

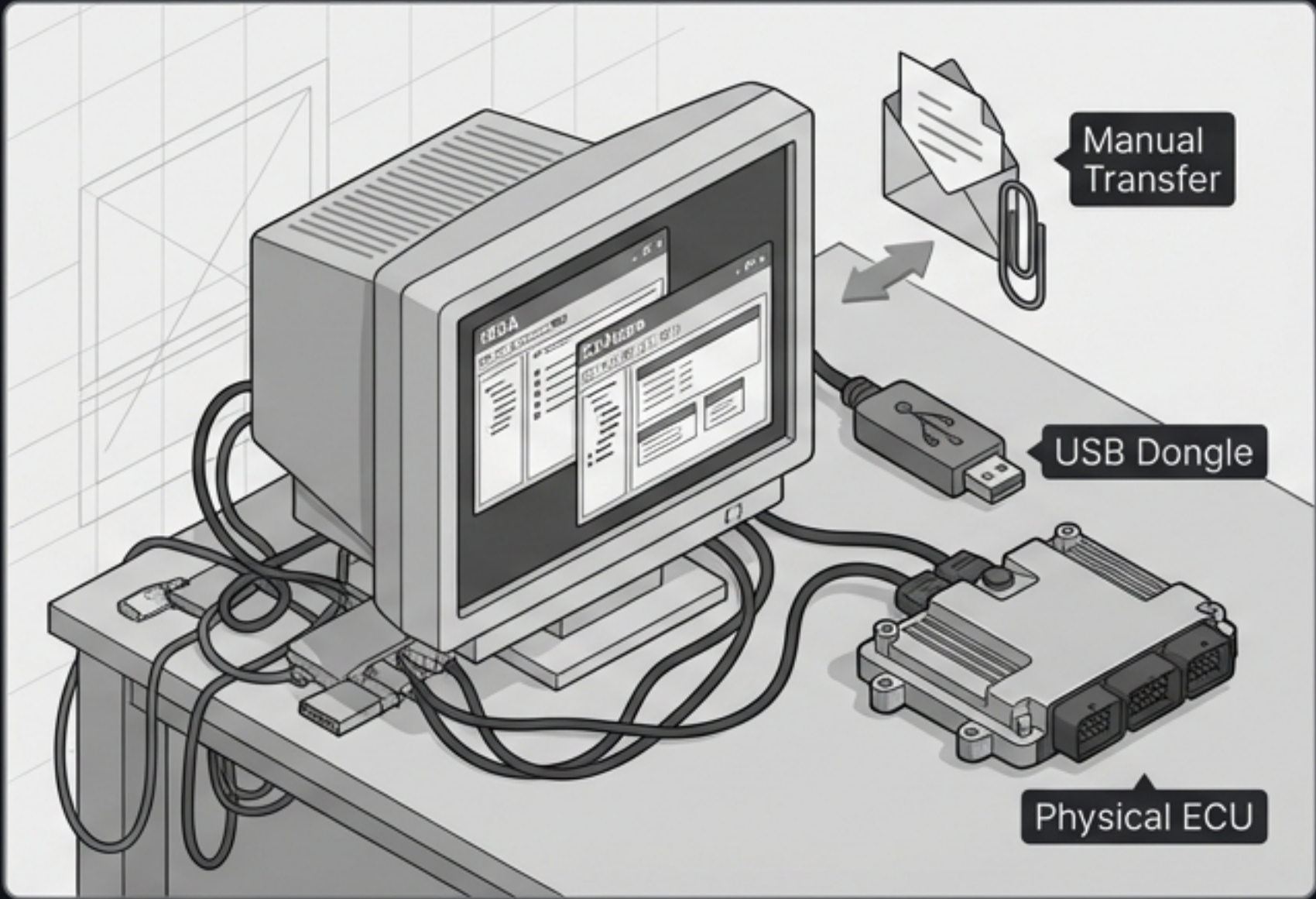
HELIX

The Cloud-Native Calibration Ecosystem



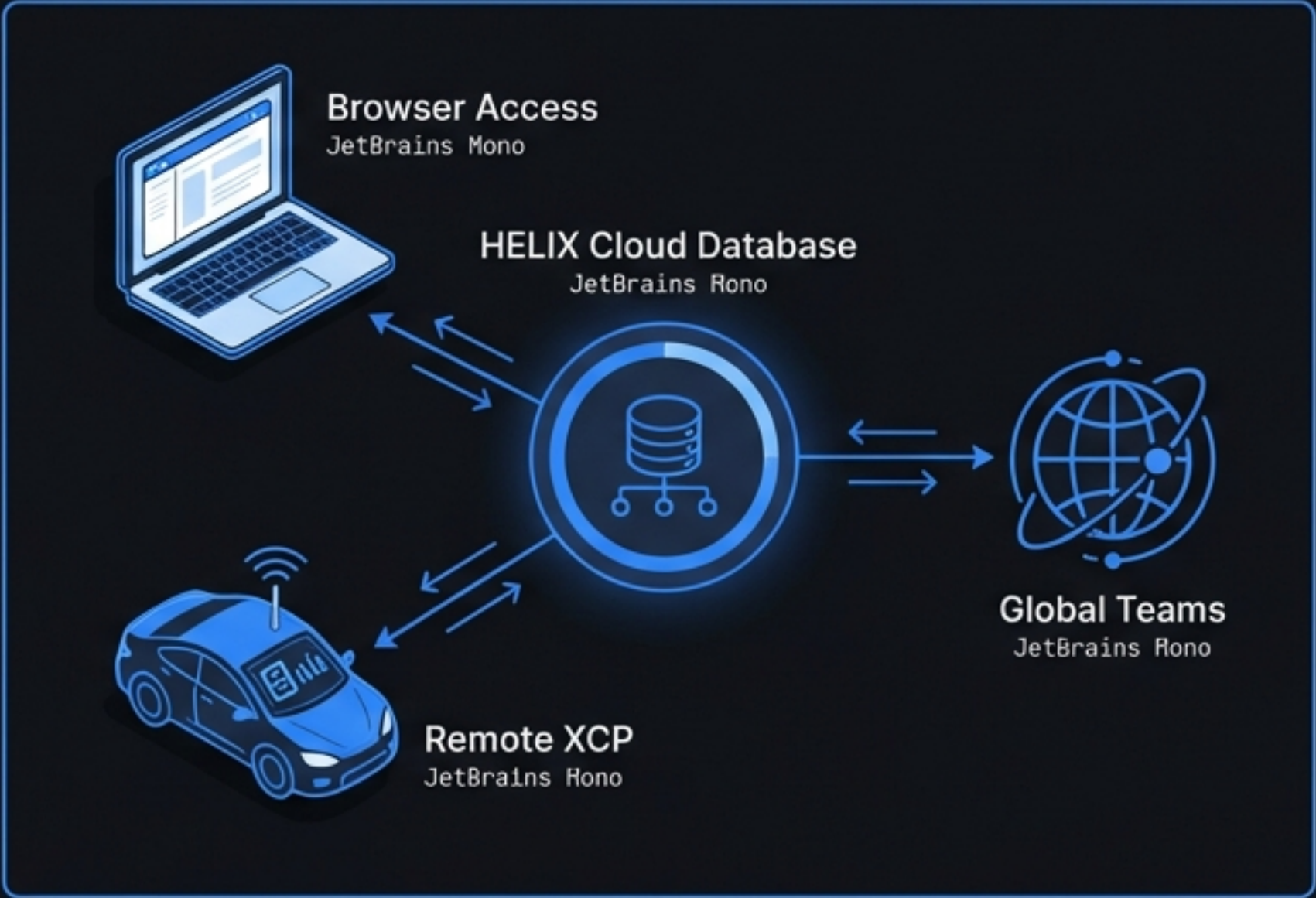
Version 2.0.0 | Foundation Complete | Real-Time Layer In-Development

Moving from Desktop Silos to Cloud Collaboration



The Old Way: Fragmented & Local

Inter



The HELIX Way: Centralized & API-Driven

Inter

Expensive Licenses



SaaS Model

Heavy Desktop Client



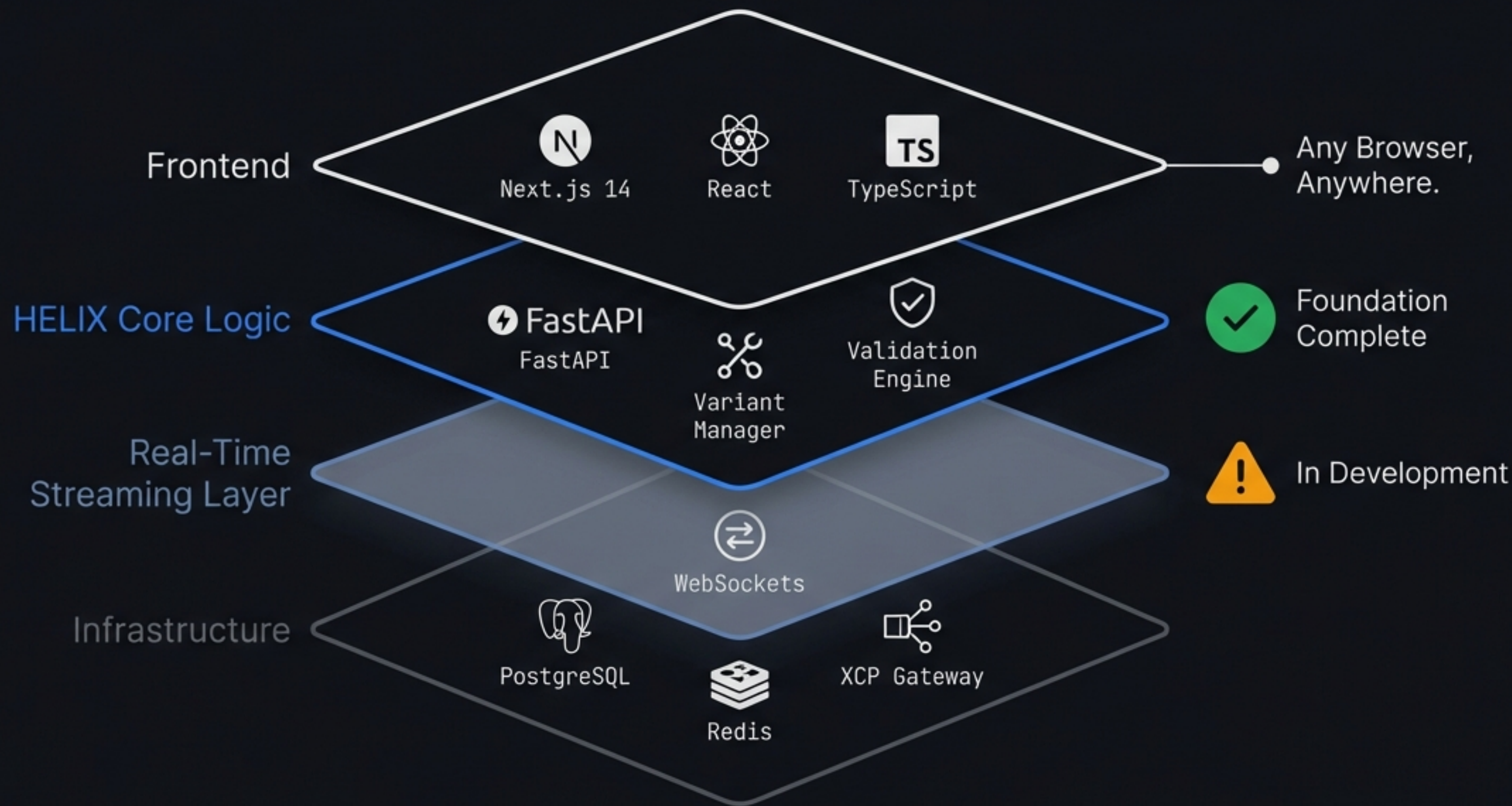
Zero-Install Browser

Manual Merging



Automated Workflows

Built on a Modern, Scalable Tech Stack



The Hierarchy of Truth: Structuring the Chaos

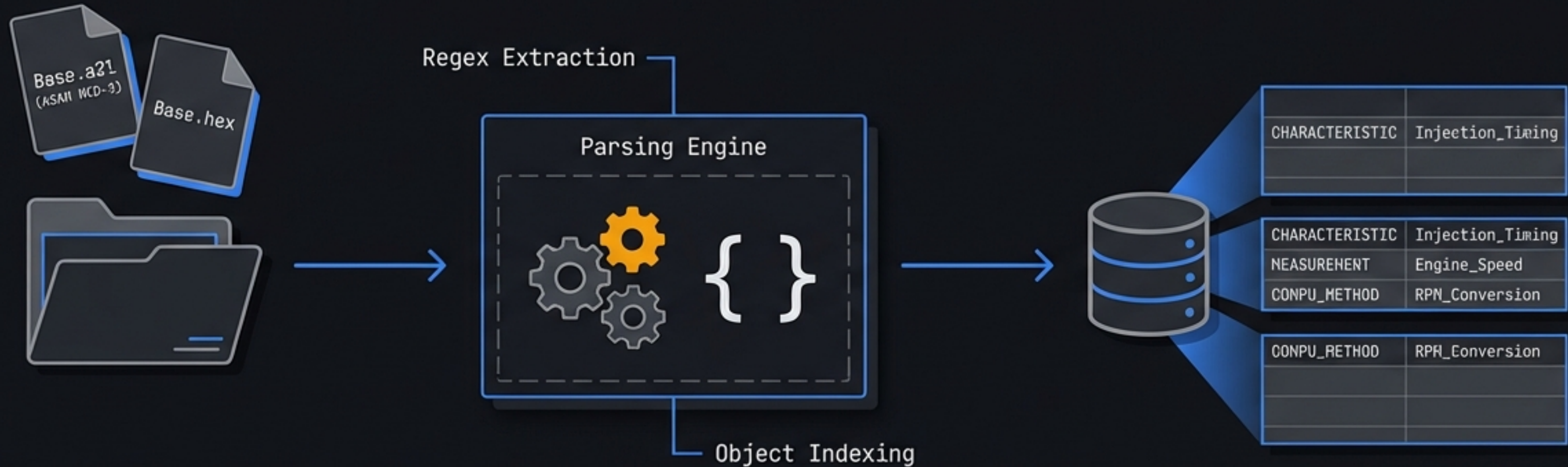
Multi-tenant management from OEM down to individual variant.



HELIX introduces 'OEM' as a first-class entity. A single Command Center allows managers to view all projects across different vehicle programs simultaneously.







Ingestion & Parsing: Creating the Digital Baseline

We don't just store files. We parse raw A2L and HEX into a granular, searchable index, creating a "Base" version from which all calibration deviates.



Intelligent Variant Management

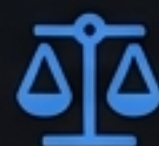
Tree Widget

- ✓  Project: 2026 Model S
 - ✓  MASTER (Base Calibration)
 - ✓  Variant: Region North America
 -  Variant: AWD Powertrain
 - ✓  Variant: Region EU
 -  Variant: RWD Powertrain



Inheritance:

Changes in Master flow automatically to Variants.



Comparison: Visual diffing between any two nodes.

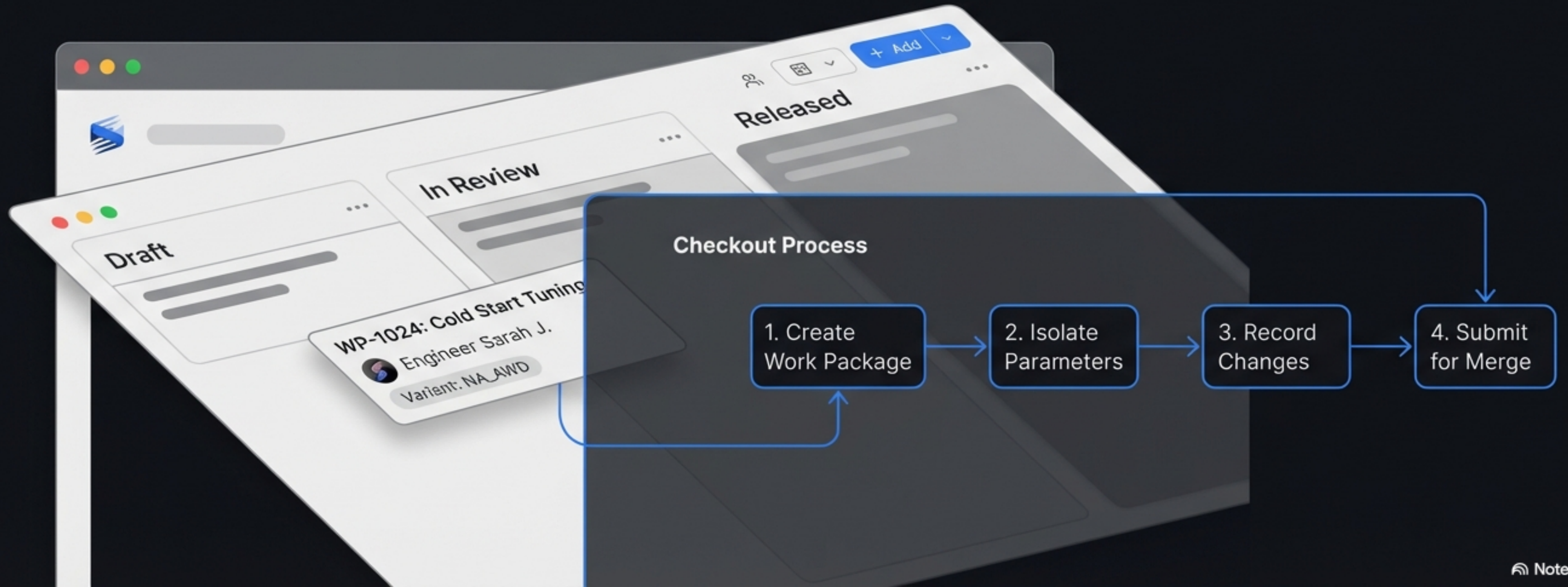


Freeze/Unfreeze:

Lock specific variants for release.

The Work Package System: Collaborative Calibration

Adhering to vCDM standards, HELIX tracks every change in isolated Work Packages. Multiple teams work in parallel without overwriting each other's data.



Conflict Resolution & The Golden Record

Current Master	Result	Incoming (Work Package)
	<div style="border: 1px solid #ccc; padding: 5px; background-color: #f0f0f0;"><p>⚠ Conflict Detected: Parameter modified by User A and User B.</p><p><input type="button" value="Accept Incoming"/> <input type="button" value="Keep Current"/></p></div>	
1 fuel_map_high: 0.85	1 fuel_map_high:	1 fuel_map_high: 0.92
2	2	2





Conflict Detection:
Automatic triggers during merge.

RBAC Governance: Only 'Integrators' can force a merge.

The Result: A generated 'Golden HEX'—the definitive, valid calibration.

Total Lifecycle Traceability

Activity Feed

-  Generate HEX triggered by System. [10:42 AM]
JetBrains Mono
Success
-  Merge Conflict Resolved by Admin. [10:30 AM]
JetBrains Mono
-  Map [Injection_Timing] modified from 0.4 to 0.6
by User: M.Chen. [09:15 AM]
JetBrains Mono
-  Work Package Created: 'High Load Optimization'.
[Yesterday]
JetBrains Mono



Granularity: Track changes to the single parameter level.



Reversibility: Instant rollback to any previous state.



Compliance: Automated DCM generation for audit trails.

Vehicle Management: Assets, Not Just Connections

WLTP Car 01
VIN:8X92 | Slot: Test Cell 4

Honda City CNG

● Online 4G Signal: Strong
Latency: **80ms**

Assigned User: Engineer: J. Doe

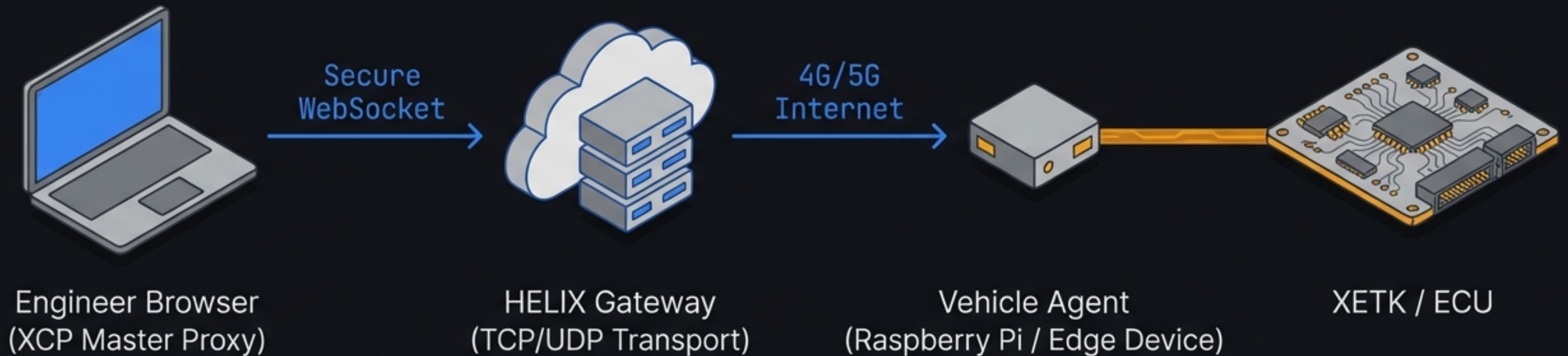
WLTP Car 02
Inter Tight
● Offline

Endurance Mu
Inter Tight
● Online

Solving the “Manager Gap”:
We map physical vehicles
to Projects.

A manager can instantly
see which assets are
assigned to the “Honda
City” project and who is
currently calibrating them.

Remote Calibration Architecture (XCP)

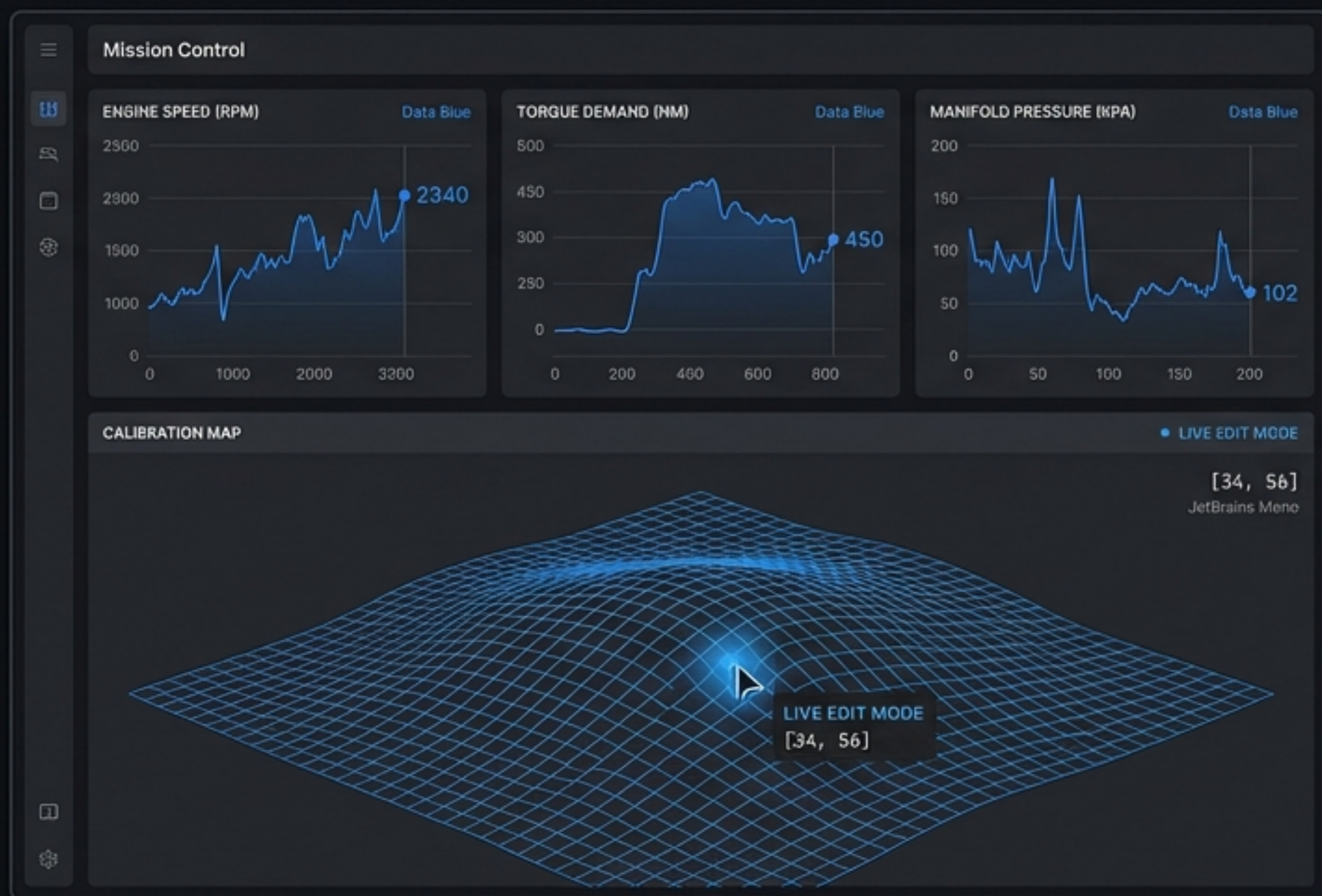


Protocol: ASAM XCP 1.5.0 over TCP/IP

Security: TLS/SSL Encrypted Tunnel

Resilience: Command buffering for network jitter (80-250ms latency)

The Vision for Real-Time Streaming



- Status: In Development (Priority 1)
- Target Latency: <10ms via WebSockets
- Feature: DAQ List support for 50Hz streaming.



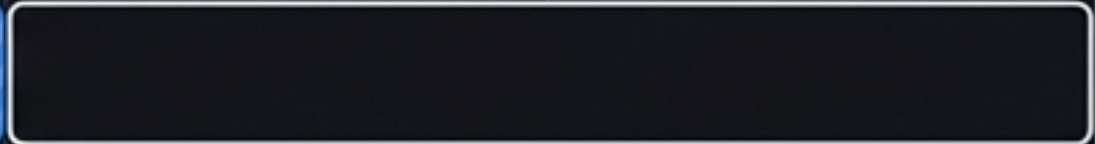
Data Plane: HELIX Streaming API v2

Security, Governance, & Access Control



Ensuring Intellectual Property protection and preventing unauthorized ECU modifications through strict role-based governance.

Implementation Roadmap

					
Foundation	Completed	The Connectivity Gap (Next 3 Months)		Scale & Intelligence	Future
<ul style="list-style-type: none">• Data Management (A2L/HEX)• Variant Workflow• RBAC System		<ul style="list-style-type: none">• XCP Master Layer• Real-Time WebSocket Streaming• Live ECU Connection		<ul style="list-style-type: none">• AI Suggestions• Full CAN Bus Integration	

The Foundation is production-ready. Engineering focus is now exclusively on the Real-Time Layer.

Control the Chaos. Calibrate Anywhere.



UNIFIED

One source of truth for all A2L/HEX versions.

COLLABORATIVE

Parallel teams, vCDM-compliant workflows.

CONNECTED

Bridge the gap between digital records and physical vehicles.

MODERN

SaaS model, no dongles, instant deployment.