Future of Infrastructure podcast

Episode 19

Jeremy Goldberg [guest]

Peter Torrellas [guest] https://www.linkedin.com/in/petertorrellas

**JEREMY GOLDBERG:** Welcome to the Future of Infrastructure, a part of Microsoft’s public sector future series. I’m Jeremy Goldberg, Worldwide Director of Critical Infrastructure at Microsoft. And I’m on a journey to learn more about how infrastructure is being built around the world by talking with public servants, philanthropists, artists and place makers who have spent their lives working in the public interest. This is a series to help us build things and plan for the future while putting people first.

So, here we are in Soho at the Microsoft Garage, and I’m joined today by Peter Torrellas from Parsons Corporation. Peter, it’s great to join you in person.

**PETER TORRELLAS:** Thanks, Jeremy. Great to be here.

**JEREMY GOLDBERG:** So, let’s start off by having you introduce yourself, and share a bit about the work you do, and some of the work that you’ve done over the course of your career with our audience.

**PETER TORRELLAS:** Yeah, thanks, Jeremy. My life’s work, if you will, is predominantly focused on I guess what they call infra tech these days. And so, that’s really the intersection of infrastructure and technology, and, of course, all of the business models and things that help create value for the world. And so, that’s, at a high level, what I work on.

Today, I lead a group of thousands of innovators, and engineers, and craftsmen and practitioners that work on all sorts of infrastructure. So, that means water, and energy, and the transmission and distribution of electricity, mining, aviation, rail, traffic. So, really every single infrastructure asset class, the team is working on in one way or another. And that’s a lot about my career.

So, about 20 years ago, I dedicated my life to the practice of working on infrastructure and trying to make our planet better. That actually started right here in New York City, so.

**JEREMY GOLDBERG:** And it sounds like you’re someone who deeply cares about cities. And so, why don’t you tell the audience a little bit more about how you got into this line of work? I mean, it’s maybe 20 years ago, but prior to that, what’s the origin story of Peter here, as a born and raised, I believe, New Yorker, right?

**PETER TORRELLAS:** Yeah, technically born in Venezuela, in Valencia, which is another city. But as a young child, I think six months old, my mom moved here to New York. She’s actually a native New Yorker. Her mom was a native New Yorker. Her mom was actually the Commissioner for Civil Rights here in New York City, and was, I think, the first Puerto Rican woman to graduate from Cornell University.

And so, my family has a long history of really civic engagement and working in cities. My mom worked for HPD, the Housing and urban Preservation & Development agency here in New York. And so, my whole life, I was surrounded by people who dedicated their lives to making cities better. And I’ve been fortunate enough to take on that mantle and – and, in my own way, practice my craft in making cities better.

And the way that I got into it was a little bit different. I started as a computer scientist and

started with my own software company doing management consulting, as well. And at some point in the early 2000s, I got a phone call to help Siemens. At the time, they were doing a project to essentially modernize the New York City subway system after 9/11. And I actually wasn’t sure if I wanted to do that.

And it turns out that one of the first train stations that they were working on, and the project was for all 468 stations in the city, was Fordham Road. And Fordham Road in the Bronx, on the border of the South Bronx, was actually the train station that I rode as a kid growing up in Kingsbridge.

And until really that moment in time, it never occurred to me that I could use my computer knowledge and my – my natural curiosity to solve problems and apply that to really tangible things that could help change people’s lives and help make people’s lives better. You know, that project was about when the towers went down, you couldn’t get a hold of anybody underground, because there was no communication infrastructure. There was no centralized passenger information system. There were just people with megaphones walking the platform. That was essentially the PA system at the time.

And so, the idea was to keep people safe, and to make New Yorkers at that time, the five million people a day who rode the subway safer. And so, this massive billion-dollar project to upgrade that system. And I got to play my small role in that, and that’s when I figured out, I could use my love of computers and technology, and my love of cities, and have that come together in a way that I can dedicate my craft to working on that.

And I got a chance to do that. I fell in love with that, and I’ve been doing that ever since. And so, in a lot of ways, my calling found me.

**JEREMY GOLDBERG:** What would you say, in reflecting upon that experience, you said a small role, a small part in that very important project at a very pivotal time in New York City, in the aftermath of 9/11. What was a bit more about your role? Tell us a little bit about that experience.

**PETER TORRELLAS:** There were two things about that role. One is my role was predominantly to help manage, and turn around, and provide strategy and guidance around the actual technology that was being developed. So, at that time, the technology, it didn’t exist, and it had requirements that the world had never seen before.

**JEREMY GOLDBERG:** Sounds familiar.

**PETER TORRELLAS:** Yeah, yeah, yeah, we specialize in things have never been done before. Those are sometimes the coolest projects to work on. And so, my role was, you know, essentially kind of orchestrating. I had a role to be ambassador to the city at that time with the MTA. It was a federally and state funded program. Obviously, I was working for a large international conglomerate.

And so, the social complexity of the relationships played a large role, and developing this one of a kind, first of its kind technology also played a large role in solving this incredibly important problem.

The cool thing about that is the same technology wound up being deployed in Hong Kong to solve similar problems, and the underlying technology wound up being used – and I’m not sure if it’s still used today, but certainly at the time, was used – to control the Large Hadron Collider in Geneva. And so, they were, you know, smashing subatomic particles and controlling Atlas and Alice with the same underlying SCADA system that was providing passenger information and public address systems here in New York.

And so, you know, it’s just one of these things that, you know, nobody always knows what goes on under the hood. But for those of us, you know, who love to talk nerdy about this stuff –

**JEREMY GOLDBERG:** I see the smile on your face here. (Laughter.)

**PETER TORRELLAS:** (Laughter.) It was incredibly, incredibly exciting work.

**JEREMY GOLDBERG:** Absolutely. And you mentioned this at the top, you know, what is deemed or defined as infra tech today, 20 years back, you know, around 9/11, what you were doing was infra tech, right?

**PETER TORRELLAS:** Oh yeah, it was smart cities before, you know, before the marketecture came out.

**JEREMY GOLDBERG:** And we’re talking about requirements that were not yet known that you were helping to design. And also with a transportation system that is, you know, more than 100 years old, right –

**PETER TORRELLAS:** Yeah, 1904. (Laughter.)

**JEREMY GOLDBERG:** And, you know, with all sorts of incredible innovation and technology that went into the design and creation of the New York City subway system, but to bring the new technologies to sort of weave them into, right, the – the old and the new kind of pieces here. Very exciting.

And I think part of what you’re doing that today in your role at Parsons, as – as you pointed out, you know, is things that haven’t been done yet, right? And I think there’s a – there’s really great work underway through the, you know, your leadership and work, and the partnership with Parsons X. So, why don’t you share with us a bit about that effort, that work, and some examples of sort of the things that haven’t been done or realized yet?

**PETER TORRELLAS:** Parsons X is, it’s one of the initiatives that we have within the business, and it is also a group of folks who is, I think you said it correctly – we’re recreating a bridge, right? There’s the world as it is, and the world as we know it. And then there’s this future state, all of these possibilities, and outcomes, and technologies, and stuff that’s coming down the line, and work that we know we need to do to make the planet better.

And the question becomes, how do you bring all that together, right? How do you bring technology companies, and engineering companies, and construction companies, and owners, and operators and all of these folks, and not any one group of folks or not any one group of constituents has all of the things that you need to be successful. So, you need to stitch all that together. You need to weave it together into a new fabric of possibilities.

And that’s the journey that we’re on, and I think that’s the journey that the folks in Parsons X certainly working on every day. And how that shows up, you know, in practice is just really cool projects, right?

So, there’s a project that we have where we were working on a digital twin for an airport, right? They’re – they were in the same – in their interpretation of that problem space, they had landside issues, they had airside issues. They were trying to work on plane turns. They had data coming from a bunch of different systems, disparate systems. And they had different stakeholders, in terms of, you know, airlines, and aviation operators and terminal operators.

And so, you know, we were able to take all of the information and use data as an asset, federate it, and create a digital twin or simulation that provided insights that weren’t there before, so that you could create, essentially, a campfire where all these stakeholders could come around, sit together, gather new insights, and deliver better outcomes, better outcomes that you could measure for the passenger, for the airline and for the terminal.

And so, we have, you know, lots of great examples like that, where all of these things are coming together, and technology’s really catalyzing these amazing outcomes. And sometimes, that outcome is just keeping things safer.

So, we have another group of folks, a recent organization that’s joined Parsons X, that delivers cybersecurity for the transmission and distribution of electricity, right, to make sure that that critical infrastructure safe – stays safe. We have a lot of examples of what happens if that infrastructure doesn’t stay safe, right, that means something material for people’s lives.

And so, whether it’s working on electrical grids, or creating a digital twin for an airport, or working on a city like Neom that’s never been done before and working on the cognitive city vision that they have, the folks at Parsons X are building that bridge between the world that we live in today and that future world that we’re all trying to co-create and co-author.

**JEREMY GOLDBERG:** All right, so bear with me. I have two questions – (laughter) – to follow off script. The first question, in both these examples you’re sharing with Parsons X and the work that’s underway, and the examples from earlier in your career, inherent in that is establishing a relationship built on trust with the stakeholders.

And in particular, because our audience, so many of them are government leaders and business decision makers, first question is how do you establish that trust? We’re talking about safety in most cases, because it’s transportation, and we’re talking about airline, aviation industry, right? We’re talking about the safety of these modes of transit. So, how do you – what are some, maybe two or three things that you bring to the table as part of – in your role in – at Parsons to help establish that trust with the customer?

**PETER TORRELLAS:** There are two things. I think there’s not a lot of, but I think there’s some really reliable ingredients for success. One of those ingredients is, first, being honest about what the process looks like, so not declaring the problem solved, not coming in and saying, you know, we know how to do this. And maybe we’ve done it before, but maybe we haven’t done it before in that environment, and helping people manage uncertainty.

So, everyone’s going into it wanting to get somewhere, but not knowing how to get there. And so, creating a common vision, right, creating understanding what shared values are, and – and really communicating and educating what the pitfalls are, what the opportunities are, helping draw a map of what that journey could look like, is sometimes a key moment in establishing trust.

**JEREMY GOLDBERG:** And transparency, right, in the process?

**PETER TORRELLAS:** Yeah, transparency and sharing experiences, you know, kind of like a Sherpa, right? So, you don’t know if, as an individual, you’re going to get to the top of the mountain, but you rely on somebody who’s been there before, who understands what the risks are, some of the things that you need to look out for, some of the pitfalls, and somebody that you want to entrust to help you go on that journey.

And so, bringing that to the table, not only transparency in the problem space that you’re facing, but also transparency in the change management part of the journey, right, what’s important for them to focus on, what they need to think about for their stakeholders, right, what problems they might run into. And then, you know, as relationships move at the speed of trust, building that as you encounter challenges together, and – and sticking with each other, and working through problems in a collaborative way.

I think trust is something that you need to continuously reinforce. You can establish it and provide an anchor, but it’s something that, you know, every day, the team’s, you know, a little more glue gets set in, if you will.

**JEREMY GOLDBERG:** You’re right. And does the digital twin, right, and I remember a few years back when the concept was communicated to me, when I was in a government role. It was something that I had heard of under a different kind of guise of, like, here’s how it’s applied to city planning or building management. But the digital twin notion wasn’t something that was all that familiar to most in government, and I still think in some cases, it still isn’t, and civilian government in particular.

So, how does a digital twin and the concept that you’ve shared around the airports help to illustrate some possibility for something you mentioned around the planes turning, or the land use, because I’d imagine that twin also has the ability to help show the way forward in a process, right, that you’re, you know, outlining here?

**PETER TORRELLAS:** A digital twin… and I think people get tripped up in – in the words.

**JEREMY GOLDBERG:** I think you’re right, yeah.

**PETER TORRELLAS:** I think it’s probably sometimes more helpful for people to understand the process. So, what are we doing, exactly? Essentially, we’re trying to mathematically express something that’s happening in reality.

Essentially, with a digital twin, we’re trying to express something mathematically that’s happening in reality. And that may be a process, that might be a physical asset. And mathematically expressing things or – you know, when I was a kid, we called them simulations; we didn’t have that word yet, “digital twin,” to label it with – was a process about understanding what data you have, and what data could feed it and what you need the twin for. And most of the work comes in defining, you know, what are you working with? And what are you trying to get to?

And then, if you can imagine, the simulation, I think, is what people really get excited about. But most of the work is not the simulation. It’s the data, and bringing the data together, and federating the data or gathering data into one, I don’t know, single pane of glass or whatever – whatever word it is that you want to use, depending on what marketing department you work in.

Once you have the video game up and running, then the magic starts, right, because as you say, no matter what you’re trying to solve, there’s a heavy lift in just getting everything together and creating the model to begin with. But once you have the model, then you have almost limitless possibilities in terms of what you can do with the simulation.

If it’s a twin for a building, and you want to optimize occupancy, the next year, you could use the same data to optimize energy or optimize cost or understand your real estate footprint. If it’s a digital twin for the airport that you built for, you know, turning planes faster, there’s a bunch of other questions that you could ask or a bunch of other things that you could simulate, to provide better decisions for.

The real value of the twin is something that you need to calculate early on, but it’s true value, you may not even realize until you start actually working with it, and people start using data to drive behavior and drive decision. I think that’s when the unlock happens. That’s when you get the – the 10x and value.

r

**JEREMY GOLDBERG:** So, let’s take one of the examples maybe you’ve shared already, and describe how Parsons and your work has overcome some of the operational challenges on the implementation side, because you – there’s that upfront work to get there. And then there’s the actual implementation of it to get to those insights and the impact that you want to have that’s 10x.

**PETER TORRELLAS:** One of the things that we bring to the table is there’s this idea, and I go back to the social complexity. So, we have people who know how airports run, who have domain expertise, who have experience in construction and engineering. And then we also have people who have experience in harmonizing data and federating data and leveraging digital twins. And it’s not until they come together to build credibility, because the data doesn’t have any context until you have people who understand the operations.

And I think what Parsons X is able to do is to bring both of those things together, and understand, tactically and operationally, where it creates value. It’s not just for the sake of creating the twin. It’s how it makes somebody’s life a little bit better tomorrow. And I think that’s what we bring to the table.

And until that happens, until somebody who’s sitting behind the desk and realizing that their life might be just a little better, if they looked at the twin or used a twin or used whatever the technology is, that’s when you get buy in. That’s when you get absorption. That’s when people start metabolizing innovation. And when that starts to happen, when they see the outcomes in their lives improving, then you get real momentum as far as adoption is concerned.

**JEREMY GOLDBERG:** And it’s an absolute journey, right, as you’re described. And so, your advice for a government, let’s say, that is looking at adopting a new technology, whether it be a digital twin or something else, what are some things that they should consider or think through to see an experience, like, the yet to be kind of realized, right, when they go on that journey?

**PETER TORRELLAS:** One of the things that has gotten better over the years, but I still think provides tremendous opportunity, is, by and large, public sector procurement is designed to be deliberate. And it’s designed to make sure that they are, safely and in a well thought out way, administering the public’s money. It’s an enormous amount of responsibility that they have.

And when you want to innovate, when you want to move fast, when you want to be agile, when you want to use something maybe that’s never been done before, because it creates a unique piece of value, the infrastructure that you have for acquiring that is designed to do something else, right? It’s designed essentially to acquire commodities at the best value and lowest cost.

And so, I think getting organizational alignment early on, and how do you experiment, do you have a safe, legal and commercial space, if you will, within local government, to try new ideas, to experiment with startups and grownups together, to collaborate? Sometimes it’s done through intermediaries. Sometimes it’s done through great policies like the Office of Urban Mechanics, right?

So, there’s lots of good examples around the world, but it’s one of those things, like that old quote, where the future is here, it’s just not evenly distributed. How you acquire this stuff, how you learn about it, and how you do it in a safe way, while being deliberate and careful with the public’s money creates a lot of creative tension in the system. And that’s obvious – it’s also where a lot of infant mortality dies in terms of the acquisition of innovation.

**JEREMY GOLDBERG:** So, there are all sorts of exciting opportunities ahead. And we talked quite a bit about the infrastructure investments happening globally in the Middle East, or in the United States through the IIJA. You look in Peter’s crystal ball here, if you will, and sort of what does the future look like? What are the things that you’re most excited about? And kind of give us a sense of what’s top of mind for you.

**PETER TORRELLAS:** The most exciting thing to me is that we’re at the beginning of this journey. And when I talk to my colleagues, and partners and clients, you know, whether we’re talking about water, or buildings, or transportation, or energy, or energy transition, all of the things related to infrastructure, what you start to realize is, you know, the war for climate action is going to be won or lost at the infrastructure level, right? It’s going to be about clean air, and clean water, and clean energy, and being able to move people and goods in a clean and safe way.

And so, that means that that infrastructure, which is essentially humanity’s user interface to the planet, is being upgraded. And knowing that we’re at the beginning of the upgrade, and how much potential is still there to still see all of those outcomes come true, and seeing all of the people and the partnerships, and all of the momentum that’s building, and now it’s resource, and you have funding, and you have political will, you know, all of the things that you need to really do something transformative.

What we do now with infrastructure over the next five to 10 years will be the legacy that will be what generations live with for the next 50 or 100. You know, just like in New York, we’re still working off of legacies like Robert Moses, right, we are now at that new inflection point for infrastructure.

And so, what we do now really matters for our – for our kids, for our grandkids. And that’s super exciting, because I think the future is bright. We’re creating an enormous amount of value, leveraging innovation in infrastructure, and we’ve got a real opportunity to get it right.

**JEREMY GOLDBERG:** What is one thing, I know you’re quite the reader and you’re curious, about the world and problem solving – something you’ve watched or you’ve listened to lately that impacts or has impacted you in the way that you’re thinking about some of these moments, right, this inflection point that you just referenced about what’s ahead?

**PETER TORRELLAS:** I would say one thing that’s really stuck with me lately is a friend of mine recommended a book called *Antifragile*. It introduces the idea that we need to create systems that not only are resilient, if you will, are resistant to shocks and stresses, which is where we have kind of gotten to, as a community, or sustainable, but things that actually grow from, and evolve from and thrive in diversity.

With all of the change that we have, and all of the uncertainty that we have, whether it be the pandemic, or digitalization, or climate action, I mean, there’s so much stuff going on that we’ve never seen before. You know, populations are extending life, right, urban densities reaching a place we’ve never seen before. We’re entering a world where we’ve never quite seen exactly what we have in front of us.

And so, dealing with change, and not only not letting it not break us, but using it as fuel to really get better, and grow, and thrive, and excel, and go from, if you will, from survival to abundance in the state of chaos in the state of change, that’s super exciting for me. I think that’s something that’s going to be a cornerstone of what good looks like, going forward.

And so, the idea of antifragile is a recent idea that I really thought was pretty cool and has been rattling around in my head.

**JEREMY GOLDBERG:** All right, it’s added to the reading list, summer reading list. (Laughter.)

Peter, it is absolutely a pleasure to see you, have this conversation today here at the Microsoft Garage in SoHo. And so, and of course, thrilled that your team and Parsons is a part of the Microsoft partnership and the ecosystem that’s helping to make an impact here globally for humanity. So, thank you for the time today.

**PETER TORRELLAS:** Thank you, Jeremy. We’re super excited about the partnership and about what the future holds. And I’m just honored to be here.

[Music.]

**JEREMY GOLDBERG:** Thanks for listening to this episode, and being a part of the Future of Infrastructure, and for joining me on this journey to meet and learn from the people improving life in their communities.

If you like today’s episode and want to help other people find it, please take a moment to share, rate and review the show. To learn more, visit us at wwps.microsoft.com, or find me on LinkedIn and Twitter @JeremyMGoldberg.

END