



This project is co-financed by the European Union and the Republic of Turkey



**INNOVATE.
INTEGRATE.
TEST.**

**Open Innovation
Autonomous Vehicle
Development and Testing
Platform**



ABOUT

OPINA is an open innovation autonomous vehicle (AV) platform that is committed to accelerating intelligent mobility software development within a comprehensive, dynamic, and agile automotive innovation ecosystem.

OPINA is co-financed by the European Union and the Republic of Turkey. It is implemented by the Ministry of Industry and Technology under the scope of the Competitive Sectors Program and managed by Istanbul OKAN University.

2009 - Okan University established Transportation Technologies and Intelligent Automotive Systems Application and Research Center

2011 - The First International Workshop was organised with the Republic of Turkey Ministry of Transport

2014 - E-HIKE Founded

2015 - E-HIKE Link Founded

2019 - Advanced Autonomous Bus Development

2020 - OPINA Project Started

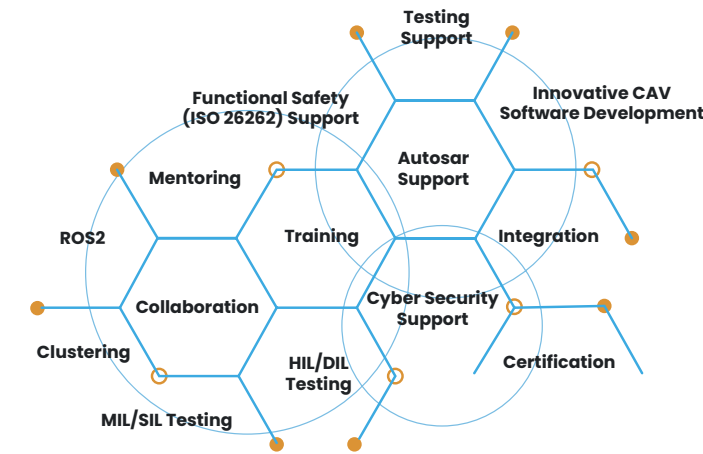
BACKBONE of OPINA

State-of-the-art, open-innovation autonomous vehicle and CCAM software technologies development platform

OPINA OFFERS

- 📶 Open Innovation eco system for CCAM technologies development
- 📶 Integration of innovative software and hardware components
- 📶 MIL/SIL software testing
- 📶 HIL functional testing
- 📶 DIL benchmark analysis
- 📶 ROS2 middleware support
- 📶 AUTOSAR compliance Support
- 📶 ISO 26262 Functional Safety design assistance for software development
- 📶 In Vehicle Testing Support
- 📶 Automotive Cyber Security compliance design assistance for software development
- 📶 Clustering and Collaboration
- 📶 Project Pool for Various National and International Incentive Programs
- 📶 Certification in Line With the Related Regulations
- 📶 Participation into Workshops/conference/Webinars
- 📶 Training and Project Mentoring
- 📶 Live Training
- 📶 E-learning

**Innovate and Integrate:
Anytime, Anywhere!**



OPINA PLATFORM and SERVICES

Incorporate autonomous vehicle and CCAM applications into the OPINA environment.

- 📶 Open Innovation Software Component Development
- 📶 Software development environment and toolchain
- 📶 Model-based development environment
- 📶 CCAM application development assistance
- 📶 Communication protocol development assistance
- 📶 Diagnostics development assistance
- 📶 Fail safe system development assistance
- 📶 AUTOSAR-based tools usage and software architecture components development assistance
- 📶 Automotive cyber security analysis support
- 📶 ISO 26262 Functional Safety analysis support

Integration of SW/HW Components

- 📶 SSIT-Software-Software Integration and Testing
- 📶 HSIT - Hardware-Software Integration and Testing
- 📶 Innovative use-case integration

OPINA SIMULATION and TESTING ENVIRONMENTS

- 📶 MATLAB/SIMULINK simulated environment,
- 📶 Open-source software simulation environment
- 📶 Commercial tool software simulation environment
- 📶 Commercial tool hardware simulation environment
- 📶 Commercial tool benchmarking analysis environment
- 📶 Model in the Loop (MIL) verification assistance
- 📶 Software in the Loop (SIL) verification assistance
- 📶 Hardware in the loop (HIL) validation assistance
- 📶 Driver in the loop (DIL) benchmarking analysis AVRS assistance.
- 📶 Co-simulation environment with scripted scenarios assistance

VEHICLE TESTING

- Drive-by-wire with fully implemented steering-by-wire, throttle-by-wire, brake-by-wire, and gearshift-by-wire functions.
- Full AD sensor set comprising LIDARs, camera, radars, V2X OBU and GPS/IMU devices.
- Installed & integrated to test vehicles for sensor fusion and sensor processing tasks.
- Automotive grade computing unit installed & integrated to test vehicle for straightforward verification and validation of AD application SW.
- Intuitive user interface for driving control transfer actions between the driver and autonomous driving system.
- Emergencies stop and driving control transfer support.
- CAN Bus messaging monitoring and analysis through state-of-art CAN analyser tools.
- Raw sensor data collection in real-time format for replaying/recreating field test traffic environments in OPINA lab settings

CERTIFICATION FACILITY

Certification is Key for Commercializing the Product Active Compliance

OPINA complies with international industry standards:

- Automotive safety ISO 26262
- Automotive cybersecurity
- Functional homologation
- CCAM application standards scenarios compliance

TRAINING

Removing the Roadblocks to Success through OPINA Training

- Embedded software development with Linux device drivers
- Autonomous application software development with tool chain
- Model-in-Loop (MIL) / Software-in-Loop (SIL) / Hardware-in-Loop (HIL) / Driver-in-Loop (DIL) simulation and testing environment
- Algorithm Modelling and Simulation.
- CCAV Control Methodologies
- CCAV Sensor Technology and hardware interfaces
- CCAV Software Technology and Architecture
- CCAV Programming
- CCAV Functional Safety Requirements
- CCAV Software Security
- CCAV Sensor Fusion Technology
- CCAV Communication Protocols
- CCAV Operating Systems
- CCAV Computer Vision
- CCAV Deep Learning
- CCAV Artificial Intelligence and Machine Learning
- CCAV Software Development Tools
- CCAV Vehicle Testing

MENTORING

Mentoring Moves Ideas Forward

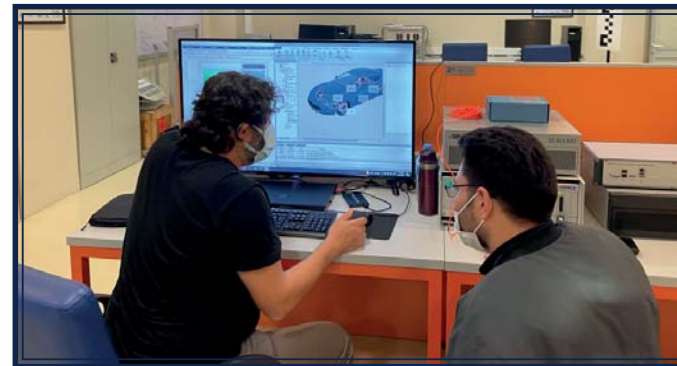
- Mentoring
- 1-on-1 Coaching

OPINA mentors and coaches can help you:

- Prepare for Demo Day
- Contact angel investors and venture capital sources
- Connect with potential strategic partners
- Develop new project and patent ideas
- Establish innovative enterprises
- Create sustainable commercialisation strategies
- Learn skills needed by tech founders and start-ups

LEGAL ASSISTANCE

- Legal Assistance Data Bank
- Domestic Regulations on CCAM
- International Regulations on CCAM
- Guidelines
- Guidelines on Liabilities
- Guidelines on IPR
- Legal Notice
- Disclosure and Waiver of Warranties
- Confidentiality Documents
- Data Privacy Policy and Documents



INTELLECTUAL PROPERTY MANAGEMENT

Co-development requires intellectual property (IP) protection that can operate with multiple approaches, missions, and operating modes. Development and testing often generates different side and foreground intellectual assets, until a final product is created. Ways to guarantee proper ownership are to manage and assure confidentiality, to detect and identify components that have IP qualification, and to register and follow protection procedures.

OPINA CLUSTER

The OPINA Cluster is positioned to become a leading AV, ADAS, and CCAM (Cooperative, Connected and Automated Mobility) networking arena. With a deep commitment to advancing innovation, we are empowering innovators across the mobility spectrum to create and accelerate the deployment of autonomous software solutions.

COOPERATION and MATCHMAKING

OPINA Cluster membership allows you to find the right strategic partners to get funding for your ideas and create cooperative projects. Workshops for technology transfer and building bridges to expand commercialisation at national and international levels.

Contact us for details on OPINA Cluster and Platform Membership.



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