

Rapidise's automotive segment is structured around key product families and technology pillars that align directly with the shift toward software-defined and centralized vehicle architectures, integrating sophisticated AI, high-performance computing, and a comprehensive Android software stack.

Here is a breakdown of Rapidise's key offerings and their architectural alignment:

1. Product Families and Technology Pillars

Rapidise leverages its vertically integrated full-stack expertise (Electronics, Mechanical, IoT, AI, and Cloud Development) to deliver automotive solutions across six major families:

A. Advanced Driver Assistance Systems (ADAS)

Pillar: Telep AI Algorithms & Computer Vision

Rapidise offers **ADAS as a service** supported by the **Telep ADAS AI Portfolio**, which consists of **ready-to-use computer vision AI algorithms** designed to be **hardware agnostic**.

Key ADAS offerings include:

- **Warning Systems:** Forward-Collision Warning (detecting cars, trucks, buses, motorbikes), Lane Keeping/Departure Assistance, Intelligent Speed Assistance, and Tailgating Warning (Accuracy 94%).
- **Detection & Recognition:** Traffic-Sign Recognition, Traffic Light Recognition, Blind Spot Detection (Accuracy 93%), Pedestrian Alert/Crash Detection, and even **Deer Detection & Warning** (Accuracy 91%).
- **Hardware and Development Support:** Rapidise provides services such as **Automotive Camera Calibration and Quality tuning for Vision-based ADAS systems**.

B. Driver Monitoring Systems (DMS) and In-Cabin Intelligence

Pillar: Edge AI for Safety and Personalized Experience

Rapidise designs advanced **DMS solutions** that utilize sophisticated technologies for monitoring driver behavior.

Key DMS offerings include:

- **Safety Monitoring:** Driver Fatigue (Eye Blink/Yawn Detection, Accuracy 93%), Mobile Phone Usage Detection (Accuracy 95%), and Seat Belt On Detection (Accuracy 97%).
- **Health and Occupancy:** Monitoring **Driver Vital Signs** (Blood Oxygen, Heart Rate, Stress Index), and detecting Occupancy, Child/Pet Presence, and Movement Detection.
- **Connectivity:** Ability to track **Driving Score On CAN Data**.

C. Infotainment (IVI) and Digital Cockpit

Pillar: Automotive Android Stack and HMI Development

Rapidise offers comprehensive **Digital Cockpit Solutions** designed for safety and comfort, integrating displays, touchscreens, and **HMI** (Human-Machine Interface) systems.

- **Product Components:** Solutions cover the Instrument Cluster, HVAC, Infotainment Systems, Head-Up Display, Navigation, and Rear Seat Entertainment.
- **Custom IP/Platforms (RSP Platforms):** Rapidise develops its own IP products, such as the **Tejas Android Infotainment System** (based on Qualcomm 625/Quectel SC600T, running Android 9.0) and the **Tejas HMI**.
- **Software Stack:** They specialize in **Automotive Android**, offering services like **migration to Automotive Android from a legacy platform**, custom HMI/UI/UX design, and incorporating **Edge AI for Voice and Vision** (e.g., gesture recognition and voice control).
- **Project Example:** They successfully developed a **Dual Display IVI System for a Truck OEM** based on **NXP iMX8** running Android 10, focusing on HMI and service layers for the Head-Unit Cluster and Head-Up Display.

D. Telematics and Connected Services

Pillar: Edge AI Framework & Cloud Integration

Rapidise's Vehicle Telemetry solutions provide comprehensive fleet management.

- **Core Functions:** Real-time **Location Tracking**, Fuel Consumption Monitoring, Over-The-Air (OTA) Updates, Parking Management, and On-Demand Video Access.

- **Framework:** The **Vehicle Edge AI Framework** enables modular development for these solutions, incorporating advanced AI algorithms for **edge computing** for faster processing and optimized performance.
- **Hardware:** They developed a **Dashcam + LTE Edge AI Box** (integrating a 2-camera unit, LTE 4G communication, and a dedicated SOS button) for emergency call systems.

E. Predictive Maintenance

Pillar: AI on Edge and Cloud

Rapidise offers Predictive Maintenance solutions built on Edge AI implementation to detect faults in crucial vehicle components.

- **Components Monitored:** Engine, Gearbox, Suspensions, Brake System, Electric Power Steering, and Tyre Parameters.
- **Offerings:** Automatic Fault Detection, **Smart Battery Monitoring**, Fuel Consumption Pattern Identification, and Service/Spare Part Recommendations.
- **Deployment:** These solutions involve developing **AI Models on the Edge and Cloud** and utilizing vehicle network interfacing and sensor data conditioning.

F. Electronic Control Units (ECUs)

ECU development is listed among Rapidise’s core automotive expertise and product deliveries. They also offer **firmware development with Automotive Protocols (CAN, LIN & Ethernet)**.

2. Alignment with Emerging Vehicle Architectures

Rapidise’s full-stack offering is built to support the transition to centralized and software-defined vehicle (SDV) architectures, which rely heavily on high-performance domain controllers rather than distributed traditional ECUs.

Emerging Architecture Component	Rapidise Product Ecosystem Alignment
High-Performance Compute (RSP Platforms)	Rapidise develops proprietary System on Modules (SOMs) under the Tejas brand (e.g., Tejas 625 SoM). They are also developing the Tejas – QCS 6490 SOM and the companion Edge AI Box .

	The QCS6490 is specifically noted for its high performance (up to 12 TOPS) and is designed for Edge AI box and rugged handheld applications, positioning it perfectly as a central domain controller or compute platform.
Software-Defined Vehicle (SDV)	Rapidise supports the core software enabling SDVs: Automotive Android development, Linux Kernel Customization, and integrating FOTA (Firmware Over the Air) capabilities for secure and functional updates.
Centralized AI and Perception	The Telep AI Stack is explicitly designed to be hardware agnostic . This allows the same advanced ADAS/DMS algorithms (like Pedestrian Crash Detection or Mobile Distraction Detection) to be deployed seamlessly onto centralized, high-compute platforms (like the Edge AI Box or IVI/Cockpit systems) that consolidate sensor data, moving away from siloed, single-function ECUs.
Unified Connectivity Backbone	Rapidise provides firmware and hardware development supporting key automotive networks (CAN, LIN, Ethernet), alongside modern wireless standards (LTE 4G, Wi-Fi 7, 5G), which are necessary for high-speed data transfer within the vehicle and V2X/Cloud communication.

In essence, Rapidise provides the necessary hardware accelerators (Tejas SOMs/Edge AI Boxes), the foundational software environment (Automotive Android), and the core application layer (Telep AI algorithms for safety and predictive maintenance) required by OEMs to build the modular, high-compute vehicle architecture of the future.