

Inside Data Centre Podcast.

WITH ANDY DAVIS

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Title

Ian Miller, Director TTSP: The architectural design of Data Centres.

Date

6th September 2024

Transcript

This is the Inside Data Centre podcast. We talk to the people who power the data centre sector to give you insider info on everything happening in DC today. He's your host, Andy Davis.

Andy Davis

Welcome to the Inside Data Centre podcast. Today I'm joined by Ian Miller, Director at TTSP. Good afternoon, Ian.

Ian Miller (0:35 - 0:38)

Hi Andy, great to be speaking to you.

Andy Davis (0:39 - 0:45)

Good to see you again. I was reminiscing earlier about the last time we saw each other, which was in Cannes.

Ian Miller (0:45 - 0:47)

There was a bongo player involved, I think.

Andy Davis (0:47 - 1:15)

Yeah, I was tempted to bring along a bongo player for the podcast, but I thought that's probably taking it a bit too far. But thanks for coming on. Looking forward to having a conversation with you.

Obviously, architectural focus, been in the industry for quite a while, a lot of experience within data centres. So looking forward to just talking about the evolution, really, of how it's changed from when you started to where we are today and try and use our crystal ball to predict the future. Before we do that, do you want to give a quick introduction of who you are and what your current role is?

Ian Miller (1:16 - 2:14)

Yeah, so I am one of the two owners and director of TTSP. We're a 65-odd-year-old architectural practice, fundamentally commercially, historically. But we sort of organically got into the data centre market because we were dealing with huge amounts of trading flaws and that sort of thing.

And you were dealing with the large comms rooms that supported those and all of the resilience issues that they gave you and the A and the B streams. So it was really when the FSA, I think it was, legislated that people had to start backing up their data, that all of these big banks sort of swept up everything, got all their comms rooms together, stuck it into one big bundle and popped it in places around the M25. And that's really how we sort of moved from commercial architecture, which we still do, into the sort of genesis of the data centre world as it became.

Andy Davis (2:15 - 2:21)

Yeah, I normally ask people how they fell into the industry because we all fell into it. I think that's the reality of it.

Ian Miller (2:21 - 2:22)

Yeah, yeah, yeah.

Andy Davis (2:22 - 2:29)

For yourself, wow, quite interesting. How did you get into architecture? You know, what was it that drew you to this industry?

Ian Miller (2:30 - 2:32)

Probably I was set up by my parents.

Andy Davis (2:33 - 2:34)

As many are.

Ian Miller (2:35 - 3:56)

Left school, did well in O levels and A levels. Knew I didn't want to carry on studying, so just carried on working in the job I was doing at the time, which happened to be a butcher, which was a Saturday job, hugely related to architecture. Then we had an architect that lived at the bottom of my garden in the adjacent house who we knew well.

And he just said to me one day, do you fancy coming in and seeing what I do? And I enjoyed the creative side. I've always done art, design and technology.

So I just went up for a day, went round the building sites, listened to what he was doing, got back to his practice, and he said, oh, Brian, one of the partners, wouldn't mind having a chat with you. I sat down and had a chat with Brian. He said, how did you find it?

Yeah, and I was really interested, really enjoyed it. He said, how do you fancy coming working for us then? And at 17, that's where I started, started life doing that.

On a drawing board with rotary pens, for those that can remember them. And then thought, well, you've really got to have a qualification in this business. Not going to study architecture, it takes too long.

So I did five years as a construction technologist, then decided I want to be an architect. So I then did another eight years, and this was all work, full-time working. So one day a week.

So 13 years into my career, I was a qualified architect.

Andy Davis (3:57 - 4:14)

And when you first, let's say, stumbled into data centres, like you said earlier, your organisation does commercial architecture as well. But was it any different at that point? As in, did you, when you started working in the sector, was it, did you have to operate differently compared to the other industries?

Or was it quite an easy transition?

Ian Miller (4:18 - 6:43)

It was an interesting transition. I mean, we, as a practice, we'd started doing them for the bank, so I hadn't done any. But I just finished a large commercial project with one of the leading MEP companies at the time.

And I just got a call from the electrical engineer I was working from, working for. And he said, we've got, we've got, we've been asked to do a project. And we need an architect to help us.

It's called a remote data backup facility. So I said, oh yeah. He said, I said, what's that?

He said, well, come down and meet me on the site. The site was down in, near Portsmouth. Very well-known facility.

Actually an interesting architectural facility in its own right. So we stood in the car park early one morning. And he said, you see that building over there?

And he told me how much money was, went through that building every day in terms of transitions. And he said, that doesn't even have generator backup on it. So if that falls over, everything goes.

And they've been told they've got to now put a backup facility. He said, we'll now, we'll go to the site and I'll talk to you about what we've got to do. So we drove out to a site about two kilometers away and we stood in the car park of that site, looking at a new, small, light industrial building.

And he said, what we're going to do here, we're going to build some big boxes in the middle. And then down one, two sides of those boxes, we're going to put air units to blow cold air into the space. And down the other two walls, we're going to put power distribution units to power everything that's inside it.

It's going to have a really deep raised floor and it's going to be full of computers. And you see that car park over there, we're going to fill it up with generators and chillers. And that was how, that was how my first data centre was described to me.

Reality is, pretty much everything we've built since then is based on exactly the same principles. We're still doing big halls, we're cooling down two walls, power distribution on another couple of walls broadly and the chillers and the generators in the car park. So, not so far away, but just, you know, massive change.

Massive change, you operate it. I mean, we were building in drywall, a whole bunch of things that now you wouldn't do, but the fundamental building blocks, yeah, not a million miles away.

Andy Davis (6:44 - 7:09)

The principles are the same, exactly. It's still trying to achieve the same thing, work the same way to a degree. And then, as a business, before we go into the kind of data centres now, I was thinking of the ghosts of past, present and future, but TTSP as an

organization, you've changed a lot as well, and you've become more focused onto the data centre market.

So, how have you evolved your organisation into the market and how have things changed for you?

Ian Miller (7:10 - 9:07)

I think, again, it's been two things happened and all of them fairly organically. It's just been a question of one job leading to another, one client leading to another. Projects coming forward 25 years ago because it looked like the financial capital might move to Germany.

We set up a joint venture office in Frankfurt, TTSP HWP, who did very little commercial. They were doing commercial then, same as we were, but if you know them, you'll probably see that they are 100% data centre now, probably the leading data centre provider or data centre architects in Germany. 70 odd people, I think they are now.

We're just over 30 here and growing steadily. So, yeah, it's been up and down, fairly organic though. I mean, it's just, as I say, clients having rollouts, clients moving from place to place, bringing new work.

A lot of work historically with MEP consultants. So, as they were getting clients and bringing people on board and bidding projects, they were often bid as a consultee. So, you found yourself twinning up with MEP consultants and we worked with most of the major ones over time and still are.

So, that's really what drove it, I think, and as the market's grown and grown and as it's just gone crazy in the last three to four years, we've grown with it. I think that and the combination of COVID coming in the commercial sector, it's led to one side of the business going crazy and the other side really finding it hard work. So, we're probably about 70%, 80% data centre now.

Grown into that over 25 years of doing it.

Andy Davis (9:08 - 9:18)

Yeah, and doing a good job. Like I was talking about before you go online, do a good job and you kind of, this industry very much is repeat business, repeat business available if you do a good job.

Ian Miller (9:18 - 9:57)

And I think one of the key factors is understanding everything. It's not just about keeping the rain off and making it look pretty. It's about understanding what goes in it, understanding how it works and knowing what the other drivers are.

I mean, not forgetting at the end of the day, all of us doing this are a service industry. We're serving the lives of clients and it's their drivers. You've got to be able to respond to those, but you've got to be able to, you've got to be interested and you've got to understand it and you've got to be able to put those things together sensibly and in this day and age is incredibly quicker by the project.

Andy Davis (10:00 - 10:34)

Yeah, and I was going to say that as well. Obviously, we talked about the past, I suppose. When you first moved into the industry, what they said it was like at that point.

And I think if you talk about the present, one point I wanted to touch on is the concept of it's just a shed, which frustrates a lot of us when you have these conversations. And I think you've just sort of touched on part of it there about the intricacies of these facilities, but also you must've seen the exterior change as well because as we've become more public, people don't want these buildings to be hidden away anymore.

Ian Miller (10:34 - 12:23)

Um, there's a bit of both in it. I mean, there are still, and you know, go to West London. There are still large parts of West London where a simple shed and the right kit in the right places works very well and works very economically.

So if you're a major co-lo or if you're a hyperscaler, that works for you because you're spending least on the bit that doesn't concern you and getting most bang for your buck. So you're getting as much white space as you can. What is changing, and we're, you know, we've got four facilities, I think going through various stages of design and construction within probably a two to three kilometre radius in London, you know, in fundamentally Docklands.

But when you're dealing with buildings, which are up to a hundred metres high, you know, some of them up to a hundred metre footprints in an urban environment, and some of them adjacent to listed buildings. Most of them, you know, within an environment that's got residential on it, it's got hotels nearby, all of those constraints, as well as the planning issues, environmental issues, you know, the architecture does take the lead. And it comes back to that, that discussion about knowing what goes into them.

So as you, as the architecture works, you've got to work the architecture around what the data centre needs, but you've got to be able to respond to urban context. You've got the quality of the design is key. It's a big driver when you're sitting in front of a design review panel and a bunch of planners in a pre-app or the GLA.

You know, all of those drivers are add to actually what an operator wants, which is as much white space for as little outlay as possible.

Andy Davis (12:25 - 12:35)

And how has legacy data centres impacted as well? Because again, we're seeing a lot because of the lack of power, obviously there's a lot more upgrade in retrofitting, et cetera. Is that impacting how you design a data centre?

Ian Miller (12:36 - 14:32)

I think legacy, I mean, they're always going to be a challenge. And it depends where they are. And it depends, and I don't think the industry as a whole has got really got its head around how you're going to deal with those.

You know, when I think back, you know, 2012, I was working on what I was told was the largest data centres fit out in Europe at the time, all six megabit. And you think, you know, how long before that becomes a legacy data centre? And smaller facilities than that, and facilities where you fundamentally can't get more space for cooling, which is what's going to be the driver.

You can get, you know, yes, power is the biggest issue for all of us getting power. But it's all right to stick loads of power in a building, but you still got to get rid of the, you know, what that drives, which is more heat. And if you haven't got room space and you haven't got the capacity to get more chillers in or get rid of that heat some in some shape or form, that really becomes a challenge.

You know, you can go as dense as you like, but, you know, the building footprint. And it'd be interesting to see that, you know, ultimately what, how that pans out, whether there are systems as we, as we change densities and as the cooling systems have to change because of that, whether doing things like taking heat off and reusing it. If these, you know, these places are in connected enough environments, allows you to strip back the cooling, whether more resilient power streams allow you to strip out generators, give you more space for cooling, for example, all of those things.

And whether, you know, whether I think fundamentally some of these, what were legacy centres just become edge centres and define the edge. I mean, we've done edge from cabinets to 100 meg facilities.

Andy Davis (14:33 - 14:56)

So I had that exact conversation on end of last week. I said, I went for a period on the podcast of asking people what the edge was, what does it mean to you? You get a different answer every time.

But yeah, I agree. You know, like edges, edges, edges. It's still there.

It's still a huge market, but what it is, it's changed fundamentally from the early days of the conversations around edge.

Ian Miller (14:56 - 14:59)

But I mean, it starts from on board computers, doesn't it?

Andy Davis (14:59 - 15:17)

This is what's going to track it all the way back. I know you touched it there. This brings us on a bit to the future as well.

But like scale, because because one thing again that you hear outside is just like building bigger, bigger, bigger, bigger. Yeah, how actually achievable is that sometimes? Because you need to consider everything within it.

Ian Miller (15:18 - 17:00)

Yeah, well, bigger, bigger, bigger. You can do providing you got the land, providing you got the power, providing you get the cooling. And densities are going up.

That's something that nobody's not convinced about that. So actually, the white space is coming down. Because within a given site, and certainly if you work in an urban environment where you've got roof space constraints, there's only only so much space you can get rid of that heat.

But, you know, we're all working those issues. It just feels to me, I think I think, you know, nobody's got any interest in doing anything other than working as efficiently, making a facility work as efficiently as it can. But the arms race of.

Bigger and bigger and more and more powerful chips simply by making them more powerful, needing more power. You know, you've got to think long term how sustainable can that be? And I really don't think, you know, while we do what we do, I don't think it's going to be until we see a real step change in what how compute is.

Derived, you know, getting significantly more. Compute for the amount of power that you put in. You know, I've seen articles I can't remember the figures, but it was like step changes of 100 times or 1000 times more compute for the same for the same kilowatt.

Now, if you can do that, then that really will make a difference. But at the moment, we're in the territory of we need more and more processing. We need quicker and quicker processing.

It's just and it has just become an arms race.

Andy Davis (17:01 - 17:25)

Yeah, and you touched on cooling as well. I was speaking to somebody yesterday who's much more, much more intelligent than I am around cooling. And he was saying, there isn't actually a solution out there.

Everyone's talking about straight to chip cooling, but there isn't a solution yet. People are trying to identify it. And will that come in?

And it's all impacted in the design, isn't it? So yeah, how do you design for the future when you don't really know what the future is?

Ian Miller (17:25 - 17:53)

Yeah, or you're going to, you know, you'll design a facility which you'll find only 50% of the white space is occupied. Because that's all the rest of the building can support. That's all the power you can get.

I mean, if you were at data centre, we talked earlier, we're at data cloud together this year. And I can't remember it was, but there was a one meg rack on display. You know, so how many one meg racks do you need in building to use up a hundred meg?

And that's an easy equation.

Andy Davis (17:54 - 17:56)

I can do that maths.

Ian Miller (17:56 - 17:56)

Yeah.

Andy Davis (17:58 - 18:11)

I know. And finally, on the sort of design side, we touched on timeframes as well. Again, it's the demand is faster, faster, faster.

How, how achievable is that? And how have you had to adapt in order to achieve these timeframes?

Ian Miller (18:12 - 20:28)

Employ more people is one thing. But, you know, it is just, it's just keeping, I suppose, being systematic about what you do. You know, some of it isn't rocket science.

Knowing, being able to, being able to, you know, for us, being able to take the metrics that we're given. Somebody gives us, gives us a site or asks us to look at a site. They give you, you know, providing you can agree the density you're operating at, providing you can agree the PUE that you're going to apply.

It's a linear equation to work out how much white space you need. You know, we can then, we have the facility, you know, we have the building blocks to apply generators to that at three megs, say, or chillers at two megs. And look at what that means.

So we can very, very quickly test fit a site. And it's that that sort of underpins what, what somebody might do about a piece of land. You know, we all know how incredibly valuable these pieces of land are and how incredibly secretive that whole business is.

So being able to do that quickly and test various options and feed into, you know, what are the pros and cons of that site? That's sort of, you know, key at that early stage. It's then, you know, depending on what route it goes, there's a lot of people in the market now who weren't in the market historically because of the investment returns on it.

So you're looking at sites that you know they're going to go to outline. They need a viable site. They need parameters.

And then they're going to, they're going to put it to market. Or you're looking at sites for colos or hyperscalers who will just take the site, take it forward and that different things apply differently. So, you know, but one of the, one of the, I think one of the key things you see now is that you don't, you don't go anywhere near a planning route until you've got a planning consultant on board.

You know, that everybody works hand in hand with those guys now as well as, you know, the regular suspects of the MEP guys and structural engineers. But, but, you know, when you've got barristers looking at what you're doing, it's interesting times.

Andy Davis (20:29 - 20:54)

Yeah. As, as the capital increases, there's more eyes on, isn't there? And I think that's the reality of it.

We're seeing it across the industry, even in talent. I have so many conversations now with investors because they're investing so much capital. They want to ensure that they're recruiting the best people, but also, you know, whether that's salary information or market intelligence or what's, what's the market saying sometimes is, it's really important to them because it's so much money.

Ian Miller (20:54 - 21:06)

Well, and, and, you know, for a number of them now, they're new investors in this market or the amount they're investing has gone up significantly from what it was. So yeah, it just becomes more focused.

Andy Davis (21:07 - 21:28)

Definitely. Good snapshot on the architectural side. Before I let you get on with your evening, a couple more questions around the industry.

We've touched on quite a few challenges already, but 2024 is, I'll have to change my question soon, which always seems crazy. We're at the end of August as we record this, but we've got four months left. Any big challenges you think the industry is facing right now?

Ian Miller (21:28 - 22:16)

Yeah, I just think it's the ongoing challenge of the increase in densities that we're all seeing and where that's going to lead in the future. You know, for a site, I plan this week at one density. If nothing happens on it for a month, I'll be asked to redo it at another density.

Most of the, you know, you see a number of the hyperscalers, you know, they've got a basis of design. It's easy. It's a playbook.

We're going to give it to you. Oh, hold on a second. We're just going to pause that project because we're redesigning our basis of design.

Guess what? The density is going up. And ultimately that change to the cooling systems as they all develop and who, you know, it's a little bit like the VHS, Betamax, you know, what is suitable for what?

Is it rear door cooling? Is it direct to chip? Is it immersion?

You know, how's it all going to pan out?

Andy Davis (22:18 - 22:19)

We need that crystal ball.

Ian Miller (22:21 - 22:24)

But one thing you need to be certain of it will change and it will change quickly.

Andy Davis (22:25 - 22:29)

But that's what we love, isn't it? I would say that. We joke about it.

Ian Miller (22:29 - 22:30)

For a little while sometimes, but.

Andy Davis (22:31 - 22:44)

Yeah, it would. But equally, I think most people in the industry that you talk to it's they actually enjoy that. Being a little bit uncomfortable and having to adapt and be agile.

The people that do well tend to have a lot of those traits.

Ian Miller (22:44 - 22:45)

Having to think.

Andy Davis (22:46 - 22:54)

Yeah, definitely. We definitely have to think. Couple of final questions.

If you could ask everyone in the sector to start or stop doing one thing, what would it be?

Ian Miller (22:55 - 24:09)

I just I just think the resolution of this whole arms race on power and density. And, you know, it's an inevitable consequence of the growth and the amount of processing that's needed. But somewhere amongst this, there must be a better way.

I think the other thing I'd really like to see is a little bit. I mean, we've all got ESG targets. Everybody has them.

And I think there's a lot of mileage to be had in engaging in the S as much as the E. You know, when we're dealing with a project. If people have got a playbook for their social issues, that's not great.

You really need to get if you can't make a difference to the people in the 10 roads around your site. Then you're not dealing with the S properly. You know, some of the sites, some of the locations I'm looking at.

And you think I can look at that site and I can look at the surrounding area and think, you know, by engaging properly, you can change a lot of people's lives. People, you can get them engaged in the industry. You can get them local opportunities, not just in the industry, but just in things you can do in the locality, which will make a big difference.

All of those sorts of things. And it'd be great to see, you know, a bit more work being done at that real grassroots local level.

Andy Davis (24:10 - 24:24)

Yeah, definitely. And you see the ones that do it well as well. You do.

It's so clear when somebody does that well, because it's not done enough. Yeah. Yeah.

Final question. If you could give one piece of advice to anyone looking to work in the sector, what would it be?

Ian Miller (24:25 - 25:35)

I just think be open, be engaged, be interested. It's an incredibly broad sector. You know, if you're interested in it, there'll be something there for you.

And it will change over time. And you'll change and you'll evolve. You'll evolve.

And, you know, be open, accep help from other people and help other people along the way. We're all in the same boat. Everybody is going to struggle at some point.

Everybody's going to need a little bit of assistance. I think really to sort of round it up, and I was just reflecting on this before we came on, but there was a little outtake, I think, that was circulating. And it was a little snapshot of Barack Obama.

And he was just talking about people that are important to him. And he describes them as people that just learn how to get stuff done. And if you look that up, that little, it's only about a two minute outtake on, and you can get it via LinkedIn, the way he talks.

And you can absolutely understand why people like that and why they'd be great in this industry.

Andy Davis (25:37 - 26:06)

We'll dig that out and we'll put it in the show notes when we release it. I'm a big believer. Again, when you look at this industry, you have to get stuff done because it moves so fast.

You haven't always got time to plan and project and forecast. It's an instantaneous industry. Sometimes you have to have done it yesterday.

That's the reality of it. You have to have done it that fast. And you do need to have that ability.

So, no, it's a really good point. I think, yeah, we'll definitely, we'll dig out of that, put it in the show notes so everyone can take a listen or watch.

Ian Miller (26:07 - 26:09)

Cool. Learn to think sideways.

Andy Davis (26:10 - 26:21)

Exactly. Yeah. In particular, the future and all that stuff that we can't do.

But thanks for your time. Great to connect. Where can people connect with you if they want to learn more, either about your business or just have a conversation?

Ian Miller (26:23 - 26:34)

Through LinkedIn. It's a good forum. Or direct to the website.

I don't know. I don't know what you can post via that, but I'm happy for my contact details to go up.

Andy Davis (26:35 - 26:45)

We'll put their website in the, again, in the show notes so people can find it. If they need to reach out directly, obviously come to me. Or like you say, if you had to find anyone on LinkedIn these days.

Ian Miller (26:45 - 26:46)

Always happy to talk.

Andy Davis (26:47 - 26:57)

Thanks for your time. Great to connect. Next time we see you, we're definitely bringing a bongo player wherever we are, whatever it might be.

If you know, you know. And yeah, we'll catch up again soon.

Ian Miller (26:58 - 27:02)

Cool. Great to talk. Bye.