INFRASTRUCTURE POWERING INTELLIGENCE: WHAT IT TAKES TO MAKE AI RUN

Miro Lu 00:00

Hello, everyone. Good afternoon. It's so good to be here again at the Milken Asia Summit. It's my third time moderating at the Milken Asia Summit, and interestingly, it's the third panel I moderate about AI. Yes, this is the topic. Before I kick-start, I would like to ask the audience three simple questions which requires your participation. If you think yes, just raise your hand. First, do you believe AI is one of the most powerful forces shaping the world today? Okay, more than half. Two, do you think there is an AI bubble? Very few hands. Third question, do you think collectively we should slow down AI development? Even less hands. Okay, so today we have a great panelist to unpack infrastructure, AI infrastructure. Now, I want to quote NVIDIA CEO Jensen Huang. He famously said that AI is a five-layered cake. Now, that's energy, chips, infrastructure, models, and applications. Today, our panel look into two fundamental layers of the AI stack. Firstly, energy. Intelligence generated in real-time requires power generated in real-time. Energy is the first principle of AI infrastructure and the binding constraint on how much intelligence a system can produce. Another layer we're going to cover is infrastructure. This includes land, power delivery, cooling system, construction, networking, and data centers. These systems are AI factories. Now, we're not talking about traditional data centers. We're talking about AI data centers. They are not designed to store information, they're designed to manufacture intelligence. On stage, we have two builders and two investors. We have, ladies first, Valerie. She leads the investment activities in the Asia-Pacific region for BlackRock Climate Infrastructure. Next to me, we have Hassan, come from the UAE. He's the CEO of Khazna Data Centers, which is UAE's largest data center operator. Further away, we have Kaushik, who runs Asia-Pacific for Bentley Systems. It's a leading infrastructure engineering software company. And lastly but not least, we have William, who's the CIO of Morrison Global, a leading global infrastructure manager. He came to us from New York. So, panelists, you saw the quick questions. What's your take on that?

Valerie Speth 02:58

Yeah, I think it's very interesting that a lot of people think there's an AI bubble and only as something we should slow down. And I think overall, when you hear about these trillions of dollars, so what seven trillion they're saying we need for AI infrastructure. That would be 125 gigawatts in maybe five years. So, if you break this down, that means you would have, every second week, one gigawatt go online. So, that's also a very big number because if you look at Asia, there's almost not a place where you have a one-gigawatt data center, right? So, I think a big

question is, are we able to move on the energy grid, like all the things that come before we try to manufacture intelligence? Are we able to move all of this so fast that we can meet the current demand?

William Smales 04:04

I think that's the key question. I think it's also interesting how many people wanted to pause, right, in this room. And a few weeks ago, I was in Austin, Texas at a data center conference and outside the Marriott downtown, there were people protesting outside the Marriott. So, as we walked in, actually people were video recording us as participants heading in, and it's kind of intimidating. And so the conversation outside the conference center was very different from the conversation inside. Inside, we were talking about how do we marshal the resources, capital, expertise? How we're talking about behind-the-meter solutions. Outside, interestingly, I read some of the signs that people were holding up, and some of the signs were, "Data centers take our water." "Data centers harm our environment." But some of the signs said, "AI has no," and a heart shape, "AI has no heart." And you realize that people are worried about two things. Category one is the stuff that we should be worried about when we're building infrastructure and communities and individuals have been worried for years. If you're building a wind farm, an electricity network, a toll road, a port, an airport. Citizens want to understand what the impact on their community will be, on the environment and the air quality and the noise pollution. They're really legitimate concerns. So, that's the data centers take our water, data centers cause noise. They're kind of category one, and they're ones that infrastructure investors are very used to and operators are very used to experience. The category two is new, right? It's, "I'm just really scared about AI and the only way I can protest AI is the physical manifestation, which is a data center." That one is much harder for us all to address. And I think when people say slow down, I actually think they're mostly worried about that because the other stuff, actually mostly, and you can talk to the builders, responsible builders can really address a lot of those concerns. So, yeah, it's interesting even in this room, we have people who are saying, "Can you just please slow down?"

Kaushik Chakraborty 06:33

To what you said, right? It's about addressing what really people are afraid of. The manifestation of that fear isn't always about what they're really afraid about. You got to dig through the layers, right? Of what the fear [Inaudible] is there. And I think you hit it on the head. We've seen this with physical infrastructure for the last 100 years, right? People don't like to have power generation except when you switch off power in their houses. People will talk about the side effects of Wi-Fi, but nobody wants to switch off their own Wi-Fi or their phones.

William Smales 07:07

Yeah, everyone wants great cell coverage but no towers, right?

Kaushik Chakraborty 07:10

Exactly. No towers. So, I think the telecom industry's gone through this for many years, right? Yeah. I remember back in the US where towers had to look like trees so people would accept them. But we've gone past that. I think this is just yet another. I think one of the things where maybe the rate of pace of development on data centers and AI has been so rapid in the last two to three years. Like GlobalData says that right now the current construction for 2027 is $2.8 trillion just for next year. I think it's that pace which puts fear into people. And announcements from some companies, which have led to this belief that AI is taking away our jobs. So, the data center fear is actually the fear about AI and what it does to jobs, which is going back to computing and everything else which we've all gone through. But I think a generation has forgotten what we've gone through in the past. And I think we just have to systematically, the owners have to systematically and the investors have to systematically deal with that in a

very calm, collected way and take the community with them, which I think is starting to happen now. The pace where just go build it and don't care about the aftermath. I think now people are slowing down. So, when people say slow down, I think that's what they mean. Take us along. Make us part of the journey, right?

Miro Lu 08:32

I like how my panelists just take on the tough question at the get-go based on the question there. You talk about this fear for data centers. One of the concerns is energy. As we mentioned, it's the fundamental layer. And in Asia-Pacific, a lot of the countries are energy importers. We saw it panning out firsthand in March during the global energy crisis. But at the same time, so many countries in this part of the world do not want to miss out on this AI boom. Everybody wants to be the AI hub, you name it, Singapore, Malaysia, now Thailand, Vietnam, Korea, all raising their hand. Valerie, you operate in this part of the world, specifically on energy. How do you think Asia-Pacific countries can achieve their AI ambition and using sustainable energy?

Valerie Speth 09:29

Yeah. So, I've been in this region for 10 years, and I moved over from Europe when the entire renewables moved over as well. And I've seen all these country unlock greater speeds because they did regulatory change. And we own a lot of energy companies, so in Korea, Taiwan, Malaysia, Philippines, where now the AI boom and the data center boom are one of our biggest clients. And when we look at scale, before this, we operate 20, 50 megawatt already being a big site. Whereas now, when these data center operators come and approach us, the question is, can you build 300 megawatts? And to be fair, building renewable power is fast, and it's also not very complex because we've done this for two decade, three decades, right? So, the technology's fast, it's cheap. But data center has the same problem than renewables have because you need to have a grid. So, if you don't have the grid, there's no way you can build renewables right next to it. And then if you don't have land, coming back to the concerns that people had before on the power side, it's the same concern that you had with the data center. But the renewable power industry has already solved that problem. So, we can just take the learnings from that and include communities in a way we have done this many, many decades ago. Create different funds, make them participate in this entire boom. So, I think the question is not, can we scale up energy as fast as the data centers? I think more that there's a regulatory point that governments decide for themselves they want to be part of this new industry or they don't want to be part. And then the second question is, how do they want to be part of it? Because there is an option that you will, by putting bids out there, incentivize whoever's bidding to build that data center to give them a framework how they can connect to local communities or ramp this up.

Miro Lu 11:44

Hassan.

Hassan Alnaqbi 11:45

Yes.

Miro Lu 11:45

We would like to bring you in. Sorry, it's taking so long. But your country doesn't have this problem for the government buy-in.

Hassan Alnaqbi 11:53

No.

Miro Lu 11:54

UAE is the first country in the world to have a minister dedicated for AI. You told me earlier on that since 2017, you guys already set out an AI blueprint. What's UAE's ambition?

Hassan Alnaqbi 12:07

So, I think one of the ambitions actually to address the point you raised, which is some nations that they actually want to be part of the AI journey, and they don't have the infrastructure that can support building out data center that enables AI to be used within the country. And what we solve for is, actually how we can export intelligence to other nations that are unfortunate to have misfortunes when it comes to infrastructure readiness to actually build data centers. And the way you do it is basically each nation is afraid about their sovereignty, and they want to make sure that if they receive an import of intelligence, I would say, how they can make sure that their data is safeguarded in a way that is not accessible. And you raised the first point about AI and people are calling to slow down. That is because AI is good in a way that it's disruptive and it helps with productivity and whatnot, but also there is a bad use of AI that they need to be protected. So, some nations are putting hard regulations. Some nations are putting AI responsible, let's say, standards. So, to allow basically a safeguard for the use cases of AI. So, what we do in the Middle East and in Abu Dhabi, and specifically, we're building five-gigawatt AI cluster in partnership with the US government. And that's not necessarily for UAE because UAE as a small country doesn't need that much of compute. But the idea behind it is that there is about a 4 billion population around UAE that may not have the same capital and the same infrastructure availability to actually do AI. And so basically you try to work alongside other governments to kind of create what we call a digital embassy, which is a way of safeguarding their data and importing intelligence to their nations without having to worry about access to that data. So, that's one of the areas we're trying to solve for. And we've seen a lot of traction with nations that are asking us to adopt the same model we have in the UAE in their own nations. And that's, I think, one of the areas to allow nations to access to intelligence.

Miro Lu 14:31

Is that why you're expanding to Saudi Arabia and other parts of Europe?

Hassan Alnaqbi 14:36

Yeah. So, the way we look at it is there are areas that you need to expand for even if you have a bigger AI cluster because with AI, as you know, I mean, connectivity is an important element. And if you don't have the right latency to nations, you cannot serve every nation from one single location. You need to have access to the, let's say, the connectivity within that nation to allow for faster inferencing. And some nations are important and sometimes the client drive the discussion in terms of where they want you to go. And you basically build your momentum based on the demands coming. And we've seen Europe now is going to be taken by the storm in the sense, like a lot of data center announcements happening in Norway and France and Italy and other markets. And we, as a platform, we'd like to be a part of that story.

Miro Lu 15:36

Speaking of Europe, William, Morrison announced a partnership with Orange, the telco company in France, on a 50/50 JV to create a leading data center with a targeted capacity of 400 megawatts. How significant is this for Morrison?

William Smales 15:57

Morrison today is invested in data centers in other parts of the world. I think it's important for us because it's a sign of this trend that you were referring to. Like how do you secure your nation's sovereignty with respect to AI? And how do you have trusted partners who can also support you in that vision? It's interesting you're saying from the UAE's perspective, they're looking at the population around the region and saying, "Hey, we can be a trusted partner, too." But in France today, there's an increasing realization that France needs its own GPU compute. It needs to be able to support its sovereign AI-native community. It needs to be able to retain data within its borders. So, we see that happening more and more. And off the back of that announcement, we're already in discussions with other countries and nations who want to replicate these types of structures to build sovereign AI capacity in their regions.

Miro Lu 16:50

If I may follow up on that. We talk about in Asia-Pacific, all these countries want to be AI hub. Everyone is talking about sovereign AI, now Europe, Middle East. But is sovereign AI a false concept? If you don't have the five layers, how can you achieve sovereign AI?

William Smales 17:11

I think you need a few of the layers, right? And we think about it. And look, you've got two infrastructure investors, right? So, we really focus around what are the hard, enduring physical constraints in the system and how do we invest our capital against those really difficult, enduring pieces. So, that's typically the data center itself, the electrical infrastructure, and the land sort of coming together. And if you're a sovereign nation, what do you need to control? If you want to control what's going on with your GPUs, you need to have the GPUs in your nation. If you want to ensure that your data isn't offshore, you actually need that to happen onshore. Are you happy to leverage an AI-native ecosystem in Silicon Valley or an AI-native ecosystem in Tokyo? For sure, right? But the other layers you actually need within your boundaries onshore.

Miro Lu 18:07

And you need to start early because it's long term.

William Smales 18:10

It takes a long time, and the power demand required is huge, and the infrastructure to build that takes a long time, and people are worried. People are worried about, "AI data center is going to make my power bills increase." So, actually you need to do it in a way where the data center development actually spurs new generation coming into the grid, which wouldn't otherwise have been built. And if you can do that, you can actually have a positive effect for the communities around them.

Miro Lu 18:38

Kaushik, Bentley Systems works with designers, construction contractors, builders, and infrastructure operators, right? So, you're sitting at this vantage point. In the past few years, how has AI digital infrastructure changed the global infrastructure landscape?

Kaushik Chakraborty 19:03

So, the trend we see is, I think we also work with a lot of the asset owners, like the Morrisons or the BlackRocks and others. And talking to a lot of our customers, so we had an event here for the last two days, our own event, and then there were some of them who were working for AirTrunk and others, we're listening to one of your investments there and what they are seeing. So, the demand is clearly there. So, our customers have a 10-year backlog, what they've got to build. And from a vantage point, what we see is three things, right? You want certainty, which means you want visibility, and then you've got to address capacity. So, the paradox of AI is that the promise of AI is actually revolutionizing the whole world of engineering. To say, how do we take 10 years and make it five? And how do we drive new sources of energy power? So, we are seeing Fervo Energy, right? That's a company we work with; they're powering Google in Utah. They were the first company to be able to drill into the core of the Earth to extract heat, and then that generates power. It then makes sure that the data center over there is net zero in terms of not taking, pulling from the grid. You're seeing the same with Contact in New Zealand and Indonesia, looking at geothermal. You'll be surprised to know even Singapore has started to do discovery around geothermal, and can it drive sources. So, like with any infrastructure revolution and boom, what we see is that it'll drive and kick-start more innovations, and it'll create and it'll self-solve the problems it creates, right? And so I think that's what we as engineers do really well, is we solve the problems we create. Right? And I think what data centers are doing is creating problems, making them challenging. And we will solve these problems. In two to three years, the requirement for water and cooling will significantly change. Next year, we are going to have data centers cooled by natural gas. Singapore does some amazing infrastructure around net zero, right? So, we have on one side, in Tuas, you have a solid waste incinerator, which creates energy, which is powering one of the world's largest water treatment plants right next to it, right? And that's net zero. It's consuming power, which it's generating on its own. And I think this is what'll end up happening. And I think that a lot of the data center companies will actually end up becoming power companies in a way and generate enough power to then support households and others as a way. So, I think it's going to be really interesting, and innovation times are ahead.

Miro Lu 21:46

William, from where you're based in the US, it contributes more than half of the data center capacity, and much of the build-up is happening there. Are you also seeing an increasing in renewable build-up?

William Smales 22:03

We are, and not only are we involved in data centers, we're also involved in renewable development platform and also in the United States, where we're delivering nearly two gigawatts a year of new utility-scale solar and storage. And a lot of the discussion in the US was sort of "build, baby, build" in terms of the current administration's focus on the oil and gas side of the energy equation. But what we're still seeing is huge amounts of solar coming online in the US, and we're actually very bullish about that as the source of generation in the US.

Miro Lu 22:44

Right. I think it's not fair to talk about AI infrastructure without talking about China, because while US takes up more than 50 percent of the capacity, China is the second, about 24 percent, and that's larger than the rest of Asia combined. We're also seeing data saying that China infrastructure spending would double this year to about $140

billion. This morning, I was reading this article talking about Inner Mongolia. There's a town, I'm from China, but I can't even pronounce that town. That's how remote this town is. It used to be a town that a rural area grows potatoes, but now it becomes data center capital. And it has all the elements. It's in a cooler place. It has lots of sustainable energy, wind. The energy price is already half of the national level. I guess my question to my panelists who operate in this part of the world is, does China's separate AI stack change your plan in this region? Because many countries in this part of the world, when they decide to build their AI infrastructure, they are inevitably facing the hard facts that they have to sort of choose which stack they go for. Maybe I'll throw that to Valerie.

Valerie Speth 24:13

Yeah. Yeah, I think in China, what we have seen is that really lead the way to scale up, and they did this for energy, and now they're doing this again for data centers. And I think one of the drivers is going back to policy that is very clear how they want to lead, and they lead by these principles, right? I think in Southeast Asia, what we're seeing is that there's a lot of new interesting technology coming out of China that will also improve the operations and the running of data centers here in the region. So, we see people that build out in this region using these technologies. And then I think the second point is that obviously there's a couple of hyperscalers, and then there's the Chinese demand they have been very essential to this region to contract for a longer time. Because in general, they're not only looking for a three- to five-year contract, their contracts can go up to 15 years. And something like that, at least as investor, is very good because it gives you an opportunity to underwrite these data centers in a different way, and it's very heavy infrastructure in this case because it's contracted revenues.

Miro Lu 25:37

One of the national policies is to—they call it using the west side of computing to support the east side of the data usage. And I'm just wondering, if they have enough to supply the east side, and if they have more supply, they can go on and supply to this part of the world and still over to Southeast Asia and maybe further. Is that something of your concern?

Valerie Speth 26:03

They could, but I think there's also a demand coming from the west, right?

Miro Lu 26:10

Of course—

[Crosstalk]

Valerie Speth 26:14

—so, the demand comes from both sides, and within one data center, it's very difficult to contract with both clients. And so what you would have to do, you have to separate this in a way that each of them are kind of sovereign, and each of them have their own guardrails around it.

Miro Lu 26:34

Kaushik, do you have anything to add?

Kaushik Chakraborty 26:37

Yeah. I think we talked about what's really driving the demand, right? So, I think when it comes to sovereignty, it's not just data residency. It's also nations wanting to build their own large language models. I think this is one of the drivers which China has, especially in Southeast Asia. How many countries want a little bit more choices in terms of the models, right? And China's also looking at ways to license large language models to other nations and help them build their own based on a platform stack. Singapore is definitely looking at that as an option. I'm sure the other nations would look at it. Not every nation has the computer power or the required number of people to build all the models, right? That will drive a lot of demand back in China as well. And China's also figured out, you talked about scale. They can figure out scale on anything, right? Even construction, design. They are today building and handing over data centers in less than half the time any other nation in the world is doing. And—so, I think there's a lot to be learned. What I see today is a lot of openness from, definitely from Australia, from Southeast Asia, Middle East, and other parts, even Europe, to look at China as a source of technology and to learn. Surprisingly, even India is opening up to starting to learn in what they want to do and where they can take the best from China on the AI revolution. Right? Because it is a lesson. It's a very good lesson to learn, and I think NVIDIA is trying to help bridge that to some extent, right?

Miro Lu 28:14

Since you mentioned India, is there investment opportunity there? There's quite a lot of headlines, attracting some hyperscalers announcement.

Kaushik Chakraborty 28:25

I don't know if any of you guys were at the AI forum, which they had earlier this year. There's definitely—I mean, India wants to have its own sovereign language models. Its data residency laws are in place for many years. I don't think it has a choice.

Miro Lu 28:39

But does it have the infrastructure, the steady grid, the power supply?

Kaushik Chakraborty 28:41

That's—no, that—it's water, it's the power supply, and the cooling systems which are lagging behind. But again, I mean, when it comes to solar, India has massive solar. Massive. Trillions of dollars' worth of investment in solar. And they recently announced more investments to look at offshore wind, and then also gas, more exploration. So, India hasn't had an exploration, high-seas exploration policy for many years, and they've just launched that, and they want to go more aggressive. So, I think, as I said, right, any demand creates a lot of, you know, backlog of innovations to come in and support that.

Miro Lu 29:20

Hassan, although you have ample supply of energy, traditional energy, but you guys are also working hard on renewable energies.

Hassan Alnaqbi 29:30

It's true, and I think, look, I know a lot of people, maybe they don't like the data center world because they think they are consuming a lot of power. But in reality, all the grids that have a mix of sources of energy, whether it's renewable and others, they need a stabilized load. And the data center actually provide that stable load constantly. You see, today, for example, Norway is attracting a lot of the DC developers and the hyperscalers to actually come and build data center because they have a bigger issue there. They have a lot of renewable, and they don't have a baseload that can sustain the grid. The grid without the baseload can actually fall down as a grid. And we've seen in one part of Europe, I think last year or the year before, where they had a big issue, a big blackout, because renewable, it's good for the grid, but you need to have a constant load, and data center actually provide that constant load. So, in our case, I think maybe a little bit different situation where we didn't take the surplus from the grid. We decided as a nation that we build dedicated power to the campus with mix of energy coming into that grid and distribute it to that single location. Because we thought about, you know, UAE, the power is actually a regulated market. So, there is a rule that you cannot put more than 5 percent, on the grid if you don't use it. And so the governments in that region, they look at that peak and off-peak kind of shaping. They have interconnected GCC network where they can take power from one country to another during the time of needs. And so we decided to build a dedicated infrastructure, but fed by multiple sources of energy. We help the grid, and at the same time, we are, you know, a single user for that particular power, which does not affect any residential or does not affect any, you know, enterprise part of the grid.

Miro Lu 31:39

So, questions for the other three panelists who operate in multiple countries and regions. If you have to point out one potential winner, or—underlooked by ordinary people, investors—what would it be? In terms of to become like AI hub, AI center.

William Smales 32:07

I think the reality is it's never one thing because it needs a lot of things to come together to be a great AI hub. And Hassan, you were talking through quite a few you experienced in your region, right? Which make it a really stable, helpful place. But you do need government to be supportive. Generally, you do need—you remember I was talking about community concerns around AI and AI and the involvement. That's where governments can really step up and message to the communities is what are the benefits of AI? What is an AI future? How excited could we be about an AI future and what it can mean for our lives and the prosperity of our citizens and our communities? So, if a government is prepared to engage in that dialogue and help people understand the value, it then creates effectively a tailwind for infrastructure investors to step in and build the hard infrastructure, the electricity grids, the power capacity, the data centers. Because remember, that's the raw ingredients—and it's a little bit your China question is—if you have excess capacity, can you export it? And remember, if you can build great capacity in your nation, i.e., electricity generation capacity and data center capacity, what are you exporting? You're exporting tokens or you're exporting new ideas, new AI companies, new AI start-ups. Incredible value can be built on that stack. So, when you were talking about excess capacity in China, is it exporting or making available raw compute? It may not be. It may be actually what's created with a token from a compute, right? It may be something actually quite sophisticated, quite developed, that ends up getting exported. But to have the chance to do that, you've actually got to build the physical infrastructure in your country first.

Valerie Speth 33:50

I think there's enough demand for every country to be a winner. And I would say the industry for sure is a fantastic industry to invest in. But it doesn't mean that every investment goes well. So, you have to go down to the individual project and look at the project.

Miro Lu 34:10

What would be a red flag for you? What, what project have you walked away, because of what?

Valerie Speth 34:17

So, because we are infrastructure investors, right? So, we look at the fundamentals. So, one is for sure the land. Second one is revenue. So, you need to have something contracted. And then the third one is grid. So, basically just the three things we're talking about, right? To identify. And then I still believe it's very important which company you invest in, because in that company, there need to be people that are very excited and sign up for the challenge. Because building a data center takes a lot of effort from a lot of different parties, and they all have to work together as a group. And because it's more early in the industry of data centers, there's still a lot of things that people have done only once or maybe twice or never done before.

William Smales 35:08

Interestingly, when we're infrastructure investors, when we first started looking at investing in data centers like 12 years ago, we really struggled. We could get our heads around these big concrete blocks with lots of power connecting them. We thought, "Okay, it actually looks and feels like infrastructure." You can kick it, and it doesn't move. Like, that feels like good infrastructure. The bit we always struggled with, if you go back 12 years, a lot of those early data centers were enterprise colo data centers. And as an investor, you look at them and say, "Well, what's the contract length?" And everyone said, "Well, typically these enterprises signing up like three-year contracts." And I'd say, "Well, what's the churn?" Well, sometimes 10 to 15 percent of the customer base could be churning because they're all understanding what their outsource data center needs are at the time. So, that it does not make a great investment for an infrastructure investor. So, for us, what changed 12 years ago, we identified a business that actually it was contracting to government. So, all of a sudden we had longer-term contracts, we had inflation linkage, and all of a sudden we had the ingredients to make an infrastructure investment. Right? So, it was almost what had to happen. And today, lots of infrastructure investors invest in data centers. Why? Because today we have the hyperscalers. You know, creditworthy counterparties writing 10-, 15-year contracts, and you get the physical infrastructure as part of the package. You know, that's a great investment criteria. The question I think we should be asking ourselves next is where can we create those conditions for investors to flood in to get the infrastructure built? And it may be that increasingly we need to work with the NVIDIAs, the hyperscalers, the large neoclouds, the governments to get the contracting structures right. And then the capital will come in.

Miro Lu 36:55

William, are you seeing more interest this year as compared to three years ago? Or we are seeing more skepticism, with all the AI could go out of control talk going on?

William Smales 37:11

It's definitely a complete contrast. On the ground—and Hassan, you'll see it, and you'll see it with your clients—there is immense built-up demand in the system, like proper contracted demand to build this capacity, whether it's energy capacity or data center capacity. It's real. You can touch it. The counterparties are creditworthy. That stuff,

it's going to get built, and it's more than it's ever been, right? So, that is very real. On the flip side, there is a high degree of skepticism and nervousness about where bubbles are emerging. And it's not going to be—

Miro Lu 37:47

Might burst according to Ray Dalio.

William Smales 37:50

—yeah. Is that right? Yeah. But remember, it's not one big bubble, it's probably a bubble bath, right? There's lots and lots of little bubbles popping up all over the—

Miro Lu 37:59

That's a nice way to put it.

William Smales 38:01

—right? And that's okay. So, as investors, as individuals, we should be working out, okay, where are the little bubbles emerging? Let's steer clear of those. But the brick theme is happening, right? And we should be getting exposure to it. But yeah, watch the bubbles in the bubble bath.

Kaushik Chakraborty 38:17

I recall the Y2K problem, right? Which was supposed to end everything and—

Miro Lu 38:21

Oh, yes.

Kaushik Chakraborty 38:22

—it ended up being a bubble bath and no problem. I think you hit the nail on the head in terms of community engagement and government, right? Some of the problems we are trying to really solve and work with people is how do you get site selection? Probably because we often think of the big ones, right? But data centers will become a part of physical infrastructure. In 10 years, they'll be just like having train stations or bus stops and stuff like that. So, it'll become a network of interconnected systems. So, if you work backwards and think of where we'll be in five to 10 years from now, site selection, and then how does that then become part of the grid? How does it help recycle water if it's consuming water? And what are the innovations that it'll drive? You mentioned something about when we talked about China, think of what we look at, especially in Southeast Asia, in India, and other parts of the world, the fintech revolution, which has happened. I can definitely—we all know that it was started in China, right? That revolution in digitizing a complete economy started there. And how many nations picked up? I think this is what will happen, right? When nations develop AI capabilities, which data centers will power, it'll revolutionize life and industries and governance and a lot of other things. Because digitalization is not going to stop, right? And the AI is also—I think construction has been, according to McKinsey, for the last 10 years, the most under-digitalized sector in the world. It will change construction. It'll bring in completely robotic constructions, robotic design. It'll change material science. All these innovations are coming in, and we see this changing the way the world works, right? How do you create a data center which creates heat, cools itself, as you

said, right? It's going to become a net zero. Today, of course, grid operators—I was reading a report from the US, the National Grid Association, which said that today 70 percent of the discussion is on reliability and not net zero as compared to last year. In 2–3 years, it'll go back to being something different. So, I think again, it's just the rate of change is so fast, it's just going to take time to settle down again. And I think investors and owners like yourselves play a large part in actually working with governments, and governments have to calm things down, right? They have to start re-touting the value in terms of what it does to economies and help improve economies in the world.

Miro Lu 41:01

Any last thought, Hassan and Valerie?

Hassan Alnaqbi 41:04

I think maybe in the future, what should happen is something like the follow-the-sun concept, where nations that they have massive capacity on the compute side, with different time zones can actually share this capacity to, let's say, not oversupply the compute globally. In the sense that you have, let's say South Korea, they're building five gigawatts, you have UAE building five gigawatt, but they have two different time zones. Meaning, the people working hours is different, and they can actually utilize this kind of compute instead of multiply the supply and build out across the globe. I think one idea that we have been exploring with one nation is how can we complement each other? But of course, there is the sovereignty part that need to be resolved, and there's also latency and connectivity that need to be in play to actually allow this follow-the-sun concept.

Miro Lu 42:03

There's the geopolitics in the play.

Hassan Alnaqbi 42:05

Of course.

Miro Lu 42:06

You offer, someone needs to take it.

Hassan Alnaqbi 42:08

But you're talking about two different nations that are actually friendly nation, they trust each other, they can actually do that.

Valerie Speth 42:14

Yeah, I think it's a very interesting new industry, and that's the reason why we're all in. And I think we have a couple decades, maybe two or three decades to optimize and get the best out of it.

Miro Lu 42:28

Excellent. Now, we started the panel with a quote from Jensen Huang. I will end it with another. "AI is becoming the fundamental infrastructure of the modern world, and the choices we make now, how fast we build, how

broadly we participate, and how responsibly we deploy it, will shape what this era becomes." On that note, thank you so much, panelists. Okay. Thank you.

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