

ECO-DRIVING SCORE ENGINE FOR THE MUXEN BRAIN

ECODRIVE

A live 0–100 score of how economically a truck or bus is being driven, and the one habit to work on next.

Ecodrive is the driver-behaviour layer of the MUXEN Brain. It reads the engine, pedal, speed and fuel signals the Brain already decodes from the vehicle’s J1939 bus, scores nine habits of fuel-efficient driving, and publishes a composite **EcoScore** on MQTT, live, per trip and per day. It only reads and scores: it never commands the vehicle, and it needs no GPS, no map and no vehicle mass.

NINE DRIVING HABITS, ONE SCORE

- 01

SMOOTH ACCELERATION

Scores how gently the vehicle pulls away. A laden vehicle hides a hard start; the score does not.
- 02

ANTICIPATED BRAKING

Rates the intensity of every stop. One emergency stop costs little; late braking at every stop costs a lot.
- 03

ENGINE SPEED ZONE

Time under load in the engine’s green zone, and how steadily it stays there. Rewards early upshifts.
- 04

QUALIFIED IDLE

Penalises long engine-on stops. Door-open boarding, parking-brake stops and cold starts are excused.
- 05

OVERSPEED

Time above the speed limit of the operating profile, from wheel speed alone: no map is needed.
- 06

ENGINE EFFICIENCY

Fuel rate against the vehicle’s own best rate at the same engine speed and load, learned on board.
- 07

ACCELERATION AT SPEED

Relative positive acceleration per kilometre: catches the small throttle corrections of a restless foot.
- 08

STEADY SPEED

Positive kinetic energy: speed gained and lost again. Holding one speed beats following the vehicle ahead.
- 09

COASTING

Share of each slowdown spent off the pedal and the brake. Lifting off early is the cheapest way to slow.

KEY SPECIFICATIONS

Score	0–100 EcoScore and nine sub-scores, rated excellent to very poor
Horizons	Rolling 30 s window refreshed every 5 s, per trip, per day
Inputs	Standard J1939-71 / FMS signals only, decoded by the Brain
Interface	MQTT only, on the Brain’s local broker
Profiles	Urban bus, delivery, highway, port; switchable at runtime
Degraded bus	A missing signal drops its KPI and re-weights the rest

Preliminary: ecodrive is in development and the figures on this sheet are design targets. MUXEN and the MUXEN logo are registered trademarks of MUXEN SAS.

FOR FLEET OPERATORS AND INTEGRATORS

HOW IT SCORES

Ecodrive is not tuned per driver. Each Brain is told its vehicle **model** — engine and gearbox — and the operating profile of the job it does. The model sets the green zone, idle speed and cold-start rules; the profile sets the weights and thresholds. An out-of-range value is clamped, and weights that do not add up to 100 are normalised.

ONE ENGINE, THREE HORIZONS

> LIVE, FOR THE DRIVER

A score over the last 30 seconds, refreshed every five, with coaching hints naming the habits that cost the most points.

> PER DAY, FOR THE FLEET

The day's trips rolled up by distance, so a long trip counts for more than a short hop across the depot.

> PER TRIP, FOR THE DEBRIEF

Engine start to engine stop, weighted by time, with a live partial while under way. Trips under 0.5 km are dropped.

> A BASELINE THAT LEARNS

Engine efficiency is judged against the vehicle's own history, kept in SQLite so it survives every restart.