Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	05 February 2026
Team ID	LTVIP2026TMIDS88090
Project Name	AUTOSAGE APP USING GEMINI FLASH
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	The application must provide a clean, intuitive, and user-friendly interface using Streamlit with clearly labeled tabs (Smart Query, Smart Vision, Multimodal Analysis) and structured AI output formatting.
NFR-2	Security	The application must provide a clean, intuitive, and user-friendly interface using Streamlit with clearly

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Sidebar Configuration	Select Vehicle Type Select Purpose Apply Changes Button
FR-2	Text-Based Vehicle Analysis	Accept user vehicle query Generate structured intelligence report using Gemini Flash Context-based analysis (Buying / Maintenance / Eco)
FR-3	Image-Based Vehicle Analysis	Upload vehicle image Convert image to byte format Send image to Gemini API Generate structured visual analysis report
FR-4	Multimodal Analysis (Image + Prompt)	Accept image + user query Combine text and image input Apply powertrain detection logic Apply powertrain detection logic
FR-5	AI Processing	Integrate Gemini 2.5 Flash model Configure temperature and token limit Handle AI response output
FR-6	Validation & Error Handling	Validate empty prompt Validate image upload Display warnings and error messages
FR-7	Output Display	Render structured report in UI Show loading spinner during generation

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

		labeled tabs (Smart Query, Smart Vision, Multimodal Analysis) and structured AI output formatting
NFR-3	Reliability	The system must handle invalid inputs (empty prompt, missing image) gracefully and display appropriate warning messages without crashing
NFR-4	Performance	AI response generation should complete within an acceptable response time (typically under 5–10 seconds depending on model latency and network conditions).
NFR-5	Availability	The application should remain accessible whenever the hosting environment (local server / Streamlit Cloud) and Gemini API service are operational.
NFR-6	Scalability	The architecture should allow future expansion, including additional AI models, advanced vehicle databases, or user authentication modules without major redesign.
NFR-7	Maintainability	The code structure must remain modular (separate functions for prompt, image processing, multimodal analysis) to allow easy updates and debugging.
NFR-8	Accuracy & Consistency	AI outputs must follow a strict structured format and maintain logical consistency between fuel type, engine specs, and efficiency data.