captured in the data centers of the corporation that this data belonged to, what Open Blue does, it actually makes it open. You can bring that and bring to it to the cloud.

Smita Khare [00:32:18] Cloud Agnostic. We are cloud Agnostic. We're not tied or married to a particular cloud, depending on the client and the customer needs. And we curate it and streamline it. So you

have to clean it because this is tons and tons of data. You have to curate it, you have to clean it, you have to turn that into information. You have to have machine learning and AI algorithms going through it so that you make sense of it. You have to combine that with the equipment power, the knowledge of the equipment and all of that. And then you have to streamline and connect that into a very integrated common data model that you touched on. Once you do that and you create that beautiful Open Blue platform, then your possibilities are endless. You can now create a lot of digital experiences. So recently, Accenture and JCI, Vic and I have been closely working on a financial bank where the experiences are around occupant comfort. All power through Open Blue. So as a person comes in from their parking, to their food management, to the locker booking, to the integration with your outlook, to your calendar, to where you, where you park yourself, how, where your colleagues are, what is the air quality, automatic sensors, your curtains going up and down, your temperature, you can provide your preferences. So it's your entire experience right around the building or the workspaces, if I may call it. That all can be done. And my teams are very proud of creating many of these experiences. On top of the Open Blue platform, we can monitor your assets. Sometimes old assets like you hear in a home that change your refrigerator, change your washer dryer, you're going to get more energy efficient. Imagine in a complex building how important it is to know how your asset is performing, what is having the larger carbon emission. So these layer of

experiences are around energy management, better energy utilization, predictive maintenance, what assets are going to fail in your building. Getting ahead of the game and solving that. I talked about the occupant experiences, all kinds of dashboards, historical evidence having sustainability or net zero goals. Many companies after the Paris Climate Agreement have the goals. Some in 2023, some in 2030, 2040. So, yeah, there's not a lot of time. How are your renewable energy impacting your carbon emission? You need all of that data and Open Blue enables that. We have a product called Net Zero Advisor, very proud of that product that actually takes from your goals to the impact and gives you that complete history on an Open Blue platform. So there's a lot that I can talk to, but hopefully it gives you an idea of the integration and the holistic approach Johnson Control is embracing to really reimagine how workspaces look like and how they become smarter, healthier, happier for the planet that we all need.

Jefferson Wang [00:35:36] I mean, such a good kind of way to capstone that. And Vic, I'm going to ask you a question at the end of this to close this out around. What are you most hopeful for in sustainability? But one thing you mentioned, Smita, that I just want to touch back on is the word open absolutely needed to create an ecosystem and sustain an ecosystem to keep it going. Makes me a little nervous on that word you said around security because now the threat surface increases. There's more devices, there's more vendors, there's more capabilities, there's more just threat surface in general.

When I think about that, Kirti, what is 5G doing to just look at security? Because everything we just talked about makes me a little nervous. It's big, it's open, lots of entry points.

Kirti Gupta [00:36:20] And I think by now it's clear that when we talk about things like Open Blue, we are talking about that layer of compute. And below that is the layer of connectivity that enables a compute. And if you have a security breach or vulnerability in any one of those layers, you are compromised. So you have to take in this foundational layer of connectivity and transmitting information. You have to take security really seriously. And I think what 5G does is, again, it builds different profiles for different kinds of network and data traffic, different profiles of security, different profiles of usage. Maybe the best way to give you a flavor of how 5G adapts itself or is designed to deal with different use cases is not really a security example, but an example that you can relate to for optimization of traffic loads. So in the past, when we were transmitting information, you're sort of transmitting on a single pipe. So think of a highway with multiple lanes and cars are going on the lanes and the highway, the width of the lanes is predetermined. Now, with 5G, we understand that there are these thousands of intelligently connected devices everywhere, these kinds of sensors, and you may be using a sensor for an electric system, and if it trips, there's a failure. The sensor needs to send like a single bit of information. And that's really critical. It cannot be delayed and it must be secure. A different profile, a savvy millennial. I'm pointing at you. Maybe using XR

glasses at the same time and using gigabits of data in that same environment, using the same pipe to transmit. So the way 5G is designed, it can actually change the width of the lanes for accommodating these different use cases at the same time. So you can have much more loss of data packets in the XR scenario. Right. It won't change your experience. You can also tolerate some security, like the profile looks different, but at the same time it has to. So let's imagine like a massive truck is passing by right in the lane in the highway because that's a lot of data. And then that sensor trips because there's a fault, you need to send a single bit. So like a very thin lane, you need to create and make it accelerate and have a totally different security profile on it. And that's what this layer is enabling to be able to create those compute possibilities.

Jefferson Wang [00:39:10] Yeah, I think it's important to think about kind of the policy around it. You mentioned a lot around what innately 5G can do and how it customizes to that the policy around that is just as important. It's like going through an airport security line. You're checked when you get there, but once you get through, you can do whatever you want. And how does 5G adapt to that is really interesting and how are we continuously checking on those threats? So that's super interesting. So we're running short on time. Vic, what are you most hopeful for when you hear about kind of a smart home to a green home or workplace that's more sustainable, how corporations look at ESG? What are you most looking forward to?

Vikrant Viniak [00:39:48] So what I'm hopeful for is that we don't have excuses. We have run out of excuses that the cost will go up if I do this. And I think right now we have technology at our hands to optimize this equation. And then I think I will say this is a call for action. We are waiting for governments to put regulations in place. Let's stop waiting for governments. Each bit counts. Every drop fills the bucket. So if I take some action, it's going to make a bigger impact. So if all of us take a little bit of action, it adds up to a lot. So I think from my as we close, I would say my call to action is that food, water, waste and emissions, let's make some personal choices that make a little bit of an impact and that all will go a long way.

Jefferson Wang [00:40:40] Well said. If there are any questions from the audience's QR code, can we pull them up? Otherwise we will get to our prizes. Oh, we do have questions. Okay, first question. What are the most important things we can do to improve energy efficiency at our home? So I think that this is an interesting one because there's stuff that when you heard Vic talk, we can aggregate something right now. Everybody in this room can do something right now. In that call to action. The first one is really your home energy management. Today, most of us have a smart thermostat, but none of that is connected to your smart appliances. None of that is connected to anything else in the home. So the first part is just awareness that inside of your home there's an ability to look for high energy efficient appliances. How do we actually connect that data to our thermostat? How do we look at our

energy usage? A lot of people will look at solar and think that this is a great renewable source, but then they forget that there's no storage of that. So how do you think about a battery on top of solar?

Jefferson Wang [00:41:39] There's these things that we can do now and the choices that we make and investments we can do today in the home. The second thing is thinking about renewables. How do we think about that in the home? Because again, if we can solve the home, we can actually solve 33% of CO2 emissions. And then finally water usage. Vic, you mentioned water being incredibly important. How do we think through that? And 5G plays a role in that. There's sensors, there's trips, there's ability to actually send that signal off so that we don't have a frozen water pipe that bursts and does those things. So super fun to see that question. Here's a great one. Are B2B enterprise SDKs gaining momentum as brands across integrated areas or will they have partners that need to connect everything point to point? This might be perfect for you to talk about Open Blue handle system.

Smita Khare [00:42:26] Yes, I think we all touched a lot about the power of integration and holistic. If you try to solve the sustainability issue in silos, we are not going to get there. And so Open blue does that. A lot of our other providers are doing that. These SDKs are going to be more open and cloud. We shielded the data right in the pillar that we cared about. I think the world is moving towards the cross integration, more openness, ability to integrate. Short answer, you don't have to partner to

connect everything. Technology allows that today. We have that power in our hands today, I think.

Jefferson Wang [00:43:10] And leadership is really important because if you don't have a leadership mentality to say that you're going to open up an API, if you're going to create an SDK, you're going to work through documentation, you're going to expose this to others, it's not going to happen. So I mean, it's incredible to see the leadership that changes controls.

Smita Khare [00:43:26] Yes, big believer in that. That's why Open is in the name.

Jefferson Wang [00:43:29] Yeah, it's fantastic. So Kirti, for you, impacts of 5G that you see on the economy and broader, what are some areas that you see?

Kirti Gupta [00:43:38] So we did the study with Accenture actually that 5G. Every once in a while actually a technology comes around that changes the productivity equation across industries. Think of electricity, think of the internet. I think 5G is one of those because once you are connecting everything everywhere you have these platforms, it enhances the productivity from healthcare to retail to smart homes and manufacturing and so on. So when Accenture did the study with us, they actually looked across industries for the impact of we found that by 2025, we should see $1.5 trillion contribution to GDP because of this transformation.

Jefferson Wang [00:44:28] That's incredible. And a wonderful number when you look at last question. So Vic, computing and connectivity are converging. How far off are we from a tipping point? Is it a five-year thing? Is it a ten-year thing? Where are we?

Vikrant Viniak [00:44:41] I think it's not five years. Ten years. I think it's only a couple of years before that happened because the progress we are making is actually exponential. So I think maybe give it another two years. And that convergence. Is it's around the corner.

Jefferson Wang [00:44:56] That inflection points around the corner.

Vikrant Viniak [00:44:57] Absolutely.

Jefferson Wang [00:44:58] Awesome. Okay, exciting moments. Let's find out who won. Thank you. And answered the most questions. Did anybody see that? Sorry. I'll look at it. I'm sure we can get a drum roll somewhere. Oh, manual drum roll. Wow. Well done, you guys cued that. Well done, audience. Mayak, you answered the most questions, and you're standing right in front of all of the prizes. So there is a Johnson Control World Cup soccer ball. There is a smart thermostat, there is a smart speaker and a smart plug. So please don't make new year's resolutions. Make life resolutions. Let's all commit to sustainability around this. We can all make a difference within our homes and decisions we make. Thank you for spending time with us. Please give a round of applause to all of our speakers.