

HARMAN



PROVIDING CLARITY IN MOTION



HARMAN Premium Communications is a first-to-market packaged solution designed to elevate today's in-vehicle communication environment. Unique features such as **ClearChat, In-Car Communication and Personal Communication Zones** raise conversations to a new level of clarity – whether it's with a voice assistant, someone on the other end of a phone call, or amongst passengers.

USER FEATURES



ClearChat's far-end noise cancellation eliminates in-vehicle background noise for phone call recipients and personal voice assistants.



In-Car Communication (ICC) provides clear, safe two-way communication amongst vehicle occupants.



Personal Communication Zones gives every seat occupant the freedom to interact with the voice assistant of their choice or host seat-centric phone calls. In partnership with Dirac, the most advanced signal processing methods optimize audio playback for all passengers.



Eliminates in-vehicle background noise for call recipients and voice assistants.

ClearChat combines world-leading beamforming microphones, echo cancellation and noise-reduction algorithms to bring new clarity to in-vehicle phone calls

and voice assistants. Phone call recipients hear the caller without the sonic clutter of a noisy vehicle cabin. Voice assistants respond promptly and intelligibly.

USE CASES

External Phone Calls

The Problem – Driver tries to make a conference call from a noisy cabin. The call recipients cannot understand the caller because of all the cabin noise.



The Solution – By activating ClearChat, the call can take place uninterrupted despite the noise in the background. Recipients can clearly understand the caller and their comments.



Personal Voice Assistant

The Problem – Driver speaks to the voice assistant while the radio plays loudly and the passengers are singing along. Voice assistant does not receive the command.



The Solution – By activating ClearChat, the voice of the driver is clearly received by the personal voice assistant, no matter what noises are in the background.





Engage in natural, stress-free conversation with co-passengers and voice assistant in the car.

In-Car Communication (ICC) uses directional microphone arrays, signal processing and enhanced sound field control to elevate the communication experience for all vehicle passengers. With its always-on seamless functionality, two-way communication from front-to-back and back-to-front

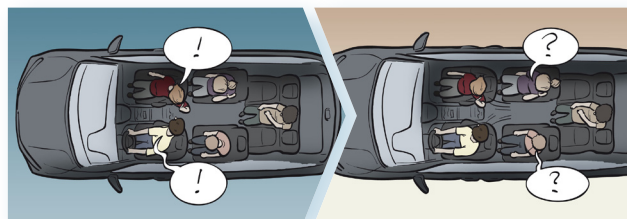


becomes more intelligible without having to raise voices or take eyes off the road. HARMAN's Adaptive Volume Control and Privacy Mode provide users with the most seamless user experience possible.

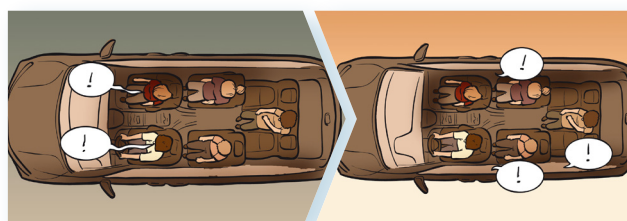
USE CASES

Front-to-Back

The Problem – For the driver to speak to second- and third-row passengers, they often must divert their attention from the road and raise their voice to be heard.

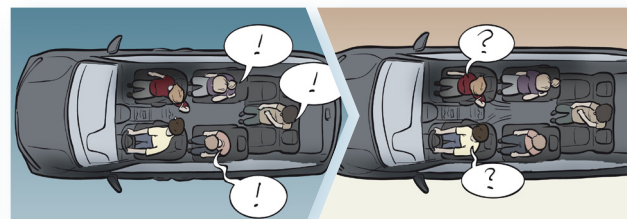


The Solution – With In-Car Communication the driver can easily speak to passengers in a normal voice without taking their eyes off the road.

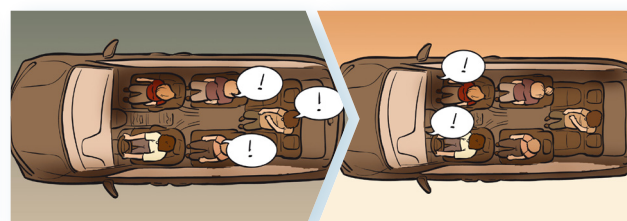


Back-to-Front

The Problem – It can be difficult for passengers in the back of the vehicle to speak to those in the front without raising their voices.



The Solution – With In-Car Communication passengers in the back can effortlessly communicate with the front row.



Seat-Centric Voice Capability.

Personal Communication Zones enables simultaneous seat-centric interactions with the vehicle and voice assistants through the use of directional microphone arrays, premium headliner and headrest speaker integration, and advanced



signal processing. Phone calls can be independently distributed to a specific seat. Voice assistants can provide personalized feedback to every passenger.

USE CASES

External Phone Calls

The Problem – Currently, passengers in the same vehicle are unable to make simultaneous external calls to different sources while leveraging their vehicle's voice-activated communication system.



The Solution – With Personal Communication Zones, phone calls can be distributed to individual seats, allowing simultaneous phone calls to take place throughout the vehicle.



Personal Voice Assistant

The Problem – Currently, the ability to interact with an in-vehicle voice assistant is reserved specifically for the driver.



The Solution – With Personal Communication Zones, each passenger can interact with their own voice assistant to receive personalized feedback to their specific seat.



The Premium Communication Solution user features (ClearChat, In-Car Communication and Personal Communication Zones) are scalable for varying vehicle segments.

Together with an OEM partner, HARMAN is committed to developing custom packaged solutions for any vehicle model – entry-level to luxury.

BENEFITS



First-to-market packaged solution



Scalable for varying vehicle segments

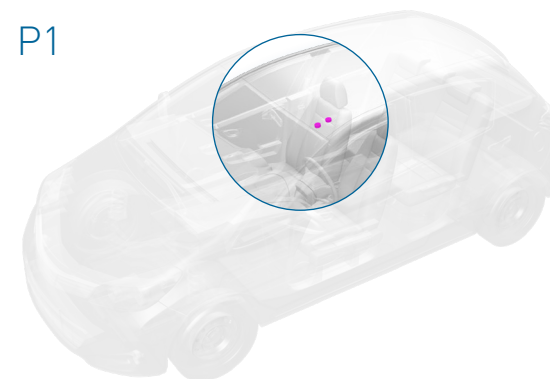


Customizable for every OEM partner and vehicle model



Elevates today's in-vehicle communication environment

P1

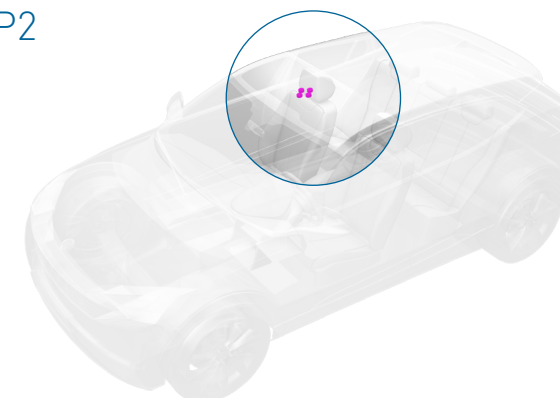


Packaged Solution

- 2 microphone A2B array, driver seat
- ClearChat software for driver seat
- Sound tuning



P2

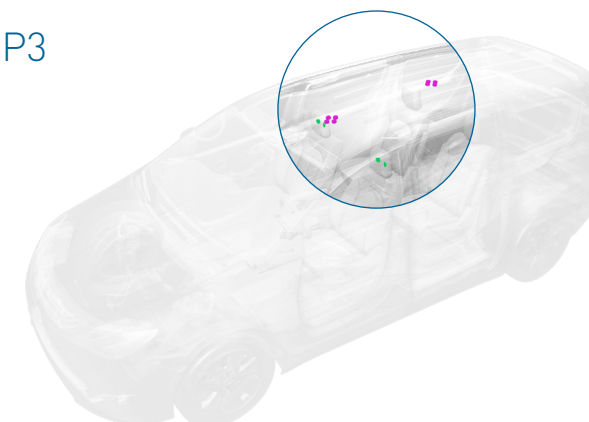


Packaged Solution

- 4 microphone A2B arrays, front row
- ClearChat software
- In-Car Communication software (F2B)
- Sound tuning



P3

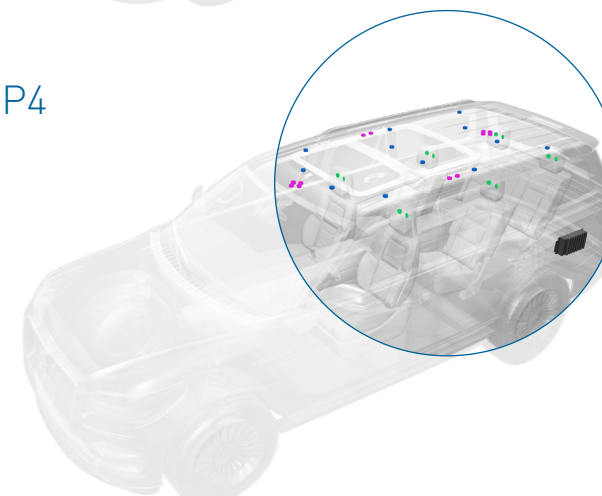


Packaged Solution

- 4 microphone A2B arrays, front & rear rows
- Headrest speakers, front row
- ClearChat software for front row
- In-Car Communication software (F2B & B2F)
- Sound tuning



P4



Packaged Solution

- 4 microphone A2B arrays, all rows
- Headrest speakers, all rows
- Headliner speakers, all rows
- HARMAN amplifier
- ClearChat software for all seats
- In-Car Communication software (F2B & B2F)
- Dirac Unison & Panorama
- Sound tuning



● Microphone A2B array

● Headrest speaker

● Headliner speaker