

tu simple



Autonomous Vehicle Safety Considerations

Safety is a key component in TuSimple's autonomous technology development process

Safe Development Processes

In place starting from software simulation to track to real traffic deployment



Functional Safety

Strong functional safety team and quality team in house; ISO 26262 compliance. Developing ISO 16949 quality practices

Operational Safety

Test driver and test engineer always present on truck; mission safety assessments;

SAE Levels of Driving Automation

TuSimple has developed the world's first L4 autonomous capable trucking solution



0

No Automation

- Zero autonomy
- Drivers perform all driving tasks

1

Driver Assistance

- Vehicle controlled by the driver
- Driving assist features available

2

Partial Automation

- Acceleration & steering automated
- Drivers must remain engaged at all times

3

Conditional Automation

- Drivers not required to monitor the environment
- Drivers must be ready to take control at all times with notice

4

High Automation

- Perform all driving functions under certain conditions
- Driver is not required in defined use case

5

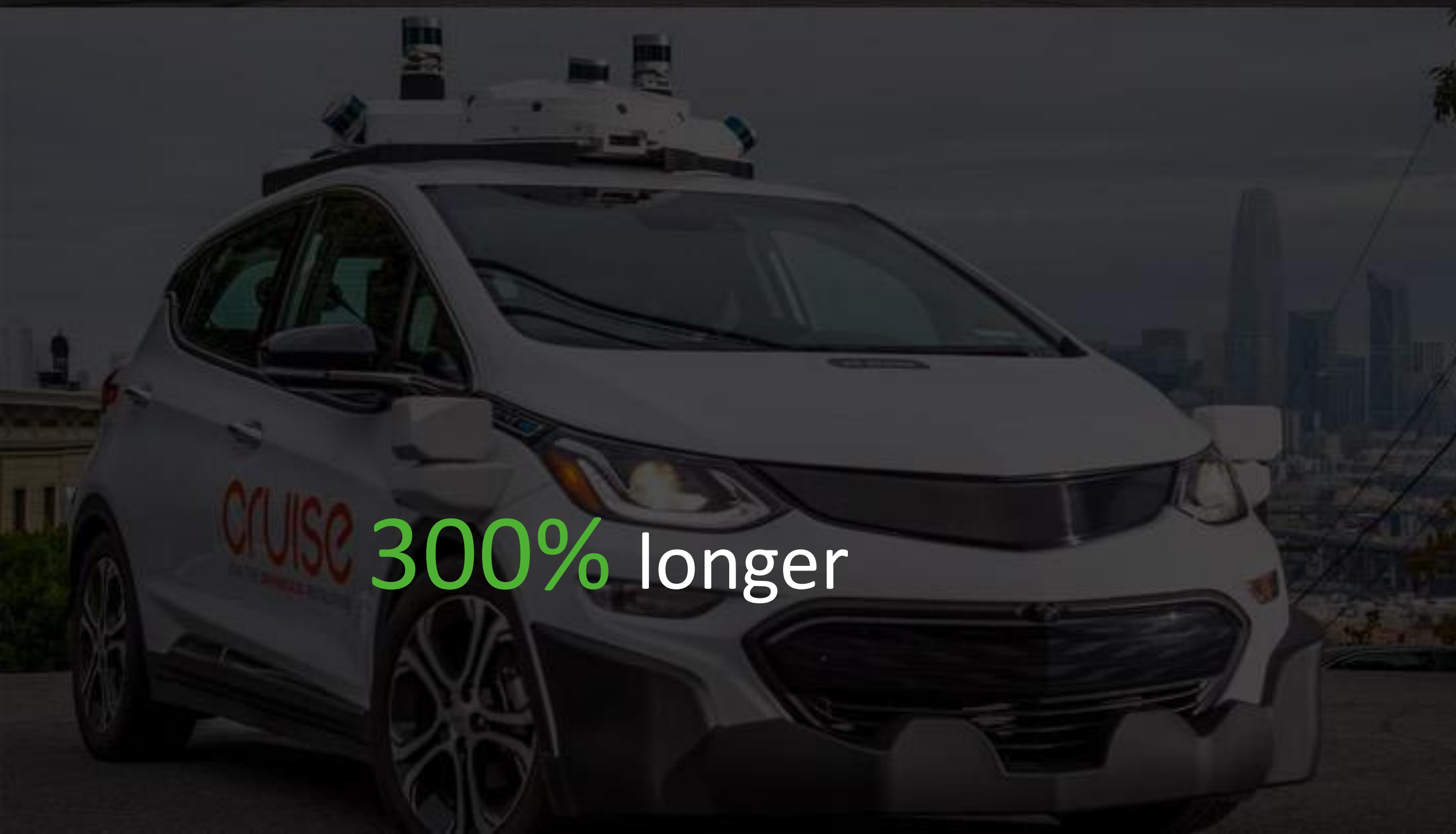
Full Automation

- Perform all driving functions in all conditions
- Driver not required to operate

The Fundamental Challenges for Trucks



44% wider



300% longer

18 wheels

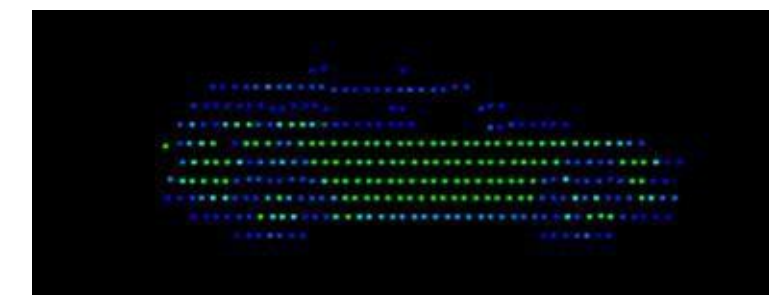
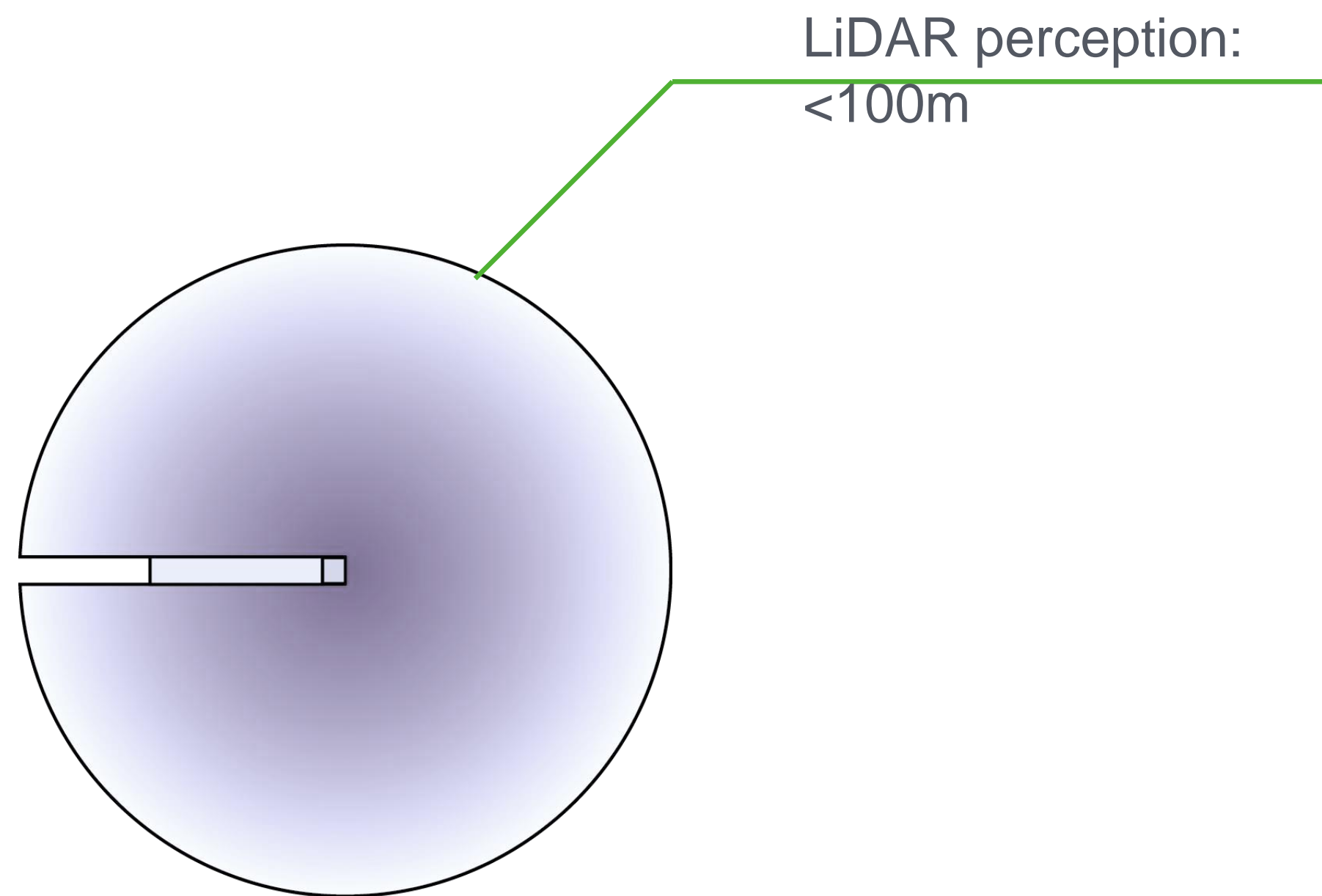
200% wider turn radius

12 gears

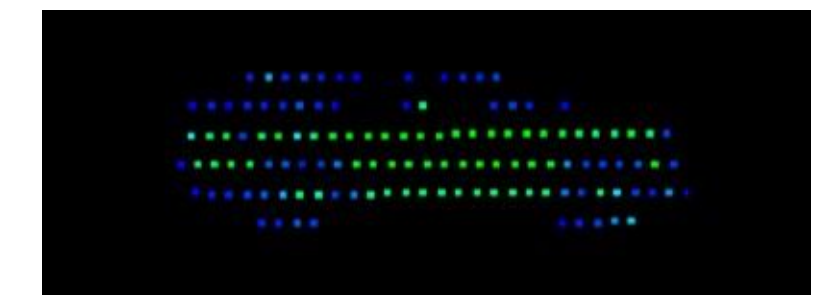
Articulated



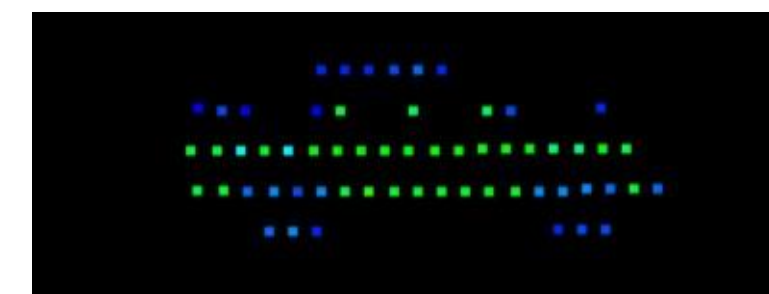
Lidar Limitation



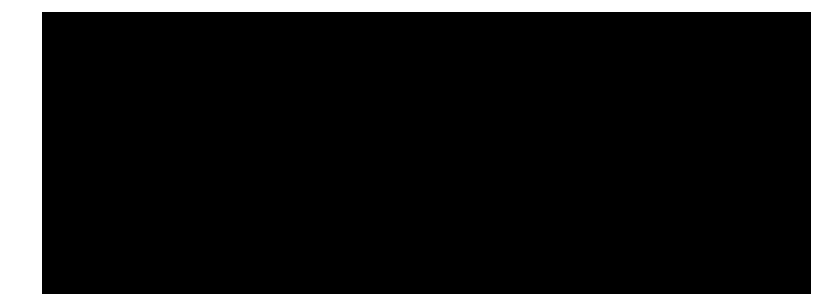
Point cloud at 30m



Point cloud at 50m



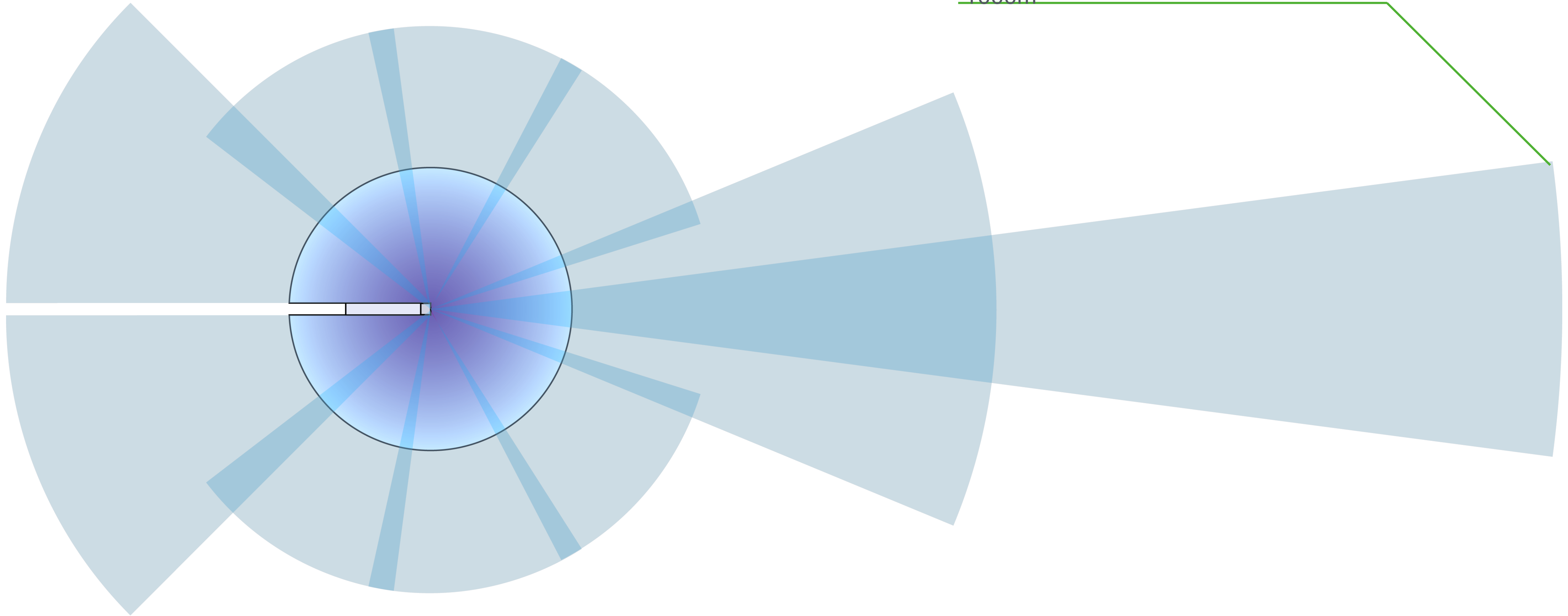
Point cloud at 70m



Point cloud at 200m

Superior Camera Perception Range

Camera perception:
1000m



System Capability in Adversarial Weather

TuSimple's in-house software stacks enable the L4 system to operate smoothly under adversarial weather conditions, such as

- Heavy Rain
- Severe Wind (Level 9 in the Beaufort Scale)
- Arizona's Haboob (Dust Storm)



Operation in Rain

