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[00:00:00] Today, once again, being perfect AI hosts, we have made no bloopers.

Unless you count using incredibly wasteful AI technology to produce an episode about sustainability.

Yes, there is that.

Hello, and welcome to another Cloud Reality special summer compilation episode.

With climate change ever more present in people's minds, we talk to a lot of people about how their businesses are changing.

Paul Armstrong from Schneider Electric told us about the challenges they face.

So basically we take the data.

Um, we benchmark it against, you know, how something was designed. So, we, we know how buildings should be designed in an ideal world. We know how electrical infrastructure should be designed in an ideal world. So, we take all the [00:01:00] data points and we have AI in there that looks at a history of the last 20 years of failures of a particular component.

Right, right. Um, how did it fail in a, in a hot country versus a cold country? How did it We work in a manufacturing facility versus a commercial building, so we've got lots of, lots of different data points, lots of failure history over many, many years, and we use that to create the AI. Then behind that we sit a person who looks at the AI and just determines whether that's real or not real.

Right, okay. So it's

a bit like a human. All that knowledge combined trained the AI that looks at the data and then says is all the things you should be interested in

exactly

interesting things for you, which is quite cool, because you're bringing a body of knowledge, the wealth of that to an individual use case, and then that's able to tell you what to do.

And of course, we spend all of our time continuous learning. So we take the data from a company. Um, and we continuously learn, so we find new things, we put it back into the AI, so we're always [00:02:00] feeding the AI.

And presumably that gives then the operators like predictive analytics, so you'll know when a certain component may well fail.

Yeah, yeah, we, we have various rules in there, and the rules would be, you know, um, physical things, you know, um, you know, movement of plant, let's say a mechanical plant. It looks at, uh, historical data and analytics, you know, and it looks at, um, you know, many different failure points. So yeah, we, we take, we take all of the different, um, uh, areas, but we also then look at, um, things like maintenance laws and things like that.

So we combine physical things, uh, historical data and statistics and maintenance laws, and that will allow us to

determine whether. We need to intervene or not intervene. Cool, and have you got this in the wild yet? Is it installed in, uh, real businesses and buildings? Yeah, I mean, I'll just talk about, um, you

know, we've got 750, 000 [00:03:00] critical assets connected to our systems you know, already, so, this is not new for us, it's slow and emerging we're just touching, or scraping the surface at the moment, but if I talk about Let's say Schneider Electric's facility in our

Grenoble, um, region of France.

You know, we've, um, historically there, we had originally 2, 000, uh, facilities, sorry, in the year 2000, we had 27 facilities in Grenoble. 16 and now we're down to 4 facilities. So, uh, we've equipped that with the EcoStruxure solutions. Um, here, um, the result of this is that we aim, or we are consuming 10 times less waste.

in energy than the average building across Europe. Wow, that is quite

a stat.

That's quite huge, and sixty times lower in carbon emissions than your average building in Europe. So you take a

facility like this that we're in now, with eight massive halls, the potential must be [00:04:00] absolutely huge for savings, because there's lights everywhere.

Yeah, there's lights, there's occupancy, you know, the lights on every day, when people aren't here, you know, all these different types of things, you know. But our facility in Grenoble is 26, 000 meters squared, of which 4, 000 meters squared is photovoltaic solar panels. We've got two vertical wind turbines, and these are producing 970 megawatt hours per year.

And we've got 300 kilowatt hours of battery storage, you know, so we're showing the way with our facilities. Um, they've reduced in volume, so what we've done is we've brought people together into a smaller, more techy building, so it's quite trendy. Optimised, yeah. Yeah, but we're bringing, we're bringing people together, so it's kind of your office is your home, uh, type, type approach, you know.

Yeah, yeah. But certainly the results we demonstrate, and what we do with our facilities, is showing customers, you know, the credentials of what we're trying to sell.

It's nice though, because it's an eat your own dog food situation, where you've done it to yourself, proved the [00:05:00] benefit, because you, you, you, you back your game, which is good.

Yeah, absolutely, and You know, if we, if we went out to the market talking about sustainability challenges, trying to offer new systems and technology and, and people, and we don't do it ourself, you know, quite easily come back to us. So, but yeah, amazing facility.

Power and the generation of power remains one of the huge challenges facing us.

Especially when we're using incredibly energy intensive AI systems to do relatively trivial things.

Like, say, presenting podcasts.

Michael Krabb told us about micro nuclear generators and the need for new sources of power.

Yeah, and there's some history there as well, right? We, uh, in the Western world over the last 20, 30 years [00:06:00] outsourcing industry to other countries, right? Relatively flat demand growth for decades. Um, and now you've got that combination that you described, right? Electrification of everything, AI demand growth and reshoring of industry all happening at the same time, all happening at a time where there's, uh, constraints and restrictions on energy resources, right?

We have, we have geopolitical conflict, right? All these things happening within the same, like, three, four years. Has caused a real constraint on our energy supply. Um, and so, you know, data centers themselves, right. To kind of bring it back to, to what we're talking about

today. Um, about 1 percent of global energy consumption today from the data center space.

I think in the UK, it's like 3%, right. A very transaction oriented industry.

Do you have a view of that by region? So you could see, you know, whether sort of West versus East or the three big global regions, what that looks like.

Oh, I mean, there's a lot of [00:07:00] people much smarter than me that spend a lot of time and effort pontificating on what that view is going to be.

Obviously, I think there could be much more growth in the developing world, right? There's there is still a one to two billion people that don't have access to. Consistent power period right so refrigeration like basic human needs right if it if the problem is you like energy abundance for human flourishing like that is where enormous growth could come from if we allow it and enable it to happen and then in the developing world.

You're seeing a lot of this AI demand, electrification, electric vehicles, right? So shifting from hydrocarbons to electricity, I think there's still a lot of debate as to what percentage that is, right? I think the data center side itself mm-hmm . Uh, well, you see, if you, if you, you can look at it a couple of ways.

Um, both the size of the data center campuses, right? It used to be 50, a hundred megawatts. Now it's 400 megawatts, a gigawatt, right? [00:08:00] And like right. So that is a big impact. And then you look at the, the compute of the racks, right? We used to be kind of kilowatt size. And now the actual racks themselves are five to 10 times per rack.

It could be just because of the density of equipment that's in those racks.

Density and CPU to GPU. Right. And right. So, you know, so you've got bigger facilities that are consuming on a per square foot, more energy. And if we just took a linear curve to what we were doing. Right. That's still an exponential growth in energy consumption, 20, 30 percent year over year, which was pretty darn fast.

If you're starting at one to 3 percent of your demand,

you feel like something's got to give in that, and it's got to be a set of things like driving efficiency, better chip design, but better, you know, design of we we've talked before about developers starting to write. sustainable software by thinking about the computational footprint of the algorithm they're striking as well.

But there is this thing that we can't escape, which is we need more power to be able to [00:09:00] drive the need regardless of how we might be able to affect the hockey stick for the better.

We've squeezed a lot of energy efficiency out of the system. I didn't mention that on the front end, but that has been right.

I mean, over the last decade, folks have switched from, you know, to LED lights, right? Like we've done all these things with buildings and on the data center side on, you know, creating efficiencies on PUE and those sorts of things like we've squeezed a lot. Of energy efficiency and demand reduction out of the systems.

And there is a limiting factor there around physics, right? Like, like, like that is a marginal aspect of what is an enormous problem. Hundreds of terawatt hours a year, right? It's like, it's like two big. To wrap your head around and think about a single solution i mean we need all of it and we want to create a world and i know i'm not supposed to talk about the solution yet we wanted to create a world where that energy is abundant that it's not actually a fixed pie or constrained pie because humans will find uses of that energy that makes everyone's

lives [00:10:00] better

before we come on to the.

The solution. Let's talk about the emissions side of things. So that journey you describe of constantly increasing demand, but we've done some things that have tried to try to squash that, like the led lights example of varying other things that have gone along. But clearly, emissions is and continues to be a sizable problem in this space.

Like, how do you, you know, what's your read of that situation at the moment?

I mean, yeah. I think we're way behind where we need to be or want to be, and we like to pretend that that's not the case, but I don't think we've even, we've reduced the amount of growth in emissions year over year, but we haven't even changed the curve to reduce yet, right?

So if every year we're consuming more power globally, every year we have more emissions, the rate of emissions increases has reduced, but it's still going up.

Right. Right,

right. So like from a, from a, from a trend perspective, we're [00:11:00] nominally better, but we're nowhere close to what we need to be. And then to make it not to start on a downer, if we were to go net zero tomorrow, well, we still have all the legacy carbon emissions that exist.

That's still a problem, right? So net zero. While we're way off track is really an interim goal, right? Because carbon is a long lived molecule and it will continue to have a warming effect, right? The thing that we don't want while it's still in the air. So this is where you hear direct air capture and some of these things, right?

But that's like trying to trying to run on a treadmill. You're not really going anywhere. Now the treadmill is getting faster than what you're able to run on, right? So that so it is, yeah, we are not doing great.

Mark Butcher from Pulsative visited the show to explain to us what exactly net zero is

and just as importantly, what it isn't.

Net zero for most [00:12:00] people is simply they've eliminated as much of their carbon as they possibly can from the production and delivery. So the use phase and embodied phase of their products and services.

And normally that gets down to the 10 percent residual is normally that boundary that people tend to get to. And then you fall into kind of the carbon neutral thing. People always conflate kind of carbon neutrality and net zero, right? And they are two entirely different things. And that's the problem when you start conflating and people, because the general average person assumes that net zero means I'm using renewable energy and it doesn't at all in that kind of falls under the boundary, kind of the carbon you tried to be.

And even if you're Even if you're buying renewable energy, that doesn't mean you're using renewable energy. What you actually use is a blend of whatever falls out the plug in the location in which you're operating your services from. And so it's great you're buying it, but it doesn't mean you're using it.

You have to take account of the actual blend of the carbon intensity of the location in which you're operating from. And that's why we're now seeing all this legislation coming in and governance coming in, which has started to try and force people to be that little bit more

transparent and clear. [00:13:00] so that because we have been doing so much game playing and that actually comes back into my major malfunction of which I have many um with things like things like there's no reason that's just mean we're all the same

it was mean dave actually the way you chuckled there he was you know that was the time for a supportive helpful uplifting comment about how mark's Helping the world be better.

No, it was more of a, it resonates with me because I feel like that most days, chuckle.

Yeah, and it's, and it's when we get into that whole kind of net zero thing is what we then people end up doing is. Because they have this obsessive target that they can't reduce to, they end up gaming it and gaming it means you end up hiding things and you put more effort into pretending you're doing something than you are into actually doing the thing.

Because people

want, because leaders want the good news. And so one of the biggest pieces of advice that I give to large enterprise users all the time is please go to your leaders now and explain that IT emissions are going to be going up. So give them the bad news now, because you've got them the next year or so for them to stop screaming and [00:14:00] trying.

One of the things we seem to be stubbornly refusing to admit to ourselves is net zero kind of in I. T. may not be possible. And what I mean by that is every organization is trying to digitize more, they're trying to transform more, they're trying to invest more money in things like AI, machine learning, new shiny things.

And what that means is that when you're investing more, you're buying more, you're building more, you're delivering more. The baseline that you kind of did is only going to go up one way. So, I think, I mean, my personal view is we shouldn't really necessarily be looking at hard reductions targets. We should be looking at efficiency targets, which is how do we, how do we do the right thing with everything that we're building and delivering?

How do we make the right decisions and make everything as carbon efficient or as water efficient as we possibly can? Because I think every, every large enterprise. As it's now going to start actually reporting more emissions type data, it's going to be finding the challenge that the numbers they're going to be reporting on a per unit and a total basis are going to

go up.

Is that just because there's more [00:15:00] awareness? So you've sort of, you've got to get the whole problem out before you can start to deal with a problem solving.

It definitely is a more awareness and that that is more awareness at all levels as well. So it's more awareness at the consumer level. So the large enterprise buying lots of things.

There's also more awareness at the vendor level and the provider level. Because the problem we've got is when I talk about the unit of consumption is most of the carbon metrics people have had for the last few years. They've kind of been a little bit of nonsense. We're not really calculating things accurately.

We're not really including everything. And the more we understand, the more we include. And the more we include, the more the units we report go up. So the problem that means is that no matter how kind of your vendors, so pick any server vendor, any storage vendor, any cloud vendor, they're all buying things and building things and they're now including more of their emissions in their calculations because they understand what they have to include.

So that means that like last year they might have thought a unit was like 500 kilograms, but now it's a thousand kilograms, right? So they're now reporting that and rolling it upwards

and that, and they're calculating things like the emissions from power consumption more accurately rather than just making them up as they go along.[00:16:00]

So, so with more accurate data comes the pain of bigger numbers.

And

that's the challenge I think CTOs and CIOs are going to have is the inconvenient truth. That's really what it is, is reporting bigger, badder numbers. And how, how do you post Yeah, so where this really comes down to is it's a bit of a cheesy phrase, but it's that butterfly effect.

Because the one challenge I have is when I go and talk to a lot of people, everyone always says the same thing, but what I do, I'm just one person. I'm just one company. I'm just one group of companies. My actions are irrelevant. And, and I'll say something like, you know, well, the UK, we're only X percent of global emissions.

Yeah. China's the bad guy. They need to do everything. Yeah, but if everyone says the same thing, then nothing happens. Actions, at every level, actions have consequences.

Mark went on to give us his take on sustainability [00:17:00] dashboards.

You've done it again. You triggered me again by mentioning dashboards.

That's three for three now, Dave. Well done.

There's a, there's a real tendency to, in IT, we love tools and we love dashboards. And I'm fairly well known now for the mustang.

Please stop buying tools you're not going to use. You don't need another dashboard tool. At all. No one needs another dashboard tool. Because all that happens is, there's loads of vendors shilling, like, sustainability dashboards for consolidating it. And they all look, they look beautiful. I mean, I love looking at them, and you're probably going, look at this, look at these data points you can get, and the analysis you can get, and the decisions I can make.

The world's going to be wonderful. And you get them, and the first question I always ask is, Okay. Well, what do I do with it? Oh, well, you just need to connect your data. Yeah. Oh, God. Well, okay. So you're saying all you've done is you've got a visualization layer where I need to supply all the data again. Oh, no.

Well, you can use our proxies. Okay. What are your proxies? Well, we use a spend based Oh. Right. Okay. So it's nonsense information [00:18:00] then. It's a very intelligent allocation model. I'm not criticizing their ability to analyze data. There's no point in having that layer if you don't have the underpinning bit.

So

actually, the bit that we always talk about is Going to the large corporations, what you need is granular metrics. You need a data lake, effectively a sustainability data. Granular metrics, location based data based upon your actual usage and your actual consumption. And the next big thing that is the bit that everyone misses every single time is be clear about what are you going to do with this information.

So how are you going to use this information to drive a different decision? And you have to split this into two things. There's the information for ESG reporting. So in other words, the metrics you're going to push uphill. So our emissions are yay big, broken into categories that your ESG team want you to report.

Brilliant, you've got that off your back and that's sorted and everyone's happy. Then the other thing is, how do you turn that into useful information that you can use within the

boundaries of IT? And that requires a totally different system of thinking. So that is actually then, how do you get [00:19:00] that data, not into a dashboard that no one's going to look at.

Yeah, because people will look at it for, say, three months and they get bored and go away like they always do.

Rob will look at it,

right? I'd bring it out at dinner parties and go, Hey, have you seen the latest analysis I've done? Look at my

bar chart!

Ha ha ha!

Yeah, those kind of dinner parties. So it's actually, how do you get it, how do you get this data on your existing systems of record?

So, because you, all enterprise is a blessing, bundles of tools they use for every area. You've got, you know, Insert the acronyms, you've got your FinOps tool, your TBM tool, your CMDB, your DSIM. How do you get all this data into the systems where your users already live? And how do you get that data into a format which they understand and can use?

So they get a metric that isn't just like a, this artificial concept for them of scope one, two, and three, where they go, is that good? Because they always ask the same thing. This number, is it a good number or a bad number? Well, [00:20:00] it's a number. So then it's actually, how do you allocate it? Because no one cares that the emissions of a server, or a storage array, or a cloud unit at all.

The business doesn't care about that. They don't even care about the VM at all. But a VM is built of consumption units from servers, networks, switches, load balancers, firewalls, storage, data center, you name it, loads of stuff. It's how you roll it up. So the bit the businesses are, I'd like to get that data lake and create your allocation model.

So understand actually, how do you get to a point of going which application is using which service and what are the emissions of it? How do you get business intelligence? Because actually, the beauty with sustainability data is how do you roll it uphill to make a different decision so that you can give it to your development team and that development team can go, Okay.

I'll go. Okay. So if we shifted from this language to this language, X would have, Oh, that will drive that down. If we switch, if we switch from London to Dublin to Amsterdam, what will happen? Oh God. Okay. We do that. What happens if we switch off our development environments that we're not using overnight?

Oh, we get a [00:21:00] 70 percent reduction in emissions. Do we? Oh, brilliant. What does that mean? Well, that's 10, 000 trees saved. Then people are suddenly tied to this. And the key point is getting that into their system of records so it's in their face. Don't expect them to go and log into a thing they don't care about and try and search through and go, like, oh, what am I seeing?

I'm seeing a chart. It's big. Oh, doesn't mean anything to me. My bit's only small. What does it matter if I change a thing? Going back to my original point, that culture will change. And you only drive culture change by giving people data on the system they want to use. Rainer

Karscher talked to us about the ways in which companies were addressing sustainability issues.

Well, um, I won't point to, to any particular company, because at the end everybody is So, as much as a brand, as much as an enterprise or a company might have a philosophy or a character and the people [00:22:00] working in those areas and environmental responsible persons, all of us were doing that for the purpose of the better and for the good and not just for.

doing greenwashing to the outside world. So this is what I would see as a theory. But, um, take the example of smartphones and the right to repair. This is a thing which has been quite recently. And what we see is the big brands and the no ones, they do come up with somehow solutions. Is that a real answer?

From my point of view, it's not there is small companies. And this is at least two on the market, which are in the meantime, even able to deal with big enterprises. Fairphone to name just one of them, Fairphone is able to just send out a QR code, you can just order any kind of spare part, including the battery online, it's been shipped to your home when the battery is lacking, which mostly happens after two to three years to smartphones, which we have in heavy business use, you can just easily exchange that by yourself.

It is nothing where you have to go to a shop to a store, you not have to pay 150 [00:23:00] euros for the maintenance part have to give it away from you. No, it just do that literally at home. And this is something where I think there is already a good way and there is already some answers to those questions. And this could be something where I think the big brands could orient a bit further more on.

I know from discussions that they come up with durability and, and if you just exchange the better yourself, then it's not water resistant anymore. And this could just shorten the life cycle, but well, is that an excuse? Is that an answer? I don't know,

but it wasn't all doom and gloom. Some of our guests gave us real reasons to be hopeful.

Justin Keeble told us that AI doesn't just have to be a problem in terms of energy use. It might be the solution too.

Um, we actually did a piece of [00:24:00] work last year with a partner where we, where they estimated that AI has the potential to mitigate between 5 and 10 percent of global greenhouse gas emissions by 2030.

Hm. That's a big number. That's about the size of the European Union in terms of annual carbon footprint. And that's obviously, uh, using AI for us to be smarter in how we manage energy. Um, so for us as Google to deliver on our 24 7 goal, we need to know exactly what the percentage of renewables is or clean energy is in the grid at any one time.

And then we need to, uh, you know, run workloads when there's more. Clean energy on the grid, right? So we're constantly moving workloads around different data centers Maybe like Iowa, for example, it's very sunny in Iowa. Let's move the workload there while it's sunny Yeah We can reduce the intensity of the footprint of the community think

about the sophistication Underpinning that the application [00:25:00] behavior.

It has to be able to move be happy with it Only really achievable because of cloud native cloud technology. You can't do that With traditional architectures, it's only a function of modern new capability, isn't it? Yeah,

exactly. And maybe kind of an important example is, we launched last year something called Flood Hub, recognizing, to my point earlier about the negative impacts of climate change being about these extreme weather events.

We've done work globally to monitor historic flood levels and then use predictive analytics to look at future weather over the next seven days. And we now provide flood alerts to 450 million people globally with SMS alerts to say that they're at risk of riverine flooding. There's a great example of where we're combining big data with AI for predictive analytics around weather.

Um, and then leveraging some of Google's technologies to be able to provide those types of alerts. So a great example of where AI is [00:26:00] helping to mitigate, you know, a really important time at risk.

Let's have a closing thought from Mark.

So you need to break it into two areas. So this is one of the problems is that so procurement are the front end of getting Sustainability data for organizations because they are the people who are out there negotiating the contracts plate because there's no better time to get metrics than when you're negotiating something with someone.

That's when they're most willing and most weak to give you what you need in the right level of detail. The problem right now is most organizations are asking for what I would call corporate level sustainability data, and that's the fluff up the fluff and nonsense that you were just talking about. So it's the, it's the shiny brochure that makes loads of vague promises about things they're not really actually doing with numbers that actually aren't inclusive and don't, yeah, and are very, very vague, but sound good.

So procurement teams get it and think, oh, I can weigh that. That's, that's three and a half stone for that one versus two and a half stone for that one. Therefore, they're more sustainable. [00:27:00] And besides, they had pictures of happy, smiling children in theirs, and it made me feel good. Uh, that's get, that's, that's very different to having accurate product level metrics.

So what you need to do is actually do a bit of both, which is to validate your supplier. How are they doing? And what are they doing? And are they morally and ethically aligned with you? So are they doing the right things?

Right.

And including the breadth of ESG, not just sustainability. Um, and then, and then it's about the product level metrics.

And that's where it's very detail focused. So what you need is that consistent approach to be asking for the vendors. You know, do you have a life cycle assessment for your individual product? Do you have an environmental product declaration? Do you have a breakdown of your emissions factors? Can you provide them to me in a consistent and standardized manner?

Because IT buys a lot of stuff and it's about how you get that data from someone in a consistent and standard way so that you know whether it's kind of good or bad. And this isn't about always castigating and beating up the vendor for being bad for not giving you the data. It's actually about knowing in your supply chain, how you rate those vendors and which ones you need to work with to use your weight as the [00:28:00] consumer to drive change.

Because that bit we talked about at the beginning, which is no one, no one's going to change unless everyone pushes in the same direction. So it's the, you know, big consumers need to push on the vendors. The big vendors need to push on their supply chain to get better data. Everyone's asking the same thing and going, we just need better data that we trust.

So in this season, we found a mixed picture on sustainability, with both hopeful and less hopeful parts of the picture.

We learned that the energy use demanded by AI solutions could be a problem on its own.

But remember, while AI podcast hosts might require six times more energy than human ones, We ask for significantly fewer scones.

Join us in the next season as we'll be finding out more about how businesses are adapting to the challenges posed by the environment.

Many thanks to Paul [00:29:00] Armstrong, Rainer Kircher, Mark Butcher, Justin Keeble and Michael Krabb.

About Capgemini

Capgemini is a global business and technology transformation partner, helping organizations to accelerate their dual transition to a digital and sustainable world, while creating tangible impact for enterprises and society. It is a responsible and diverse group of 340,000 team members in more than 50 countries. With its strong over 55-year heritage, Capgemini is trusted by its clients to unlock the value of technology to address the entire breadth of their business needs. It delivers end-to-end services and solutions leveraging strengths from strategy and design to engineering, all fueled by its market leading capabilities in AI, cloud and data, combined with its deep industry expertise and partner ecosystem. The Group reported 2023 global revenues of €22.5 billion.

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