

## Smart Seats: A New Frontier in the Search for UX Real Estate in the Car

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Since cars came into existence, they needed to interact with their users by providing both output and input. Lamps, diodes and displays were and are needed to let the driver know what is going on, while dials, knobs, and buttons enable the driver to let the car know what it is supposed to do. However, as cars got more complex, real estate in the car became a scarce resource over time.

Extending to ever more physical surfaces in the cockpit has its limits, since you don't want to overload the user. So, UX designers have tried different ways to find more space elsewhere:

- In the brains of users: Overloading knobs and dials with multiple functions means users need to remember which functions there are
- In time: new displays and touchscreens allow us to show different instruments at different times as they are needed (context awareness)
- In the air: both voice recognition and gesture control use the airspace
- On the windshield: Heads-up displays and new smart glass technologies allow us to use the windshield as an additional information display, without compromising its main function (looking through it), as we first [demonstrated at CES 2019](#).

Now, there is another area we would like to expand into: the seat. That is why we have started a research project with DFKI's – Germany's leading AI research center – [Interactive Textiles Group in Berlin](#). The group develops research projects for the future of human-machine-interaction from a user-oriented perspective. The focus is on interactive textiles and smart materials that enable new combinations of textiles and electronics. Their work combines design and high tech, which is why the group is located at DFKI but also at the [Universität der Künste](#). Together we will explore how to embed sensors and actuators into the seat to create an improved user experience. Sensors, because the car increasingly needs to know how you feel and how you are doing: new safety standards require that the car monitors if a driver is drowsy for example, and new autonomous driving capabilities require the car to know if the driver is fit for taking back control if needed. Actuators for example can vibrate, to alert the driver about potentially dangerous situations, both in autonomous and manual driving modes.

By making use of the seat in this way and leveraging some of the other options, like speech and gestures "in the air" and displays that adapt to the context in a smart and natural way, we will create a seamless experience that allows us to use the many features of today's cars in a simple and intuitive way.

So, take your seat and relax, and see what the automotive future holds for your safety and comfort.