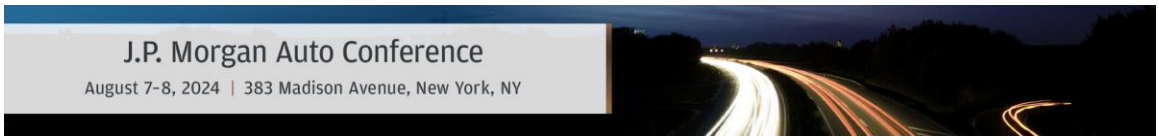

AEye

AEye presentation delivered at the J.P. Morgan 2024 Auto Conference on Thursday, August 08, 2024 at 12:30 PM

Matt Fisch: We're going to go ahead and get started as people filter in from lunch and whatnot. Hey, it's great to be back here again this year. Of course, we're very excited about the LiDAR topic. We're glad to see some folks here in the room as well. Standard disclaimers, now that you've had time to read through those, we'll jump into the presentation.

How I wanted to start this, since it's been a bit out there in the press about do we really need LiDAR? Is it really a thing? I want to go back to Grassroot for just about 20 seconds here and show a quick video.

On the right, you have a camera that you might find in a vehicle ADAS system, and on the left you have a LiDAR system. You note the perspectives are similar. You got a guy there in white pants and a black jacket. We're going to have him walk into the shadows of the light.

You'll notice as he leaves this street light, whatever's out there, he just disappears and he's not very far out. You can see on the left-hand side, he's very clearly visible in the LiDAR image. There is very much still an absolute need for LiDAR. There's tons if you've been following what's going on with NHTSA and Rule 127 for safety.

We're not even talking about autonomy yet. These are the kinds of cases that NHTSA is looking at for pedestrian safety, avoiding crashes, and things like that. They're just scenarios where cameras and RADAR can't fill in.

Here's another one, which I'll speak to here in a bit. This one actually came from an OEM. This is a tunnel in Korea. I can't say who the OEM was. Tunnel in Korea where they're having issues where a lot of customers reporting that the cars slamming on the brakes.

The automatic emergency braking is triggering, coming out of this tunnel, a certain time of year, a certain time of day, and they figured out that the sun shining into the cameras was causing a problem. Again, camera image on the right, same image, and LiDAR on the left. You don't even see the sun on the LiDAR.

Again, we haven't spoken about autonomy yet, but really what's driving us first and foremost in the LiDAR industry is safety. That's really our gateway into the industry. I'm not going to go through all the bullet points, but a lot of reasons why camera and RADAR even when combined can't detect certain scenarios.

Certainly, when you get into autonomous driving, especially in the space that we play in at AI, which is long-range detection of objects, this is required when you're driving at high speed. Absolutely. We don't see this going away.

A little bit about our company. A few things. First and foremost, we have a very solid financial foundation for the company and a lot of very capable partners, starting with GM Ventures, partnering with us on the financial side.

What we're going to jump into here in the next few slides is, number one, a little bit about our technology and IP that allows us to do some things that others can't. I'm going to show a little bit of show and tell here.

Then our unique business model, which is a licensing or think about it like a fabless semiconductor business model. Then last but not least, since we've been here last year, we've had a very significant restructuring of the company.

We have a new management team in place and one that's very experienced at bringing new technology to market. The company's transition out of an R&D phase into a product and get the product to market phase.

First on our business model, again which is a bit different, we call it Capital Lite. The idea here, like a fabless semiconductor or design house, we build a reference design.

Our model is we partner with a tier one in the automotive space and that we provide them with that reference design. They package and customize it for the OEM. This allows us to operate under a very lean cost structure.

We've seen our earnings call on our website and the material there, our cost structure is up to 10X lower. You'll see coming up here we burn about five million a quarter, which is quite a bit lower than others.

Our architecture and our technology foundation allows our partners to differentiate by and large with software. It allows for very fast design cycles and allows us to essentially rinse and repeat with different tier one partners like we did with Continental last year, and now we'll talk about LITEON in a bit.

We're not having to invest this capital by inventory to build manufacturing lines. This is a very modest number from some of these tier ones perspective. They can absorb this and this allows in very high gross margin structure for us.

Goal for us, automotive safety as the entry point into the market, scale this with multiple OEMs and tier ones in the market, and then into other markets. We believe that going in through automotive is necessary to achieve the scale to drive cost structure globally, a digestible cost structure across the other industry.

If you know LiDAR, your probably know the old report. They've updated this year. I'm not going to spend a ton of time on this, but China's where it's happening right now. Somebody asked me a question earlier about, "Well, I heard that LiDAR's going away."

In the US and Europe, the reality is a slow down a bit. It takes a while to integrate a new sensor into all the software that's running in the vehicle. You've probably read about the delays and whatnot in the industry due to software integration. China's years ahead of where we're at here.

We'll get back to this point, but we believe, because of the scale of the ADAS platform, this is the right entry point for the LiDAR into various markets out there.

I'm going to be a little bit more thoughtful here because we're also here today to talk about a new product. We announced it in China about a month ago at the LiDAR conference in Suzhou. It's our next generation product called Apollo.

Here's where we talk a little bit about the IP that we have that's unique. You pretty much take a LiDAR prototype apart today out there from various manufacturers. It's got mirrors that spin inside of it. We've taken a different path. We've built a very small, microscopic mirror structure that's virtually solid state and allows us to do a couple of things that others can't.

Number one is we can build something that's incredibly small. This is a device that can see out one kilometer. I just got back from two weeks at Detroit showing OEMs that. It's not just on the PowerPoint. We actually have samples that are out there with OEMs. We're running test cases

with OEMs under ADAS live.

In the car, we're seeing dimly lit objects like tires, and black cars, and things like that at over 300 meters. Kilometer max, 300 meters. This is 1,550 nanometer LiDAR. It allows, because it doesn't impact your retina because of the wavelength, we can crank up the power and see very, very far. We believe the furthest in the industry.

What else? The other part that this enables is software definability. When you have spinning parts and mirrors in your system, there is only so much you can do with software. This thing is very...I want to say infinitely programmable.

To give you an example, last week we visited two different OEMs. They wanted the right to use the LiDAR in two completely different ways. It was two revisions of software for us. We used the same box. Not only that, but it allows OEMs to easily scale this across multiple vehicle lines.

It's very small, first of all, so it's very flexible. It also...We can tone down performance or look at different scenarios. Urban driving versus highway. Low TCL is what I'm really talking about. You don't have to have lots of variant in the hardware across your vehicle line.

We're getting a very strong reception, we believe, for a device that can see 300, 325 meters in ADAS and over a kilometer max range. Nobody else is this small, not even close. Last but not least, this is not our first rodeo in the automotive space, supply chain-wise.

We did a ton of work with Continental for three years, up until the end of last year. We have an automotive grade sample. This is basically reusing 80 percent of the supply chain. Most of the change is between our prior generation with Conti and now we're working with LITEON, an expert in optics.

They're an industry leader in automotive, in disrupting camera pricing. 10 years ago, camera in ADAS systems or backup cameras were very, very expensive. They're super-cheap now. LITEON was a key player in this market. They know LiDAR, as well.

We're very excited about working with them. We think we're going to see another 50 percent cost reduction between the price point, thanks to our work with them here, in the next year. Yes.

Audience Member: What's the key difference between for LiDAR and for the new radar technology from companies like [inaudible] . How would you differentiate?

Matt: Let me just try to up level between the questions about the difference between LiDAR and radar. The physics underneath is quite a bit different. With radar, to get high resolution...By the way, high resolution is super important for ADAS systems.

They've been wired for years to cameras. Cameras require high resolution images. The more you can look like a camera from a digital perspective, the easier it is for the OEM. Radars are not good at high resolution because the wavelength coming out of the radar system is much lower resolution than a LiDAR can do. Instead of distinct objects, you tend to see blobs.

Yeah, I know there's some guys who come out and say we have high resolution radar. It's still at least a few orders of magnitude poorer than LiDAR in its physics. It really has nothing to do with the product pace. Big difference.

Moving on, I think I talked to...Look, our supply chain strategy, I think the world is familiar with the geopolitical risks that are happening right now. We have a dual pronged supply chain strategy. One is global, through LiDAR.

For example, I'm out in Detroit last week talking with head of LiDAR's North America businesses from Mexico. They also have a business based in Germany and in Asia as well. Then we have ATI LITEON. In order to do business in China, you have to have local supply chain and boots on the ground to do it.

We have this dual chain inside and outside of China. Some of the OMS are dropping hints that, "Hey, look, if you're going to source things through China, you can't do business with us." There's some of those hints coming. We're ready for that from a supply chain perspective.

We think it is an inflection point year for LiDAR 2024. Look, the thing that we look at and energizes me showing up to work every day is take a look at China. It's a leading indicator of what's happening.

According to the last Goldman Sachs report, they're going to do a million and a half units shipped in automotive. It's a big growth from last year. Look it's, you need LiDAR. If you look at what's happening in China, it's very clear. Yes, OEMs are still actively engaged in discussions.

In fact, now that we have this NHTSA ruling, I've walked into two meetings in the last couple of weeks where the leader on the engineering side and the OEM is saying, "Look, if you can't see

200 meters down the road, high resolution, let's not meet because we're not interested." That's because NHTSA has elements of long distance. Incident detection is part of this new rule 127.

I'm going to say we believe that 1550 is necessary to see that far. It's not just about seeing something. You have to be able to know what you're seeing that far. We think that this ties to 1550 very closely. Yeah, that's it. Yes?

Audience Member: [off-mic question]

Audience Member: I can repeat the question. It's OK. I know we're on the webcast here.

Audience Member: Question about the perception stack that you guys tie into for ADAS as well as in the future. Of course, ADS level two to level four. Is there ones that you work better with especially with sensor fusion?

Or are there companies that you're already tied into that makes it easier for an OEM to adopt? Or do they have to custom adopt your sensors?

Matt: To put this in perspective, look, I'm an old Intel software guy. There are no standards. Going from one OEM to the next, to the next, to the next, they're all doing something unique. That's part of the challenge here.

The good thing is most all the perception software we've run into accepts what we call point cloud. That's the format that comes out of the laser. That's where the compatibility ends. This is an area where it feels like OEMs are doing their own thing, by and large.

Now you got Mobileye out there trying to do it. Actually we work very closely with NVidia on their platform as well, but not everybody's, "I'm taking NVidia. They're gigantic." Not everybody's using NVidia. It's very select. I don't think I can mention the names, but it's very select, OEMs are looking at that.

Fragmentation is a huge issue, we just have to be compatible in general in the automotive space, that's the game. We do have a couple partners outside of automotive, but that doesn't help us with ADAS. It's just very fragmented, that's the challenge.

As a company, new management team, I think we've made great strides. This is a snapshot of our quarterly earnings. It was a bit worrisome last year. I think we got feedback from investors

when Conti backed out of the LiDAR space. LITEON is an amazing partner, and I can say that LiDAR is very strategic to them, which is important for the momentum that you get from working with a company like that.

OEM feedback of our new product Apollo is tremendous. We're very deeply engaged. We've got our burn rate down to a very sustainable rate. With all the delays in the industry, longevity is important. We've been able to raise capital in the last quarter at very favorable terms. We've got ourselves the potential for quite some runway here due to our low burn rate.

We knocked it down. Since the management team came in, we've got it down. 75 percent will be somewhere about five million a quarter, which is incredibly competitive in the industry. We have a new equity line of credit instrument in place. I'll tell you, sometimes just lean, mean, and small and focus is way faster than bigger.

Being out at Detroit this week, I got some clear feedback. "Wow, you guys really started moving at warp speed, even though you're a much smaller company than you were in 2022." It's just been that focus on automotive first that's allowed us to cut back a lot and keep the burn rate very low.

Next steps for us getting this guy to market. We're very busy right now. The small size is great, allows folks to put it where that rear view mirror is in the windshield, behind the windshield. It still performs well behind that. Product cost is absolutely critical to ramp volume. LITEON is an incredible partner there.

They're applying the same process they used to drive camera costs down. We're going to cut our cost, this product compared to last year's product by half. The question may come up, what does it take? These long range guys are running about a thousand bucks outside of China.

It's going to need to be half of that for the next set of quotas. That's what we have our sights set on. We're going to hit it. We're incredibly competitive and continuing to manage and run a tight ship here. We're on a very strong cadence, even with a modest budget.

Last but not least, thank you. We're out here road-testing real product today. We're not just talking about a concept. This is an actual shot from one of our road tests in Detroit last week. Sorry. You noticed I've been on the road somewhere in the same clothes. Apologies for that. I did wash them.

We're not talking about concept. This is real product that's being demoed and road-tested with OEMs today. Probably can't see it from there. You can actually read the writing on that dump truck that's pulling the trailer. That is unbelievable resolution. This is what the OEMs want.

They want to be able to see fine detail. That's another breakthrough that this product offers. Thanks for your time and off to Q&A.

Ryan: Thank you so much for being here. I appreciate the presentation. Just to start off, there's a perception in the industry that LiDAR is synonymous with EVs and ADAs. Can you speak a little bit to the opportunity you guys are seeing in that front?

Is your RFQ activity strictly limited to those programs, or you see an expansion outside of ICE platforms, given the delay and the ramp-up of EV volumes over the next couple of years?

Matt: We're not seeing any connection specifically to EV. You probably already know that the technology itself is independent of the power train, the vehicle. Maybe your question is also related to some CEOs in the OEM space that say, "Well, the new stuff is common in EVs."

We're seeing RFIs come in, for example, that are very broadly applicable to vehicle lines. They're not specific to EVs. The pool is still definitely there, not impacted by the EV.

Ryan: Maybe for some people who aren't familiar with the LiDAR space, you guys chose the 1550 nanometer laser instead of the nano-8. Can you explain some of the benefits that you see from using that rather than the competing solution?

Matt: Specifically related to the wavelength of the technology, I'm going to go straight back to NHTSA, and us walking in the door and some of these guys saying you got to see 200 meters or better, and you have to be able to identify objects at 200 meters. 1550 allows us to turn up the power of the laser. It's very, very simple.

How far you can see in some ways related to how much power you can put on the laser. A 905 laser, if you turn it up too high, it'll damage people's eyes. For safety reasons, the power in 905 is limited.

Looking at these new regulations, if you want to be able to see far, that means drive at high speed and have better safety, and ultimately autonomy, we believe that 1550 is actually going to be a game in town that's going to deliver that kind of performance.

Ryan: Gotcha. Thank you so much. Then maybe just switch over to how you guys measure the content-per-vehicle opportunity or how you guys look at it because you're taking a different approach than some of the tier-one LiDAR suppliers. Do you view it as like a percentage of ASP? How you guys quantify the opportunity between the ladder units you ship?

Matt: Maybe Conor, I'm going to have you come up here and talk about that a little bit. In essence, we've looked at some of the older older...not older, but we've looked at camera deployment and how quickly the take rates have gone up.

That's been one of our benchmarks that we look at, see what the uptake is, what the resulting price curve based on the penetration rate, take rate, and how many vehicle lines you're hitting.

I don't know if you want to give any more detail than that, Conor, but we've looked at IHS and some of the older models and try to map them here. That's pretty much how we've done it, if you look at our financial models.

Conor Tierney: Yeah, I think you pretty much nailed it. I'll turn it over to Josh.

Matt: Conor's our CFO, by the way.

Ryan: Matt and Conor, maybe we could talk more about the Capital Light model. It's something differentiated within the industry and a unique approach. If you could just expand upon that and how that sets you apart from your competition.

Conor: I think in essence, it's obviously a licensing model. The big differentiator is we're designing the technology, but we're working with the tier one, which in this case is LITEON, and they're responsible for industrializing the product and bringing it to market.

Essentially, when we bring the product to market, we will earn a royalty on every unit that's sold. That's extremely important when you think about capital expenditure and capital outlays, because it's a very expensive endeavor to industrialize a product and bring it to market. That's why it's great having a partner like LITEON that can work with us and share that cost burden.

Matt: There is one thing I want to add to that. I like examples. There's been a decade of work that's gone into engineering supply chain at the component level. We make underneath this, you click down one level, it's very modular.

You take a company like LITEON, because it's such a modular design, and basically they're using epoxy and screws to assemble this, they can ramp up a production line or even a prototype line in a couple of months.

That's not something that we can pivot on so quickly as a company, because you have to put the capital in to make that happen. You have to convince your component supplier, say "Look, there's money come and there's demand behind this." It's very, very fast. They can react quickly.

We're not talking about tons of money, but we don't have to invest that upfront and try to guess at when the market's going to take off. It's super helpful for managing our costs...

[crosstalk]

Matt: costs.

Conor: The other important point is just optics. When you're in the room with the OEMs and you have a partner that's brought other automotive components to the market before, in the case of LITEON, that's done that with cameras.

That's a very powerful message when you're talking to the procurement teams in the OEMs because it gives them a certain amount of confidence that your partner knows what they're doing and that they have the infrastructure to be able to scale to mass production.

Ryan: Got it. That's helpful color. Just wanted to check if anyone in the audience had a question.

[pause]

Ryan: I'll go on. Just maybe trying to understand a broader picture question as to, what do you think are the biggest challenges that you see for broader adoption of LiDAR by the OEMs? Is it primarily cost, and do you see customer demand for this technology already?

Matt: I believe the biggest challenge in adoption is the software integration. You can read about it recently about some of the delays, because ultimately ADAS, even for safety, not even talking about autonomy, there's millions of lines of code in there.

You introduce a new sensor, and any time you introduce a new sensor, you have to retrain the

brain in the car. That's just not a matter of just writing some code. You actually have to put it out there. You have to road-test it. It has to see various scenarios and retrain the AI in the car, essentially.

I think that's the biggest holdup, quite honestly. I think that our company, working with Continental and LITEON, we've been able to make leaps and bounds cost improvement of this.

It's on the right trajectory for higher volume adoption, but it's really been the software integration that just pushed things to the right. I think, to your question, is there going to be an adoption curve like we saw with cameras? Absolutely.

Audience Member: Got it. Thank you. Super helpful. Maybe just something I wanted to switch gears about, the actual design and when you guys are integrating your product onto the vehicle. I don't know if a lot of people caught it, but you're behind the mirror on the roofline of the car.

Can you maybe speak to what drove your decision to make that part of your design? What's the feedback you're receiving from the OEMs, given that a lot of the computer solutions have to be integrated on top of the vehicle, not inside of it?

Matt: Look, it's an interesting...I'm an enthusiast. I'm in the enthusiast segment in the automotive in terms of market research, so take it for what it's worth, given that I'm an enthusiast. At the end of the day, design is super important. Super important. At AEye, we realize that's eventually going to be a big factor.

In fact, an OEM who hasn't talked to us recently, their design studio reached out to us, asked us to come to Detroit. 30 people showed up to him, and they're like, "Wait a minute, you could put this thing behind the windshield?" As soon as they saw it, they're going, "Yeah."

Look, we just believe it's a natural outcome in the automotive industry. Design is king at the end of the day, and that drove the thought process here.

Ryan: Got you. Thank you so much. Then maybe switching gears to L4 and L5 and the adoption, given you guys have better visibility on that, what's the timeline you guys are seeing for those higher levels of autonomy? What's the key holdup in terms of the sensor suite that you're seeing from the OEMs?

Matt: On the higher levels of autonomy, it's clearly pushed right. We're definitely seeing that, and

its software and its training. I look at examples of what happened with Cruise in San Francisco, for example, is that it's a learning process. You can't go unnaturally fast through that learning process. Otherwise, bad things are going to happen. People might get hurt.

I think that was the correction that we saw here in the last year that, "Hey, this is going to take a bit longer because it goes back to training the brain that operates the car, even with new sensors."

With that being said, I think you can read that there are expansions happening, in that, we'll call it the robotaxi space, where you're seeing expansion. Cruise is coming back online. You see that Waymo is doing well, and the Motional guy has got a new investment from Hyundai.

It's still a very active space, but I think there's a humbleness now that's happening to say, "You can't go too fast on the autonomy space. You've got to be careful. You need appropriate amount of time to train all of this digital intelligence on all the billions of scenarios you're going to see out there on the road.

Ryan: Last one from me, then I'll turn over to the investors and Josh. Obviously, across the space, you're seeing LiDAR supply prices are just depressed relative to two or three years ago. What do you think it's going to take for investors to get excited about the LiDAR space again going forward and for those share prices tore-rate higher?

Matt: I'm going to keep it to a one-liner, let Conor weigh in as well, but broader market adoption. That's what it's going to take.

Ryan: Thank you so much. I don't know if there's any questions from the audience.

Audience Member: China seems like it's adopting using ADAS first. If that trend continues, it should drive price down. There's a bunch of other LiDAR players that are vying for that space, but it's their choice of hardware and software that's going to make the big difference.

In your mind, you say adoption. It seems like there's a trend there. How do you see the winners emerging both from a hardware and a software standpoint?

Matt: You're talking about ADAS in general, or is it a LiDAR-specific question?

Audience Member: There's a sensor is that's the hardware side. The software side has to be

compatible. We talked about fragmentation.

Matt: Let me speak to the space that we operate in. The first day I walked into AEye, by the way, I'm not a LiDAR expert. I'm learning now, but I'm a software guy. I sat down, I did a listening tour across the company for 30 to 45 days, and I'm going, "Guys, it's all about the ADAS system and being compatible with the software in the best way you can."

LiDAR is not going to dictate how ADAS software gets rewritten. It's going to be how quickly can you integrate and adapt. One of the things that the industry has struggled with is like, "Wow. Hey, we can see really far and identify objects far. We're good." Nope. You got to have high-resolution images that in effect look like camera images to the software. That's the fastest path.

The people are going to win or the ones who can be the best in terms of backward compatibility. I know it sounds strange for new tech, but there's so much software out there. The more friction you can remove from that software integration process, that's who's going to win. That's my prediction.

Audience Member: One more follow-up on that, which is you probably heard of Elon Musk's comments about not leading LiDAR, and version 12.5 now is out there, but still, of course, when there's weather conditions. How are you seeing this Waymo method of training location versus the free-for-all Tesla version of perception and control?

Matt: Let's talk about how you train because I'm pretty sure everybody sitting in this room has had their brakes slam on when you didn't expect it. I'm going to take it to a human thing. The smartest system that I know of today is the human brain.

I have an uncle. He had some weird accident in the kitchen 10 years ago where he poked his eye with a broom handle and he can only see out of one eye. What does that mean? It means you can only see in 2D really with one eye. Uncle CF here take this. He'll like go like this and he'll miss it by a foot. He's got a really good brain, but his sensor only sees in 2D and he's missing stuff.

That's the thing with Elon...I'm not going to sit here and debate him. He's brilliant. You can't effectively avoid obstacles when you can only see in two dimensions. That's why I show up to work every day. I back into a garage where there's a manhole covering the ground and the sun shines off in a certain way, the brakes slam on so hard and my car automatically...

My wife says, "Oh, my God. We've crashed into something." No, it's because a camera can't distinguish a manhole cover from the ground. It can't see in 3D. That's a fundamental issue that most automakers, maybe except one, have come to grips with. It's just a matter of time.

Moderator: Great. I know we have a couple of minutes left. I wanted to get your thoughts around liquidity runway. You've reduced your quarterly bond rate and you have a target of reducing it by 75 percent through the end of the year. Wondering, if you could share your thoughts as to how should we think about liquidity runway going forward?

Audience Member: We have enough runway right now to get us to the third quarter of 2025, which puts us in a good position versus our peers. Everybody is in more or less the same boat. Then the great thing about this equity line of credit facility we put in place is it's 50 million. You look at our burn rate right now, it's about 20 million on an annualized basis.

That gets us at least another two to three years of runway. Now, of course, there's some conditions associated with that. The share price has to be at a certain price point and all that to fully maximize the facility. Nonetheless, we're feeling pretty confident that we've got a strong balance sheet and we've done a lot on the cost reduction side and the liquidity side.

We're feeling pretty confident here. That's obviously important. It's not about extending the runway. It's about investing in the company, bringing the product to market. When you're going in and you're having these meetings with the OEMs, they want to be confident that you have the runway to be able to go out and execute.

Ryan: Thank you so much. It's a good place to end. We really appreciate you guys being here and exciting times in the LiDAR industry.

Matt: Great. Thank you. Thanks for having us. Great discussion.