Capgemini

CLOUD REALITIES

CR031

Connected Engineering within the Automotive industry with James Speer, AWS

CR031

Connected Engineering within the Automotive industry with James Speer, AWS

Disclaimer: Please be aware that this transcript from the Cloud Realities podcast has been automatically generated, so errors may occur.

[00:00:00] Welcome to Cloud Realities, a conversation show exploring the practical and exciting alternate realities that can be unleashed through cloud driven transformation. I'm David Chapman. I'm Sjoukje Zaal, and I'm Rob Kernahan. This week we're going to talk about the automotive industry in the connected car. Is it becoming more of a software platform than the familiar vehicle?

And amongst other elements of automotive futures, will our emotional relationship to these objects change? Joining us to explore this interesting topic is James Speer. Global Partner development manager, automotive and manufacturing at AWS.

James, great to see you. Thanks [00:01:00] for joining us today. Tell us a little bit about yourself. So, I'm responsible for working with some of our largest partners at AWS in the automotive manufacturing. My job really is our mutual customers, our. Realize their ambition by, by working with AWS and, and their partners.

So James, the world of automotive, clearly over the course of the last, I'm going to say decade, it might be, it might be longer the, the evolution in the car platform for many different reasons that I'm sure will explore are huge. So maybe set the scene for us, like what's your perspective say on the last sort of five to 10 years of development kind in summary of course.

And then where are we up to today in terms of current conversation around automotive? Yeah, so, so actually it's, it's an excellent question cause my background is, is I'm actually not a petrol head at all. Ok. So my background is very [00:02:00] much in, you know, computers basically, and information technology. So when I was a kid, I was just really interested in, in computers and my interest in actually.

Still relatively recently when it became apparent that a lot of the technology that I was just interested and curious about, and also of course some of the things, some of the technology that I working with in my career was starting make its way into. So that was, that was the, you know, that was the catalyst.

In fact, if you were to dismantle, I don't know, say Tesla, Something, something funky, one of the new or Mercedes, bmw even you, you would actually find a lot of stuff inside that car. Right? That would be very familiar to all, uh, as, as technologists. [00:03:00] So, so you microcontrollers. Running on ECU inside the car hold. Hundred million, sorry, not million One, one or 2 million lines of code, written in things like c plus plus Java. Python, you'll find, uh, lenux. Well, auto grade Lennox is a particular variant or of Lennox for the automotive industry in realtime systems.

You'll find containers, orchestrations, service-oriented architecture, Android, GPUs, fault tolerant networks, and e , and all of these things that we've with sounds.

You know, any cloud availability zone, region, data center, even colo [00:04:00] from a years ago, and course all this technology would. So what's your track then on the development of. That type of vehicle. So clearly Tesla have been ama amazingly disruptive to the, to the automotive sector, and then we've seen all of the mainstream manufacturers like running to catch up.

What, what's your, what's your sense of where that race is at the moment? Well, they're undoubtedly, they're undoubtedly in the lead. There's no question. But I think that we're just, we're just beginning. You can kinda look at this in two ways. You can kinda look at it bottom up, right? So we've got all this familiar technology that, you know, all of us and hopefully everyone listening to is, is familiar with, but you can.

What's the conser experience like? [00:05:00] So, so how does all this, why, why does any of this matter and, and how does it change? , how, how does it change our, our experience as a driver, passenger, a pedestrian, and, and things like this that when you start to look at, when you start to look at both sides, becomes meaningful.

I think if you, if you, if you drive relatively modern, maybe less. You'll start see the benefit, of some of technology, you know,

autonom driving

inside used control, Lane departure warnings, [00:06:00] autonomous emergency braking, traffic sorry, traffic sign recognition, and things like this. So if you can imagine, you know, we're all kind of used to those features and capabilities now, but imagine where that's going. And it's all enabled by all of this technology.

We already know. And I remember the first time I was in a car driving it and it, it, it, a little warning symbol came up and it started to take control of the car on my behalf. Yeah. And I was a bit like, hang on a minute, what's going on? And there was this reaction about the, oh, I want to turn all this stuff off.

And then I went, well actually no, it could possibly well save my life in the future. So I'll probably keep it switched on. But again, that's all fundamentally. Powered by software and sensors and the merging of the two, isn't it? So it's like the, this revolution that is in the driving experience fundamentally making it safer and easier is, is a big change that I personally I've seen in the last few years, but appears to be powered by all the things that you're referencing.

Exactly. Exactly. And of course, the cloud plays a big part [00:07:00] in stuff is.

A nber of technology innovations. Ok. You know, things like relatively cheap, uh, edge compute, lidar, radar, uh, the ability to, deploy machine learning and ai, at the edge so that, Far, far quicker, and more accurately than a han can. And of course, to, to create all of that software and to, to train the models and things like this.

All of that happens in the cloud. And then I suppose there's this view of the, the future coming. I mean, we've seen a revolution. What do you think the future holds? I mean, there's, well, a lot of talk. In industry about autonomous driving. There are people who say, well, they'll never turn it on because nobody will accept the risk.

But actually the statistics tend to show that a car [00:08:00] car is safer than the next show. Where do you think that's going with the, it's sort of this semi-autonomous capabilities definitely crept in and helping us. Do you think we'll ever get to the point where we sit in the car, open the newspaper and it drives us to work type Jetson's vision of the future that we all remember?

I think our producer already does that, Rob. Of course, I suppose the, the standard answer here is it depends. So, but, but let me explain. So I think there are three, there are three things. So regulation is certainly one of question, and there are some places in the world. That take a more progressive attitude to this.

I think the automotive industry is highly regulated anyway, so, so you, you know, can't just build has levels of, and things like this so that it's deemed to be roadworthy. But regulation [00:09:00] is definitely, definitely one of those things. I think the second thing is technology. There is a huge race at the moment, no pun, well, pun intended, actually, you know, with all of the OEMs.

Okay. Trying to, trying to catch up with this technology. I mean, most OEMs now, you know, internal combustion cars.

But also, all of those new ADA capabilities and software defined capabilities that we were just talking about, a minute ago, but that's OEM need help traditionally, I guess, skillset really around, you know, mechanical engineering.

Software. But the third thing that I think is often [00:10:00] understated is people and hans and emotion. So, so, A lot of people like to feel connected to their car, don't they? They, it, you know, they like, they like the sensation of like an emotional connection, you mean? Yeah, yeah, yeah. Exactly. And also they like, they like, they like the sense of driving, they like holding the steering wheel.

They like, they like the feedback right from, from the road and the tires back the wheel.

An emotional attachment to this ob to this object. And I'm wondering, and I don't know the answer, it's a question how, how that will impact things. Will there be people out there that have these incredible cars loaded to the, with technology that they don't really use cause they just enjoy driving? Yeah, I guess it's the classic car argent in a lot of, [00:11:00] which is, it sort of makes no sense to.

A 50 year old car that costs you far more to maintain and is far worse for the environment than buy-in. I don't know the newest kinda little electric runaround, but there is an emotional connection to that sort of pile of nuts and bolts that maybe PE people haven't yet developed with some of the newer experiences.

Yep. It's that thing that the, uh, the retro and the vintage appeal, isn't it? The, yeah. Uh, we all look back with rose tinted glasses, even though, you know, at, uh, at eight o'clock in the morning on a freezing winter, you don't want to climb into an old car and wait for the heater to warm up the modern experience where it's prepositioned itself before you drive.

But, uh, yeah. Yeah. It's that. Yeah. Yeah, exactly.

It could be a great new car from [00:12:00] Tesla again, you know, right. With all of this technology, all of this software, and yet 30 minute review, you know, we're spending 20 minutes talking 60. Yeah, and , you know, does it lean too much into the corners and things like this? And we might get one minute if we're lucky, you know, on, on the touchscreen, uh, the voice commands, the over air software updates, and all of this stuff.

I think it'll change, but. I think it also shows, you know, there were people that just enjoy driving. Yeah. You raised a very interesting point and I'm wondering then the sort of way you de, you were describing the, the modern car earlier actually makes it sound more like an iWatch or a software platform, doesn't it?

Yeah. So maybe you could just expand on that thought a little bit. Is is actually that what we're talking about, software platform with wheels that you from.[00:13:00]

In that sort of situation, its going be interesting to see how and what emotional connections people start to make to those vehicles, isn't it? Yeah. Yeah, that's right. So, so, so you, if were car.

There will be lots of software in that car. Ok. Controlling all of the things. Touch, you might voice in there that, but things that we talked about, but guess there there number of things. So first of all, the car is also connected. Okay? So what connected? , so it, it, it has, you know, relatively fast cellular connections and, and that's important cause you then get [00:14:00] bidirectional, communication over the internet with the cloud, with the OEM.

And, and lots of other organizations as well that open up a whole, you know, myriad of possibilities. The first thing is, is of course, feedback loops. So, so we're so, so with the cars, connectors, the OEM can actually understand how the car is being used. So we talked about, you know, Rob, you mentioned, you know, one of your first experiences where you knows noise inside steering wheel.

Well, that's valuable information oem understand drivers need, some intervention. Override capabilities, of course, was the, was the intervention needed it was.[00:15:00]

Certainly, when you're dealing with, you know, real time safety critical things, and then deploy software over just as phone something fleet.

Guess what's occurring to me as you're describing this, is that there's got to be a coming together. Of AI and connected car. And I'm thinking now bear with me on this. You're not go, I know where you're going, Dave. Nightrider, mate. Yeah, I am. I was just thinking night rider, when can I have kits in my car, please?

With a turbo boost button. That's what I want. Exactly. Yeah. So, so James, what, what kind of timeframe are we talking about to be now? Now? Well, well of course. Of course, actually, do you know what? I'd love one of those as well. But being [00:16:00] responsible, we can't have turbo boost, can we? Not today. Not today. But I think that would be a regulatory challenge.

Exactly. Don't we need AC boost? Why can't I jp my car through a lorry? I want to jp my car through a lorry on the way to work. As I know I should have the right to do that. Yeah, yeah. But we need some kind of electric boost. That's right. Yeah, that's what I mean. That's what I mean. We need, uh, some kinda jolt, jolt of electricity into the car's, Rob.

Exactly.

On the way to work, car. I had another one this morning, like another one, Jim. They're like, yeah, it's the third this week. We'd all buy one. Take my money now. I love it. Yeah, thank you. Exactly. These damn cars just keep flying outta nowhere, don't they? You can imagine, uh, shortcuts would be a lot easier. You could jp over the fence to work and park.

Yeah, yeah, yeah. Or, or, you know, you.[00:17:00]

Just far away. Yeah. Yeah. Come on, come on. I need the toilet. So, so in this world then, and we sort of joking obviously about that, but it is, it is pretty funny. But the, you knows, like, say the presence in the car is actually the, is actually the manufacturer that you're dealing with, right? I mean, that, that is the, that's the real presence and personality in.

One of these connected cars, you're sort of buying into BMW or Mercedes or Tesla or, or whatever it might be. You know, they're aesthetic. It's almost like buying Apple versus buying Dell or you know, whatever it, whatever that might be. So what's the changing nature do you think, between the driver and the conser and the, and the auto manufacturer in the future?

Cause it seems to me that the auto manufacturer and what they need to. Very profoundly different. It goes, it goes much further than just say the, the connected car itself. Yeah. Yeah. Absolutely. And you there hint of this now, hint of this now. So, so [00:18:00] clearly automotive need to build, you know, their brand, and personality if experience.

Inside the car at, at the moment. I mean, you could say that Tesla is sort doing that cause you do see glimpses, right? Of Elon Musk's personality in your Tesla, don't you? I was exactly going to say that. You know, like the doors doing a dance and or like the, and stuff like that. Well, isn't it, it creates the, it changed the experience to bit of fun.

Yeah, yeah, yeah. Exactly. Exactly. So, I don't know if this, it does sound silly.

They all kind of have a reputation, don't they? Some, some have a reputation for being, I don't know, like a racy, sporty brand, a reliable brand, uh, [00:19:00] an off roady kinda rugged outdoor type brand. Maybe some of these, if you.

I think. I think that's one, one thing. The other thing as well is, is personalization. So we're kinda used to personalization kinda, right? Kinda. So when you buy a car, you can personalize it to some extent. So if you're buying a new car, you can choose the color, you can choose the wheels, things like this.

The, the, the, the personalization kinda stopped there. Clearly with the software defined car. There was a big opportunity that, that, that personalization to continue during the owning experience. Right? So for example, let's say you every Friday morning on your [00:20:00] way,

I don't know, I'm not going to say, uh, any brand, your local coffee drive through Right. To pick up your triple when Rob's case made these quadruple caramel latte or whatever it was. Right. Very briefly speaking to someone who, who had a, a triple shot cappuccino this morning and it's now. Quarter to three in the afternoon.

Yeah. Four. Yeah. Have I been buzzed up today? It's like, it's it's, it's pretty bad. It's pretty bad. So like, I, anyway, I, I'm in danger of digressing into a caffeine thing. So back to you, James. No, no, no. Mood. Mood. Yeah. So course, I mean, that's just trivial example, but, but when you think about all the different

opportunity, To, identify some of these patterns. And if you can identify these patterns, you can, you can, you can start to do [00:21:00] more useful things. You know, you can start to order your quadruple frappuccino thingy and before you've even left the home and have that drink ready for you at the point you get drive.

Cause you know the car just knows that's what you do every Friday morning anyway. What you ordered, what route you would go, check the traffic on that route, work out what time you might get there. Yeah. Well I remember the time I, uh, Googled did that for me on maps. It basically sent me a prompt. I clicked, it went on Thursday.

You always drive here, traffic's a bit snarled up. We recommend you take this route. And I was like, that's useful and scary and similar measures that, you know, it's that level of understanding that you're able to say you probably want to do something different today. And that, and that was quite surprising.

But then you sort of thought, wow, you could, there's so much more the system can do for you if. If, if, if you trust it and you want to, so I suppose there's a big part about the OEMs showing about James is we have to trust them to allow them to do this for [00:22:00] us, and yes, give them our, our data. So there's a, there's got to be a form of I trust you as an organization, I'm happy for you to know things about me, to allow me to get the convenience of it, which is a debate in society that's been raging and it's now going to turn up in our car, isn't it?

Yeah, of course. Absolutely. Absolutely. And then, you know, there are lots and lots of other scenarios and we've already got some of these things to an extent, but there's a lot further we can go. So, you know, the integration between your car and your home, and the ability to turn heating on in winter when you know, when, when there's some kind trigger. Maybe a so.

You know, a lot more that we can do. But there's this mesh coming isn't there, where the car's talking to the [00:23:00] services we like, it's talking to the, the home. It's understanding our diary, our behavior. There's some sort of mesh relationship that'll have to be, that allows all

this understanding to connect.

Yeah. And then trigger onward prescriptive actions like the heating that you su suggest. Yeah. So it's all got to come together. There's got to be some form of service integration in the future. That's right. That's right. And then, and then I think beyond that, you know, we'll see integration, integration, or better integration I should say, between, between all vehicles on the road, in some kinda, you know, smart city.

Idea where, you know, traffic controls, you know, uh, like that controlled instead of having traffic lights, you red.

Things are controlled much more scientifically. [00:24:00] Uh, yeah, you, you could, you could always imagine a day where everything's carefully scheduled so you sort of tell the system or it knows you're driving to work tomorrow cause it's checked your calendar and it auto schedules the best time to leave cuz it knows what everyone else is doing.

You can imagine sort of this nirvana of it all this like, it is like the future, like the Jetsons where everything just yeah. Integrates for those who don't know what the Jetsons were, probably a seventies cartoon, that vision, the future that looked very nice. It was a, yeah, yeah, yeah. But there, there's, so I think there's a lot of other use cases that we'll see how far into the future, I don't know.

But things like the ability for a car to see around the corner. Oh, right. Okay. Like a camera uses access to something else or talk to the car in front, or, well, no, so

Wheeler Electric, scoot. If they're connected to the internet, if they're connected to the cloud, if we have, wide scale deployment of, [00:25:00] computer vision and CCTV and things like that in our, in our cities, I think, I think it won't be too long before we start to see new safety features, right, that are built into you literally when, so, Right.

So the other thing I think when you sort of gazing into the crystal ball of the future around cars, I'll tell you what my other major disappointment is that the automotive industry have, have not yet delivered. You guess what this one is, Rob. Uh, I don't go on. You've foxed me on that one. Flying cars maybe.

Oh, here we go. Yes. Flying cars. Like, you know, Bladerunner. Bladerunner was a good couple years ago now in terms of like the year that was set. Flying cars everywhere. So, so James, why not flying cars yet? And given the rise of, no, no pun intended. Give, given the rise of things like drone technology, how, how close do we think we are?

Cause those, those [00:26:00] flying cars that just got fold up wings don't look even remotely practical to me. I think where I'm, where I'm going is more like a, you know, like a drone car combo. Yeah. Like a spinner in Robax. Robax, yes. Yeah. Yeah. I mean, there are a lot of organizations, you know, working on, working on these things now.

I think it's a different, for now it's a different type of transport, isn't it? Cause it's, it's public transport. It's, it's, You know, right. Individuals, not really, uh, or families, but, but yeah, maybe in the future we'll see that. Maybe it's a may. Maybe it's a, a thing where you drive along, dock with something, it takes you somewhere and then your car drives off again.

Like, you know, uh, you dock or it comes down, picks you up and takes you over. Maybe that's on Thunderbird was like, oh, yeah. Thunderbird one of those. Yeah. Yeah, yeah. Yeah. You would think though, with, you know, like commercial use of [00:27:00] drones, right. Is. Is growing every single day. Yeah. Yeah. There are, there are companies that are, that are working on drone technology for deliveries and things like that, so it's got to be a matter of time, isn't it?

Until like drones and cars become more integrated. If you think about it, the police high speed interceptions, that's a new thing, isn't it? Actually. You don't chase 'em in a car, you just go think it's like the great big magnet drops down and picks the car up off the road and takes them off. Yeah. To the, the, the, the jail I like.

Right? You can, yeah, yeah, yeah. Absolutely. Revolutionization in law enforcement, solved by cloud realities right here. Cloud realities, productions copyright. Yeah, I agree. I agree. I think, I think maybe, maybe one of the things that is, is that we need to make more progress with electrification cause.

Three dimensions instead of two. And if we look at, if we look at automotive today, you [00:28:00] know, with, with cars constraints by gravity, with four wheels, you know, one of the biggest, one of the biggest problems I think is, is the lack of available charging infrastructure. Yeah.

Feels like it's a 10 connection, doesn't it? Maybe it's not, but when you think about drones, well, my gut feel is that you probably need more. You would need far better charging infrastructure for actually to viability.

I guess we need to wheel. The four-wheel transition and I think, uh, that's a great note. Maybe to begin to bring our conversation today to a bit of a conclusion like coming really close to home now. [00:29:00] Like what do you think just the next couple of years looks like from that perspective in terms of growth of infrastructure and the switch itself?

So with the next two or three years? Well, two things. Obviously there will be more charging infrastructure, but I'm. In the battery, uh, itself. So, so I think, I think there are two ways to solve that problem. Clearly we do need more charging infrastructure in the world, but we also need batteries that, that, can work over much longer ranges as well.

So we've, the problem from both sides, I think.

, become mainstream in every new vehicle for sure, with a big focus on safety. I think. I think that, I think that when different, countries and governments and regulatory bodies around the world start to see some safety benefits of autonomous [00:30:00] driving in general, my, my expectation is that regulation will be permissives.

Sjoukje what you've been looking at this week. So each week I will do some research on what's trending in tech, and this week I want to focus on the free tech trends for the automotive industry. So the automotive industry is one of the world's most technologically advanced and innovative industries. From electric vehicles and autonomous driving technologies to advanced safety features and connectivity options, technology is at the heart of every aspect of this industry.

So what are then the free tech [00:31:00] trends to watch first, stable network infrastructure with 5G and edge computing. This can provide enhanced and consistent user experiences, improved connectivity for multiple devices and fast and reliable communication with low latency. The second one, incorporated AI features.

AI can be used for driver assistance systems, predictive maintenance and manufacturing optimization. And the last one, advanced supply chain. By using analytics platforms, you can analyze big data more efficiently, and by using data visualization, you can gain more insights into supply chain operations. So a question to you, James.

What is your opinion of these trends, and which one do you think is going to be the most important one for the automotive industry at this point in time? We haven't mentioned AI much yet, have we? So briefly, so we have, yeah, we, we have to talk about ai. We're sort of

obliged to talk about ai. Are we? It's [00:32:00] actually a licensed requirement now, so, yeah.

On Exactly, exactly. But no, we should, we should talk about ai. I think there are two, I think two very important points with AI. The first, I would say with generative ai. So the way that we develop, autonomous vehicles today isn't particularly efficient. Cause we, we rely on, you know, test cars or they're called mules to drive around planet as many different environments and conditions as possible.

To collect lots and lots of data, right? Different weather conditions, different road signs, you know, urban, suburban, you name it, every country. And then all of that data was collected on SSDs and the cloud, and then used to train all of these really clever ML models that. [00:33:00] So I think general AI has a role there, right?

Can, can we use gen generative AI to actually generate some of that simulation data? That's, that's an important one. And the other thing as well, I think is, is that when you are developing. Safety critical software that's running inside a car, having an AI code, a copilot like AWS Code Whisperer for example, that is particularly important as well.

It makes the developer, you know, more. More efficient, more productive, and I think you probably might be safer software as well. There, there is a view about how far do you go with the simulation. So can you have an active argent with your co-pilot about the best route to the, uh, to the, uh, the destination or even, you know, so I, the real life simulation of how we used to complain.

You, you, you type thing. Yeah, yeah, yeah. Well, [00:34:00] one observation I've got on the trends is that they look specifically like. Digital and technology trends, you know, hence saying three tech trends, but they don't look like car development trends. Do you know what I mean? Like if you looked at maybe trends in the automotive sector 10, 15 years ago.

That would surely look quite different. Would that be about, I don't know, aerodynamics or would it be about engine technology or you know, to your point earlier, reduce not to 60 time or whatever. So it's, it's, it really underpins that point you were making about the car becoming more software platform. I think it's that realization, the organizations that understand they're a software company first and uh, might, might and sell something second, is really becoming a reality cuz it is software that is making the differentiation and the competitive advantage in the marketplace, isn't it?

It is the thing that everybody has to understand. It's software that's going to make the future business models work properly. It, it's, it's interesting though, isn't it? Whilst I'm obviously an advocate of [00:35:00] that and, and you can see that in, in many sectors today. There, there is something about this particular topic and the emotional relationship that we were talking about earlier and you know, the fact we've all had so much to say about, you know, our childhood views on what cars are and things like that, that there is just something so resonant there that yeah, I sort of hope we don't lose in this race to having utility vehicles, you know, Well, it's that thing like you always remember the first time all the times you remember when you accelerated really quickly on a motorcycle or a car or something like that, and you had that experience and there is something visceral and tactile about the car driving experience.

Like you said, the connection with the road and the feedback and everything else. It's like the almost, maybe we see a divergence of the, the utilitarian vehicle, which just does everything for us and drives us to work and we read the paper and then the experience version of the car, which is. I get feedback and I have fun and I enjoy myself through the driving experience and, and, and, and maybe there'll be two things that just diverge.

Right. Well, and it might be like, you know, you buy the [00:36:00] fun version as a, a weekend upgrade or something along those lines, you know? Oh, oh yeah. Subscription based service for the, I'd like to have fun for the next two days, please. Right. Buy that package. Yeah. Yeah. Turn this into a sporty little nber at the weekend.

Well, look, James, thank you so much for, for joining us in today's conversation. It was both educational and uh, and really entertaining. So thank you so much for your time and insight today. My pleasure. Now we end every episode of the show by asking our guests what they're looking forward to doing next.

Now, that could be your favorite alb. You haven't heard it for a while, so you wanna listen to it the weekend. It could be a great restaurant you've got booked, or it could be something in your professional life. So James, what are you looking forward to doing next? I am looking forward, middle of, oh yeah.

Oh. Yeah, the start of the new football season, you know, it's, it's just a calendar highlight, isn't it? Rob? What, what team do you support again? Uh, that would be Everton, David. [00:37:00] Yes. Everton. Although I was at Goodson Park when they scraped it through in the premiership, which was an amazing experience, and the crowd went nuts.

So that is a very memorable experience. I'm with you, James. There's nothing quite like the football stadium on an exciting football game, so, uh, yeah, exactly. Yeah.

So, a huge thanks to our guest this week, James. Thank you so much for being on the show to our sound and editing wizard, Ben, and of course to all of our listeners, We're on LinkedIn and Twitter, Dave Chapman, Rob Kernahan, and Sjoukje Zaal. Feel free to follow or connect with us and let us know if you have any ideas for the show.

And of course, if you haven't already done that, rate and subscribe to our Cloud Realities podcast. See you in another reality next week

About Capgemini

Capgemini is a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of over 360,000 team members in more than 50 countries. With its strong 55-year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fueled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering and platforms. The Group reported in 2022 global revenues of €22 billion.

Get The Future You Want | www.capgemini.com