



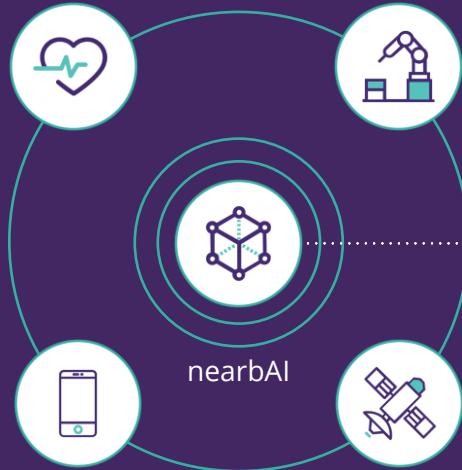
# GET OUR LOGIC IN YOUR SYSTEM

30 years in business — founded in 1991  
@ Arenberg Science Park, Leuven, Belgium

# about easics

healthcare

industry 4.0



consumer

other markets



nearbAI

AI deployed close to the sensors  
in FPGA SoM or ASIC technology  
easics proprietary technology



reliable & scalable



ultra low latency



low power consumption

# our services



design conceptualization



ASIC design



FPGA design



product ideation

# Benefit from our IP



nearbAI on ASIC



nearbAI on FPGA



TCP/IP offload engine

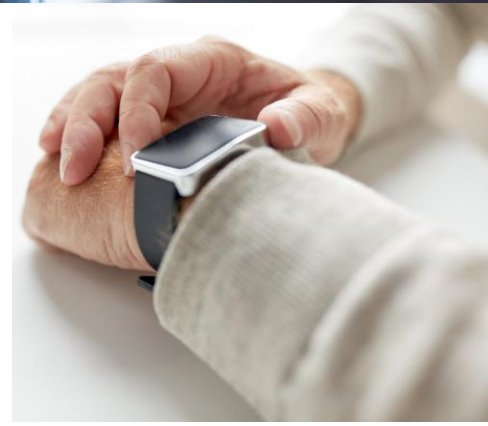
# image & signal processing - expertise / examples

- implementing digital pipelines, processing and algorithms in ASIC, FPGA, image sensors, vision systems
- embedded software development
- mapping of algorithms (C / C++ / Python, ...) on ASIC and FPGA
- implementing deep learning algorithms - networks provided for:
  - hand gesture monitoring
  - ResNet for object classification
  - crowdsourcing SLAM
  - YOLO-v3 & Tiny YOLO-v3 for object detection
  - RNN for audio
  - hyperspectral imaging
  - combining image and lidar data
  - LSTM to detect changes and abnormalities
  - optical flow to detect movement



# examples in healthcare

- wearables:
  - ASIC development for hearing aid devices
  - design for ultra low power
  - development of FPGA test environment and emulation
- image sensors
  - Digital macro for X-Ray image sensor
- medical imaging
  - FPGA development for medical vision systems
  - TCP/IP core for client/server communication on medical equipment
- AI in healthcare
  - Hardware accelerator for deep learning in medical imaging



# examples in industrial

- connectivity
  - 1Gb & 10Gb TCP/IP stack on hardware
  - 5G - algorithms to be accelerated on ASIC and FPGA
- industrial AI
  - Automated quality inspection
  - Industrial HW accelerators for deep learning
- vision
  - digital sequencers to read out the analog pixel-array
  - real-time image enhancement on FPGA
- industrial vehicles
  - CAN & ethernet communication for railway and automotive
  - Lidar point cloud processing



# examples in consumer

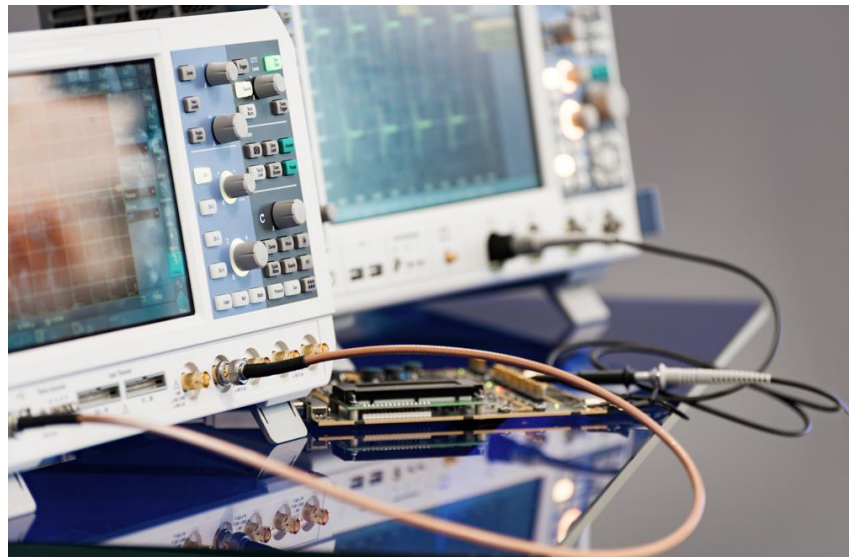
- image sensors:
  - Digital CMOS sensor design
  - Time of flight
  - RGB
  - Hyperspectral
- AI
  - Hand Gesture monitoring
  - Audio noise cancelling
  - Image classification and detection
- wireless:
  - Bluetooth
  - Zigbee
  - 5G
  - Mmwave - high speed interface
  - RFID
- audio:
  - DSP
  - Bluetooth
  - NFMI





# examples beyond

- Test and measurement
  - High data-rate transmission and bandwidth ASICs
  - High speed interface
  - DSP
- Space:
  - high reliability
  - radiation-hardened ASIC
  - ultra-low / cryogenic temperature (down to 77 Kelvin)
  - FPGA development on space-grade FPGAs
  - Spacewire
- broadcast
  - FPGA development for broadcast equipment to transfer data from image sensor to PC
  - FPGA development on proprietary FPGA cards



# ASIC design flow

## model

- SystemC
- C++
- C
- Python
- VHDL / wreal
- SystemVerilog
- Matlab
- SciLab
- Octave
- Julia

## RTL implementation

- VHDL
- SystemVerilog
- Verilog
  
- verification plan
- verification platform definition

## RTL verification

- SystemC
- SystemVerilog UVM
- VHDL
  
- verification platform
- verification software
- RTL simulations

## gate level

- timing constraints
- synthesis
- ATPG
- formal verification: RTL vs. pre-layout netlist
- pre-layout STA
- gate level simulations

## physical

- floorplanning
- spare gates
- place & route
- formal verification: pre-layout vs. post-layout netlist
- STA
- IR-drop, DRC, ERC, LVS, ANT checks
- sign-off

# benefits of working with easics

- highly skilled team in ASIC, FPGA, DSP, software & AI design
- easics project leader ensures a can-do mentality and efficient cooperation
- proven easics methodology & quality system:
  - first-time-right
  - consistent within easics team
- easics requirements engineering & architectural expertise
  - lower project cost & risks
  - shorter time-to-market
- easics EDA tools automate tasks and generate hardware, software and documentation, ensuring high productivity
- easics is organized to deliver long-term support

[www.easics.com](http://www.easics.com)

Ramses Valvekens - [ramses@easics.be](mailto:ramses@easics.be)  
Bram Senave - [bram@easics.be](mailto:bram@easics.be)

