Cepton, ALP.Lab, and TE Connectivity Complete Joint V2X Proof of Concept, "Periscope"

Real-time traffic analytics and communications solution alerts drivers to hazard five seconds before it was visible in proof-of-concept testing

SAN JOSE, Calif. & Graz, Austria –November 7, 2022– Cepton, Inc. ("Cepton") (Nasdaq: CPTN), a Silicon Valley innovator of high-performance lidar solutions, ALP.Lab GmbH ("ALP.Lab"), an Austria-based technology provider of autonomous vehicle testing solutions and TE Connectivity, a world leader in sensors and connectors, have completed a proof of concept project that confirms the ability of an integrated system to warn drivers of unseen hazards ahead. Named "Periscope," the project successfully extended a driver's field of view by using lidar sensors mounted at the intersection to "look around the corner" and warn of a wayward pedestrian approximately five seconds before they would be visible otherwise.

Using Cepton's intelligent 3D lidar perception, ALP.Lab's expertise in system integration, testing and data analytics and TE Connectivity's vehicle-to-everything (V2X) solution, the three companies created a solution that communicates additional information about road conditions in real time to the vehicle providing more time to react to potentially dangerous situations and enhancing overall safety.

"The results from 'Periscope' are impressive," said Christoph Knauder at ALP.Lab. "We tested a scenario where a pedestrian around a corner started to cross the road and thus stepped into the lane of the approaching test vehicle. The driver was able to be warned of the approaching pedestrian five seconds before the pedestrian became unblocked and appeared in his field of view. The high-resolution 3D sensing capabilities of Cepton lidars allowed us to generate smart analytics of the situation, while the V2X system by TE Connectivity enabled real-time communications to the vehicle, making it possible to drive an intelligent decision before it's too late. We believe 'Periscope' has proven the safety potential of smart infrastructure in the future of autonomous mobility. We look forward to extending our collaboration to test the solution in more use cases."

The companies are planning to collaborate on quantitative testing in the coming months to confirm this initial finding.

The project was carried out to address the alarming global issue of traffic accidents involving pedestrians or bicyclists. According to NHTSA, in 2020, "a pedestrian was killed every 81 minutes and injured every 10 minutes in traffic crashes." In the 2021 statistics published by the European Commission, "70% of total fatalities in urban areas are vulnerable road users."

While recent enhancements in advanced driver assistance systems (ADAS) are expected to help reduce crashes between vehicles and bicyclists, pedestrians, and e-scooters, the complexity of road conditions today leaves a critical gap where not all road users are within the vehicle's field of view when early warning is needed. This reduces the ability of the vehicle to react and prevent potential collisions.

"Periscope" was precisely designed to expand the awareness of a vehicle and its driver of the overall traffic situation beyond visible surroundings and the onboard sensors' reach via real-time communications of high-precision, smart data collected from the infrastructure.

In this joint project, the three leading technology innovators combined their world-class expertise to deliver an integrated V2X solution:

- Cepton provided high-precision perception through its Helius® Smart Lidar System, which combines high-performance lidar sensors with edge computing and perception software to deliver real-time, 3D object detection, classification and tracking day and night.

- ALP.Lab spearheaded the overall system integration and testing. Its proprietary software translated the perception data output from Cepton's lidar system into Collaborative Awareness Messages (CAM), which provide a driver vital information about traffic flow, vehicle position, driving speed, driving direction etc. ALP.Lab also provided the testing area and infrastructure for "Periscope."

- TE Connectivity completed the solution with V2X hardware components in the car and in the surrounding infrastructure, which allow the transmission of CAM to any vehicle. TE Connectivity also provided technology for an on-board display of the vehicle's location and any potential road hazards.

"We are thrilled to announce the successful completion of 'Periscope,' in collaboration with ALP.Lab and TE Connectivity," said Cepton CEO and Co-founder Dr. Jun Pei. "NHTSA revealed that 6,516 pedestrians were killed in traffic accidents in 2020, and that's a heart-rending figure. We believe proactive safety measures should be taken to protect vulnerable road users, and that's why we invested our efforts in proving how enhanced intelligence in infrastructure can, in turn, make vehicles smarter and safer. Through the lens of 'Periscope,' we can see that the increased connectivity between vehicles and infrastructure can help keep everyone safe on the road. I believe that is also a crucial step towards preparing our society for the future adoption of fully autonomous driving."

Ralf Klaedtke, CTO Transportation Solutions at TE Connectivity, says: "The results of the V2X 'Periscope' are yet another proof point that V2X and sensing technology is ready to save human lives in road traffic every day. V2X communication will be the breakthrough technology to advance the safety of autonomous driving and intelligent future mobility. This technology will play a key role in TE's future."

Gerhard Greiner, Managing Director from ALP.Lab, adds: "To enable safe and secure testing of automated driving technologies is our core competence. Therefore, we are happy to bring together global players to implement and demonstrate future vehicle technology in Austria."

About Cepton, Inc.

Cepton is a Silicon Valley innovator of lidar-based solutions for [automotive](#) (ADAS/AV), [smart cities](#), [smart spaces](#) and smart industrial applications. With its [patented lidar technology](#), Cepton aims to take lidar mainstream and achieve a balanced approach to performance, cost and reliability, while enabling scalable and intelligent 3D perception solutions across industries.

Cepton has been awarded a significant ADAS lidar series production award with Koito on the General Motors business. Cepton is engaged with all Top 10 global OEMs.

Founded in 2016 and led by industry veterans with decades of collective experience across a wide range of advanced lidar and imaging technologies, Cepton is focused on the mass market commercialization of high performance, high quality lidar solutions. Cepton is headquartered in San Jose, CA and has a center of excellence facility in Troy, MI to provide local support to automotive customers in the Metro Detroit area. Cepton also has a presence in Germany, Canada, Japan and China to serve a fast-growing global customer base. For more information, visit www.cepton.com and follow Cepton on [Twitter](#) and [LinkedIn](#).

About ALP.Lab GmbH

ALP.Lab is the Austrian Light Vehicle Proving Region for Automated Driving and provides comprehensive services for safe and secure testing of automated driving technologies.

Founded in 2017, ALP.Lab provides an integrated test chain for automated driving functions and vehicles, enabling testing activities in both the virtual and real world. ALP.Lab offers a holistic traffic monitoring solution to create testing scenarios out of real-life driving behavior in primary, secondary, and urban road networks. Further, ALP.Lab provides a professional testing team for Euro-NCAP-compliant ADAS/AD testing, including extensive testing equipment and different proving grounds. A unique mobile HIL (hardware-in-the-loop) system facilitates complex sensor testing and validation.

A strong network of industrial and scientific partners support the capabilities of ALP.Lab for safe and secure testing of any autonomous mobility solutions. Creating value for their customers by providing high-end testing facilities and real-time traffic data is the main driver for the Austrian Light Vehicle Proving Region for Automated Driving.

For more information, visit www.alp-lab.at and follow ALP.Lab on [LinkedIn](#) or [YouTube](#).

About TE Connectivity

TE Connectivity is a global industrial technology leader creating a safer, sustainable, productive, and connected future. Our broad range of [connectivity](#) and sensor solutions, proven in the harshest environments, enable advancements in [transportation](#), industrial applications, medical technology, energy, [data communications](#), and the home. With more than 85,000 employees, including over 8,000 engineers, working alongside customers in approximately 140 countries, TE ensures that EVERY CONNECTION COUNTS. Learn more at www.te.com and on LinkedIn, Facebook, WeChat, and Twitter.

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