

6-Step Process for DMS Validation



1

Ground-Truth (GT) System Concept

Analyze the requirements of your driver monitoring system (DMS)

Establish the set of use cases for which you want to validate your DMS

Take into consideration the sensor functionalities and capabilities

Specify the required accuracy of your DMS signals

Perform specific adaptations, if needed

Define the specification of the GT system for the validation of your DMS

2

Ground-Truth (GT) System Development & Setup

Establish the set of components required according to the specification of the GT system

Ensure that the GT components complement each other and work in harmony with your DMS

Develop specific adaptations, if needed

Identify the optimum placement of the GT system in the vehicle



3

Ground-Truth (GT) System In-Vehicle Integration

Ensure secure mountings for the GT system in the vehicle

Plan and supply hardware and software components required for the measurement system

Create a suitable wiring plan and perform cable laying

Mount the measurement system in the trunk or onto the co-driver seat

Conduct a functional test of all components to ensure everything works as desired



4

Data Collection

Analyze the required characteristics of the test drivers (e.g. spectacle wearer)

Plan the test procedure and organize the test track

Train the test drive supervisors

Acquire the test drivers with the required characteristics

Conduct the necessary number of test drives

Manage large volumes of data



5

Data Annotation

Pre-process raw images to filter out relevant data for annotation

Annotate upper and lower eyelids for calculation of degree of eyelid closure

Annotate pupil position and size

Assess blinking for detection of drowsiness

Conduct quality checks



6

KPI Analysis

Define the appropriate key performance indicators (KPI)

Compare DMS and GT data according to defined KPIs

Create reports with analysis of the results to determine the performance of your DMS

