

FordMotorCompany

**September 12, 2018
12:45 PM EDT**

Adam Jonas:

Good morning everyone. I'm Adam Jonas. I head up Morgan Stanley's Global Autos and Shared Mobility effort based in New York, and I'm very pleased to have us, representing Ford, Sunny Madra, who is vice president and heads up Ford X, which I'm going to have you describe it in your own words, but I've kind of high-level described it as like the kind of in-house skunkworks, incubator lab for bringing in data and looking at adjacent business model opportunities and creating a velocity within a very, very large, 200,000-plus person company and culture, to create greater awareness and value for the company, and then ultimately, for shareholders. So, really pleased to have you here.

I will also repeat the disclosures for the webcast, please read the Morgan Stanley disclosures in the back of our research. These are important disclosures, including conflict of interest and relationship disclosures. Please read them

So, Sunny, I'd love to just start by you telling us a bit about your background. If I were to reach into a bucket at Ford Motor Company and pull someone out, you know, they've been there like 30 years. You have not. So where are you from, and how did you end up at Ford?

Sunny Madra:

Yeah, so my background is serial entrepreneur, and so I've built a couple companies and sold them. The most recent one—and I ended up at Ford through the acquisition of my company, Autonomic.

And, you know, the reason we ended up at Ford, it was an interesting time, and it actually ties back to some learnings that we had in our previous business, Xtreme Labs, which we had sold to Pivotal, which is a spinout of EMC, VMware.

As entrepreneurs, we get really good at pattern recognition, and one of the things that we saw was that Ford was starting to make the appropriate moves in the connected car ecosystem that for us mimics something that we saw going back to the 2010 timeframe. So I'll give you a bit of history here, because it's a good context for the rest of the conversation.

We had done, in my previous business, Xtreme Labs, a joint venture with IAC, and that

was called Hatch Labs, and that was done at the dawn of the mobile phone era. IAC had just acquired one of the first iPhone apps. You guys probably remember it. It was called Urban Spoon. You shook your phone, and the rollers would go, and it would pick restaurants for you. And they had just acquired that app, and what they had realized was the size and scale of that ecosystem was going to make applications unaffordable for them, and so they need to incubate those things internally.

So they created this JV with us, and when they did that, the value of IAC at that point was like \$2.5 billion. The net result of that incubator was something called Tinder, which we all use every day.

Adam Jonas: Of course. We use it in the car.

Sunny Madra: And if you look at—yeah, please don't do that.

Adam Jonas: Not while driving.

Sunny Madra: And if you look at IAC today, the combination of IAC and Match Group, where Tinder ended up in, is probably worth \$32 billion. And so, that was a company embracing a big change happening and embracing it by doing incubation, and we sort of see the same thing happening at Ford. And with Jim coming out with the 100 percent connectivity mandate, that was sort of the triggering moment for us, saying this company really is going to play in the connected vehicle space, and we think that's going to be the dawn of this next era where a lot of value can get created.

Adam Jonas: You gave me so much material to work with here. You're dropping the Tinder already; we just got started. Pivotal, by the way, nice investment.

Sunny Madra: Yeah.

Adam Jonas: A three-bagger, maybe four-bagger for you, I don't know. (Inaudible) is okay.

Sunny Madra: For Ford, I don't track that for us, but we were there when it was \$1 billion, so it was 7x for me.

Adam Jonas: Okay, nice one.

Sunny Madra: Yeah.

Adam Jonas: So kind of transition that, then, to your mandate now. What is Ford X? What's the mission? Kind of, what are you doing here?

Sunny Madra: Yeah, so you know, we're taking the learnings that we had, again, going back to the JV that we had created back in 2010 with IAC called Hatch, and we're trying to bring that discipline into Ford for the mobility ecosystem. And so, there's a couple of different aspects of what we're trying to do there. One, we're looking at new opportunities, and we're looking at those in a quick way.

If you think about the mobility ecosystem, if 12 months ago someone sat here and said

hey, there's going to be two billion-dollar scooter companies, you would have probably laughed them out of the door. Now, what do we have? The two billion-dollar scooter companies, right?

And so, the ecosystem is moving really fast, and in order to work in that ecosystem, you have to have a discipline and culture around being able to do things quickly, kill things off fast, and investigate new ideas, right?

The second thing is, there's a discipline we were trying to bring to mobility efforts within Ford. And so, what we do is we kind of have created a startup funding model within Ford, where you know, think about series seed A and B financing, where you can take an opportunity and say, without any customers, we'll give you \$250,000 just to go and try something. You get some customers; we'll give you the next chunk of money. You get multiple customers, we'll put you in the series B. And so we're bringing that discipline, not just within Ford X, but within the larger Ford, around mobility and connected vehicle ecosystem things to really move that needle and make it move faster for us.

Adam Jonas: So how do you—and maybe you could speak to your own experience, but now that you're within Ford, the current experience, how does Ford, and Ford X specifically, get around the challenge of attracting and retaining talent, because that seems to be an issue? I mean, even Google talks about how tough it is for them to retain talent. You know, they're a trillion-dollar company. It's too big. They could lose people to these startups. How do you get around that? And maybe if you weave that into how does it affect compensation structures or giving in this kind of mini-seed model that you have, do the employees get a piece of the action as well?

Sunny Madra: Yeah, so I'll start with the first. I think being in Silicon Valley, and I've been there almost 20 years now, or 18 years, what I've really seen is this change. I think Silicon Valley is actually at a disadvantage, right, because the concentration is there, the real estate prices are crazy, and the competition is super high.

I think what we're starting to see from people is that they want to work in interesting spaces, they want interesting work. And I can speak to sort of our own experience within Ford. We were able to double the Autonomic staff since the acquisition, so that's post-acquisition. We've been able to grow the entire Ford X team because people are wanting interesting work, and they can't do it, always, in Silicon Valley. So I think that's the first thing, first and foremost, that we've seen, and I think Ford is really embracing that.

When it comes to compensation, I think there's amazing things already happening within Ford and sort of the extended ecosystem of them learning to adapt to that, and I think there's future stuff that everyone's thinking about. Like, people are looking at this as an opportunity where there could be huge growth. You were just making a joke a second ago about market cap, right? But you know, if you believe in what—

Adam Jonas: It wasn't a joke.

Sunny Madra: Okay. Well, okay. But if you believe in what can happen in this ecosystem, you know, Ford is well positioned for a lot of growth here, right? Even your notes on some of the pieces put huge values on what can happen here.

Adam Jonas: Big business, small equity, a lot of people. How many people are assigned to your area of work?

Sunny Madra: So, you know, under me, we have Autonomic reports to me. It's about 115 people now, and we have Ford X, which is about 20 people.

Adam Jonas: Okay, so I'm going to kind of have you talk about the transport mobility cloud, and then we're going to get into some of the ways that you use data and your insights and your people to attach the Ford ecosystem in new domains that could create value to create the next Tinder kind of thing.

So what is the transportation mobility cloud? It's something Jim talks about a lot, but from our perspective, it still seems like—it seems like a work in progress, but I'd be very curious of your experience and definition of what that is.

Sunny Madra: Yeah, and I'll try to tailor it to the cloud and try to stay away from tech analogies, but we always start with, like, think of what AWS did for infrastructures. Amazon Web Services did that for infrastructure, we're doing that for the connected vehicle ecosystem and the smart city ecosystem.

What AWS does and what the TMC does is take connected vehicle data and take connected city data, and make it easy for developers to exploit. So, you know, prior to having this kind of technology, if you're a developer and you want to interact with data coming off a vehicle or from a city, it's really, really difficult to do. You know, what we've seen when you simplify that is you see huge growth. And so, think of Netflix, or think of all these companies that were created on top of AWS. They're able to accelerate because their developers don't have to spend time working on undifferentiated heavy lifting.

What AWS does is not differentiated in any kind of way. And the developers, then, can take their energy and focus on the stack. And what the TMC does is allow developers in the automotive ecosystem not to worry about how to read from a CAN bus (A Controller Area Network (CAN bus) is a robust vehicle bus standard designed to allow microcontrollers and devices to communicate with each other in applications without a host computer), and take those signals and process them. The TMC does that for them so that they can take the real valuable signal, which is speed or location, or whatever it happens to be, and then creates a value add on top of it. And so that's what we build with Autonomic with the TMC.

Adam Jonas: So what is truly unique, then, at Ford, within the TMC and the ecosystem that is really, truly differentiated from other OEMs?

Sunny Madra: I think, I mean, flip the question around, right? I think it's not a technology differentiation; it's the decisions that are being made. And so, the decision to go to 100 percent connectivity is what's going to create the elements that are going to feed the information into the transportation mobility cloud so that we can open that up to developers, and so developers can create an ecosystem. And so what I'll go back to, again, in my previous company, we saw this happen with Apple, right? We saw the

ecosystem prior to Apple not focus on developers. And what did Apple really do? They were a developer-centric company, and when they put the iOS out there and they put the SDK that came a year later, they focused that on developers and then they let the developers create the ecosystem.

So if you look at the iPhone when it first comes out, half the apps they created, and half they had curated. So you had, like, Google Maps and YouTube. But today, Apple makes 0.002 percent of all the apps. The rest of the ecosystem, the Ubers, the Instagrams, everything else are developed on the platform that they've created.

We strongly feel that same ecosystem is going to evolve in the connected car or connected city ecosystem, where the same way Apple made that available through their operating system and their platform, we're going to do the same thing with the TMC.

Adam Jonas: So the decision to make 100 percent of Ford's production connected, is that by 2020?

Sunny Madra: I think 2020, yeah.

Adam Jonas: That differentiates Ford from other OEMs? I mean, other OEMs are not? I mean, what is that, a one-year advantage?

Sunny Madra: You know, it's a good question in that sense. I think it's not the connectivity, again, but it's getting the connectivity there and creating the ecosystem. We've started that—

Adam Jonas: So connectivity, maybe you're early, but it's reasonable to assume that your competitors will get there, more or less.

Sunny Madra: Everyone will. Exactly.

Adam Jonas: It's what you're doing with it.

Sunny Madra: Exactly, and making that available to an outside ecosystem.

Adam Jonas: Well as part of that, then, over the air updates, I don't know if that's something that's within your domain. But like, because there's connectivity—there's different kinds of connectivity. Elon Musk likes to say hey, GM's put 4G in the car, that's great, but does it just make the OnStar agent's voice crisper, or can it actually update the firmware and change the engine dynamics and braking and things like that? So to really enable some of the Edge Compute and the business models that you're focused on, how important is OTA update capability?

Sunny Madra: It evolves with time, right? So I think you need to get to a basic level, right? But really, we don't understand where all the innovation is going to come, and OTA makes it better because we can enable more features over time, right? That's what the powerful thing about OTA is. But where we think we are now is there's enough core data just available, even without OTA. OTA is available; I'm not saying we shouldn't do it. But there's enough core data available on vehicles, and we can talk about some examples, that it's starting to create value for a larger ecosystem.

Adam Jonas: Let's get into that. So what type of data from connected cars is most valuable?

Sunny Madra: I'll give you an example. When the iPhone first came out, we didn't know that it would be the camera to drive Instagram or it would be location to drive Ubers of the world, right? So we don't fully know, and we can't guess, but again, we have to enable that.

What I'll say is what we're starting to see with the TMC, and I'll give you a very specific example of FCS, which is our Ford Commercial Solutions business, which is a business built on top of the transportation mobility cloud, an internal business, so think of it like an internal developer that is built on top of it. They are working very closely with car rental companies, and what they're doing is—I'll give you an example.

We all rent cars, right, to some extent still.

Adam Jonas: That's nostalgic.

Sunny Madra: Yeah, and when we return them, we gas up 60 miles away because we know the needle won't come down, right? That costs rental car companies, like, serious money. It's all actually bottom line, in fact, because they can't really measure it. What we're able to do now with fuel data is basically allow a large rental car company to access that information across their fleet and determine how much actual fuel is in the tank, and then appropriately charge you.

And so we think that type of enablement of future business models will really create a really powerful ecosystem. That was hard before the TMC. The TMC makes that easy to do, and we were able to do that just in a few weeks with a rental car company.

Adam Jonas: How do you monetize that, though, in that particular example. How does Ford get paid for telling a rental car company that it's a more accurate fuel-reading gauge?

Sunny Madra: Yeah, and so the way we've really built the system, it's like, again, modeling it after what we've seen in the consumer internet is the services that we make available for developers to use are sort of all a-la-carte and all have a consumption-based price associated with them. So in order to pull X, it costs Y, in order to call A, it costs B. And so, you know, we create an ecosystem just like we see elsewhere in the world, right? If you want to use Compute on Amazon, it costs X; you want to use storage, it costs Y. And so that's how we've modeled it, and we built it based on that.

Adam Jonas: So the message I'm getting is, you know, you have to start somewhere. You have to connect in order to know. You can't necessarily—and I get this from a lot of auto companies. I'm not just singling out Ford. When I ask peers like you at other OEMs, what's the single most exciting business modernization opportunity for an auto maker that owns the data, and owns the real estate, the cubic feet, et cetera, I often hear Domino's Pizza, Starbucks, and maybe some logistics apps and things like that. It's interesting, and again, relative to market cap could be very big. But I want to find that, you know—

Sunny Madra: The Tinder?

Adam Jonas: —that next Tinder. Where's the Tinder. So, again, you don't know what you don't know yet, but using your imagination, what are some—you know, thinking of a destination, where are some applications for big markets from which rents could accrue to Ford and Ford shareholders?

Sunny Madra: Yeah, it's a great question, and look, my crystal ball is not working, so I've got to be careful here. But you know, what I find really compelling, again, just going back on experiences, what we do as entrepreneurs, like where have we seen this move before, where can we see pattern matching, right?

We feel there is something when it comes to mobility, right? That is, you have to pay for it, and there's payment involved in either the use of the service or having it take you from place to place, and we think that is what will really drive a huge business created on top. So if you think of the iPhone ecosystem, there's the entire virtual economy. We're not going to get that with automotive, but there is a huge economy associated with repair and fueling and location and just improved experiences where we think the dollars will come from long term.

Adam Jonas: What would you say is the most misunderstood aspect about Ford's place in Auto 2.0, from your seat, that you'd like to get across to this audience?

Sunny Madra: Yeah, I would break it down into the following things. One, there's a huge level of empowerment, right? If you actually go back to Bill Ford's TED Talk from 2011, he has been talking about this stuff since then. He's been saying hey, the future is going to have to change. It won't just be vehicles. And so, I think he's been saying this for a long time. And so with that, and kind of bringing Jim in, they have really empowered the group to make it happen.

Secondly, if you look at our senior leadership team, you know, the place where we have operations and engineering, we have mobility there as well. So everyone is there together, and it's an important thing for Ford. And because of that, the empowerment that's happening for us and our teams is huge. We're really empowered to make decisions quickly, turn things around, explore new ideas, and we have the full support of them to do that.

Adam Jonas: So I'm going to go back a bit to some examples that Ford's talked about, but you know, your palate's—you know, take it wherever you want. One of the big challenges I've found with talking to traditional auto manufacturers about this topic is trying to get external validation, trying to get some—and I'm kind of fantasizing here, but what could get Jeff Bezos, standing side-by-side next to Jim Hackett, saying—where Bezos is like, here's why we're using Ford, and the transportation mobility cloud. Here's why we're using Ford's robo cars in Miami to do X, and here's how it helps Amazon. You know, what's the closest thing to that kind of external validation, where you can see kind of two company logos in the same press release talking about why they picked Ford, not GM, or not Daimler, to do something?

Sunny Madra: Yeah.

Adam Jonas: And then I want to kind of move into the goal for Ford to try to set some standards from

which other OEMs can join and whether that could really work. But that external validation point seems like it's missing, and that SoftBank/GM thing really—I mean, for a few weeks at least—seemed to get some attention before China took over.

Sunny Madra:

So I'll stay away kind of from AV because that's not my space. But I think when we think of smart cities and smart world, I think really, what we're pushing for—and we're in the early innings here. That's the other thing. I've only been there six months, right, —but where I feel that that comes together, and I'm really passionate about sort of that combination of tech and auto, where I feel I kind of fit in the middle right now is us enabling Amazon. Like, Amazon is a wonderful business built around efficiency. What will help them be more efficient is the vehicles that we put out there can offer them not just more telemetry, but we can offer them, like you talked about, abilities to update those vehicles, abilities to make them better over time.

Can we offer them ability to make their business more efficient? So if we think of, like, the IoT ecosystem, how can we enable that through our connectivity initiatives? You know, they going out and purchasing lots and lots of vans for their delivery ecosystem, right? How can we make that more efficient than just a van with a phone in it, or simple connectivity? Can we make it so that people don't have to scan packages and do those kind of things?

That's what will be enabled by the TMC for us. Once we get our vehicles into this 100 percent connectivity, we open up that ecosystem. We allow developers to create software and services that say hey, you can take a package out of the back and a scanner can read it, and no one ever has to touch it, or there's RFID connected to it. So I think when they see that, and when that comes for them, the power is really going to come, because those companies are built around efficiency.

Adam Jonas:

Questions for Sunny?

Unidentified Participant:

Is the monetization of the data that you're talking about limited by the bandwidth that's currently available, and when do you expect this to become a limitation? So development of a 5G network or a connected infrastructure, is that really necessary for your business to be successful?

Sunny Madra:

Yeah, great question. I think when it comes to where we are in the ecosystem today, I don't think 5G is a limitation for the types of things we're trying to create. And I'll just go back to—you've got to remember, that first iPhone was Edge. It was 2G, when everyone else had 3G. Even the one they created when they opened the ecosystem was just 3G, right? And so a huge ecosystem was created, even on lower bandwidth, and so we feel as though, even where we're at with LTE, we're at a huge starting point, so I feel comfortable.

I think if you think about larger monetization opportunities, other than vehicle data, that's where 5G becomes important, like if you want to stream content into the cars and things like that. But where we are now, I think we're sufficient to start a giant ecosystem already with LTE and where we're at today.

A:

There's a couple in the back here.

Unidentified Participant: I just wanted to ask, what are your views on data ownership? Where does that reside?

Sunny Madra: Another great question, and not my personal views, but I think from a Ford perspective, we understand and believe that, you know, data ownership and its permissioning resides with the customer. At the end of the day, the customer, it's their data; they're generating it, and the permissions have to be appropriately given for anybody to consume it. We've seen companies brought in front of Congress for their handling of that permissioning. And so, Ford has always done, I think, a very good job of making that very clear to their customers and making those authorizations available and very clear to the customers as well, and we're going to continue to do that. We think they've always been very sensitive to that fact and will continue to do that.

Unidentified Participant: Just a clarification on TMC. So is there a desire to make that open to other OEMs over time? And I ask because Ford spent all this money trying to create Ford Sync, and you know, an environment for developers to develop apps and so forth. It feels like you have an opportunity to really scale here, right? You invest in the backbone, you allow the cars to talk to the cities, but you need to give developers a reason to say this is why we want to use TMC, not necessarily I have to buy a Ford in order to access TMC.

And so, philosophically, is there a desire to kind of take this to a next level, or is it really just about trying to sell more Ford cars?

Sunny Madra: No, no, for us, we've kept autonomic as a wholly owned subsidiary. We haven't folded it into Ford for exactly that reason. It is really important for us to open that up to other OEMs. And again, we think about it like AWS, right, and maybe not so familiar to this crowd, so I'll kind of go into that example really quickly.

If you think about Amazon Web Services, it hosts two competing things, right? It hosts Amazon Prime Video and Netflix at the same time. And it does that because both those companies understand that by being on the same Cloud, you know, the folks that work on Amazon Prime Video can't go and look at all the Netflix data and figure out all the customers and all that. But they realize that layer gives them a differentiation, so they don't have to focus on that. Their engineers, their precious resources, can focus on the stack.

And that's the story that, we need to deploy from Ford with our 100 percent connectivity initiative. And that's the story that, as we're out there talking to other OEMs, they're starting to see that, right? Spending that dollar is doing the exact same thing, and replicating it all around the ecosystem is just everyone wasting dollars, and that's why tech is really advancing. Tech is embraced, whether it's Google Cloud or Amazon Cloud or Microsoft Cloud, and they've been able to focus their dollars on customer experience and user experience, and we're starting to push that message through the automotive ecosystem.

Adam Jonas: Let me kind of follow up a little bit on that, and then we'll take this question in the middle here, because your senior leadership at Ford talked about, for a couple years I think, about the need to kind of make this open architecture and try to recruit, if you will—I'm probably using the wrong word—other auto companies to kind of work together. How's

that going so far? Have those discussions actually begun, and has there been any formation of a coalition?

Sunny Madra: I'm not going to speak for the past. I wasn't there for that. What I'll say now is Ford has, you know this well, has many joint ventures around the world, right, and is proposing many new joint ventures around the world. So I think that is a good lead-in for us, and that's already starting to happen, and so the places where we're doing that we're talking to those folks.

Adam Jonas: Like Volkswagen, for example.

Sunny Madra: That or Mahindra and other ones that we have—you know, our Chinese ones as well, right?

Adam Jonas: So it's a pillar in any strategic discussion that you're having

Sunny Madra: One hundred percent. And it's an advantage for us, because we can bring that to the table, and we can bring that to a partner and say, again, going back to that story, you don't have to make this investment. You can basically rely on this, and you get the data separation and all that stuff. So it's become an important pillar in our discussions.

Adam Jonas: Okay, there's a question here.

Unidentified Participant: If I understand you correctly, the open architecture is critical to Ford's play, right, and it's seemingly so for the others. But there's significant issues around antitrust that show up within that confine of collusion between parties. If you look at the Netflix/AWS—

Sunny Madra: Prime Video?

Unidentified Participant: —and Prime Video thing, and perhaps it's because it's service as opposed to product. But Apple said the same thing to Qualcomm, as they gave the Qualcomm plans to Intel in order to get Intel to replicate the Qualcomm technology. So, I'm not sure I buy all that, right? It all sounds very good, but you've got two major issues, which is partnerships that aren't really partnerships and antitrust that recognizes that.

Sunny Madra: I think that's a great question. Let me try to tease that into a couple different places. So I think one, when it comes to sort of your example of Apple/Qualcomm/Intel, you know, you have to look back at the history of the Ford Motor Company, right, and where they've been and have they done that before. So personally, being there for the short amount of time I have, one thing that I know that's important to the company through and through is its trust of not only its customers, but its partners, and so I don't think there's a history of that kind of stuff happening. So I think we have to rely on that to some extent, that the company has certain values and morals that it sticks to.

When it comes to antitrust, I think one of the things I've learned within Ford is our OGC is very significant in many of our decision makings, and one of the first lessons that I took when I got into Ford was to sit down with our OGC and understanding sort of the appropriate practices around antitrust, and they're very, very sensitive to it. I've even seen it in our discussions with Volkswagen and others, and we take a lot of precaution and use

internal folks and external folks to make sure we do that correctly. And I think that ties back to our first question, that we always really focus on operating in the correct way.

I think lastly, you know, the Amazon Prime, going back to that example, that to me, again, still resonates, because they are services, but they are products, right? Netflix is a product that someone is using, and Amazon and AWS does not allow their own company to go in and look at the data of that service. And we've seen the growth of AWS, right? Like, a lot of their growth is just living in that ecosystem, and I think again, because they need to establish that to create the trust around that service that they have. And so, you know, we operate with that same model, right? We operate very clearly. We let people know that by using this service doesn't mean you get access to those things. And again, we also continue to push that data permissioning all the way up to the end customer—not just within the companies, but to the end customer as well.

Adam Jonas: Let's continue here. We understand that Ford is in, in many cases, a leading position relative to other OEMs in working with cities on smart cities and things that go beyond four-wheeled vehicles, of course. I think Pittsburgh, London, and Miami are three of a number of cities that tend to get a bit of attention where Ford has kind of a lot of momentum with the MTAs and the mayors, et. cetera, in applying smart transport solutions. Can you tell us where your work kind of intersects with cities, city planning, traffic, smart cities, and—

Sunny Madra: Yeah, no, it's super interesting, you know, when I first joined Ford after the acquisition, I understood Ford's relationship with cities, but I didn't fully appreciate it, and I think that some stuff has happened in the last six months that really highlighted where there was some vision there, right? So one, you know, Ford—not only those cities, but most of them have really longstanding relationships, some upwards of 50-plus years of selling vehicles into these cities, right, because those cities use them for their own internal services, whether it's police or their just city-type operations.

Adam Jonas: Those channels of communication are legacy.

Sunny Madra: There are legacy channels that have existed for a long time, and that's important. So I'll jump right now to what's happened very near and dear to here in Santa Monica and the RFP process around the scooters. I don't know if everyone's tracked that here, but these scooter businesses have kind of really grown rapidly in the last 12, 18 months. What happened in Santa Monica was we saw the city take a step back after the , and we've seen other cities do this as well—San Francisco did it—and the cities basically come back with pilots and rules and regulations.

And so the cities are in this new world of mobility where connectivity will play, AVs will play, other forms of mobility will play, are taking a much more active stance. And so, relationships with the cities are going to be vital for success in mobility. And I think where Ford has that—again, we take a step back, look at our police business, look at other businesses. We have relationships across the board, and I'm just starting to scratch the surface there. I didn't know about any of this. But seeing that is a real advantage for us, because we've been doing it for a long time, and I see that with our teams now.

Like, we go into universities or cities, and they want our city solutions team to help

define what a scooter pilot could look like or what—like the work we're doing in Miami, what a AV pilot could look like. And so, I think that's a really important effort that we have—

Adam Jonas: So, Sunny, let's get specific here. What do those scooter pilots look like? Because we talk to some investors that are like, scooters? Really? Like, do you know how many of those you'd have to sell to get the revenue equal to one car? And there's a lot of eye rolling. But then I talk to people that are plugged in with cities, and they're like, the interaction with the infrastructure is much easier. The payback periods for these things can be phenomenal.

Sunny Madra: Yeah, two months.

Adam Jonas: And by the way, you would beat traffic. If you're just trying to deliver a pizza on Uber Eats, oh my God, a scooter kicks the crap out of a car. So demystify it. Is it serious business? Is this scooter stuff like no joke?

Sunny Madra: Yeah, you know, the way I'll describe it is if you look at most distributions in life, they kind of follow a bell curve. But if you actually look at, like, transportation and mobility, it follows this inverse exponential curve, right, where most of the rides are like sub-three kilometers, and that's where this stuff makes sense. Like, you're a New York guy, right? How does food get delivered there?

Adam Jonas: I don't know what I am. I live in—yeah, nearby.

Sunny Madra: Yeah, but how does food get delivered there? It gets delivered on bikes, right? And so, I think what the scooters have really highlighted is that the sub-three-mile market—and this goes—getting back to Bill's talk, right, is that more cars are not the solution, right? If we're going to address these problems—like, for me, it was an eye-opening experience. I was in San Francisco a couple months ago before they took them away, and I was up at Twitter up on Market Street and needed to get down to Ferry Building. And on an Uber X, it was, you know, say \$7 or \$8, but it would have taken 15 or 20 minutes because of the traffic. It took me three minutes on a scooter to get there.

Adam Jonas: And we're talking scooters. We're talking—

Sunny Madra: Yeah, electric.

Adam Jonas: —like Piaggio kind of electric—

Sunny Madra: No, not those. I'm saying these—

Adam Jonas: Like the actual IM8

Sunny Madra: Yeah, yeah.

Adam Jonas: Okay.

Sunny Madra: Yeah, those are them, right? But you know, I'll give you an example of the penetration of

that ecosystem. It took Uber three years to get to 1 million rides. It took Lime six months. So this is something that you just can't ignore. If you're looking at mobility and you want to understand it, that ecosystem is growing faster than anybody—

Adam Jonas: Uber is making a try to stay ahead of that wave. So, sorry, you gave me this number, two-month payback?

Sunny Madra: That's what they see, yeah.

Adam Jonas: Are you running pilots that back that? Does that validate?

Sunny Madra: We're going through that process, right? That's what Ford X is trying to do to understand, to see if that validates now.

Adam Jonas: More questions for Sunny with the time we have left?

Unidentified Participant: How important is 5G connectivity to everything you're doing with mobility and autonomy?

Sunny Madra: I won't speak to autonomy because it's not my core area of focus. I'm not an expert in it, so I'd rather stay away from that. But again, I think it's similar to the question earlier. I think we've seen an ecosystem grow in the mobile space off 3G, 4G, LTE, and we think that there's a lot of legs in letting that grow today, for now. And so, it's not a limitation. I think it's an enabler to new services. Once 5G gets here, we can offer more services.

I'll go back to what I said a few minutes ago, which is when the iPhone first came out, it was an Edge device, right? We all remember it, and it still allowed you to get app and ecosystem going. And so we think there's enough capabilities in the current cellular technologies to create a huge ecosystem. When 5G comes, we just accelerate that whole thing.

Unidentified Participant: Regarding your opportunities to monetize data through connectivity, do you see any challenges, given your dealer model? You know, for most customers that have a Ford, they have to go through a dealer. Do you think having that middle man presents any sort of structural barriers to fully monetize those opportunities?

Sunny Madra: No, awesome question. You know, I actually think our dealer network is probably one of our secret weapons. I just got these stats the other day. We have 10,000 dealers worldwide. They have 400,000 customer-facing employees. I think if you're going to be a real winner in the mobility ecosystem, you're going to find a way to monetize data, which we all know it's going to happen today, you're going to have to use those folks.

And people don't actually think about this, but one of Apple's big secrets is the Apple Store. It gives them a place for people to go and take lessons and learn about their phone and do all those things, and I don't have the exact stats, but something like half of Apple's employee base is in the Apple Store. And so, no one really looks at that and thinks about what a secret weapon that is for them and think about why they maintain so high

percentage of the profits. And I think we need to look at it the exact same way and leverage our dealer ecosystem.

And so, I'm spending more and more time with our folks on the dealer side to understand how we can make them part of this process. Because I think that, just like the Apple store was, they'll be really critical for us in mobility

Adam Jonas: Well, and just to develop that point more, we're talking about moving people and objects on public roads, and there is an obvious safety element there, so to be able to maintain that mega fleet is important.

And then, the things that are not as obvious to people outside of the auto business, hygiene, okay? Smell matters. I don't recommend you smell your iPhone, but if you're in a car, and if you talk to anyone in the used car business, smell is a deal breaker. I don't care how beautiful the car looks, how perfect it is, how many miles are on it. If you go in and it smells like a frat party, it's going to affect the value of the experience.

Sunny Madra: Yeah.

Adam Jonas: And so, if Apple's going to put their beautiful Apple symbol on a car and working with Ford and TMC or whatever, and it's not maintained properly, it could reflect badly on that brand.

There was another question towards the back there.

Unidentified Participant: So someone just mentioned that they're working on the flying taxis. Are you working with any others of nontraditional, non-autos OEMs? I know you have these technologies, and what do you think about the risk that some of those asymmetric, completely different OEMs coming to the space?

Sunny Madra: Yeah, you know, I think when—again, I'll just use the scooter example there for a second—is that we've seen the—and this is why Ford X is important. We're seeing the ecosystem just move so quickly, and I think there is significant investment in that space, right. We're looking at that. We understand that mobility is going to change significantly, and I go back to what Bill said in 2011 and it's starting to play out, and we just have to stay on top of it.

Now, what we need to also do is be wary of regulation and safety and autonomy and how that all plays into all those things. But all these areas, whether it's flying type vehicles, whether it's delivery robots, these are all things that are going to be part of the mobility ecosystem. You can't ignore that. Light electric vehicles, these are things that we have to look at.

I think coming back to your question earlier, Adam, Bill talked about it and Jim continues to talk about it, and having their support to look at those areas is really, really huge. That's why for me, it's really important to have Jim as a leader and Bill as our executive chairman, because they believe in this stuff, and they really, really do. They just didn't get on it right now; they've been talking about it for a long time.

Adam Jonas: All right, that's all the time we have, Sunny. Thank you very, very much for—

Sunny Madra: Yeah, thank you.

Adam Jonas: —enlightening us on this topic.

Sunny Madra: Yeah, awesome.