# CORVETTE

## Cognitive Sensing Framework for Vehicle-Fleet Driven Data Services

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## MOTIVATION & GOALS

The project aims to develop infrastructure for **cognitive vehicle** fleet monitoring, involving the collection, evaluation, interpretation, and utilization of vehicle data for **data-driven services.** This includes supporting development processes and providing on-vehicle services like predictive maintenance. **Multiple use cases** will be addressed, and emerging mobility trends can be detected through the collected fleet data.

- Rapidly prototype onboard measurement for efficient data collection
- Design **modular devices** for use-case-specific data capture and future expansions
- Perform onboard data capture, interpretation, and preprocessing for intelligent analysis

**Project FactBox**

**Project Name** RECTIFICATION
**Project ID** MFP II 4.1.1
**Duration** 36 Months

**Area 4.1**
Cognitive Products

**Project Lead**
Dr. Michael Krisper

## APPROACH

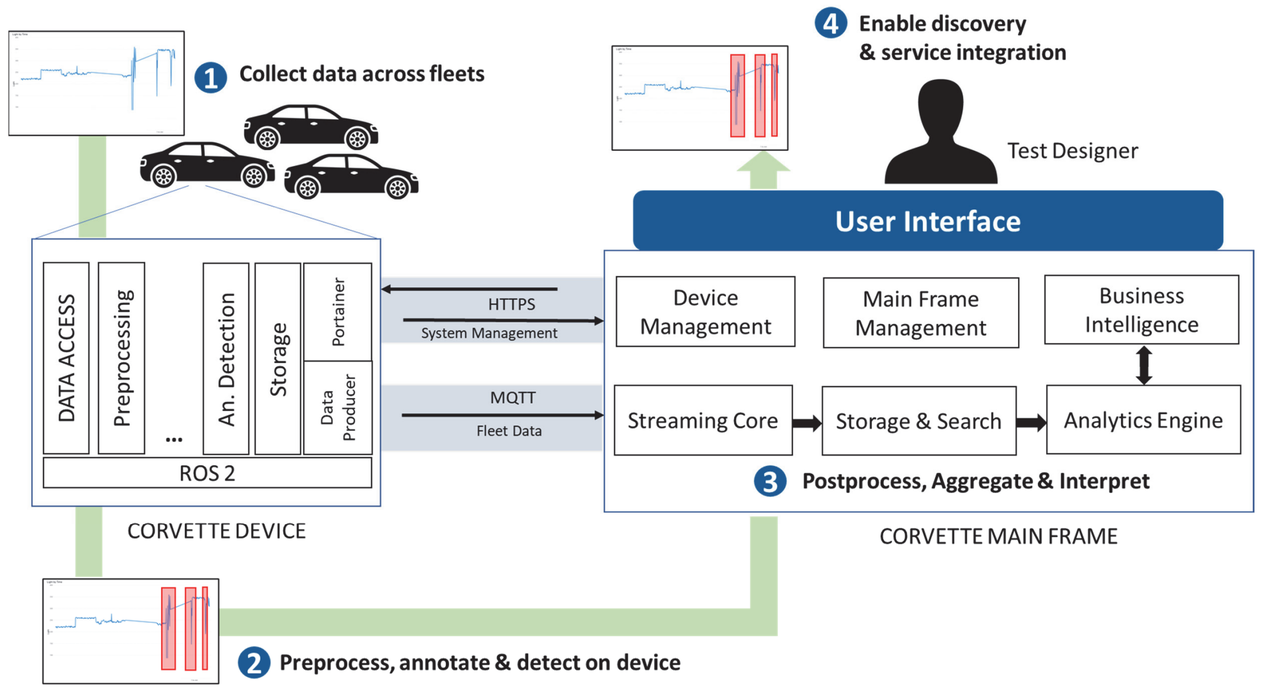
- Rapid **prototypes** for data collection
- **Scalable backend** for training, interpretation,
- and service integration
- Model **adaptivity**, robustness, and stability
- Anomaly detection in **multimodal data**
- Real use case application and environment detection

## CONTRIBUTION

CORVETTE Applications (real-time)

- Digit Dashboard Detection – QR code approach to identify regions of interest (ROIs)
- Weather and Tunnel Detection
- Anomaly Detection – Monitoring acceleration data
- Up/Download of sensor data and ML models

## SYSTEM ARCHITECTURE




### CORVETTE DEVICE in every vehicle

- Sensors: cameras, microphones, accelerometers, temperature …
- NVIDIA Jetson as High-End-Processing Unit with a powerful GPU
- LTE/5G communication interface to the backend
- Real-time anomaly detection

### CORVETTE MAIN FRAME in the cloud

- MS Azure storage & data analysis
- Anomaly detection and re-training
- Data visualization for post-processing
- Upload retrained models to the device

### REAL-TIME APPLICATION

- Machine Learning Models for environment detection: **weather** and presence of **tunnel**.
- **Anomaly detection** in the collected time series data (e.g., speed).
- The models are tested and evaluated in **real use case** scenarios.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