

Date: October 22, 2025

**Travis Axelrod**

Good afternoon, everyone, and welcome to Tesla's third quarter 2025 Q&A Webcast. My name is Travis Axelrod, Head of Investor Relations. I am joined today by Elon Musk, Vaibhav Taneja, and a number of other executives. Our Q3 results were announced at about 3 PM 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 we voted on at the 2025 annual meeting. During the question and answer portion of today's call, please limit yourself to one question and one follow-up. Please use the raise hand button to join the question queue. Before we jump into Q&A, Elon has some opening remarks. Elon?

**Elon Musk**

Thank you. We are 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. We are really just at the beginning of scaling at a quite massive level, full self-driving and robotaxi, and fundamentally changing the nature of transport. I think people just do not quite appreciate the degree to which this will take off. It's honestly going to be like a shock wave. So it's because the cars are all out there. We have millions of cars out there that, with a software update, become full self-driving cars. We are making a couple of million a year. In fact, with the advent of what we see now as 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. I was ready 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 are also making a huge impact on the energy sector with battery storage. 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 US energy capability, for example, there's roughly a terawatt of continuous power available in the US. But the average usage over a twenty-four-hour cycle is only half a 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, pulling no incremental power plants. It's very difficult to build power plants. They take a long time. There's a lot of permitting. It's not an industry that's used to moving fast. 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 are also on the cusp of something really tremendous with Optimus, which I think is likely to be, has the potential to be, the biggest product of all time. It's a difficult project. It's worth noting that it's not just automatic. I'm unaware of any robot program by Ford or GM or, you know, in the by USC of car companies. People might think of Tesla as a car company that mostly makes cars and battery packs. It's not just 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. With version 14 of self-driving, people can see the reactions of people online. They're quite amazed. Actually, anyone in the US can get version 14 if they just go and select "I want the advanced software" in their car. If you're listening right now and you'd like to try it out, just go into settings and say, "I want the advanced software," and you will get version 14. On the Megapack front, we unveiled Megablock, Mega Pack three. We also have exciting plans for MegaPack four. MegaPack four will incorporate a lot of what is normally in a substation and be able to output at probably 35 kilovolts directly. This greatly improves our ability to deploy Megapack because it's not dependent on building a substation up through 35 KB for MegaPack four. That's the engineering priority for Megapack. We look forward to unveiling Optimus b three probably in Q1. I think it'll be ready to show off. That, I think, is going to be quite remarkable. It won't even seem like a robot. It'll seem like a person in a robot suit, which is kind of how we started off with Optimus. It'll seem so real that you'll need to poke it, I think, to believe that it's actually a robot. Obviously, the real-world intelligence we've developed for the car, most of that transfers to Optimus. It's a very good starting point. In conclusion, we're excited about the updated mission of Tesla, which is sustainable abundance. Going beyond sustainable energy to say, sustainable abundance is the mission, where we believe with Optimus and self-driving, we 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. Imagine if everyone had access to an incredible surgeon. Of course, we make sure Optimus is safe and everything, but I do think we're headed for a world of sustainable abundance. I'm excited to work with the Tesla team to make that happen.

**Travis Axelrod**

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

**Vaibhav Taneja**

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 fresh free cash flow. This was the result of continued confidence of our customers in our products and the relentless efforts of the Tesla team. The strength in deliveries was attributed to strong performance across all regions. Greater China and APAC were up sequentially 33%, 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. I had previously talked about 2025 being the year of the Y, and we have since delivered on that promise. Model Y was released in Q1, followed by Model Y long wheelbase and performance, and more recently, Standard Y in North America and EMEA. We are now operating a robotaxi in two markets, Austin and most various cities. We have already expanded our coverage area in Austin three times 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 people experience the supervised FSD at scale, 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 the total paid FSD customer base is still small, around 12% of our current fleet. We are working with regulators in places like China and EMEA to obtain approvals so that we can deploy FSD in those regions as well. Now covering a little bit on the financial side, automotive revenues increased 29% 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%. This 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 percentage of COGS since currently all sales procured are from China while we're still working on other alternatives. However, as the ramp of mega factory Shanghai is happening, this is helping us avoid tariffs. We are using this factory to supply the non-US demand. Like Elon said, grid-scale storage is the only way we can get to electricity fastest 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 impacts for Q3 for both businesses were 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, etc. 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 AR AI chip design efforts. Additionally, we incurred legal expenses related to proceedings in certain legal cases. As incremental cost incurred preparation for our shareholder meeting. Such costs are recorded within SG&A. Further, our employee-related spend is increasing, especially in R&D. We have recently granted various performance-based equity awards to employees working on AI initiatives. Therefore, such spend will continue to increase 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 the 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 the continued belief in us. Thank you very much, Vibhav. Now let's go to investor questions.

**Travis Axelrod**

From say.com, the first question is, what are the latest robo taxi metrics fleet size, cumulative miles, rides completed, intervention rates, when will safety drivers be removed? What are the obstacles still preventing unsupervised FSD from being deployed to customer vehicles?

**Elon Musk**

I'll start off with that, and then Ashok can elaborate. 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 in at least parts of Austin. We're obviously being very cautious about the deployment. Our goal is to be actually paranoid about deployment because, obviously, even one accident will be front-page headline news worldwide. 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. We do expect to be operating robotaxi in, I think, about eight to ten metro areas by the end of the year. It depends on various regulatory approvals. You can actually think most of our regulatory applications are online. You can kind of see them because they're public information. We expect to be operating in Nevada, Florida, and Arizona by the end of the year. Ashok?

**Ashok Elluswamy**

Yeah. We continue to operate our fleet in Austin without anyone in the driver's seat, and we have covered more than a quarter million miles with that. In the Bay Area, we still have a person in the driver's seat due to the regulations, and we've crossed more than a million miles. We continue to see that the robotaxi fleet works really well. Customers are really happy, and there are no notable issues. On the customer side, we have FSD supervised for a total of 6 billion miles as of yesterday. That's a big milestone. Overall, the safety continues to be very good. As Elon mentioned, we are on track to remove the person from inside the car altogether, starting with Austin.

**Travis Axelrod**

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?

**Elon Musk**

Thanks.

**Michael Snyder**

Demand for Megapack and Powerwall continues to be really strong into next year. We received very strong positive customer feedback on our Mega Block product, which will begin shipping next year out of Houston. 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. It increases reliability and relieves grid constraints, as Elon was talking about. We've also seen a surge in residential solar demand in the US due to policy changes, which we expect to continue into 2026 as we introduce the new solar lease product. 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 US manufacturing.

**Travis Axelrod**

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**

Yeah. 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. We do have Optimus robots that walk around our offices at our engineering headquarters in Palo Alto, California, basically twenty-four hours a day, seven days a week. Any visitors that come by can actually stop one of the Optimus robots and ask it to take them somewhere,

and it'll literally take them to that meeting room or that location in the building. I don't want to downplay the difficulty, but it's an incredibly difficult thing, especially to create a hand that is as dexterous and capable as the human hand, which is incredible. The human hand is an incredible thing. The more you study the human hand, the more incredible you realize it is, and why you need four fingers and a thumb, why the fingers have certain degrees of freedom, why the various muscles are of different strengths, and fingers are of different lengths. It turns out that those are all there for a reason. 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 the robot from an electromechanical standpoint. The forearm and hand are more difficult than the entire rest of the robot. But really, in order to have a useful generalized robot, you do need an incredible hand. 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. You need to be able to make Optimus robots at volumes comparable to vehicles, not significantly higher. So trying to make a million Optimus robots per year, that manufacturing challenge is immense considering that the supply chain doesn't exist. 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. 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. This is the kind of thing where I'm like, if I put myself in the position of a startup trying to make a humanoid robot, I'm like, I don't know how to do it without an immense amount of manufacturing technology. That's why I think Tesla is in almost a unique position when you consider manufacturing technology, scaling real-world AI, and a truly dexterous hand. Those are generally the things that are missing when you read about other robots that just don't have those three things. I think we can achieve all those things with an immense amount of work, and that is the game plan. My fundamental concern with regard to how much voting control I have at Tesla is if I go ahead and build this enormous robot army, can I just be ousted at some point in the future? That's my biggest concern. That is really the only thing I'm trying to address with this. It's 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 current control, but a strong influence? That's what it comes down to in a nutshell. I don't feel comfortable wielding that robot army if I don't have at least a strong influence.

#### **Ashok Elluswamy**

Great. Thank you.

#### **Travis Axelrod**

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? The importance of semiconductors to autonomy in Tesla's AI-driven future, what gives you confidence Samsung can fulfill AI six at Tesla's timelines? And achieve relatively better yields and cost versus TSMC.

#### **Elon Musk**

Okay. 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. First of all, I have nothing but great things to say about Samsung. They're an amazing company. Samsung, it's worth noting, does manufacture our AI four computer and does a great job doing that. Now with the AI five, and here's where 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 AI five. The AI five chip designed by Tesla is, I think, an amazing design. I've spent almost every weekend for the last few months with the chip design team working on AI five. I don't hand out praise easily, but I have to say that I think the TensorFlow team is really an incredible chip here. By some metrics, the AI five chip will be 40 times better than the AI four chip. Not 40%, 40 times. Because we have a detailed understanding of the entire software and hardware stack, we're designing the hardware to address all of the pain points in software. I don't think there's really anyone that's doing this thing the entire stack all the way through real-world. You know, calibrating against the real world where you've got cars and robots in the real world, we know what the chip needs to do, and we know just as importantly, we know what the chip doesn't need to do. To sort of use some examples here, with the AI five, we deleted the legacy GPU or the traditional GPU, which is in AI four. But AI five does not have, we just deleted the legacy GPU because it basically is a GPU. We also deleted the image signal processor. This looks like a long list of deletions that are very important. As a result of these deletions, we can actually fit AI five in a half reticle and with good margin for traces from the memory to the Tesla accelerators, the ARM CPU cores, and the PCI blocks. This is a beautiful chip. I've poured so much life energy into this chip personally, and I'm confident this is going to be a winner. Next level. It makes sense to have both Samsung and TSMC focus on AI five. Even though technically, Samsung fab has slightly more advanced equipment than the TSMC fab. These will both be made in the US, one TSMC in Arizona, Samsung in Texas. We're going to make starting off just to be confident. Our explicit goal is to have an oversupply of AI five chips. If we have too many AI five chips for the cars and robots, we can always put them in the data center. We already use AI four for training in our data center. We use a combination of AI four and NVIDIA hardware. We're not about to replace NVIDIA, to be clear, but we do use both in combination. AI four and NVIDIA hardware, and the AI five excess production can always be put in our data centers. NVIDIA keeps improving. The challenge that they have is that they've got to satisfy a large range of requirements from a lot of customers. Tesla only has to satisfy requirements from one customer, Tesla. That makes the design job radically easier and means we can delete a lot of complexity from the chip. I can't emphasize how important this is. When you look at the various logic blocks in the chip, you increase the number of logic blocks, you also increase the interconnections between the logic blocks. If you can think of it like there are highways, like how many highways do you need to connect the various parts of the chip? 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, it becomes almost an 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. The net effect is that I think AI five will be the best performance per watt, maybe by a factor of two or three, and best performance per dollar for AI, maybe by a factor of 10. We'll have to, the proof's in the pudding, so obviously, we need to actually get this chip made and made at scale. But that's what it looks like.

#### **Travis Axelrod**

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

#### **Vaibhav Taneja**

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

**Ashok Elluswamy**

Once the v 14 release series is fully done, we are planning on working on a v 14 Lite version for hardware three. Probably expected in Q2 next year.

**Travis Axelrod**

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

**Elon Musk**

Yeah. So I guess I'll start with that in terms of the semi,

**Lars Moravy**

production plan and schedule. 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 a larger build 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. That's going quite well, and that's the first step to 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. We do expect that to probably shift in as we, as Elon said, change the way transportation is considered. We're looking forward to that timeline. Ashok, I know you can take the full self-driving part.

**Ashok Elluswamy**

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

**Travis Axelrod**

Great. And now we will move over to analyst questions. The first question comes from Emmanuel, at Wolfe. Emmanuel, please go ahead and unmute yourself.

**Emmanuel Rosner**

Great. Thanks so much. Hi, everybody. 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 timeline 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**

Well, 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 twenty-four months, I think. Maybe less than twenty-four months. Bear in mind, there's an entire supply chain, a vast supply chain that's got to also move in tandem with that. I think we're going to expand production as fast as we can and as fast as our suppliers can keep up with it. Then we're going to think about where we build incremental factories beyond that. The single biggest expansion in production will be the Cyber Cap, 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 enduring optimization on minimizing cost per mile for fully considered cost per mile of operation. For our other vehicles, they still have a little bit of the horse carriage thing going on where, obviously, if you've got steering wheels and pedals and you're designing a car that people might want to go very direct past 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 and doesn't expect to go past sort of 85 or 90 miles an hour. It's just aiming for a gentle ride the whole time. That's what Cyber Cap is. Do I think we'll sacrifice margins? I don't think so. I think the demand will be pretty nutty. Here's the killer app, really. What it comes down to is, can you text while you're in the car? 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, anyone who can buy the car will buy the car. End of story. That's what everybody wants to do. In fact, not everyone wants to. They do do that. That's why, in fact, the reason you've seen an uptick in accidents, pretty much worldwide, is because people are texting and driving. Autopilot actually dramatically improves the safety here. If someone's looking down at their phone, they're not driving very well. That's really the game changer. At this point, I feel essentially 100% confident, I say not essentially, 100% confident that we can solve unsupervised full self-driving at a safety level much greater than human. We've released 14.1, got a technology roadmap that's, I think, pretty amazing. We'll be adding reasoning to the car. Our world simulator for reinforcement learning is pretty incredible. Our Tesla reality simulator, when you see it, the video that's generated by the Tesla reality simulator and the actual video looks exactly the same. 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 that are quite radical. This car will feel like it is a living creature. That's how good the AI will get with the AI four computer before AI five. AI five, like I said, is by some metrics forty times better. But just to say safely, it's a 10x improvement. 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. One of the things I thought of, like, well, if we've got all these cars that maybe are bored, well, why they're sort of, if they are bored, we could actually have a giant distributed inference fleet. If they're not actively driving, just have a giant distributed inference fleet. At some point, if you've got 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 taken with cooling and power conversion taken care of. That seems like a pretty significant asset.

**Travis Axelrod**

Great. Thanks, Elon. The next question comes from Adam from Morgan Stanley. Adam, please feel free to unmute yourself. Adam, go ahead and ask your question. Seems like we might be having some audio issues with Adam, so we'll come back to you. Next question will then come from Dan, from Barclays.

**Dan Meir Levy**

Hi. Good evening. Thank you for taking the question. Elon, I know that Tesla's really focused on with master plan for bringing AI into the physical world. I think we've seen over the past, you know, 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**

Actually, I'm not sure what you mean by AI applications outside of Tesla's core competency. We kind of didn't have any of these core competencies when we started, you know. We had zero core competencies, total competency of zero, actually. You can think of Tesla as, like, I don't know, a dozen startups in one company. I've initiated every one of those startups. We didn'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 and Megapack. We created the supercharger network globally. No one else has created a global supercharger network. In fact, the North American supercharger network is so good that basically, yeah, every other manufacturer in North America has converted to our standard and uses the Tesla Supercharger network. If it was so easy, why didn't they just do it? The Chef Design team started that from scratch. The Tesla AI software team was started from scratch. I literally just said, hey, we're going to start this thing. I posted it on Twitter, now X. 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. Core competencies created while you wait. Optimus at scale is the infinite money glitch. It's difficult to express the magnitude of, like, if you've got something that, like, if Optimus, I think, probably achieves five times the productivity of a person per year because it can operate twenty-four seven. It doesn't even need to charge. It can operate tethered. It's plugged in the whole time. 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 enhancing the productivity of humans. There is not really a limit to AI that is embodied. That's why I called the infinite money glitch.

#### **Vaibhav Taneja**

I mean, one thing which I'll further add is, I mean, forget, like, our first iteration of autopilot was ten years back. Elon had started this way back in the day. We've got the twist to prove it. Exactly. Even on the Optimus side, as much as people think, oh, good, this is a new thing. Still remember, was it four plus years back? We were in a meeting with Elon, and Elon said, hey, our car is a robot on wheels. That's where we started developing. In fact, most of the engineering team working on Optimus has come from the vehicle side. That's why, you know, when we talk about manufacturing progress, we have the wherewithal because the same engineers who worked back in the day on drive units are working on actuators now. If there is any company which can do it at scale, that is going to be us.

#### **Elon Musk**

We also have actually added a lot of new engineers as well to the team. A lot of the credit for the Optimus engineering is actually also near new engineers, many of them that are just out of college, actually. The Optimus engineering team is a very talented engineering team. I'd say, like, wow, actually. The Optimus reviews at this point are that there's the engineering review and then there's the manufacturing review. Being done simultaneously. With an iterative loop between engineering design and manufacturing. 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. We've made radical improvements to the design of Optimus while increasing the functionality, but making it actually possible to manufacture. I'd say Optimus two is almost impossible to manufacture, frankly. But my two-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. Optimus was at the Tron premiere doing kung fu, just up in the open, with Jared Leto. Nobody was controlling it. It was just doing kung fu with Jared Leto at the Tron Premier. You can see the videos online. The funny thing is, 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 three inches wide. It results in not a human. But the movements were so human-like that a lot of people didn't realize they were looking at a robot. What I'm saying is, Optimus three will be a giant improvement on that. Made at scale, like I said, a very difficult thing. The Optimus engineering and manufacturing reviews and there's the Friday night meeting with Optimus, which sometimes goes till midnight. My Saturday meeting is with the AI chip design team. Two things are crucial to the future of the company.

#### **Travis Axelrod**

Great. And Dan, do you have a follow-up?

#### **Dan Meir Levy**

Yeah. I think just as a related, maybe you could just talk about to what extent are the AI efforts at Tesla and x AI complementary, or are they just different forms of AI? Maybe you can just distinguish for the audience. Thank you.

#### **Elon Musk**

Yeah. There are different forms of AI. The XAI, so Grok is like a giant model. You could not possibly squeeze Grok onto a car. That's for sure. It is a giant piece of a model. With Grok, it's trying to solve for artificial general intelligence with a massive amount of AI training compute and inference compute. For example, Grok five will actually only run effectively on a GV 300. That's how much of a beast Grok five is. Whereas Tesla's models are, I don't know, maybe about less than 10% the size, maybe closer to 5% the size of Grok. They're really at the problem from very different angles. XAI and Grok are competing with Google Gemini and OpenAI ChatGPT and that kind of thing. Some of it's complementary. For example, for Grok voice, being able to interact with Grok in the car is cool. Grok for Optimus voice recognition and audio 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**

Alrighty. Adam, let's give it another try. When you're ready, please unmute yourself for the next question. Alrighty. Unfortunately, Adam is having audio issues. So we're going to move on to Walt from LightShed. Walt, please go ahead and unmute yourself.

#### **Walt**

Can you hear me now?

**Travis Axelrod**

Yes. Perfect. Thank you.

**Walt**

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? Similarly, in the eight to ten 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 and the individual market?

**Elon Musk**

Well, I think even if the regulators weren't making us do it, we'd still do that as the right sort of cautious approach to a new market. Just to make sure that we're being paranoid about safety, I think it makes sense to have a safety driver or safety occupant in the car when we first go to new markets to confirm that there's not something we're missing. All it takes is one in 10,000 trips to go wrong, and you've got an issue. It just makes sure, like, is there some peculiarity about a city, like a very difficult intersection or something that's an unexpected challenge in a city for that one in 10,000 situation. We probably could just let it loose in these cities, but we just don't want to take a chance. What we're talking about here is maybe three months of safety driver in a new metro to confirm that it's good, and then we take the safety driver off, that kind of thing.

**Walt**

Okay. 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 paths that you're doing in terms of the robotaxi stuff versus what you're dropping to the early adopters? 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, the drive modes, or just the overall comfort?

**Elon Musk**

The first priority when we release a major new software architecture for Autopilot is safety. It starts off with safety, obviously, safety prioritized, and then solve comfort thereafter. That's why I don't recommend people take the initial version. That's why I say, like, yeah, most people should wait until 14.2 before they actually download version 14. 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, it'll be safe but jerky. We just need time to smooth the rough edges and solve for comfort in addition to safety with a major new autopilot architecture change. I know what the roadmap is for the Tesla real-world AI in very granular detail. Obviously, Ashok is leading that. I mean, I spend a lot of time with the team going in excruciating detail here on what we're doing to improve the real-world AI. This car is going to feel like it is a living creature. That's with AI four before even AI five.

**Ashok Elluswamy**

Yeah. The roadmap is super exhilarating. We're waiting so much, like, at least all the stuff we are working on. In terms of what we ship to customers versus robotaxi, it's mostly the same. Customers have some more features like, you know, they can choose the car wants to park in a spot or drive you or 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 architecture, everything is the same between those two platforms.

**Elon Musk**

Yeah. As I mentioned earlier, we'll be adding reasoning to, I don't know, reasoning in 14.3, maybe 14.4, something like that.

**Ashok Elluswamy**

Yeah. See here. Or by end of this year, for sure.

**Elon Musk**

Yeah. With reasoning, it's literally going to think about which parking spot to pick. 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, you know, 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'll simply do is drop you off at the entrance of the store and then go find a parking spot. It's going to get very smart about figuring out a parking spot. It's going to spot empty spots better than a human. It's got 360-degree vision, and it's going to, yeah.

**Ashok Elluswamy**

Yeah. Like I said, it's going to use reasoning to solve things.

**Elon Musk**

Yep. Putting that all inside the computer that has AI four is the actual challenge. That's what the team is working on. Obviously, you can do reasoning on the server that takes forever. But then in the car, you need to make real-time decisions. Putting all the, you know, that's in the car, that's the challenge.

**Elon Musk**

Yeah. That's why I say, like, I have a pretty good understanding of AI, you know, the giant model level with Grok and with Tesla. I'm confident in saying that Tesla has the highest intelligence density. When you look at the intelligence per gigabyte, I think Tesla AI is probably an order of magnitude better than anyone else. It doesn't have any choice because that AI has got to fit in the AI four computer. 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 AI five. Now you have that same intelligence density, but you've got 10 times more

capability in the computer.

**Travis Axelrod**

Great. The next question will come from Colin at Oppenheimer. Colin, please unmute yourself when you're ready.

**Colin Langan**

Colin, go ahead and unmute yourself, please.

**Colin Langan**

Thanks so much, guys. I appreciate you bringing up the challenges of hand dexterity in humanoids, along with the state of the supply chain and the vertical integration you guys are pursuing. I'm just trying to harmonize the timeline for the start of production next year with the state of the supply chain. What sounds like a fair amount of work remains on the dexterity before you can really freeze the hardware design and start to scale up production.

**Elon Musk**

Well, the hardware design will not actually be frozen even through the start of production. There'll be continued iteration. A bunch of the things that you discover are very difficult to make. You only find that pretty late in the game. We'll be doing rolling changes for the Optimus design even after the start of production. I do think that the new hand is an incredible piece of engineering. We'll actually have a production intent prototype ready to show off in Q1, probably February or March. We're going to be building a million units Optimus production line, hopefully with the production start towards the end of next year. That production ramp will take a while to get to an annualized rate of a 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 a million units. Ultimately, we'll do Optimus four. That'll be 10 million units. Optimus five, maybe 50 to 100 million units. It's really pretty nutty.

**Travis Axelrod**

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

**Vaibhav Taneja**

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

**Elon Musk**

Yeah. It's just like the point is that I just need enough voting control to give a strong influence, but not so much that I can't be fired if I go insane. I think that sort of number is in the mid-twenties approximately. As a company that has already gone public, we've investigated every possible way to achieve voting control without, you know, is there some way to have a supervoting stock, but there really isn't. There is no way to have a supervoting stock after you've gone public. For example, Google, Meta, many other companies have this. But they had it before they went public. It sort of gets, I guess, grandfathered in. Tesla does not have that. Like I said, I just don't feel comfortable building a robot army here and then being ousted because of some asinine recommendations from ISS and Glass Lewis who have no freaking clue. I mean, those guys are corporate terrorists. The problem, yeah. Let me explain, like, the core problem here is that so many of the index funds, passive funds, vote along the lines of whatever Glass Lewis and ISS recommend. They've made many terrible recommendations in the past. If those recommendations had been followed, they 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. They're not voting along the lines that are actually good for shareholders. That's the big issue. That's what it comes down to. ISS, Glass Lewis, corporate terrorism.

**Vaibhav Taneja**

Yeah. I would say, you know, the special committee did an amazing job constructing this plan for the benefit of the shareholders. There's nothing which gets passed on till the time shareholders make substantial returns. That's why in the end, I would say, would urge you to not only vote on the plan but also vote on all the three directors because of their exceptional knowledge and experience. Literally, you know, we at Tesla work with these directors day in, day out. 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. Even the directors out here are not just reading out of PowerPoint presentations. They're actually working with us day in, day out. Again, I just urge you guys as shareholders to vote along the board's recommendation. Thank you, guys.

**Travis Axelrod**

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.