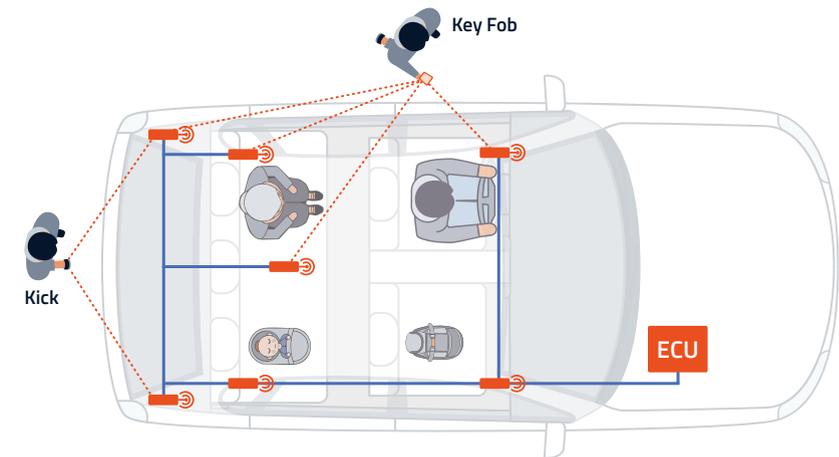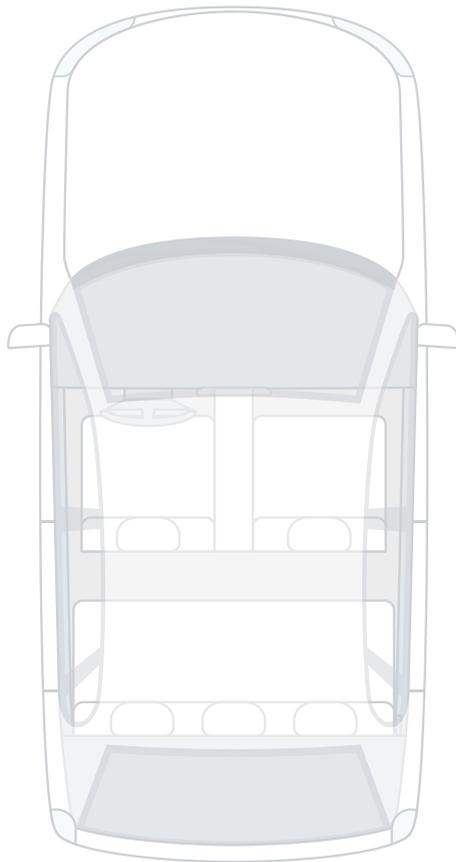# Embedded AI in Your Car

UWB — One Sensor Platform for Access, Interaction and In-Cabin Safety

- UWB radar for in-cabin sensing - occupant presence, child presence, motion and respiration
- UWB radar for exterior sensing - kick gesture for intuitive trunk opening
- UWB ranging for smart car access - keyfob localization, indisde/outside awareness
- One sensor hardware, many functions - access, safety, sensing, comfort
- Embedded AI inside - real-time sensing on the edge

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TISAX ENX ASSOCIATION

UWB Antenna Mounting Topologies

- Performance comparison of UWB antenna mounting topologies
- Reference comparison: Classic Setup and Camera only
- Setup-by-setup overview of in-cabin, exterior and keyfob capatilities
- Potential contribution of each setup to the Euro NCAP score
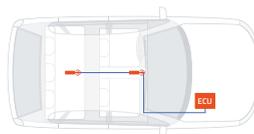- Trade-off between sensor footprint and capabilities

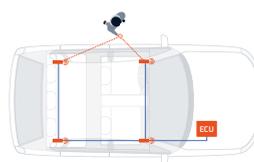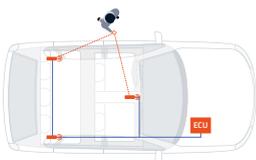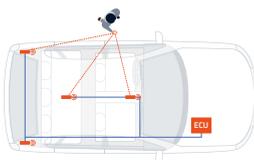|	Classic	Setup 1	Setup 2	Setup 3	Setup 4	Setup 5	Setup 6	Setup 7	Setup 8	Setup 9	Setup 10	Camera
Smart Car Access	OK	limited	limited	OK	OK	OK	OK	OK	OK	OK	OK	-
Vehicle to Infrastructure Localization	OK	limited	limited	OK	OK	OK	OK	OK	OK	OK	OK	-
Kick Gesture	OK	-	-	-	-	-	-	OK	OK	OK	OK	-
CPD	OK	limited	OK	OK	OK	OK	-	OK	OK	OK	OK	limited
Intrusion Detection	limited	limited	limited	OK	OK	OK	-	limited	OK	OK	OK	limited
Seat Occupancy	-	-	-	limited	OK	OK	-	-	OK	-	OK	limited
Euro NCAP Score	1	0.7	1	1.7	3.1	3.1	0	1	3.1	7.1	9.2	6.1
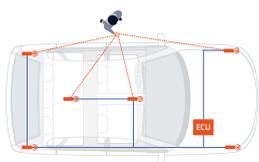
Reference: Classic Setup
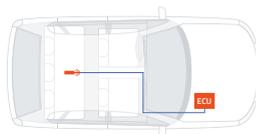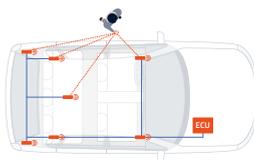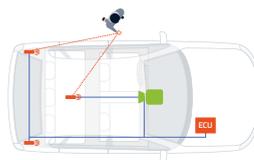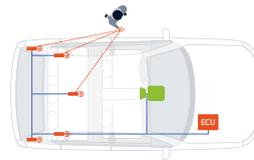
Setup 1

Setup 2

Setup 3
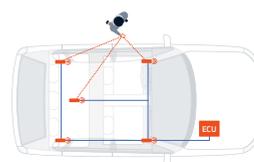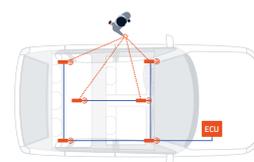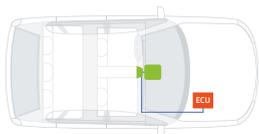
Setup 4

Setup 5

Reference: Camera only

Setup 6

Setup 7

Setup 8

Setup 9

Setup 10

UWB Sensor

Camera

ECU

Electronic Control Unit

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