TATA

TATA ELXSI

TELIPORT

Script Your Future

Season 3

Case Study No: 2

AUTOMOTIVE

Team Details:

Team Name: **NEXUS**

Member 1: Lakshiya Sri K M

Member 2: Doneeswaran J

Member 3: Harish Kumar V **(Team Lead)**

Predictable Code Development for Service Oriented Application using GenAI

TELIPORT Script Your Future Season 3

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SOLUTION

Gen-AI & **LLM-based** SoA code generator with **RAG + prompt engineering** for **multi-protocol vehicle services** and **predictive analytics dashboards** by **accelerating SDV development 40%** and **dynamic HMI dashboards**

NOVELTY & KEY TECHNIQUES INCLUDED

GEN-AI + RAG ENGINE:
Uses **RAG+LLM** for **Semantic retrieval** using Fallback formatting

MULTI-PROTOCOL CODE GENERATION:
Unified framework generates **multiple language variants** from one spec

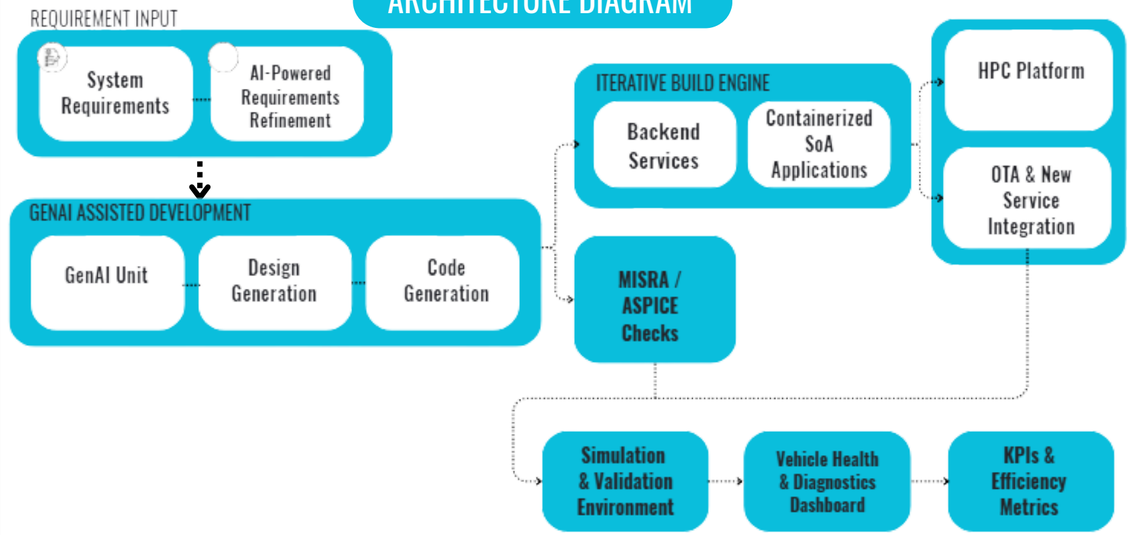
MISRA/ASPICE COMPLIANCE BUILT-IN
Safety standards embedded in code generation for **first-pass compliance**, eliminating **manual audits.**

AI-BASED HMI DASHBOARD GENERATION
generate **production-ready dashboard code** without **manual UI development.**

TECH STACKS

- Frontend / HMI
- Backend / SoA:
- Simulation & Data: CARLA(vehicle simulator)
- Testing & Compliance:
  - MISRA
  - ASPICE

ARCHITECTURE DIAGRAM



KEY METRICS

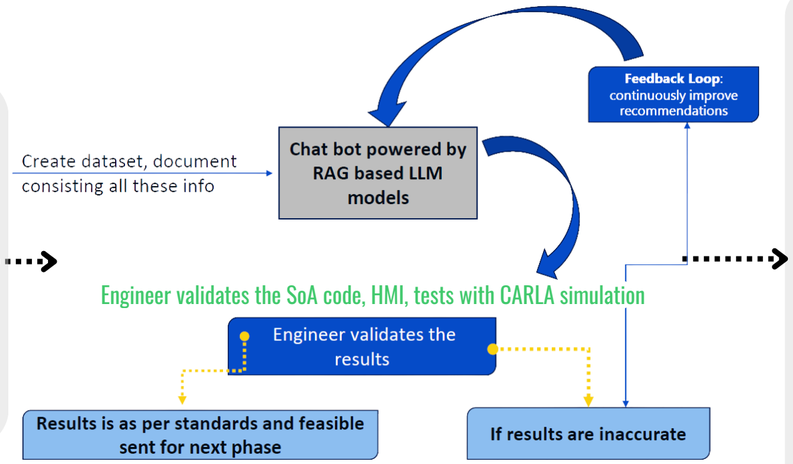
40% Faster Development | 95% Code Accuracy | <50ms Dashboard Update Latency

KPI METRICS

97.2% Anomaly Detection Accuracy | 95% Test Coverage Auto-Generated | OTA service integration in 5 minutes

INPUT REQUIREMENTS

- Vehicle Type (ICE/ Hybrid/ EV variant)
- Automotive code samples
- Vehicle data schemas
- ASPICE guidelines
- Target Platforms
  - C++ • KOTLIN • Android • Linux



OUTPUT

SoA Services Code
- C++ • Kotlin • Rust Service

HMI Dashboard
- React Native • Flutter UI code

Test Suites
- 95%+ code coverage with 200+ test cases

Docker Configs
- Containerized services (Deploy)

Vehicle Health Demo
- Dashboard (SoC, Tire Pressure)

DEMO HMI VISUALIZATION DASHBOARD