



Strategic Partnerships – Incumbent automotive OEMs’ best tool to survive in the autonomous era?





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There is an ongoing race to commercialize and bring self-driving vehicles to the market. However, the road forward is not as straight as one might think. It has become an industry wide consensus that technological challenges to bring autonomous transport solutions to the market are immense, and likely strongly underestimated. As a result, the arrival of self-driving vehicles is further away than what was expected only a year ago and the estimates on when we will have fully autonomous vehicles on the roads without humans in the loop now differ wildly.

Asking the public on the other hand, there seems to be a conception that self-driving vehicles are only just out of reach. Recent studies in fact reveal that 23 percent believe self-driving cars are already available on the market today. This delusion is mainly driven by the perception that companies such as Tesla are offering self-driving capabilities, when in fact the capabilities currently being offered is to be considered SAE Level 2+. The difference between an autonomous car (SAE Level 4/5) and a vehicle with advanced driver assistance systems (SAE Level 2/2+) is fundamentally different, with the main differentiator that for SAE Level 2/2+, the driver’s attention is needed. At SAE Level 4/5 on the other hand, the car can manage itself on its own, ultimately meaning that the liability of the driving is associated with the car (and the automaker) instead of the driver. A true gamechanger!

Consequently, despite ongoing pilots with SAE Level 4 vehicles around the world such as Volvo Trucks and Brønnøy Kalk in Norway, TuSimple in Arizona and Waymo Robotaxi in Phoenix (safety driver remotely), the previous industry belief that widespread adoption of autonomous vehicles on public roads would be a reality in 2025 is, to say the least, postponed. One of the main barriers to developing self-driving vehicles is to manage the technological complexity of autonomous driving systems, and Original Equipment Manufacturers (OEMs) are increasingly realizing that getting the technology as robust and widely deployed as needed is more complex than initially thought. Historically, incumbent automotive OEMs have competed in hardware development such as engines, transmission and axles. During the last two decades the transition toward software development in vehicles has been inevitable but with the introduction of self-driving cars the existing software development needs in the automotive industry have now culminated.

The technological complexity mainly related to software development has attracted new actors to the automotive industry. Software companies such as Google (Waymo), Uber and Baidu have taken the step into the race of self-driving vehicles, investing billions of dollars into software development related to autonomous driving. So, why do these companies choose to enter the industry even though they lack automotive experience? The answer is simple: they possess the technological and organizational capabilities needed to develop self-driving software, hence making them better prepared to succeed in the technical revolution that is shaping the automotive industry.

At the same time, incumbent automotive OEMs have realized that in order to manage such self-driving software development themselves, they must radically transform their current R&D organizations and get access to completely new competencies and knowledge. However, they do have one essential advantage over pure software companies: their legacy. Most incumbent OEMs have decades of experience building vehicles from SAE Level 0 up to Level 2 and therefore possess crucial knowledge of vehicle dynamics, manufacturing processes and quality assurance. Accordingly, the opportunity to combine exceptional software development with substantial truck and transport solutions knowledge leads to partnerships arising as a suitable alternative for both incumbent automotive OEMs and for tech companies.

What are the main benefits with strategic partnerships?

- The partners can take advantage of each other's strengths
- Access to key technologies typically related e.g. to raw data fusion as well as AI and deep learning
- Access to skills and know-how
- Reduced development costs for the individual actor
- Economies of scales in the way that one software company can license their platform to several different players

What are the main barriers with strategic partnerships?

- Dependency on the partner over time for changes and scaling of autonomous solutions
- Differentiation of Automated Driving System (ADS)
- Managing intellectual property rights
- Uncertainty of which actor will endure the largest bargaining power, potentially leading to loss of control for the OEMs

Evidently, there are both advantages and challenges related to strategic partnerships. However, the question arises as to whether incumbent OEMs will manage to build the capabilities to develop the self-driving technology needed themselves, or if they will be outrun by tech companies along the way. Although implying several potential barriers, it may therefore be that strategic partnerships is the only way forward for the OEMs to be able to manage the development and commercialization of autonomous vehicles.



The industry consensus today is that through strategic partnerships be able to reach SAE Level 4/5 automation and there are already several examples available of such partnerships. One is the partnership between Fiat Chrysler Automobiles (FCA) and Waymo. The automaker has also partnered up with Aurora with the effort of developing self-driving commercial vehicles by incorporating Aurora’s technology into FCA vans. Another example is General Motors who has entered a partnership with Softbank to develop self-driving cars as well as with DoorDash to develop autonomous food delivery. Additional examples of partnerships formed to develop self-driving transport solutions can be seen between Waymo and Jaguar Land Rover, between Toyota and Uber and between Ford, Volkswagen and Argo AI. The above-mentioned partnerships are only a few of the currently existing ones and the fact that they are growing in numbers indicates that there is a need to create strategic partnerships to be able to reach higher SAE levels.

Assuming strategic partnerships is the way for OEMs to go, the task of defining the depth of the partnership engagement becomes central. There are several different levels of strategic partnerships in the autonomous driving area, ranging from a ‘turn-key’ solution delivered by a strategic partner, to co-development of the complete stack, to strategic partnerships in only one specific autonomous technology area (e.g. Teleoperation). So, how should OEMs determine the partnership depth of engagement?

The easiest way is to take standpoint in the automation technology stack starting with modules in the Automated Driving System-Dedicated Vehicle (ADS-DV), ADS and TMS and evaluate each module based on a matrix, see figure 1. Evaluating the differentiation of the specific technology on the end customer product and the company’s specific capabilities compared to other companies within the particular technology area will determine whether the OEM should partner up or not in the area.

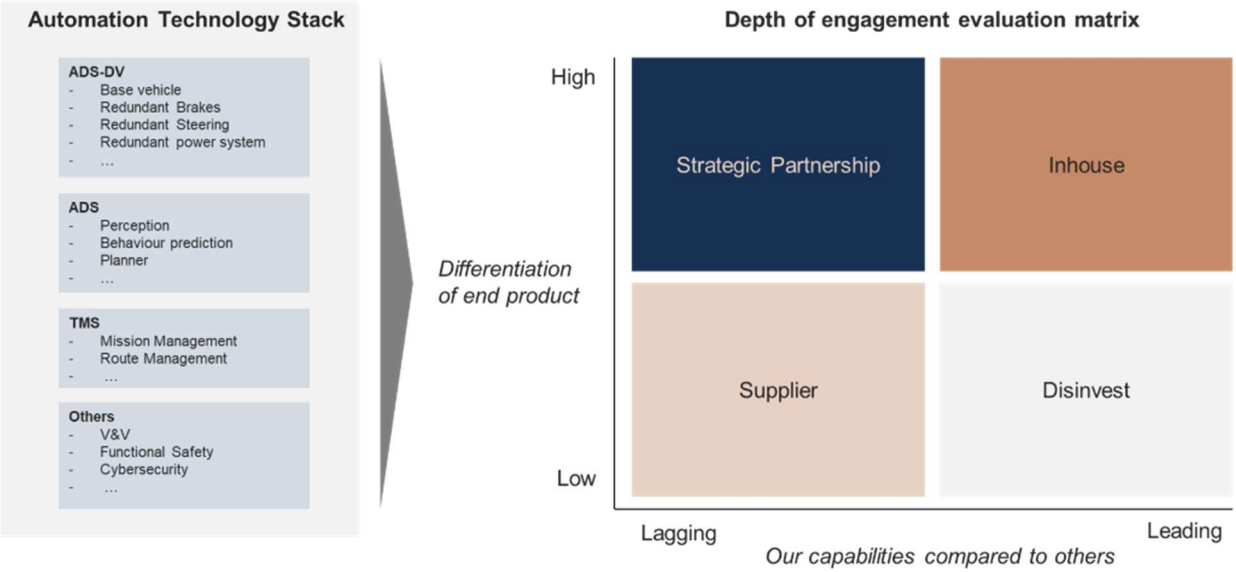


Figure 1 – Depth of engagement matrix for automation technology partnerships



Depending on the individual companies' baseline and existing capabilities, each OEM is likely to come up with different levels of depth of engagement and thus also partnership set-ups. Forming a solid partnership agreement is important and in order to maximize the value of your strategic partnership, the collaboration needs to be seamless. Differentiation, time to market and commercial success of the product is pending on the partnership. To facilitate a successful partnership, the following aspects are to be considered, see figure 2.

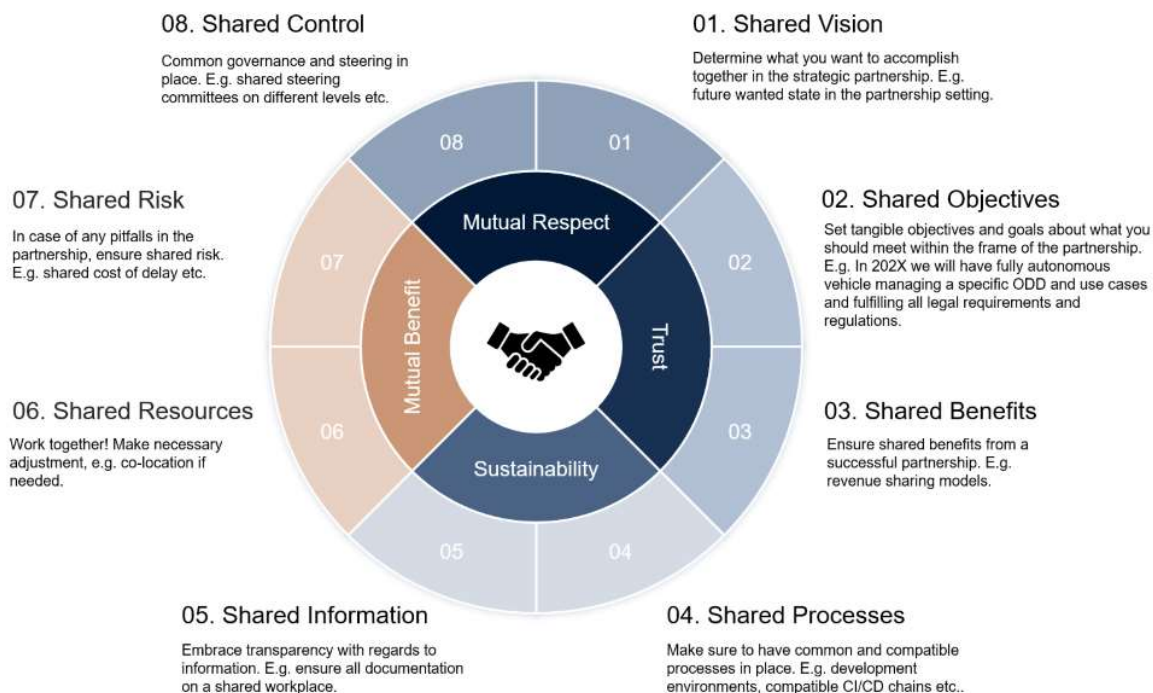


Figure 2 – Strategic partnership collaboration framework

Managing the eight factors will be key for an efficient strategic partnership. Overall, it could be the case that strategic partnerships are the OEMs' best way to survive in the autonomous area, but the future is still unknown.

Summary

There are clearly strong indicators pointing to the fact that self-driving vehicles will be brought to the market through strategic partnerships between incumbent automotive OEMs and software development companies by sharing the crucial capabilities needed to succeed. However, as stated in previous articles of this series, several uncertainties remain as to how the race of realizing self-driving vehicles will be won. In the upcoming articles of this series, other likely scenarios will be investigated of how autonomous transport solutions will be developed and commercialized.

This is the third article in the series targeting how autonomous trucks will transform the commercial vehicle industry. Stay tuned for the next article in the series.



This article was written by Fortos Autonomous Transport Solution practice together with students from Gothenburg School of Business, Economics and Law. Please feel welcome to contact us to discuss this topic in greater detail or challenge our views.

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