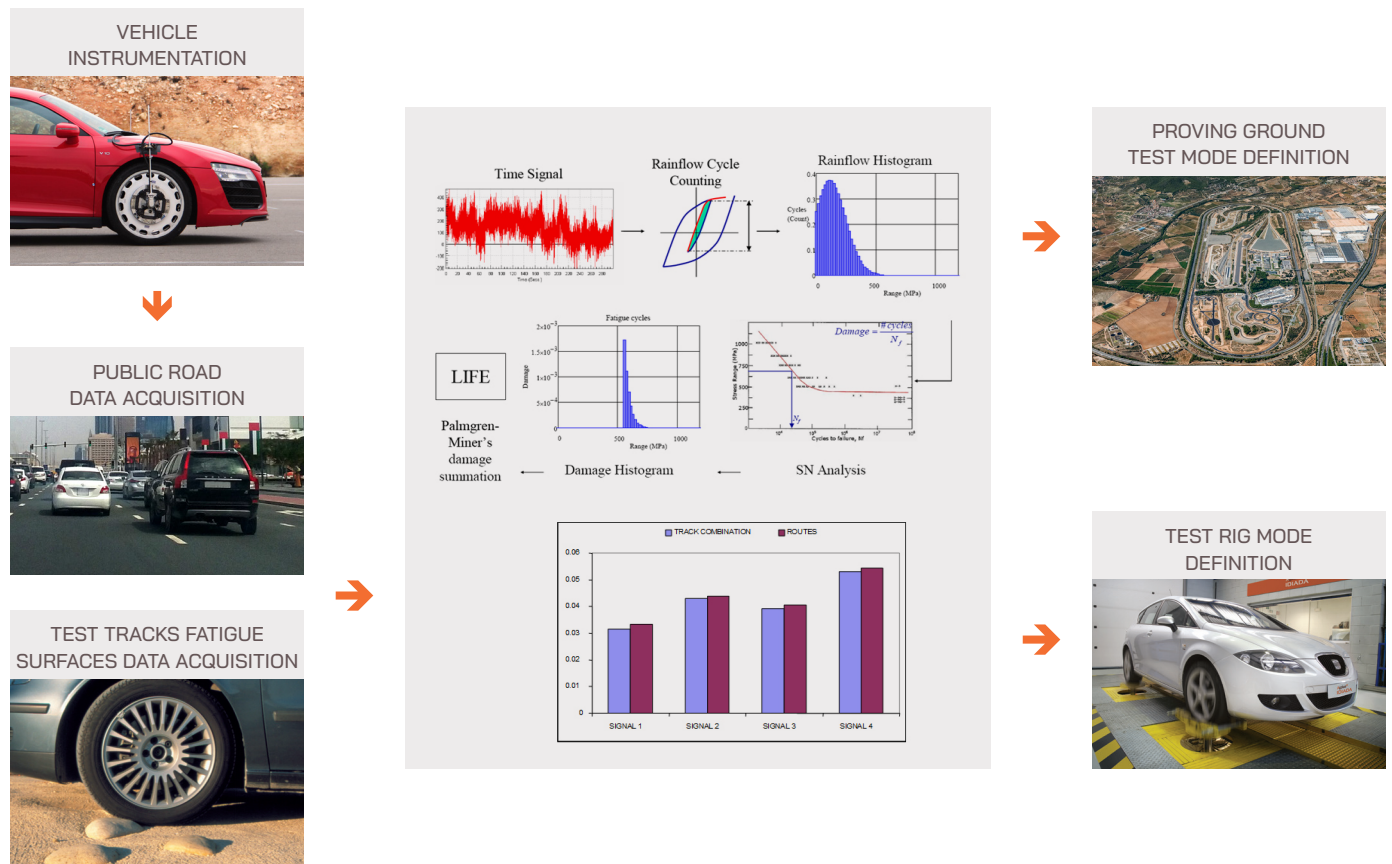




## Structural Durability Testing Road Load Data Acquisition and Data Correlation

Structural durability is one of the most important goals in the current state-of-the-art design of new vehicles. IDIADA has developed a methodology to design less expensive and fast structural durability validation procedures, as well as fitted and reliable to the market and durability targets.

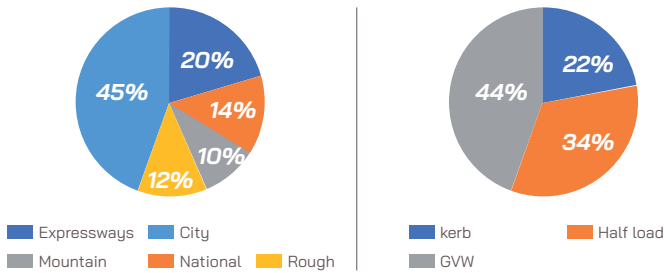
The development of the methodology is based on the analysis and extrapolation of the information collected directly in market (Road Load Data) in order to design endurance schedules using the accelerated fatigue surfaces of the proving ground.



# METHODOLOGY PHASES

## DEFINITION OF CUSTOMER USAGE PROFILE

Knowledge of the customer usage profile is essential to obtain reliable results. Service life of a vehicle is affected decisively by the vehicle loading conditions in service and the input loading pattern of a vehicle is mainly influenced by the driving conditions and mixed road profiles.



## VEHICLE INSTRUMENTATION AND ROAD LOAD DATA ACQUISITION (RLDA)

Collecting information of the input loads in the vehicle is the important phase of the project. The data acquisition must be performed at both scenarios: the market (open roads) and the proving ground (fatigue test tracks).

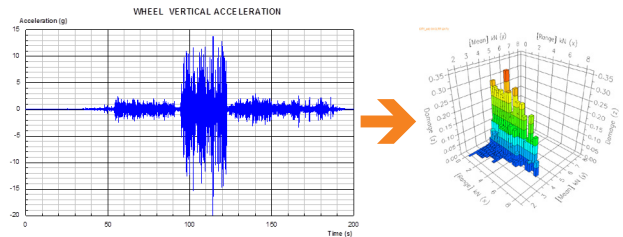
A representative vehicle is instrumented in the more suitable locations. Typical used sensors are: strain gages, accelerometers, displacement sensors for suspension travel and wheel force transducers.



## DATA ANALYSIS AND CORRELATION

Collected data is treated and analysed in order to calculate the fatigue damage content of each measured channel:

- Raw data verification and filtering
- Data rainflow counting and histograms of the signals
- Fatigue life calculations
- Extrapolation to vehicle target



## DEFINITION OF THE ACCELERATED DURABILITY TEST

Definition of the proving ground test cycle taking into account the lay-out of the proving ground.

The goal of the correlation is to find the optimal mix of the test tracks (test sequence) with the condition that the accumulative fatigue damage calculated from the defined test sequence was equivalent to the accumulative fatigue damage calculated from the measurements in the market.



## CONTACT INFORMATION

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