Paul Thies: In many parts of the world, the infrastructure and construction industries remain heavily influenced by 20th Century standards and solutions, and the need to move beyond these has become even more pressing in light of COVID-19. A better way to procure plan and deliver infrastructure is required, [00:00:30] one that prioritizes digital innovation, offsite manufacturing technologies, and a focus on whole life asset performance. The way society engages with public infrastructure is changing, and both those procuring and delivering major programs must evolve with it. While this is a hot topic globally, Jacobs has produced a white paper in response to the UK government's significant infrastructure investment commitment, in which the company set out [00:01:00] six areas where change can be achieved in a timely targeted way; funding, delivery, contracting, technical standards, data and digital, and capacity.

I'm your host Paul Thies, and in this episode of If/When, we look at these issues on a global scale with Brian Harvey, Jacobs' Global Vice President of major programs and Donald Morrison, Jacobs' Senior Vice President for Europe and global executive [00:01:30] sponsor of Digital Strategies. For more information on this topic, the white paper is available to download on jacobs.com/industry-insights. Thank you Brian and Donald for joining me today, and I'm really looking forward to talking with you about program delivery and the lessons that we have learned in the UK markets specifically during this time of great disruption.

[00:02:00] To start us off Brian. I'd like to ask, of the six areas where you believe change can be achieved in the UK market, which do you see as universals that can be applied irrespective of geography?

Brian Harvey: Thanks Paul. I think one of the key universals that we've got regardless of geography, is that we've got an incredibly fragmented industry. An industry that's made up of very big suppliers, [00:02:30] smaller suppliers, contractors, consultants, and a whole myriad of different arrangements in between. And I think that the biggest challenge therefore is bringing that community, all of those fragmentation of industries together in a more collaborative way. And I that's the area where the UK is really focusing hard at the moment through the work of the project 13 group [inaudible 00:02:56] institution civil engineers, and [00:03:00] that's being replicated, and there are parallel streams going elsewhere in the world as well. For example in the US, it would be called Integrated Project Delivery, there's examples of alliances elsewhere in the world.

So this collaboration theme seems to be building momentum and certainly reinforced through the Construction Playbook, which has just been released in the UK. And so for me, that's one of the biggest challenges to fragmentation because opportunity is collaboration and the quicker we can start collaborating [00:03:30] together, the quicker we can reduce waste within our industry and all those handover points and start to really drive an improvement in productivity the whole industry is being challenged with at this moment in time.

Paul Thies:	That's interesting. And I'm seeing more and more emphasis on what's being called the circular economy and driving waste out. And it's interesting that collaboration among players can be a key enabler there and in the work that you are all are [00:04:00] looking to do. Donald, Brian mentions collaboration and that's going to be a key to success here. What do you see are some of the barriers to collaboration among industry players and how might those barriers be overcome?
Donald:	Maybe just a few that would come immediately to main poll probably decades of inevitability in the sector in its broadest sense, and then maybe a couple that [00:04:30] maybe transcend multiple sectors, things across business, things like a lack of trust and protection of commercial interest.
	But I think the way to overcome these as Brian has already said is through much closer collaboration. I believe that a good idea maybe a couple of years ago would have lasted a few months. But maybe in the world that we're now in lasts maybe only a matter of weeks or days. And I actually think that as a [00:05:00] sector, we need to look much more closely at perhaps threats outside our sector. The biggest worry to my mind is maybe they're not in kind competitor coming in and disrupting some of the inevitability barrier that I talked about there. And I think we've got a really great opportunity to turn some of these barriers if we have the right vision as we've set out in the paper into real enablers for us, if we've really taken an acute focus on them and deal with them [00:05:30] one at a time. I'm really confident about the potential for change in the market.
Paul Thies:	Now with the UK market, and I've seen other surveys and studies that have looked at things like they've ranked like smart cities in the world and the deployment of emerging technologies and whatnot, and London is ranked number one in the world in terms of smart cities. And London it's a hub for artificial intelligence development in Europe, and [00:06:00] it's a very resource rich geography and it's, so there's a lot of advantages there. But Donald are there specific learnings stemming from the concepts that are mentioned in the white paper that in the UK the other geographies might learn from, that may not for instance have quite the resources at hand that the UK does, but they could still learn from and deploy in their own local geographies?
Donald:	[00:06:30] Yeah. That's a great question Paul, and one that we could probably talk about almost all day and solemnly from my perspective, I do recognize that the UK is a mature market, and I think there's a really great opportunity, but probably also a risk that we absolutely need to unlock the potential of digital as that pertains to the market, and then I would want to be clear [00:07:00] on how we would define digital. I think it's too easy to quickly just to jump to a definition of digital that these centers maybe just in technology and data, from a Jacob's perspective. And I know a number of other organizations both within our markets that we face out with have a much broader definition, which is

where I would settle the digital is actually about culture ways of working business models.

And yes, it does include technology and data, [00:07:30] but I think that is really fundamental that we look at that. And I heard it said, perhaps just recently if we have data as one example of as a part of data, let's use data, but if all we have is opinions, let's use [inaudible 00:07:46] And I think that presents almost a unique opportunity because I think for years I talked about the inevitability that we've seen and how we reach our infrastructure decisions, and I think we need to [00:08:00] just get into a much more agile approach and I think it's got to be transformative cultural change.

I like a good analogy and I think one of the analogies that I've heard used here is the impact of digital on so many sectors at the moment, almost has to be as bold or as impactful was the change from steam power to electricity in the 19th century. And at that point, it didn't just change how pack factories paired [00:08:30] their machines, allowed companies to totally reconfigure their approach to relocate into new geographies and it allowed new competitors to emerge. So I think just as the factory owners of the 19th century discovered, it's not simply about flicking some digital switch and swapping from one per source to another, it's about reimagining companies and industries, but starting with that desire [00:09:00] for transformative cultural change.

Paul Thies: Now Brian, Donald mentioned infrastructure and so I want to kind of talk about infrastructure challenges especially in light of COVID 19. So I'm going to ask you both, but I'll start with Brian, what are some of the infrastructure challenges and needs that COVID 19 uncovered that need to be addressed and which in your view necessitated as strategic plan for better program management?

Brian Harvey: COVID really tested [00:09:30] our resilience to respond to those very unpredictable, those very high risk but very low likelihood type events. And for me, the areas of the industry which have been most resilient, to those that are least dependent on labor, be it in the construction activity or in the design activity. So really those areas of the industry, which are more forward thinking into automated processes and the more connected [00:10:00] ways of working. So thinking that into the program management space, that's very much the way we tend to operate in program management, in program management, where we're dealing with such complex situations, invariably looking to deliver client outcomes or a solution type outcome that we really need to unlock the innovation across many, many teams. And to do that, we need some digital platforms,, [inaudible 00:10:29] been [00:10:30] driving a single source of truth approach, which really empower all our teams wherever they have to be set in the world with that singular knowledge that what they're doing is aligned with that greater vision and that greater focus on on the outcomes.

So I think really the COVID situation has not only tested that resilience, but it's reinforced the importance of those digital platforms, those single source

through platforms [00:11:00] which enable us to respond quickly and with the agility to whatever the situation develops either now or into the future. But certainly that's an area I think we can all learn from, we're going to continue learning from in the coming months and years because I think it starts to show us what true productivity improvements are possible with this new way of thinking.

Paul Thies: And it seems like COVID has really kind of underscored or even accelerated that drive [00:11:30] for automation, the disruption of automation that many industries were already seen pushes for efficiencies and whatnot. And now with COVID, it's really seemed to amp that up. So Donald taking up on that thread Brian saying about the role of digital platforms to help underpin and address some of those infrastructure challenges, what do you see are the infrastructure challenges that [00:12:00] need to be addressed and that this strategic plan is situated for?

Donald: Yeah. I think perhaps the biggest one Paul is actually agility and it's perhaps something not that infrastructure planning isn't all that well known for. So maybe if I give one example that agility and transit planning to handle the new work patterns that we're maybe going to have in our post COVID world. And I think a phrase I often used even in [00:12:30] a pre COVID was the rate change will never be this slow again. And that personally really excites me as an individual. And I know it excites a lot of our staff and Jacobs for some individuals they will see that as a threat, but I think it's a really great opportunity.

                And if you actually look at how Jacobs and a number of other businesses have performed over the last 10 months we've absolutely as Winston [00:13:00] Churchill said, "We've not wasted a good crisis." I think if we deliberately set out to drive change at the rate that we have in a really structured way over a two-year-period we wouldn't achieve what we've achieved in the last 10 months. So I think for those reasons, it's shown an agility and a resilience and an imperative for change within our organization. And I think that sets a really good foundation for increasing that rate of change for the right [00:13:30] reasons as we move into the future

Paul Thies: And Brian, so there are six areas of change that are explored in the white paper; funding, delivery, contracting, technical standards, data and digital and capacity. Which one seems to be to you the area of greatest challenge and is this consistent and from markets across the globe? And if not, where is this different [00:14:00] and why?

Brian Harvey: I think before I go directly on answering that, so just to set the context here. I think with climate change, with the growth of the global population, with asset in some sectors and some geographies, the challenges of infrastructure, the challenges of trying to solve are probably greater than we've ever imagined in the past. And therefore what we're [00:14:30] suggesting in the white paper is that we need to start thinking beyond those approaches that we thought

appropriate and in some areas still think are appropriate in solving some of those infrastructure challenges. So we need to test the boundaries. And I think the most common and probably the greatest challenge in all of this as Donald alluded too with regard to digital is the cultural, the mindset change.

We need to prepare ourselves for new ways [00:15:00] of looking at things and new ways of approaching some of these greatest challenges. So in the past, we might have been dependent on a single source of funding, but very often now that single source of funding can't afford that total infrastructure solution. So how about blending those different sources of infrastructure funding together so that we can achieve something much more powerful and something that's much more aligned with the social needs of the local communities. Maybe [00:15:30] we could look as I mentioned earlier around collaboration, try and break down some of those barriers. In other areas, we're trying to unlock new technologies for example, graphine, or these new materials and using standards which were developed in the seventies or so, it's very difficult to bring in those new technologies into mass infrastructure solutions.

So there's a whole range of things here, and each challenge will vary per geography [00:16:00] depending on the particular labor markets, the construction techniques, we're all on a different journey, but I think the exciting thing now is, and this is probably being experienced in some geographies if not a number of geographies around the world, is that there is absolutely a better way of doing things and an increased potential therefore on how we can deliver into the future. And I think that's the exciting thing now is we're not just [00:16:30] talking in theory any longer, we're talking in reality. And it's just a matter of time now before that journey becomes appropriate for everyone regardless of where they're in the world.

Paul Thies: So you've kind of touched on differences across the globe and across geographies are really going to be I think, influenced by a number of factors, but of those six funding and delivery and et cetera, which one do you think presents the greatest near term opportunity to [00:17:00] achieve efficiencies, savings, and other benefits? And realizing that again, the geographies are going to vary, is there a consensus where one of these might be by and large, the one that presents the greatest opportunity globally?

Brian Harvey: Yeah. I think the one for me is the speed of delivery. That's the objective we are trying to achieve because not only does that then reduce the cost of it, of [00:17:30] the infrastructure, it also increases the speed and we can realize the benefits of that infrastructure. So if we can reduce the length of time it takes to deliver infrastructure, then we win on the cost side and we win on the benefits side. And in some markets, the more mature markets we'll be unlocking the offsite manufacturing assembly style approaches, just in time logistics of getting material and kit to site. In other geographies though, [00:18:00] which don't have that inbuilt capability, there are still some techniques that can be transferred, perhaps in the speed of which we can get through the development

phases, the way we can get through the business cases, through the investment cases much more quickly. And to do that, we've got to really start unlocking the power of digital and the global communities which can really engage in the truly global [00:18:30] sense in global delivery.

Paul Thies: Okay. And then what are the market sector and cross-sector approaches, and what are the benefits of shifting from a market sectoral approach to a cross-sector approach?

Brian Harvey: I think that the big advantage here is that in recent years, we've tended to focus on a road, a railway and a water system, each in their own individual rights. And once that's great for [00:19:00] achieving efficiency in that particular sector, it's limited to the benefits we could deliver to just that sector. So the benefits we're trying to unlock or the outcomes trying to unlock or simply a better roadway, or a better railway, or a better water supply system. Now, if we start thinking cross-sector, surely we can start a much more additive way of leveraging the benefits or the outcomes beyond a single sector. So we look at not [00:19:30] just those individual bits of infrastructure development, but all those connecting points, all those interface points which bring challenge, but they also bring opportunity to unlock wider development.

So we don't just end up with say a road or railway a water system. We end up with a completely new community, a completely new city for lack of a better word, a completely new environment for people to enjoy, to work in, to live in and to travel across in the future. Something [00:20:00] that's completely reimagined, something we couldn't imagine in the fifties or the sixties, when a lot of the infrastructure of the world really started taking shape.

Paul Thies: So Donald, this question's for you. The paper notes that the construction and infrastructure industries remain heavily influenced by 20th century needs and Brian touched on that a bit here. So influenced by the need standards and solutions from the 20th century, and that progresses long overdue. What do you think are the greatest barriers [00:20:30] that have prevented these industries moving with the times today?

Donald: Probably we maybe start to sound a bit like a stuck record in some of these, but I think this idea of just a whole inevitability, I think we have great legacy across a number of the key geographies in which we operate. But I don't think as an industry we've moved quickly enough if you compare our progress compared to a number of other industries, emerging industries and ones that have been significantly disrupted. [00:21:00] I won't bother naming any of them here, but there's just so many of them that we all probably experience in our lives each day. And I think we need that transformative cultural change and that's certainly something I can see that we're on an exponentially positive trajectory on within Jacobs at the moment, so that we've got those transformative new ways of working that I mentioned earlier.

I think like Brian mentioned also, I think one [00:21:30] of the barriers is just to kind of siloed or stovepipe approach that we often take within markets, and I think there's a great opportunity around cross-functional or cross-market adjacencies. And I think as we've said in the paper, above all I think the most important thing we can do is actually create that environment where people are constantly striving for the better way and are always starting by asking why are we doing [00:22:00] it this way? And I think that will enable us to create long term value. And I think as I said earlier, that focus on outcome is the outcome to provide a transit route between A and B, or is it to create economic regeneration in a wider corridor? And I think you would get potentially two very different solutions if you asked a different question. And maybe a final point, I think [00:22:30] when it's not often commented on is actually the infrastructure can be complex to consent, procure, design, deliver, how do we start to think across political periods?

I think the majority of democracies in the globe have four or five-year political tenure periods and generally it would be pretty incredible to deliver a [00:23:00] major piece of infrastructure within our period, but how do we start to maybe take a more strategic approach to that planning where it's really focused on the value that infrastructure brings to economies? Because I think that's absolutely considered, I don't think there's any debate about the impact of infrastructure and fueling economic growth.

Paul Thies: So then Donald, how has the way society engages with public infrastructure changed, and what impact [00:23:30] does this have on the future of major program delivery?

Donald: Yeah, great question Paul and is probably like so many areas. I think it has changed significantly certainly over my number of years in the industry. If I was scoring it out of 10, would it still get anywhere near 10? Probably not because despite the fact I'm an optimist, I would always say there's room for improvement. So I would maybe give it a 6/10 at the moment. I think we have moved [00:24:00] from our position where the general public feel infrastructure's done to them, where they now [inaudible 00:24:09] it's been done for them. And I know that's very generalistic, but I think we have changed the narrative with the public. I think we can still do more to explain the why behind major infrastructure development and the benefits and that will bring long term to many, many individuals. And I think the drive [00:24:30] and the focus that we've got in social value now as an organization and as a wider industry is a real imperative there and that really helps that narrative.

Paul Thies: And then Brian, the same question for you, how do you see that the way society engages with public infrastructure has changed and what impact do you think this has on the future of major program delivery?

Brian Harvey: So I think there's been a stepped increase in the level of transparency around our infrastructure [00:25:00] schemes now. There's much easier ways now of

communicating with people, not just the town down halls that we used to hold many a year ago explaining to communities what a scheme involved, now there's total transparency via the web and online consultations and the like. So there's a much stronger social connection with the big schemes, the major program schemes that we're delivering. And with that comes increased challenged in some areas [00:25:30] and rightly so, the people are much more aware now of their local environments and what infrastructure will do, be it an improvement or a challenge in the local environment. So lot more challenge there and that's great to see because we're coming up with much stronger social value schemes. Also seeing many local businesses now wanting to get involved in infrastructure delivery and so we're not just importing everything to our local community.

We're really using the community [00:26:00] to better that scheme and also deliver that scheme. So there's a much stronger connection there now, some brilliant scheme in Scotland where local schools, the local communities are learning and developing from the infrastructure we're putting in place. So I think for me, that's the big change which has come and will continue to drive going forward. And I think our industry will be better for it, our communities will be stronger [00:26:30] for it. And overall, our major program delivery will take the step to the next level because of that challenge and that drive for more.

Paul Thies: Excellent. Well, Brian and Donald, I want to thank you both for joining me today. I really learned a lot about where we're going in terms of program delivery with a view toward infrastructure and using digital to enable that, and in so many ways the UK is leading here and [00:27:00] so it's interesting to see what the experience there has been and how it can help inform the situations on the ground elsewhere. So for our audience, if you're interested to learn more, the team has produced a white paper which is available to download and the industry insights section of jacobs.com. So Brian and Donald, thank you both much for joining me today.