S&P Global
Mobility

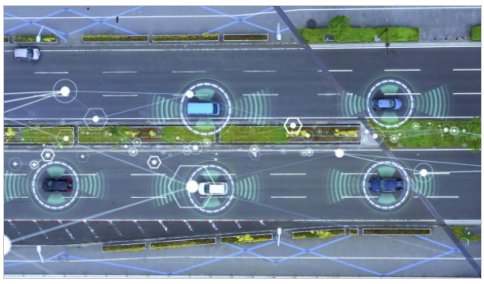
AutoTechInsight Insights
Autonomous Driving
October 2025

Pony AI's vision for robo-taxis

20-Oct-2025 11:58 GMT

Matthew Beecham
S&P Global
Supply Chain and Technology, Automotive

Q&A with Pony AI



Source: Getty Images

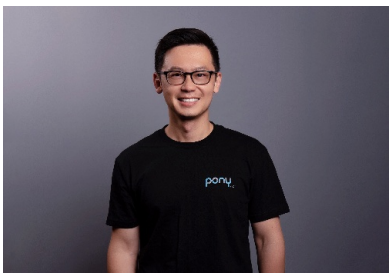
Robo-taxis are emerging as a significant innovation in the transportation sector, particularly in mainland China, where the technology is being actively developed and deployed. In major cities, such as Beijing, Guangzhou, Shanghai and Shenzhen, companies such as Pony AI has received licenses for fully driverless operations, allowing them to provide commercial ride-hailing services. As of the end of June 2025, Pony AI reported more than 380,000 registered users on its PonyPilot app, with their vehicles averaging 15 orders per day. The market in mainland China has seen substantial investment in autonomous vehicle technology, supported by a favorable regulatory environment, which has facilitated rapid advancements in robo-taxi deployment.

Globally, the robo-taxi landscape varies significantly by region. In the US, companies such as Waymo and Tesla are testing their autonomous vehicles in select cities. However, regulatory challenges and public acceptance remain hurdles to widespread commercialization. Meanwhile, markets in Europe, such as the UK and Germany, are developing their regulatory frameworks for autonomous vehicles, with expectations for pilot programs in the near future.

In the Middle East, countries such as United Arab Emirates and Qatar are also exploring robo-taxi services, with plans to integrate autonomous vehicles into their transportation systems. These regions are working to establish clear regulatory guidelines to support the safe deployment of driverless technologies.

Despite the potential benefits of robo-taxis, including safer rides compared with human drivers, reduced traffic congestion and lower transportation costs, challenges such as regulatory compliance and public perception must be addressed. As technology continues to evolve, the future of robo-taxis will depend on successful integration into existing transportation networks and the establishment of robust safety standards and regulatory framework across various markets.

To gain further insights into the developments in this field, S&P Global Mobility analysts Owen Chen, Senior Principal Analyst; and Daokuan Lu, Senior Research Analyst, engaged with Haojun Wang, CFO of Pony AI.



[Leo Wang]

Key takeaways:

1. **Progress in Robo-taxi commercialization**: Pony AI has completed the 0 to 1 phase of robo-taxi commercialization in mainland China, having received licenses for fully driverless operations in major cities, such as Beijing, Guangzhou, Shanghai and Shenzhen. The company reports more than 380,000 registered users on its PonyPilot app and an average of 15 orders

per day per vehicle.

2. **Cost reduction and fleet expansion**: The company has achieved a 70% reduction in the overall bill of materials (BOM) cost for its seventh generation ADK (autonomous driving kit) compared to the sixth generation. Pony AI aims to exceed a fleet size of 1,000 robo-taxis by the end of the year, utilizing cost-effective vehicles to achieve economic breakeven on a unit basis.
3. **Global market strategy**: Pony AI's current focus is on scaling operations in mainland China, while working closely with local partners to expand into overseas markets, such as Dubai and Singapore. The company is prioritizing partnerships and establishing safety records in overseas markets before moving toward commercialization.
4. **Future of autonomous trucking**: Pony AI develops autonomous trucking technology while working with partners, such as Sinotrans, to explore commercial opportunities. The company currently has a fleet of more than 170 robo-trucks. As the trucking sector in mainland China faces challenges, including a driver shortage, which could impact the logistics industry, the rollout of robo-trucks could play a key role in addressing this issue.

Owen Chen: Could you please provide us with an update on the latest progress regarding Pony AI's global operations and commercialization efforts?

Haojun Wang: Yes, I would like to share some highlights on our recent progress.

As for the current stage of robo-taxi commercialization, at Pony AI, we believe that the 0 to 1 phase in the mainland Chinese market is complete. We received licenses for driverless robo-taxi commercialization in Beijing, Guangzhou and Shenzhen approximately two to three years ago, and we have been providing public services and charging fares in these cities daily since then. By the end of June 2025, we had more than 380,000 registered users on our PonyPilot ride-hailing app. On average, our vehicles in commercial service receive about 15 orders per day, indicating a growing base of early adopters. This demonstrates the safety and reliability of our technology, as users are consistently utilizing our services.

We are transitioning into the 1 to 100 scaling phase. Our strategy involves deploying more cost-effective vehicles to achieve unit economic breakeven as quickly as possible. This year, we are rolling out our seventh-generation robo-taxis, partnering with three OEMs. Currently, two of the three vehicle models are in production, with approximately 400 new Gen 7 robo-taxis already produced as of early September. We are on track to exceed a fleet size of 1,000 robo-taxis by the end of 2025.

Significantly, we have reduced the overall bill of materials (BOM) cost of our gen-7 ADK by approximately 70% compared to the sixth generation. This cost-effective approach will enable us to achieve unit economic breakeven by year-end or early next year when these vehicles are deployed in mainland China's tier 1 cities. We plan to ramp up vehicle deployment at an accelerated pace. All these vehicles use automotive-grade components, with an expected lifecycle of 600,000 kilometers, marking a potential inflection point for robo-taxi advancement.

Additionally, we are enhancing our user acquisition channels. In mainland China, we have established partnerships to integrate our services with major platforms, such as WeChat, Alipay and various ride-hailing apps, allowing users to access our services through multiple platforms, not just the PonyPilot app. Globally, we have partnered with Uber, enabling users in select markets to book a Pony ride through the Uber app. We have also secured permits in several countries, including South Korea, Qatar, Singapore, Dubai and Luxembourg.

Owen Chen: Given the significant investment required for robo-taxi operations, how does Pony AI prioritize which global markets to focus on for deployment? Specifically, what factors influence your decisions regarding regions, such as Europe, the Middle East and Singapore? Additionally, could you clarify the status of robo-taxi testing in the US? In your opinion, what does the global market outside of mainland China look like for robo-taxis?

Haojun Wang: Currently, our primary focus is on scaling operations in mainland China, as it forms the foundation of our business. Since robo-taxi services are fundamentally a ride-hailing business, achieving scale is essential, particularly with driverless technology.

When we evaluate the global regulatory landscape, we find that only mainland China and the US have mature regulations that allow for scaled driverless operations with the necessary permits. In contrast, markets outside of these two countries, such as Dubai and Singapore, are still in earlier stages of regulation, approximately two to three years behind where the US and mainland China currently stand. Both Dubai and Singapore are moving fast toward opening up driverless commercial operations, but initially, they will likely permit only a limited number of robo-taxis to ensure safety and build public confidence.

At this stage, our efforts in overseas markets are focused more on establishing partnerships and laying the groundwork for safety records rather than immediate commercialization. We are actively seeking local partners who are interested in operating robo-taxi services. Additionally, we assess whether these countries have a clear regulatory roadmap for permitting and commercialization, which is critical for our deployment strategy.

For instance, Dubai and Singapore have indicated a clear timeline for allowing driverless robo-taxis and the approximate number of vehicles they plan to permit. Markets with such clarity will naturally take higher priority for us.

However, it is important to note that the majority of our resources are currently dedicated to scaling up operations in tier 1 cities in mainland China. As for the US market, we are not exploring commercial opportunities there at this time. Therefore, our focus remains on the mainland Chinese market and select overseas markets, excluding the US.

Owen Chen: One point that comes to mind is the pricing of taxi services. The US might offer an ideal environment for deploying robo-taxis due to higher fares. However, what are your thoughts on markets like Tokyo, London, and Switzerland in terms of taxi pricing and the potential for robo-taxi deployment in those areas?

Haojun Wang: Essentially, robo-taxi means driverless, and their economic value and potential margins are the strongest in markets with high demand or elevated local labor costs. Markets such as Tokyo, London and Switzerland are some good examples of regions that could be highly profitable for robo-taxi operations in the future.

However, regulatory progress in these regions has been slower. For instance, the UK does have a regulatory framework in place and is expected to initiate driverless operations next year. While I believe these countries will eventually open up to robo-taxi services, the pace will likely be slower compared to their counterparts in the Middle East.

Owen Chen: Regarding the Middle East, is this a genuine business-to-consumer business, or is the demonstration supported by funding from the Dubai Emirates?

Haojun Wang: In the Middle East, decisions are typically made from the top down. However, there is a clear roadmap indicating that a certain number of robo-taxis will be permitted for deployment within a specified timeframe. This suggests that we can expect a rollout of driverless robo-taxis for commercial use as early as next year.

Beyond the US and mainland China, the Middle East is likely to be one of the next markets to open up for robo-taxi services. Additionally, the region aims to position itself as a hub for high-tech innovation, attracting advanced technologies to showcase its openness and competitive advantages. This approach will not only enhance technological development but also generate economic benefits.

Owen Chen: Is the trucking business still expanding in other regions? What are your thoughts on the future of the autonomous trucking industry?

Haojun Wang: The trucking business is crucial. In the mobility segment, shared mobility and ride-hailing represent the largest market, followed closely by logistics, with long-haul transportation being the largest within that segment.

At Pony AI, we have prioritized robo-taxis as our primary focus, especially since commercialization is at a critical juncture and regulatory support in mainland China is in place. Our efforts are concentrated on scaling driverless robo-taxi deployment.

Regarding our autonomous trucking technology, we have been developing it since 2020. Currently, regulations in mainland China require a human safety driver to be present during testing and commercialization. This limitation affects the profit margins compared to traditional logistics services, as we cannot eliminate the safety driver at this stage. However, we are actively engaging with regulators and believe that driverless policies for robo-trucks will be lifted in the next two to three years. This will position our trucking business as a significant revenue driver for Pony AI.

Currently, we operates more than 170 robo-trucks in our fleet, and we also has a joint venture with Sinotrans, the largest logistics transportation provider in mainland China. This partnership allows us to fulfill logistics service orders using our robo-truck fleet, generating additional revenue.

Owen Chen: I have heard about the joint venture with Sinotrans. In your opinion, how do you view the commercialization opportunities for autonomous trucking in mainland China? I have concerns regarding the low-cost trucking business, especially since removing the driver seems challenging. This situation suggests a Level 3 automation rather than Level 4 driving, which is fully automated

Haojun Wang: Ultimately, from a technological perspective, it is feasible to remove the human driver in autonomous trucking. The economic viability of robo-trucks hinges on this capability; only when the human driver is eliminated will the unit economics make sense. With Level 3 automation, where a human driver is still required, the costs remain comparable to traditional trucks, as the driver cost is a significant factor.

In mainland China, the trucking industry faces an additional challenge: a driver shortage. Unlike ride-hailing, the average age of truck drivers, especially in long-haul operations, is increasing, and younger generations are less inclined to pursue truck driving as a career. This impending shortage will pose a significant problem for the logistics sector in the future.

Daokuan Lu: I would like to delve deeper into the technology aspect. You mentioned that reducing the BOM cost is one important aspect for your business model. Beyond the

operational scale of your fleet, what are the core technological competencies that give your robo-taxis a competitive edge? Additionally, what does your technology roadmap look like?

Haojun Wang: This is a very interesting topic, and I would like to address it from several angles. First, regarding our seventh-generation robo-taxi, we significantly reduced the total cost by making a strategic decision to utilize as much Level 2+ and personal vehicle hardware as possible. For example, lidar in our seventh generation are the same as those used in BYD vehicles, allowing us to benefit from the increased adoption and cost reductions in the personal vehicle segment.

Additionally, we opted for the NVIDIA Orin X chip for our computing needs, moving away from traditional CPU and GPU [graphics processing unit] architectures. This choice enhances reliability and reduces costs, as industrial computers can be bulky and prone to issues like cooling and reliability.

However, adapting personal segment hardware for Level 4 applications is challenging. In Level 2+ applications, if the sensors struggle in conditions like rain or darkness, a human driver can take over. In contrast, Level 4 automation requires maintaining safety performance that exceeds that of a human driver, necessitating advanced AI algorithms to accommodate various sensor limitations.

Our unique PonyWorld model is built on reinforcement learning rather than imitation learning. While imitation learning relies on real-world data from human drivers, it limits the AI's capabilities to that of a human driver, which is insufficient for Level 4 requirements. Instead, we focus on reinforcement learning, which allows us to create a more robust AI system.

The PonyWorld model consists of three key components:

1. **Generative data**: We primarily use generative data for AI training, enabling us to simulate various conditions, such as adding noise to sensor data during rainy days. This approach is more efficient and cost-effective than collecting extensive real-world data.
2. **Fidelity**: The driving process is interactive; decisions made by the AI impact the behavior of surrounding vehicles and pedestrians. Therefore, ensuring high fidelity in our simulations is crucial for meaningful AI training.
3. **Defining good driving behavior**: Establishing what constitutes good driving behavior is complex, involving both objective and subjective metrics. Our criteria include safety (minimizing collisions), comfort (avoiding close encounters with pedestrians or other vehicles) and efficiency. We track these dimensions to ensure our technology meets the needs of robo-taxi operations, enhancing user experience and encouraging repeat usage.

Overall, our PonyWorld model infrastructure is unique in the industry, particularly among our mainland Chinese counterparts. While some companies are beginning to explore reinforcement learning, we have been developing this approach for some time.

Daokuan Lu: You mentioned the transition from imitation learning to reinforcement learning. How do you assess this upgrade in terms of improvements, such as takeover rates and average takeover mileage? Additionally, how is this optimization reflected in real-world operations?

Haojun Wang: As I mentioned, when evaluating safety for Level 4 automation, we no longer rely on disengagement metrics, since there is no human driver present in the vehicle. Instead, we utilize an internal good driver behavior evaluation system that includes a comprehensive safety dimension. This dimension tracks various metrics, such as near-miss rates, hard braking rates and collision

rates, particularly during the training phase.

Another important indicator is the 'remote assistant' ratio. In our robo-taxi operations, remote assistant monitor vehicles from a service center but do not control them. Occasionally, the vehicle may require guidance in complex situations. For example, if a vehicle encounters a blocked road and surrounding vehicles are using a reverse lane to navigate around the obstruction, the remote assistant can provide high-level instructions. They simply confirm whether the vehicle can use the reverse lane, after which the vehicle autonomously manages the maneuver, including avoiding oncoming traffic and pedestrians.

Currently, our remote assistant-to-vehicle monitoring ratio is 1:30, indicating progress in our vehicles' ability to handle safety and complex scenarios with minimal remote assistant intervention. This metric is a unique indicator of our Level 4 capabilities.

In contrast, Level 2+ systems still rely on disengagement metrics. If a human driver frequently needs to take over control, their attentiveness can diminish over time. For instance, if a driver only needs to take over once a week, they may not be as vigilant during their drive. When the time comes to regain control, they might not respond quickly enough, posing significant risks to the system.

Daokuan Lu: It is very interesting to note the differences. You mentioned a remote assistant ratio of 1:30 for operating robo-taxis — that is an impressive figure. Is this the current status of Pony AI in mainland China?

Haojun Wang: Yes, our capability is currently over 30. In some regions, we maintain a lower ratio, but technology-wise, the maximum is indeed over 30.

Daokuan Lu: Regarding the ADC, Pony currently has four Orin X chips. What are your future plans, and how do you evaluate the necessity of achieving 1,000 TOPS for Level 4 robo-taxis?

Haojun Wang: Achieving 1,000 TOPS [Total Operations Processing Systems] is a crucial principle for us, as it is necessary for our Level 4 robotaxi capabilities. We believe that 1,000 TOPS is sufficient for Pony's AI model at this stage. While more powerful chips will emerge in the future, our focus right now is on commercialization. It is not just about increasing power; it is about cost-effectiveness and ensuring a good return on investment for our hardware.

Daokuan Lu: I would like to revisit the topic of overseas markets. Given Pony's successful operations in mainland China, how easily can your AI algorithms or autonomous driving systems be adapted to other regions? How long will it take to transition the technology to a new market?

Haojun Wang: We have valuable experience from our vehicle deployments, so the initial setup in new markets typically takes weeks rather than months. However, local markets usually require us to accumulate a certain amount of mileage to obtain permits. Generally, securing these permits takes a few months — around one to two months after deployment. Most local scenarios are adaptable to our system, but we may need to conduct additional AI training for unique elements, such as traffic lights that we have not encountered in mainland China.

Daokuan Lu: Can you provide some numbers on your fleet size in different regions? This would help us generate a more detailed report.

Haojun Wang: We have not disclosed specific numbers yet, but most markets are currently in the

testing phase rather than commercialization. Some markets have around 10 vehicles, while others are at similar levels. However, we expect significant acceleration in some markets next year.

Daokuan Lu: What is your forecast for Pony in the next four to five years, leading up to 2030?

Haojun Wang: While we have not formally issued a forecast, we anticipate our fleet could range between 50,000 and 100,000 vehicles.

CONTACTS

The Americas
+1 877 863 1306

Europe, Middle East & Africa
+44 20 7176 1234

Asia-Pacific
+852 2533 3565

www.spglobal.com/mobility