

fka launches project to address test methods for LiDAR performance evaluation in adverse conditions

- fka and DVN have formed a consortium to further develop test methods for LiDAR performance evaluation
- Project focus is on an industry-accepted definition of test methods addressing adverse conditions
- Methodology covers three aspects of adverse conditions: adverse weather, contamination and interference

Aachen, May 2024: LiDAR sensors (Light Detection and Ranging) offer precise measurements combined with the ability to provide three-dimensional scans of the vehicle environment. This combination positions LiDAR sensors as a key technology for the transition from SAE level 3 autonomy to the higher levels of autonomy. The potential to offer redundancy to existing sensor technologies for environment perception is further evident in the increasing number of LiDAR sensors and the increasing number of OEMs choosing to offer vehicle models with LiDAR sensors. There are many different underlying technologies which are a combination of measurement principles, scanning, emitter and receiver technologies. This makes a comparison between LiDAR performance difficult.

To address this, an industrial consortium led by fka together with the German Institute for Standardisation (DIN) and the Society of Automotive Engineers (SAE) published **the DIN SAE Specification 91471** in April 2023. Through this specification, a base methodology for the performance evaluation of LiDAR sensors irrespective of the sensor design and underlying technology is achieved. The specification covers performance evaluation when the test conditions are ideal (dry weather, dry test surface, clean sensor surface and transmission medium, no interference with other LiDAR sensors, etc.).

In October 2023, fka GmbH launched a new industrial consortium together with the Driving Vision News (DVN) network to create a **test methodology for performance evaluation** of LiDAR sensors when subjected to non-ideal or adverse conditions. The LiDAR performance in adverse conditions project covers three main pillars of adverse conditions that potentially affect LiDAR performance:

1. Adverse weather such as rain or fog
2. Contamination of sensor surface through dirt or contamination of transmission medium through road spray or dust
3. Interference with other LiDAR sensors or cameras

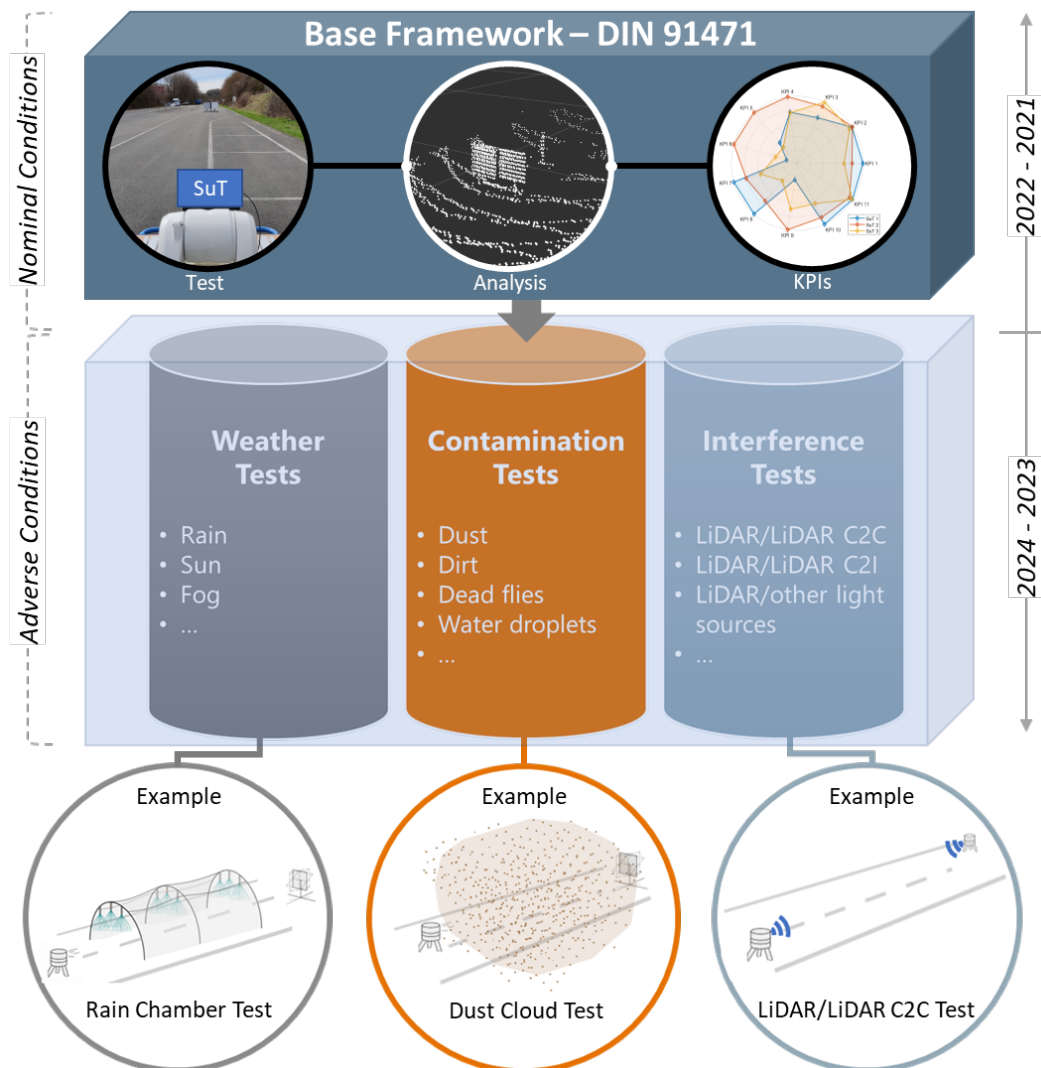


Image: Extension of test framework for LiDAR performance evaluation

The project is scheduled to end in December 2024 with the aim of having an industry-wide accepted definition of test methods for adverse conditions. Some of these test methods shall also be validated with multiple LiDAR sensors available within this project. Upon project conclusion in 2024, the process to submit these test definitions for the formulation of a new standard addressing adverse conditions in 2025 shall be started.

The consortium consists of 9 industry partners with OEMs, LiDAR manufacturers and Tier 1 suppliers and LiDAR component suppliers being part of the mix. OEMs such as Volvo Cars Corporation, TORC Robotics and Honda R&D Europe joined along with LiDAR manufacturers and Tier 1 suppliers such as Valeo, Microvision and Luminar Technologies. The final two technological partners are Scantinel Photonics, a silicon photonics based FMCW LiDAR startup along with CHASM Advanced Materials, a leading provider of transparent LiDAR screen heating solutions, using cutting-edge carbon nanotube/copper micromesh technology.

Partners



About fka

For 40 years, fka has been internationally known as an innovative engineering service for the mobility industry. Driving the world by developing ideas and creating innovations is the mission statement that fka's 160-strong team is committed to.

The team is inspired by a passion for efficient, safe and fascinating mobility. As one of the first companies on the Aachen campus, the spin-off of the Institute for Automotive Engineering of the RWTH Aachen University demonstrated entrepreneurial foresight.

Interdisciplinary expertise in all aspects of mobility and technological visions, combined with the advantages of the inspiringly creative location, are fka's fuel. Ideas, innovations and unique methodological expertise are shaped into well-founded and secured solutions that give fka's customers the necessary edge in a wide range of issues.

A complete spectrum of services, ranging from consulting and conception to simulation and design, prototype construction and experimental testing, forms the basis for this.

With the credo "creating ideas & driving innovations", the team constantly has the mobility of the future in mind.

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