



Ford Motor Company

## **Ford Motor Company | Bernstein 39th Annual Strategic Decisions Conference | May 31, 2023**

### **Toni Sacconaghi:**

I'm Toni Sacconaghi. I cover IT hardware and electric vehicles at Bernstein. And I'm thrilled to have Jim Farley, CEO of Ford join us today. Jim's been with Ford since 2007. He became CEO in 2020 and he's really leading a significant transformation at the company. Jim attended our conference last year. I've gotten to know him a little bit over the last 18 months and he is one of the most open-minded change ready CEOs that I've met. And so we're thrilled to have him here and to hear his ideas. But before we get into the Q&A, let me just play a video.

### **Toni Sacconaghi:**

Great. So just one housekeeping item. I will be leading the fireside chat, but inside your a conference brochure, there's a barcode that enables you to enter questions which will then show up on my iPad. We'd gone to the digital age at the SDC, so feel free to submit questions via that mechanism. So Jim, welcome back.

### **James Farley:**

Nice to be here, and thank you all for joining in person.

### **Toni Sacconaghi:**

So maybe we can just start really big picture and think about the global auto market. How do you think about the size? Is it structurally growing and do you think 10 years from now the auto market is bigger or smaller than it is today?

### **James Farley:**

We've traditionally thought about unit sales, but I don't...

### **Toni Sacconaghi:**

Yeah, but units are fine.

### **James Farley:**

I think we need to start thinking about it a little differently than that because we're creating a digital product. So the two attributes that we are starting to see is one, the winners and losers in the digital era are completely different than the analog winners and losers. So let's just say the TAM is the same. There's going to be a pretty big mix up it seems already. If you take China, which is a third of all I would say digital products so far, the traditional ICE winners in the analog world are like 60% of the industry and they're like 3% of the digital industry. So the brands are getting all mixed up. How I like to think of it

kind of in the third inning of a nine inning game on the digital side is that the business model for the OEMs was to sell a vehicle, make a margin, and then maybe get some financing revenue on maybe through your captive of half and maybe get a third of the parts sales, especially collision in the first three years of the first owner.

What a digital product gives us that we never had before, which would expand the TAM and shift it away from others to the OEMs, is owning the addressable market in the second and third owner of the vehicle. That the vehicles tend to last 10 years to 15 years depending on the market. With these new digital vehicles, they're going to last longer. The mechanics are simpler, the batteries will last 15 years, especially an LFP battery. And if the financial markets can support it, I could see more and more of the OEMs having a relationship with the second and third owner because it's a digital product, that will massively change the addressable market. So how we think about it is it will grow, the winners and losers will be asymmetric and the digital product will give us a chance to make money on the second or third owner where we've made none.

**Toni Sacconaghi:**

Right. Now, so implicitly, it sounds like you're saying, look, units may not grow, but if we can capture more revenue per unit, that will be good.

**James Farley:**

And we're seeing it on Pro now.

**Toni Sacconaghi:**

Right. And maybe we'll get to that in a little bit, but if we think about just structurally the industry, the auto industry's always been pretty competitive, 8 to 10 sort of big global brands. We now have I think six or seven EVs with market caps above 10 billion, whether they're warranted or not separate discussion. But going concerns that are in the market, we have increased globalization. What happens to this industry? I think a year ago you said, "Look, I think there's going to be consolidation."

**James Farley:**

Yeah.

**Toni Sacconaghi:**

Do you still think that's going to be the case, and what way, shape, or form might we see that? So is end state back to 8 to 10 players as opposed to 16 or 17 today with market caps kind of above 10 billion? Or how do you see just sort of the nature and number of competitors going forward and how does that shake out?

**James Farley:**

I think for sure there'd be consolidation, but in a way a mature industry, like the ICE analog world consolidation was kind of moving assets around between players and becoming more efficient. I think what we're going to see now is, especially in the next five years, is a very large acceleration of cooperation and a lot of talent movement. Not all the pure EV players are going to make it because it requires a lot of cash, but they have a lot of talented people, those talented people and others from outside the industry, we've seen at Ford for the last two years now is there'll be a lot of talent change.

I know that's not related to your question, but I think it's very important aspect of the changing nature of the industry.

The cooperation is essential because there's a lot of players like a Suzuki in India or a Honda in North America that rely on certain geographies for most of their profitability, but they aren't big enough to do an embedded electric architecture or come up with a fully competitive, super cost-efficient EV platform with vertical integration. They don't have the resources. So you're going to see a lot of cooperation now that's required, just like what you saw with Ford and Tesla on the infrastructure side, we did it on transmissions and engines without anyone noticing on the ICE world. Now it's going to be more on the technology side. I think that's one of the most interesting new dynamics.

As I said, I just want to double click on the winners and losers being different. In the first quarter of this year, no one noticed, but we noticed that something monumental happened in our industry where China became the number one exporter of vehicles globally. It had always been the Germans and the Japanese. They exported more than a million units away from China, increasingly to Europe. 50, 60% of the Chinese markets going to be EV digital products. They have a different digital ecosystem as you know, so that will require some transition for them. But companies like SAIC, Geely, BYD, these are going to be global players now. Their local market was big enough at 25 million units, approximately 25% of the overall vehicle sales. It was big enough for them to concentrate locally, but now with the pricing wars on EV, they've turned their sights to overseas where the pricing power's higher like Europe, especially Europe.

So I think what you're going to see in our industry, even in the short term, is a lot of shifting within the industry of winners and losers. And you'll see some mature OEM shrink, they have to and others will expand dramatically. I would say a company like BYD. They have to sort out their brand and their distribution overseas and become a global player. It's not going to be easy. But if you take the half-life of what happened in the Chinese, the Japanese where I worked for 25 years and then the half-life of the Koreans who were doing amazing jobs now on EV and digital products, you take that half-life and apply it to the Chinese OEMs that are now exporting the largest number of vehicles in the world now, I think, you can clearly see it's a bit of a new world order.

**Toni Sacconaghi:**

But that sounds like a really significant challenge, Jim, because the Japanese were and the Koreans were--

**James Farley:**

Yeah.

**Toni Sacconaghi:**

--and now you're saying this is perhaps as big a wave as we might ever see in terms of globalization and foreign imports coming into Europe and potentially ultimately into the US.

**James Farley:**

I think that's what's exciting for me. I think that's a really positive thing in our industry. Because we've had this model of selling to one owner basically, financing a little bit, getting some parts revenue, especially at collision, and that was really it. That was the business model. And what you're seeing now is as we go to digital product, I believe an American company like Ford could be a winner in that

scenario. We have to get our costs brutally competitive, our batteries have to get down in size. We can go over that, but we have to kind of redo the product execution on the digital side.

But when I see the talent at Ford right now, I see Pro productivity software, physical network of repair vehicles all integrated just like John Deere and Caterpillar do it on the Pro side. I can see differentiated level two and level three autonomy that's better than what I see in China from my team in Ford. I see safety and security software that has not been built out yet, but will be, another node on your house for safety and security of your vehicle. These are all \$1000 to \$4,000 revenues just from one owner. We've never done insurance. The connected car data will be critical in more thoughtful insurance products.

These are whole new revenue streams that don't go away when the economic cycle turns down. This is a different opportunity we've ever had, and I believe if Ford can execute our product, put the platforms, especially advanced electric architecture and great application facing software to our customers, there's no reason why we can't win against these great competitors.

And it all comes down to one thing, talent. The talent. It's a talent war - globally now. And I don't see any reason why Ford can't win that talent war. It's amazing to see the talent we have at the Company, not just compared to other OEMs. These are world-class technical people.

**Toni Sacconaghi:**

So Jim, you've talked a lot about this transition happening to digital product and the potential for incremental revenue.

**James Farley:**

Yes.

**Toni Sacconaghi:**

I think right now, revenue is 200 million--

**James Farley:**

Yeah.

**Toni Sacconaghi:**

--on digital products at Ford. So maybe we can double click on some of those opportunities that you talked about--

**James Farley:**

Sure.

**Toni Sacconaghi:**

--because at least to me, the PRO story is very clear, and I'm happy for you to summarize it for investors who aren't familiar. But the consumer story is a little less clear to me, in terms of the ability to capture incremental revenue---

**James Farley:**

Ok.

**Toni Sacconaghi:**

--for a couple of reasons. One, I feel that historically in the automotive market, innovation has benefited consumers, not companies. And I may have shared some of these examples with you before, but when I was a kid, windows were manual, \$250 for electric windows. In fact, I'm Canadian, we had to pay for a rear defroster, which you really needed growing up in Montreal.

**James Farley:**

Yeah, a block heater too.

**Toni Sacconaghi:**

A block heater too. Yeah, no, but then you think about first airbags came out, a \$1,000 bucks an airbag. Now every car has eight airbags and you don't pay for it. Cruise control.

**James Farley:**

ABS.

**Toni Sacconaghi:**

ABS, et cetera, et cetera.

**James Farley:**

It's a long list.

**Toni Sacconaghi:**

And competition has priced that away, right?

**James Farley:**

Yes.

**Toni Sacconaghi:**

And so, if we have an industry structure that is arguably as or more competitive than it was before, again, on the consumer side, what gives you confidence that the OEMs can actually take price, and it won't be competed away?

**James Farley:**

Yeah, I almost don't think of ourselves as an OEM in that regard, because making the vehicles just like an install base, you have to think about the vehicles differently from that vantage point. Look, Ford now has 600,000 subscribers for software. Compared to a year ago, it's tripled. So it's not small growth, it's growing a lot. And what we found is that the vehicle...so I agree with you 100% when it comes to infotainment. I don't think any OEM, no matter how much they could actually write down the revenue, is going to get any money from the customer around infotainment, content, music, video, interior experience. We can curate it better than anyone else, because you have safety critical systems. Well,

we'll get into that in a second, but I think there's brand differentiation in how, but you're not going to charge for that. I think what we've learned so far in the last year, is that productivity software for our PRO customers is incredibly valuable, and I would say even more valuable than the vehicle.

Actually, our PRO customers are more loyal to our PRO software than they are our vehicles. So if you're 95% of the commercial industry, 20 million vehicles around the world of the 100 are small, medium-sized business, plumbers, electricians, HVAC. Go in the city here, go outside and look at all the transit vans, super duties, that's our customer. They're not last mile delivery. That's 5% of the industry. It's small, medium business, entrepreneurs, and they run their business on these vehicles. If you lose one fifth of your vehicles, one vehicle out of five, and you're a plumbing supply company in Manhattan, you lose 20% of your revenue. How much is that customer willing to pay for predictive failure of all components on the vehicle, so the vehicle's never off the road. It's the same as John Deere and Caterpillar found - a lot.

A lot of these, the driver takes the vehicle home at night to their personal home. There's a lot of fraud on gas cards, for example, where people have a company gas card, they actually fill up their private vehicle, even though they're supposed to be using it for their van. We can now track where the person is when they use it and whether the vehicle's next to them. We can actually limit the speed of the vehicle, which we're going to be OTA-ing this year for all of our PRO customers.

**Toni Sacconaghi:**

That might be a good consumer offering for parents of teenagers, by the way.

**James Farley:**

Yeah, me too. Actually, that's the first thing I ask is, I have two 15 year olds, same thing. What I'm saying is, that productivity software will work for retail, and we've never had this chance, because the vehicle data is different and more valuable than what you can get off in OBD port or a dongle from an insurance company. It's more valuable. But the biggest unlock, is time. In no point in our history have we been able to give people time back, which is the most valuable thing. When I sold my Prius when I was at Toyota, and I left for Ford, my Prius was worth \$5,000 more, because of the HOV sticker on the back of it in California.

People are willing to pay a lot for time. They're actually willing to pay \$1,500 to take their hands off the wheel now. You can imagine how much money they'll be willing to pay, maybe temporary, until it gets commoditized. I don't think it'll become commoditized in the next 10 years. But when they take their eyes off the road on a sunny day on the New Jersey turnpike, off-ramp to on-ramp, how much are people going to be willing to pay for that? A lot, I think.

So it turns out our category of products are a little different than people thought. People thought of our category is like people using a phone before the smartphone. Actually, the trip's going to change now where you can reuse the time if you are a winner in the level three autonomy system. If you are one of the first, and have a really differentiated level three system, if you have really good productivity software, and I believe safety and security software, all those things customers are willing to pay. Will they get commoditized? Absolutely. I don't think it'll happen as fast as ABS, because these are not software systems that are generic.

When you're using a level three system on the highway on a sunny day like today, how much time you actually get, how accurate predictive the ETA is, how it pulls over safely when things don't work right, how it reengages the customer when you have to take the wheel back, those are all really hard things to do and they're differentiating. I think prognostics is another good example. Using AI to predict failure for a plumber's transit van, is not an easy thing to do. It's not easy to commoditize that. It's really hard.

We think we'll have to provide about 300 predictive signals to those customers, to our PRO software when we launch our truly digital PRO vehicles. So I guess what I'm saying, I want to be a little bit argumentative to you, that actually giving time back for people and making them more productive if they're running their business on vehicles, is very valuable. And it's actually not easy, it's not like an airbag. It's complicated to do well. I think it is differentiating to some extent.

**Toni Sacconaghi:**

Because if I take the autonomy example, I feel like, again, we used to pay a 1,000 bucks for cruise control, then cruise control became standard, and now lane keeping and distance tracking on highways, level one autonomy. Tesla used to charge \$5,000 for it, now it's free. It's base level autonomy on the car. So I just wonder, I hear you. You have delivered something that is useful to consumers, and not everyone has it. You're going to get rewarded for that.

**James Farley:**

Yes.

**Toni Sacconaghi:**

But it does go back-

**James Farley:**

Is it durable?

**Toni Sacconaghi:**

--to your question of, if you have these really aggressive Chinese competitors who are becoming increasingly global and they're sophisticated, are they going to say, "Hey, we want to win over the customer. Guess what?" And the Koreans have done this with some of their technology. Their cars are really teched out. We're going to try and win market share by, you know, by-

**James Farley:**

Gifting it.

**Toni Sacconaghi:**

--gifting it. Exactly.

**James Farley:**

Yeah. I think we should absolutely expect the commoditization of some of these features, but I don't see anyone who can compete with PRO right now. We have 500 upfitters. You're a plumber, the inside of your vehicles fitted specifically. You can't ship that from California. It has to be a local company.

Bailment programs having, It's a very, very complicated, difficult business. You can't just spend money and time and figure it out.

**Toni Sacconaghi:**

Yeah. The PRO-business seems like, I mean we've seen the economics on it seems, like the crown jewel of Ford--

**James Farley:**

It is.

**Toni Sacconaghi:**

--from a profitability perspective, but also from a barriers to entry, because the infrastructure you have with the upfitters, with your--

**James Farley:**

Physical repair. These vehicles are heavily used, 90% uptime. So they have collisions, they have things that wear out, and they don't have time. They can't have the vehicle off the road, so you need 24/7 repair facilities across the world. Only Ford has that. So yes, I believe, bring on BYD. Love for them to compete against pro. I tried for 25 years of my career at Toyota to beat Ford. Never could do it. We tried with Tundra, the plant was half full, because it's a really hard, durable business. And now when you make it digital, it's even harder. So yeah, but I'm starting to see on the retail side some software ships that does change the basic experience for the retail customer. We can agree to disagree, but I really believe that level three autonomy is quite difficult to execute well, and I don't think the Chinese, new competitors, are any better off getting to that solution.

It's a very difficult thing for software to pull the vehicle off safely, to monitor the driver safely, to integrate all of that into the IP. Now, I don't think it's like cruise control, personally, but I do think cruise control and ABS and airbags are very similar to each other. But this is different, this is software that's very complicated. And will it be durable for 10 years? No, I agree with you 100%. Will it be durable for five years? Yes. And then there'll be something else. I don't know what it is going to be, Tony, but I think there'll be a fourth software ship. I don't know what it is yet.

**Toni Sacconaghi:**

Right. Yeah. I mean, you could argue the parallel being the iPhone where people didn't know the utility of the phone, it was really just through continuous application that ultimately did that, right?

**James Farley:**

Yes.

**Toni Sacconaghi:**

And so ,you're right, by definition, if you have a digital asset, who knows the creativeness either within Ford or by third parties, that may be able to increase the value of--

**James Farley:**

Totally.



**Toni Sacconaghi:**

--that asset.

**James Farley:**

Totally.

**Toni Sacconaghi:**

And again, I think the Apple analogy is informative from that perspective. Again, the beauty that Apple had is they had this locked in iOS ecosystem and every car vendor will to some degree have that. The question is will they feel like, "Well, I must go with Ford because I feel like their platform is better than BYD's platform or has more applications, more utility. And I'm willing to pay for that because if the functionality is similar and it's a competitive marketplace, that's probably going to get priced away."

**James Farley:**

Yeah. But I'm encouraged not because I'm the head of Ford, but I didn't know a year ago that we would have 600,000 people paying. I didn't know that Rent-a-car companies wanted to actually get , you know I raised a hand. How many of you rented cars and lied about your fuel? All of you.

**Toni Sacconaghi:**

Rounded, Jim, rounded, rounded.

**James Farley:**

But how valuable is an accurate fuel level for a rental car company? It's very valuable.

**Toni Sacconaghi:**

It's got to be 10s of millions of dollars.

**James Farley:**

It is. And they'll happily pay for it.

**Toni Sacconaghi:**

Right. Jim, maybe you could just, of the 600, 000 subscribers today for software, what are the principle items that they're purchasing?

**James Farley:**

It's in two buckets. 400,000 is our Pro software customers and most of that is data services like large fleets, U-Haul, Hertz, they just want the data off the vehicle, the stuff they can't get from the OBD port. And of course it's charging services there, too. So we have about 30% attach rates for our EV commercial vehicles on charging. So they buy the depot charging from us and they use the energy management software. So that's very popular for Pro as well, not just the data services. And then the telematics, which is dynamic routing, fuel card fraud, that kind of stuff.

The other 200,000 is in retail and it's all on BlueCruise. And BlueCruise is really gaining momentum. It's interesting. We've done our 13 million OTA. Most of that has been from the infotainment system for our

EVs called the Menlo System. But we did a massive change, OTA to over the air to the inside experience for Mach e and Lightning and F-150 ICE. And we used all the customer data to see how to change the experience, but we didn't charge for that.

So like you said, that's like just being a good brand. I mean, so the 600,000 is just productivity and ADAS so far. We haven't launched our safety and security system. We're working on it now.

**Toni Sacconaghi:**

And you mentioned in your comments, and you talked a bit about your capital markets day, the insurance opportunity. And I think the number that was thrown out was \$2,000 per car. When I heard that number, I thought that feels like a high insurance premium because I paid less than that for each of my cars. And I would figure that, I'm not sure if Ford actually plans to get in the underwriting, but if you're really a facilitator of the business, I would imagine your revenue share would be a fraction of that.

**James Farley:**

Could be.

**Toni Sacconaghi:**

So maybe you could just explain how you think about the insurance opportunity and why \$2,000 might be something that's plausible.

**James Farley:**

Yeah. First of all, it's super early days. Second of all, the data off the vehicles, really important because that's why most insurance companies are offering customers a dongle to put in their OBD port because they're much smarter underwriting the risk if you know how the customer actually drives. But the data off the vehicle to the OBD port was basically for repair. The actual data off the vehicle is much more valuable than that for insurance purposes.

And what we find, and I think Tesla is a good example, they started rating customers driving characteristics from a risk standpoint. That's starting to score the risk for each customer's driving habits themselves. I think it's only a matter of time before we know so much about how people drive that we can do a really good job making that risk assessment. That number is basically the revenue of the course of let's say a five-year ownership cycle. So we think it's very reasonable.

I think the way we're thinking about it is that for customers we know really well, like our commercial customers, it could be a very good vertical integration opportunity. I think for retail will be very difficult to be differentiated for a while. But we'll experiment. I think for Pro it's a very big natural for us. To bundle the services together where people have an energy contract with Ford and insurance and they're already buying software. Of our connected vehicle, 30% attach rates already for software for Pro. I think it's a natural place for us to go for Pro.

**Toni Sacconaghi:**

Let's maybe, we've talked a lot about the digitization of cars. We haven't really talked about EVs per se, so maybe we can just shift a little bit to that, Jim. So the EPA has this proposal to get the US to 54 to 60% EVs by 2030. California's banning ICE cars starting in 2035.

**James Farley:**

Including Super Duties. Good luck with that.

**Toni Sacconaghi:**

Yeah. Europe and Canada are kind of similar. So how do you think about EV sales percent by geography, let's say in 2030 or 2035. And we know what your target is, but how do you think about the marketplace? And is 50% by 2030 going to be in line?

**James Farley:**

I think it could happen. It's completely dependent on regulatory support. So, when we see the China government change their licensing policy for EVs in Shanghai, or the Benelux government take away the registration benefit for EVs, like customers are rational. The next day people buy different vehicles. So it's very dependent on regulatory environment around the world.

But if you assume what we see today, you could easily see Europe and China getting to a 50, 60% mix. They're about half of that now, but they're growing. It's doubling almost every year. So I think next year both will probably grow by about 2 million pure EVs in Europe and China. And oh, by the way, it looks like the ICE is going down about the same mountain. So it's people changing.

I would say the rest of the world, which people don't think about a lot, but it's like a huge part of the global industry is Thailand, South America, South Africa, Iran, Middle East. I mean, they're huge markets. And yeah, there's a few Japans and Australia in the world, but most South Africa, South America, 10 to 15, 20% max in that timeframe, electric. There'll be some outliers, but in India to get to 10% electric would be a revolution by 2030 in the EV. And that's a another huge market.

So then I say the US, it looks like we're on a trajectory for like 30%. So the globe could be at 50%. For the US to get to 50% in 2030 to 2035, it's going to take a lot more regulatory support.

**Toni Sacconaghi:**

Do you think even IRA incentives are not enough to get the US?

**James Farley:**

Not so far.

**Toni Sacconaghi:**

Beyond 30.

**James Farley:**

We haven't seen the elasticity. I mean, look, every business owner gets \$7,500. The car company's very quick to flip that into a lease through their captives. And even we're still seeing a lot of incredible pricing

pressure. I would say it'll be fits and starts. But we're kind of in the first inning of this playing out, in my eyes. In the first inning, it is characterized by one single thing. Price competition.

We keep talking about unit volumes. That's not very important. The unit volumes may get to 50%. The real question is, at what price? At what price?

**Toni Sacconaghi:**

What does your crystal ball say on that?

**James Farley:**

Yeah, I'd say the pricing is going to be much, much harsher than people think. And that's cool for companies like Ford.

**Toni Sacconaghi:**

Would you have said that a year ago?

**James Farley:**

No.

**Toni Sacconaghi:**

Before Tesla's moves?

**James Farley:**

Forget about Tesla.

**Toni Sacconaghi:**

Okay.

**James Farley:**

I mean, not forget about Tesla because I respect them so much, but actually the pricing war in China, the biggest EV market in the world may have been started by Tesla, but it was sustained by everyone else except for Tesla. So Tesla gets mentioned in the price war, but actually that's not very interesting. What's interesting is that it is persisted in China, not because of Tesla, because of BYD, because of Geely, because of Great Wall, because of Changan, because of SAIC. They're the ones who are propagating this.

The other thing that people should understand that I didn't even a year ago, is that there are degrees of electrification from let's say hybrid on the ICE side all the way to pure EV, let's say 400 mile EV. We always thought of it like as an either or. It's not a monolith. What we're seeing, especially in China, is an infinite degrees of electrification. We have E-REVs now that are very popular in China that go 200 miles, all electric, but have a combustion engine for a 600 mile range. We have PHEVs that now go a hundred miles, some go only 30 miles. So there's a range. So compared to a year ago, we need to think of the electrification journey not as a monolith, that will go from HEV to pure EV. That's not how it's working out in the last year.

We're seeing degrees of electrification. Why? Because the EV is so expensive right now. Customers are smart. If you live in China and you only go home for Chinese New Year, but you want your car and your family in the car, and EREV is a great solution. You don't have to buy a \$50,000 pure EV. You can buy an EREV from Lee Auto that goes 200 miles. You're all electric all the time, except for on Chinese New Year, you still get home. You don't have to take a high speed train. You can still use your own car.

So I think what we're learning is that pricing and cost are going to be more important than we thought. And we have to think of the electrification journey, that the pure EV is going to have to be engineered completely different. Thankfully we were ahead of that. But I see a lot of companies are completely bragging about these huge 250 kilowatt-hour batteries that are completely ridiculous. They may go 500 mile range, but they cost \$45,000 and weigh as much as a Mazda Miata. It makes no sense to have these huge batteries when you can fast charge 250 miles in 10 minutes, which is as much time as it takes to fill up your tank in an ICE vehicle.

So it's better to have a smaller battery, to have a competitive range. Let's say the human body may go 250, 300 miles before you need a break, then have a fast charge. Not have a 500-mile battery, a 400-mile battery. That makes no sense. So I think costs on pure EV side. And then they're going to be degrees of electrification between HEV and that solution. That's what we've learned last year.

**Toni Sacconaghi:**

So Jim, if we think about relative cost of an EV today, let's say with a 70 kilowatt-hour battery today.

**James Farley:**

Okay, yeah, that's a good example.

**Toni Sacconaghi:**

What do you think the relative cost of an EV is today? Or maybe even think about it more simply. I think of a power train on a \$40,000 car maybe costing, I don't know, five, \$6,000 for an ICE. On an EV car, if I got a 70 kilowatt-hour battery, I don't know what is it, 150 now per kilowatt-hour, maybe?

**James Farley:**

Yes.

**Toni Sacconaghi:**

Maybe a little more. So, that's \$10,000 plus I got the electric motors, plus I have the inverter, right? Is that still sort of the structural cost difference or do you save somewhere else?

**James Farley:**

Good question.

**Toni Sacconaghi:**

Or if I think about a \$40,000 car and a 70 kilowatt battery, what's the structural cost difference between the two? And how does that change?

**James Farley:**

I think in the second generation of products, other than Tesla and some of the Chinese makers no one's gotten to, but we're almost finished designing our second, actually working on third now, we've got to stop thinking of just the powertrain. The vehicle's dramatically, dramatically simple. It turns out that the battery is so expensive, like you said, that we have to actually redesign the whole vehicle for complexity reduction. And most of the savings is in labor and the complexity of the parts being reduced. And of course the vertical integration is a big value and then making the battery smaller.

But in your example, 70 kilowatt in battery is not a huge battery. So, I would say what we've learned is large mega castings, massive simplification of the design of the vehicle, can eliminate a lot of that gap. It turns out our ICE vehicle wiring harnesses are one and a half kilometers too long, weigh twice as much as they should. I have a whole group in our ICE development team called the bracket department, and all they do is design brackets. Okay?

The way we're measuring the labor reduction for our second cycle product is to reduce fasteners by like 40%. It turns out fasteners are a really important metric on how simple and elegant your design is of the vehicle. The fasteners aren't important, but the fasteners should have three roles, not just one. You should reduce them by 40%. If you do that, you massively reduce the complexity in the vehicles.

So, what I see right now, the opportunity is definitely they will cross. The battery cost is coming down. Your example was a lithium ion battery and the LFP battery is dramatically 20, 30% less cost. It lasts twice as long. And between that and the way the vehicle's designed, we can clearly see a \$30,000 vehicle becoming less cost on an EV than an ICE in let's say a generation of product.

In addition to that, when you redo the electric architecture, you have software revenue you've never had. And, turns out, customers really don't want to pay for the complexity of our distribution system. They don't want to pay for the TV ads on the Superbowl anymore. They do that for the drug companies, but not for us. So, our inventory stuck in our system on distribution, going to e-commerce as a way to sell the vehicle, that's thousands of dollars of cost that we can eliminate now.

**Toni Sacconaghi:**

But on the car, I think you said it, but I want to play it back. So on the car itself, if you had, let's say a \$40,000 car with an EV power train, when do you think the cost of making that car will be the same as making a traditional ICE powertrain car? Are we 2030, 10 years away?

**James Farley:**

2030 to 2035. We are right there right now. It's between the second and third cycle of the EV products.

**Toni Sacconaghi:**

Okay.

**James Farley:**

Tesla's on their second cycle, the Model 3 and Model Y were engineered completely different than Model S, Model X. That's their second cycle. They had a fully software update-able vehicle with Model 3. Actually, every time they build a plant, they completely re-engineer the vehicle for complexity reduction. Just go look at them.

But the third cycle, between the second and third cycle, Tesla's talking about the \$25,000 vehicle. This is the zone. This is a time when a Corolla-sized vehicle EV gets lower cost than its ICE competitor. LFP battery dominant for sure, dramatically lower labor content, and dramatically lower distribution costs.

**Toni Sacconaghi:**

But if that's the case, Jim, and Tesla's kind of, let's say, third cycle in 2024, '25, and everyone else is--

**James Farley:**

No, no, no, it won't be that soon. They have to build a plant. They don't have the capacity.

**Toni Sacconaghi:**

--let's say 2025. No, I follow Tesla very closely, so I'm there with you.

**James Farley:**

Yeah.

**Toni Sacconaghi:**

But let's say 2025, even 2026. But if third gen's really happening in 2030+ for everyone else, isn't that a lot of cost differentiation? I mean, is that a structural cost advantage that Tesla's going to enjoy for a while and BYD?

**James Farley:**

And others. It's not just them.

**Toni Sacconaghi:**

No, but I mean, your second platform's 2025. You've talked at capital markets day about-

**James Farley:**

Yeah, we have a couple--

**Toni Sacconaghi:**

You have a couple new exciting products that are coming out.

**James Farley:**

--we haven't told everyone everything for competitive reasons. But I think yes. I think in the '25 to '30 timeframe, if you design your vehicle right, with the right distribution system, and the right battery tech, there'll be just a few companies that will have a material advantage.

But I was talking about the revolution in all the price categories. When will that happen? When will a two row crossover EV be cheaper than a RAV4 HEV or a CRV? I think it's the same timeframe. Not all the vehicles in our industry are going to be \$25,000. And it turns out that actually, with an LFP battery and the driving cycle, that kind of car, you have the opportunity to be a lower cost in that timeframe. But there's a lot of other segments in our industry, a lot of other kinds of customers who drive longer distances, require bigger batteries.

It takes time to convert all the plants. All of that takes time. So yeah, I think it'll take a couple more years after that, another cycle. But there'll be a few, a few early players. Will it be durable? So the question is, will it be a durable differentiation? I don't think so.

**Toni Sacconaghi:**

But in the near term, my observation, correct me if I'm wrong, on the response to Tesla's price cuts... And I know there's sort of a price war in China. And I think a lot of that is because there's a lot of capacity and the economy slowed down a bit, so you have more supply than demand so you have crazy pricing there. But if I think about Tesla specifically, if ultimately they're half a generation to a generation ahead of everyone else, and they have a superior cost structure and they want to just drive units like crazy, invariably won't more people have to respond?

**James Farley:**

Yes.

**Toni Sacconaghi:**

We've seen them respond in China.

**James Farley:**

Yes.

**Toni Sacconaghi:**

In the United States, EVs are only 6% of the market, so most people haven't had to respond. Europe's kind of in the middle, right?

**James Farley:**

Yeah, yeah, yeah. But the installed capacity, all the plants are getting built right now.

**Toni Sacconaghi:**

Right, no, but that's what I'm saying.

**James Farley:**

Yeah.

**Toni Sacconaghi:**

So, could it be pretty ugly for the industry in two or three years if Tesla's half a gen has everyone else on a lower cost?

**James Farley:**

Well, first of all, this is a quite interesting topic because everyone's focused on Tesla and like Mustang Mach-E. Two-thirds of our volume is - we're number two last year in EV. It's tiny compared to Tesla in the US.



**Toni Sacconaghi:**

Right.

**James Farley:**

Two-thirds of our volume is Lightning and E-transit. Both of them, we increased prices since launch by \$11,000 in the case of Lightning and \$6,000 in case of E-transit. No one writes that story. No one's watching that story. Everyone keeps talking about Mach-E versus Model Y, which we had to respond to, right? Because we cross-shop against those vehicles. But people need to realize that the competitive landscape of EVs is just in a few segments. It's a tiny part of the industry in the US.

**Toni Sacconaghi:**

Right. And you're clear about where you're going with your next generation platform, and they're different segments, right?

**James Farley:**

Correct.

**Toni Sacconaghi:**

If I think about the market as a whole, Tesla's in some pretty big segments now. They're going to be in even bigger segments with the \$25,000 cars.

**James Farley:**

Yes, yes.

**Toni Sacconaghi:**

Isn't that going to be ugly for a while?

**James Farley:**

What transformation isn't ugly? I mean, that's what happens. I mean look at what Henry Ford did in 1913. His starting price for the Model T was \$810. It was already the lowest price. By the time he gets done, it's \$500.

Every one of these are the same. What's happening in China should be no surprise to anyone. If you haven't written down cost pressure and pricing pressure for commoditized segments in the industry, you're not doing your job as management. It's going to happen. I don't know why anyone's surprised about this. I mean, we've reduced the price of Mach-E \$5,000 because we knew we had to.

**Toni Sacconaghi:**

Right.

**James Farley:**

We knew two years ago this was going to happen. I told my team, "Get five grand out now." And it's not easy. But we knew we had to. Yes.

**Toni Sacconaghi:**

Jim, we've got 15 more seconds. Any parting words and words of wisdom, either about Ford as an investment or about where we are in the automotive world?

**James Farley:**

We are in the second inning in a nine inning game. Everyone wants the instant answer to everything. There is no instant answer. But we are learning really quickly what's happening over the last year. And what I have learned is that this is a war of talent globally, number one.

Number two, when you go to a digital product, the revenue streams can dramatically change, but it requires flawless execution and differentiation.

And the third thing is, not all companies are the same. Don't treat the industry as a monolith. It isn't a monolith. Ford can compete with Pro and retail electric digital pickup trucks and other vehicles like Bronco and Mustangs that are incredibly profitable that will grow for a long time to come that will have lots of revenues because Ford isn't the same as the other companies. Our product strategy is different. So, I personally feel like, compared to a year ago, even with all the price wars, it's actually playing out what we thought. But there are some surprises. And to me, I'm much more optimistic now than I was a year ago because I have 600,000 people paying me every month for software that's integrated into my product. And I've never had that in my career. And will it get commoditized? I guess it could be, but I don't think my talented people will let that happen.

Yeah, that's all I'd say.

**Toni Sacconaghi:**

Great.

**James Farley:**

Yeah.

**Toni Sacconaghi:**

Well, Jim, thank you very much.

**James Farley:**

Thank you.

**Toni Sacconaghi:**

We appreciate your time.