STREAMANALYTIX

# Real-time Driver Profiling & Risk Assessment for
# **Usage-based Insurance with StreamAnalytix**

To keep up with the new digital consumer and remain competitive, the auto insurance industry is increasingly investing in connected car solutions to offer simplified, transparent, and flexible products and pricing options.

For example, usage-based insurance is a voluntary, behavior-based insurance program that uses analytics to create highly personalized and dynamic plans based not only on the driver's age and other demographics, but also accounts for the driver's behavior, risks related to a vehicle, and external factors such as driving conditions and weather.

# Solution Highlights

## Real-time ingestion of telematics and sensor data

The auto insurance company uses a telematics device to capture and transmit vehicle performance, usage, and driver behavior data from various sensors in the car. The StreamAnalytix solution enables real-time ingestion of this sensor data using an AWS (Amazon Web Services) IoT gateway. The device captures data points such as:
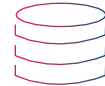
**Diver behavior:**

Rapid acceleration, hard braking, hard cornering, and air bag deployment

**Vehicle sensor data:**

Oil temperature, engine performance, brake wear, and tire pressure

**Usage data:**

mileage, location, and historic riskiness of the routes used

## Data processing, as it arrives

In-memory data transformation, data blending and data enrichment is performed as driver behavior, usage, and vehicle data arrives:

Combines real-time behavior and vehicle sensor data with risk history

Blends driving behavior data with other real-time data sources such as syndicated public data marts and weather data

Enriches data with customer information such as contact, location, age, past purchases, past claims, and more

## Automated risk analysis through machine learning

The ingestion and enrichment stages provide a rich array of key attributes needed for the predictive machine learning models running on Apache Spark. Orchestrated by StreamAnalytix, these stages assess and predict individual risk scores.

Classifying drivers as safe or risky and quantifying risk scores are based on current driving behavior, historical behavior, and supplemental data flows such as: usage data, geographic location, vehicle type, vehicle performance, and third-party data (like driving conditions and weather data).

StreamAnalytix also provides easy visual dev-ops interfaces to allow for a periodic refresh of the models based on varying patterns of data or drift in user behavior. If necessary and when appropriate, the insurer can configure StreamAnalytix to deploy real-time continuous learning models such as K-means clustering for this use case.

## Smart alerting

The application creates alerts to flag risks based on altered behavior patterns as well as anomalies in vehicle performance:

Customers may opt to be alerted in real-time on risks to enable course correction and caution

Alerts for vehicle health can be created to flag predicted faults and repair needs, reducing the number of claims caused by vehicle breakdowns

Smart alert models are built to reduce false positives. For instance, if a driver is braking frequently because his route shows heavy snow fall, his driving behavior will not be flagged as a risk because there is a good explanation for it

---

# Results

## An end-to-end, real-time analytics application for driver profiling & risk assessment to enable personalized, usage-based insurance plans

Through driver profiling and individual risk scores, the auto insurer is now offering data driven, and highly personalized, insurance policies and pricing plans. Additionally, the insurance giant is now also offering predictive maintenance services that prevent vehicle breakdowns and repairs.

**Premium adjustments and dynamic pricing**

Highly personalized premium pricing options are based on:

**Individual scores:**
Lower insurance premiums for safe or infrequent drivers

**Vehicle type and make:**
Data shows that people with a lower risk profile inherently choose certain types of cars

**Geography:**
Certain geographies have more favorable weather and better driving conditions, leading to lower risk and lower premiums

# Increased customer loyalty and claims reduction from value-added services

Remote vehicle diagnostics and predictive maintenance services proved to be consumer-friendly value-addition which resulted in increased customer loyalty. Customers report that they like, and have come to rely on,v the application's predictions related to component failures and breakdowns. Also increasing preventative maintenance resulted in fewer claims from incidents created by vehicle malfunctions.

Risk Distribution By Geography And Vehicle Make



# Real-time tracking
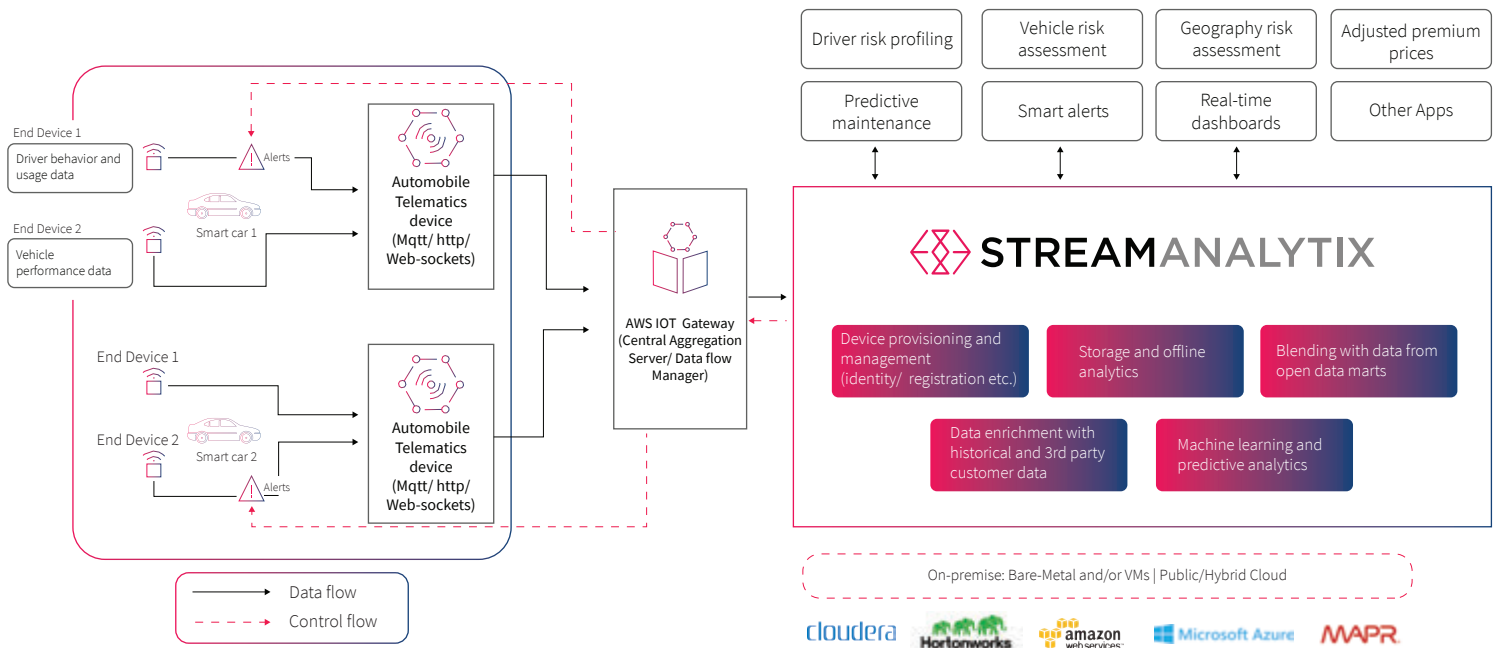
The application makes it easy to track driver activity and vehicle data in real-time through a custom web UI and interactive real-time dashboards. Customers can also easily track their own driving behavior and vehicle performance in real-time (through an installed mobile application) and take corrective action that can affect their insurance premiums.

Real-time Dashboard for Active Trips
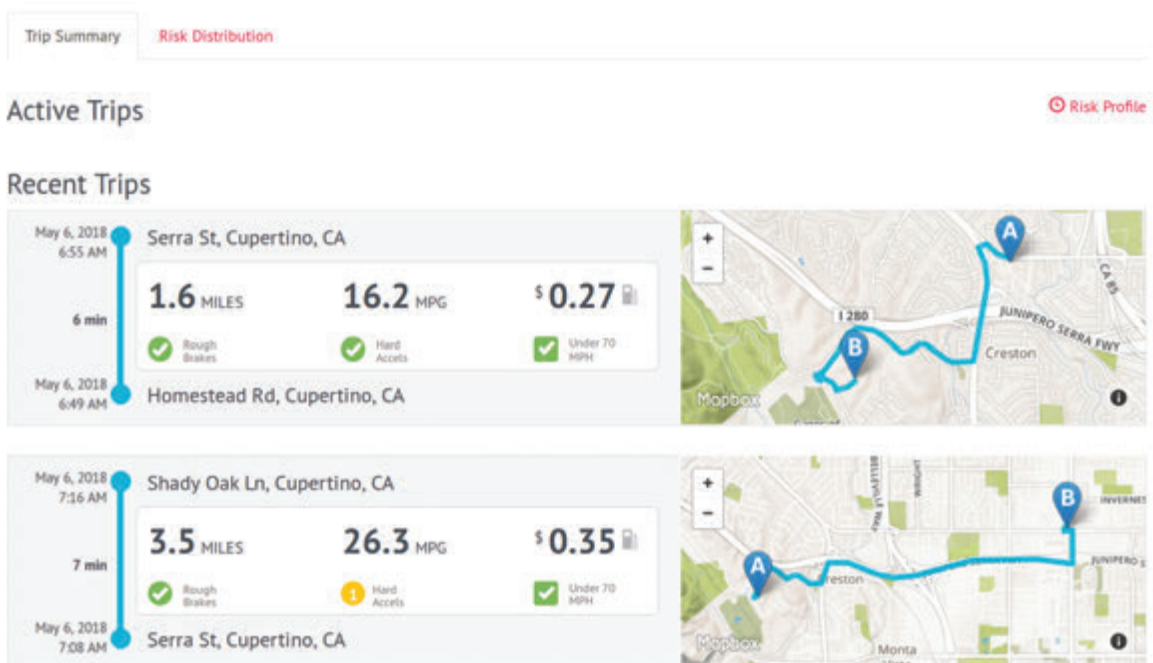
# Connected Car Solution with StreamAnalytix

Driver risk profiling

Vehicle risk assessment

Geography risk assessment

Adjusted premium prices

Predictive maintenance

Smart alerts

Real-time dashboards

Other Apps

End Device 1

Driver behavior and usage data

End Device 2

Vehicle performance data

Alerts

Smart car 1

Automobile Telematics device (Mqtt/ http/ Web-sockets)

End Device 1

End Device 2

Smart car 2

Alerts

Automobile Telematics device (Mqtt/ http/ Web-sockets)

AWS IOT Gateway (Central Aggregation Server/ Data flow Manager)

## STREAMANALYTIX

Device provisioning and management (identity/ registration etc.)

Storage and offline analytics

Blending with data from open data marts

Data enrichment with historical and 3rd party customer data

Machine learning and predictive analytics

On-premise: Bare-Metal and/or VMs | Public/Hybrid Cloud

Cloudera

Hortonworks

amazon web services

Microsoft Azure

MAPR

→ Data flow

- - → Control flow

StreamAnalytix is an enterprise grade, visual, big data analytics platform for unified streaming and batch data processing based on best-of-breed open source technologies. It supports the end-to-end functionality of data ingestion, enrichment, machine learning, action triggers, and visualization. StreamAnalytix offers an intuitive drag-and-drop visual interface to build and operationalize big data applications five to ten times faster, across industries, data formats, and use cases.

Visit www.streamanalytix.com or write to us at inquiry@streamanalytix.com

## STREAMANALYTIX