

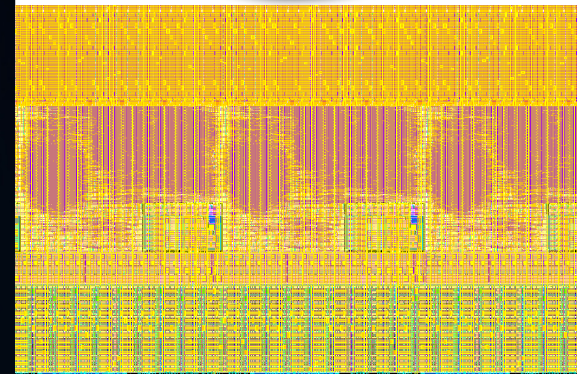
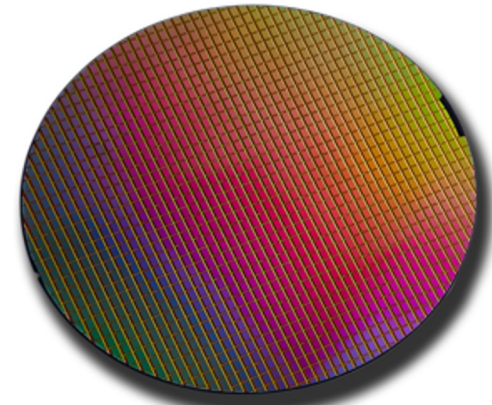
# High-resolution, high-speed imaging for electron microscopy and X-ray applications

Renato Turchetta  
CEO and co-founder

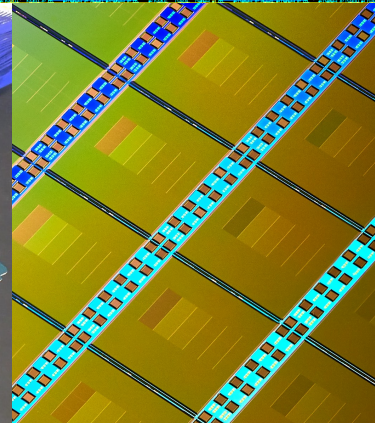
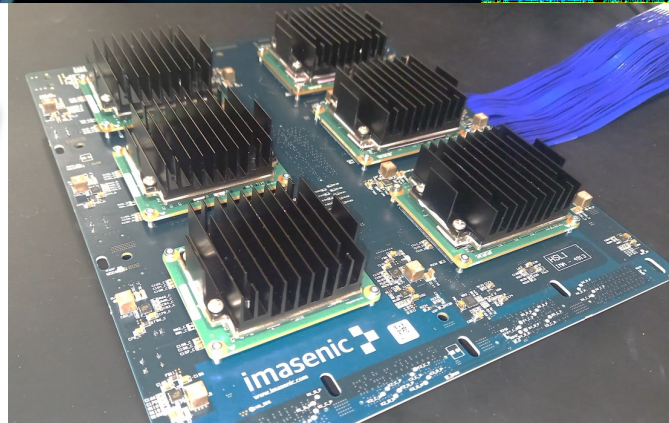
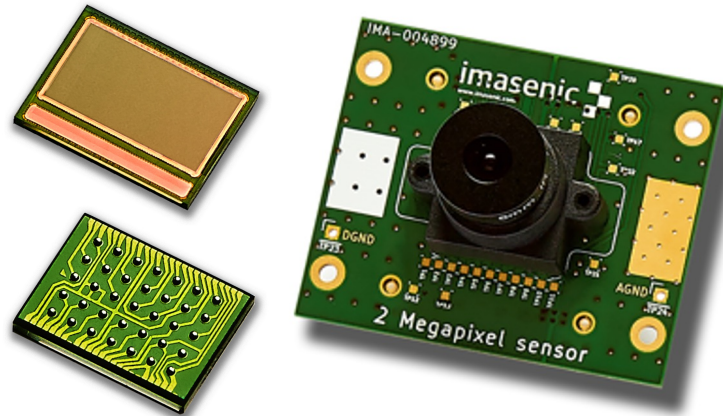
# About IMASENIC



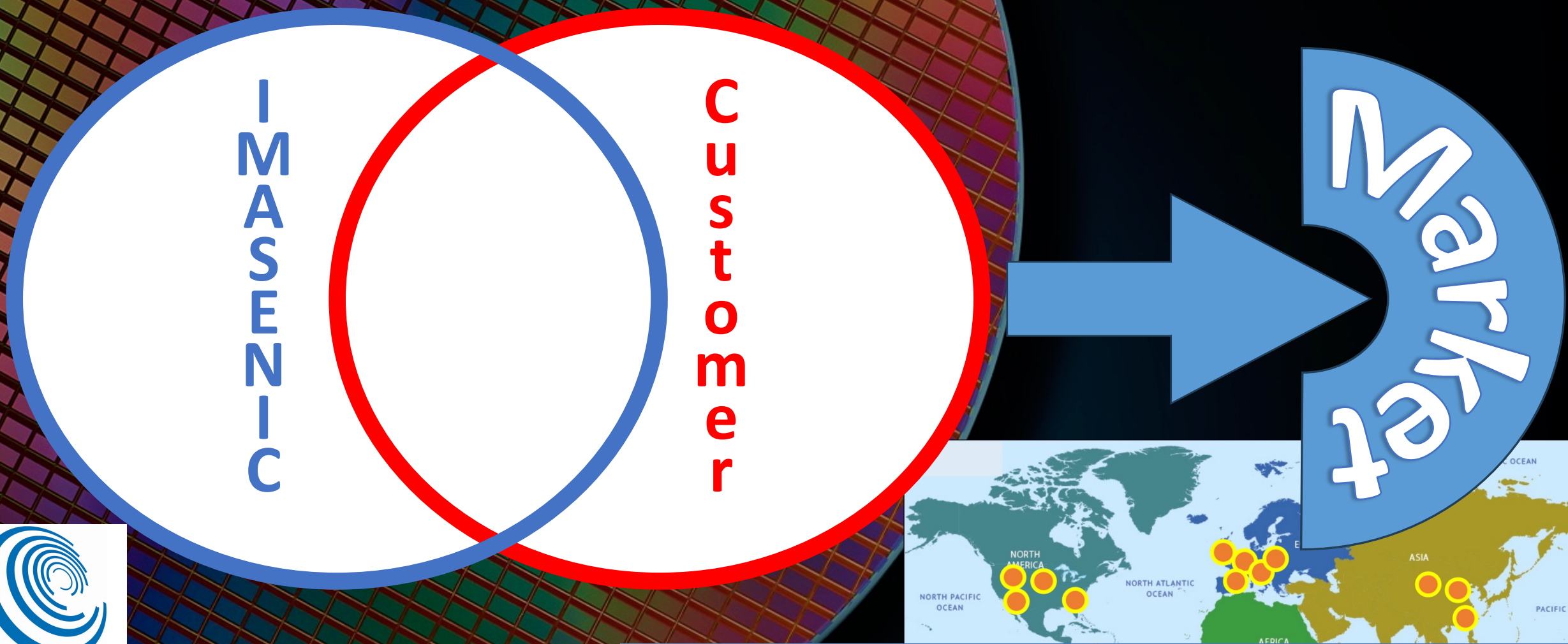
- Fab-less semiconductor company. We develop
  - CMOS Image Sensors (CIS)
  - Readout IC (ROIC)
- Constant growth from its creation in 2017
- Today we employ 20 people, 65% with PhD or Master



Barcelona,  
Spain



# Innovative and Customer-focused



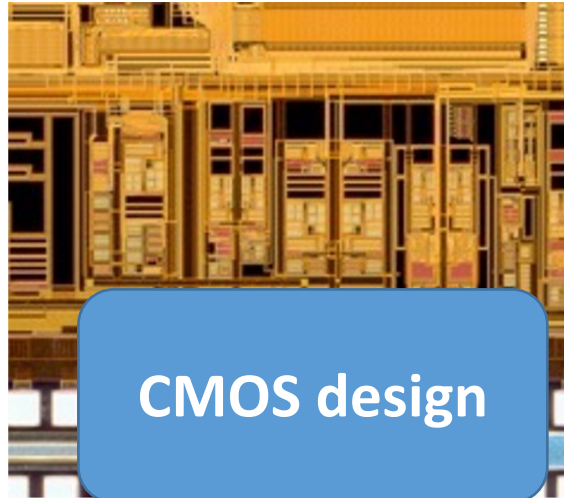
**INNOVATIVE SME**  
Valid until Feb 9th 2026



**World-wide happy and returning customers**

# From ideas to products

State-of-art CAD:  
Synopsys  
Siemens-Mentor  
Cadence



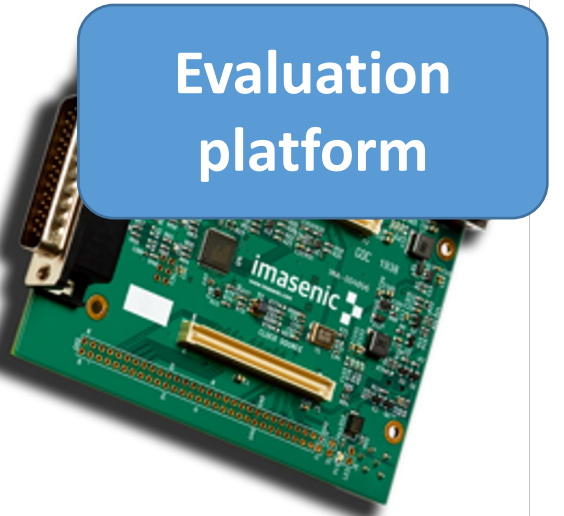
CMOS design



Camera design

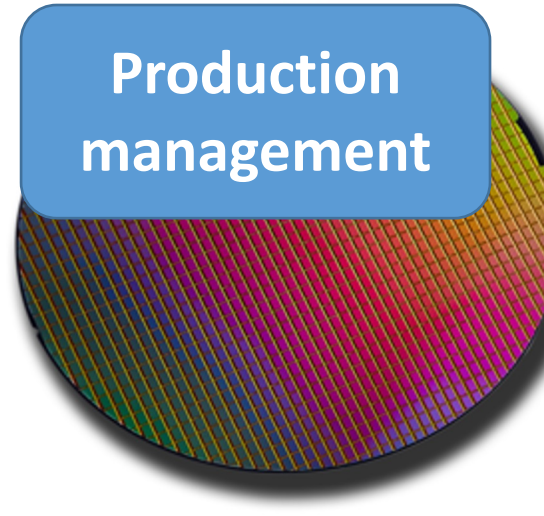
PCB design  
FPGA design  
S/W design

Test facility  
EMVA-based  
analysis software  
Clean room



Evaluation  
platform

Production  
management



CIS and mixed-  
signal foundries,  
down to 40 nm  
node

# IMASENIC technology for large area sensor

Proprietary (patent pending) technology for large-area, up to a full wafer, CMOS image sensor to achieve high-speed, high-yield and 3-side buttable detectors

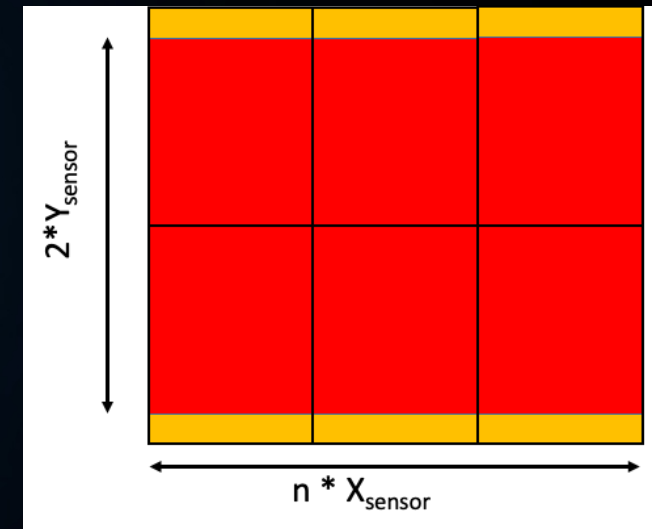
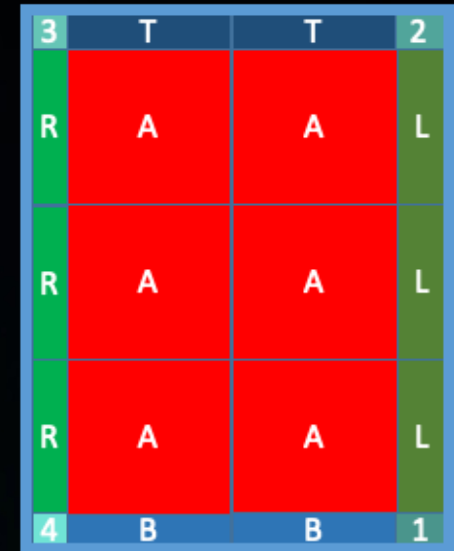
Single-wafer sensor:

largest sensor on a 200/300mm wafer: 127/198mm side

3-side buttable sensor (<1pixel gap between sensors):

largest sensor on a 200mm wafer: 254mm x (127\*N)mm

largest sensor on a 300mm wafer: 396mm x (198\*N)mm





# IMA300. Low-noise, HDR family



- 1.5 e- rms noise
- 65ke full well
- $\geq 92.7$  dB high dynamic range HDR
- 8  $\mu\text{m}$  pixel

Family of sensors:

- IMA302 Full format: 11.6Mpixel @ 30 fps
- IMA304 Medium format: 69.5Mpixel @ 12 fps

Stitched design so other formats are possible.

- Back-Side Illuminated.  
Two options available:
  - a) VIS option: QE > 90% in visible
  - b) DUV option: QE > 40% at 193nm

- IMA302 in production from Q1\_2024
- Evaluation kit available



# CIS for Transmission Electron Microscopy

Development for 100keV Transmission Electron Microscopy

Patented technology for high-speed, wafer-scale CIS

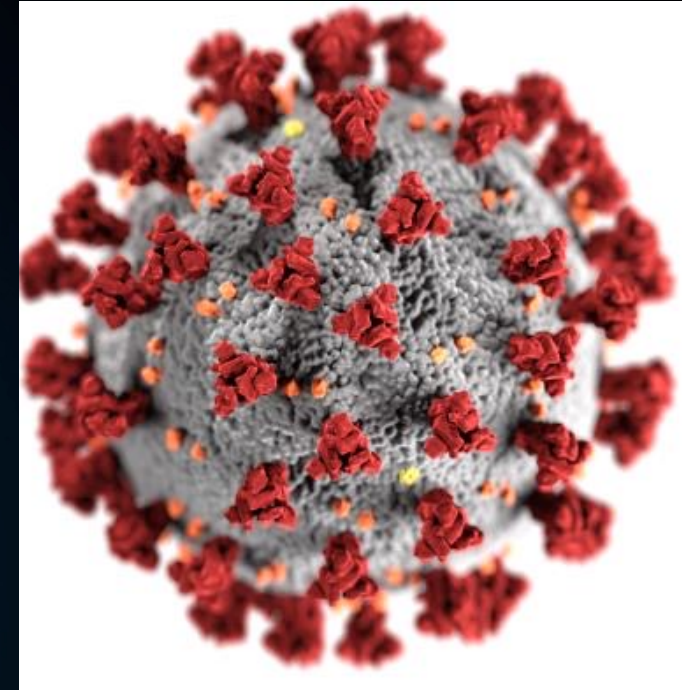
Radiation-hard proprietary pixel

2kx2k, 4Megapixel with rolling shutter. Full frame performance

5200 fps @ 8-bit resolution → 22 Gpixel per second

3300 fps @ 10-bit resolution → 14 Gpixel per second

216 LVDS outputs at 1.2 Gbps → >200 Gbps data rate

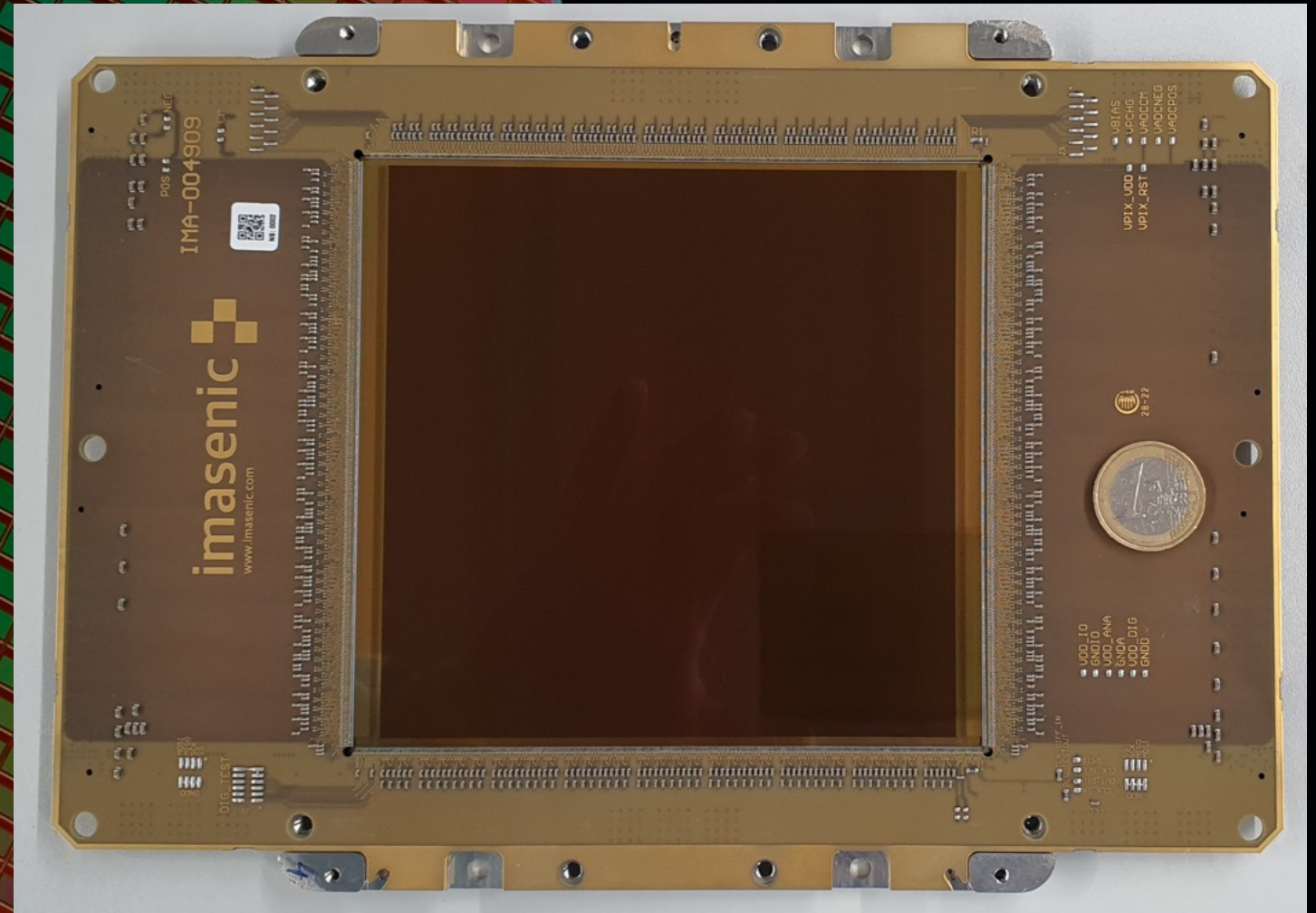
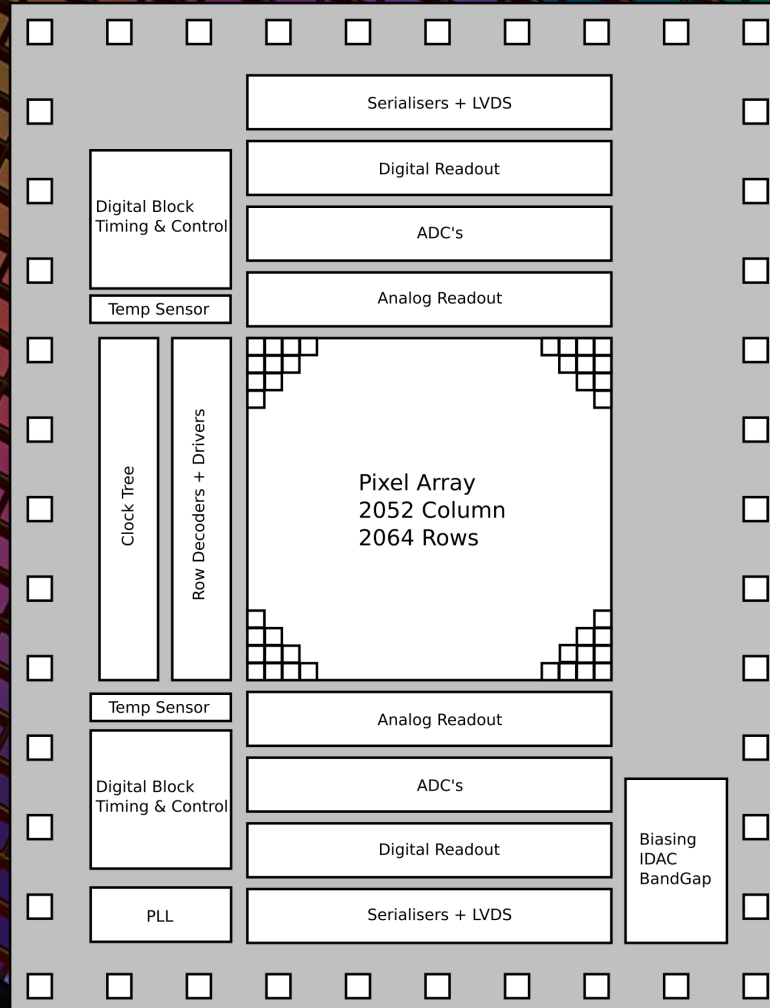


This project has received  
funding from the  
European Union's H2020  
programme under grant  
agreement No 971007



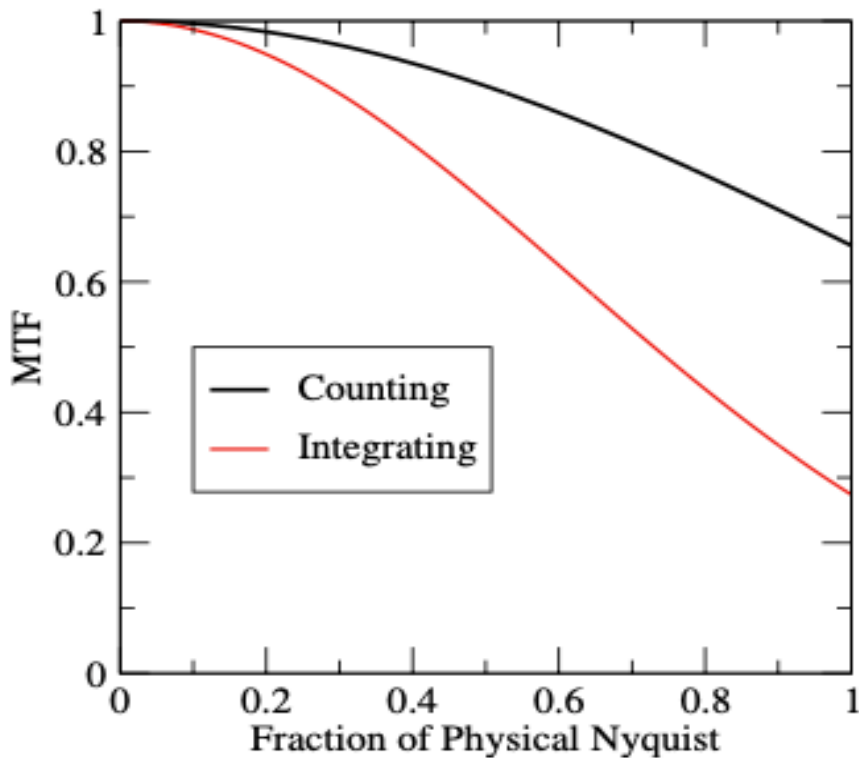


# Sagara1212. High-speed, wafer-scale CIS

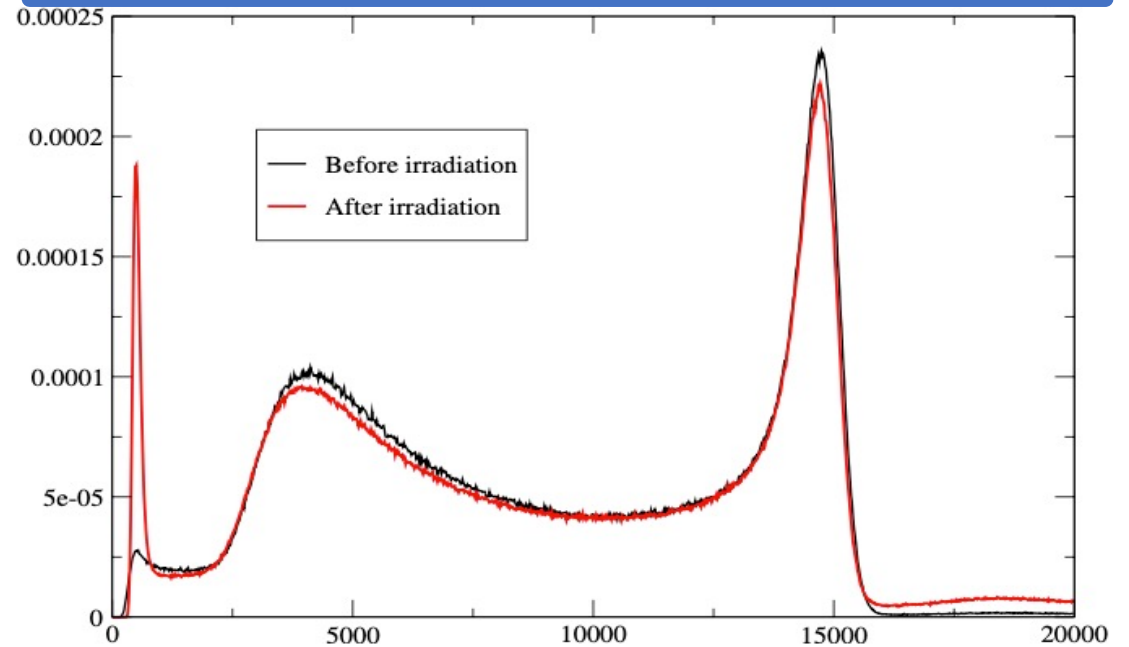


# Sagara1212. High-speed, wafer-scale CIS

MTF



Sensor response before and after irradiation



Sensor  
SNR = 462

Radiation resistant beyond  
 $9.6 \times 10^{10}$  electrons

# Combined VIS-SWIR

## *Solution 1*

Electrically tunable VIS - SWIR response, up to  $1.5\mu\text{m}$

Optimised SiGe CMOS 250 nm technology

Development started Q2\_2022

Goal: to build a VGA imager with dual-band pixels

Tapeout: Q2\_2023

*Funded by EU*

## *Solution 2*

*Wider band response with Quantum dots*

*Technology 110 or 180 nm*

*Development starting Q1\_2023*

*Goal: to build a HD 2Mpixel sensor, with  $<5\mu\text{m}$  pixels*

*Tapeout: Q4\_2023*

*Funded by CDTI (Spain)*

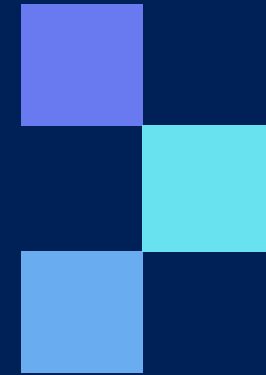
## What can we do for you

- Develop innovative image sensors (and ROIC), together with their readout electronics
- They will: enable new applications, differentiate your offer and give you a dominant position in your market

## What can you do for us

- Packaging solutions
- PCB manufacturing
- Optics design
- Mechanics, including vacuum solutions
- Cooling solutions

# imasenic



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