

iARGUS-CMD

Traffic Scenario Planning, Verification, Execution & Visualization Software for advanced Vehicle-in-the-Loop operations on the Proving Ground within the iSWACO-ARGUS Proving Ground Instrumentation & Automation

iARGUS-CMD gives the operator the unmatched flexibility to generate and execute repeatable as well as individual Vehicle-in-the-Loop tests using traffic scenarios for vehicle testing and homologation as well as for validation of sensors like radar, lidar, cameras etc. Moveable objects according to ISO 22133-1 can be real vehicles, soft targets and virtual elements.

The **iARGUS-CMD** software, installed on the iARGUS-CC Control Center of the **iSWACO-ARGUS** system, is used to plan, to verify, to execute and to monitor the trajectories of each participating moveable objects (vehicles, soft crash targets) on the proving ground (PG).

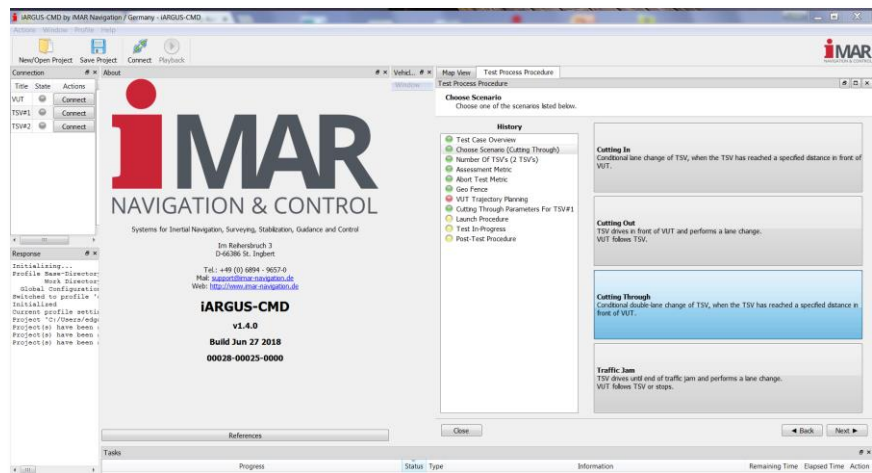
- Traffic scenario definition and **trajectory planning** and generation for each participating moveable object. A powerful import function is available to process scenarios defined by **OpenScenario** (others like CarMaker on demand)
- Execution and supervision of the traffic scenario on the PG
- Simultaneous support of several Traffic Simulation Vehicles (TSV) and Soft Crash Targets (SCT) together with the Vehicle under Test (VUT) within the same traffic scenario.
- Availability of definable launch procedures and post-test procedures to guide all vehicles into the test and to guide them automatically back to a defined position after the test has finished.
- Definable Assessment Metric and Abort Test Metric to qualify the test result and to abort the test in case of unwanted situations
- Geo Fence definable to suppress driving of the driverless vehicles outside the allowed area
- Test visualization and surveillance in real-time
- Support of all scenarios, for vehicles up to SAE level 5, on proving grounds and on public roads.
- Communication protocol fully compatible with the future ISO 22133-1 standard. iMAR is member of the ISO WG.
- iSWACO-ARGUS is also aligned to the latest results of the German **PEGASUS** project.
- iARGUS-CMD is integral component of iMAR's **iSWACO-ARGUS** system for enhanced Proving Ground Automation

iARGUS-CMD furthermore performs the download of the planned scenarios to the vehicles and to the ISEs

(Infrastructure Elements), like **TSV-KIA-NIRO** as TSV, any arbitrary Vehicle under Test, SCTs (4a, ABD, Humanetics / DSD, DRI etc. on request) and traffic lights, wind generators, rain machines etc. as ISE, and controls and monitors the execution of the entire test scenario in real-time.

The **iARGUS-CMD** provides standard maneuvers as default beside of definable customized scenarios:

- Cutting In: Conditional lane change of TSV, when the TSV has reached a specific distance in front of the VUT
- Cutting Out: TSV drives in front of VUT and performs a lane change. VUT follows TSV
- Cutting Through: Conditional change over two lanes of TSV, when the TSV has reached a specific distance in front of the VUT



- Traffic Jam: TSV drives until end of traffic jam and performs a lane change VUT to follow the TSV or to stop (whatever the VUT is intended to do in its automated mode)
- Nearly any arbitrary scenario like crossing with SCT, interaction with Virtual Elements etc.

iSWACO-ARGUS is the Toolchain for a seamless workflow from simulation (**OpenScenario**) to real-world test execution on the proving ground and to data export of all vehicles coordinates over time as CSV or binary file.

