

Teleoperation



Or: The key to making autonomous vehicles truly driverless.



Hendrik Kramer
Co-Founder & CEO PYLOT GmbH

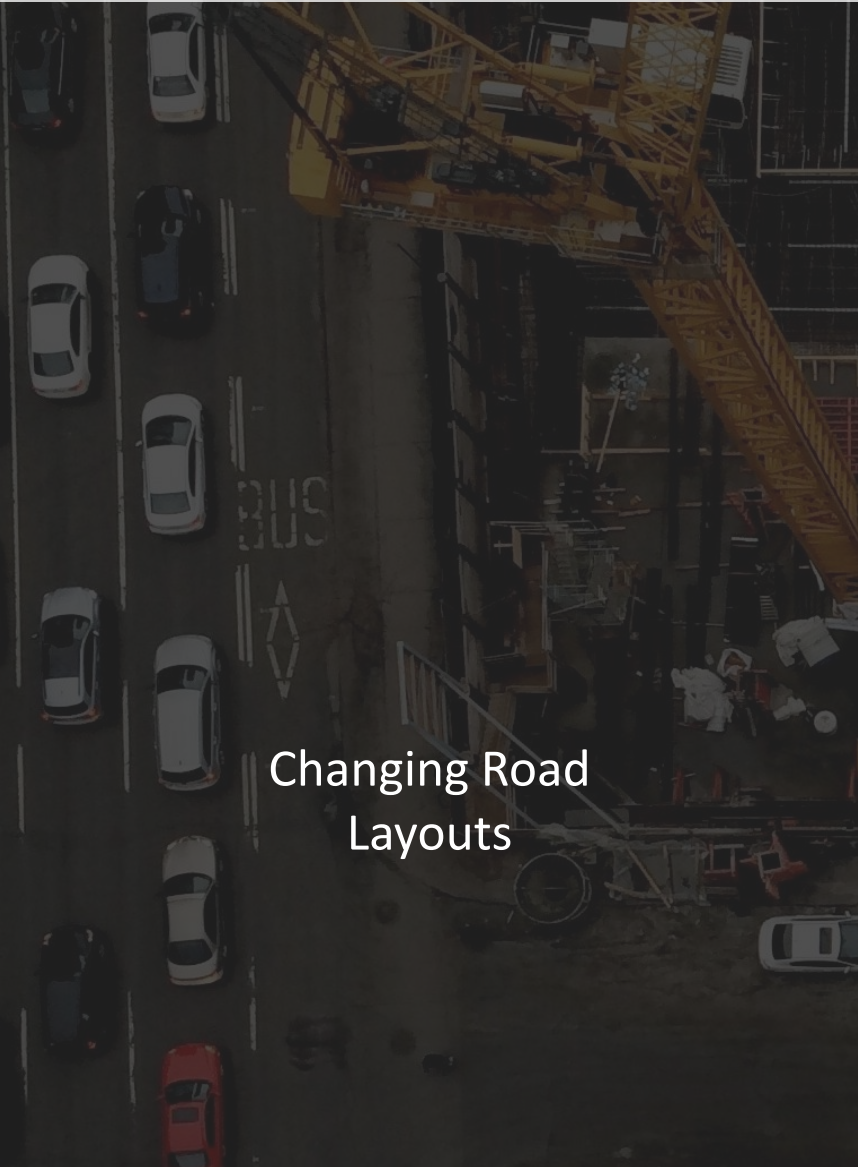


“Autonomous cars won’t ever be able to drive in all conditions.”

CEO Waymo, Nov’2018

AV Tech limitations

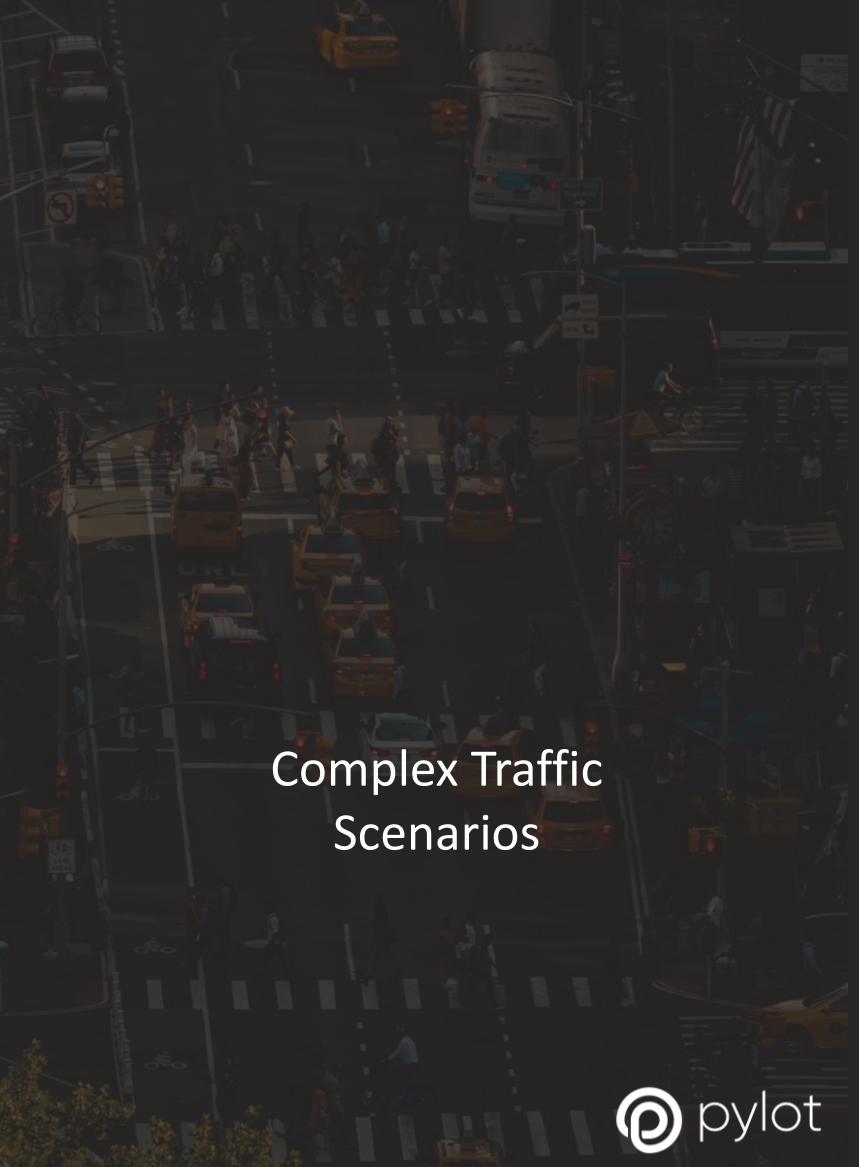
The Problem



Changing Road
Layouts



Harsh Weather
Conditions



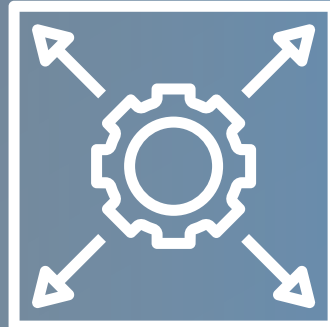
Complex Traffic
Scenarios

Current Solutions?

The Problem



Keeping Safety Driver
on board



Limit Operational
Design Domain (ODD)



Wait until
Tech arrives

Better – Teleoperation!

The Solution

Remote control of vehicles over the **cellular network**



The Approach of Teleoperation

Remote control of vehicles over the **cellular network**

THE 2 USE-CASES FOR TELEOPERATION

1. Teleoperation as primary driving mode (up to 100%)
2. Teleoperator as Backup of the AV (down to 0.001%)

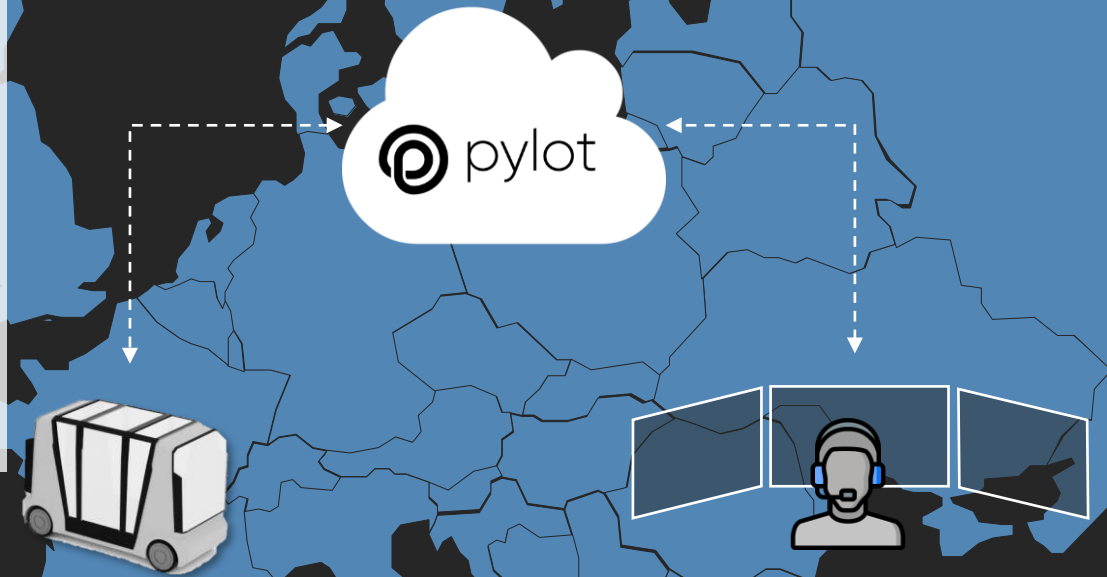


The Approach of Teleoperation

Remote control of vehicles over the **cellular network**

EFFICIENCY LEVERS FOR N:N-FLEET OPERATIONS IN 3 STEPS

1. “Driver on Demand” increases driver utilization (up to 3X) through 100% teleoperation as the primary driving mode
2. Latency improvements allow safe Teleoperation from low-income countries (up to 10X)
3. Full automation of some routes and tasks (up to 50X) by combination of Teleoperation & AV



THE CONCEPTS BEHIND

INDIRECT CONTROL

VS.

DIRECT CONTROL



Remote Assistance



Real-time Remote Driving

YES, THERE ARE LIMITS

- ODD for Teleoperation defined by
 - Latency
 - Network Coverage
- Misconception: No “On The Fly” Takeover at High Speeds
- Legislation

THE USE CASES FOR OUR N:N TELEOPERATION PLATFORM



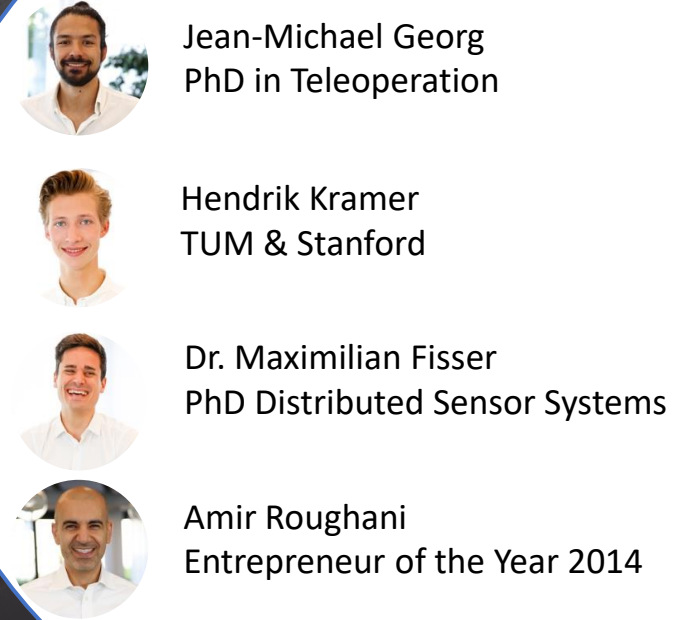


Pylot's strong team is ready to take on your challenge!

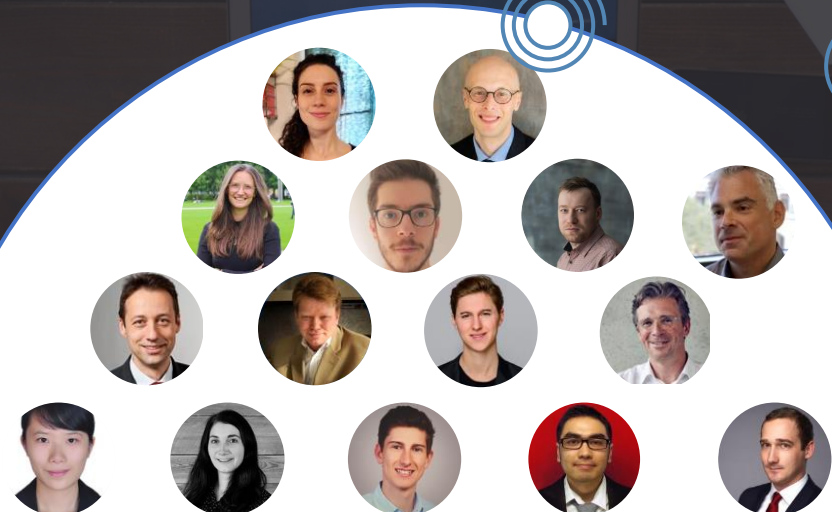
Our Support



Our Founders



Our Team



Proven teleoperation technology

- ✓ Multiple PoCs with OEMs
- ✓ Deployment at a leading German logistics provider
- ✓ Deployment of Shuttle Buses in different locations in Europe

Ask us for references!



ENABLING AUTONOMOUS FLEETS THROUGH TELEOPERATION



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