

ANSYS VRXPERIENCE SOUND ASDforEV

In-vehicle sound design and tuning solution for quiet vehicles

/ The Sound of Silence

Electric vehicle (EV) and autonomous vehicle (AV) manufacturers create signature sounds for their cars, including engine noise, to enhance vehicle appeal and give listeners a feel for the speed and acceleration. Using cutting-edge sound enhancement techniques, automakers are introducing new, customized sounds for their vehicles. These techniques augment natural vehicle sounds by playing synthesized sounds synchronized with the vehicle's real-time data over the vehicle's speakers. VRXPERIENCE Sound ASDforEV delivers in-vehicle sound design and tuning that is designed to predict, test and validate the future soundscape of vehicles in real-world driving conditions to ensure that EVs provide the optimal sound experience.

/ Which Sounds are Addressed by VRXPERIENCE Sound ASDforEV?

VRXPERIENCE Sound ASDforEV generates a variety of designed vehicle sounds.

For driver and passengers:

- Event-related sounds for ambiance and HMI (welcome sequence, turn indicator sound, unfasten seatbelt alarm, etc.)
- Dynamic/active sound, similar to engine sound enhancement (ESE) and generalized as “speed/acceleration feedback (SAF) sound”
- Advance driver assistance system (ADAS) sounds for improved driver awareness, including 3D rendering for event localization

For pedestrians:

- AVAS (acoustic vehicle alerting system) for collision warning
- Vehicle engine signature sounds



Ambiance



SAF Sound



AVAS for EV



ADAS



HMI

/ Active Sound Design

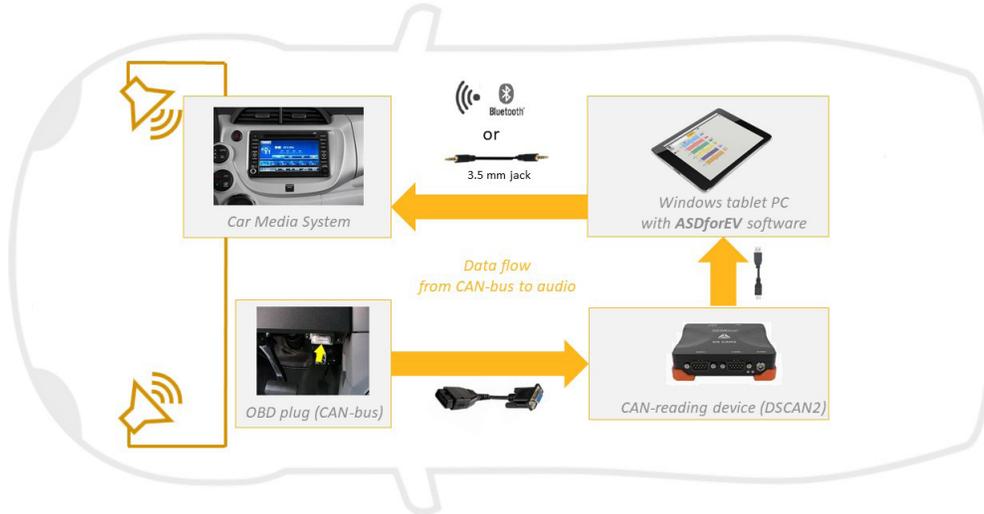
VRXPERIENCE Sound ASDforEV enables you to perform smooth changes of sound pitch and gain depending on driving parameters such as speed, RPM, load, acceleration, torque and brake. You can load complete sound sets and easily switch between them within one click through a fast-rating interface. Multichannel management is quick and easy thanks to customizable playback setups (speaker number and positions), output equalization and sound checks. Additionally, you can play several sound functions at once and adjust their relative levels by using a mixing table.



/ Connection with the Vehicle

VRXPERIENCE Sound ASDforEV can be connected to the vehicle using the following configurations:

- Connection to the CAN bus through the OBDII connector
- Connection to the vehicle's audio system through Bluetooth or audio jack cable
- Tablet PC running VRXPERIENCE Sound ASDforEV



/ Sound Fine Tuning

VRXPERIENCE Sound ASDforEV enables you to finely tune the sounds of the five sound axes mentioned above.

- AVAS: Wavetable synthesis (up to 4 mono audio sample loopers, audio sample switch, variable playback speed, load/edit pitch & gain laws, etc.)
- SAF: Wavetable synthesis (same principle as AVAS with up to 10 loopers) + additive synthesis (up to 30 oscillators, individual frequency laws, load/edit frequency & gain laws, etc.)
- Ambiance/HMI/ADAS: Audio players (stereo, or mono + 360° panning), played once or repeated depending on function, adjustable repetition rate (silence duration)

To see a full list of Ansys acoustics capabilities please visit [Ansys VRXPERIENCE Sound Capabilities Chart](#).

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