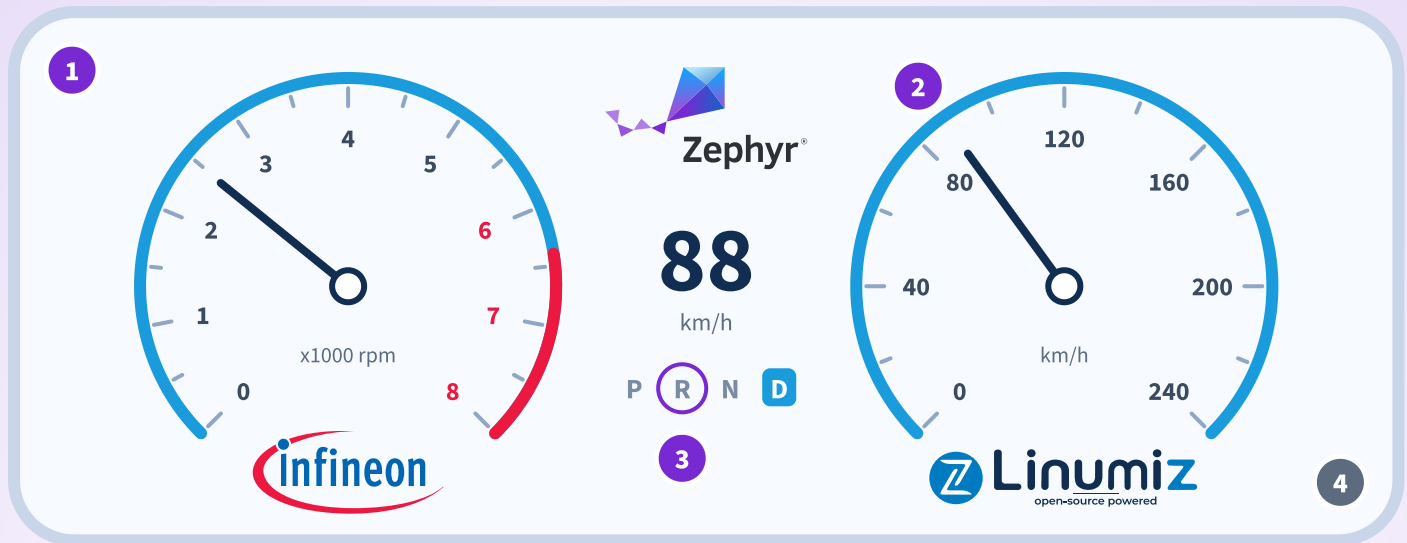


Zephyr Behind the Wheels

A live digital instrument cluster on Infineon TRAVEO T2G, running Zephyr RTOS.



1 Cluster ECU

LVGL draws every gauge on the GFX2D engine

2 Vehicle Simulator

Live vehicle signals over CAN

3 Rear Camera ECU

In reverse, OV5640 video over Gigabit Ethernet

4 HDMI Monitor

Shows the cluster over HDMI

● All three TRAVEO T2G ECUs run Zephyr RTOS

Inside the Cluster ECU

■ Linumiz ■ Upstream ■ Vendor middleware ■ T2G hardware

APP

Display App

renders the cluster / menu from CAN signals, and shows the incoming video

SUBSYSTEMS

LVGL

widgets & styles to draw tasks

GFX2D draw unit

runs the draw tasks on the engine

GFX2D Graphics Engine Middleware (CyGFX)

2D engine · compositor · scanout

BSD Sockets API

receives frames as UDP datagrams

Net stack · UDP / IPv4 / L2

the Zephyr networking stack

PLATFORM

Zephyr Core Kernel Services · scheduler · timers · device model

Display drivers

CyGfx engine · VideoSS encoder · IT6263 bridge

GEM Ethernet driver

xlrx,gem

AXI-DMAC driver

copies chunks to VRAM

ZEPHYR

HARDWARE

T2G CYT4DN SOC

GFX2D engine

renders into VRAM

VideoSS scanout

VRAM to FrameGen · TCON · FPD-Link

Video RAM (VRAM)

4 MB · shared frame pool

GEM MAC + AXI-DMAC

Gigabit RX · copies to VRAM

IT6263 to HDMI monitor

LVDS to HDMI · the display

Ethernet PHY

1000BASE-T



GIGABIT ETHERNET · from the Rear Camera ECU (sender)



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