



Speaker 1  
Start

Good afternoon, everyone, and welcome to Tesla's Third Quarter twenty twenty five Q and A Webcast. My name is Travis Axelrod, Head of Investor Relations, and I'm joined today by Elon Musk, Vibhav Taneja and a number of other executives. Our Q3 results were announced at about three 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 we voted on at the twenty twenty five 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 and A, Elon has some opening remarks. Elon? Thank you. We're at a critical inflection point for Tesla and our strategy going forward as we bring AI into the real world.

Speaker 2  
1m 15s

I guess 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 gonna get better. And we're really just at the beginning of scaling at a 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 the the it's honestly, it's gonna be like a shockwave. So it's it's because because the cars are all out there. They're you know, we have millions of cars out there that's with a software update become full self driving cars. And and, you know, we're making a couple million a year. And and in fact, with the advent of with what we see now as 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 that is our intent to expand as quickly as we can our future production.

Speaker 2  
2m 51s

So I was I was hesitant to do that until we had clarity on on achieving unsupervised full self driving. But at this point, I I feel like we've got clarity and it it makes sense to expand production as as fast as we reasonably can. We're also making huge make making huge impact on the energy sector with with battery storage. So with both Powerwall and especially with the mega pack, we are dramatically improving the ability to generate more energy from the grid. So let me sort of talk a little bit about that, which is if if you look at total US energy capability, for example, there's roughly a terawatt of 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 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.

Speaker 2  
4m 17s

So we see the potential there for Tesla battery packs to greatly improve the the energy output per year for any given grid, US or otherwise. We're also on the cusp of of something really tremendous with Optimus, which I think is likely to be or has potential to be the biggest product of all time.

Speaker 2  
4m 49s

And it's it's a it's a difficult project. And it's worth noting that it's it's not like it's it's just automatic. I'm unaware of any robot program by Ford or GM or, you know, any by US sort of car companies. People like think maybe think of Tesla as as a car company. We mostly make cars and battery packs. But so it's it's not like it's it's not just like an obvious full of a log thing to make Optimus, but but we do have the ingredients with 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, yeah, with with with version 14 of the of of self driving, which people you can see the reactions of of people online. They're quite amazed. And, actually, anyone in The US 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 in settings and say, I want the advanced software, and you will get version 14. And yeah.

Speaker 2  
6m 20s

So on the MegaPack front, we we we unveiled MegaBlock, MegaPack three. Also have exciting plans for MegaPack four. MegaPack four 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 this greatly improves our ability to deploy Megapack because it's not dependent on building a substation up through 35 k b for Megapack four. So that that'll be that's that's the that's the engineering priority for Megapack. And we look forward to unveiling Optimus v three, you know, probably in q one. I think it'll be ready for to to show off. And that that I think is gonna be quite remarkable. If you you it won't even seem like a robot. It'll seem like a person in a robot suit, which is kinda how we started off with Optimus. But it'll seem so real that you'll need to, like, poke it, I think, to believe that it's actually a robot. And and, obviously, like, the the the real world intelligence we're developed we've developed for the car, most of that transfers to Optimus. So it's a it's a very good starting point.

Speaker 3  
8m 3s

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 we believe with with optimists and self driving that you can actually create a world where there is no poverty, where everyone has access to the finest medical care. Like, Optimus will be an incredible surgeon, for example. And imagine if everyone had access to an incredible surgeon. So so I I think there's you know, of course, we we make sure Optimus is safe and everything, but but I 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.

Speaker 1  
9m 11s

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

Speaker 4  
9m 15s

Thanks, Travis. Q three 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 by the Tesla team. The strength in deliveries was attributed to strong performance across all regions. Greater China and APAC were up sequentially 3329%, 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 q one, followed by Model y long wheelbase and performance, and more recently, Standard y in North America and EMEA. We're now operating a robotaxi in two markets, Austin and most Bay Area cities. We've 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.

Speaker 4  
10m 45s

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 supervise FSD at scale, the demand for our vehicles, like Elon said, would increase significantly. On the FSD adoption front, we 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 or 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 percentage of COGS since currently all sales procured are from China while we're still working on other alternatives.

Speaker 4  
12m 20s

However, as the ramp of mega factory Shanghai is happening, this is helping us avoid tariffs because we are using this factory to supply the non US demand. Like Elon said, you know, 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 impacts for Q3 for both businesses was in excess of \$400,000,000 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, etcetera. Our operating expenses increased sequentially. The largest increase included in restructuring and other related to certain actions undertaken to reduce costs 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 and A. Further, our employee related spend is increasing, in r and 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.

Speaker 4  
14m 11s

On other income, our other income decreased sequentially primarily from mark to market adjustments on BTC Holdings, which was a much smaller gain of \$80,000,000 in Q3 versus \$284,000,000 in Q2, with the rest of the movement attributable to FX movements in the quarter. Our free cash flow for the quarter was approximately \$4,000,000,000 which was yet another record. Our total cash and investments at the end of the quarter were over 41,000,000,000. On the CapEx front, while we are expecting to be around 9,000,000,000 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 the continued belief in us.

- Speaker 1**  
15m 28s
- Thank you very much, Bebhav. 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 FST from being deployed to customer vehicles?
- Speaker 2**  
15m 50s
- I'll start off with that, and then Chuck 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 in at least in parts of Austin. We're 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, you know, it's better for us to take a cautious approach here. But we do expect to have no safe drivers in the car in Austin in 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 eight to 10 metro areas by the end of the year. You know, it depends on various regulatory approvals. And but you can actually think most of our regulatory applications are online. You can kinda see them because they're they're public information. But we expect to be operating in Nevada and Florida and Arizona by the end of the year.
- Speaker 2**  
17m 16s
- Ashok?
- Speaker 5**  
17m 17s
- 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. And then in the Bay Area, where we still have a person in driver's seat, because of the regulations, cross more than a 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 FSC supervise for a total of 6,000,000,000 miles, as of yesterday. So that's, a big milestone. And overall, the safety continues to be very good. And as Ilan mentioned, we are on, on track to remove the person from inside the car altogether, starting with Austin.
- Speaker 1**  
18m 10s
- 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?
- Speaker 6**  
18m 26s
- 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 demand for AI and data center applications as hyperscalers and utilities have seen the versatility of the Megapack product to increase reliability and relieve grid constraints, as Yulam 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 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.
- Speaker 1**  
19m 26s
- 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 gonna have to skip it. The question after that is, what are the present challenges in bringing Optimist 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.

Speaker 2  
19m 57s

Yeah. I mean, bringing office Optimus to market is an incredibly difficult task, to be clear. It's it's not like some walk in the park at at some point. I mean, at this actually, technically, Optimus can walk in the park right now. We and 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. So any visitors that come by, you actually you can you can stop to stop one of the Optimus robots and ask it to take you somewhere, and it'll literally take you to that meeting room or that location in the building. So I don't wanna downplay the difficulty box in this. It's it's an incredibly difficult thing, especially it's difficult to create a a hand that is as dexterous 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 and why you need five, you know, four fingers in the thumb, why the why the fingers have certain degrees of move of of freedom, you know, why why the the various muscles are of different strengths, the fingers are of different lengths.

Speaker 2  
21m 12s

And it turns out actually that that all that that those are all there for a reason. And so making making it a that the hand and and forearm because most of most of the actuator, just like the human hand, the muscles of that control your hand are actually primarily in your forearm. The Optimus hand and forearm is an incredibly difficult engineering challenge. It's I'd say it's more difficult than the rest of from an electromechanical standpoint, the forearm and hand are more is more difficult than the entire rest of the robot. So but really, in in order to have a useful generalized robot, you you do need this you do need an incredible hand. And and then you need the real world AI, and you need to able to scale up that production to have it be relevant because it's not relevant if it's just a few 100 robots. But so you need to be able to make Optimus robots at volumes comparable to vehicles, if not significantly higher. So if you're trying to make a million or something per year, try to make a million Optimus robots per year, that manufacturing challenge is immense considering that the supply chain doesn't exist.

Speaker 2  
22m 35s

So with with cars, you've got an existing supply chain. With computers, you've got an existing supply chain. With with a humanoid robot, there is no supply chain. So in order to 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 this is the kind of thing where I'm like, if I put myself in the position of a startup trying to make an off a humanoid robot, I'm like, I don't know how to do it without an an immense amount of manufacturing technology. So that's that's why I think, like, Tesla's in some almost a unique I think I think unique position when you consider manufacturing technology scaling, real world AI, and the and and a truly dexterous hand. Those are the generally the things that are missing when you read about other robots that that just don't have those three things. So no. I think we can achieve all those things, those those three things with an immense amount of work. And and that that is that is the game plan. So, you know, my my my like, my, you know, 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 ousted at some point in the future?

Speaker 2  
24m 15s

That's my biggest concern. If I that's that that is the that is really the only thing I'm trying to address with with this so it's it's called compensation, but it's not like I'm gonna go expend the money. It's just, you know, 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 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.



Speaker 1  
24m 48s

Great. Thank you. We've already covered robotaxi expansion. Unfortunately, the question after that is another future product question, so we're gonna have to skip that. The next one though is, can you update us on the \$16,500,000,000 Samsung chip deal in Taylor? Given the importance of semiconductors to autonomy in Tesla's AI driven future, what gives you confidence Samsung can fulfill AI6 at Tesla's timelines and achieve relatively better yields and cost versus TSMC?

Speaker 2  
25m 19s

Okay. So I'm gonna I'm gonna give quite a long answer to this question because it's because I have to unpack this question and then 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, it is worth noting, does manufacture our AI four computer and does a great job doing that. So now with the the AI five, and here's I I I need to make a point of clarification relative to some comments I've made publicly before, which is we're actually gonna focus both TSMC and Samsung initially on AI five. So the the AI five chip designed by Tesla is I I think it's an amazing design. I've spent almost every weekend for the last last few months with the chip design team working on AI five. And I I don't hand out praise easily, but I have to say that I think I think the Tensor chip team is is really designing an incredible chip here. This is by some metrics, the AI five chip will be 40 times better than the AI four chip. Not 40%, 40 times. Because we we have a detailed understanding of the entire software and hardware stack.

Speaker 2  
26m 59s

So we're designing the hardware to address all of the pain points in software. So I don't think there's there really isn't anyone that's doing this think the entire stack all the way through real world, know, calibrating against the real world where you've got cars and robots in real world that like, we we know what the chip needs to do, and we know what just as importantly, we know what the chip does doesn't need to do. You know, to sort of give you some examples here. With the AI five, we we deleted the the the legacy GPU or the or the traditional GPU, which is it. It's in AI four. But AI five does not have we just just deleted the the legacy GPU because it basically is a GPU. So we also deleted image signal processor. And this looks like a long list of, actually, of of deletions that are very important. As a result of these deletions, we can actually fit AI five in a half reticle and with with with with good margin for the traces from the memory to the the the trip the the the Tesla trip accelerators, the ARM the ARM CPU cores, and and the PCI x sort of the PCI blocks.

Speaker 2  
28m 40s

So this this is a beautiful chip. I've I've poured so much life energy into this chip personally, and I'm I'm confident this will be this is gonna be a winner next level. So it makes sense to have both Samsung and TSMC focused on AI five. And so even, like, the technically, the Samsung fab has slightly more advanced equipment than the TSMC fab. These will both be made in in The US, but in one TSMC in Arizona, Samsung in Texas. And but but it's it it we're we're gonna make starting off just to be confident of having our goal explicit goal is to have an oversupply of AI five chips. Because if if we if we have too many AI five chips for the cars and and and robots, we we can always put them in the data center. So we already use AI four for for training in our in our data center. So use a combination of AI four and NVIDIA hardware. So we're we're not about to replace NVIDIA, to be clear, but but but we do use both in combination, AI four and NVIDIA hardware. And the AI five excess production, can always put in in our data centers.

- Speaker 2**  
30m 15s
- Yeah. NVIDIA keeps keeps improving. The 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 that makes the design job radically easier and means we we can delete a lot of complexity from the chip. Like, I can't emphasize how important this is. So 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 if you 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 gonna go between each, you know, logic block on the chip, then you you kind of end up having giant highways going all over the place. It's a very it's 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 we we're going for radical simplicity.
- Speaker 2**  
31m 24s
- And the net effect is that I I I think AI five will be the best performance per watt, maybe by a factor of two or three, and the best performance per dollar for AI, maybe by a factor of 10. So, you know, that's you know, we'll we'll have to the 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.
- Speaker 1**  
31m 59s
- 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?
- Speaker 4**  
32m 13s
- Yeah. We've not completely given on upon hardware three. However, over the last year, we've offered the customers the option to transfer FSD to their new vehicle, which which at times we've been running some promotions. If if they got FSD, they can 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 three car, which I use FSD on a daily basis. So we will definitely take care of you guys.
- Speaker 1**  
32m 56s
- Great. Thank you. Addition.
- Speaker 5**  
32m 58s
- 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.
- Speaker 1**  
33m 13s
- 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?
- Speaker 7**  
33m 26s
- Yeah. So I guess I'll start with that in terms of the semi production plan and schedule. So the factory is is going on schedule. We've, you know, 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, you know, 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 to obviously getting autonomous trucks on the road. In terms of trains, you know, they're really great for long point to point deliveries. They're super efficient, but, you know, 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 timeline. And, Ashok, I know you can can take the full self driving part.

- Speaker 5**  
34m 25s
- Currently, the team is, like, 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.
- Speaker 1**  
34m 40s
- 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.
- Speaker 3**  
34m 53s
- Great. Thanks so much. Hi, everybody. So Ilan, 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 3,000,000 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?
- Speaker 2**  
35m 37s
- Well, our capacity isn't quite 3,000,000. But it will be 3,000,000 at some point. Know, aspirationally, you know, it could be 3,000,000 within we could probably hit an annualized rate of 3,000,000 within twenty four months, I think. Maybe less than twenty four months. Bring in mind, like, this like, there's an entire, like, supply chain like, a vast supply chain that's gotta also move in tandem with that. So but we're gonna we're we're we're gonna expand production as fast as as as we can and as fast as our suppliers can can can can sort of keep up with it. And then we're gonna think about where where do we build incremental factories beyond that. Like, the the single biggest expansion in production will be the the cyber cap, which starts production in q two next year. That's 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 mile for, like, fully considered cost per mile of operation. So that's you know, we for for the other for the for our other vehicles, they're still they still have a little bit of the horseless carriage thing going on where, you know, obviously, you've got if you're still if you've got steering wheels and pedals and and and you're designing a car that people might wanna go, you know, very direct fast acceleration and tight cornering, like high performance, you know, cars, then you're gonna design a different car than one that is optimized for a comfortable ride, but doesn't expect to go, you know, past sort of 85 or 90 miles an hour.
- Speaker 2**  
37m 26s
- And it's it's just aiming for a gentle ride the whole time. That's what cyber cap is. So yeah. So 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 here's the killer app, really, what it comes down to is can you text can you text while you're in the car? And if you tell someone, yes. The the car is now so good, you can you can 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. End of end of story. So that's what everybody wants to do. In fact, not everyone wants to. They do do that. And that's why in fact, the reason you've seen, like, there 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's looking down at their phone, they're not driving very well. So that's that's really the the game changer. And, you know, we we we do see like, at this point, feel, you know, essentially 100% confident.



Speaker 2  
38m 50s

I say not essentially. 100% confident that we can set we we that we can solve unsupervised full stripe 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 semi for reinforcement learning is is pretty incredible. Like, our like, our when you see it, the the Tesla reality simulator, it's you can't tell it from a screen. The video that's generated by the Tesla reality simulator and the the actual video looks exactly the same. So that that that allows us to have a very powerful reinforcement learning loop to further improve the the Tesla AI. We're we're we're gonna be increasing the parameter count by an order of magnitude. That that's not in 14.1. There are also a number of other improvements to the AI just that that are that are quite radical. So it's a this this car will feel like it is a living creature. That's how good the the AI will get with the AI four computer with this before AI five. And then and then AI five, like I said, is, by some metrics, forty forty times better.

Speaker 2  
40m 19s

Which, let's say safely, it's a 10 x improvement. So it 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 of, like, well, if we got all these cars that maybe are bored, well, while they're while they're sort of if they are bored, we we could actually have a giant distributed influence fleet and say, like, well, if they're not actively driving, let's just have a giant distributed influence fleet. You know, at some point, if if you've got, like, tens of millions of cars in the fleet or maybe at some point, a 100,000,000 cars in the fleet, And let's say they had, at at that point, you know, like, I don't know, a kilowatt of inference capability of, you know, high performance inference capability. That's a 100 gigawatts of inference distributed with with power and cooling taking with with with cooling and and power conversion taken care of. So that seems like a pretty significant asset.

Speaker 1  
41m 37s

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. The next question will then come from Dan, from Barclays.

Speaker 8  
42m 10s

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

Speaker 2  
42m 50s

Actually, I'm not sure what you mean by AI applications outside of Tesla's core competency. But and we we kind of we didn't have any of these core competencies when we started. You know? So it's like we had zero core competencies. Total competency of zero, actually. So, I mean, you can think of Tesla as, like, I don't know, a dozen startups in one company. You know? And and I've initiated every one of those startups. So it's they wouldn't use to make battery packs, stationary battery packs, but now we do. We make them for the home, make them for, you know, utility scale with Powerwall Megapack. We've created the Supercharger Network globally. No one no one else has created a global supercharger network. In fact, that North American supercharger network is so good at that that basically that yeah. Every other manufacturer in North America has converted to our standard and uses our the 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 gonna start this thing.

Speaker 2  
44m 11s

I post it on Twitter now x, and then, you know, join us if you'd like to build it. In fact, Ashok was, I believe, the first person I interviewed for the the Tesla autopilot team, which we now call Tesla AI software team, which because it is the AI software team. So, you know, it's core companies competencies created while you wait. And, you know, optimist at scale, it is the infinite money glitch. It's like this is a it's difficult to express the magnitude of like, if you've got something that, like, that that like, if if Optimus, I think, could probably achieve five x the productivity of a person per year because it can operate twenty four seven. It doesn't even need to charge. It can operate it tethered. So it's it's plugged in the whole time. And what so it it that's that's why I call it, like, if if you're true of sustainable abundance, where working will be optional. You know, there there's there's limit to how much 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 called the infinite money glitch.

Speaker 4  
45m 43s

I mean, one thing which I'll further add is, I mean, people forget, like, our first iteration of autopilot was ten years back. So, you know, Elon had started this way back in the day.

Speaker 2  
45m 55s

We've got the twist to prove it.

Speaker 4  
45m 56s

Exactly. And then even even on the optimist side, right, as much as people think, okay. This is a new thing. I still remember, was it four 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 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, you know, when we talk about manufacturing progress, we have the wherewithal because the same engineers who worked in the back in the day on drive units are working on actuators now. So that's where we can do if there's any company which can do it at scale, that is gonna be us.

Speaker 2  
46m 39s

But we 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 is actually also new new engineers. Many of them that are just out of college, actually.

Speaker 4  
46m 52s

Yep.

Speaker 2  
46m 54s

So the Optimus engineering team is a very talented engineering team. I'd say, like, wow, actually. So and, you know, the optimist reviews at this point are that there's the the engineering review, and then there's the manufacturing review being done in simultaneously with an iterative loop between engineering design and and manufacturing. Because then we see we we we we design something and we say, 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 two is almost impossible to manufacture, frankly. But to buy both point, we've gone from, you know, a person in a robot outfit to what what people have seen with Optimus 2.5 where it's doing kung fu. You know, it was like Optimus was at the at the Tron premiere doing kung fu, you know, just up in the open, you know, like, with Jared Leto. Like, there wasn't nobody was controlling it. It was just doing kung fu with Jared Leto, you know, at the Tron premiere. You can see the videos online.

- Speaker 2**  
48m 25s
- And, actually, the the funny thing is, like, a lot of people walked past it thinking it was just a person. Even though you with Optimus 2.5, you can see that it has, you know, a waist that's three inches wide. It results in not a human. So but 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 three will be a giant improvement on that and made at scale. But, like I said, a a very difficult thing. You know, the the the Optimus sort of injuring and man manufacturing reviews, and there's the the Friday night meeting with Optimus, which sometimes goes till midnight. And then my Saturday meeting is is with the is is the Saturday afternoon is with the the AI five chip design team. So those two things are crucial to the future of the company.
- Speaker 1**  
49m 36s
- Great. And Dan, did you have a follow-up?
- Speaker 8**  
49m 37s
- Yeah. I mean, 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 could just help distinguish for the audience. Thank you.
- Speaker 2**  
49m 53s
- Yeah. There there are different forms of AI. So the, you know, the the the XAI so Grok is like a a giant model that that you could not you could not possibly squeeze Grok onto a car. That's for sure. It is a giant piece of a model. It's with with Grok, it's trying to say solve for artificial general intelligence with a massive amount of AI training compute and and inference compute. So for example, for for Grok five will actually only run effectively on a GV 300. That's that's how much of a beast that Grok five is. So you know, whereas Tesla's, you know, models are, I don't know, maybe about less than 10% the size, maybe closer to 5% the size of of of Grok. So, yeah, they're they're they're they're really coming at the problem from very different angles. XAN and Grok are are you know, they're competing with you know, Google Gemini and OpenAI, ChatGPT, and that kind of thing. So and and so some of it's complementary. I mean, for example, for Grok Voice, being able to interact with Grok in the car is cool. Grok for for, you know, Optimus voice recognition and audio voice generation is Grok.
- Speaker 2**  
51m 33s
- So that's that's helpful there. But they are coming at it from kind of opposite ends of the spectrum.
- Speaker 1**  
51m 41s
- Alrighty. Adam, let's give it another try. When you're ready, please unmute yourself for the next question. Alrighty. Unfortunately, still having audio issues. So we're gonna move on to Walt from LightShed. Walt, please go ahead and unmute yourself.
- Speaker 9**  
52m 10s
- Can you hear me now?
- Speaker 1**  
52m 12s
- Yes.
- Speaker 9**  
52m 12s
- Perfect. Thank you. Just getting back to Austin. If 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 eight to 10 markets that you mentioned to get added, is the decision there to put, you know, 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?

Speaker 2  
52m 46s

Well, it's I think I think even if the regulators weren't making us do it, we'd still do that as the 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 a sort of sort of a either safety driver or safety occupant in the car when we first go to new markets to just to confirm that there's not something we're missing. Because all it takes is, like, one in ten thousand trips to go wrong, and and you've got you've got an issue. So it's it just makes sure, like, is there some peculiarity about a city, like, a very difficult intersection or, I don't know, something that's that's an unexpected challenge in in a city for that one in ten thousand situation. So and I think we we probably could just let it loose in the in this in these cities, but we just don't wanna we don't wanna take a chance. And and and, like, you know, what we're talking about here is, you know, maybe three months of safety driver in in a new metro to confirm that it's good, and then we take the safety driver off that that kind of thing.

Speaker 9  
54m 0s

Okay. And then on 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 in Austin. Are you is it basically deaf different development pass pass that you're doing in terms of the robotaxi stuff versus what you're dropping to the early adopters? And when you and when you push these new builds, is it that you're 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 or just the overall comfort?

Speaker 2  
54m 33s

Now the the first priority when we release a major new software architecture for Autopilot is safety. So so it's it starts off with safety obviously, safety prioritized, and then we've and then we solve comfort thereafter, which is why I don't recommend people take the the initial version. Like like that's why I say, like, yeah, most people should wait until 04:14.2 for before they actually download version 14. Because by fourteen point two, we will have addressed many of the comfort issues. The priority is is very much safety first, and then thereafter, the the comfort issues. That's why most people are like, probably, it'll be a little, like, it'll be safe but jerky. And it we just need time to kinda smooth the rough edges and solve for comfort in addition to safety with a with a major news autopilot architecture change. But it it really is I mean, I I I know what the, you know, the road map is for the Tesla real world AI and and a very granular detail. Obviously, Ashok is leading that. And I and I, I mean, I spent a lot of time with the team going, you know, in in, like, excruciating detail here on on what what what we're doing to improve the real world AI.

Speaker 2  
56m 5s

And, like I said, this this car is gonna feel like it is a living creature, and that's with AI four before even AI five.

Speaker 5  
56m 13s

Yeah. The road map is super exhilarating. Like, it's like so, we're we're waiting so much, like, at least all the stuff we are working on. In terms of, like, you know, what we ship to customers versus robotaxi, it's more more mostly the same. Obviously, 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, like, few minor changes like those ones. But majority of the algorithms and architecture, everything is the same, between those two platforms.

Speaker 2  
56m 43s

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

Speaker 5  
56m 53s

Yeah. See, four. By end of this year, for sure.

- Speaker 2**  
56m 56s
- Yeah. So with reasoning, it's literally gonna think about which parking spot to pick at the so it's gonna say, this is the entrance, but actually, probably, there's not a parking spot right at the entrance if it's a a full you know, if the if the parking lot is fairly full, the probability of a 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. But it's it's gonna get very smart about figuring out a parking spot. It's gonna spot figure out it's gonna spot empty spots much better than human. It's got 360 degree vision, and it's gonna yeah. Yeah. Like I said, just it's it's gonna re use reasoning to solve things.
- Speaker 5**  
57m 42s
- Yep. And putting that all inside the computer that has the a four is the actual challenge. That's what the team is working on. Because, obviously, you can do reasoning on the server that takes forever. But then in car, you need to make real time decisions. So putting on the computer that's in the car, that's the challenge.
- Speaker 2**  
57m 58s
- Yeah. That's why I say, like like, I know I have a pretty good understanding of, like, AI, you know, the the sort of the the giant model level with Grok and with with Tesla. And, like, I'm confident in saying that Tesla has the the Tesla AI has the highest intelligence density. When you look at the the intelligence per gigabyte, I think, like, Tesla AI is probably an order of magnitude better than anyone else. And this is it doesn't have any choice because that that AI has got to fit in the AI four computer. The but the 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 order of magnitude more capability like AI five. Now you have that same intelligence density, but but you've got 10 times more capability in the computer.
- Speaker 1**  
58m 50s
- Great. The next question will come from Colin at Oppenheimer. Colin, please unmute yourself when you're ready. Colin, go ahead and unmute yourself, please.
- Speaker 8**  
59m 5s
- Thanks so much, guys. You know, I appreciate you bringing up the the challenges of hand dexterity in humanoids, you know, along with the complexity of the supply chain and the the vertical integration you guys are pursuing. You know, I'm just trying to harmonize the the time line for the start of production, you know, next year with the current state of the supply chain. And what sounds like a fair amount of work remain on the dexterity before you can really freeze the hardware design and and start to scale up production.
- Speaker 2**  
59m 35s
- Well, we're not the the hardware design will not actually be frozen even through start of production. There'll 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 of of for the Optimus design even after start of production. But I do think that the the, you know, the new hand is an an incredible piece of engineering. And, you know, that's you know, we'll actually we'll have a production intent prototype ready to show off in, you know, q one, probably February or March. And then we're, yeah, we're we're we're gonna be building a, you know, million unit Optimus production line, you know, hopefully with the production start towards the end of next year. But that that production ramp will take a while to get to an annualized rate of a million because it's gonna move as fast as the the slowest, dumbest, least lucky thing out of 10,000 unique items. But it but it will it will get to a a million units. And then, ultimately, you know, we'll do Optimus four. That'll be, you know, 10,000,000 units.
- Speaker 2**  
1h 1m
- Optimus five, maybe 50 to a 100,000,000 units. I mean, it's really pretty nutty. Yeah.
- Speaker 1**  
1h 1m
- Alrighty. That is, unfortunately, all the time we have for q and a today. Before we conclude, though, Vedbav has some closing remarks.



Speaker 4  
1h 1m

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 two 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 a special committee has laid out a compensation package. Like Elon said, don't we don't even want to call it a compensation package.

Speaker 2  
1h 2m

Yeah. It's it's not the point is that I I just like there needs to be enough voting control to give a strong influence, but not not so much that I can't be fired if I go insane. But, you know, and I I think that sort of number is in the mid twenties approximately. As a company that has already gone public, there's no that we've we've investigated every possible way to how do you achieve increased voting control without, you know is is there some way to have, like, a supervoting stock? But there there really isn't there is no way to have a supervoting stock after you've gone public. But, for example, Google, Meta, you know, many other companies have this. But they 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, you know, being ousted because of some asinine recommendations from ISS and Glass Lewis who have no freaking clue. I mean, those guys are corporate terrorists. And and the problem yeah. So let me, like, explain, like, the core problem here is that so many of the index funds, the passive funds, vote along the lines of what whatever Glass Lewis and ISS recommend.

Speaker 2  
1h 3m

Now they've 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 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 that's the big issue. I mean, that's what it comes down to. ISS, Glasgow, is corporate terrorism.

Speaker 4  
1h 4m

Yeah. And I would say, you know, the special committee did an amazing job in constructing this plan for the benefit of the shareholders. There's no nothing which gets passed on till the time shareholders make substantial returns. So that's why, you know, in the end, I would say I would urge you to not only vote on the plant, but also work on all the three directors because of their exceptional knowledge and experience. And literally, you know, 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 colleague hasn't spoken to. And we're the even the directors out here are not just reading out of, you know, PowerPoint presentations. They're actually working with us day in, day out. So, again, I just urge you guys as shareholders to work along the board's recommendation. Thank you, guys.

Speaker 1  
1h 5m

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