

# Autonomous Driving in Harsh Weather Conditions

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sensible<sup>4</sup>

# Our Mission Is to Make Shared Driverless Mobility Mainstream

Sensible 4 is a Finnish self-driving technology company developing full-stack autonomous driving software for last-mile vehicles.

**80+**

Employees

**2017**

Founding Year

**10+**

OEM Customers

**\$7 million**

A-Round Funding

Key Customers



TOYOTA

NOKIA

Panasonic

MUJI  
無印良品

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# Sensible 4 in SHOW Project

Sensible 4 is one of the partners in a pilot in Tampere, Finland.

Other partners are Sitowise, VTT and the city of Tampere.



# Why Weather Poses Problems for Self-Driving



## Measurement Errors

Sensor measurement errors lead to problems for the vehicle's software, as the basis of vehicle steering decisions can not be trusted. Most vehicles usually stop at this point, as they don't know what to do.



## Snow Covered Lanes

Snow and dust can also cover the lane markings and traffic signs, making it very hard for a computer vision to understand their meaning.



## Blocked Sensors

Sensors, (e.g. LiDAR's and cameras) are the eyes of the autonomous vehicle. Bad weather such as rain, falling leaves and snow add noise and error to their observations and measurements.



## Slippery Roads

Slippery roads make it more difficult to control the vehicle.



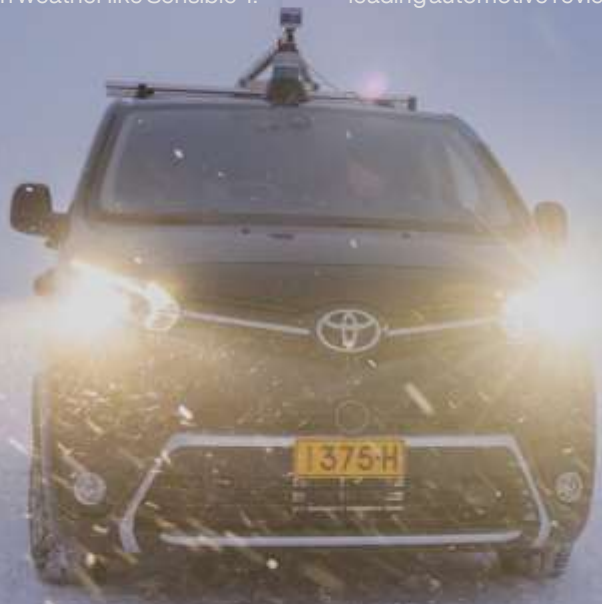
### Best-in-Class Performance

There's no other autonomous driving software performing in harsh weather like Sensible4.

### Independently Validated

Uniqueness and suitability of our solution have been validated by a leading automotive reviewer.

# Unique All-weather Approach for Last-Mile Autonomous Driving Based on Decades of Research



- Probabilistic mapping used for positioning is naturally robust against the elements.
- Various sensors with sensor fusion used to provide best obstacle tracking in bad weather.

# Sensible 4 in SHOW Project

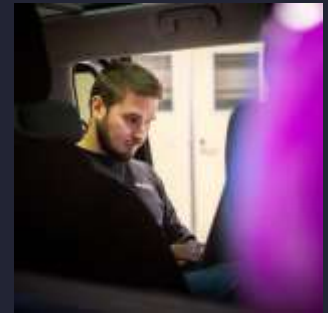
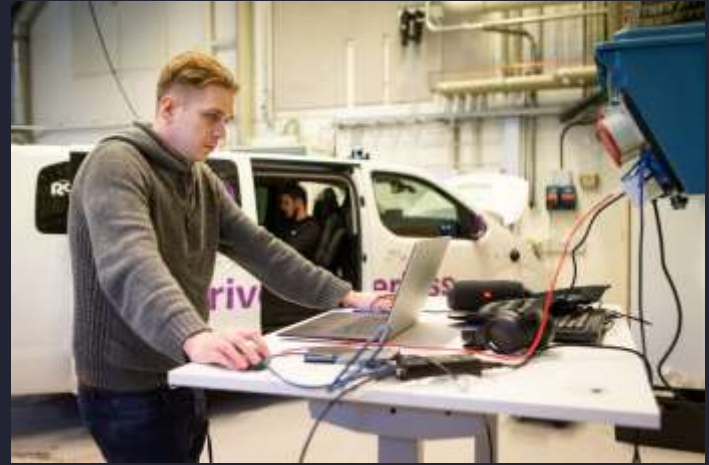
1663

Passengers transported

5569

Kilometers driven

- Sensible 4 drives two autonomous Toyota Proace vans in the pilot.
- Autonomous vehicles work as a feeder transportation for the new tramline.



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SHOW

# Thanks!

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