

Car2TERA

Terahertz sensors and networks for next generation smart automotive electronic systems

car2tera.eu

Eyes and Ears for the Car of the Future

ABOUT

- **Car2TERA** is focusing on 2 areas of research & development: in-cabin radar & onboard data communications.
- **Car2TERA** is exploiting the benefits of sub-terahertz (150-330 GHz) communication.
- **Car2TERA** is building a prototype radar for testing and will develop nascent methods of data communication using plastic fibre.



SOLUTIONS

WHICH PROBLEMS ARE WE SOLVING?
TRL-4 demonstrators for 2 high-potential applications:

- Short-range, high resolution, low-latency, large-bandwidth, compact radar sensor; for pre/post-crash in-cabin passenger monitoring
- “1st car radar sensor prototype in this frequency range using industrialized, volume-manufacturable technology”
- “THz-over-plastic”: low cost, robust high-speed wired short range communication link (>100 Gbit/s), primarily for 5+G base station intraconnects

IMPACT

- Maintain Europe's technology/market dominance:
 - 79% world market share on car radars
 - 90% world market share on SiGe radar chip sets
 - Leading in pushing SiGe into THz gap ($f_{MAX}=700$ GHz)
 - 60% of telecommunication system market
- Car radar* + in-cabin monitoring**: no. 1 and no. 2 fastest growing car electronics markets
- 5G: fastest growing telecom market
- **Car2TERA** building on EU collaboration results: M3TERA, TERAMICROSYS, Graphene Flagship, DOT7, TARANTO, RADIFLAT, DENSE, ...

CAGR CAGR 2018 2023: * 18% **49%

NEW TECHNOLOGIES USED

- ✓ Polymer Microwave Fibre (PMF)
- ✓ 600-GHz-fmax SiGe MMICs
- ✓ Silicon micromachining for system integration, packaging and phased-array antenna front-end
- ✓ Integrated MEMS reconfigurability
- ✓ Large-bandwidth, high-linearity graphene MMICs
- ✓ Advanced signal processing: OFDM radar signals and AI sensor fusion

CAR2TERA FACTS



Budget
€ 3.9 Million
100% EU-funded



Consortium
9 Partners
5 Countries



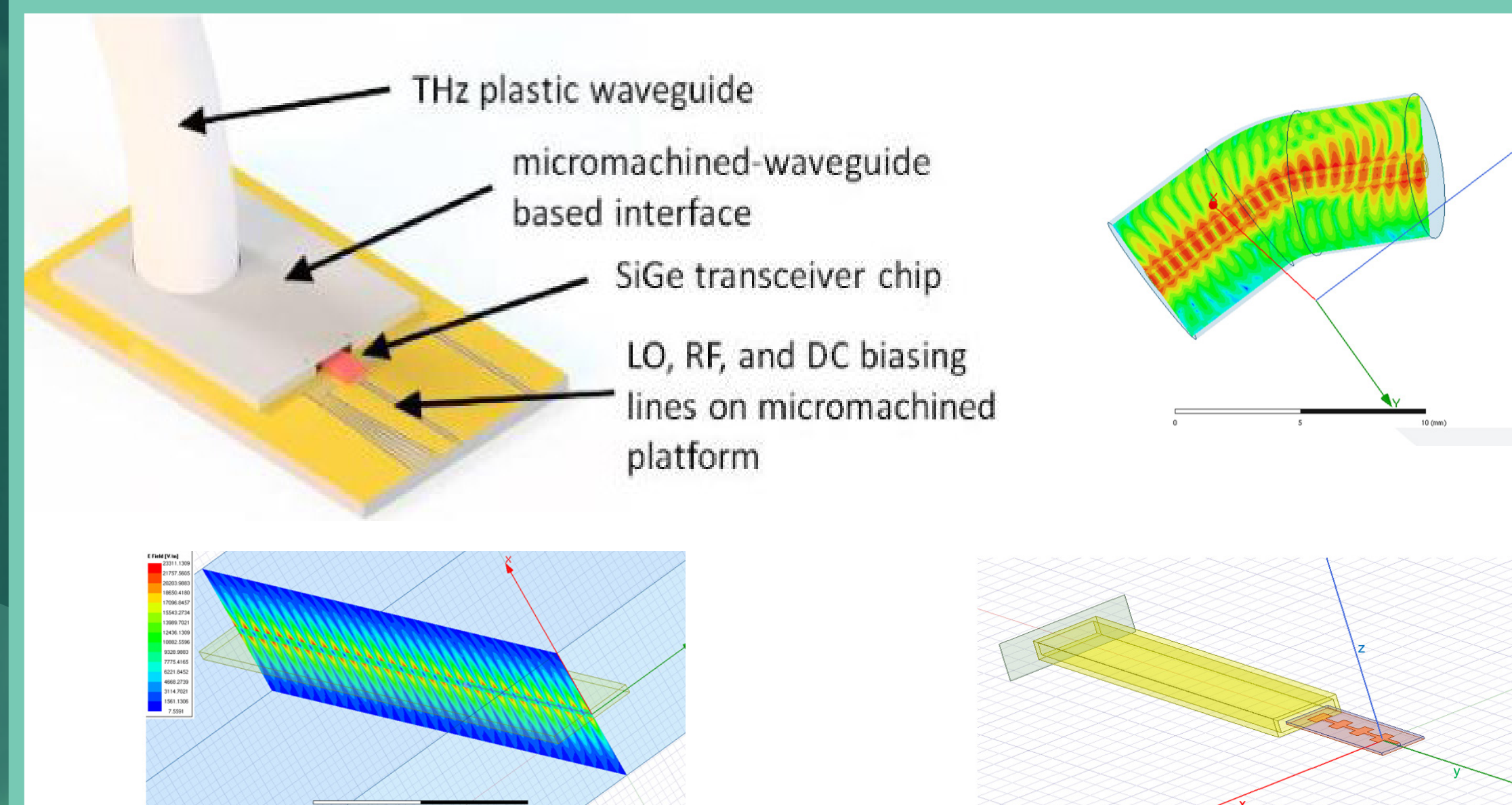
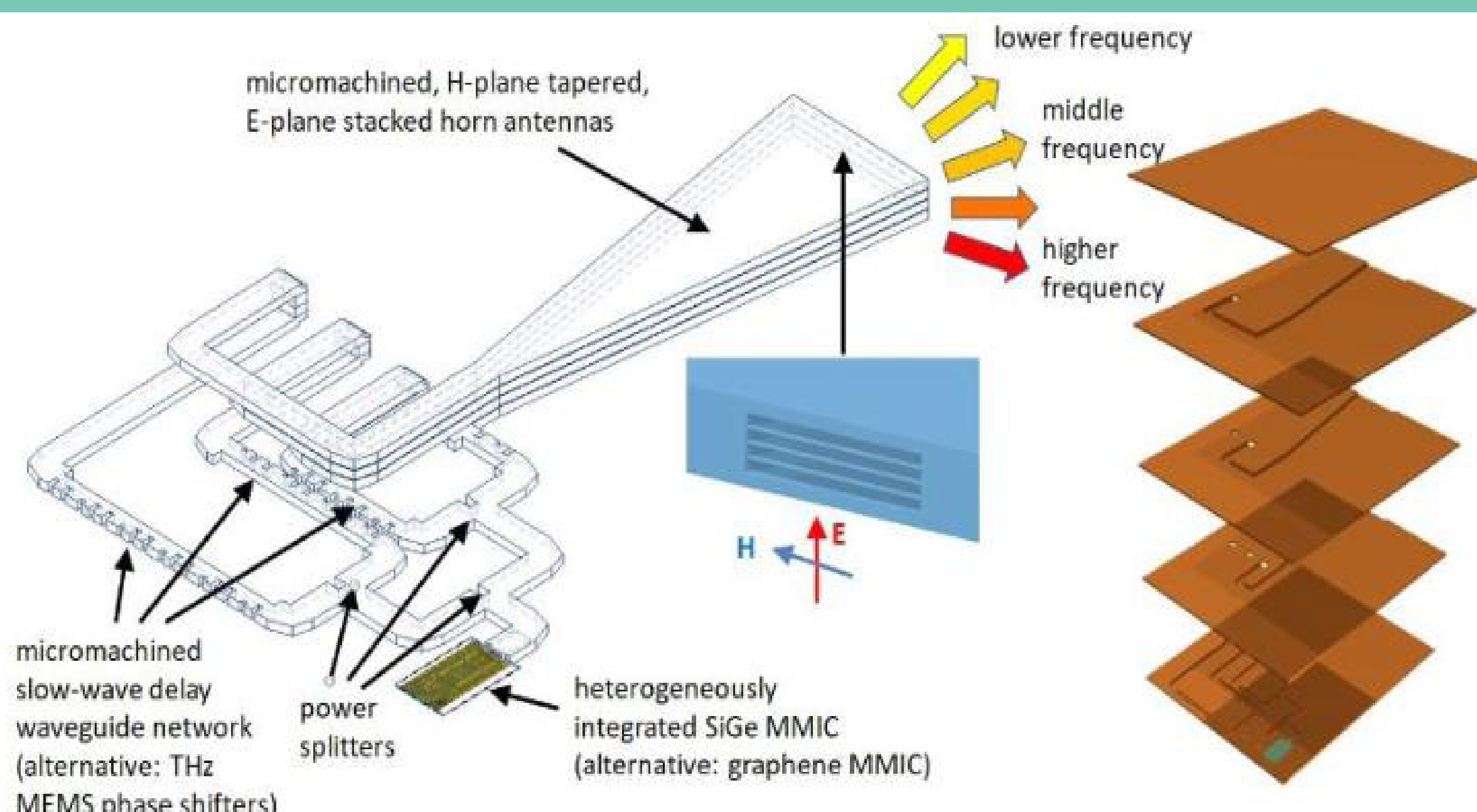
Duration
39 Months
01/2019 - 03/2022

IMPACT LEAD, Franz Dielacher
Infineon Technologies Austria AG, Austria

SCIENTIFIC LEAD, Joachim Oberhammer
KTH Royal Institute of Technology, Sweden

PROJECT COORDINATOR, Technikon Forschungs- und Planungsgesellschaft mbH, Austria
Martina Truskaller

DEMO 1 Novel car radar sensor concept (TRL 4)



DEMO 2 THz over plastic interface concept (TRL 4)

TECHNIKON



VIGO SYSTEM Epitaxy Division



The Car2TERA project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 824962.



veoneer

