



mec

Embracing a better life

Mario Konijnenburg

A pair of hands is shown from the bottom, cupping a glowing, semi-transparent globe of the Earth. The globe is illuminated from within, showing continents and oceans in a golden-brown hue. The background is dark with scattered, out-of-focus light points, suggesting a starry or cosmic environment. The overall mood is one of care, responsibility, and global impact.

As a **world-leading R&D** hub, we aspire the impossible and aim for **disruptive innovation**. We maximize societal impact by creating **smart sustainable solutions** that enhance **quality of life**.

At imec, we shape the future.

WORLD CLASS INFRASTRUCTURE



IMEC

- ▶ World leading R&D in nanoelectronics & digital technology
- ▶ >5000 international R&D top talents
- ▶ Unique 3B€ leading-edge semiconductor fabs
- ▶ >800M€ revenues (2022), >70% industry, 10% YoY growth during the last decade
- ▶ Serving 600+ companies, created 122 spin-off companies and incubated 200+ start ups
- ▶ 8 sites worldwide
- ▶ Delivering industry relevant innovation for semiconductor, healthcare, automobile, energy and smart industries





MOBILITY



HEALTH



INDUSTRIES



CITIES



ENERGY



EDUCATION



INFOTAINMENT



AGROFOOD

Example 1: 140 GHz CMOS Based Radar

Towards smaller, smarter, and connected radars

- High resolution
- Small form factor
- Fewer external components

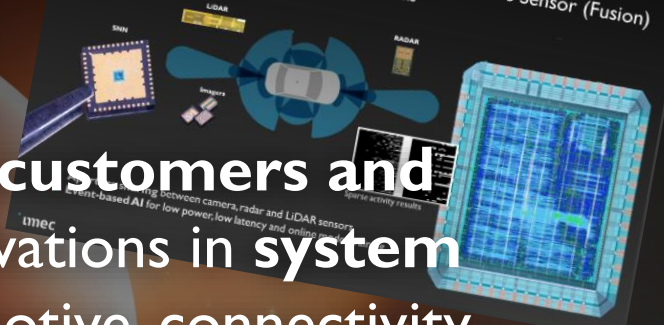


- Autonomous driving**
- Blind spot detection
 - Automatic car parking
 - Lane change decision
- In-cabin sensing**
- Gesture-based interaction
 - Vital signs monitoring
 - Occupancy detection

Looking for new opportunities, customers and partners to (jointly) perform innovations in system and chip development for automotive, connectivity, health and more

Example 2: Spiking Neural Network For Automotive Sensor (Fusion)

100 times less power than traditional implementations



Example 3: UWB and BLE for Keyless Entry

Secure High Accuracy Ranging

- BLE**
- Works with standard radio
 - Accuracy better than **10cm**
 - Secure for location spoofing

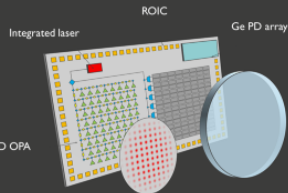


- UWB**
- Ultra-low-power
 - Small form-factor
 - Accuracy better than **1cm**



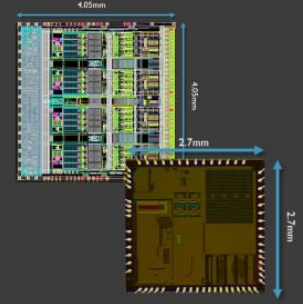
Example 4: Highly Compact, Disruptive Solid-State LiDAR

From a \$ 2000-4000 \$ per unit to less than \$100 (in mass production)



- No more moving or mechanical parts:**
- 100-300 m range with sharp angular resolution
 - Wavelength: 1550 nm (safety)
 - Compact size: < 10 cm x 10 cm x 10 cm
 - LiDAR engine: FMCW
 - Beam delivery: Optical Phased Array

Example 5: From wearable sensing to close-the-loop insertables



- Inductive wireless power transfer
- Multi-channel current stimulation (with active and passive charge balancing)
- Highly sensitive sensor readouts

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