

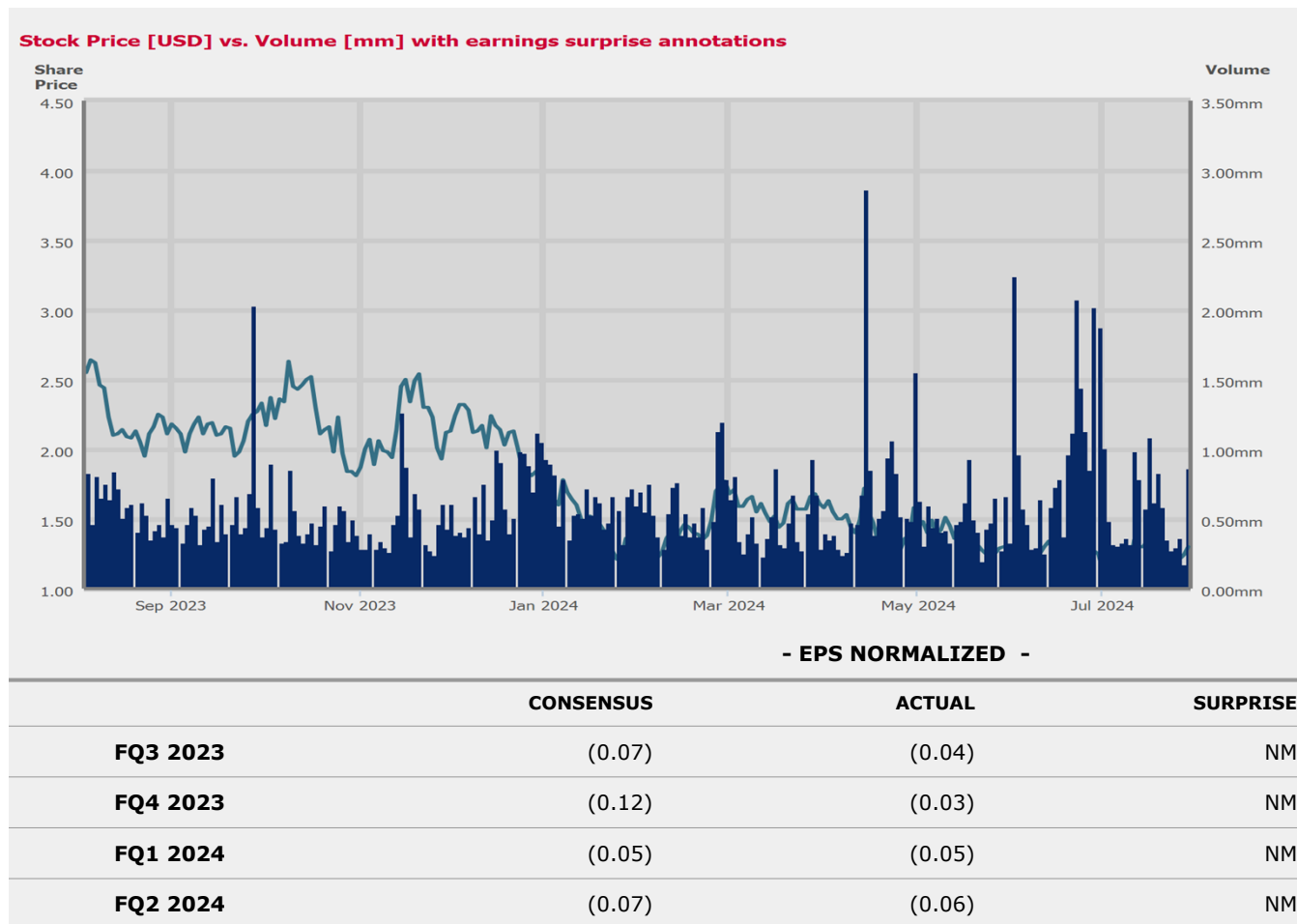
# SES AI Corporation NYSE:SES

## FQ2 2024 Earnings Call Transcripts

**Monday, July 29, 2024 9:00 PM GMT**  
S&P Global Market Intelligence Estimates

|                       | -FQ2 2024- |        |          | -FQ3 2024- | -FY 2024- | -FY 2025- |
|-----------------------|------------|--------|----------|------------|-----------|-----------|
|                       | CONSENSUS  | ACTUAL | SURPRISE | CONSENSUS  | CONSENSUS | CONSENSUS |
| <b>EPS Normalized</b> | (0.07)     | (0.06) | NM       | (0.08)     | (0.30)    | (0.33)    |
| <b>Revenue (mm)</b>   | -          | -      | -        | -          | -         | 135.00    |

Currency: USD  
Consensus as of May-10-2024 1:14 PM GMT



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# Call Participants

## EXECUTIVES

**Jing Liu Nealis**  
*Chief Financial Officer*

**Kyle Pilkington**  
*Chief Legal Officer*

**Qichao Hu**  
*Founder, Chairman & CEO*

## ANALYSTS

**Mark Haywood Shooter**  
*William Blair & Company L.L.C.,  
Research Division*

**Shawn Michael Severson**  
*Water Tower Research LLC*

# Presentation

## Operator

Good afternoon. Thank you for attending today's SES AI Second Quarter 2024 Business and Financial Results. My name is Cole, and I'll be the moderator for today's call. [Operator Instructions] I'd now like to pass it over to Kyle Pilkington. Please go ahead.

## **Kyle Pilkington** *Chief Legal Officer*

Hello, everyone, and welcome to our conference call covering our second quarter 2024 results. Joining me today are Qichao Hu, Founder, Chairman and Chief Executive Officer; and Jing Nealis, Chief Financial Officer.

We issued our shareholder letter after market close today, which provides a business update as well as our financial results. You'll find a press release with a link to our shareholder letter in today's conference call webcast in the Investor Relations section of our website at ses.ai.

Before we get started, this is a reminder that the discussion today may contain forward-looking information or forward-looking statements within the meaning of applicable securities legislation. These statements are based on our predictions and expectations as of today. Such statements involve certain risks, assumptions and uncertainties, which may cause our actual or future results and performance to be materially different from those expressed or implied in these statements.

The risks and uncertainties that could cause our results to differ materially from our current expectations include, but are not limited to, those detailed in our latest earnings release and in our SEC filings. This afternoon, we will review our business as well as results for the quarter. With that, I'll pass it over to Qichao.

## **Qichao Hu** *Founder, Chairman & CEO*

Good afternoon, and thank you for joining us on our second quarter earnings call. I want to talk about the seismic shift across any industry by generative AI and large language models, LLMs. AI represents a pivotal development of this decade. This transformative technology is set to disrupt industries from those seeking the next innovation S-curve to those grappling with shrinking margins.

The fact is today's EV battery market is completely different from that of 3 years ago or even just 1 year ago. The incumbent battery players now dominate the global market. The next-generation battery companies must deliver something completely different and light years ahead to become relevant.

We cannot compete on their terms. Previously, we announced that we are entering the air mobility market, including urban air mobility or UAM and drones in addition to our existing EV work. For next-gen batteries to compete with incumbent batteries, we must overcome 3 hurdles at commercial scale: quality, safety, and future & material development. The traditional human-based approach simply takes too long. That's why the introduction of next-gen battery technologies has always been very slow. We are the world's leader in lithium metal.

We were the world's first to enter automotive A-sample and B-sample joint development agreements with global automakers. We have developed very exciting capabilities in materials and manufacturing. We have strategically integrated AI into our operations, encompassing design, technology development, manufacturing and aftermarket support.

Since embarking on embedding AI into lithium metal, we have realized that the value of AI materializes when it fundamentally reshapes the business model by adopting a thematic approach with platform-building mindset, we aim to generate both internal and external value. We've worked diligently to achieve this and are excited to share the preliminary outcomes of our initiatives.

Today, we're introducing a paradigm shift. Our AI solutions will accelerate the commercialization of all next-gen better technologies. Lithium metal represents the forefront of this new approach, but our AI will ultimately be agnostic to any battery technology.

Let's start with the EV sector. Last quarter, we announced our B-sample joint development partnership with Hyundai to build a line within their electrification center in Ui-Wang, South Korea. I'm glad to share that we are on track to hit our target of completion of the line in the fourth quarter of this year. This will yield one of the largest capacity lithium metal lines globally and will manufacture 50 amp hour to 100 amp hour large automotive lithium metal B-sample cells.

We continue to work with our automotive OEMs with a goal to reach EV C-sample in 2025 and start of production SOP in 2026. For UAM and drones, we continue to see strong demand. For UAM, we are converting our previous EV A-sample lines in South Korea and Shanghai to UAM lines. We expect the Korea UAM line to complete field acceptance test, FAT, in August; site acceptance test, SAT, in September and start producing cells in September.

We expect the Shanghai UAM line to complete both FAT and SAT in September and start producing cells in October. Both UAM lines will make 20 amp hour to 30 amp hour medium lithium metal cells and modules. We're making great progress testing these lithium-metal modules based on the rigorous safety test for aviation certification. We have already entered a few cell testing agreements with leading UAM OEMs and expect to enter a few more later this year.

For drones, we are seeing growing demand from both industrial and defense customers, especially for small swarm drones. The drone market was estimated to be \$28 billion in 2023, according to SkyQuest, about 1.8x the \$16 billion estimated market size for AR/VR goggles in 2023, according to Concentric Intelligence. We have already converted our small cell lines to make 4 amp hour to 6 amp hour, small lithium metal cells and modules.

Now let's talk about our AI solutions. We have 3: AI for Manufacturing, AI for Safety and AI for Science. First, AI for Manufacturing. The traditional approach to optimizing cell design and process and improving manufacturing quality is through human experience where the human engineers define and optimize quality specifications typically takes at least 8 years.

Battery manufacturing is often more of an art than a science, especially between the good ones and the very best. While this human-based approach has worked well in the past and works today for mature lithium-ion cell technologies, it slows down large-scale commercialization of next-gen battery technologies. We believe AI for Manufacturing can accelerate this time line by 10x. It uses machine learning to define and fine-tune quality specifications based on manufacturing process data collected, which is much faster and more accurate than human engineers.

Our EV B-sample, UAM and drone lines produce an enormous amount of data, the largest manufacturing data of lithium metal cells anywhere in the world. We produce more than 1,000 cells per line per month and growing. There are more than 1,000 quality checkpoints per cell and growing, including both time series data and images such as CT, x-ray, ultrasound and vision. There are thousands of process steps with complex individual and group relationships.

Our AI for Manufacturing model has already been pretrained on more than 15,000 liter metal cells. We're very excited to announce the installation of AI for manufacturing on all of our working lithium metal from EV B-sample, to UAM, to small drones. We expect it will provide very detailed and accurate individual step quality analysis and group of steps relationship analysis. This will further accelerate the optimization of manufacturing quality, preparing us for EV C-sample and larger-scale UAM and drone manufacturing.

In addition to in-house AI for Manufacturing development, we also partner with big tech companies and plan to incorporate the latest AI for Manufacturing approach from the semiconductor industry. We continue to work with our automotive OEMs with a goal to reach EV C-sample in 2025 and SOP in 2026. This AI for Manufacturing capability allows us to bring enormous value to our auto OEM and large battery manufacturing partners.

Second, AI for Safety. Traditional vehicle battery health monitoring and safety prediction are based on a set of boundary conditions determined by humans, physics-based models. These would include, for example, state of health, SOH; state of charge, SOC; capacity; voltage; temperature; current; time, to name a few.

While the boundary conditions are well understood by humans, they are not enough to actually predict battery remaining useful life and incidents. AI is far more accurate and powerful at detecting anomalies than even the best human engineers. In AI for Safety, rather than relying solely on human-developed boundary conditions, we have pretrained our LLM with a cell cycling data of more than 15,000 lithium metal cells under various mission profiles, including more than 100 actual flight hours of drones using our lithium metal modules.

Interestingly, the LLM identifies features that can detect anomalies and send early warning signals far more accurately. These AI developed features work remarkably, and we are working on improving the expandability of these models. With more vehicle battery data training, we believe that AI for Safety can help guarantee near 100% safety in the field, addressing the core issue of lithium metal and all next-gen batteries with higher energy densities, which is safety.

In working with our OEM partners, our AI for Safety model has been able to predict 100% of more than 40 incidents. Our model predicted the incidents 10 to 30 cycles earlier than they occurred and sent warning signals. We also continue the cycle test until the actual incidents to verify the prediction accuracy. In comparison, our human-based models were only able to predict around 80% of the incident.

Third, AI for Science. Human research and development on battery materials has been the single slowest step in commercialization of next-gen battery technologies. For example, the entire global lithium-ion industry spent 30 years studying less than 1,000 unique molecules. When there are 100 billion, that's 10 to the 11th unique molecules that could be studied and should be studied.

On average, it takes human scientists 10 years to introduce a new battery material. We believe AI for Science can do that in 1 year. Unlike AI for Manufacturing and Safety that collect actual data from the lines and vehicles. AI for Science requires an enormous molecular property database that currently does not exist.

Synthesizing this property database requires massive computing power. Recently, we started a new initiative called Molecular Universe, whose goal is to crowdsource subsidized and free computing resource to map the properties of small molecules. Several universities, national labs and big tech companies have participated in this initiative, and we have already mapped about 10 to the 6th molecules.

With more GPUs, we expect to map a large enough Molecular Universe that our AI model training will reach sufficient accuracy. Once we have this map, we can accelerate material discovery for any battery problem. This includes not just lithium metal for EV UAM and drones, but also lithium-ion batteries for consumer electronics, power tools, automotive and other applications. Most of these molecules are completely new and not commercially available. That's why we built the Electrolyte foundry, which has been operational since April this year. This Electrolyte employs some of the best organic synthesis chemists in the world, now we have complete ability from molecular mapping to generative AI models for new molecules to molecular synthesis and purification to high-throughput electrolyte formulation screening and to small and large cell testing.

No one in the battery industry has such a complete capability. So how do we monetize all this? These 3 AI solutions represent what we expect to be exciting and sooner-than-expected revenue streams as well as the future of electric transportation.

In AI for Manufacturing and Safety, to truly ensure near 100% safety in the field, manufacturing quality and vehicle safety data must be integrated. Here's where SES AI comes in, our lithium metal cells for EV, UAM and drones will be the first time that manufacturing and safety data are integrated to ensure near 100% safety.

We're also working with some of our peers in both next-gen lithium-ion and lithium-metal batteries to consolidate manufacturing and safety data for our model training. The larger and more diverse data, the

more accurate the models become. We expect the pricing to be structured as a premium valued for the entire warranty period. The value proposition for these OEMs is that incident prediction can prevent costly recalls and more accurate remaining useful life prediction can help extend battery lifetime.

In AI for Science, SES AI has the strongest battery electrolyte development capability. Many battery companies and OEMs do not have the resource to develop good electrolyte materials. We can in-source intelligence and help them solve their challenges. We will start by seeking to beat the lithium metal Electrolyte Coulombic Efficiency record set by human scientists. We will then expand to lithium-ion applications such as low temperature performance and fast charge non-volatility and expand from automotive to consumer electronics to grid storage and many other applications.

This type of in-source intelligence for the AI for Science business model can find an analogy in the pharmaceutical industries that enjoy much higher profit margins. The pricing structure may be based on a development fee and recurring licensing royalty. We have been applying this to lithium metal material discovery and expect to apply to lithium-ion material discovery.

So we're going All-in on AI. AI is changing everything. Our AI for Manufacturing, AI for Safety and AI for Science models are accelerating the commercialization, time to revenue and profitability of lithium metal for EV, UAM and drones. But they can also be applying to the broader lithium ion applications.

Having navigated numerous industry cycles, I'm particularly proud of developing a technology from the ground up that many deemed impossible. Our collaboration with a diverse portfolio of world-class customers further validates our efforts. However, I've never been more excited about our business than I am now with the integration of AI into every aspect of our operations. I firmly believe this will enable us to drive transformative change on a global scale.

I am truly fortunate to be living in this exciting period in transportation, science and AI. In addition to the vision we have outlined for our 3 AI solutions, our top priorities for the year remain focusing on capital efficiency, attracting top talent, continuing to make progress on delivering lithium metal cells to our EV UAM and drone partners and leading the AI transformation of the battery industry.

Thank you for your continued interest in SES AI. And now I'd like to turn it over to Jing for financials.

**Jing Liu Nealis**

*Chief Financial Officer*

Thank you, Qichao. Today, I will cover our second quarter 2024 financial results and discuss our operating and capital budgets for the full year 2024. In the second quarter, our GAAP operating expenses were \$24.6 million.

Cash used in operations was \$22.1 million, and capital expenditures were \$3.7 million. We ended the second quarter with \$294.7 million in liquidity. As we continue to be very prudent with our cash and management of expenditures, we updated our full year 2024 guidance.

We now expect total cash usage to be in the range of \$100 million to \$120 million, down from \$110 million to \$130 million previously. This range is comprised of cash usage from operations of \$85 million to \$95 million compared with \$90 million to \$100 million previously.

And capital expenditures in the range of \$15 million to \$25 million compared with \$20 million to \$30 million previously. We expect our strong balance sheet to provide liquidity for the company well into 2027.

Going forward in C-sample and beyond, we expect to share capacity buildup capital expenditures with our OEM partners, UAM drones and our AI solutions could provide potential upside to earlier commercialization.

With that, I'll hand the call back to the operator to open up for questions.

# Question and Answer

## Operator

[Operator Instructions] Our first question is from Jed Dorsheime with William Blair.

## Mark Haywood Shooter

*William Blair & Company L.L.C., Research Division*

You have Mark Shooter on for Jed. Qichao, I'd like to hear what incremental data you've seen on AI to really push for this All-in approach. I know you've been working on these AI applications in the background for some time. But what was so incrementally positive here to really push this strategy shift.

## Qichao Hu

*Founder, Chairman & CEO*

So really, in all 3 areas, we started working on these 3 AIs. AI for Safety really back in 2017 and then AI for Manufacturing really towards the end of A-sample, beginning of B-sample. So towards the end of A-sample and now as we begin B-sample with more data, and then in manufacturing, we found once we hit about 1,000 quality checkpoints per cell and you get about 1,000 cells per month per line is actually really helpful.

And then because when we make a new cell design, the human engineers don't -- so you start with the new cell design, basically, you have no experience. You have no idea what quality specs to use. So the traditional process really is just too slow. And then we started applying AI models, and then first, we collect all this data. And then the model would actually recommend very interesting quality specs, and we started seeing this, I would say, towards the end of last year and the beginning of this year.

So instead of human engineers trying lots of experiments and then figuring out, okay, the optimal electric amount is 2 grams per amp hour or what the optimal GAP between capital anode is 1.5 millimeters. Actually, this AI model is actually going to rank all the quality issues for you and then tell you so this one, for example, the pressure during hot press on the jelly role has a bigger impact than your sealing temperature. And then actually, it's going to tell you the relationships between all these steps.

So that was like shocking, but in a really powerful way. So instead of the traditional way of improving manufacturing quality, this model was just like out of the world, powerful. And it still doesn't replace quality engineers. We still have good quality engineers from the big lithium-ion industries, but it's a really helpful tool to supplement -- sorry, complement the human engineers.

And on the safety side, so we started training a large language model with all the cycling data charge and discharge. And then actually, if you look at the charge and discharge curve, it's actually very much like a sentence. So you train a large language model. And then -- we have several examples where -- and this is also another case where now we are in B-sample. And also we're testing against mission profiles for UAM and in drones. And then the traditional, the OEMs would have 9, sometimes more than a dozen physics-based models like SOC, SOH and then set those as boundary conditions, if any of those get triggered, then you have an alarm.

But it takes a long time to develop that. That set of physics-based models that only works for mature chemistries. Again, [ let's head to ] manufacturing, when you introduce a new cell chemistry, like none of the existing process -- I mean the existing process is just [indiscernible], but none of the existing set of metrics works the manufacturing quality specs don't work, the physics-based models, those boundary conditions don't work.

So if you continue to use the traditional process, it will take too long. So then this large language model, actually, we had an example where the cell actually had an incident on cycle like 170-something. And then none of the other physic-based models was able to predict anything before that. But it's one AI model, this one large language model that actually found this feature, which we cannot explain today, that actually sent a warning on cycle 144, about 30 cycles before. So that's really powerful.

And then -- so both quality manufacturing and then safety side, when you introduce a new cell design, your experience doesn't work anymore. Your existing set of metrics don't work anymore. So AI model will help you develop that much faster. And then in AI for Science, so we actually hired -- we actually expanded our electrolyte team, both AI team and human scientist team. And then just since end of last year, our AI model was actually able to find 17 new molecules, and then we actually standardize 3 of them and we're testing.

And the performance so far are just as good as the molecules that the human scientists came out with in the past 10 years since 2012. And then this only after heavy math 10 to the 6th, right? If we math 10 to the 8th, 10 to the 11th, we're pretty confident that we can find something that works better. So I think these 3 signals that we found towards the end of last year and beginning of this year, just made us convinced, okay, if you want to introduce a new battery chemistry and then we're doing that at scale, B-sample, C-sample, why spend 8 years? Why spend 10 years just improving the quality, improving the safety when you can use the AI do things much faster.

**Mark Haywood Shooter**

*William Blair & Company L.L.C., Research Division*

Well, that's great. I appreciate all the color there, Qichao. It sound -- we hear a lot of time that AI is making software engineers 10x engineers. But it sounds like you're applying AI to make your material scientists and your quality control engineers, 10x engineers. So that's great to hear.

I'm particularly interested in what comes out of AI for Science in the electrolyte space because that is such a vast mapping that needs to occur. I agree with you there. One follow-up about the OEM partners. I was thinking of -- sorry, how are the OEM partners, specifically the EV OEM partners? How are they looking at this AI for Manufacturing and the Science -- I'm sorry, not to Science, Safety, are they looking at it as an attractive bonus that they currently don't have for traditional lithium-ion? Or are they looking at it as a necessary proof point to convince some of the safety of a new chemistry that they're not comfortable with.

**Qichao Hu**

*Founder, Chairman & CEO*

Yes. So it's 2 things. One is it's a necessary approach to convince them of a new battery chemistry at commercial scale. We're not on doing R&D anymore, not A-sample. We're talking about B-sample and C-sample, we're seriously talking about putting tens of thousands of cars with lithium metal batteries in the field with all kinds of users for EVs and UAM.

So at this point, we need a lot of data, a lot of real-world experience and also AI model to really guarantee safety because now we're talking about not safety in the lab but safety in the field. So one thing is necessity. Second is a lot of these automakers want to make their own batteries. And so far, they are -- so far, the power is in the hands of the large battery manufacturers, the CATLs, the LGs of the world. So for the automakers to control their own destiny, they really need to quickly control battery and then having access and having control to battery manufacturing data and battery performance data in the vehicle is very powerful.

It allows the automakers to quickly get up to speed and then get to the same level of proficiency in terms of manufacturing quality and safety compared to the large battery manufacturers. So these 2 are really important for the OEMs. And then it's both for lithium metal, but also for any next-gen lithium-ion.

**Operator**

[Operator Instructions] Our next question is from Shawn Severson with Water Tower Research.

**Shawn Michael Severson**

*Water Tower Research LLC*

Qichao, I just wanted to go back to the monetization of the AI. I mean I think it's clear in the pathway for -- you've simply been able to make a better lithium metal battery, right, with the information you have. And what I'm trying to understand is how does that model expand to the lithium-ion industry, the OEMs,

what you were talking about as far as uses and applications for AI? How does this get monetized outside of your own manufacturing.

**Qichao Hu**

*Founder, Chairman & CEO*

Yes. So once we get the AI, then it becomes very chemistry-agnostic. And then actually in AI for Manufacturing and AI for Safety, we do train our models with both lithium metal data, more than 15,000 lithium metal cells in-house as well as lithium ion data that we get from our OEM partners, we get from other sources and the more diverse, the larger the data size that you train this model, the smarter the model becomes.

So the AI for Manufacturing, we could also apply this, for example, a company who wants to commercialize next-gen silicon lithium-ion battery. And then it also happens to be pallet stack cells. We can apply this model to that manufacturing line because they are also new to the cell design that cell manufacturing process, and they also don't know what quality specs to apply because it's new, so we can apply this to that.

And also, if an OEM wants to put a silicon anode lithium-ion cell or any less proven lithium-ion cell in the vehicle and then also to monitor the health and then predict the remaining useful life and the incident, then this large language model train on the data can also be used for that.

**Shawn Michael Severson**

*Water Tower Research LLC*

So they would, in effect, kind of license this from you or license the solution for you, they pay you for the AI.

**Qichao Hu**

*Founder, Chairman & CEO*

Yes. Yes. So for example, in the first part -- the first phase of engagement basically it'll be free, they provide us data and then to fine-tune our model. And once our model is fine-tuned, then we license that model to them. And then so for AI for Safety, it could be a premium per vehicle per month over the day or 10-year warranty period. And for the AI for Manufacturing, it could be also a fee per line per year.

**Shawn Michael Severson**

*Water Tower Research LLC*

Do you expect to own the IP that comes from this, particularly in the for science. I mean you come up with a new combination or a new chemistry, these things that then you will own and you will patent and license those things? Or are they going to be specifically used by the OEM for the solution and they would own it?

**Qichao Hu**

*Founder, Chairman & CEO*

Yes. So the models we definitely own. And then in some cases, we might open source the models, so the models can be trained faster. But especially in the AI for Science case, when we actually -- so the Molecular Universe, the molecule property database that we plan to make open source. And then the model -- part of the model will also be open source so that others can develop it and then this model can become smarter.

But then once we use that model and then generate a new molecule that has, for example, higher coulombic efficiency on lithium metal or can improve low-temperature fast charge of silicon lithium ion. Then those molecules, the output, of course, will be our proprietary IP that we're going to license.

**Shawn Michael Severson**

*Water Tower Research LLC*

My last question is will the AI be proactive and reactive. And by that, what I mean is let's say, there is a problem that is happening, right? Something that is occurring. Can you then take that data and solve for -- I understand there's a predictive portion of this as well. But can you solve problems that the battery manufacturers and OEMs are experiencing after the fact?

**Qichao Hu**

*Founder, Chairman & CEO*

Yes. So in manufacturing, for sure, for example, we can actually blindly manufacture cells, meaning you just manufacture cells, collect data without any initial quality specs. And then the AI is going to collect all the data and then get trained and then recommend quality spec. And actually it's going to rank it. For example, certain steps will have higher impact on quality than other steps.

And then -- so that's going to tell you, for example, step #17, and that's a hot press that you need to lower the pressure to improve the quality Yes. So in AI for Manufacturing, definitely, you can get to a point where you can start with blind manufacturing and then the AI will tell you where to fix.

So yes, in AI for Safety on the vehicles, so the goal is to monitor the health and then predict and then -- but then not really to control it. So whatever prediction we make, we're going to send that back to the OEM. And then what the OEMs do with the signal that's up to them.

**Operator**

We have no further questions. So I'll pass the call back to the management team for any closing remarks. That concludes today's call. Thank you all for your participation. You may now disconnect your lines.

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