AWS re:Invent

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AUT302

Serverless architectures for autonomous fleets

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Serverless architectures for autonomous fleets

Tracking and tracing our autonomous fleet for R&D

Demo

How we solved

Q&A

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Autonomous test fleet logistics needs

- 4 testing regions, globally distributed engineering teams
- 16 hours per day (2 shifts)
- Fleet operations, safety conductors, safety drivers, data-hungry engineering teams
- Multiple TB per hour, per vehicle
- Real-time location, virtual driver status, telemetry and event monitoring

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Tracking and tracing our autonomous fleet for R&D

R&D team requirements

- ✓ Real-time visualization of test fleets
- ✓ Track events in real time for operational reporting and analysis pipelines
- ✓ Alert teams on critical events
- ✓ Compare and correlate events with historical data of devices (sensors, cameras, etc.)
- ✓ Test fleet management
- ✓ Route planning

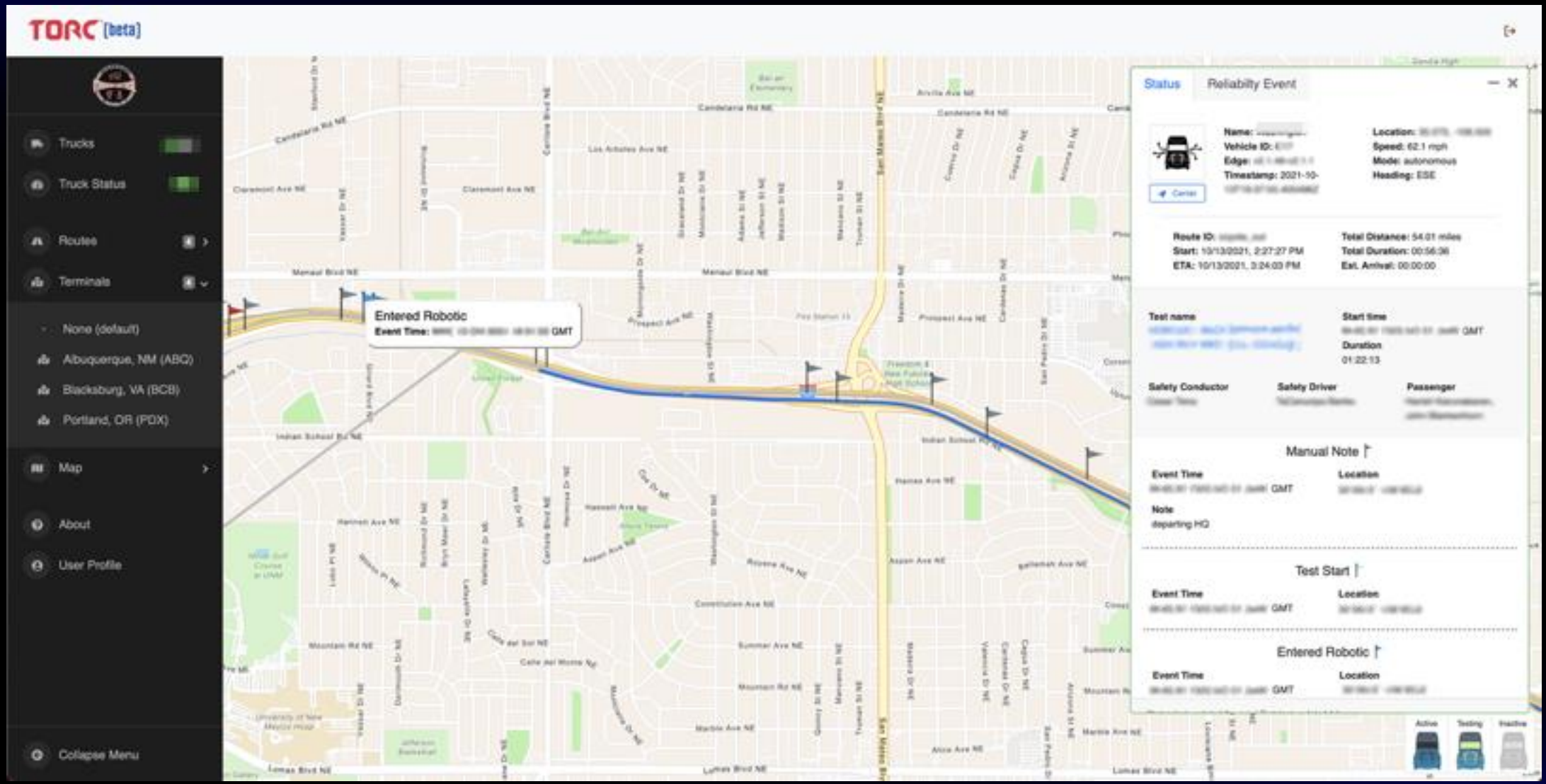
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Real-time visualization of test fleets

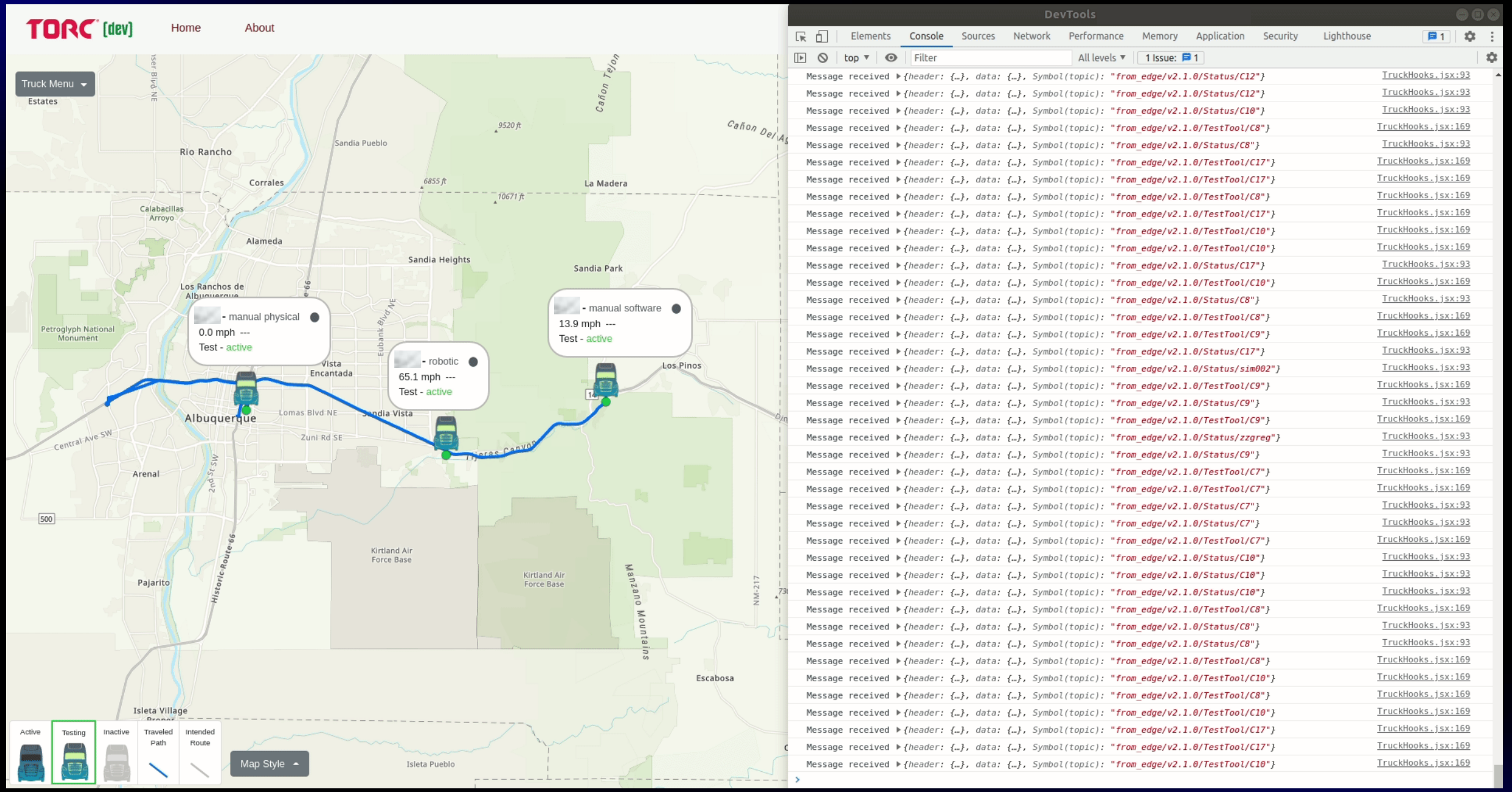


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Track events in real time for pipelines

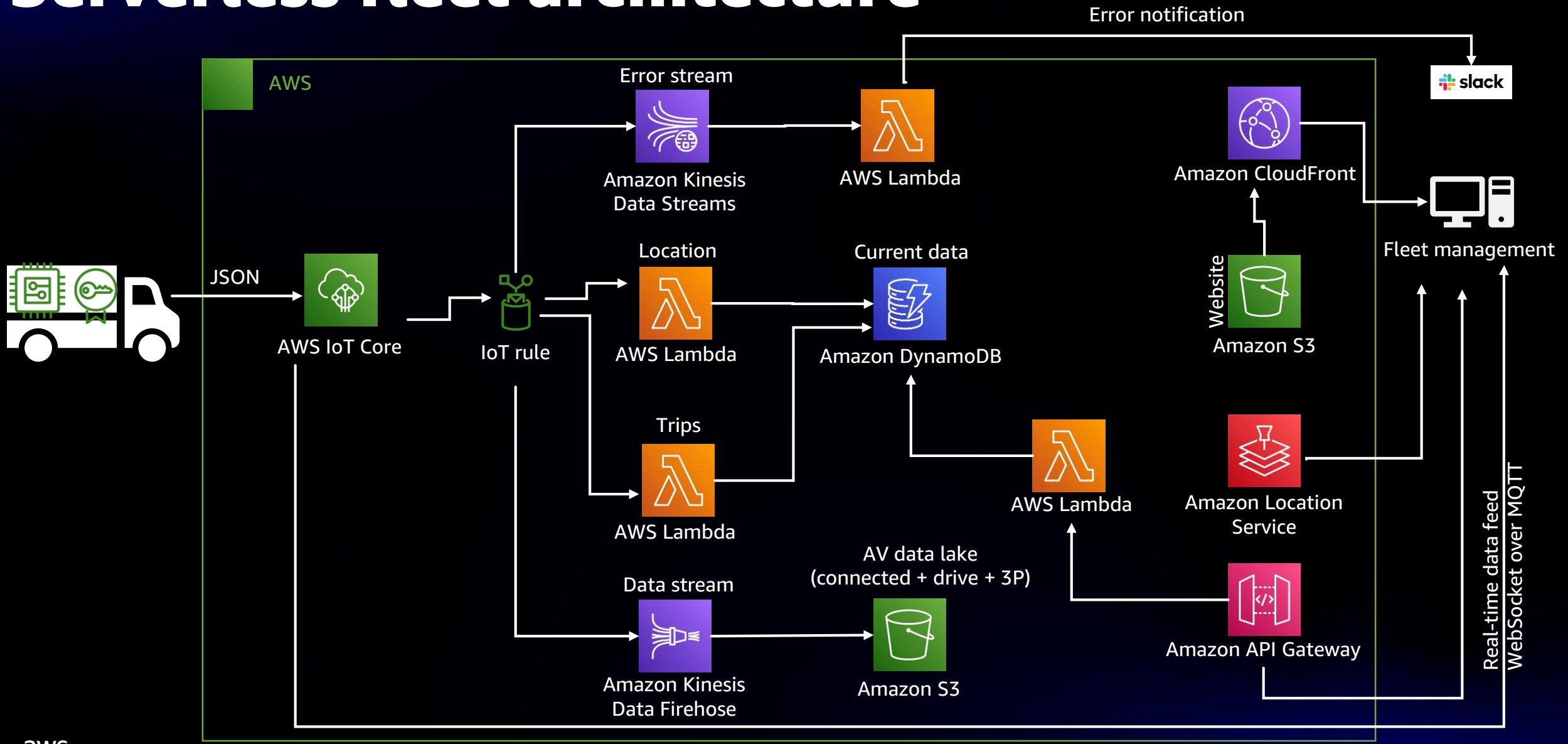


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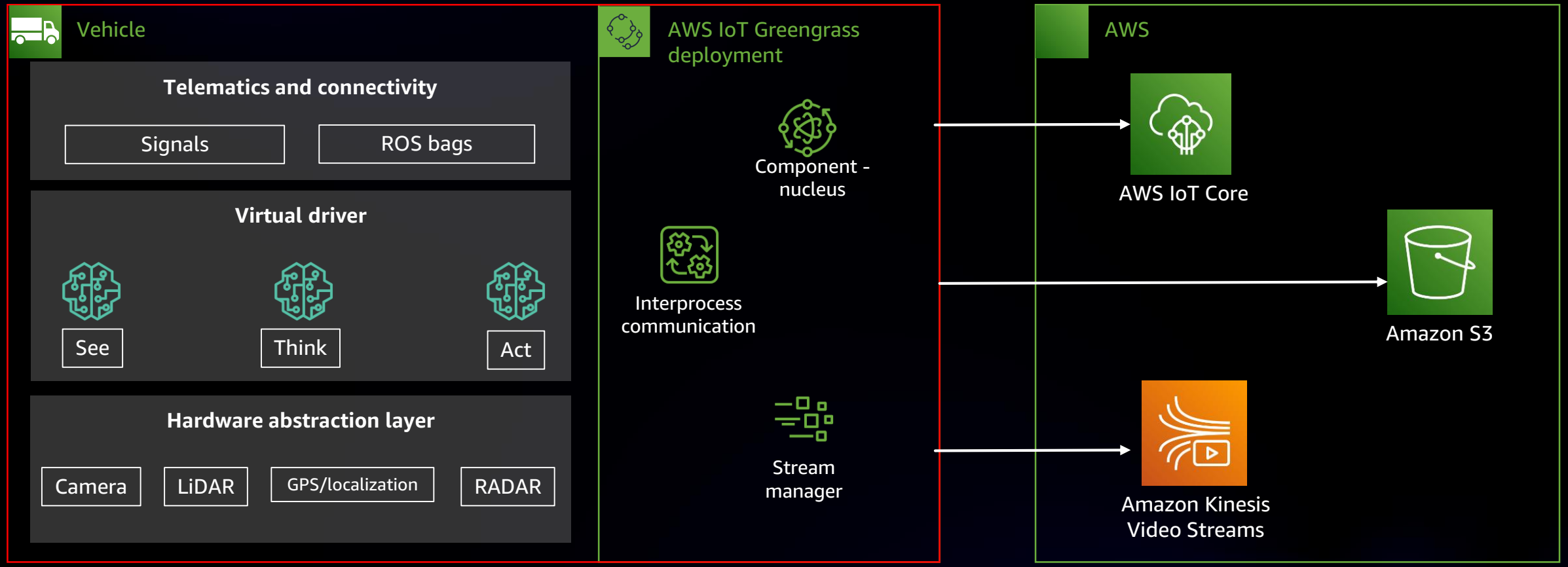
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Serverless fleet architecture



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Serverless fleet architecture at the edge



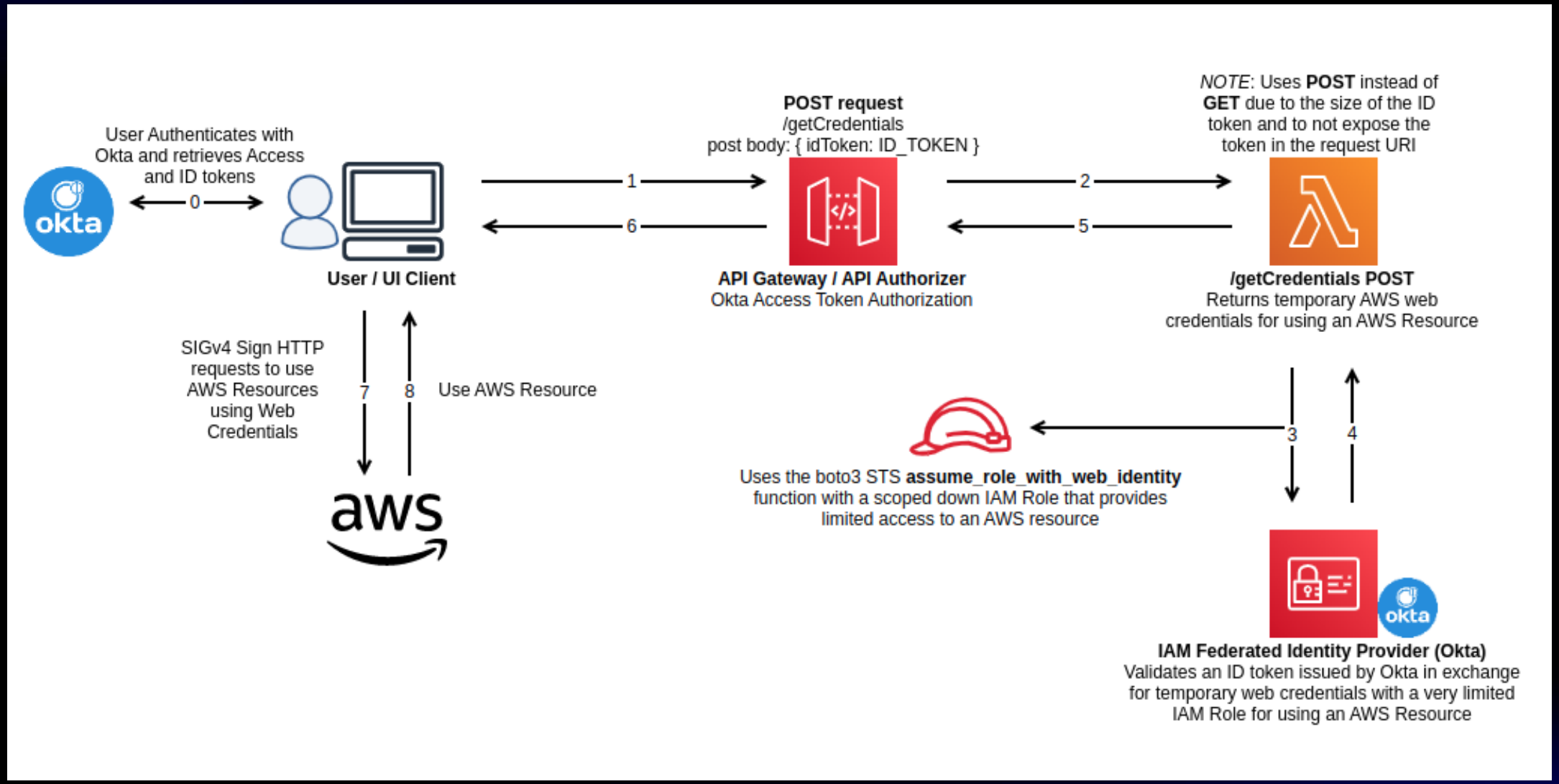
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Key decisions we made

- Over-the-air data message schema - Protobuf v/s JSON
- Low latency data transmission from edge to UI
- Multi-generation message transformation
- Using Okta token authorization for AWS Services instead of Cognito
- Replace Mapbox implementation with Amazon Location Services

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Using Okta token authorization



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Why serverless architecture?



Automatically scale from zero to peak demands



No servers to administer or patch



No guessing capacity or requirements



Pay-per-value pricing model

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How to send on-demand video?

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Thank you!

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