

Route Manifest Composition

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What Route Manifest Composition Specifies

The route manifest is the credentialed sequence of segments the vehicle has authorization to traverse. As the vehicle approaches each segment, it reads the segment's credentialed markers; the marker stream contributes to the manifest under the vehicle's policy admission framework.

Composition is incremental rather than pre-computed. The vehicle doesn't need a pre-loaded manifest covering its entire route; it constructs the manifest segment-by-segment as it operates. The architecture supports operations where the destination changes mid-route, where conditions force routing adjustments, or where the vehicle enters segments not in any pre-loaded plan.

Why Pre-Computed Routes Don't Match Operating Reality

Current navigation architectures pre-compute routes based on map data. The pre-computation works for benign-environment operation; it produces brittleness when conditions change mid-route. Construction zones, traffic incidents, weather events, regulatory updates can all invalidate the pre-computed route.

Manifest composition is dynamic. The vehicle constructs authorization as it goes; conditions changes are reflected in the credentialed marker stream the vehicle

consumes; routing adjusts naturally.

How Cross-Authority Composition Operates

A route from Manhattan to suburban New Jersey crosses NYC DOT, NY State DOT, Port Authority Hudson River crossings, and NJ State DOT segments. Each authority signs the credentialed markers in its segments. The vehicle's policy admits each authority; the cumulative manifest emerges.

Authority unfamiliar to the vehicle (a foreign nation's authority during international operation, an authority not yet admitted by the vehicle's operator) produces a fallback to sensor-primary mode in that authority's region rather than a refusal to enter. The architecture supports graceful degradation across authority boundaries.

What This Enables for Cross-Jurisdictional AV Operation

L4 fleet operations gain structural cross-jurisdictional support. A fleet operating across state lines, across national borders, between toll authorities composes routes through credentialed cross-recognition rather than per-jurisdiction custom integration.

The architecture supports the multi-jurisdictional reality of commercial transportation that current per-jurisdiction AV regulatory architecture handles ad-hoc. The patent positions the primitive at the layer where cross-jurisdictional AV operation has been waiting for governance support.

