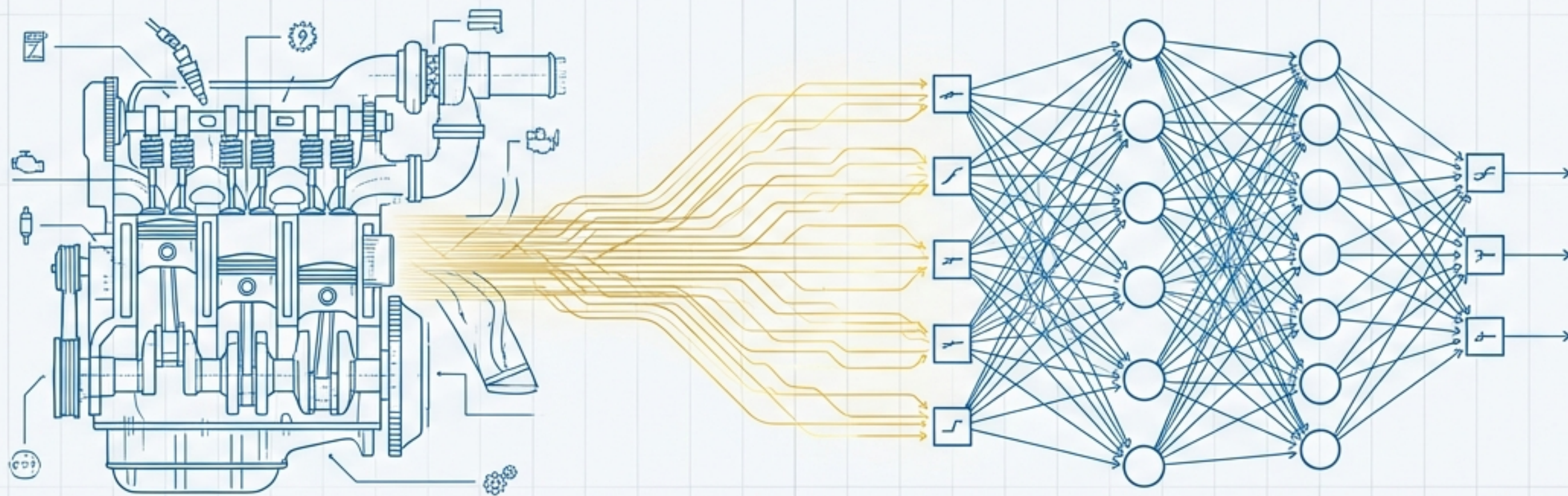


# Redefining Vehicle Diagnostics.

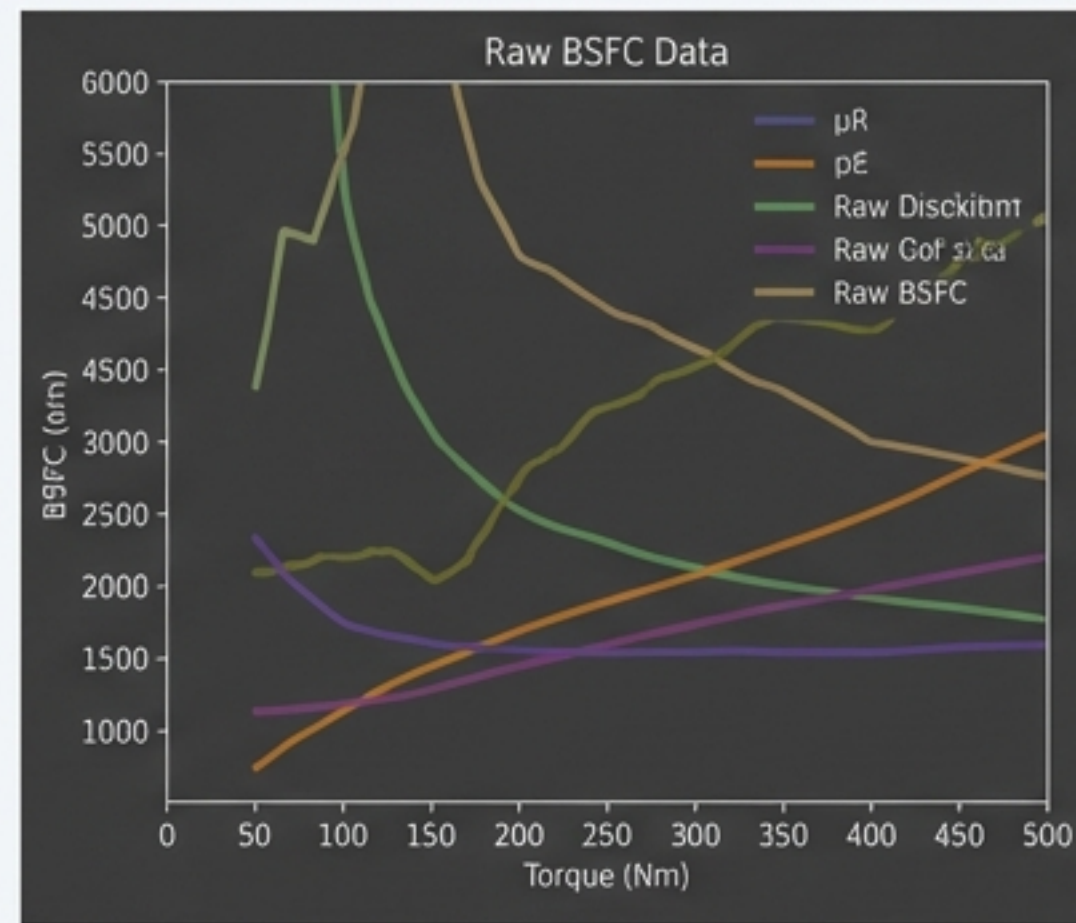
From Data Overload to Engineering Insight.



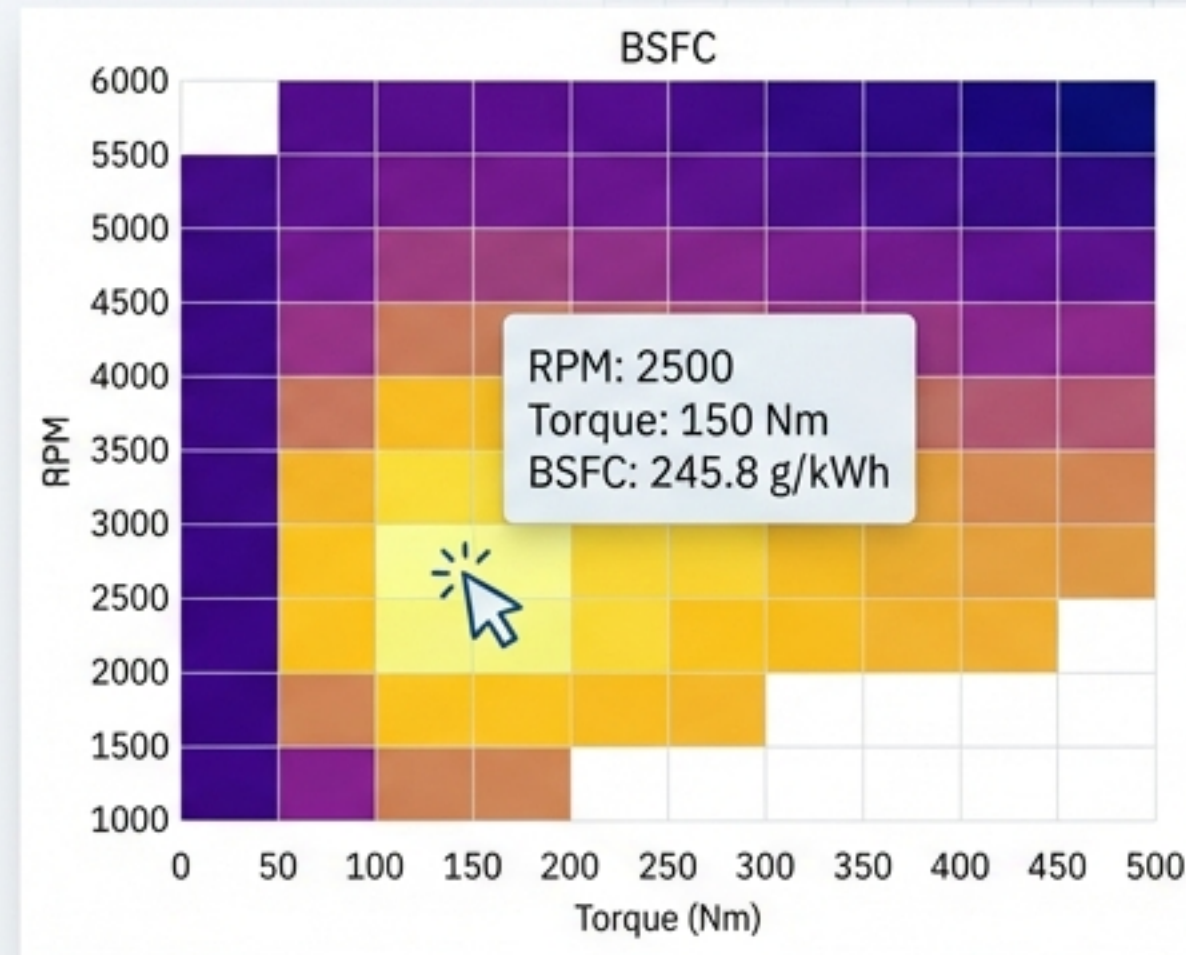
This is not just another diagnostics tool. It's a comprehensive engineering partner, designed with a senior engineer's expertise at its core. We will show you how.

# We Start with Presentation-Ready Visuals, Not Raw Data

## Standard Industry Plot



## Our Beautiful Heatmap



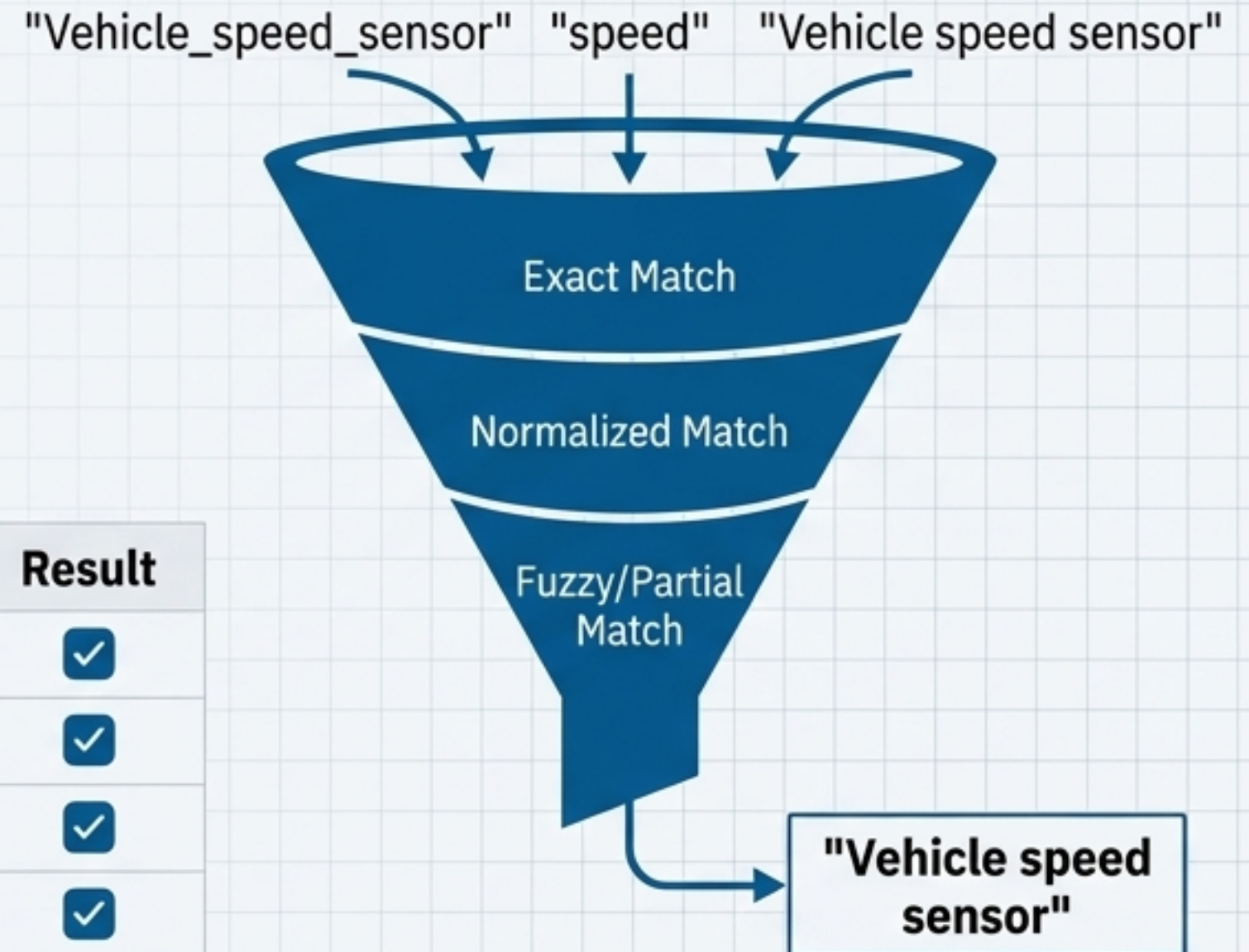
- ✓ **Clean & Professional**  
White background, clean grid lines, proper axis labels.
- ✓ **Intelligent Colorscale**  
Plasma colorscale (reversed for BSFC so yellow = better efficiency)
- ✓ **Consistent Binning**  
Fixed 500 RPM / 50 Nm bins for a professional, readable grid.
- ✓ **Interactive**  
Hover tooltips reveal precise RPM, Torque, and BSFC values.

Our outputs are designed to be immediately understood and shared, matching the clarity and quality of best-in-class data visualization.

# Your Data, Your Format. Flawless Plotting, Every Time.

**Problem:** Standard tools often fail when plotting from CSV/XLS files due to inconsistent column naming ('Vehicle speed sensor' vs. 'Vehicle\_speed\_sensor').

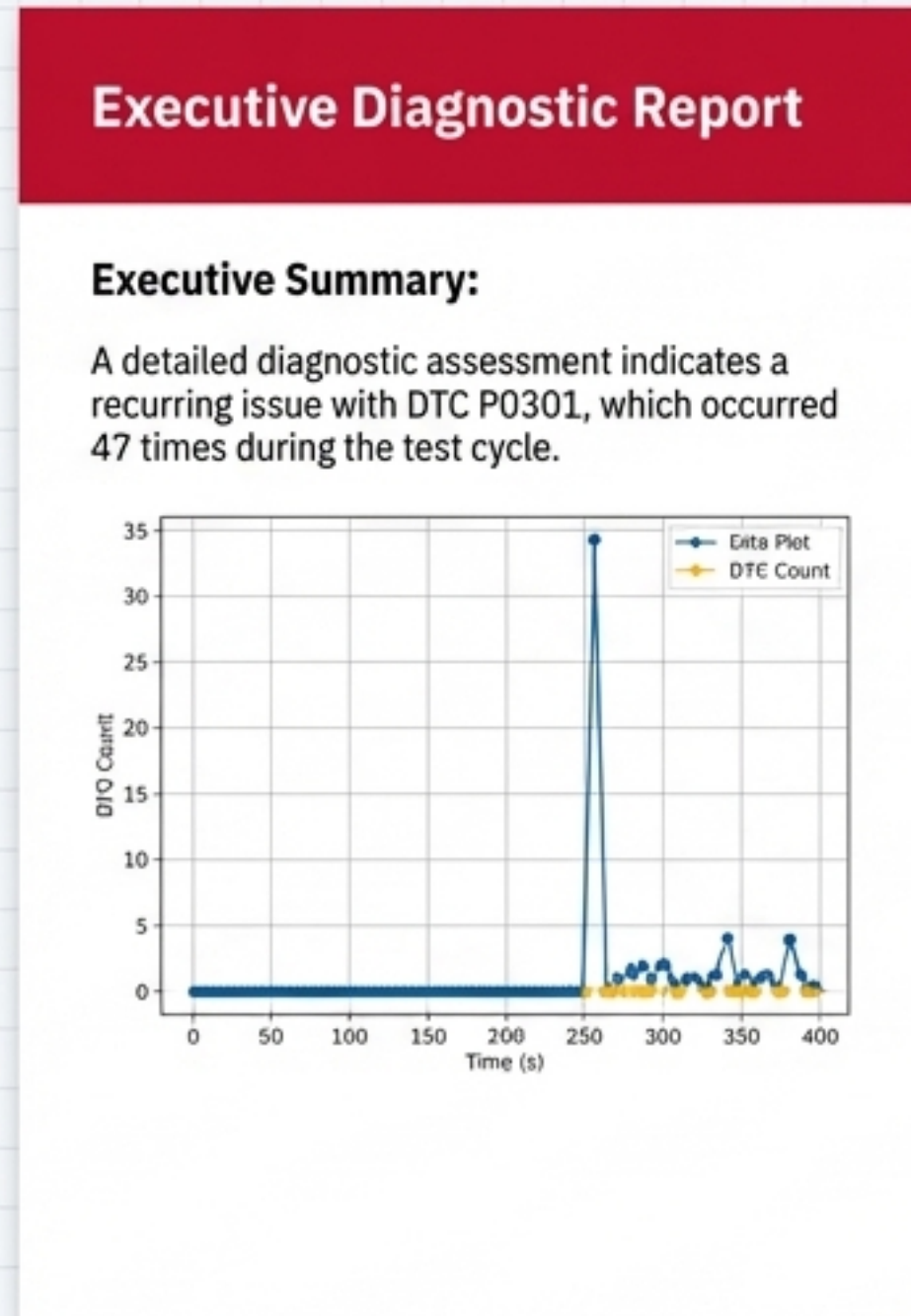
User Selection	CSV Column Name	Match Method	Result
"Vehicle speed sensor"	"Vehicle speed sensor"	Exact Match	✓
"speed"	"Vehicle speed sensor"	Fuzzy Match	✓
"Vehicle_speed_sensor"	"Vehicle speed sensor"	Normalized Match	✓
"speed sensor"	"Vehicle speed sensor"	Partial Match	✓



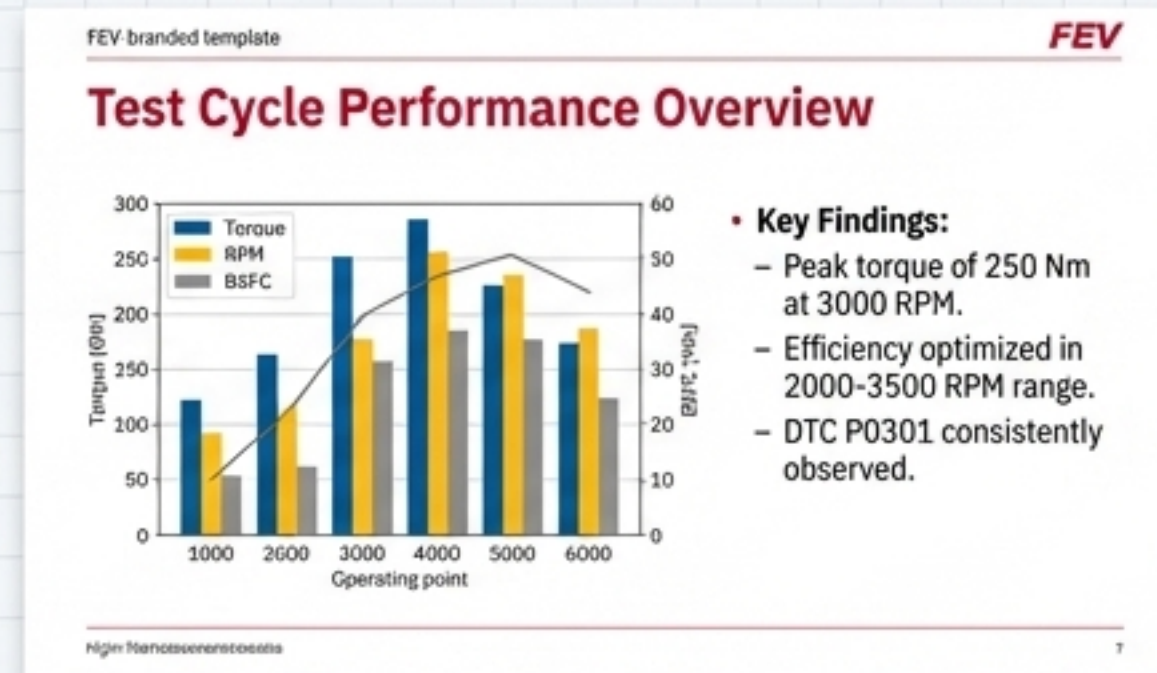
Seamless plotting and analysis for CSV, XLS, MDF, and MF4 files.  
No more renaming columns or fighting with your data.

# From Analysis to Actionable Report in a Single Click

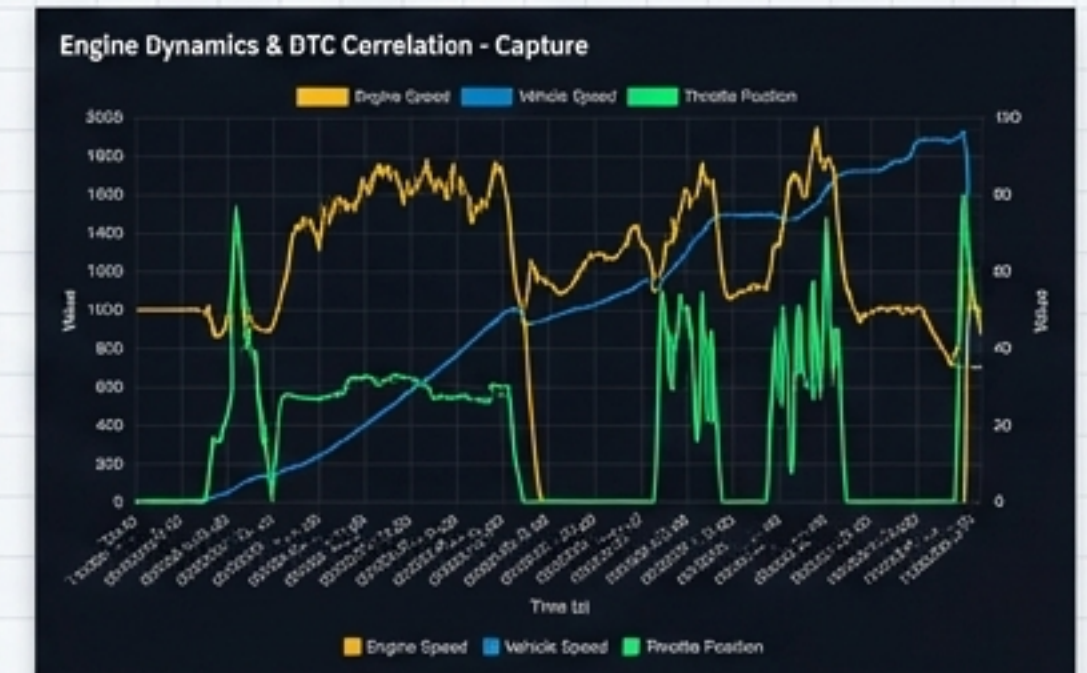
A4 PDF page mockup







16:9 PowerPoint slide mockup

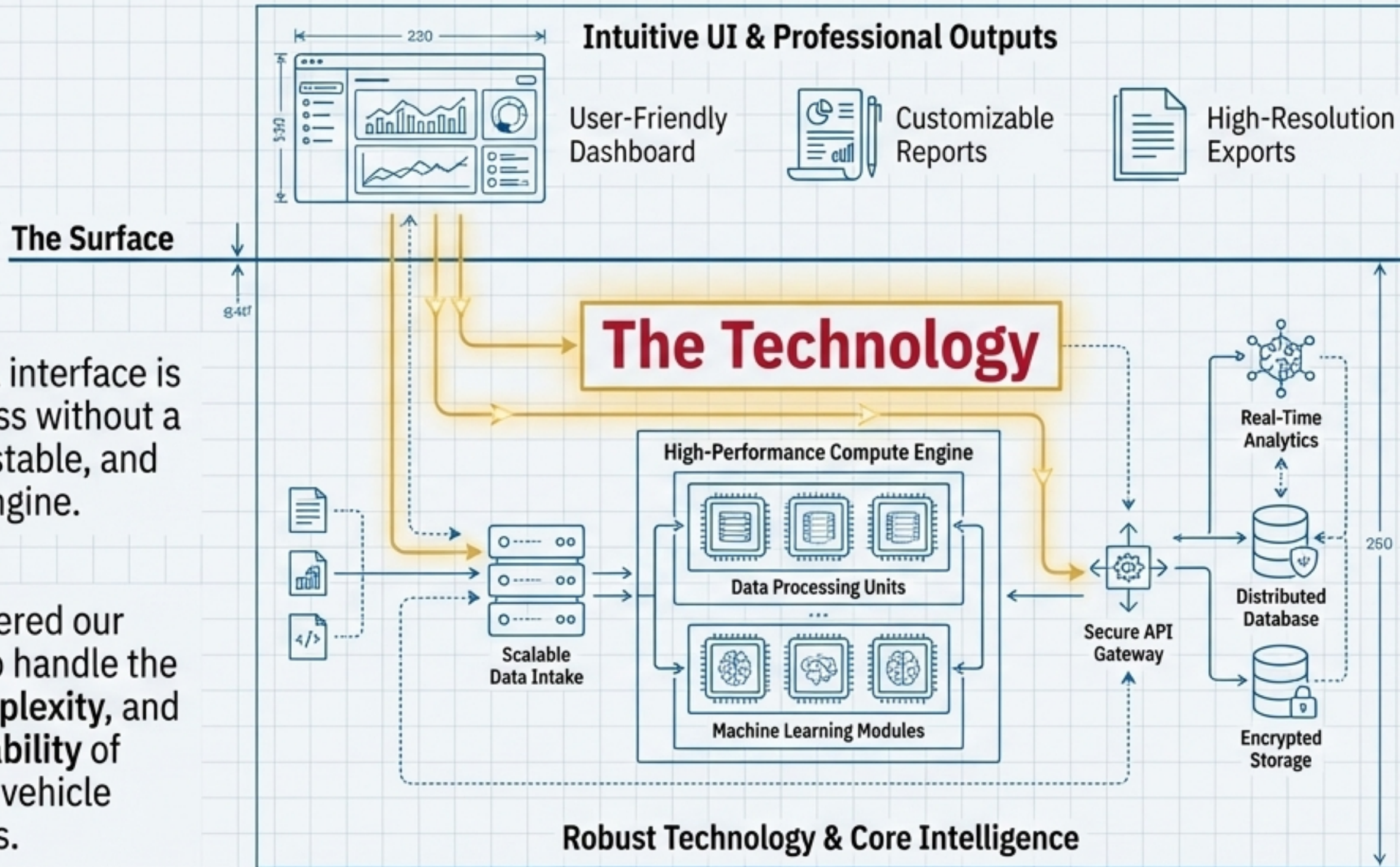


High-resolution JPEG export mockup



-  **Data-Driven LLM Insights:** Reports include LLM analysis that references *actual* table data, citing specific values (e.g., 'DTC P0301 occurred 47 times').
-  **Professional FEV-Branded Styling:** Consistent, high-quality formatting across all PDF and PPT exports.
-  **Section-Specific Content:** Exporting the DFC report gives you *only* the DFC content, perfectly formatted.
-  **Robust & Reliable:** JPEG exports use multiple CDN fallbacks to ensure capture library always loads.

# Beneath the Surface: Engineered for Real-World Demands.



A beautiful interface is meaningless without a powerful, stable, and efficient engine.

We engineered our platform to handle the scale, complexity, and unpredictability of real-world vehicle diagnostics.

Let's look at the technology that powers it.

Let's look at the technology that powers it.

# Handle Massive Files Effortlessly. No More Lag or Choppiness.

Competitor tools struggle or crash with large (500MB+) data files, leading to frustrating delays and high memory usage.

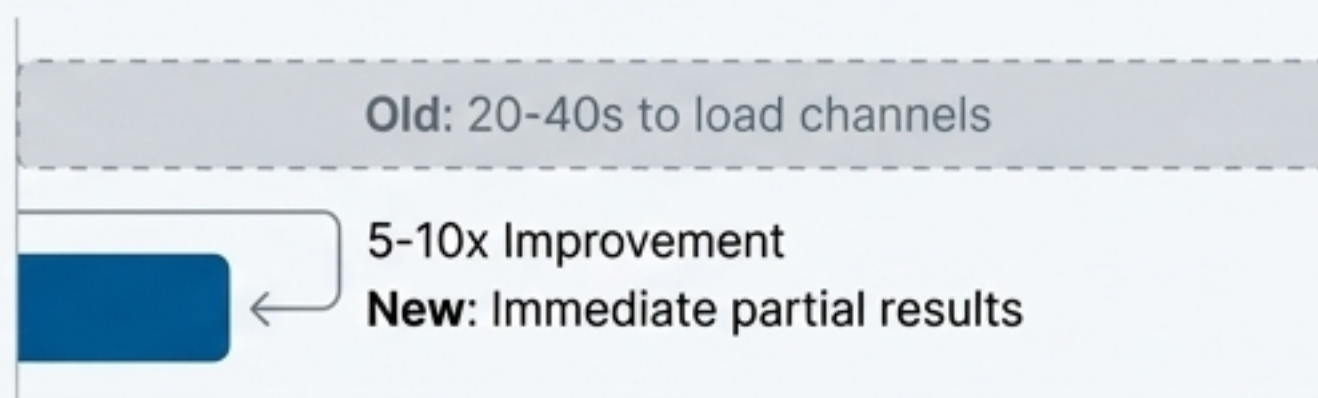
## ~80%

Reduction in RAM Usage for 500MB+ files



## 5-10x

Faster UI Response



### Memory Mapping



Instead of loading huge files into RAM, we access data directly from the disk.

### Progressive Loading



The UI displays the first 100-200 channels immediately while the rest load in the background. No more blocking.

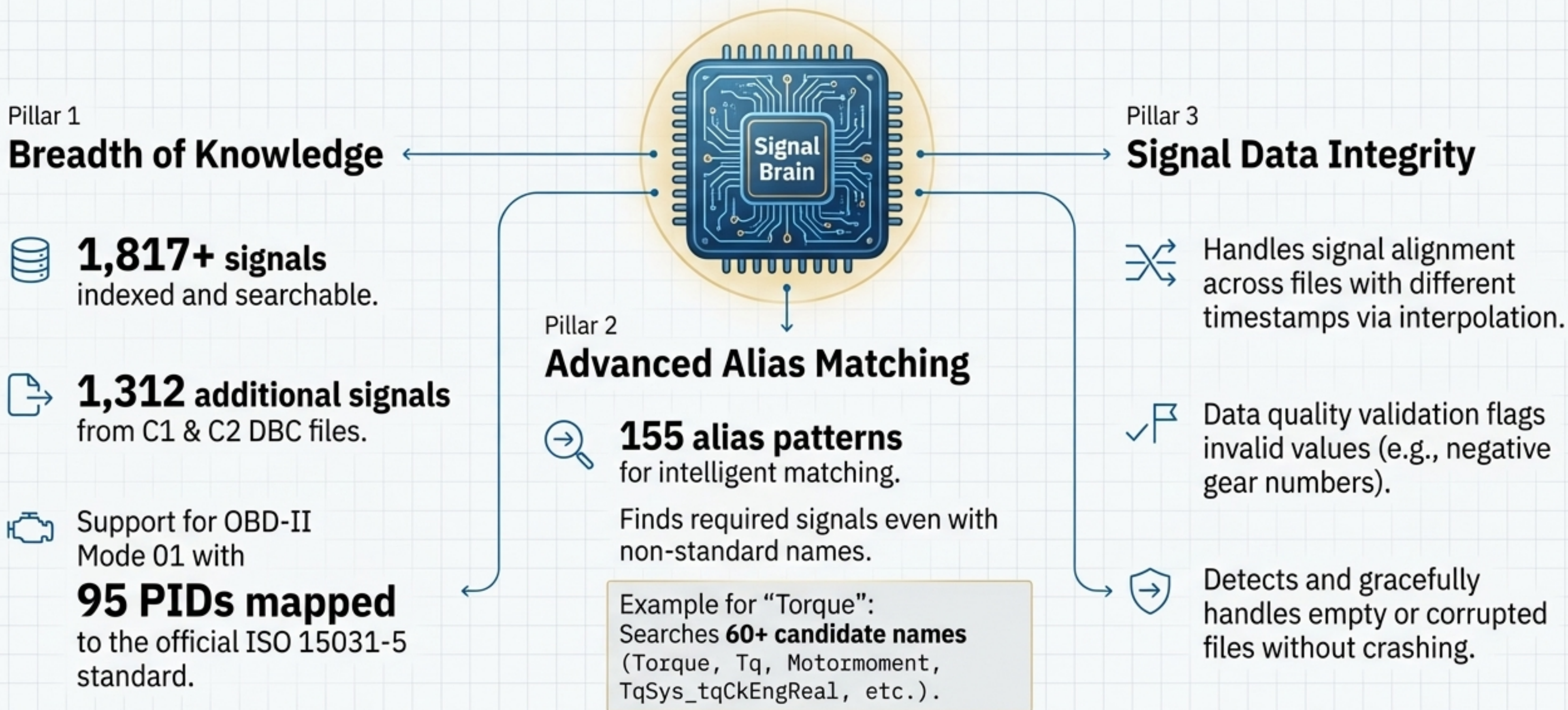
### Intelligent Downsampling



For large signals, we automatically downsample data for initial display, preventing memory overflows while preserving data quality.

# Unmatched Signal Intelligence Across All Formats and OEMs.

We don't just read data; we understand it. Our system is built with deep, flexible knowledge of vehicle signals.



# A Secure, Stable, and Production-Ready Platform

Our tool is built on a foundation of excellent software engineering principles, ensuring it's ready for mission-critical work.

## Code Quality Assessment



### Error Handling

✓ Excellent

- **470+ exception handlers** ensure graceful failure.



### Security

✓ Good

- Path traversal protection, rate limiting, and CORS configured.



### Stability

✓ Production Ready


- Deployed on Render, successfully handling real-world operations.



### Maintainability

✓ Excellent

- Refactored duplicated code and implemented a registry pattern for extensibility, moving from a complex if/elif chain to a clean, scalable design.

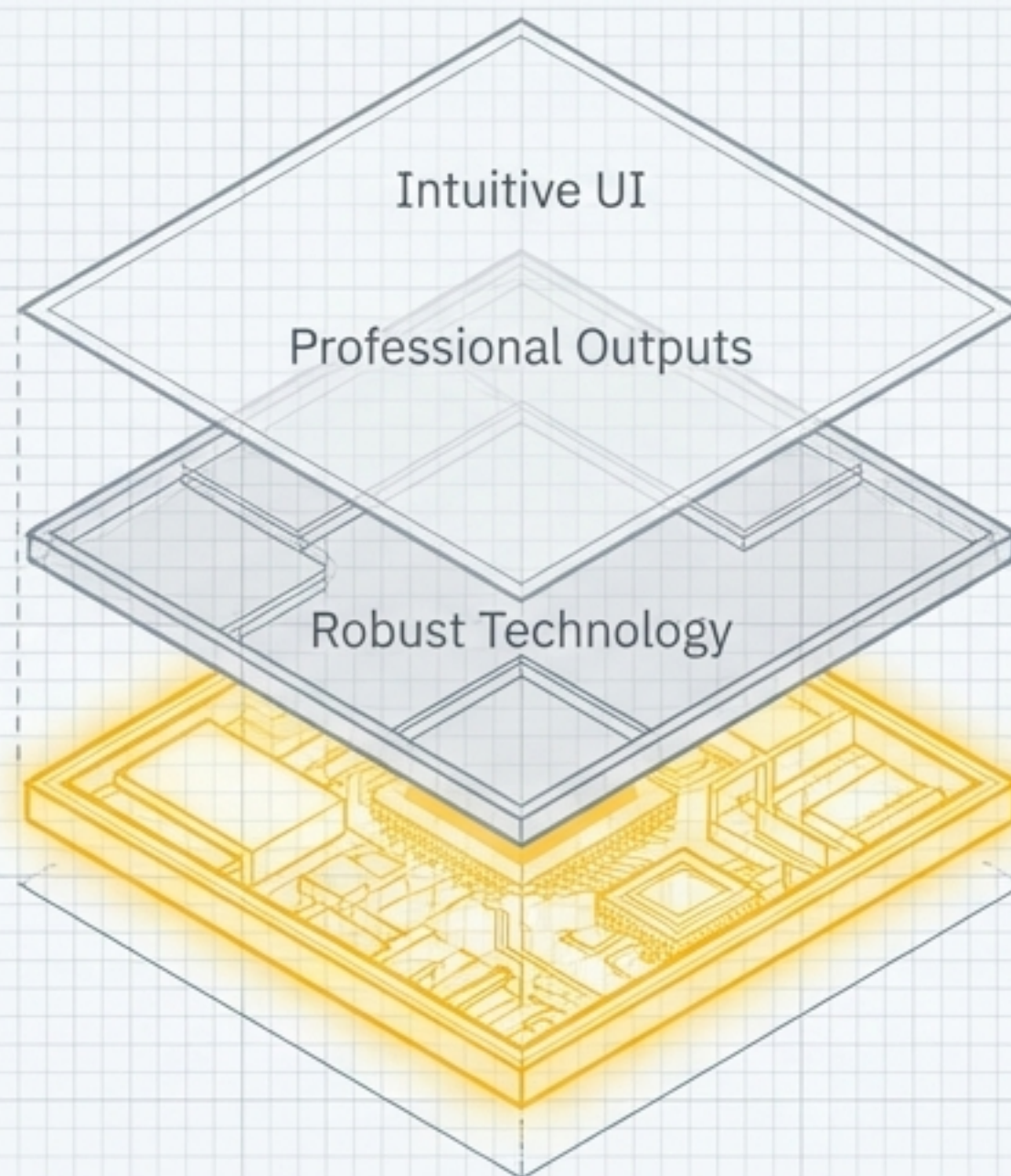
“The deployment is **stable and production-ready**. All critical issues resolved. Overall Risk Level:  **LOW**.”

This isn't a beta. It's a reliable, secure tool you can depend on.

# More Than a Tool: A Diagnostic Partner with a Senior Engineer's Brain.

Powerful technology is the foundation, but true differentiation comes from intelligence.

We didn't just build software; we encoded the reasoning, knowledge, and workflow of a senior vehicle diagnostics and calibration engineer.



**\*\* Core Intelligence**

This is the 'brain' of the system.

# The Senior Engineer in the Machine: An 85/100 Capability Assessment

Verdict from Formal Assessment:  **YES - Strong Mid-Level to Senior Engineer Capabilities.**

## The Diagnostic Engineering Brain (85/100)



**Multi-Agent System: 9 Specialized Diagnostic Agents** (Misfire, DFC, IUPR, WLTP, Fuel, etc.) work in concert.



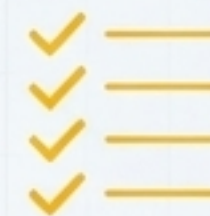
**Deep Analysis:** Performs statistical analysis, correlation, anomaly detection, and root cause analysis.



**Domain Knowledge:** Integrates **6 Gemini File Search stores** (SI/CI Engine Analysis, Drivability, etc.) for deep context.





## The Calibration Engineering Brain (80/100)




**Core Formulas Implemented:**

 BSFC

 BMEP

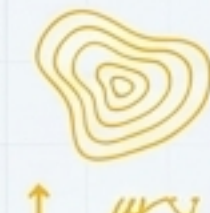
 Power

 Thermal Efficiency



**Engine Parameter Knowledge:**

Knows specific parameters for engines like the 1.2L 3-Cylinder TGDI.

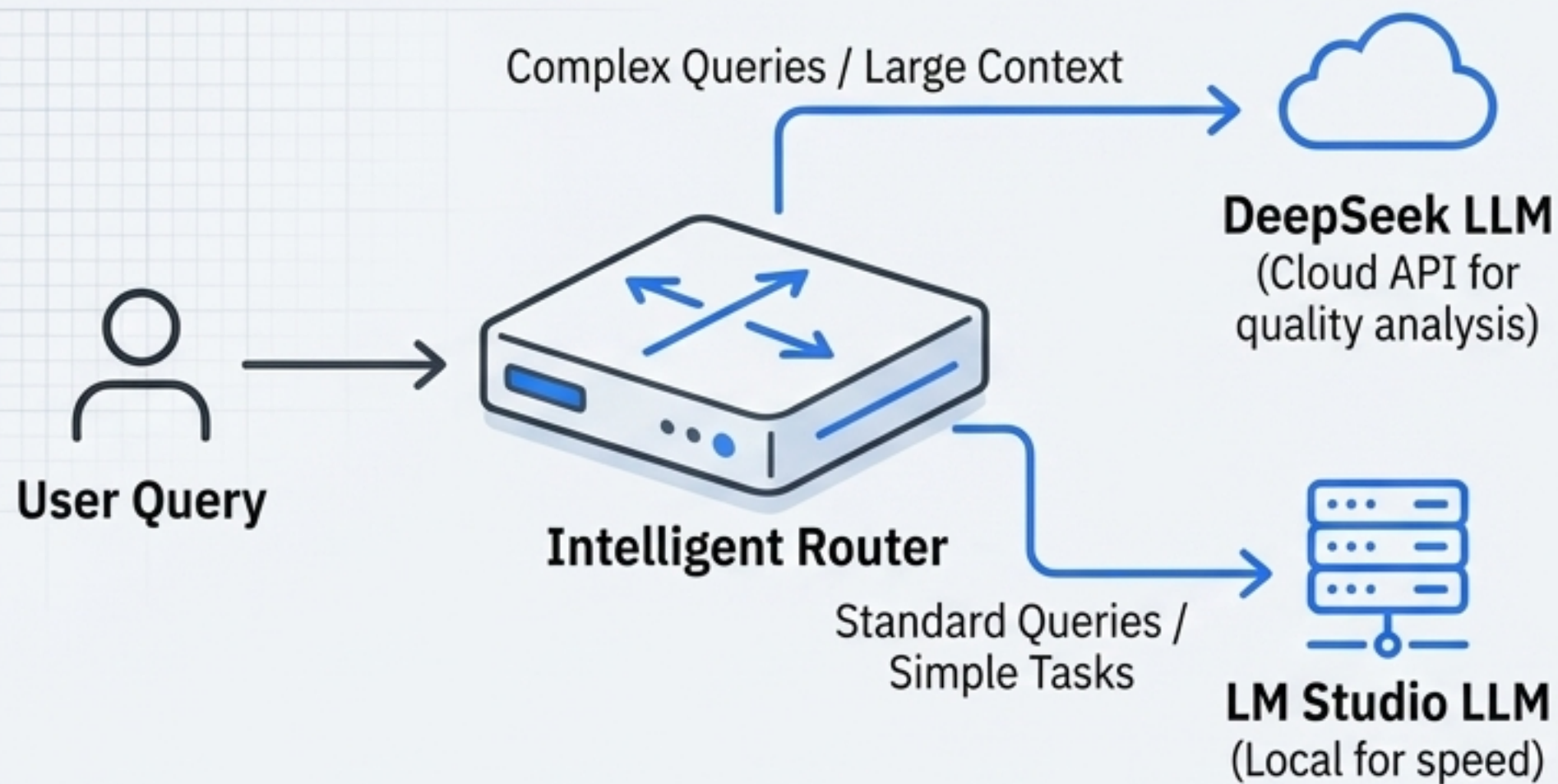


**Professional Visualizations:**

Generates BSFC Contour Plots, Fuel Efficiency Maps, and identifies "efficiency islands".

# Powered by an Intelligent, Optimized Dual-LLM Architecture

We don't rely on a single, generic model. Our system intelligently routes queries to the best LLM for the job.



## Smarter by Design - Recent Improvements

- **Smart File Search Routing**  
Simple queries with file context (e.g., "list signals") now use the faster LM Studio, not DeepSeek.
- **Optimized Model Selection**  
The weak, trained GPT-2 model is now used only as a last resort, ensuring higher quality responses from capable models.
- **Robust Edge Case Handling**  
A defensive check prevents undefined behavior and ensures graceful routing.

## Proven Performance Gains

Response Quality  
↑ +15-20%

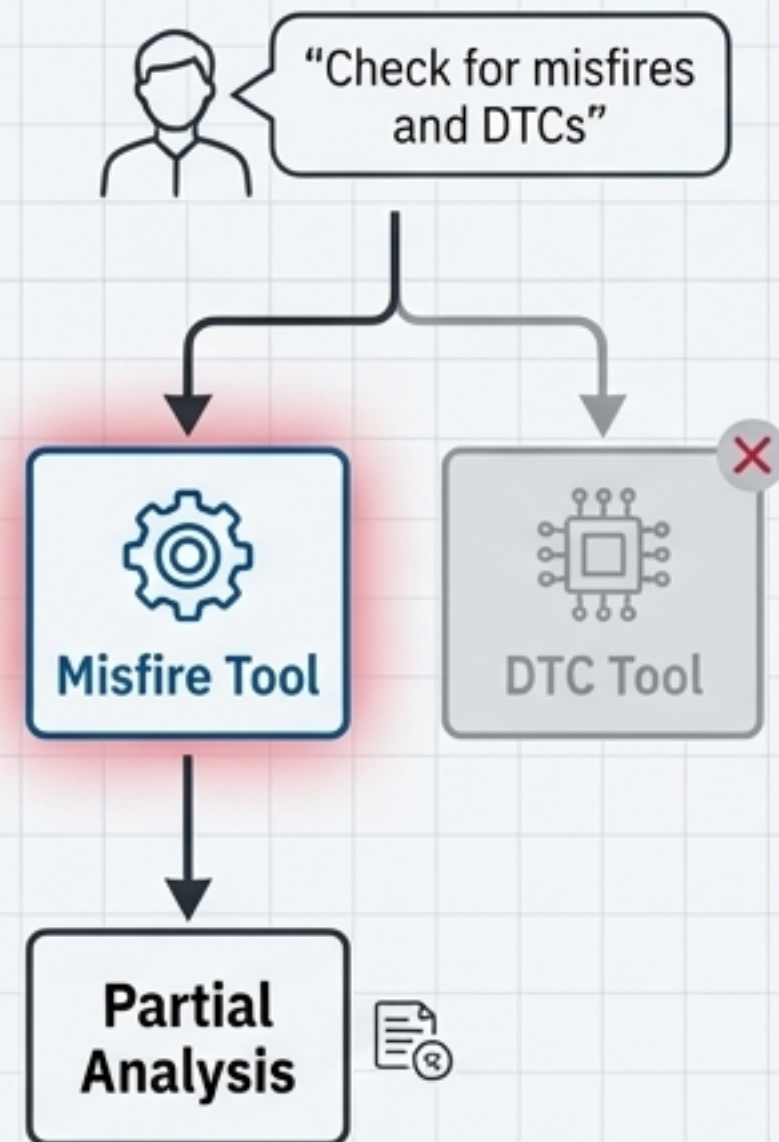
Response Speed  
↑ +10-15%

Reliability  
↑ +10%

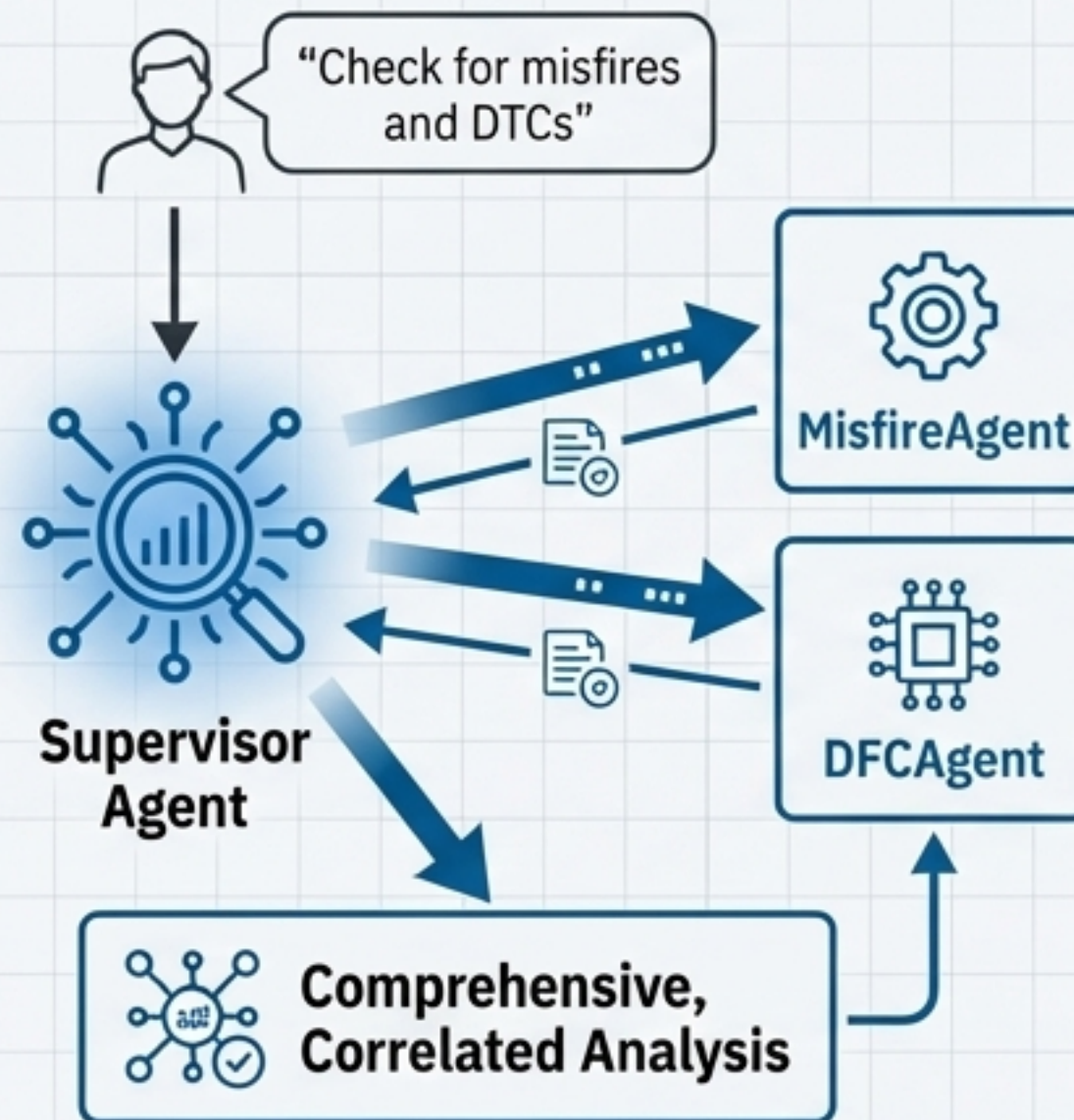
# Multi-Agent Orchestration for Truly Comprehensive Analysis

Introducing the **Supervisor Agent**, the orchestrator that coordinates our 9 specialized diagnostic agents.

## Before (Other Tools)



## After (Our Supervisor Agent)



## Capabilities Unlocked by the Supervisor:



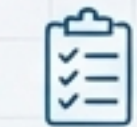
### Multi-Domain Analysis

Intelligently handles queries like "analyze fuel consumption during the WLTP cycle."



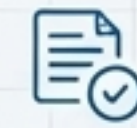
### Cross-Domain Correlation

Identifies relationships between different diagnostic areas (e.g., how a specific DTC might relate to a drivability issue).



### Prioritized Findings

Synthesizes results from all agents and ranks them by importance.



### Transparent Workflow

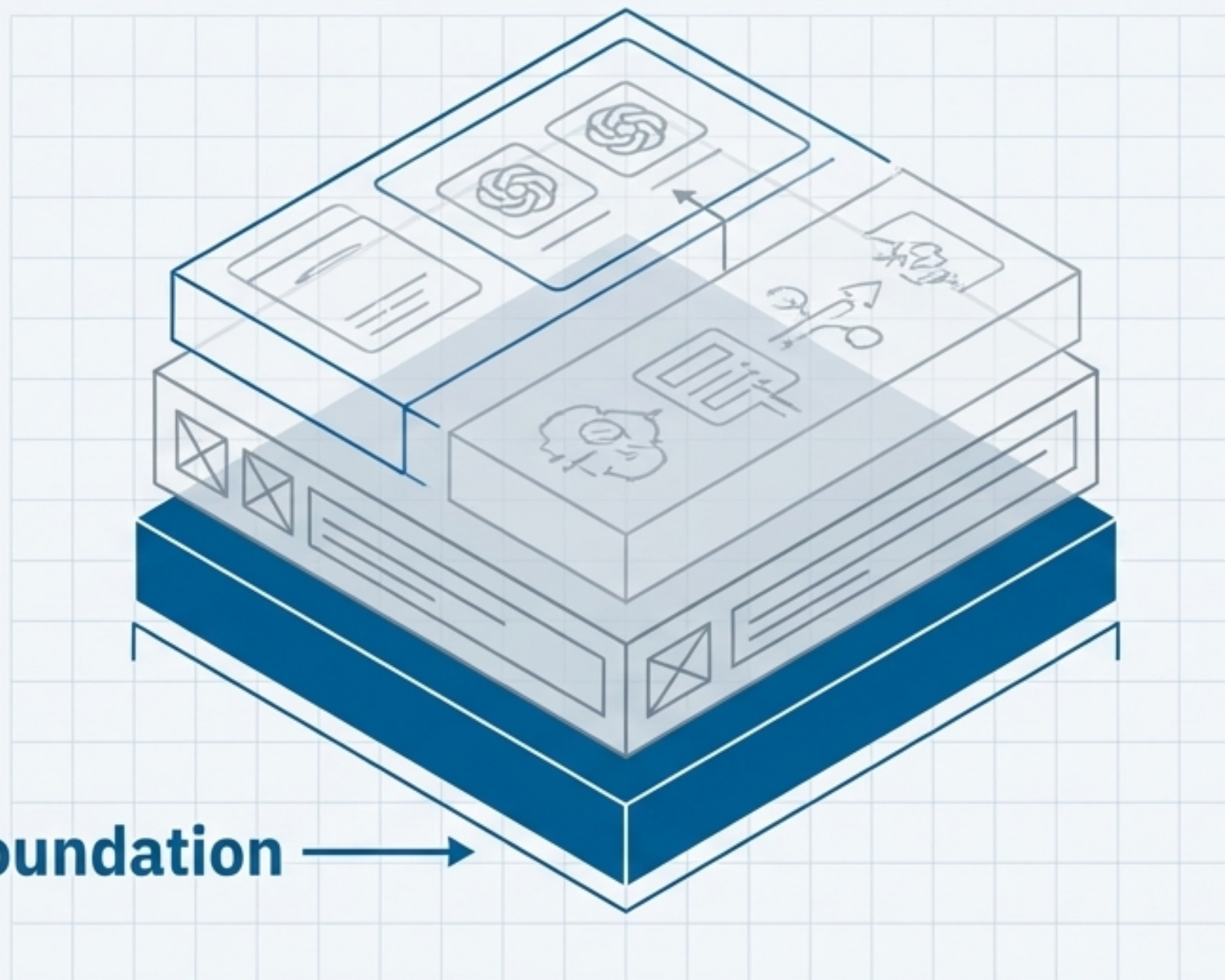
The entire step-by-step reasoning process is visible to the user, building trust and clarity.

# Built on a Foundation of Trust and Security.

Our advanced intelligence is grounded in a robust, secure, and reliable platform.



Advanced intelligence must be paired with unwavering reliability.



**The Foundation** →



We've built our system with **security, safety,** and operational best practices at its core.



You can trust our tool not only with your data, but with your workflow.

# Your Codebase and Data Are Always Protected.

We operate under a strict safety policy, reinforced by a robust and secure architecture.

## Our Safety Commitment



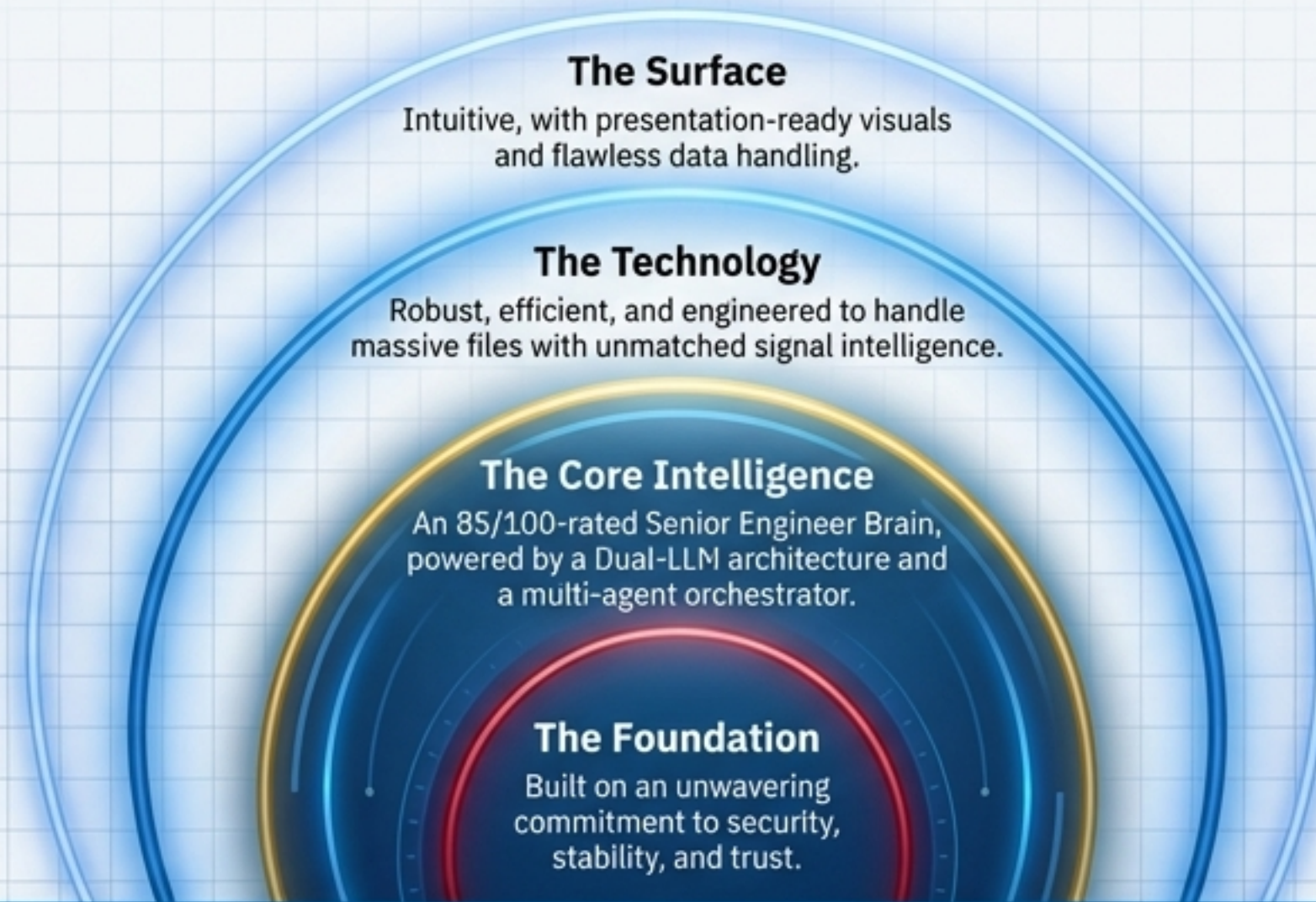
- ✓ **No File Deletion Without Permission:** We will NEVER delete files without explicit user approval.
- ✓ **Full Git Version Control:** All committed code is tracked, with full rollback capability.
- ✓ **Clear Status Reporting:** The tool always communicates the status of tracked, untracked, and modified files.

## Proactive Security Architecture



- ✓ **Critical Vulnerabilities Patched:** Fixed critical pre-deployment issues like missing CORS configuration and rate limiting on all report endpoints.
- ✓ **Hardened Path Validation:** Enhanced security against path traversal attacks.
- ✓ **Sanitized Inputs:** LLM inputs are sanitized to protect against prompt injection.

# A New Standard in Vehicle Diagnostics



**CONFIRMED: This system demonstrates SENIOR VEHICLE DIAGNOSTICS ENGINEER capabilities.**

Source: DUAL\_LLM\_ENGINEER\_CONFIRMATION.md

**System is production-ready for:** Complex diagnostic scenarios, multi-domain analysis, signal processing, and generating engineer-level insights.