Emily Yates:

[00:00:01 - 00:00:20]

Welcome back to Redesign, brought to you by mima. We're a human centered design agency who believes in working together with our clients and partners to make infrastructure accessible and inclusive to all. I'm Emily Yates, head of accessibility and Inclusive Design here at MIMA and one of your hosts for this series.

Oliver Bennett-Coles:

[00:00:20 - 00:00:24]

And I'm Ollie Bennett Coles, Head of Marketing at mima. You're the host for this podcast.

Emily Yates:

[00:00:25 - 00:00:46]

In the whirlwind of today's fast paced modern world, technology continues to advance and improve on. From the prolific rise of artificial intelligence to the latest smartphones and supercomputers, how can we best apply today's technology to help us genuinely innovate with design solutions that generate positive impact?

Oliver Bennett-Coles:

[00:00:47 - 00:00:58]

In today's episode, we're delving into how design principles, creative storytelling and new technologies can and should be used in transformation projects big and small. So who can we expect to hear from in today's episode?

Emily Yates:

[00:00:58 - 00:01:18]

EM well, first up, we're delighted to have Will Redaway, head of Innovation at East West Rail, with us here today. As his job title suggests, Will's been helping drive organizational and cultural change by challenging the status quo in strategic innovation leadership. Nice to have you with us today, Will.

Guest:

[00:01:18 - 00:01:20]

Thank you for inviting me.

Oliver Bennett-Coles:

[00:01:20 - 00:01:35]

And our second guest on today's podcast is Tim Murdoch, co founder of waymap, former Vodafone innovator and current business development lead at Cambridge Design Partnership. His career has seen him bring people centered innovations to the masses across various industries. Thanks for joining us today, Tim.

Guest 2:

[00:01:35 - 00:01:37]

It's great to be here. Thanks for having me.

Emily Yates:

[00:01:37 - 00:01:49]

Okay, so diving right into it, let's talk about each of your journeys. Could you both share a bit of your background, career path, and what led you to your current role? Will, let's start with you.

Guest:

[00:01:49 - 00:02:10]

I started off as an engineer. Like, I think a lot of people decide that I don't know what else to do. So let's just do engineering because it looks difficult and I can look intelligent. I did an apprenticeship for a small business, an SME, specialising in IT and telecommunications systems on the luxury yacht market. So these floating gin palaces that you see sailing around the world.

Guest:

[00:02:10 - 00:02:31]

And I continued on that journey developing a penchant for R and D and development and seeing what we can do to offer our clients the best possible solution. I was very fortunate that money was no object. So I was able to break stuff and learn and develop as I went on. It took me around the world, which was brilliant. However, I wanted, believe it or not, a nine to five in an office.

Guest:

[00:02:31 - 00:03:18]

That's what I was really desiring in my mid-20s, which is looking back, absolutely ridiculous, but I joined a large Footsie 100 where I led and was part of a continuous improvement team. So using lean Six Sigma techniques, business improvement and basically business engineering. So how do we speak to our clients and our customers, both internal and external, and see what we can do to improve the service delivery capability, reduce our mistakes and improve our performance as a business and as a supplier? Following that, that's when I sort of broke the back of infrastructure and landed at Crossrail where I was part of the innovation program called Innovate 18. I was there for four years and it really cemented my role as someone who was really keen on driving innovation and infrastructure industry.

Guest:

[00:03:18 - 00:04:06]

It was so successful, our program that it spurred the birth of something called i3p, which is the Infrastructure Client Partnership or Infrastructure Innovation Partnership. And it created a collaboration environment where all the major client organizations from the Environment Agency through to DFT and Network Rail and everything in between collaborated and joined together to say, how can we solve common problems in the industry? And we also invited our supply chain, all the large tier one contractors and other consultants to support that collaborative thinking and actually create opportunities for transforming the industry. But that wasn't good enough for me. I was then headhunted to join one of those tier ones to create an innovation capability from scratch because they were on a fast growth drive.

Guest:

[00:04:06 - 00:05:02]

So a contractor called Jay Murphy and Sons and innovation was a core element for them to exploit their capabilities and their skills. And part of innovation is how do we adopt and adapt existing knowledge, doing that iterative improvement and actually embedding it into that business as usual mentality and making people proud of the work that they do. Following that, we had this thing called Covid that happened which knocked the sales out of a lot of people's efforts to want to do things differently and go back to the fetal position and say let's not do anything like we've never done before. So I was invited back to lead and grow i3p because I was able to do that from a centralized position and actually do the connecting the dots, shall we say, across the wider industry. It appealed enormously to me because I was able to then continue that strategic industry wide alignment and growth without having to rely on project work, which obviously contractors were severely suffering with during the pandemic.

Guest:

[00:05:02 - 00:05:35]

So I moved back to Innovate UK KTN, where I helped grow the impact of i3p. Where before I joined East West Rail, which is where I am now, we uncovered over £9 billion worth of opportunities for the industry through a wide range of not just technology but processes, behaviors, knowledge adoption and cross industry and pan industry collaboration. So it was there on the table ready to be used and then my job was going to be make them use it. But then East West Rail sort of approached me and said, oh, like a magpie. Chase the other shiny thing.

Guest:

[00:05:35 - 00:05:36]

And here I am.

Oliver Bennett-Coles:

[00:05:36 - 00:05:39]

Wow, what a journey. That's pretty impressive stuff.

Guest:

[00:05:39 - 00:05:39]

Thank you, Will.

Oliver Bennett-Coles:

[00:05:39 - 00:05:41]

Tim, what about yourself?

Guest 2:

[00:05:41 - 00:05:59]

Well, you sound far too structured in your career. I'm afraid I'm not like that at all. So I spent my sort of 20s academic, so I was at Cambridge and did a PhD, very much focused on mechanical engineering design and looking at the design process. I was in the weeds of information management. How do people work out how to design?

Guest 2:

[00:05:59 - 00:06:13]

In this case it was a gas turbine at Rolls Royce. How do they share information to do some amazing things with if you like really focused engineering. But the people weren't really involved in that whole process. So it was more about designers rather than end users. And I loved it, it was great, I really enjoyed it.

Guest 2:

[00:06:13 - 00:06:53]

But then I sort of got poached by a startup in the Cambridge area and then I've started a journey of typically every five years I'm either in a startup or I'm in an engineering consultancy. And I've sort of loved this journey because in a startup you are at the coal face, you're having to do anything, you make the tea, you wash the floor, you absolutely build the software and you build the proposition as well. And that's an amazing experience. But you're able to move a small amount with a small team and actually every now and then you're so focused on a particular problem that it's worthwhile stepping back and doing a broader issue and maybe working with other people and other topics and so on. So I tend to then sort of step out to a consultancy where you've got a large number of really, really bright, really capable people.

Guest 2:

[00:06:53 - 00:07:10]

And I love working with sort of people who are definitely brighter than me. It's one of the most innovating, sort of keeps me young type approach. And so in the consultancy world you then are able to have a broader access to different needs, different customers, different users and different technologies. But you're not at the coal face. I missed that bit.

Guest 2:

[00:07:10 - 00:07:38]

So it tends to be, I flip flop. I describe my career as a checkered history, every five years being one or the other. And I think the project that really sort of changed my mind between being in the Weeds of data and information and systems and actually understanding users and really focusing on the user need was a project we did while I was at Sagentia, which is an engineering consultancy in Cambridge. We worked with Vodafone to roll out a mobile payment system across Africa. We started because we were focused on the technology.

Guest 2:

[00:07:38 - 00:08:06]

We had some great engineers who were telecoms engineers and great software systems engineers to put a secure system where the actual application ran on the SIM card in your old phone. Think of really old Nokia phone, so old keyboards where you type in a number. And we were able to use that to send 1 5$10 to another person somewhere else in Africa. So we were working in Kenya when we were doing this. And suddenly actually it wasn't the technology that was the hard bit, it was the user experience that was the heartbeat.

Guest 2:

[00:08:06 - 00:08:30]

We converted shopkeepers to bank clerks. So how do you do that? We had people whose literacy wasn't that great, but there's no reason why they shouldn't be able to move money around if they can't read very well, because they just haven't had that background. So we suddenly found ourselves really much more focused on that user

experience. And I got myself into service design as well as agile development and all that sort of stuff, and that bit that really sparked an interest.

Guest 2:

[00:08:30 - 00:09:16]

So ever since then, I found myself sort of wanting to steep myself in technology, but first focus on the end user as the primary need and then bring whatever technologies are appropriate to that. And ever since then, I've been working through various different sort of stages of my life in terms of consultancy and startup. And as you mentioned earlier, I helped found a company called waymap, helping blind people, people who are visually impaired, to be able to get around the built environment and to do that independently on their own. All they need is their mobile phone and we're able to locate them accurately using hard technology, hard maths. And then to be able to give instructions, to be able to get them to turn left, turn right in various different situations, making sure that they are safe and that they are able to respond to those instructions in the appropriate manner.

Guest 2:

[00:09:16 - 00:09:42]

And again, actually, that's quite hard. And that sort of gets you into the edges of behavioral science. It's not strictly behavioural science, but it is because we're watching and understanding the behavior, we are then reacting in a different way. And so again, it's sort of an understanding of that end user is so important to the whole experience and then the frustrations and the joys and the wins of them building the technology to Deliver. That is very exciting and very hard to do, but I love doing it, there's no doubt about it.

Guest 2:

[00:09:42 - 00:10:10]

And so now I'm at CDP consultancy in Cambridge where we are able to bring really good engineers and data scientists and designers to help clients out in many, many different ways. But what I love about CDP and the reason I joined is that its primary focus is the end user. It's got engineering skills, it's got great technologists and we're doing some amazing things with AI at the moment. And I love it to bits, but its primary focus is the

end user and then we bring the technology and then we solve the client's problems in that way.

Emily Yates:

[00:10:10 - 00:10:37]

Thank you, Tim. It's been so great to listen to you both. Some of the comparisons that I've managed to grab from that is how customer centric you both are, how user centric you both are, how you bringing different stakeholders and different capabilities abilities to help you with those fresh new ideas and innovation. But also I think ultimately what I really gained from that is how much you've both enjoyed your careers and really loved the different roles that you've been involved in. That was so clear.

Emily Yates:

[00:10:37 - 00:10:57]

So thank you so much, that was really, really great to listen to. Would you both be able to just discuss the current roles that you're in and give the people listening an idea of what your day to day looks like and some of the challenges but also rewards of your current roles? Tim, shall we continue with you?

Guest 2:

[00:10:57 - 00:11:16]

My official title is Business Development for Digital cdp. So I'm helping find new clients when you work to basically bring the digital story to market for what we can do. And so what does that mean? So we do a lot of work with the healthcare sector. So think about devices that are helping drug delivery, for example, or tools and devices that help in diagnostics.

Guest 2:

[00:11:16 - 00:11:51]

We even do work, for example, on robotic surgery. So those sorts of things that we do, traditionally those are mechanical engineers, electronics engineers, working really hard to make some really difficult things work well. But if you add the software to that and you start to connect those devices, then you're starting to add the digital services that

go around those devices. So in surgical robotics, for example, watching a surgeon at work, as the surgeon takes control of the robot, actually you're able to start to provide advisory services as the surgeon operates. Or if you're looking at pathology, you will be able to look at images and will be able to provide advisory elements.

Guest 2:

[00:11:51 - 00:12:31]

Say, oh, that feature in that image, you need to look at that a bit more. We think that might mean this and this is really interesting for us because not only does it bring sort of really complex maths, which I love, and AI and algorithms, but also it's a case of most of our users don't want to be told what to do by the AI, they don't want to be told what to do by the software, but they do want to be advised and they do want the support we do need to find a way to accelerate, to augment what they do. And so what I do is fundamentally, I'm working with our clients, we're bringing that innovation and insight. And I spent a lot of my time, rather than going out and trying to sell lots of new work, I actually end up spending a lot of time with existing clients, just saying, how about this? How about that?

Guest 2:

[00:12:31 - 00:12:55]

You know what? If we do this, we can start to have a different relationship with your end user and it's that relationship with the end user, the relationship with maybe the physician, for example, or even the patient. In times, getting that right is really interesting. So, again, while I carry a sales cycle, actually it's fundamentally I'm innovating, I'm helping, working with the client to innovate and bring new ideas, new ways for them to add new features, earn new revenue sources from the work that they do.

Oliver Bennett-Coles:

[00:12:55 - 00:13:05]

Wow, that's fascinating. So interesting. So, so interesting. And will, what about the daily responsibilities of your role? What do you get up to as a Head of Innovation at East West Rail?

Guest:

[00:13:05 - 00:13:39]

Well, in a way, quite a lot of similarity to what Tim does. So my role, I touched on it earlier, but it's how do we join the dots across the industry? How do we bring solutions to some of the challenges? So we as a business, as a client organization, as an infrastructure client, we have opportunities, we have challenges and there are solutions, but they are not always aligned. Key part of my role is understanding what solutions fit what challenges and what opportunities come out of some of the challenges to create value and also to help create this paradigm shift in behaviors within the organisation.

Guest:

[00:13:39 - 00:14:02]

The infrastructure industry, the rail industry in particular, has been quite slow to adopt and adapt and move with technology and the technological uptake because it's risky for a lot of people and there's not a huge amount of investment in that area. Specifically, it's quite traditional in it. We've got a bridge or an embankment that needs fixing. Let's just go and look, see and do. And you can go and physically see it.

Guest:

[00:14:02 - 00:14:21]

This nebulous activity of technology can be quite alien. Touching back on some of the points that Tim was Talking about how you interface with the clients, the suppliers, the experts. We ran what we called a trackathon, which is similar to what people would call a hackathon, but because we're rail, we called it trackathon.

Oliver Bennett-Coles:

[00:14:21 - 00:14:22]

See what you did there?

Guest:

[00:14:22 - 00:14:50]

Well, we innovators, you know, we're more than just a pretty face. On the first day, we brought in all of our partners, so Network Rail, TfL, Highways England, you know, all the infrastructure client owners, and we add our challenges and said we're currently struggling to improve on what have you got? So that we could collaborate and pick their knowledge. A week later, we brought in all the SMEs. I mean, the SMEs had to apply and we had to triage them.

Guest:

[00:14:50 - 00:15:15]

There were hundreds of applications to come and talk to us, so we had to triage them. But they all came and they listened to the same challenges with some of the flavor that we had given from our industry partners. And they came, told us how they could help us fix our problems. And now my job moving forward, well, with the support of the team and the subject matter experts within East West Rail, is how do we link up these solutions to create value? And I know Emily mentioned the word challenges and rewards.

Guest:

[00:15:15 - 00:15:26]

One of the biggest challenges that I've got, I'm not sure if Tim has struggled with this sort of thing as well, is that we're limited by the money that the DFT gives us and the government gives us.

Guest 2:

[00:15:26 - 00:15:27]

Budgets are always a problem.

Guest:

[00:15:29 - 00:15:59]

And the infrastructure sector always happens in cycles rather than front loading the cost and saying, here's your budget, go and do something with drips and drabs as we go along. And unfortunately that means it's very hard to speculate and to spend money on things which may not add immediate value. Now, most infrastructure is designed for

120 year life cycle. I mean, most of us will not be around, so where does the liability lie? And all the risks lie and then that all gets devolved and shared and it becomes a minefield.

Guest:

[00:16:00 - 00:16:29]

And the problem is that most government organizations are very cyclical in their thinking, but also they focus on cost. Whereas I'm one of these irritating people that sits in the back of the room, says, well, what about value? The whole life? Value is so much more important because if customers use the service and people get benefits out of it, we gentrify parts of the uk, we bring more value, connect people. That doesn't have a cost, it has value to people.

Oliver Bennett-Coles:

[00:16:30 - 00:16:33]

This feels very topical. This will anyway draw a discrete line.

Guest 2:

[00:16:33 - 00:16:37]

Under that, but carry on, yeah, don't mention the elephant. Don't mention the elephant.

Oliver Bennett-Coles:

[00:16:37 - 00:16:38]

No, no, we won't.

Guest:

[00:16:38 - 00:16:41]

We're not on safari, so there are no elephants around here.

Oliver Bennett-Coles:

[00:16:41 - 00:16:42]

Very good, Very good.

Guest:

[00:16:42 - 00:17:16]

But, yeah, so that's one of our biggest challenges. So conversely, for me, one of the biggest rewarding things is seeing people change, seeing people appreciate how bending the rules a little bit, being slightly disruptive, being the person that is willing to put their hand up and challenge and a few bloody noses along the way, actually creates resilience and creates strength in actually challenging the status quo. Not for the sake of doing it to make a name for yourself. When people say, why did we never do this before? That's the best sentence, that's literally the best endorsement I can ever get is, I can't believe we waited this long to do this.

Guest:

[00:17:16 - 00:17:48]

For me, that is just. Wow. And just to touch on Tim's point, we look at AI and technology not as a way of replacing our engineers or making engineering decisions, but enhancing, amplifying. We can provide an engineer with more headspace to think as an engineer rather than having to do paperwork, rather than having to become an admin clerk and just do reports all the time, but actually take the data that's provided to them to go out on site and make better decisions, quicker decisions, and allow us to deliver quicker, more effectively, that's got to be a benefit for everyone, surely.

Emily Yates:

[00:17:49 - 00:18:15]

I'm learning so, so much here on this episode. Me too. And one thing that I really, really love gonna take away about what you've just said, Will, is it's not just about finding solutions, but the most important thing is about finding value. And I think that there's so many correlations in that and the way that you work and the way that I work. So I work in accessibility and inclusive design.

Emily Yates:

[00:18:15 - 00:18:42]

And don't get me wrong, sometimes it's very difficult to find the solutions, especially if you're looking at a heritage area, for example. But actually, sometimes finding the solutions is the easy part. It's being able to make sure that people understand the value and that they can buy into the value. That's the hardest part of my job sometimes. And the reward that comes from that is beautiful and brilliant and great, but it's not without its challenge.

Emily Yates:

[00:18:42 - 00:18:44]

So I absolutely related to that.

Guest 2:

[00:18:44 - 00:19:12]

Yeah. And I think often you need to just give people space to follow through with their own ideas. One of the things we had with M Pesa in Kenya is we launched the service about 2005, I think it was 2006. And within a Week of launch, we had a small market trader in Nairobi that was selling chocolates and flowers and would deliver them to your door and you pay them by m peso just using a mobile phone. And all he did was put a little web page up there, put his mobile phone number on there, send me some money and I'll send you the chocolates.

Guest 2:

[00:19:12 - 00:19:39]

And that was within a week. We just had not anticipated this would happen at all. And so it's giving someone the ability to, oh, gosh, that's interesting, can I do this? And they can find their own way and they can add so much more value. And it was things like that, it was the sort of the groundswell of people doing things from the bottom up that actually with Mpesa, within four years of launch, we were doing 40% of the entire country's GDP was going through that platform.

Guest 2:

[00:19:39 - 00:19:46]

Wow. So it was used. It was, it was extraordinary. I mean, I still don't believe the numbers, but the Economist was sort of backing me up on this. That's why I'm prepared to sort of say it.

Guest 2:

[00:19:47 - 00:20:01]

But it's just extraordinary quite how much it was the groundswell of people who saw the system and they could say, oh, I could do this now. And innovation isn't central, innovation is distributed. And that's the bit that's, I think, lovely about this brilliant stuff.

Emily Yates:

[00:20:01 - 00:20:20]

And I think this leads nicely onto the next question where we want to talk about motivation. So why are you both so passionate, which you obviously are, about change and innovation across industries and particularly through the lens of human centered design principles, polls and will, shall we stay with you for now?

Guest:

[00:20:20 - 00:20:51]

Sure. It's very easy to say motivations are altruistic. I don't think that's entirely correct because I think there's always more to it than doing the right thing for the right people at the right time. I think for me it's almost evangelical sort of role just to show people that actually there are different ways of doing things. And when you bring the customer first approach, the user experience that the end user first, it radically changes how we design and think about systems.

Guest:

[00:20:51 - 00:21:22]

It could be an infrastructure system, it could be a software system, it could be anything. It doesn't matter what the system is. Sometimes we marvel at our own self magnificence of design, which, you know, I think is fair because we do some amazing things. We forget whilst it looks fantastic and it works and it's efficient, it lands flat because you've excluded a certain amount of the population or you haven't thought of

another element that hasn't been considered in the design factor. So going back to my motivations is to make sure those things don't happen.

Guest:

[00:21:22 - 00:21:52]

So make sure that all the work that we do, you're never going to please 100% of people. It's always going to be a struggle. But to show the mitigations, to show that we've thought about it in a really holistic way, but also drawn on the best experiences, multiple sectors is for me so important. To break away from those silos means you get a collective experience for not only the challenges, but also the solutions we need. Everyone's opinions and everybody's opinion counts.

Guest:

[00:21:52 - 00:22:13]

And for me, as I said to you earlier, one of the rewards is just seeing people get it, seeing solutions come to life, seeing people kind of go, I wouldn't have done this had it not been for you or the empowerment that you provided me with to stop wasting money and time on vanity and focus on less snazzy solutions. But actually that provide exactly what we need and not more.

Oliver Bennett-Coles:

[00:22:13 - 00:22:31]

I love that, especially that evangelical aspect to what you're saying. I think a sense of mission or purpose is so, so important. You know, I've got a three year old and if I tell him to do something because he's got to do it and he believes in it, it's amazing how quickly he does it compared to if you just ask him something just off the bat. Tim, what about yourself? What do you find kind of motivates you?

Oliver Bennett-Coles:

[00:22:31 - 00:22:34]

And why is human centered innovation so important to you?

Guest 2:

[00:22:35 - 00:22:53]

That project we did in Africa was the key for me. Until then, I was in the weeds of technology and it was great and I had some great relationships with my colleagues and we were doing some amazing things and I love that. And I've always focused on building teams and mentoring people like that. For me, that internally within a team has always been a key part of what I do. I think that's the thing I'm sort of in many ways most proud of doing.

Guest 2:

[00:22:53 - 00:23:41]

But actually the experience of putting a service in that transforms people's lives and does it at such scale and with so many stories about little things that happen which are massively insightful, and you get to know the types of people who are using it and you get to know the variety of people on the planet, it's just extraordinary. People have different motivations. So I'm very enthusiastic about what I do, showing people the value, the reason why they would do it. I think that's the key for me, that project we did in Africa and actually Seeing the transformative effect and focusing on the core value, I think for me is the bit that has the impact and seeing that the value doesn't come from me or from my team. The value comes from the community and the users and the variety they bring.

Guest 2:

[00:23:42 - 00:24:19]

And I talked about the market trader we had. But one of the other things that happened is as a bank, got to realize it was more of an insurance organization in Kenya, got to realize that they could do some really simple things. So when farmers in remote parts of Kenya buy seed and fertiliser, that's quite a significant investment for them. And so what they're able to do, if the rains don't come and there's a drought, actually, that all of that seed, all that fertiliser gets wasted, all that money they've spent. So just by adding a small increment payments on the fertilizer and registering themselves with the insurance over the mobile payments, this is all done remotely in the market in the middle of northern Kenya.

Guest 2:

[00:24:19 - 00:24:45]

And then all they have to do is they use satellite imagery to monitor the rainfall in that part of the world automatically, and without the farmer having to worry about it, they will get recompense for their initial purchase of the fertilizer and seed. That innovation comes from the groundswell, from the community. And for me, that's one of the reasons I love digital so much and doing it in a manner that allows other people to build on what you do.

Guest:

[00:24:45 - 00:25:24]

I'd just like to add that what Tim says is really powerful because innovation can be simple. And we do have a habit of overcomplicating solutions sometimes. Certainly from my experiences, if you bring a bunch of engineers into a room to solve a problem, you'll end up with either someone reverse engineering the solution based on their bias and then everyone will just agree because they're the expert, or you create a solution that's so complicated, it'll solve the problem, but it'll be very expensive. It'll create a lot of risk. So one of the things I found is actually bringing in those naive resources into those meetings, those design meetings, those workshops, because they'll ask the silly questions that people are too embarrassed to ask.

Guest:

[00:25:24 - 00:25:48]

Say, well, why do we use concrete? Why do we use steel? All these sort of simple questions that sometimes people forget that actually, maybe I'm just sticking to those principles I've always known, but actually there could be another way. And Ollie, you mentioned your children and some of the things that Tim mentioned about failing and continuing to succeed. When kids learn how to walk, they Fall over and they take a couple of steps and they fall over.

Guest:

[00:25:48 - 00:25:58]

And what do they do? They look around. They look around, they looked at their parents and they want to see if they're getting told off or encouraged. Now 99% of people will go, oh, that's fantastic. Well done.

Guest:

[00:25:58 - 00:26:09]

Stand up, carry on. You did two steps, it's brilliant. And then they'll take three steps and fall over and they'll look around and they'll see the motivation. And then after a while, they'll stop turning around because they know what they're doing is right. They're forging their path.

Guest:

[00:26:09 - 00:26:33]

What we don't do as an industry, I'm not sure if this happens in Tim's world, but certainly my world is when we fail, instead of learning and looking back, say, well, okay, we tried to do something different, it didn't quite work. Oh, well, what can we do differently next time it's right, whose head's on the block? Who's the scapegoat? Who can we throw under a bus? There isn't this value of encouraging trial and error, because as I said before, we don't really have the budget for it.

Guest:

[00:26:33 - 00:26:55]

And that's why we rely on our SMEs and supply chain to do a lot of the risk taking for us. But if we don't create an environment where people can try these things, we struggle to improve, which is why some of Tim's work is incredible, because they're creating things which are sometimes seem very, very complicated, but actually just solves a very simple problem. And that's one of the things that we overcomplicate things quite a lot.

Guest 2:

[00:26:55 - 00:27:07]

So I must agree with that. I think that naivety and the ability to. And often I do this and I ask the first stupid question in a meeting. It gives permission for other people to ask questions. And I think that's exactly right.

Emily Yates:

[00:27:07 - 00:27:19]

So be motivated by other people's motivations. Don't be afraid to fail as long as you're retrospective. And no silly question is a silly question as long as we're all asking them. Is that right? Is that fair?

Guest 2:

[00:27:19 - 00:27:20]

Very much so.

Emily Yates:

[00:27:20 - 00:27:36]

Brilliant. I'll take all those things away for sure. Thank you. And let's start deep diving into some of the projects that you've worked on, because we'd love to hear a little bit more. Will, could you tell us a little bit more about your innovative work with Crossrail, please?

Guest:

[00:27:36 - 00:28:09]

When I joined Crossrail, our CEO at the time who joined Andrew Wolsenholm sort of said, why can't we innovate as an infrastructure project. What's stopping us from doing it? So we put together a pilot to understand how can we create an environment where the supply chain and the client organizations and the consultants create an environment where people can try things. So the pilot starts off with health and safety, which is obviously a common thread for infrastructure, and I'm sure a lot of businesses and industries. And as I'm sure you're probably all aware, most of the projects I Crossrail were delivered by joint ventures.

Guest:

[00:28:10 - 00:29:00]

So a joint venture is when multiple contractors work together on a project and they are one team. And health and safety for us was a very easy thing to start off with, because who wouldn't want to protect your fellow teammates? We created Innovate 18 program was based around collaboration to help prevent injury. And it was so successful on the pilot sites that we did, we had dozens of ideas submitted to our internal sort of Crossrad

portal of saying, well, we've used these anti slip steps, or we've used this technology or this solution to prevent slips, trips and falls, or working at heights or whatever the issue was. And it was so popular that we worked with Professor David Gann from Imperial College and we put together an innovation strategy based around the cultures of collaboration, creating the capability and the capacity to make innovation come to life.

Guest:

[00:29:01 - 00:29:20]

And I go back to that collective experience. Everyone had some skin in the game. Crossrail then offered a bit of money to enable innovations or trials to happen. People bid for a bit of cash to try something else, whether it's technology, whether it was bringing in a supplier, which was a bit different. And it grew, it grew arms and legs.

Guest:

[00:29:20 - 00:29:31]

And then all the joint ventures wanted to join. And the skin in the game was they had to contribute £25,000 to be part of the innovation program. And then Crossrail Match funded it. So it created the. This pot of monies.

Guest:

[00:29:32 - 00:29:54]

In the grand scheme of things, £25,000 is not a huge amount for a contractor, but it just provided that we're part of something different. Let's do it. As the innovation program matured, more people joined. We initially motivated people by adding innovation as part of our sort of performance assurance score. So we had on time, on budget, health and safety incidents, all that sort of stuff.

Guest:

[00:29:54 - 00:30:17]

But then we had a measure called world class. And in world class we were talking about digital engineering and all sorts of other things, adds the cherry on the cake, so to speak. And innovation was one of the metrics. It was only, I think, worth 2% of the

overall performance assurance score, but it was still 2% that people wanted to stretch for. And that really got everyone thinking, motivated.

Guest:

[00:30:17 - 00:30:42]

And the number of submissions went through the roof. Towards the last couple of years of the programme that I was there, we removed the performance assurance score. By the end of it, the ideas kept on going up. There was no slowdown because we had embedded that sort of it's okay to share, it's okay to try things. And more and more sites and more and more projects created a little area to do tests and trials.

Guest:

[00:30:42 - 00:31:08]

So we did a test for low carbon concretes, we did tests for drone flights and operations, we did tests for sensors and people monitoring. We even created, I mean, this sounds really, really, really daft, but we even created the ability for people to use mobile devices on site. And so that changed the culture. We went from being a no technology on site to you can now use it as long as you've had your induction. And we embraced the use of it.

Guest:

[00:31:08 - 00:31:37]

And that also introduced lots of efficiencies in project delivery. So we went from paper, you know, those big plotters, printouts, blueprints and everything else. We moved from spending thousands of pounds per month on printing things to almost nothing by using digital solutions instead, very minor things like this. But it transformed how people's opinions, sharing ideas happened. Very lastly, we had a research, they did an analysis on the uptake of innovation.

Guest:

[00:31:37 - 00:32:16]

And our key driver for us was this notion of pinching with pride. We wanted all the projects across the whole of Crossrail to pinch each other's ideas with pride. Because if someone's invested the intellectual capital, the financial capital, the time to make

something work, then there's a very high likelihood that it'll work on their site. And we promoted it as much as possible. The report that Dr. Antoine Vernet did for us showed that actually across the whole of the innovation program and Crossrail program, bearing in mind this was heavy civils, I left before the systems integration bit, but the civil side of things returned about four to one.

Guest:

[00:32:16 - 00:32:45]

A return on investment. Now, there was no external financial investment other than what the supply chain contributed. But in terms of impact and value, going back to my point about whole life value, we returned four times more value than we did initial investment. And it's been published and it's been peer reviewed and it's used now in education materials, in universities for teaching people about innovation and in infrastructure projects. So that for me was the pinnacle that, yeah, you know what, this works and we know what we're doing and the results speak for themselves.

Guest 2:

[00:32:46 - 00:33:05]

Well, I think that's amazing for me that just points out that innovation is a community activity. You're rarely alone as an innovator and if you are, there's something slightly sad and slightly wrong about it. You need to find a community because sharing ideas and it's not just pinching, it's reusing, it's building. It's an amazing idea. And I think that little concept giving people permission to pinch is really key.

Guest 2:

[00:33:05 - 00:33:05]

I love that.

Oliver Bennett-Coles:

[00:33:06 - 00:33:26]

Really do really love that will. I love that blueprint for of innovation and first of all kind of embedding it, making it a kind of a KPI or something they're judged on and then kind of removing that and watching how it's actually so embedded in the culture that is almost

a reflex, if you will. I love that. So clever. Tim, could you talk about the innovative work you did with Vodafone on the Impeza project a little bit more?

Guest 2:

[00:33:26 - 00:33:45]

So you'll have to stop me, I'm afraid. So it's the other way around. So I mean it's just one of those things. So as I said it was the UK aid helping try to do some innovation and Vodafone would never have done it on its own without extra funding to do it. And it was okay, let's go to part of Africa which is relatively stable and we can invest in.

Guest 2:

[00:33:45 - 00:34:08]

And Vodafone was basically a local partner out there, Safaricom, which they had part ownership in. And so they looked to a safe pair of engineering hands. And so this is why we started that work. And really from the outset we were my first forays into Africa, first time I've been the continent and it was an absolute eye opener for what we were trying to do. And I think it's trying to keep things really simple was what we were always trying to do.

Guest 2:

[00:34:08 - 00:34:30]

But at the same time as being in a remote location in a foreign land and trying to understand the culture, I was also having to learn about finance systems because we're fundamentally we were building a bank. That's sort of what we were doing. All of the financial controls and we had to fulfill all the regulatory requirements of know your customer and safe management of people's money. And the money was always in a bank account somewhere so that it was always secure. So we had to make this all work.

Guest 2:

[00:34:31 - 00:35:02]

So we were so focused on getting some of the fundamentals right. And then it started to dawn as we started to roll out the pilots and I'm a huge fan of small scale pilots. Test your ideas with real people, see what they value so we ran a little pilot for about 300

people between Nairobi and Thika, which is just north of Nairobi, to allow them to move money between these two towns. And actually just watching what they did and why, what's the reason for moving the money, what was the purpose, and so on. And it was clear that the microfinance industry was a really interesting place to start, but it would have constrained us.

Guest 2:

[00:35:02 - 00:35:40]

So we needed to go to the open market and actually have anyone move any money for any reason, not just for the purpose of microfinance. And as I alluded to earlier, we realized very early on that the end user proposition, if we kept it really, really simple, the hard bit to solve was the shopkeeper proposition, because they had the same sim, same mobile phone behind the counter in the shop. So we had some really innovative things to try and get our head around there, trying to get people to understand how to use it, who weren't necessarily completely financially literate, but they were literate enough to run a shop, so that should be enough. And that's where we were focused. So all of this time we were just focusing on getting this right, working with 300 people, working at how they would move their money around.

Guest 2:

[00:35:40 - 00:36:08]

And then that gave us that period. And actually it was about a two year period between starting to roll out that pilot and then getting permission to launch, because effectively for permission we wanted to fulfill the European literary guidelines, because that was the standard that we wanted, obviously, particularly Vodafone, for brand protection perspectives. They really wanted to be clear that they were following the right approach. So by the time we then got to launch, we'd been running this and watching this for quite a little while. And as a small team of people in Cambridge, we were about seven or so people, something like that at that point.

Guest 2:

[00:36:08 - 00:36:28]

And suddenly this thing started to grow. And what was interesting, we were 42% growth every month, which means doubling every two. And this happened, this 42% number

actually stayed the same for about the first seven or eight months. Wow, you suddenly thought, okay, this is on a trajectory here. How do we keep up?

Guest 2:

[00:36:28 - 00:36:49]

And so the challenge we had, which was basically make the thing scale, it was very, very hard to make that work. But at the same time we were having to provide support for our shopkeepers. And at one time, I remember this to this day, taking a call from one of the shopkeepers and saying, basically, please help. They've started throwing bricks. And I thought, okay, right, what's going wrong here?

Guest 2:

[00:36:50 - 00:37:18]

And so at the time we were running the service from London and it Was, I think, under the flight path of Heathrow, actually is one of the most secure parts of where we were doing it and we were running the service. So the transactions were having to come via London from Kenya, and it was all having to go via satellite because there wasn't a east coast fibre that connects it all up. But back then there was satellites and there were sunspots. So the sunspots were basically interfering with our satellite connections and therefore the transactions couldn't go through and therefore the shopkeepers couldn't give. And then people were saying, this is my money, I want my money.

Guest 2:

[00:37:18 - 00:37:48]

Here, have a brick. So we very quickly had to reorientate the software in order to be able to support them, even in circumstances like that. So while we had a massive engineering challenge, we were driven by those user experiences and by making sure that actually to get this to scale, sort of 42% a month, which is sort of, if you think about it, a network effect every time you get paid. I think that's one of the reasons why we wrote word of mouth growth at that point, because basically your first experience of using IMPESA was to receive money, which is a great experience. Oh, I've got some money.

Emily Yates:

[00:37:49 - 00:37:50]

Everybody loves that.

Guest 2:

[00:37:50 - 00:38:10]

Absolutely. And so getting that sort of thing right was some of the fundamentals for what we were doing. And really for that four year period, it was just a case of trying to keep up with the innovation that was happening locally, the demands of scale with that, and at the same time work with Vodafone to try and take it to new markets. We were then supporting a whole other set of initiatives taking it further afield.

Emily Yates:

[00:38:10 - 00:38:35]

And this need to pivot and be agile as well, that came up quite a lot in what you were saying and was really interesting as well. Something that's come up quite a lot in our conversation is finance and funding in different ways. And it seems to be a bit of a recurring theme that I think is quite interesting. What do you both think? Is funding a real major barrier to change and innovation?

Emily Yates:

[00:38:35 - 00:38:42]

And is this particularly apparent with tech or. Or not? Is it just something that innovators have got to deal with everywhere?

Guest 2:

[00:38:42 - 00:39:18]

Oh, that's an interesting one. So you're working someone who's worked in a number of startups and it's a mantra that we all have in the UK or Europe that the Americans have it so much easier, they can get funding so much quicker. It is true that actually for a lot of technology startups, spending a decent amount of money early to get that in the hands of end users to get that proof of value fast is much, much easier to do in that environment, and it's a crying shame. But it holds you back in the uk, it absolutely does.

And we're not talking about huge amounts of money, but we are talking about just enough to be able to get that properly in the hands of users.

Guest 2:

[00:39:18 - 00:39:42]

Because your innovation only starts when it's in the hands of users, really. And I think for me, funding is an issue and I think just the vibrancy of the market that goes on in the US is so strong and the ability to try these things out and get to the users and learn and pivot. And by pivot we mean actually the initial idea was not quite right. We needed to change our initial idea or we found a much better one. That, for me, is where the value would come and I just wish we would be better there.

Guest 2:

[00:39:42 - 00:39:52]

So the UK is really good for an initial amount of money. The tax incentives for individuals to support you in the early days is brilliant. We absolutely don't want to lose that. It's the next bit. And the next bit is really quite hard.

Guest 2:

[00:39:52 - 00:40:06]

And increasingly I'm now supporting work in the health sector and that's a really difficult transition because actually it is very expensive to get things into the hands of real users in the medical sector because there are so much many more regulatory requirements and hurdles to jump through.

Guest:

[00:40:06 - 00:40:35]

I have to say I agree with a lot of that. I touched on it when I first started talking about front loading funding to enable things to happen quickly. So that one of the things that people forget or ignore is that innovation is not invention. A lot of innovation is iteration and adopting existing things to make it work for you or in your sector. But one of the challenges that we've got, I'm not sure if that's the same in your experience, Tim, but we have a lot of duplication of effort in our sector.

Guest:

[00:40:35 - 00:41:27]

We have a lot of, not necessarily startups, but a lot of government bodies, quangos, or even professional bodies that have come together altruistically or for good reasons to solve a particular problem, whether it's carbon, whether it's concrete logistics, whatever it is. And there are lots of these bodies doing the similar things, solving similar challenges. And there needs to be an uncomfortable conversation by someone to say, right, I'm afraid you need to stop doing this, or you need to hand over all that work you've done and give it to this body, because they're much more mature, they've got a lot more funding or backing or whatever you need to join these people and you have to have a single point of expertise. Because in my industry there is a lot of duplication of intellectual capital, but also financial capital and time and effort and everything else being deployed. And it's great.

Guest:

[00:41:27 - 00:41:58]

It's wonderful that people are trying to solve problems that are going to add value. However, duplication of effort just erodes a the financial opportunities because you're not going to get funding for all these things and then people get disappointed. But also if there's so many solutions that do the same thing, you're going to pick the people that you either know or trust or who's got the better patter, not necessarily the better solution. So it's that iteration in the public sector, it's very hard because we've. Similar to what Tim was mentioning, you know, we've got some very strict procurement rules that we have to go through.

Guest:

[00:41:58 - 00:42:17]

It's very hard for us to actually take that financial or that procurement risk because we have to adhere to some really, really stringent, you know, why did you choose this supplier? Why do you not choose another supplier, et cetera, et cetera. But for a private sector, when I was working for a tier one contractor, we had much more freedom. It was our profits that we could then either spend on innovation or not.

Guest 2:

[00:42:18 - 00:42:33]

I think what you were saying about effectively salami slicing the amount of capital that's available in order to reduce the risk of holistic failure actually increases the risk of holistic failure because no one of those items gets proper funding. And that's a real problem.

Oliver Bennett-Coles:

[00:42:33 - 00:42:46]

I think it's really interesting, slight conversational handbrake turn here, but in the interest of time, but just want to kind of move on to technology aspect and specifically AI. And Tim, I just wanted to ask you what role you see that technology having in the future of industry?

Guest 2:

[00:42:47 - 00:43:18]

Oh, huge. I mean it is going to massively, massively change what we do. Even the work at waymap where we were effectively helping vision impaired people get around, we were using an element of AI based on statistical analysis to work out where people were. But the work around generative AI and I think we do need to differentiate between traditional AI and then generative AI, which is a completely other thing. So traditional AI would be an algorithm that solves a particular problem and then generative AI which basically uses the information knowledge, it's got to generate some new ideas.

Guest 2:

[00:43:18 - 00:43:20]

It'll write you some text to write you some copy.

Emily Yates:

[00:43:20 - 00:43:21]

Got you.

Guest 2:

[00:43:21 - 00:43:47]

And I think for me, the generative AI, it's a moment in time that I don't think you can overhype it. There's a huge amount of hype and I'm probably just adding to the hype and I apologize for that and we will come down the hype curve and so on. But ultimately for me the difference is it provides a human like interface to machinery. And a human like interface is a conversation that I think we all get increasingly used to having. And there are lots of work that we're doing now to make that conversation more reliable.

Guest 2:

[00:43:47 - 00:44:17]

Doesn't hallucinate as much make information up. But I think for me, changing that human machine interface, it comes back to the human, always comes back to the human. Changing that human machine interface is where the massive changes will be and we will get comfortable being helped. I've always wanted the concept of digital buddy, someone who helps me do stuff for me. That human machine interface, that buddy, that ability to understand me really intimately and interact with me, I think that's going to make a huge difference.

Oliver Bennett-Coles:

[00:44:18 - 00:44:21]

So interesting. So it's definitely a hot topic at the moment.

Emily Yates:

[00:44:21 - 00:44:43]

Lots to think about there and interesting how we can move that into different sectors as well and it can become beneficial in those. That's, that's really fascinating too. And then final question, Will, what are your hopes for the rail industry and its infrastructure in the future? How large a role do you think technology is going to play there?

Guest:

[00:44:43 - 00:45:12]

Oh, we haven't got long enough. I'm actually just quickly tap into the AI and machine learning conversation just very briefly because I think it's relevant. So as a construction

industry or as an infrastructure sector as a whole, we create a tremendous amount of data. I mean not anywhere near as much as the medical industry and everything else. We create our own and we're very poor at using it, we're very poor at analyzing it, and we're very poor at making decisions from it in an effective way.

Guest:

[00:45:12 - 00:45:55]

And I think Tim's points about generative AI and traditional AI is actually really, really interesting because I think moving forwards, I mentioned this before, AI will not replace engineers. It'll enhance the decision making process. But also in terms of infrastructure monitoring, so remote condition monitoring, preventive maintenance. As the world of IoT sensors and data starts to create this real time data maturity, that we can start interacting and interrogating the data in such a way that it's starting to tell us like your child will tell you, I'm not feeling very well. The infrastructure will start telling you this part of the rail track or this light bulb or this generator is starting to not perform as it should.

Guest:

[00:45:55 - 00:46:27]

And rather than doing that scheduled maintenance where you put a bunch of people out in danger to go and investigate things, you can then rely on this much more autonomous way of doing things. You still need the people, you still need the experts to interpret the information. But then you're creating a much more proactive, which means that the uptime for infrastructure lasts longer. It feeds into this. We don't have to spend as much time and money buying loads of stock and spares, and you move into much more just in time sort of maintenance capability.

Guest:

[00:46:27 - 00:46:54]

But also we are moving into a world which you or Tim may well understand this, but digital twins. Now, this is still a buzzword, just like AI is still a buzzword in our industry. It's a buzzword that holds a lot of power if it's delivered. And for us, a digital twin is absolutely vital because it's a digital representation of your physical asset. And we're talking about every single nut and bolt to every single wire to every single person that has touched that wire or bolt.

Guest:

[00:46:54 - 00:47:31]

And then with data and analytics, you can see the number of seasons that particular bolt has been through, how many times it's frozen solid, how many times it's been loosened, how many times everything else. I mean, we were talking a long time in the future, but this is the power of AI data and analytics and this digital twin capability. But for me, it's still a bit of a pipe dream for the infrastructure industry. But the stage one for me in our industry is data and analytics starting to use data in a proper way. Creating this data trust capability between projects, between infrastructure owners would be a massive leap because then we would be able to talk the same language.

Guest:

[00:47:32 - 00:48:04]

It would make handing over a project far easier, it would make operating that piece of infrastructure far easier, but also it starts to project our success and then we can start twiddling the knobs at the back end saying, well, actually we can afford to spend a bit more money on this and we're still on the critical path, is still within parameters at the moment. We can't do that. It's guesswork. So for me, data and analytics is going to be. It's not a panacea that's going to solve everything, but it's going to be a huge change in how we deliver, maintain and operate infrastructure.

Guest:

[00:48:04 - 00:48:19]

And then hopefully we can then bring people like Tim in to then add that layer of, you know, AI and automation and machine learning that will create that next level. I think AI is brilliant in everything else, but we just don't have that data capability and AI only works if you provide it with good data.

Guest 2:

[00:48:19 - 00:48:38]

No, you're absolutely right, Certain will. And thank you for the invitation because I will step in and do a little bit of a plug and a build, hopefully. Because obviously with waymap, Waymap was all around helping vision pair people navigate to the rail network

is absolutely number one one of those areas. And the way that Waymap works is requires data. It requires good map data of the environment you're walking around.

Guest 2:

[00:48:38 - 00:49:10]

So not only is the digital twin actually a key part of maintaining the infrastructure, it's also a key asset for interaction with your end users so that the tools, the AI can be really focused on using that data for all sorts of purposes. And again, I keep on trying to bring it back to the human, so bring it back to the individuals working out where they are, giving them the right contextual information to how to get around. And it may not just be navigation, it may be all sorts of information. And as you say, it could be about managing the asset as well as actually navigating around. That becomes a really valuable part of the process.

Emily Yates:

[00:49:11 - 00:49:38]

Well, you've both just blown my tiny little mind in this episode, I have to say. So interesting and so much to take away and think on. And I think about how we can apply innovation elsewhere. That's the big thing that is really in my mind that we maybe need to take away and really think about how can I be more innovative in my world of work, for example? So, Will and Tim, thank you once again for joining us.

Emily Yates:

[00:49:38 - 00:49:45]

It's been an absolute pleasure to have you and tonight learn from you and is there anything that we've not asked you that you'd like to share?

Guest 2:

[00:49:46 - 00:50:10]

Just from my perspective, I'm a technologist, I love working with technology. But actually if we can get everyone to really focus on the end user in an environment that actually really focuses on what they need, and then we provide the solutions and allow us to innovate, provide a system and a network that allows us to try things out and learn from

that and be able to sometimes get things right, sometimes get things wrong, but when we get it right, we can really get it right and we can properly scale.

Guest:

[00:50:11 - 00:50:27]

Just to add to that, I think. Learn to celebrate failure, learn to take a chance, be bold. We talk about lessons learned all the time, but we don't. So let's be proud of trying to rock the boat a little bit and then ultimately, hopefully we can get more support to do that iterative innovation.

Oliver Bennett-Coles:

[00:50:28 - 00:50:38]

Amazing. Tim and Will, I think I echo Em's sentiments. I feel like I've been co hosting a TED Talk rather than a podcast. Thank you so much for your time. It's absolutely incredible and inspirational.

Oliver Bennett-Coles:

[00:50:38 - 00:50:39]

Truly has been.

Guest 2:

[00:50:39 - 00:50:39]

Yeah.

Oliver Bennett-Coles:

[00:50:39 - 00:50:40]

Thank you so much for joining us today.

Guest 2:

[00:50:41 - 00:50:41]

Thank you very much.

Guest:

[00:50:41 - 00:50:42]

Thank you.

Emily Yates:

[00:50:43 - 00:50:51]

And to everyone out there, thank you so much for tuning in. We hope you've enjoyed all the conversation and have gained some fresh new insights.

Oliver Bennett-Coles:

[00:50:52 - 00:51:01]

Please head over to our website, mimagroup.com for more information on our work or if you'd like to reach out to see how we can help you and your organization on your next project.

Emily Yates:

[00:51:01 - 00:51:03]

And once again, I'm Emily Yates.

Oliver Bennett-Coles:

[00:51:03 - 00:51:07]

And I'm Ollie Bennett Coles. And this has been the redesign from mima.

Emily Yates:

[00:51:07 - 00:51:13]

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