Resilient Edge: A Business Vitality Podcast from Deloitte

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Episode 7 — Driving transformation: Scaling AI across the supply chain

00:00:11 **Ashwin Patil:** Hello, everyone. Welcome to Resilient Edge, a business vitality podcast paid and presented by Deloitte. I'm your host, Ashwin Patil. In this episode, we are going inside one of the world's most complex supply chains to see what happens when data, cloud, and AI converge at scale. Toyota Motor North America was up against the same barriers many enterprises face: outdated systems, scattered data, and processes that couldn't meet today's space. But instead of patching old systems, Toyota teamed up with Deloitte and AWS to build a real- time digital data thread. They connected forecasting, production, logistics, and dealers all in one adaptive ecosystem. Joining me are two leaders who helped make it happen, Chris Jangareddy and Jason Ballard. Chris is a Managing Director at Deloitte, and he is our AWS AI and Data Alliance Lead at Deloitte Consulting. Jason Ballard is the Vice President of Digital Innovations at Toyota North America. Together, we are going to unpack how generative and agentic AI move from pilots to production, driving productivity gains, and transforming how teams plan, decide, and deliver every day. If you've ever wondered what it takes to scale AI responsibly in a complex enterprise, this is your roadmap. Welcome, Jason. Welcome, Chris.

00:01:54 **Jason Ballard:** Happy to be here.

00:01:55 **Chris Jangareddy:** Glad to be here.

00:01:57 **Ashwin Patil:** So we're going to talk about Toyota's transformation journey when it comes to driving supply chain transformation using AI capabilities. So Jason, let me start with you first. What

was the moment that drove the conception or the vision of this kind of a transformation within the enterprise?

00:02:15 **Jason Ballard:** I would say COVID was the igniter for fueling the transformation that we've been undergoing for three plus years. Our team members are very resilient. They use a lot of manual processes or lean into some legacy systems that have been around for 30 plus years. They've been reliable. The process works. But COVID, with the chaos nature of what happened in that period and the impact on the auto industry, you had chip shortages as well during that same period, it really exposed how resilient our team members had been when they were dealing with maybe a disruption a week. But with COVID, we were seeing 30 to 40 a day.

00:02:59 **Ashwin Patil:** Wow.

00:02:59 **Jason Ballard:** Became nearly impossible for them to follow the processes that we had and sustain a way of life. But the team members pushed through, but that drove us to the commitment of we have to do something. We've got to reimagine how this supply chain should operate. And we knew digital would be there. And then of course, AI just has been pushed to the forefront ever since we started.

00:03:26 **Ashwin Patil:** So Jason, that's pretty insightful, especially since you brought in the Toyota culture, the way the organization was set in its processes, the reliance on technology as it stood. Now, Chris, when you think about the shift in technology, I would imagine that you go from some level of initial piloting to then driving scale. How did you think about that and how would you ensure that things were moving from pilot to scale effectively?

00:03:52 **Chris Jangareddy:** I know we keep hearing 95% of the pilots fail. My response to that is, "It's not the technology that's failing it. It's the use case that you pick." So you got to first look at the business process and identify the bottlenecks and the use cases to start with. Define the out of the possible. Deloitte has an enterprise value framework where we identify the business value each of those use cases would derive and pick the use case that can give you a good ROI in the next six to 12 weeks. So that's the approach that would make sure these pilots do not fail. So that's exactly what we did. We picked some use cases that have a higher value, business value, and we put it into a test. We also made sure that we have infrastructure in place. Toyota early on has had a vision of building an

ecosystem. It's not a platform, it's an ecosystem of: platform intelligence layer, agentic layer, experience layer. So we worked with Toyota in designing that ecosystem and made sure that it's scalable. So any KPI that hit the threshold are the only use cases that moved into production. That's how we made sure that use cases are productionized and POCs are productionized as opposed to testing the technology because technology is already tested. It's the use case that's super important.

00:05:21 **Jason Ballard:** If I can add-

00:05:21**Ashwin Patil:** Yes, please.

00:05:21 **Jason Ballard:** ... I would just say that since the early days when we've learned how to follow this framework, we've also been adopting science as a more of a cultural norm where we really want to drive experimentation. Starting with a simple template of a hypothesis, the expected value, how would we measure if it's truly meeting the expectation we think it will, and then letting our team members have that time to go see if it's going to stick. And then that gives us opportunities to then figure out, okay, which ones do we prioritize now that we do have several that have gone through experimentation, which allows us to then think about the scaling across North America.

00:06:03 **Ashwin Patil:** Excellent. Excellent. Chris, maybe let me ask you a question to bring what Jason's saying to life. In order for experimentation to happen effectively, you need, what we keep hearing, "AI ready infrastructure."

00:06:18 **Chris Jangareddy:** Yep.

00:06:19 **Ashwin Patil:** What do you see as the difference between modernizing infrastructure from a technology standpoint to be AI ready versus truly making AI ready available for scale for the business?

00:06:30 **Chris Jangareddy:** There's a difference between modernization and transformation. Lifting and shifting versus completely redefining your business processes and embedding AI right from the get- go at the design layer as opposed to embedding AI after the fact. So when we do embed AI into the business process, into the design phase, the way we develop the architecture is completely different. It has to be event driven. It has to be real time. It has to be API based. It has to be scalable. So some of these are architectural practices, but the most important thing in this all is the data.

Without proper data, there is no use case that's going to go to production. Data governance, data quality plays a pivotal role. So technology is super important, architecture is super important, and even more important is the data and mapping the use cases to the data to make sure the data is available to deliver that use case, and doing the mundane, boring stuff ahead of time rather than after the fact is going to make sure you're successful.

00:07:40 **Ashwin Patil:** So Jason, once let's say this technology component is modernized and it's being put in place, from a day- to- day standpoint, what do you see changing with the workforce, with your team that's leveraging this technology in the way they do things?

00:07:57**Jason Ballard:** It's pretty powerful when you take a step back and look at how it's transforming the way our team members are working. I can give an example. In our demand and supply management function, it's an area where it's a monthly cycle where they're taking demand inputs and our supply capacity and they're trying to figure out how they allocate vehicles, at what volume and at what types. And it's a very complex operation.

00:08:25 **Ashwin Patil:** Sure.

00:08:25 **Jason Ballard:** Before we introduce the transformation and some of this new technology, it was very a stitched process with 70 plus spreadsheets. And again, some of those legacy mainframe system manuals as well. Very manual. Lots of overtime. So it's hard to sustain morale of your team members when they know each month they're going to end up spending time trying to get the job completed. So as part of our new transformation, we have a product that we've been developing that provides an AI assistant to these planners. And it allows them to provide scenarios and recommendations and allows them to drill with the agent and ask questions about certain volume recommendations and things like that to get the right response. And what's key is that as we do that month over month, those agents are learning and our team members are learning as well. And because of this, we went from the previous process of having 40 to 50 planners, and now once we complete... We're still refining and building, but once we complete, we think we can do this whole operation for North America with around 10 planners.

00:09:34 **Ashwin Patil:** Wow.

00:09:35 **Jason Ballard:** So you think about, from a planner perspective, now their work is uplifted. They're taking on a much wider scope of responsibility. They're getting stretched. They're learning new parts of the operations. For the others, it's allowing them to tap into their career aspirations. There may be folks that are in daily ops that want to get into the transformation. So now that's an avenue for those team members. And then morale, because of the new system and the way the advancement of the technology we're using, no more overtime. They're able to get these responses, these scenarios, these recommendations within their business hours, and we can actually complete the operation. So it's kind of a win- win- win, we feel like for our team members, ultimately for our customers, who's the beneficiary of these output that's coming from these products, and then, of course, our company.

00:10:25
Ashwin Patil: Sounds like they are putting this extra time to good use by focusing on the things that really matter.

00:10:31 **Jason Ballard:** It's elevating their decision- making. It's changing the scope of work that they're dealing with every day. And so we see it as an assistant. I like to refer to it as software developers use two in a box. So we think about it that way in the context of how can AI help the team member just perform their work. And so we're still early in the journey, but we really see it transforming the way our team members work, but also completely changing the customer experiences, which ultimately is what we're driving towards.

00:11:03 **Ashwin Patil:** That's right. Now, Jason, I've served Toyota in the past, and I always thought that Toyota and the way they operated was a very family oriented organization, especially as you think about the ecosystem of partners and suppliers that work with Toyota. I'm assuming that when you talk about extending this foundation of capabilities, that there's an aspect of impact to suppliers and how suppliers are going to get benefited from some of these capabilities. Can you talk a little bit about what the suppliers can do in the future that they couldn't do in the past without these capabilities in place?

00:11:38 **Jason Ballard:** Yeah, certainly. So our transformation scope includes all of our key partners, whether that's our dealers and, of course, our suppliers. And so we've built a product that allows us to improve the collaboration with our suppliers, starting with increased visibility, providing them more of a window into our demand and our forecast of what's needed beyond the traditional like 12 to 13

week forecast. And so that is proven to be really advantageous. That in the system allows us to set triggers and alerts. And again, it allows open windows for more communication. Recently, we just had a situation where, as you can imagine, with the industry the way it is and the consumer market, demand shifts. And so we may want to reprioritize a particular vehicle and a particular series. Well, now when we do that, the suppliers have so much more advanced awareness to that change. They can accommodate those changes with much more success on their side, and then they can also do it with no expedites. They can meet at a normal cost to get the supplier parts to our plants. And then at the end of the day, our plants are meeting that revised demand. And then our customers are happy because it's allowing us to even be better at getting the right car, right place, right time.

00:12:58 **Ashwin Patil:** So better visibility, better collaboration, better partnership through and through, and hence more clarity in how you're doing your business and performing. That's awesome.

00:13:06 **Jason Ballard:** 100%.

00:13:07 **Ashwin Patil:** That's awesome. Chris, Jason started talking about agentic AI. Now, we know that there is a lot of buzz in the marketplace. A lot of companies are thinking about agentic. How do you think about the balance between control and automation in terms of reality and what that affected Toyota operations?

00:13:27 **Chris Jangareddy:** So one, Toyota operations, we did not put agents as a replacement, just like Jason suggested. It's a augmented assistant to the human FTEs. Early on...

00:13:41 **Ashwin Patil:** So humans getting augmented with agentic capability is not getting replaced.

00:13:46 **Chris Jangareddy:** Not getting replaced. I mean, it's against Toyota culture as well, that people are of utmost importance for Toyota. And like Jason suggested, it's giving them opportunity to explore other areas of the business. And agents are helping the planners, in this case, as a sidekick or a digital twin, the digital FTE basically, who would do the heavy lifting and leave the important tasks to the actual business user.

00:14:17 **Jason Ballard:** We have a vehicle ETA, estimated time of arrival, a promise that we make to our customers when they come into the dealership to order a vehicle that we perhaps don't have on the lot. And so we'll tell them when their build date is going to happen, when their delivery date's

going to happen. And so we want to maintain that promise to the customers. We're not great at it. We're always improving. And we've gone from it being purely a mainframe- based lookup to see what the status of the vehicle would be to building a new pipeline management system that has a sexy UI that's highly intuitive. But you still have the team member clicking to filter parameters and figure out what's the delayed vehicle status for a particular region. Next evolution we said, " Okay, what if we throw a context window, leverage generative AI and include some automation prompts?" So now the team member's clicking less and they're getting their responses a little bit faster, but they're still interacting and driving the output that they're looking for. So now what we're working on is pure agentic solution where the agents are learning all the different types of reasons that are causing a delayed vehicle to our customers. And we're teaching it which ones it can respond to and address automatically and which ones the team member needs to remain in the loop to make a decision or to follow up. Another quick part of that is, say for example, we find that a vehicle has just been misplaced in the yard and it needs to be loaded on the trailer. Well, we can have the agents actually initiate the conversation with the logistics providers to load that vehicle. We can also have it initiate the conversation with the impacted dealer to tell them that we've expedited the trailer and it's going to be on time. So now when that team member comes into work, they are getting a report of all the actions the agents took on their behalf and maybe to address three of five delayed vehicles. And now the team member focuses on how to solve the remaining two scenarios. So it completely changes the way that they interact and they work with AI.

00:16:22 **Ashwin Patil:** I like what you said earlier, Jason, about two in a box between human and AI. One of the big concerns that many organizations have is as you scale, the governance of decision models or the governance associated with agentic becomes a problem. What are a couple of things that you're doing in terms of driving control, especially in this two in a box model? And what role do human play as you think about the controls that you put in place for governance?

00:16:50 **Jason Ballard:** You want to take that one?

00:16:50 **Chris Jangareddy:** I'll take that. So from a controls perspective, it's embedded into the design. Deloitte partnered with AWS in building not only the bedrock services, but also the audit manager where audit manager has 100 controls across eight pillars. The audit manager was developed based on the domain expertise that Deloitte brings from a compliance and audit standpoint. We brought in our security and AI from both sides and we leveraged our trustworthy GenAI framework and identified 100 controls across fairness, security, accuracy, and all of the eight domains like

privacy, reliability. So these controls, what they do is once a model generates an output, these controls run on the output to make sure that generated output is fair. It's not biased. It's accurate. It's secure. It's private. So those controls are embedded into the design. So we make sure the output of any of these models and the recommendations that these agents are performing or the actions that these agents are taking are tightly controlled around these 100 controls.

00:18:16 **Ashwin Patil:** That makes sense.

00:18:17 **Jason Ballard:** I can add that as an enterprise as such, we are multinational about how we operate in North America. We have a centralized responsible AI board that's looking after the various AI solutions that we're putting into place to make sure that the same controls that Chris referred to are being adhered to, right? And that we're making sure, again, we're protecting our customers' information, but we're also using it in a safe, reliable way internally as well.

00:18:46 **Ashwin Patil:** So Chris, in order to enable and unlock these kind of capabilities, I understand that AWS technology was leveraged. Can you talk a little bit about the use of AWS technology and how it helped?

00:18:57 **Chris Jangareddy:** So like we talked about the architecture previously, there's an ecosystem that we built which had the platform, intelligence, agentic, and experience layers, and the platform had data as well. The technologies that were used were all of the event driven transaction layer services of AWS, the data services of AWS. We would think about these domain specific multi- agent systems like demand, multi- agent systems, supply multi- agent system constraints, logistics, and the entire supply chain value chain. The other important thing is it's not confined to supply chain. The idea is get into the adjacent lines of businesses, but the platform is scalable. These are all the reusable components that Jason's team is building, which would help accelerate the transformation for other lines of services. That's the idea rather than reinventing the wheel.

00:20:00 **Ashwin Patil:** I love the idea of how you're looking at it really more as a foundation of capabilities that you're now going to evangelize beyond purely supply chain use cases and think about adjacencies. Now, there have got to be some surprises, especially as you talked about expanding or driving the scale around driving AI capabilities.

00:20:20 **Jason Ballard:** When we first introduced AI in the scenario of the demand and supply planning function where we had the planners stitching together a lot of spreadsheets. Through some of our early releases of the new product, we immediately saw upwards of 60% productivity gains. We were expecting maybe 20%. So to quickly jump out of the gate and exceed that by 3X was a bit of a surprise for us. We know that that's not always going to be the case in every scenario, but we do expect those productivity gains. And so now I think for us, it's more of like how we just tackle the various scenarios that make up the full supply chain and how we think horizontally across all of North American operations and how do we break that down using some of the experimentation and then taking it from there.

00:21:10 **Ashwin Patil:** Excellent. Chris, any thoughts on that from a scaling surprising standpoint that's more technology oriented?

00:21:16 **Chris Jangareddy:** There's one scenario which is common. Everyone encounters this is the quality of data. So while we were expecting a significant amount of data quality work, what we ran into is the volume of data was so high that it's manually impossible to handle it. We had to use an AI assisted way of doing data quality. The traditional way of doing data quality by building rules one at a time is not going to scale, and so we had to do an innovative way of handling data quality through AI and agentic AI.

00:22:00 **Ashwin Patil:** So if I'm hearing you right, these capabilities that were really targeted towards driving improvements in supply chain, you've also embedded some of these capabilities in actually delivering the solution, the technology solution. Can you talk a little bit about some of the efficiency gain beyond just data quality and where in the life cycle have you leveraged some of these AI agent capabilities because I see those as something that'll remain with Toyota and improve the way in which the solution gets refined over a period of time.

00:22:32 **Chris Jangareddy:** As part of Deloitte, we've built an accelerator called Data Assist, and Data Assist has a set of agents which tackle the end- to- end data lifecycle management, all the way from ingestion to data cataloging to data quality and data consumption. So we took that as a base code for developing these agents and then customized it to Toyota. And it's Toyota's IP right now. So that's something that would stay with Toyota and it accelerates future onboarding of new data sources end- to- end leveraging agents.

00:23:11 **Ashwin Patil:** Excellent.

00:23:12 **Jason Ballard:** I think one of the things that we've learned is you cannot wait for perfect data. It's a nirvana if you're trying to wait until your data gets to a point that you think it's perfect and able to execute some of these scenarios with AI. So I think what we've learned is it's best to just get started. And if the data is not exactly to the health standards you'd expect, then use that as the opportunity when it's exposed to then correct and adjust and go back after it.

00:23:40 **Ashwin Patil:** I think that's a great point. So Jason, you brought up this notion around vertical organization and how some of this enterprise AI driven at scale is breaking that down into more of that horizontal thinking, what that means to your organization and how you're driving that horizontalization across these vertical silos.

00:23:59 **Jason Ballard:** I think most organizations, they follow their org chart. And we've been very much focused on how do we adopt a new operating model. But as an organization, as an enterprise, we're also thinking about how we must adapt in order to stay at the forefront of mobility for our customers. At the end of the day, people still really care about what they're responsible for and some of this work breaks that down. So we're putting a lot of effort into, again, thinking about working backwards from the customer. We used to be product centered. Now we're trying to be customer centered. Chris alluded to it. We're not doing lift and shift. We're asking our team members as we think about this to reimagine as if you were starting the company today. And when you do that reimagination, it's like a chicken and the egg a little bit around you don't want to lead with technology, but you also need to know the value that technology can bring to this reimagined process. And so we're starting to invest a lot in talent and experiences. You're going to be, like my team is, working side by side. You need to know the operations. Operational folks need to understand basic tenets of technology. And so how we think about that future roles in our company is really critical. So getting them prepared is part of that journey as well. And that's where, again, the change management piece is so critical and so much emphasis on it. Just one, to make sure they're educated on what's possible. Two, giving them the outlet to go get trained or take on certain curriculum to advance their own self- knowledge. Three, working tighter together. I would say when there's a crisis, you typically form what we call a tiger team, and it's a horizontal team.

00:25:48 **Ashwin Patil:** Yes.

00:25:48 **Jason Ballard:** And what do they do? They achieve amazing results. They fix the problem swiftly. There's no bureaucracy. It's almost like we're trying to create that tiger team, but in under everyday circumstances.

00:26:00 **Ashwin Patil:** So I like what you said also about providing a broader AI fluency to the team and driving change management through making everyone generally more literate as it pertains to AI. I also like that you're going beyond pure process redesign and rethinking into organizational rethinking as you cut across the horizontal. Love that. So Jason, shifting gears a little bit in terms of path forward and thinking about, I guess, into your crystal ball, what's next as you drive this AI maturity forward? What do you see happening? How do you see this being evangelized across the organization?

00:26:39 **Jason Ballard:** So when we've started our transformation, it's been very much focused on supply chain, although it stretches into other aspects. Right now, with what we've seen so far with what we can do with the various types of AI, now we're very much focused on how do we accelerate from here. And so we believe in the 3P Flywheel, platform, people, and performance, and how do we leverage that Flywheel to accelerate the transformation again horizontally?

00:27:09 **Ashwin Patil:** Chris, quick question for you from a technology enablement standpoint. Unlike packaged solutions that have a start and stop, obviously AI solutions and agentic capabilities, there is an aspect of ongoing refinement, correction, accuracy improvement. How has that been set up from a technology standpoint to support the flexibility and the agility that Toyota will adopt as part of their nature going forward?

00:27:36 **Chris Jangareddy:** Supply chain transactions or any automotive value chain transactions, they're not static. They keep changing, and the model that you train today may not be valid two days from now or one week from now. So retraining those models is embedded into the process. If there is a disruption in the supplier network or on the plans or human resources, that's a daily update that you get.

00:28:00 **Ashwin Patil:** That's right.

00:28:00 **Chris Jangareddy:** So the models have to be run with that new information on a daily basis. So the models would give you recommendations on what is the impact of the schedule for

manufacturing and the permutations and combinations that are available. It's a continuous improvement, continuous training on a daily basis.

00:28:21 **Ashwin Patil:** Love the interlock that I see between process, business improvement, really driving the technology shift. Love that. Now that you're well into this transformation journey, we talked about one of the big misconceptions about having pristine data in order to be able to scale AI. Are there any other misconceptions that either of you saw that were shattered as part of driving enterprise AI for Toyota that you would advise other companies on?

00:28:51 **Jason Ballard:** I would jump into what you were alluding to as far as the privilege I have to lead a new function inside of Toyota. It's a digital innovations function. It's a blend of operational functional expertise and technology expertise, but we reside in the function. We reside in the business. And my remit is to drive transformation across sales, marketing, supply chain, and make sure that these touchpoints are working upstream and downstream. And everything is centered back to the customer. With that said, still requires extremely strong partnerships with your IT divisions. They are the ones who are really unlocking a lot of that time to value when you think about the core horizontal capabilities that are needed with the data, with your security, with your infrastructure, and with the enterprise AI. And so that's been a lot of the focus early on in my new role is building those partnerships, trying to drive time to value, time to market improvements, and then we're just continuing to follow the frameworks that we've been using successfully around transformation.

00:30:00 **Ashwin Patil:** Chris, you've been part of this journey with Jason and partnering him from a standpoint of providing and building the technology capabilities. What are some of the lessons learned as you think about scaling AI safely and effectively? What would you say to other organizations who are maybe at the beginning of this journey or trying to go down this path of enterprise transformation or supply chain transformation using AI?

00:30:24 **Chris Jangareddy:** Do not go for the moonshot when you want to do a transformation or adopt agentic AI. Start with one use case, which is high value, high impact. Number two, standardize on the architecture early on. Make sure your data is taken into account from the get go. Number three is have IT be joined at the hip with the business. It's not an IT only play. It's a workflow, it's a business process, and it's an operations play. So any IT should be the domain savvy. It cannot be sitting in an island. And have fun along the way.

00:31:11 **Ashwin Patil:** Have fun along the way. I like that.

00:31:12 **Jason Ballard:** I'll add one more. Keep the basics at the forefront of your transformation. Everybody wants to talk about the technology and AI, but at the end of the day, it still comes down to how you convince your people to want to come along on the journey, to be comfortable with change. So a ton of emphasis remains on change management, communications, storytelling, working closely with the people. Early on in our transformation, I would say we didn't do enough of that. And even today, as we shift from a North American transformation to a global transformation, it's what we're talking about more than sometimes the technology. So I would just add that to your list.

00:31:56 **Chris Jangareddy:** I think that should be number one.

00:31:57 **Ashwin Patil:** That is fantastic. Thank you very much for your time, Jason. Thank you for your time, Chris. Appreciate the conversation.

00:32:03 **Jason Ballard:** Thank you. Appreciate it.

00:32:04 **Chris Jangareddy:** Thank you for your time, Ashwin.

00:32:06 **Ashwin Patil:** What stays with me is that 60% in productivity gains. That's not just a number. That's people getting hours back in their day doing work that actually matters. Toyota didn't automate people away. It empowered them instead. It's how organizations turn technology into real progress by putting people, not processes, at the center. I'm Ashwin Patil, and this has been Resilient Edge, a business vitality podcast paid and presented by Deloitte and produced for Deloitte by BBC StoryWorks Commercial Productions. Thank you for listening.