

# Case Study

*One of the world's leading automakers rebuilds their digital ecosystem — from voice to middleware — to get ahead of the curve.*

Nissan Motor Company is the 6th largest auto manufacturer and the largest electric vehicle manufacturer in the world, selling its cars under the Nissan, Infiniti, and Datsun brands. With a brand promise of “innovation that excites,” the company sought to push forward in the connected car space and deliver a suite of first-rate products to its drivers and passengers.

## Challenge

Nissan needed to partner with a vendor capable of building a Google Home voice application to complement their Amazon Alexa skill as their vendor at the time did not have this ability. However, upon starting the engagement, we identified further issues in their digital ecosystem, including:

- + Flawed user flows in the Amazon Alexa Skill
- + A black box and flaws in the middleware, where the Nissan team had little information as to how any information was fed into the car
- + Dated coding languages and on-premise architectures that limited scalability

## KEY RESULTS



**4.2 star** rating for Google Action



Improved API Call Latency by **40%**



Improved Call Failure Rate by **30%**

# Solution

Nissan were familiar with our work with another major auto manufacturer and chose to work with us for our expertise and ability to build in the connected car space. Further, they were impressed with our Agile processes, commitment to transparency, and development speed. We built the Google Home Action, rebuilt the Amazon Alexa Skills, and their middleware.

- + **DESIGN:** We designed the voice user interface (VUI) for the Google Action, which was complete with full user flows, error cases, and intents. The depth and specificity of the 60-page VUI was a major point of attraction and impressed Nissan. They then engaged us to redesign the Amazon Alexa Skill with greater detail and an improved user flow.
- + **VOICE DEVELOPMENT:** Our development teams built the Google Action app from scratch and rebuilt the Alexa Skill. Our team paired with Nissan's architect to ensure all builds satisfied and exceeded their requirements. We built 4 Skills and 4 Actions — 1 each for Nissan ICE vehicles, Nissan EV vehicles, the Infiniti demo app, and Infiniti in-touch services.
- + **MIDDLEWARE DEVELOPMENT:** We rebuilt Nissan's entire middleware, migrated their code from Java to a modern language, Node.js, and migrated them from on-premise infrastructure to the cloud via Amazon Web Services. Google and Amazon both certified the solution in just 7 months.
- + **QUALITY ASSURANCE (QA):** Our QA engineers conducted essential testing on the voice applications in both ICE and EV vehicles. Our team tested on Nissan and Infiniti vehicles at their North American headquarters in Tennessee, and at our offices in the OC and in Toronto. This way, we ensured all inputs produced the appropriate in-vehicle output, from end-to-end.

## TECHNOLOGIES

- + Node.js
- + Google Cloud Platform (GCP)
- + Amazon Web Services (AWS)
- + API Integration with SiriusXM
- + API Integration with Global Distribution System
- + Postman API



# Outcome

Nissan now has 4 distinct Google Home Actions and Amazon Alexa Skills, which give a driver or passenger the ability to lock and unlock their car, adjust heat, start the engine, etc., and all by simply speaking.

Given our close relationship with Amazon, we were able to make Nissan the first automotive manufacturer with services on AWS. With a rebuilt middleware that integrates with modern and relevant APIs (SiriusXM and GDS) the new coding language and cloud infrastructure enhances Nissan's digital maintainability, scalability, and reliability, and reduces dependencies. Further, because of the way in which we built and implemented the middleware, their team can now pull a specific job ID and trace it through the entire digital ecosystem and see how a user request flows from speech-command to output. The new middleware is highly transparent, which was a goal of Nissan's and a commitment of ours.

Our work with Nissan is ongoing. We continue to work with their executive team to explore potential products and avenues to further differentiate Nissan from their competitors in the connected vehicle services sector.



“Love it! It’s the little things that make life just a little bit easier. Starting my vehicle to cool down in the Texas sun is now fun and easier. I can simply from the convenience of the house just ask Alexa to start up my truck. When locking up the house at night, just ask her to lock your doors just to be sure. Really love the easy interaction!”

- AMAZON ALEXA REVIEW



# TRIBAL<sup>7</sup> SCALE

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