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Company Participants

Travis Axelrod - Head of Investor Relations
Elon Musk - Co-Founder, Technoking of Tesla, CEO & Director
Vaibhav Taneja - Chief Financial Officer
Ashok Elluswamy - Executive Officer
Micheal Snyder - Vice President of Energy & Charging

Conference Call Participants

Emmanuel Rosner - Wolfe Research, LLC
Dan Levy - Barclays Bank PLC, Research Division
Walter Piecyk - LightShed Partners, LLC
Colin Rusch - Oppenheimer & Co. Inc., Research Division

Presentation

Travis Axelrod
Head of Investor Relations

Good afternoon, everyone, and welcome to Tesla's Third Quarter 2025 Q&A Webcast. My name is Travis Axelrod, Head of Investor Relations, and I'm joined today by Elon Musk, Vaibhav Taneja and a number of other executives. Our Q3 results were announced at about 3:00 p.m. Central Time in the update deck we published at the same link as this webcast. During this call, we will discuss our business outlook and make forward-looking statements.

These comments are based on our predictions and expectations as of today. Actual events or results could differ materially due to a number of risks and uncertainties, including those mentioned in our most recent filings with the SEC. We urge shareholders to read our definitive proxy statement, which contains important information about the matters to be voted on at the 2025 Annual Meeting. [Operator Instructions] Before we jump into Q&A, Elon has some opening remarks. Elon?

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

Thank you. We're at a critical inflection point for Tesla and our strategy going forward as we bring AI into the real world. I think it's important to emphasize that Tesla really is the leader in real-world AI. No one can do what we can do with real-world AI. I have pretty good insight into AI in general. I think that Tesla has the highest intelligence density of any AI out there in the car, and that is only going to get better. And we're really just at the beginning of scaling at quite massively full self-driving and Robotaxi and fundamentally changing the nature of transport. I think people just don't quite appreciate the degree to which this will take off where it's -- honestly, it's going to be like a shock wave.

So it's because the cars are all out there. There -- we have millions of cars out there that with a software update become full self-driving cars. And we're making a couple of million a year. And in fact, with the advent of -- with what we see now as a clarity on achieving full self-driving, unsupervised full self-driving, I should say, I feel confident in expanding Tesla's production. So that is our intent to expand as quickly as we can our future production. So I was reticent to do that until we had clarity on achieving unsupervised full self-driving. But at this point, I feel like we've got clarity, and it makes sense to expand production as fast as we reasonably can.

We're also making huge -- making impact on the energy sector with battery storage. So with both Powerwall and especially with the Megapack, we are dramatically improving the ability to generate more energy from the grid. Let me sort of talk a little bit about that, which is if you look at total U.S. energy capability, for example, there's roughly a terawatt of continuous power available in the U.S. But the average usage over a 24-hour cycle is only 0.5 terawatt because of the big difference between day and night usage. If you buffer the energy with batteries, you can effectively double the energy output in the United States just with batteries building no incremental power plants.

And it's very difficult to build power plants. So they take a long time. There's a lot of permitting, and it's not an industry that's used to moving fast. So we see the potential there for Tesla battery packs to greatly improve the energy output per year for any given grid, US or otherwise. We're also on the cusp of something really tremendous with Optimus, which I think is likely to be or has potential to be the biggest product of all time. And it's a difficult project. And it's worth noting that it's not like it's just automatic. I'm not aware of any robot program by Ford or GM or any U.S. sort of car companies. People like, I think maybe think of Tesla as a car company, we mostly make cars and battery packs.

But -- so it's not just like an obvious fall of a log thing to make Optimus, but we do have the ingredients of real-world AI and exceptional electrical, mechanical engineering capabilities and the ability to scale production, which I don't think anyone else has all of those ingredients. So yes, with version 14 of self-driving, which people -- you can see the reactions of people online. They're quite amazed. Actually, anyone in the U.S. can get version 14 if they just go and select, I want the advanced software in their car.

So if you're listening right now and you'd like to try it out, just go in Settings and say, I want the advanced software, and you will get version 14.

And yes, so on the Megapack front, we unveiled Megablock, Megapack 3. We also have exciting plans for Megapack 4. Megapack 4 will incorporate a lot of the -- a lot of what is normally in a substation and be able to output at probably 35 kilovolts directly. So this greatly improves our ability to deploy Megapack because it's not dependent on building a substation up through 35 kV for Megapack 4. So that will be -- that's the engineering priority for Megapack. And we look forward to unveiling Optimus V3 probably in Q1. I think it will be ready for -- to show off.

And that I think is going to be quite remarkable. If you -- it won't even seem like a robot. It will seem like a person in a robot suit, which is kind of how we started off with Optimus. But it will seem so real that you'll need to like poke it, I think, to believe that it's actually a robot. And obviously, like the real-world intelligence we've developed for the car, most of that transfers to Optimus. So it's a very good starting point.

In conclusion, we're excited about the updated mission of Tesla, which is sustainable abundance. So going beyond sustainable energy to say sustainable abundance is the mission where we believe with Optimus and self-driving that you can actually create a world where there is no poverty, where everyone has access to the finest medical care. Optimus will be an incredible surgeon, for example, I imagine everyone had access to an incredible surgeon. So I think there's -- of course, we make sure Optimus is safe and everything. But I do think we're headed for a world of sustainable abundance, and I'm excited to work with the Tesla team to make that happen.

Travis Axelrod
Head of Investor Relations

Great. Thank you very much, Elon. Vaibhav also has some opening remarks.

Vaibhav Taneja
Chief Financial Officer

Thanks, Travis. Q3 was a special quarter at multiple levels. We set new records, not just for deliveries and deployments, but also around a range of financial metrics from total revenues, energy gross profit, energy margins to free cash flow. This was the result of continued confidence of our customers in our products and the relentless efforts by the Tesla team. The strength in deliveries was attributed to strong performance across all regions. Greater China and APAC were up sequentially 33% and 29%, respectively. North America was up 28%, while EMEA was up 25%. The pace in deliveries was the function of continued excitement around the new Model Y.

We had previously talked about 2025 being the year of the Y and have since delivered on that promise with the new Model Y released in Q1, followed by Model Y Long Wheelbase and Performance and more recently, Standard Y in North America and EMEA. We're now operating our Robotaxi in 2 markets, Austin and most Bay Area cities. We've already expanded our coverage area in Austin 3x since the initial launch and are on pace to continue expanding further. Unlike our competitors, our Robotaxi fleet blends in the markets we operate in since they don't have extra sensor sets or peripherals, which make them stick out.

This is an underappreciated aspect of our current vehicle offerings, which are all designed for autonomous driving. We feel that as experience -- as people experience the supervised FSD at scale, the demand for our vehicles, like Elon said, would increase significantly. On the FSD adoption front, we've continued to see decent progress. However, note that total paid FSD customer base is still small, around 12% of our current fleet. We're moving -- we're working with regulators in places like China and EMEA to obtain approvals so that we can get FSD in those regions as well.

Now covering a little bit on the financial side. Automotive revenues increased 29% sequentially, in line with the growth in deliveries. While regulatory credits declined sequentially, we entered into new contracts and continued delivery on previously entered contracts. Our automotive margins, excluding credits, increased marginally from 15% to 15.4%, which was attributed to improvements in material cost and better fixed cost absorption due to higher volumes. The energy storage business continued to deliver with record deployments, gross profit and margins.

As discussed before, this business has a bigger impact from tariffs as measured by a percentage of COGS since currently all sales procured are from China, while we are still working on other alternatives. However, as the ramp of Megafactory Shanghai is happening, this is helping us avoid tariffs because we are using this factory to supply the non-U.S. demand. Like Elon said, grid-scale storage, the only way we can get to electricity fastest is by using storage. The other thing to keep in mind is we are seeing headwinds in this business given the increase in competition and tariffs.

The total tariff impact for Q3 for both businesses was in excess of $400 million, generally split evenly between them. Services and Other demonstrated a marked improvement sequentially. This was a function of improvements primarily in our insurance and service center businesses. Note that while small, our Robotaxi costs are included within Services and Other, along with our other businesses like paid supercharging, used car, parts and merchandise sales, et cetera. Our operating expenses increased sequentially.

The largest increase included in restructuring and other related to certain actions undertaken to reduce cost and improve efficiency to convergence of our AI chip design efforts. Additionally, we incurred legal expenses related to proceedings in certain legal cases as well as incremental costs incurred in preparation for our shareholder meeting.

Such costs are recorded within SG&A. Further, our employee-related spend is increasing, especially in R&D as we have recently granted various performance-based equity awards to employees working on AI initiatives, and therefore, such spend will continue to increase going forward.

On other income, our other income decreased sequentially, primarily from mark-to-market adjustments on BTC Holdings, which was a much smaller gain of $80 million in Q3 versus $284 million in Q2, with the rest of the movement attributable to FX movements in the quarter. Our free cash flow for the quarter was approximately $4 billion, which was yet another record. Our total cash and investments at the end of the quarter were over $41 billion.

On the CapEx front, while we are expecting to be around $9 billion for the current year, we're projecting the numbers to increase substantially in 2026 as we prepare the company for the next phase of growth in terms of not just our existing businesses, but our bets around AI initiatives, including Optimus. In conclusion, note that bringing AI into real world is hard, but we have never shied away from doing what is hard. We are extremely excited about the future and are laying down the foundation, the benefits of which will be realized over years to come. I would like to end by thanking the Tesla team, our customers, our investors and supporters for their continued belief in us.

Question-and-Answer Session

Travis Axelrod
Head of Investor Relations

Thank you very much, Vaibhav. Now let's go to investor questions. From say.com, the first question is, what are the latest Robotaxi metrics, fleet size, cumulative miles, rides completed, intervention rates? And when will safety drivers be removed? What are the obstacles still preventing unsupervised FSD from being deployed to customer vehicles?

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

I'll start off with that, and then Ashok can elaborate. But we are expecting to have no safety drivers in at least large parts of Austin by the end of this year. So within a few months, we expect to have no safety drivers at all at least in parts of Austin. We're obviously being very cautious about the deployment. So our goal is to be actually

paranoid about deployment because obviously, even one accident will be front page headline news worldwide. So it's better for us to take a cautious approach here.

But we do expect to have no safety drivers in the car in Austin within a few months. I think that's perhaps the most important data point. And then we do expect to be operating Robotaxi in, I think, about 8 to 10 metro areas by the end of the year. It depends on various regulatory approvals. And -- but you can actually -- I think most of our regulatory applications are online, you can kind of see them because they're public information. But we expect to be operating in Nevada and Florida and Arizona by the end of the year. Ashok?

Ashok Elluswamy
Executive Officer

Yes. We continue to operate our fleet in Austin without anyone in the driver seat, and we have covered more than 0.25 million miles with that. And then in the Bay Area, where we still have a person in the driver seat because of the regulations, we crossed more than 1 million miles. So -- and we continue to see that the fleet -- Robotaxi fleet works really well. Customers are really happy, and there's no notable issues.

On the customer side, we have -- customers have used FSD supervised for a total of 6 billion miles as of yesterday. So that's like a big milestone. And overall, the safety continues to be very good. And as Elon mentioned, we are on track to remove the person from inside the car altogether, starting with Austin.

Travis Axelrod
Head of Investor Relations

Great. The next question is, what is the demand and backlog for Megapack, Powerwall, solar or energy storage systems? With the current AI boom, is Tesla planning to supply power to other hyperscalers?

Micheal Snyder
Vice President of Energy & Charging

Thanks. Demand for Megapack and Powerwall continues to be really strong into next year. We received very strong positive customer feedback on our MegaBlock product, which will begin shipping next year out of Houston. And we're seeing remarkable growth in the demand for AI and data center applications as hyperscalers and utilities have seen the versatility of the Megapack product to increase reliability and receive -- and relieve grid constraints, as Elon was talking about.

We've also seen a surge in residential solar demand in the U.S. due to policy changes, which we expect to continue into the first half of 2026 as we introduce the new solar lease product. And we also began production of our Tesla residential solar panel in our Buffalo factory, and we will be shipping that to customers starting Q1. The panel has industry-leading aesthetics and shape performance and demonstrates our continued commitment to U.S. manufacturing.

Travis Axelrod
Head of Investor Relations

Great. Thank you, Mike. Unfortunately, the next question is related to future products. This is not the appropriate venue to cover that. So we're going to have to skip it. The question after that is, what are the present challenges in bringing Optimus to market, considering app control software, engineering hardware, training general mobility models, training task-specific models, training voice models, implementing manufacturing and establishing supply chains.

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

Yes. I mean bringing Optimus to market is an incredibly difficult task to be clear. It's not like some walk in the park, at some point. I mean actually technically, Optimus can walk in the park right now. And we do have Optimus robots that walk around our offices at our engineering headquarters in Palo Alto, California, basically 24 hours a day, 7 days a week. So any visitors that come by, you actually -- you can stop one of the Optimus robots and ask it to take you somewhere, and it will literally take you to that meeting room or that location in the building. So I don't want to downplay the difficulty of Optimus.

It's an incredibly difficult thing, especially it's difficult to create a hand that is as dextrous and capable as the human hand, which is an incredible -- the human hand is an incredible thing that the more you study the human hand, the more incredible you realize the human hand is and why you need 5 -- 4 fingers and a thumb, why the fingers have certain degrees of freedom, why the various muscles are of different strengths, the fingers are of different lengths. And it turns out actually that those are all there for a reason. And so making the hand and forearm, because most of the actuators -- just like the human hand, the muscles that control your hand are actually primarily in your forearm.

The Optimus hand and forearm is an incredibly difficult engineering challenge. I'd say it's more difficult than the rest of -- from an electromechanical standpoint, the forearm and hand is more difficult than the entire rest of the robot. So -- but really, in order to have a useful generalized robot, you do need this, you do need an incredible hand. And

then you need the real-world AI, and you need to be able to scale up that production to have it be relevant because it's not relevant if it's just a few hundred robots. But -- so you need to be able to make Optimus robots at volumes comparable to vehicles, if not significantly higher.

So you're trying to make 1 million or something per year -- trying to make 1 million Optimus robots per year, that manufacturing challenge is immense, considering that the supply chain doesn't exist. So with cars, you've got an existing supply chain. With computers, you've got an existing supply chain. With a humanoid robot, there is no supply chain. So in order to manufacture that, Tesla actually has to be very vertically integrated and manufacture very deep into the supply chain, manufacture the parts internally because there just is no supply chain.

So this is the kind of thing where I'm like, if I put myself in the position of a start-up trying to make a humanoid robot, I'm like, I don't know how to do it without an immense amount of manufacturing technology. So that's why I think like Tesla is in almost a unique -- I think in unique position when you consider manufacturing technology scaling, real-world AI and a truly dextrous hand. Those are generally the things that are missing when you read about other robots that just don't have those 3 things. So I think we can achieve all those things -- those 3 things with an immense amount of work. And that is the game plan.

So like my fundamental concern with regard to how much voting control I have in Tesla is, if I go ahead and build this enormous robot army, can I just be outset at some point in the future? That's my biggest concern. If I -- that is really the only thing I'm trying to address with this so called compensation, but it's not like I'm going to go spend the money. It's just if we build this robot army, do I have at least a strong influence over that robot army, not control, but a strong influence. That's what it comes down to in a nutshell. Like I don't feel comfortable building that robot army if I don't have at least a strong influence.

Travis Axelrod
Head of Investor Relations

Great. Thank you. We've already covered Robotaxi expansion. Unfortunately, the question after that is another future product question, so we're going to have to skip that. The next one, though is, can you update us on the $16.5 billion Samsung chip deal in Taylor? Given the importance of semiconductors to autonomy and Tesla's AI-driven future, what gives you confidence Samsung can fulfill AI6 at Tesla's time lines and achieve relatively better yields and cost versus TSMC?

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

Okay. So I'm going to give quite a long answer to this question because I have to unpack this question and then answer the unpacked version. So first of all, I have nothing but great things to say about Samsung. They're an amazing company. And Samsung is worth noting, does manufacture our AI4 computer and does a great job doing that. So now with the AI5, and here's I need to make a point of clarification relative to some comments I've made publicly before, which is we're actually going to focus both TSMC and Samsung initially on AI5. So the AI5 chip design by Tesla is -- I think it's an amazing design.

I have spent almost every weekend for the last few months with the chip design team working on AI5. And I don't hand out praise easily, but I have to say that I think the Tesla chip team is really designing an incredible chip here. This is -- by some metrics, the AI5 chip will be 40x better than the AI4 chip, not 40%, 40x because we have a detailed understanding of the entire software and hardware stack. So we're designing the hardware to address all of the pain points in software.

So I don't think there really isn't anyone that's doing this -- the entire stack all the way through real world -- kind of calibrating against the real world where you've got cars and robots in real world that like we know what the chip needs to do, and we know what -- just as importantly, we know what the chip doesn't need to do. To sort of give you some examples here, with the AI5, we deleted the legacy GPU or the traditional GPU, which is -- it's in AI4. But AI5 does not have -- we just deleted the legacy GPU because it basically is a GPU. So we also deleted the image signal processor. And there's like a long list actually of deletions that are very important.

As a result of these deletions, we can actually fit AI5 in a half reticle and with good margin for the traces from the memory to the Tesla Trip accelerators, the ARM CPU cores and the PCI-X sort of the PCI blocks. So this is a beautiful chip. I've hoarded so much life energy into this chip personally. And I'm confident this will be -- this is going to be a winner next level. So it makes sense to have both Samsung and TSMC focus on AI5. And so technically, the Samsung fab has slightly more advanced equipment than the TSMC fab. These will both be made in the U.S., one -- TSMC in Arizona, Samsung in Texas.

And -- but it's -- we're going to make -- starting off just to be confident of having -- our goal -- explicit goal is to have an oversupply of AI5 chips because if we have too many AI5 chips for the cars and robots, we can always put them in the data center. So we already use AI4 for training in our data centers. So we use a combination of AI4 and NVIDIA hardware. So we're not about to replace NVIDIA to be clear, but we do use both in combination, AI4 and NVIDIA hardware. And the AI5 excess production, we can always put in our data centers. NVIDIA keeps improving.

The challenge that they have is that they've got to satisfy a large range -- a lot of requirements from a lot of customers, but Tesla only has to satisfy requirements from one customer, that's Tesla. That makes the design job radically easier and means we

can delete a lot of complexity from the chip. Like I can't emphasize how important this is. So like when you look at the various logic blocks in the chip, as you increase the number of logic blocks, you also increase the interconnections between the logic blocks. So you can think of it like there's highways, like how many highways do you need to connect the various parts of the chip.

And especially if you're not sure how much data is going to go between each logic block on the chip, then you kind of end up having giant highways going all over the place. It's a very -- like it becomes an almost impossibly difficult design problem. And NVIDIA has done an amazing job of dealing with almost an impossibly difficult set of requirements. But in our case, we're going for radical simplicity. And the net effect is that I think AI5 will be the best performance per watt, maybe by a factor of 2 or 3 and the best performance per dollar for AI, maybe by a factor of 10. So that's -- we'll have to -- the proof is in the pudding. So obviously, we need to actually get the chip made and made at scale. But that's what it looks like.

Travis Axelrod
Head of Investor Relations

Great. Thank you, Elon. We've already covered unsupervised FSD. So the next question is, instead of trying to replace Hardware 3 with Hardware 4, why not give an equal incentive to trade in for a new vehicle?

Vaibhav Taneja
Chief Financial Officer

Yes. We've not completely given up on Hardware 3. However, over the last year, we've offered the customers the option to transfer FSD to their new vehicle, which at times we've been running some promotions. If they got FSD, they could get better preferential rates. So we've been definitely taking care of this, but we do want to solve autonomy first, and then we'll come back with a way to take care of these customers. These customers are very important. They were the early adapters. For what it's worth, my daily commuter is a Hardware 3 car, which I use FSD on a daily basis. So we will definitely take care of you guys.

Ashok Elluswamy
Executive Officer

In addition, once the V14 release series is fully done, we are planning on working on a V14 light version for Hardware 3 probably expected in Q2 next year.

Travis Axelrod
Head of Investor Relations

Awesome. Thanks, Ashok. Our final question from Say is, how long until we see self-driving Tesla Semi trucks? And could you see this technology replacing trains?

Unknown Executive

Yes. So I guess I'll start with that in terms of the Semi production plan and schedule. So the factory is going on schedule. We've completed the building and are installing the equipment now. We've got our fleet of validation trucks driving on the road. We'll have larger builds towards the end of this year and then our first online builds in the first part of next year, ramping into the Q2 timing with real volume coming in the back half of the year. So that's going quite well, and that's the first step, obviously, getting autonomous trucks on the road.

In terms of trains, they're really great for long point-to-point deliveries. They're super-efficient, but that last mile, the load, unload can be better served for shorter distances with autonomous Semis, and that would be great. And so we do expect that to probably shift as we really, as Elon said, change the way transportation is considered. And so we're looking forward to that time line. And Ashok, I know you can take the full self-driving part.

Ashok Elluswamy
Executive Officer

Currently, the team is super focused on solving for passenger vehicle autonomy. That said, the same technology will extend quite easily to the Semi truck once we have a little bit of data from the Semi trucks.

Travis Axelrod
Head of Investor Relations

Great. And now we will move over to analyst questions. The first question comes from Emmanuel at Wolfe.

Emmanuel Rosner
Wolfe Research, LLC

So Elon, you talked about expanding production of vehicles as fast as possible now that you have confidence in the unsupervised autonomy. How should we think about that in the context of your existing capacity of 3 million units? Is that where you're hoping to get volume to? What sort of time line are we talking about? And would this require some level of boosting or incentivizing demand? Like would this basically be prioritizing volume over near-term profitability given the longer-term opportunity?

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

Well, our capacity isn't quite 3 million, but it will be 3 million at some point. Aspirationally, it could be 3 million within -- we could probably hit an annualized rate of 3 million within 24 months, I think, maybe less than 24 months. Bearing in mind like there's an entire supply chain, like a vast supply chain that's got to also move in tandem with that. So we're going to expand production as fast as we can and as fast as our suppliers can sort of keep up with it. And then we're going to think about where do we build incremental factories beyond that. The single biggest expansion in production will be the Cybercab, which starts production in Q2 next year. That's really a vehicle that's optimized for full autonomy.

It in fact, does not have a steering wheel or pedals and is really an engineering optimization on minimizing cost per -- like fully considered cost per mile of operation. So that's -- for the -- for other vehicles, there's still have a little bit of the horseless carriage thing going on where obviously, you got -- you still -- if you've got steering wheels and pedals and you're designing a car that people might want to go very fast acceleration and tight cornering, like high-performance cars, then you're going to design a different car than one that is optimized for a comfortable ride, but doesn't expect to go past sort of 85 or 90 miles an hour.

And it's just aiming for a gentle ride the whole time. That's what Cybercab is. So -- yes, so it's -- do I think we'll sacrifice margins? I don't think so. I think the demand will be pretty nutty. Like here's the killer app really, what it comes down to is can you text while you're in the car? And if you tell someone, yes, the car is now so good, you can be on your phone and text the entire time while you're in the car. It's -- anyone who can buy the car will buy the car and its end of story. So that's what everybody wants to do. In fact, not everyone wants to do, they do, do that.

And that's why, in fact, the reason you've seen like there's been an uptick in accidents pretty much worldwide is because people are texting and driving. So Autopilot actually dramatically improves the safety here because if somebody is looking down their phone, they're not driving very well. So that's really the game changer. And we do see like -- at this point, I feel essentially 100% confident -- I'd say not essentially, 100% confident that we can solve unsupervised full self-driving at a safety level much greater than human. So we've released 14.1.

We've got a technology road map that's, I think, pretty amazing. We'll be adding reasoning to the car. Our world simulator for reinforcement learning is pretty incredible, like -- when you see the Tesla Reality Simulator, it's -- you can't tell a difference between the video that's generated by the Tesla Reality Simulator and the actual video, it looks exactly the same. So that allows us to have a very powerful reinforcement learning loop to further improve the Tesla AI.

We're going to be increasing the parameter count by an order of magnitude. That's not in 14.1. There are also a number of other improvements to the AI just that are quite radical. So it's -- this car will feel like it is a living creature. That's how good the AI will get with the AI4 computer just before AI5. And then AI5, like I said, is, by some metrics, 40x better. Let's just say safely, it's a 10x improvement. So it might almost be too much intelligence for a car. I do wonder like how much intelligence should you have in a car. It might get bored actually.

And then one of the things I thought like, if we got all these cars that maybe are bored, while they're sort of -- if they are bored, we could actually have a giant distributed inference fleet and say like, well, if they're not actively driving, let's just have a giant distributed inference fleet. At some point, if you've got like tens of millions of cars in the fleet or maybe at some point, 100 million cars in the fleet, and let's say they had at that point, I don't know, a kilowatt of inference capability of -- high-performance inference capability, that's 100 gigawatts of inference distributed with power and cooling -- with cooling and power conversion taken care of. So that seems like a pretty significant asset.

Travis Axelrod
Head of Investor Relations

The next question comes from Adam from Morgan Stanley. Adam, go ahead and ask your question. It seems like we might be having some audio issues with Adam. So we'll come back to you. The next question will then come from Dan from Barclays.

Dan Levy
Barclays Bank PLC, Research Division

Elon, I know that Tesla is really focused on with master plan for bringing AI into the physical world. And I think we've seen over the past this willingness for Tesla to engage and go into new markets, new TAMs. So when you think about the growth prospects, how do we define the areas that are really within Tesla's core competency versus where do you draw the line for markets or AI applications that are outside of Tesla's core competency?

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

Actually, I'm not sure what you mean by AI applications outside of Tesla's core competency. But we kind of -- we didn't have any of these core competencies when we started. So it's like we had 0 core competencies, total competency of 0 actually. So I mean, you can think of Tesla as like, I don't know, a dozen start-ups in one company. And I've initiated every one of those start-ups. So it's -- we weren't used to make battery packs, stationary battery packs, but now we do. We make them for the home, make them for utility scale with Powerwall, Megapack. We've created the Supercharger network globally.

No one else has created a global Supercharger network. In fact, that North American Supercharger network is so good that basically every other manufacturer in North America has converted to our standard and uses our -- the Tesla Supercharger network. But if it was so easy, why don't they just do it? And the chip design team started that from scratch. The Tesla AI software team was started from scratch. I literally just say, hey, we're going to start this thing. I post it on Twitter, now X and then join us if you'd like to build it. In fact, Ashok was, I believe, the first person I interviewed for the Tesla Autopilot team, which we now call Tesla AI software team because it is the AI software team.

So it's -- core competency is created while you wait. And Optimus at scale is the infinite money glitch. It's like this is -- it's difficult to express the magnitude of -- like if you've got something like that -- like if Optimus, I think, probably achieve 5x the productivity of a person per year because it can operate 24/7, it doesn't even need to charge. It can operate at tethered. So it's plugged in the whole time. And what -- so that's why I call it like if you're true of sustainable abundance, where working will be optional. There's a limit to how much AI can do in terms of enhancing the productivity of humans, but there is not really a limit to AI that is embodied. That's why I call the infinite money glitch.

Vaibhav Taneja
Chief Financial Officer

I mean one thing which I'll further add is, I mean, people forget like our first attrition of Autopilot was 10 years back. So Elon had started this way back in the day.

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

Yes, we got the Tweets to prove it.

Vaibhav Taneja
Chief Financial Officer

Exactly. And then even on the Optimus side, right, as much as people think, okay, this is a new thing. I still remember, was it 4-plus years back, we were in a finance meeting with Elon and Elon said, hey, our car is a robot on wheels. And that's where we started developing. In fact, most of the engineering team, which is working on Optimus has come from the vehicle side. And that's why when we talk about manufacturing prowess, we have the wherewithal because the same engineers who worked back in the day on drive units are working on actuators now. So that's where we can -- if there is any company which can do it at scale, that is going to be us.

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

But we also have actually added a lot of new engineers as well to the team. So there's actually a lot of the credit for the Optimus engineering is actually also new engineers, many of them that are just out of college actually. So the Optimus engineering team is a very talented engineering team. I'd say like, wow, actually. So -- and the Optimus reviews at this point are there's the engineering review and then there's the manufacturing review being done simultaneously with an iterative loop between engineering design and manufacturing because then we see -- we design something and we say like, oh man, that's really difficult to make.

We need to change that design to make it easier to manufacture. So we've made radical improvements to the design of Optimus while increasing the functionality but making it actually possible to manufacture. Like I'd say, Optimus 2 is almost impossible to manufacture, frankly. But [indiscernible] point, we've gone from a person in a robot outfit to what people have seen with Optimus 2.5 where it's doing Kung fu. It was like Optimus was at the Tron premier doing Kung fu just out in the open like with Jared Leto. Like there wasn't -- nobody was controlling it. It was just doing Kung fu with Jared Leto at the Tron premier. You can see the videos online.

And actually, the funny thing is like a lot of people walked past it, thinking it was just a person. Even though with Optimus 2.5, you can see that it has a waist that's 3 inches wide, that results in not a human. So -- but the movements were so human-like that people didn't realize -- a lot of people didn't realize they're looking at a robot. So -- and what I'm saying is like Optimus 3 will be a giant improvement on that and made at scale. But like I said, a very difficult thing. The Optimus sort of engineering and manufacturing reviews and the Friday night meeting with Optimus, which sometimes goes to midnight. And then my Saturday meeting is with the -- Saturday afternoon is with the AI5 chip design team. So those 2 things are crucial to the future of the company.

Travis Axelrod
Head of Investor Relations

Dan, did you have a follow up?

Dan Levy
Barclays Bank PLC, Research Division

Yes. Just as related, maybe you could just talk about to what extent are the AI efforts at Tesla and xAI complementary? Or are they just different forms of AI? Maybe you could just help distinguish for the audience.

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

Yes. They are different forms of AI. So the xAI, Grok is like a giant model that you could not possibly squeeze Grok onto a car. That's for sure. It is a giant beast of a model. It's -- with Grok is trying to solve for artificial general intelligence with a massive amount of AI training compute and inference compute. So for example, Grok 5 will actually only run effectively on a GB300. That's how much of a beast that Grok 5 is. So -- whereas Tesla's models are, I don't know, maybe about less than 10% of the size, maybe closer to 5% the size of Grok.

So yes, they're really coming at the problem from very different angles. xAI and Grok are -- they're competing with Google Gemini and OpenAI ChatGPT and that kind of thing. So -- and some of it is complementary. I mean for example, for Grok voice, being able to interact with Grok in the car is cool. Grok -- for Optimus voice recognition and voice generation is Grok. So that's helpful there. But they are coming at it from kind of opposite ends of the spectrum.

Travis Axelrod
Head of Investor Relations

Adam let's give another try. Unfortunately, still having audio issues. So we're going to move on to Walt from LightShed.

Walter Piecyk
LightShed Partners, LLC

Just getting back to Austin. If you can remove the safety driver at year-end, is the limitation in the Bay Area just regulatory? Or is it kind of the market-by-market learning process? And I guess, similarly, in the 8 to 10 markets that you mentioned to get added, is the decision there to put a safety attendant in the passenger seat or the safety driver in, is that like your step-by-step process to opening up a market? Or is it really just the regulation in the individual market?

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

Well, I think even if the regulators weren't making us to it, we'd still do that as the sort of right sort of cautious approach to a new market. So just to make sure that we're being paranoid about safety, I think it makes sense to have it sort of either safety driver or safety occupant in the car when we first go to new markets just to confirm that there's not something we're missing because all it takes is like 1 in 10,000 trips to go wrong and you've got an issue.

So it's just to make sure like is there some peculiarity about a city like a very difficult intersection or I don't know, something that's an unexpected challenge in a city for that 1 in 10,000 situations. So I think we probably could just let a loose in these cities, but we just don't want to -- we don't want to take a chance. And like what we're talking about here is maybe 3 months of safety driver in a new metro to confirm that it's good and then we take the safety driver out, that kind of thing.

Walter Piecyk
LightShed Partners, LLC

Okay. And then on FSD 14, it has a different feel than 13, and it's also, I think, a little different than what it feels like in Austin. Is it basically different development path that you're doing in terms of the Robotaxi stuff versus what you're dropping to the early adopters? And when you push these new builds, is it that you're looking for notable improvements in intervention rates? Or is that largely solved and it's more about adding the functionality like the parking and the drive modes or just the overall comfort?

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

Now the first priority when we release a major new software architecture for Autopilot is safety. So it starts off with safety -- obviously, safety prioritized and then we solve comfort thereafter, which is why I don't recommend people take the initial version, like -- that's why I say like most people should wait until 14.2 before they actually

download version 14 because by 14.2, we will have addressed many of the comfort issues. The priority is very much safety first and then thereafter, the comfort issues. That's why most people are like, probably, it will be a little -- like it will be safe, but jerky.

And we just need time to kind of smooth the rough edges and solve for comfort in addition to safety with a major new Autopilot architecture change. But it really is -- I mean, I know what the road map is for the Tesla real-world AI at a very granular detail. Obviously, Ashok is leading that. And -- I mean, I spent a lot of time with the team going in like excruciating detail here on what we're doing to improve the real-world AI. And like I said, this car is going to feel like it is a living creature, and that's with AI4 before even AI5.

Ashok Elluswamy
Executive Officer

Yes, the road map is super exhilarating, like it's -- waiting so much like to release all the stuff we are working on. In terms of like what we ship to customers versus Robotaxi, it's mostly the same. Obviously, customers have some more features like they can choose the car wants to park in a spot or drive something like that, which is not super relevant for Robotaxi. But there's only a few minor changes like those ones. But the majority of the algorithms and the architecture, everything is the same between those 2 platforms.

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

Yes. But -- and as I mentioned earlier, like we'll be adding reasoning to -- I don't know, Ashok, is that like reasoning in like 14.3, maybe 14.4, something like that?

Ashok Elluswamy
Executive Officer

Yes, by end of this year for sure.

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

Yes. So with reasoning, it's literally going to think about which parking spot to pick, so it's going to say, this is the entrance, but actually, probably there's not a parking spot

right at the entrance if it's a full -- if the parking lot is fairly full, the probability of an open parking spot right at the entrance is very low. But actually, what it will simply do is drop you off at the entrance of the store and then go find a parking spot. But it's going to get very smart about figuring out a parking spot. It's going to figure out -- it's going to spot empty spots much better than human. It's got a 360-degree vision. And it's going to -- yes, like I said, just -- it's going to use reasoning to solve things.

Ashok Elluswamy
Executive Officer

And putting that all inside the computer that has AI4 is the actual challenge, and that's what the team is working on because obviously, you can do reasoning on the server, that takes whatever. But then in a car, you need to make real-time decisions. So putting all that into the computer that's in the car, that's the challenge.

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

Yes. That's why I say like I have a pretty good understanding of like AI, sort of the giant model level with Grok and with Tesla. And like I'm confident in saying that Tesla has -- Tesla AI has the highest intelligence density. When you look at the intelligence per gigabyte, I think like Tesla AI is probably, in order of magnitude better than anyone else. And it doesn't have any choice because that AI has got to fit in the AI for computer. But the discipline of having that level of AI intelligence density will pay great dividends when you go to something that has an order of magnitude more capability like AI5. Now you have that same intelligence density, but you got 10x more capability in the computer.

Travis Axelrod
Head of Investor Relations

Great. The next question will come from Colin at Oppenheimer.

Colin Rusch
Oppenheimer & Co. Inc., Research Division

I appreciate you bringing up the challenges of hand dexterity and humanoids, along with the complexity of the supply chain and the vertical integration you guys are pursuing. I'm just trying to harmonize the time line for the start of production next year with the current state of the supply chain. And what sounds like a fair amount of work

remaining on the dexterity before you can really freeze the hardware design and start to scale up production.

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

Well, the hardware design will not actually be frozen even through start of production. There will be continued iteration because a bunch of the things that you discover are very difficult to make. You only find that pretty late in the game. So we'll be doing rolling changes for the Optimus design even after start of production. But I do think that the new hand is an incredible piece of engineering. And that's -- like say we'll have a production intent prototype ready to show off in Q1, probably February or March.

And then we're -- yes, we're going to be building a 1 million unit Optimus production line hopefully, with the production start towards the end of next year. But that production ramp will take a while to get to an annualized rate of 1 million because it's going to move as fast as the slowest, dumbest, least lucky thing out of 10,000 unique items. But it will get to 1 million units. And then ultimately, we'll do Optimus 4, that will be 10 million units. Optimus 5, maybe 50 million to 100 million units. I mean, it's really pretty nutty.

Travis Axelrod
Head of Investor Relations

That is unfortunately all the time we have for Q&A today. Before we conclude, though, Vaibhav has some closing remarks.

Vaibhav Taneja
Chief Financial Officer

Thanks, Travis. I want to take the time to talk about an extremely important vote, which is being held on November 6. The meeting will shape the future of Tesla, and we are asking you as our shareholders to support Elon's leadership through the 2 compensation proposals and the reelection of Ira, Kathleen and Joe to the Board. Note that it is a team sport. And here at Tesla, the Board is an integral part of the winning team. Shareholders are at the center of everything we do at Tesla and our special committee has laid out a compensation package. Like Elon said, we don't even want to call it a compensation package.

Elon Musk
Co-Founder, Technoking of Tesla, CEO & Director

Yes. The point is I just like there needs to be enough voting control to give a strong influence, but not so much that I can't be fired if I go insane. But -- and I think that sort of number is in the mid-20s approximately. As a company that has already gone public, there's no -- we've investigated every possible way to how do you achieve increased voting control without -- is there some way to have like a super voting stock, but there really is -- there is no way to have a super voting stock after you've gone public. But for example, Google, Meta, many other companies have this, but they had it before they went public. And so it sort of gets, I guess, grandfathered in.

Tesla does not have that. So it's just -- like I said, I just don't feel comfortable building a robot army here and not -- and then being ousted because of some [indiscernible] recommendations from ISS and Glass Lewis who have no freaking clue. I mean those guys are corporate terrorists. And the problem -- so let me explain like the core problem here is that so many of the index funds, the passive funds vote along the lines of whatever Glass Lewis and ISS recommend. Now they have made many terrible recommendations in the past that if those recommendations have been followed, would have been extremely destructive to the future of the company.

But if you've got passive funds that essentially defer responsibility for the vote to Glass Lewis and ISS, then you can have extremely disastrous consequences for a publicly traded company if too much of the publicly traded company is controlled by index funds. It's de facto controlled by Glass Lewis and ISS. This is a fundamental problem for corporate governance because they're not voting along the lines that are actually good for shareholders. That's the big issue. I mean, that's what it comes down to, ISS, Glass Lewis corporate terrorism.

Vaibhav Taneja
Chief Financial Officer

Yes. And I would say the special committee did an amazing job in constructing this plan for the benefit of the shareholders. There is no -- nothing which gets passed on till the time shareholders make substantial returns. So that's why in the end, I would say, I would urge you to not only vote on the plan but also vote on all the 3 directors because of their exceptional knowledge and experience.

And literally, we at Tesla work with these directors' day in, day out. I mean there is not even a single day that one of the directors I haven't spoken to or one of my colleagues hasn't spoken to. And even the directors out here are not just reading out of PowerPoint presentations, they're actually working with us day in, day out. So again, I just urge you guys as shareholders to vote along the Board's recommendation. Thank you, guys.

Travis Axelrod
Head of Investor Relations

Great. Thank you, Vaibhav. We appreciate everyone's questions today. We look forward to talking to you next quarter. Thank you very much, and goodbye.