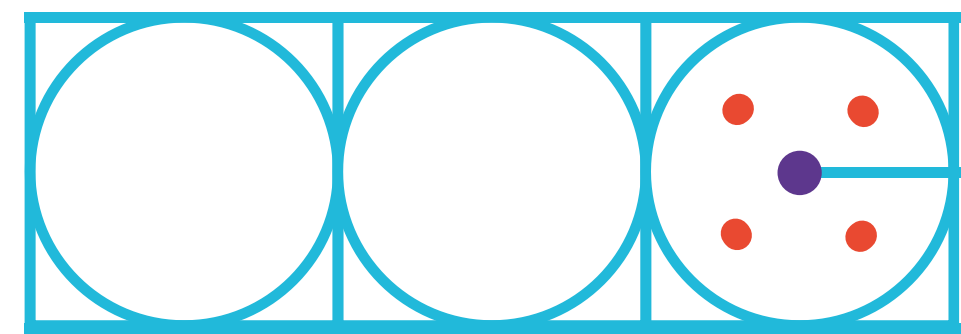




AIRBUS

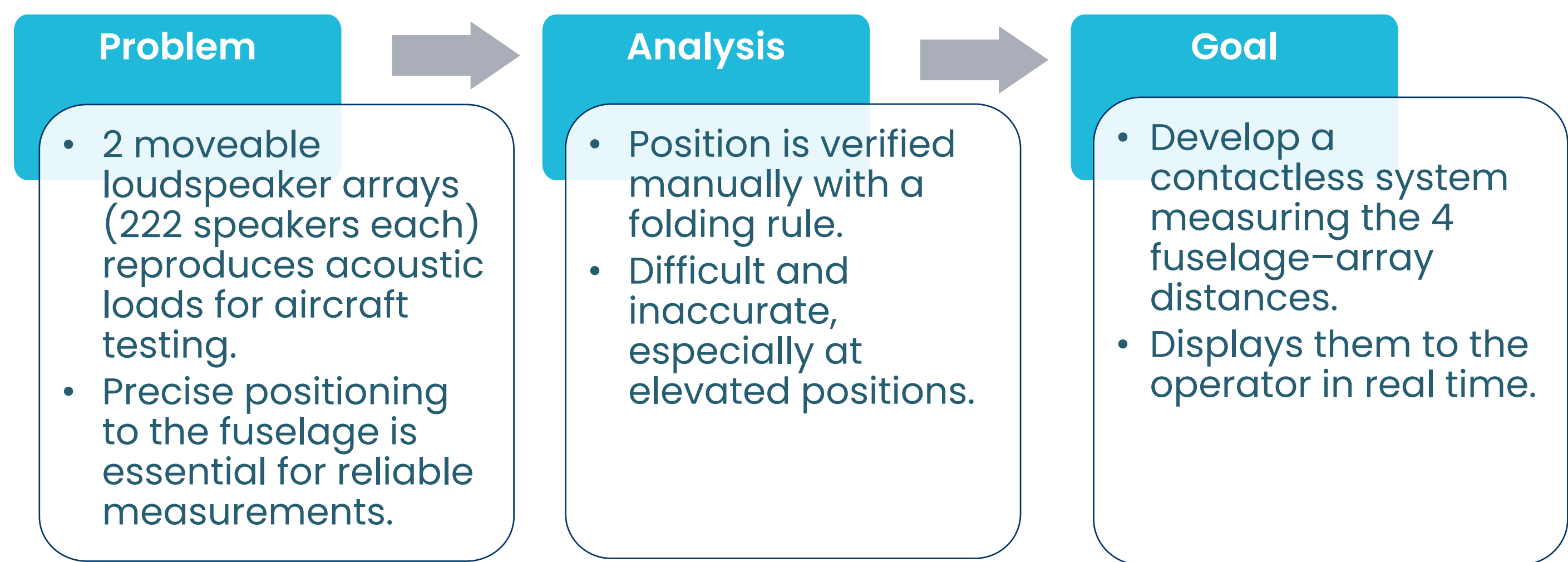
Dipl.-Ing. Martin Wandel

Contactless Loudspeaker Array Positioning System

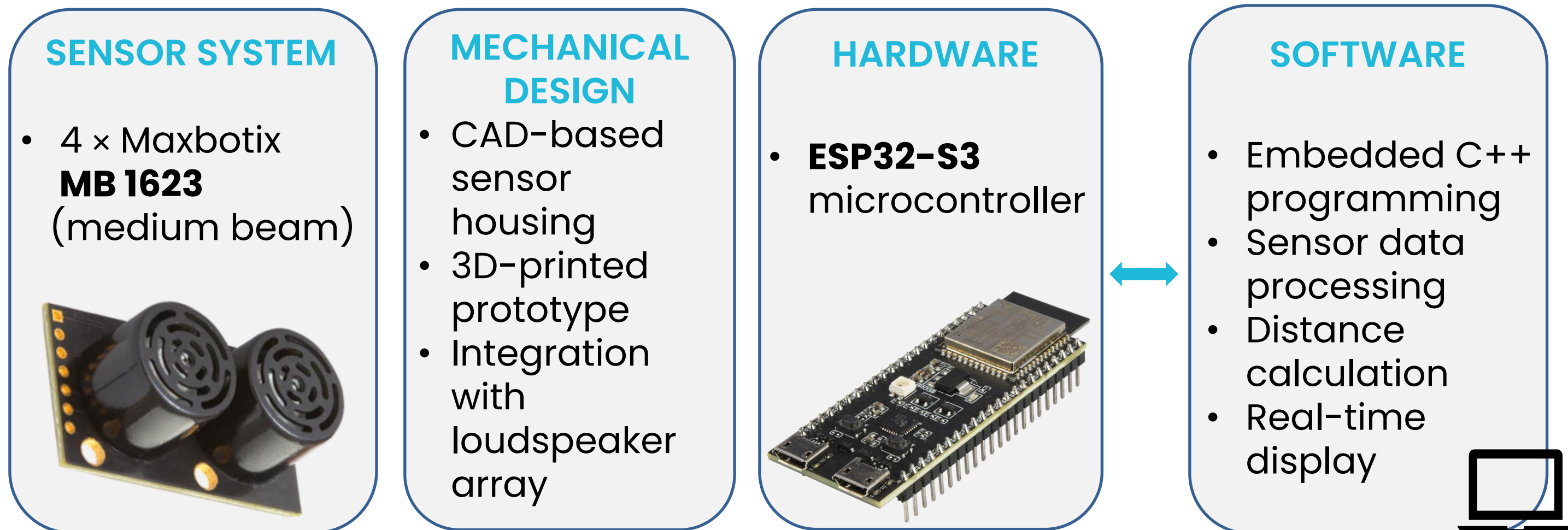
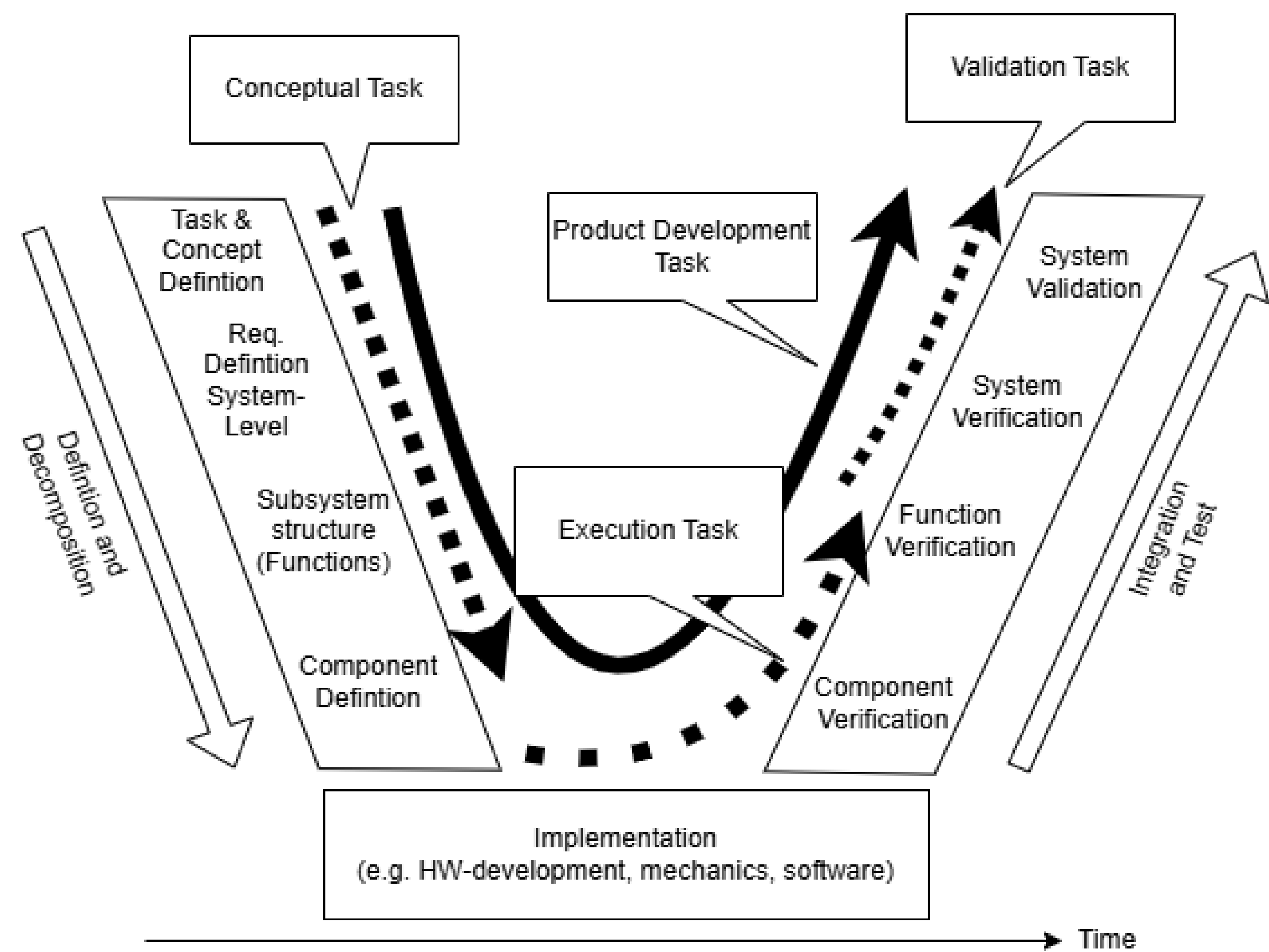
1. INTRODUCTION



Figure 1: Loudspeaker array and fuselage set up. Source: Acoustic Flight LAB, ZAL Research Infrastructure

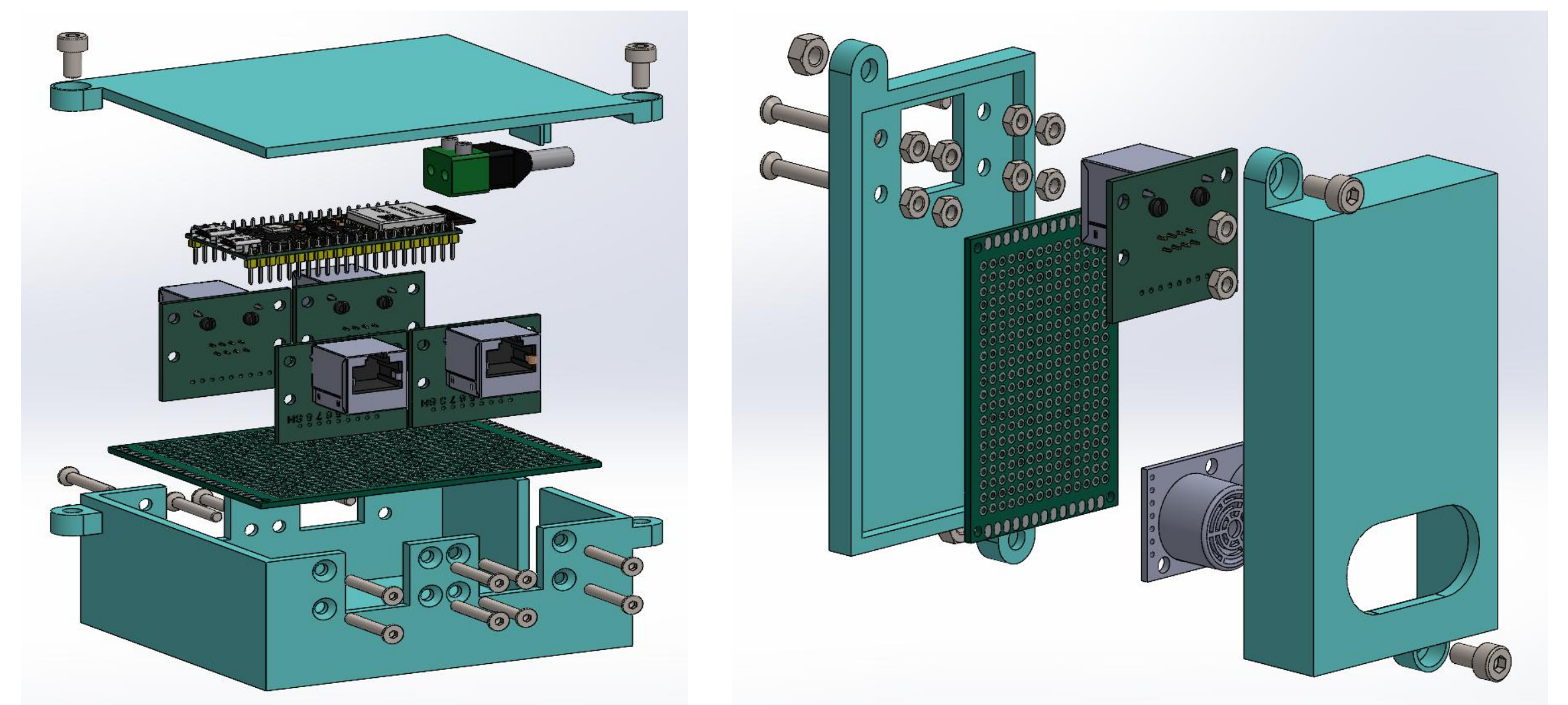


2. METHODOLOGY: V-MODEL

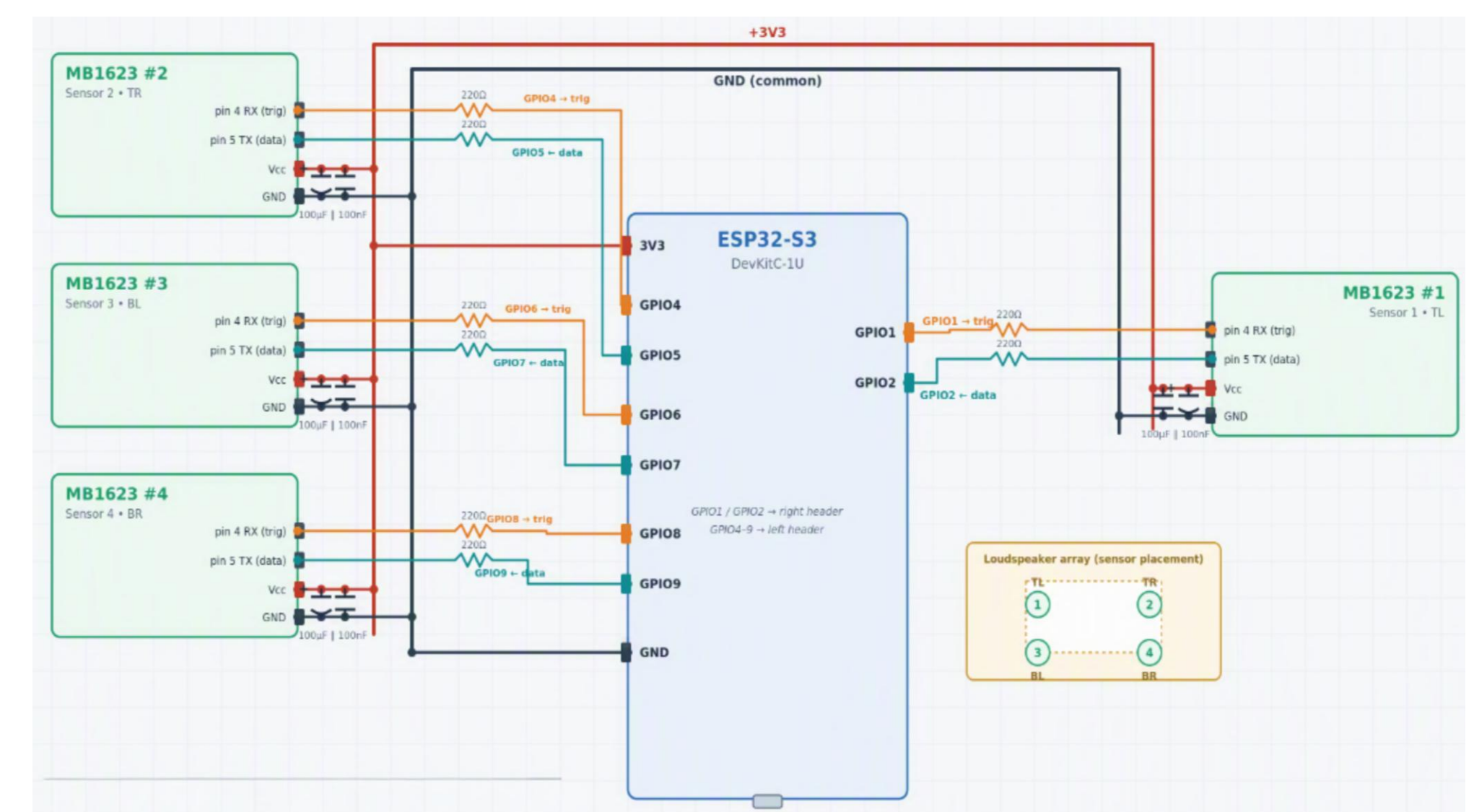


3. IMPLEMENTATION

EXPLODED VIEW OF PROTOTYPES: MICROCONTROLLER HOUSING (LEFT) & SENSOR HOUSING (RIGHT)

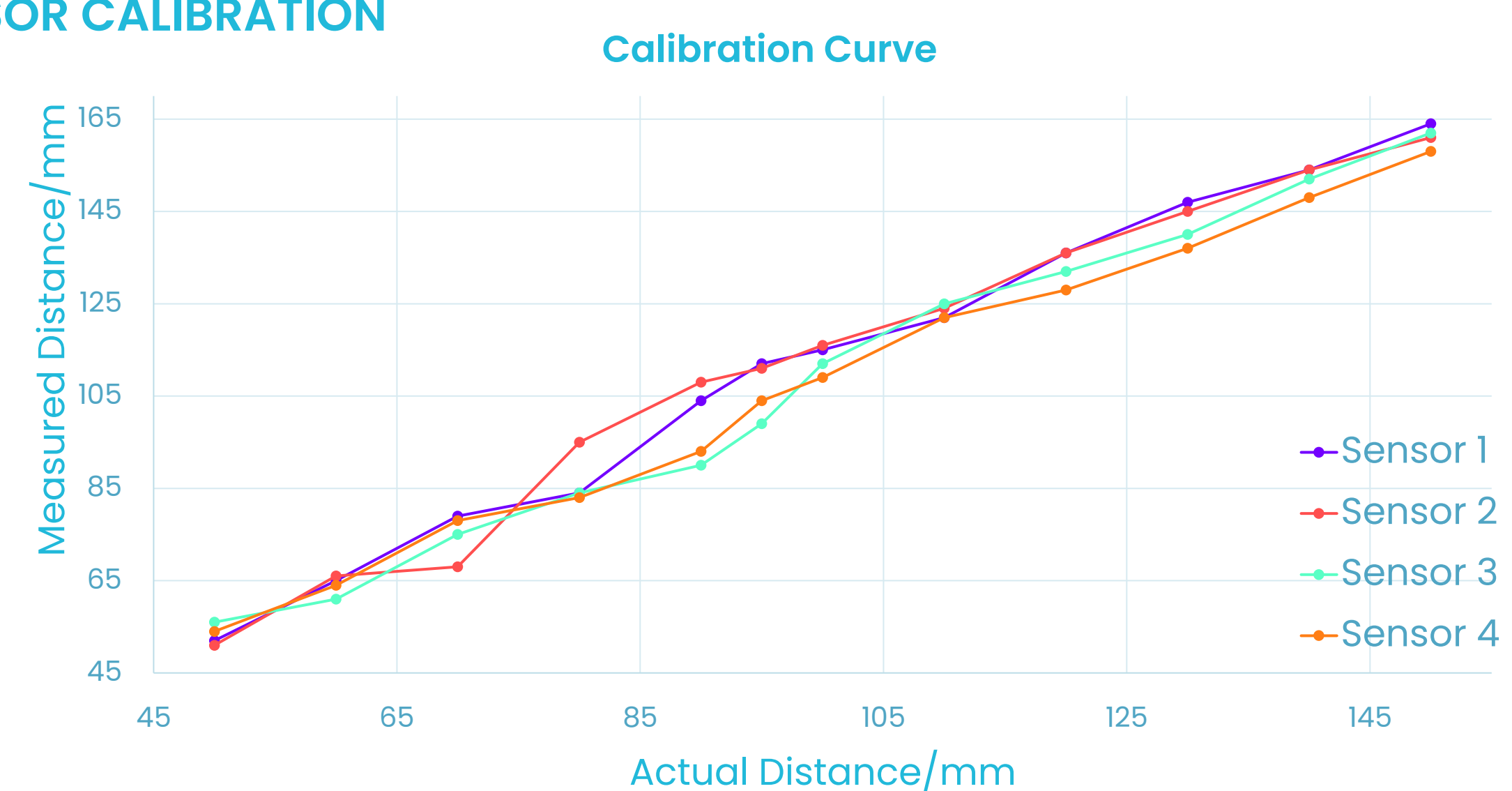


ELECTRICAL CIRCUIT AND WIRING



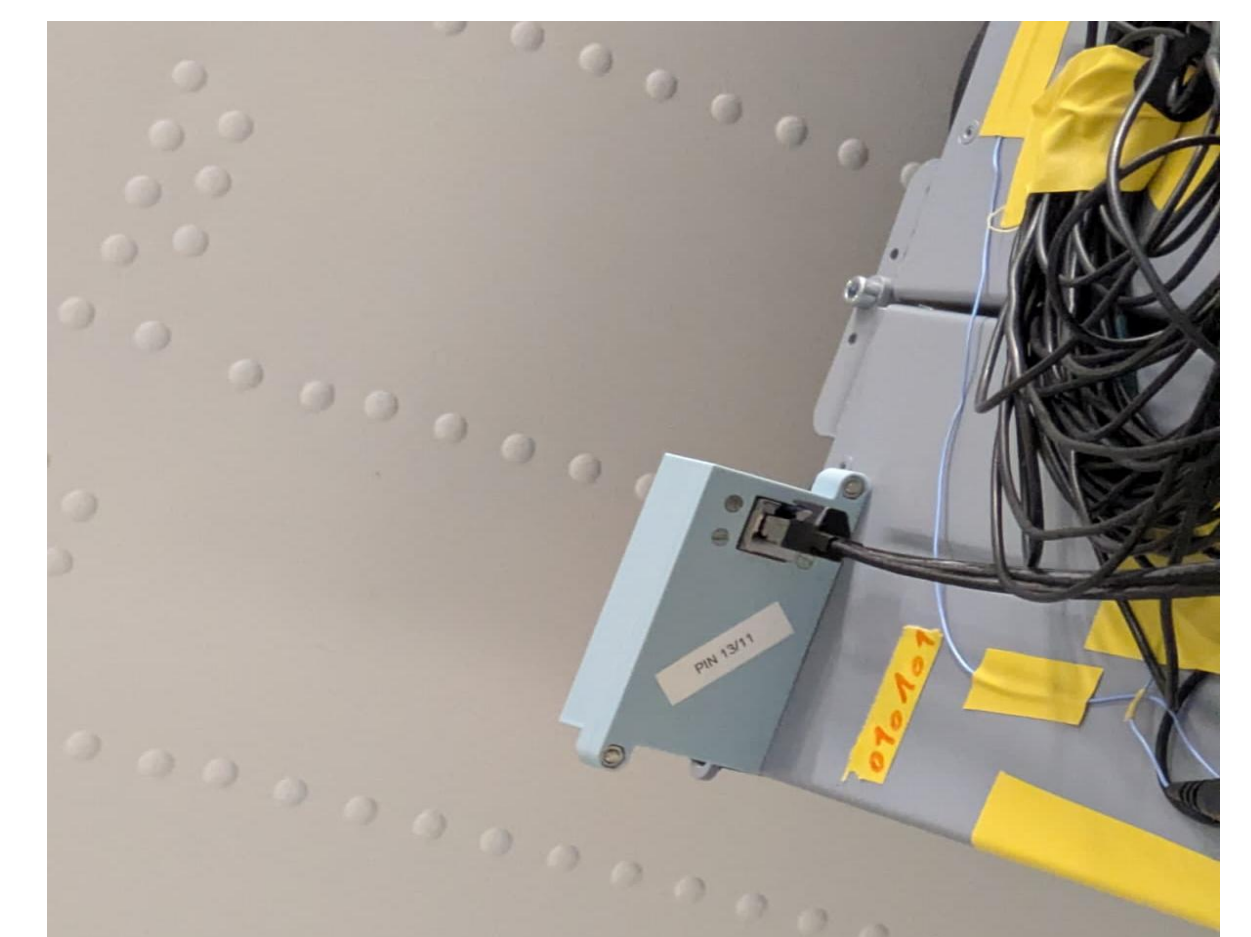
4. VERIFICATION & VALIDATION

SENSOR CALIBRATION



SYSTEM VALIDATION AT AIRBUS

- Tested on the loudspeaker array against the aircraft fuselage.
- Measurements matched manual reference distances, confirming reliable system operation.



5. CONCLUSION

The prototype was installed on the loudspeaker array and validated under real operating conditions at Airbus. Sensor measurements were compared with manual reference distances and showed good agreement. All four sensors reliably detected the aircraft fuselage, confirming the functionality of the complete contactless positioning system.

ACKNOWLEDGMENTS

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