

## Autoliv, Inc. Press Event September 6, 2016

### Corporate Speakers

- Hakan Samuelsson; Volvo Car AB; CEO
- Jan Carlson; Autoliv Inc; CEO

### Participants

- Victoria Greer; Morgan Stanley; Analyst
- David Lim; Wells Fargo Securities; Analyst
- Agnieszka Vilela; Carnegie Securities; Analyst
- Erik Golrang; Nordea Equities; Analyst
- Rod Lache; Deutsche Bank Securities; Analyst

## PRESENTATION

**Jonathan Goodman:** Good afternoon. Welcome on behalf of Autoliv and of Volvo Cars to this press conference where we're together towards autonomous driving. And it's a great pleasure for us to welcome Hakan Samuelsson and Jan Carlson, who are going to take you through this great news and explain it to you.

And without further ado, Hakan, I'll hand it over to you.

**Hakan Samuelsson:** Good afternoon also from my side. It's a real pleasure being here together with Jan to tell you about this new corporation, which I think is an important step forward for both of our companies. And really, if you go back in and look into our history, we have decades of work together; so often in this corporation is very important with the cultural fit.

And in this case I don't think we have to speculate about that. We really know we have it, and our people are working together I think. That basis is of course good. We are from the same region, Scandinavian companies, and can work very good together. And right now we also have a solid position into active safety, both of us, and that is really the base for autonomous drive. And it's very natural then that we joined forces to create a world leader in the area of autonomous drive.

And then we are the very first two partners to set up a real company. There are people cooperating in this area. We are talking about a formal AB located in Gothenburg, and it will be a 50-50 company and it will be situated in Lindholmen, which I think is also an

important piece because developing a software is not exactly the same as developing hardware, so we need to work in a very dynamic environment and Lindholmen, we think, is absolutely right place to be. And then we are also then strengthening this new automotive technology hub that we have in Sweden.

And we will start working together immediately, and from around the 1st of January, the target is then the Company should formally be fully operational, around 200 people on board, and growing then within the next two years to around 600 people.

And the basic role division here; the Company develops the software, sell it at market to Volvo who will use it in our cars, and Autoliv will distribute it to other OEM's so that the software can also be used by other OEM's to save lives, as this is one of the most important safety things looking forward.

So this is a way, very crucial, for Volvo to reach our visions for the future. We want by 2020 that nobody should be killed or seriously injured in a Volvo. You've heard of that before. We have had another vision to that also, that we want to offer our customers extra quality of life by freeing up wasted time, which is now the case, maybe half an hour a day, sitting in the queue, possible to do very little.

And to be able to be successful here, we need something more than the traditional supplier OEM role. I think we need full transparency and full openness, which we can only get in a true 50% joint venture. So I think we have really the basis for Volvo to move forward faster than we could have by ourselves, and we will have better systems for our customers faster. We will also with this venture have the ability to build up, put in more resources in the development job, that's important, human resources, but also financial resource, and as this is a separate company opening up for various solutions.

And third, but not – last but not least, for Volvo this will also secure the part 50% of the value created will also be part of the Volvo's value. So I think we have really reached our three main objectives that we want to have from an autonomous drive corporation. So we think this is a very important step forward in the Volvo transformation.

So, Jan.

**Jan Carlson:** Thank you very much. Welcome again here – everybody here in the room, and also all of you on the webcast. I'm very excited about this day, because this is the next step in our journey of saving more lives.

Autoliv has for the last 60 years been doing life-saving products for the automotive industry, and we have actually brought the majority together with our customers of the different technologies and world's first to the market in the field of automotive safety.

Many of these world's firsts have been brought together to the market with Volvo. We have the buckle pretensioners and we have the side airbags, we have the side curtains, and we have pedestrian airbags for mentioning a few examples of inventions and innovations we have brought together with Volvo to the market.

We have also been through several transformations in terms of technology, and we have gone from mechanical starting with the seat belts in the 1950s into airbags into electronics into active safety. And now we are looking towards the fourth transformation from electronics into the era of digital.

And this important step forming this joint venture is really the next step in this journey, and also in our vision in saving more lives. This scope of the Company for our sake and also a little bit more of the facts in addition to what Hakan Samuelsson just talked about, it's a very powerful combination of vehicle level software, together with advanced system capability, together with component know how from Autoliv.

So this combination is a unique entity for now to focus solely on the next generation of software for ADAS, for advanced driver systems, and for highly autonomous drive. We are aiming to start delivering the products from the Company here from the software company starting with 2019, where the first ADAS products we expect to go out from the Company and be ready to sell.

We also expect that by 2021, we will have the first generation of highly autonomous drive software ready going to the market. We will start – expect to start the company by beginning of 2017, and as Hakan Samuelsson just said here, the Company will have its main location in Lindholmen Science Park in Gothenburg. But we will also see additional sites into the Corporation here in Germany and also in Michigan, in Southfield in Michigan.

We're also pleased here to announce a joint decision of the future CEO, Dennis Nobelius. He is a great leader with great experience from the automotive industry, and also a long-lasting time together with Volvo Cars Corporation. So we expect him to start and start working on this actually from now and onwards, then becoming the CEO when the Company is formed in the beginning of the year.

The advantage for Autoliv is quite obvious. We are getting access to the Volvo vehicle level software in combination to the technology that we have developed inside Autoliv. We have an exclusive right to sell the combination here to all other car manufacturers through the sales channels from Autoliv's side. This will give us an advantage when it comes to time to market; it will give us a tremendous sales opportunity that we would not have been able to get access to if we had not seen this Company, not at least in the time frame we are talking about here.

So we are very excited around this opportunity. And I would say that in sum, this combination is a great opportunity for us together to be able to save more lives in the automotive industry, and for the next step towards highly autonomous drive.

## QUESTION AND ANSWER

**Thomas Jönsson:** Thank you. OK, thank you very much, Jan. Thank you, Hakan. We will now step into Q&A session, and we'll have then both Q&A possibilities for those of you who are in the room, but also from the webcast.

(Operator instructions)

So why don't we start in the room. We can start with Hampus Engellau from Handelsbanken.

**Hampus Engellau.** I have three questions. First question is on how does this affect the Drive Me program with other participants attending that? Next question is on Volvo with an Uber collaboration playing. And then last, on the technology side, when you said 2019, are we talking level 4, level 5 on autonomous driving?

**Thomas Jönsson:** So maybe Hakan on the Volvo side and Jan on the (inaudible).

**Hakan Samuelsson:** Maybe we're the two first. And you asked about Uber – the first question again, say?

Unidentified Audience Member: Drive Me.

**Hakan Samuelsson:** Yes, Drive Me. I mean, we are both partners in Drive Me and that is of course a developer project where we of course what we learned in this new joint venture will of course be fed into the Drive Me projects. But initially, it will be -- it's already starting up. But after some year here, we see new developing being fed in.

Uber is another joint venture for us, which is targeted developing a base car for autonomous drive, because it has to be a much more steer by wire and brake by wire redundant based car that we are teaming up with Uber to develop. Now we are talking about the control software that we will apply in that car.

**Jan Carlson:** If you look to that technology that we talked about here, and the deliverable starting with 2019, it's about the robustness and the focus on highly autonomous drive coming out in 2021. And we should look to maybe level 4, maybe level 5 type of software coming out there. But it's important to state that first and foremost, robustness quality and the safety aspect is going to steer the timing schedule for it. But that's the level we are looking for in 2021.

**Thomas Jönsson:** So why don't we try a question from the webcast and see if the operator can present a person asking a question from the webcast.

**Operator:** Victoria Greer, Morgan Stanley.

**Victoria Greer:** From the Autoliv side, could you talk a bit about what happens to your existing active safety business within Autoliv? Would you stick to your targets for the active safety business there, and how will that interact in the future with the joint venture?

**Jan Carlson:** We're seeing an opportunity here to of course further grow our active safety business from an Autoliv standpoint. We will continue to invest and to continue our efforts in the active safety area. What we will do here initially is we will contribute with some around 100 people into the joint venture from the software point of view.

And we will rely upon this joint venture company for the software towards a highly autonomous drive and advanced driver assistance. When it comes to our sensor development and software and hardware related to the sensor type, we will continue to invest as in the past.

**Victoria Greer:** And from a product perspective, where will be the line between what the active safety business is doing and what the JV is doing?

**Jan Carlson:** The joint venture will focus on the higher level of software for automated driving. That would be the prime focus for the joint venture, and that is what we will look towards the combined competencies from Volvo Car and from Autoliv to help us being an even more effective system supplier to all our customers.

So the line will continue to be drawn towards component specific software, and of course the hardware and the hardware integration that Autoliv is already working with today.

**Thomas Jönsson:** Okay.

**Victoria Greer:** And so just finally, in that active safety business, if I'm an OEM, and you're doing some of the spoke work with me in the active safety business, is that automatically shared with Volvo Cars, or would it still be ringfenced because it's done by the active safety business?

**Jan Carlson:** No, this is a software company developing software as an entity of its own. I think it's very important to point out that this company is an entity of its own, continuing to drive the needs for highly autonomous drive and to be able to create the world class, and the world's best software solution within this area.

So there is no sharing between the different donors, or the different entities on results, on IP. And if you go back and look to how we have successfully over the years, Volvo Cars and Autoliv, developed airbags or seat belt systems for that sake as well,

I don't think that has created any strange thoughts from other OEM's. Today you have side curtains for instance, which is a result of a development together, and it's existing more or less in all cars, or many of the cars, and to a large extent produced by Autoliv. So we don't see that as anything strange or changing with this development.

**Victoria Greer:** And finally, just on the financials, is there anything you can share with us about the likely level of investment for the first couple of years? Is there anything you can share on that side?

**Hakan Samuelsson:** It's a joint venture where we will contribute of course with manpower, IP rights and money, and it will be shared on a 50-50 basis and we have to come back with the magnitude of these resources when we start up the Company.

**Thomas Jönsson:** Yes, we should remember it's an early phase. We just have an LOI and the Company's about to be formed in the beginning of the year. So we'll have plenty of opportunity to get back to that.

So we'll take next question in the room, and Björn Enarsson you're next.

**Björn Enarsson, Danske Bank:** Question on have you approached other OEM's with this joint venture, or how do you look upon going to other OEM's when you have always a 50-50 partners? I guess in the past I have seen companies with also Volvo as a big important partner where there have been problems approaching other OEM's where they have a competitor invested in that project. Is that something you have discussed with OEM's?

**Jan Carlson:** For our sake, it has been the natural discussion and evolution of a long-lasting relation between Volvo Cars and Autoliv. And as I also said here to Victoria in my answer there, we have experience with developing different kind of products together with Volvo Cars in a very fruitful way for Autoliv and for Volvo Cars as well.

And we believe that this is a natural extension, when we now have an opportunity to combine world-class vehicle level software together with world-class tier one component and system integration know-how; we took that opportunity. We couldn't rule out there could be other combinations going forward, but now we are focusing on this one, and we are very excited about getting this point.

**Björn Enarsson:** Could it be open to other partners?

**Hakan Samuelsson:** Let's come back to that. I think it's important to start with a tight partnership between the two of us to proceed here. But a bit common to this also from our side; I

mean, if you look into autonomous drive different models, one are the sensors and sensor softwaring that we are going to buy also from Autoliv, but not only from Autoliv.

It depends on how good they are, so to say. And then you need a sort of software package where you really you're combining first computer vision technology, which really Autoliv mainly is bringing in, with the car decision-making software, which we are mainly bringing in.

So this I think is the only company I know in the world that really has the full set of software. Normally the car part is with the OEM and the other with the supplier. So I think that is a very natural base for a cooperation with two. But now we start with this, and I think we come back. The ambition is to be world leader in this, and we need the absolute best hardware, and absolute best software.

**Jan Carlson:** I agree with Hakan fully here. We have now started this, and we are on the way to start the Company formally here beginning of next year. This is a very, very important step in a highly interesting area – autonomous drive.

And to what extent this will lead into something else in the future, that will be a question for the future to discuss. This is now a very powerful solution as it is with the two partners coming together.

**Björn Enarsson:** And the current offering of more component-centric software that you are providing is obviously not involved at all in this.

**Thomas Jönsson:** Business as usual, exactly.

**Operator:** David Lim, Wells Fargo Securities.

**David Lim:** The question that I have is, so, the software that you guys are developing is a high level sensor fusion for autonomous drive. So Volvo will exclusively use that sensor fusion, is that correct?

**Hakan Samuelsson:** Yes; I mean, we have to set our resources on one track, and we have seen that combining our know-how with Autoliv is the best way forward. And it's really, computer vision, object identification, sensor fusion and decision-making; all of that will be covered and in a special company which I think is very unique. And the intersections between these technologies is highly complicated, so I think that can be done and can only be done in total openness and transparency.

**Jan Carlson:** And the same goes for Autoliv. We will also rely upon this Company solely for that type of software in addition to what we do on the hardware side and on the sensor software side.

**David Lim:** And the follow-up question I have, and Jan, I think you've touched on this, is this does not exclude for example other OEM's using other sensor companies, like other different radar companies or vision companies, correct?

And the last question is since it is a software company that Volvo and Autoliv is developing together, can we anticipate software kind of margins going forward?.

**Jan Carlson:** I can start commenting on the last question; that is something we will comment on when the Company is maybe up and running and we have come further into this. We are just

now forming the Company and putting the resources together and we will come back with the details at the later stage when it comes to all the financials around the Company.

**Hakan Samuelsson:** What I think is important is to say also this Company will basically sell the software to two customers at market and that is Volvo, we will use it in our cars, and the other customer is Autoliv who will distribute it to other OEM's to get economy of scale and bring in resources to be even faster in development.

**Thomas Jönsson:** So we take the next question from Agnieszka.

**Agnieszka Vilela,** Carnegie. I have a question for Volvo. Why Autoliv? I know that you have worked with other active safety suppliers, but why do you choose Autoliv, and why now?

**Hakan Samuelsson:** I think we have explored all possible options, and we came back to a very close option geographically which for us has big advantage of the cultural fit, because this is a very advanced area, and you need a very tight, open communication. And I mean, these decades of cooperation is a really good base.

Secondly, it is a very good combination because Autoliv brings in exactly what we need, and that is object identification and computer vision, and that is one of the crucial points of having an autonomous driven car.

The car has to know what's lying ahead on the road, and they have to learn thousands of items, and that is something that is very important for this. And with Autoliv we have this unique combination, we have not been able to get that with another partner.

**Agnieszka Vilela:** And just one question; how does Mobileye fit in your strategy?

**Hakan Samuelsson:** They are of course also a company which has computer vision technology, and we are working with them right now in the very first step. And I think the ambition of this Company to have the absolute best software and hardware to deliver to our customers. So our ambition is to develop that, but of course we will look into other alternatives from the outside. And if that is better, we will of course use that also.

**Thomas Jönsson:** We'll take the next question from Björn.

**Björn Ewenfeldt, TT:** You are saying you're going to develop the best software in the world, but there are other companies who knows a thing or two about developing software; Google, Apple, for a couple examples. What makes you so sure you are going to make the best?

**Jan Carlson:** Well, the combination of what Autoliv represents in the form of state of the art sensors we today, developing algorithms for vision systems, for radar systems, for ADAS controllers today. Having launched these components as early or as late as early this year.

Together with the state-of-the-art vehicle software that is available in the V90 and S90 and XC90, that is a foundation for the future combining this type of competencies and resources into one entity solely focused on the next generation we believe is a unique combination not being seen before. And that is highly competitive we believe, and that's the foundation for getting it into the next generation.

**Hakan Samuelsson:** And working in a very dynamic way, not as an hardware company; that's why we put it in Lindholmen. I think that's also very important issue here. And at the end, it's not just technologies, it's also at the end maybe the most important thing with autonomous drive

system is the credibility. And I can't see any better combination of companies bringing in safety credibility into autonomous drive than Volvo and Autoliv.

**Jan Carlson:** I also think what is important is that we have extremely skilled people in this area. We have various good work force-base, we have a competence in terms of our people that we put now together on one single focus area to develop the next generation software for highly autonomous drive.

I think that is giving us access, we have been proven here in Sweden and in west Sweden together over many years to be very creative, very innovative in developing a lot of new world's firsts. So why this should not be it, I cannot see. We have a good base.

Hampus Engellau.

**Hampus Engellau:** Thank you, Hampus Engellau Handelsbanken. A question to Hakan; when you develop this type of software and you put different layers on software, and I guess the OEM wants to claim that his autonomous driving systems is better than Daimler for instance, or any other. Where do you see that Volvo-specific software coming into this software collaboration?

**Hakan Samuelsson:** Even of course we have the ambition to sell this to more people to get economy of scale; there will always be adaption and everybody have their special requirement. And Volvo will of course focus on safety, and we will make no compromises in jeopardizing safety. So I think that will be one of the main features with our system.

**Hampus Engellau:** And on the technology side, will this software company also be able to acquire technology? And what's your general review both on leader technology?

**Hakan Samuelsson:** For having a separate company, I think we will have flexibility to absolutely secure the resources and know how necessary to be leaders.

**Jan Carlson:** And we are putting this in an entity of its own to giving it freedom to be able to act, and we will make sure that the resources will be available so that the Company can really also gain the right momentum in potential acquisition or acquiring software or other type of resources to get into a good position.

**Hampus Engellau:** And on the Lidar side, do you need to acquire Lidar to have that into the software development, or how do you view that?

**Jan Carlson:** Well, if you take a Lidar as a product then you're coming into the sensor aspect of it, and then you are more into what Autoliv is doing and what Autoliv is doing in addition to this now formed joint venture for the highly autonomous drive software.

And that is something that Autoliv has been looking into and that we have been talking about in the past, that we are evaluating Lidar as a technology for the future also, and we'll come back to that a little bit later.

**Thomas Jönsson:** And I think we have a couple more questions from the line. So Operator, please present the next person.

**Operator:** Erik Golrang, Nordea.

**Erik Golrang:** Just one follow-up specific question; 2021 highly automated driving solutions norms. Does that mean start of production already for start of production at least?

**Jan Carlson:** Well, it means that it is available and we are now forming the joint venture. Our targeting plan here is to have it out for being available by 2021. So we'll have to look into exactly the timing schedule for it.

**Hakan Samuelsson:** No, and Volvo's ambition is we would like to offer to our customers such a system around this time schedule scale. So I think we have to work full speed ahead.

**Erik Golrang:** And then one more question for Hakan. When you look at the way you're planning for 2021 and beyond, let's say that this is ready production in that year. Are you considering being able to do high volume deliveries early on, or will this initially be very limited high-end option for certain models only? How broadly are you planning to roll this out when it's ready?

**Hakan Samuelsson:** It's a bit too early to see how fast we will be in the ramp up, but I would say a car 2021 would be a very attractive feature if you would have such an autopilot, which you could switch on on the highway in queue situations. So I think we would have the ambition to ramp it up on a premium car to a rather high frequency option rather fast.

**Thomas Jönsson:** So any more questions in the room? I do believe we have one more question on the line, so we'll take that question next, please.

**Operator:** Rod Lache, Deutsche Bank.

**Rod Lache:** I had just two questions. One is just more on the technical side, or accounting side. I understand you're not disclosing the investment, but will the costs be consolidated on the Autoliv or on the Volvo side of the business?

And then secondly, obviously Volvo has one of the broadest deployments of ADAS of any automaker today, and you are working with a series of partners in computer vision and sensor fusion and mapping and other technologies even on somewhat semi-autonomous cars that are on the road today.

The impression that you're giving is that you would want to build all of these capabilities that you currently have with partners in house. And I want to just confirm that is that a correct assertion, and maybe you could just explain a little bit more on why that is viewed as important to Volvo.

**Hakan Samuelsson:** Maybe the last one for Volvo, then I mean we really see this as one of the absolute most important thing for the Volvo transformation, and then we would like to have full control of this, and we are talking about different modules.

It's a car where we have the Uber corporation; it's smart cloud solutions, it's dynamic mapping where we also need partnership with others. We need very fast processors for sensor fusion on the car, and we need the software, which this Company is going to developing. So there are various models for us to be leaders in this area, and then there will be various other corporations as we already have, that would –

**Jan Carlson:** If you talk about the cost side from an Autoliv perspective, this is a true 50-50 joint venture and will not be consolidated into the Autoliv numbers. It will go outside the Autoliv numbers.

**Thomas Jönsson:** So if we have no further questions, do we have any last words from our speakers?

**Hakan Samuelsson:** No, I think this is a very important day for the transformation of Volvo, and I'm very excited to start that corporation with you, Jan, and with Autoliv, and will be a great opportunity also for our engineers. I think we are creating one of the most exciting jobs here in northern Europe with this Company.

**Jan Carlson:** And I can only agree to that. I think this is very exciting day; it's a great opportunity to combine a very good competence and an opportunity for both Volvo and for Autoliv to capitalize on each other's strength here. And last but not least, highly autonomous drive is here to save more lives. And when we can save more lives in this area, that's our great pleasure. So I'm very excited.

**Hakan Samuelsson:** Good day.

**Thomas Jönsson:** Thank you very much, and thank you for attending also the webcast. This is the first step of the journey, so I'm sure we'll have opportunities to get back to this. Thank you.