



How Autonomous Vehicles will Transform the In-Car Voice Assistant – Part 1

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It is a well-known fact that our future roads will be awash with varying levels of autonomous vehicles (AVs). AVs are set to transform the way we travel in many ways, but what do they have in store for in-vehicle voice assistants (VAs)? It's a common assumption that a VA's primary purpose in the car is to help reduce driver distraction, but its role is far more dynamic in the cars of both today and tomorrow. Voice interfaces not only deliver fast, flexible, and more human-like interaction, but also help build a driver's emotional connection with their car, improving their perception of the car as a trustworthy digital companion and, in the case of AVs, helping them feel more comfortable with the newfound lack of vehicle control.

With the help of current scientific research, an eye toward some of the trends we are seeing in OEM concept cars, and Cerence's innovation in voice-based experiences for AVs, we've outlined some of what we can expect from automotive VAs in the increasingly connected and autonomous vehicles of the future.

Driver Becomes Passenger. Various OEM concept cars developed in recent years have given us a glimpse into the future of AV cockpits. From swiveling seats and pop-up work areas as seen in the [Mercedes Benz F015 concept car](#), to screens on the ceiling as shown in [Hyundai's IONIQ concept cabin](#), to retracting surfaces creating sleeping areas as seen in the [Volvo 360c concept](#), the auto industry is clearly gearing up for a world in which the driver is no longer needed in their conventional position in front of the steering wheel. With AVs expected to evolve into highly flexible environments, voice commands have unrivaled potential for facilitating fast and flexible interaction that can be done from any position within the vehicle – without physical interfaces, and even with your eyes closed. Further automation and advancement in AI will also enable personalization of VAs towards a driver's preferences, which will result in a more personable UX in which VAs will become more like a ride companion than an assistant.

Intelligent Voice. The deepening integration of VAs with various vehicle sensors, as well as future AVs' ability to be connected to each other, opens up VAs to connect with the myriad intelligent components around them. For example, the combination of a vehicle's ability to anticipate the actions of other road users, along with smart eye-tracking technology such as [Cerence Look](#) and advanced NLU, may lead to more smooth transitioning situations between the vehicle and driver. Picture this scenario where a driver receives a request to take over manual control of the vehicle in order to complete an overtaking maneuver; however, the driver is busy writing an email:

Driver: "I need 30 seconds before I can take over."

VA: "OK, just say 'take-over control' when you're ready."

Or a scenario when a driver is late for work, but the AV does not perform an overtaking maneuver because its sensors are blocked. The driver leverages gaze detection to provide direction:

Driver: "Overtake that white van ahead and take the fastest route thereafter."

In both scenarios, drivers can provide complex information to the AV with only a few simple voice commands, using the help of smart components integrated into the vehicle, requiring minimal effort, and without the need to use any physical interfaces.

Mobility as a Service (MaaS). Transportation is on the cusp of an essential transformation: with rising city populations and the ominous impact of climate change, smart public and personal transport services will be a vital and necessary mobility solution. At [CES 2020](#), Cerence showcased part of our vision for MaaS alongside partners e.GO MOOVE, e.GO Digital, and Saint-Gobain Sekurit. In the [e.GO Mover](#), an electric, autonomous shuttle bus that is slated to [begin production at the end of 2021](#), we together demonstrated first-of-its-kind transparent glass screen technology, enabling projection of key information both inside and outside the vehicle. When combined with Cerence's advanced natural language understanding (NLU) technology, which allows passengers to interact with the e.GO Mover with flexible commands in a variety of languages both inside and outside of the bus, a natural, intuitive experience that helps build trust and confidence begins to take shape.

As you can see, the possibilities for voice assistants will only continue to grow with increasing technological advancements, vehicle automation, and vehicle connectivity. Stay tuned for part two of this blog and more on this topic later this week!