



TRANSITION TO LEVEL 3+ AUTONOMY

INTERVIEW WITH

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As autonomous vehicles head towards level 3+, questions begin to arise on how vehicle seating will change to adapt to this level: how will the seats differ when the driver is still required to be semi-in control? What new functions can we expect and how safe can these functions be?

Hear from an academic seating expert and get an insight into what we can expect from vehicle seating in autonomy level 3+. Dr. José Solaz will be presenting at Automotive Seating Innovation 2023, Düsseldorf, Germany, January 24 - 26, 2023. It's here where he'll be diving more into the changes to seating in autonomous vehicles, including the functions and requirements.

Read our exclusive interview below with José to learn more and to get a preview of his presentation discussion points.

Q: At level 3+ autonomy, we know that the driver still has the main control of the vehicle. When developing new seating for AVs, how can the driver's seat differ from a level 0-2 for this stage, as the driver would still be driving?

José

Whilst from level 0 to level 2, the driver must drive or surveil, for AV driving at level 3+ there will be moments in which the driver could be doing different activities, not related to driving and in positions that significantly differ from how they would usually be driving. Seats will most likely have integrated safety belts, controls and indicators. A higher level of interaction and flexibility is foreseen in the new seats.

As the functions may incorporate rotation and inclination changes, the inclusion of electronics and mechatronics makes a necessary reduction to the weight of the rest of the components to compensate for these new possibilities.

Q: How will the use of the first & second row of seats change as the industry transitions from Level 2 to Level 3+ autonomy?

José

There are some approaches based on four independent seats with higher levels of flexibility, including turning the seat, moving the central console to generate new spaces (in level 3) and increasing the interaction between passengers, which opens new possibilities to design the interior. However, standards, safety and trust are still factors to be considered in the design of seats that cannot be neglected.

Q: We're currently at level 3, but what is the development path for seats in autonomous vehicles with continuous integration of new functions? What can we expect when we get to level 5 – will the driver be able to completely recline and relax in their seat, and not be required to be active behind the wheel at all?

José

In level 5 there will not be a driver anymore – only in degraded mode, therefore all the occupants will be passengers. In this scenario we should think about how the vehicle will be employed: Robotaxis, driving elderly passengers, taking children to school, driving between two points that are difficult to access with conventional public transportation? We will need the seat design to follow the expected function of the vehicle.

Q: What challenges are arising when developing seats with new features and with ultra-comfort, whilst not compromising on safety? What are the solutions?

José

The main challenge is how to include the new features without increasing the weight of the seat or adding elements that might interfere with safety elements (passive and active).

The solution could be to redefine the seat thinking from the function to the elements. Maybe new safety elements might be conceived for the L4/L5 autonomous vehicle.

Q: As an academic, how do your findings and your role specifically affect the seating production for OEMs and Tier 1s?

José

We do not have the boundary conditions of production, so we think that our vision can be helpful in the early stages of development. We are always analyzing and testing very low TRL as well as answering “what if...” questions. Our laboratories also permit contrasting hypotheses related to comfort and usability from basic prototypes.

Q: Can you give us some spoilers for your presentation at the conference? Why should the industry attend?

José

We will cover aspects related to the foreseen users of the CAV L4 and the expected functions of the seat and interiors.

The industry might find this vision interesting as it starts asking “why” instead of “how” to conceive the seats from the experience we have had during several years studying the needs and expectancies of future CAV users.



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