INFODAY 2021

11.11.2021 Praha - TT

Welcome

Auditorium

- Dear guests, customers, IMA partners, colleagues a even your loved ones

Speakers

- IMA & industry & academic domains

Booths / Workshops

- IMA – IMAporter access control
- WITTE Digital – flinkey demonstrator
- IMA R&D
- Oksystem – attandance control
- ABLOY – Traka
- LLEV desing studio – mycelium
- EIA
- Eurostars SACON – smart buildings
- 2KSys – autosar for skateboard
- IMA & WITTE – gesture recognition

Today‘s workflow

We invite you to a friendly meeting of our employees, partners and customers

DATE: 11. 11. 2021 at 13:00
LOCATION: Troja Castle, U Trojského zámku 4/1, 171 00 Praha 7
TRANSPORT: Bus 112 stop „Zoologická zahrada"
PARKING: directly in the castle grounds (let us know if interested)

SIDE EVENTS:

13:30—17:30 ***For Children:*** weather permitting, a tour of the ZOO

17:30—21:30 ***„The jungle never sleeps"***
guided tour of the Fata Morgana greenhouse

EVENT SCHEDULE:

13:00—13:30 Welcome drink and registration

13:30—14:30 IMA related news
- **Tomáš Trpišovský**: Opening, welcome speech
- **Jiří Bárta, Jan Schlechter, Karel Kalivoda**: News in IMA identification systems
- **Michael Tüllmann**: WITTE Digital — Introduction of flinkey & beyond
- **Jiří Havlík, Michal Kašpárek**: News in the areas of grant projects with IMA participation

14:30—15:00 Coffee break

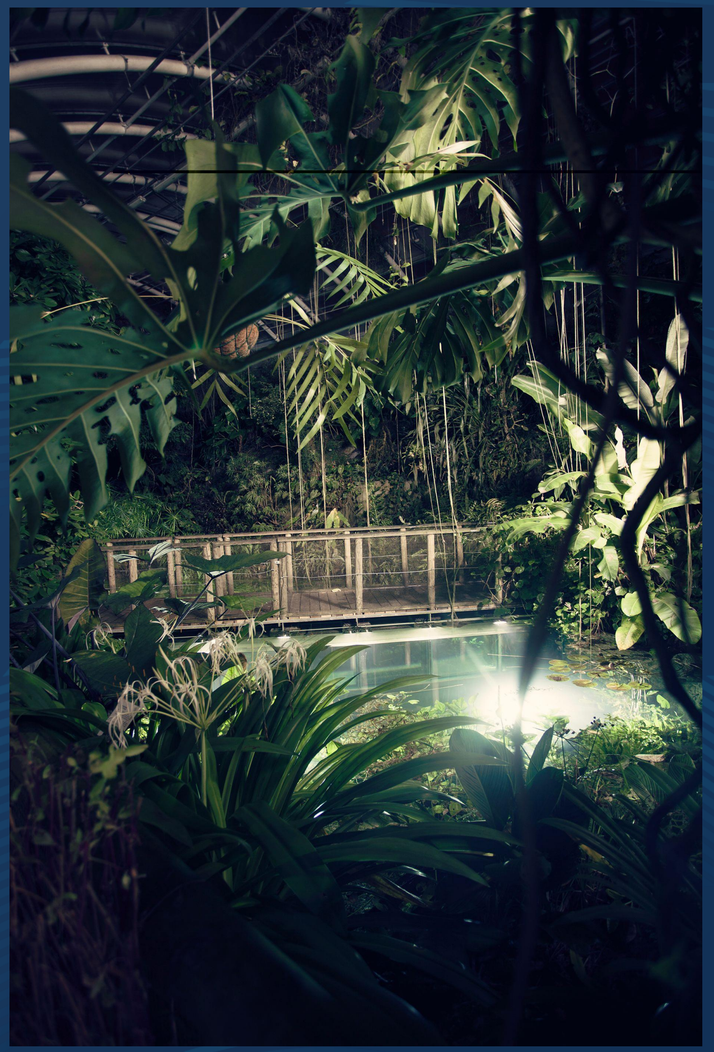
15:00—17:30 Technology novelties
- **Petr Panec**: OKbase — basics of attendance system
- **Věra Šmídová**: EIA blockchain is not a cryptocurrency
- **Miroslav Husák**: Mikro/nano electronics — news and outlook
- **Tomáš Bureš**: ML and NN in Embedded systems for gesture recognition
- **Jaap Kautz**: Eurostars SACON — Smart access control for smart buildings
- **Jaroslav Kadlec**: Autosar — Automotive technology in practice
- **Josef Lazar**: Modern technologies of the Institute of Instrumentation of the CAS
- **Jakub Rozkydal**: ISIC — identification systems in schools

17:30—18:00 Discussion, workshops for presentations, tour of the castle, refreshments

ima Institut mikroelektronických aplikací

INFODAY2021

MORE INFO AT
WWW.INFODAY.CZ



ima

IMA status update

IMA became member of WITTE Automotive group by Jan 2021
& migrated SME -> LE

Member of WITTE AUTOMOTIVE

Press release

(01/28/2021) **WITTE Automotive has acquired the Prague-based company IMA, the innovative developer of electronic identification systems, as of 01.01.2021.**

Strategic step
WITTE has already been cooperating with IMA since 2017 and had acquired a 24% stake in IMA in August 2018. With the 100% takeover, WITTE Automotive will expand its mechatronic product portfolio, especially in the areas of controllers and sensors, and achieve another important milestone in the implementation of its digitalization strategy.

Strengthening the position of IMA
Becoming recognized R&D center for capital strong WITTE group complement perfectly IMA‘s core businesses in access control domain and thus strengthen IMA position on the market. "*This partnership is an absolute win-win situation*," emphasizes WITTE Managing Director Christian Kaczmarczyk.

IMA status update cont.

IMA core business: based on eIDentity, IoT

R&D center WITTE: Automotive
NewControl, AI4DI, StorAIge, AI4CSM, ArchitectECA2030…

Incubator: technology exploring

-> WITTE Digital in automotive and beyond

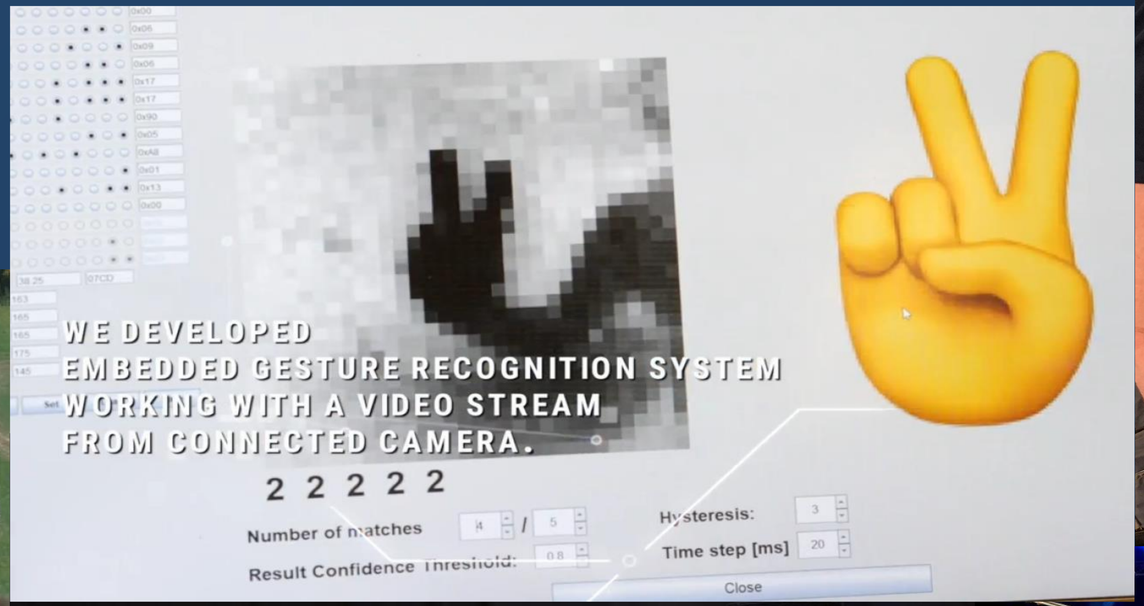
-> Oksystem smart system integration

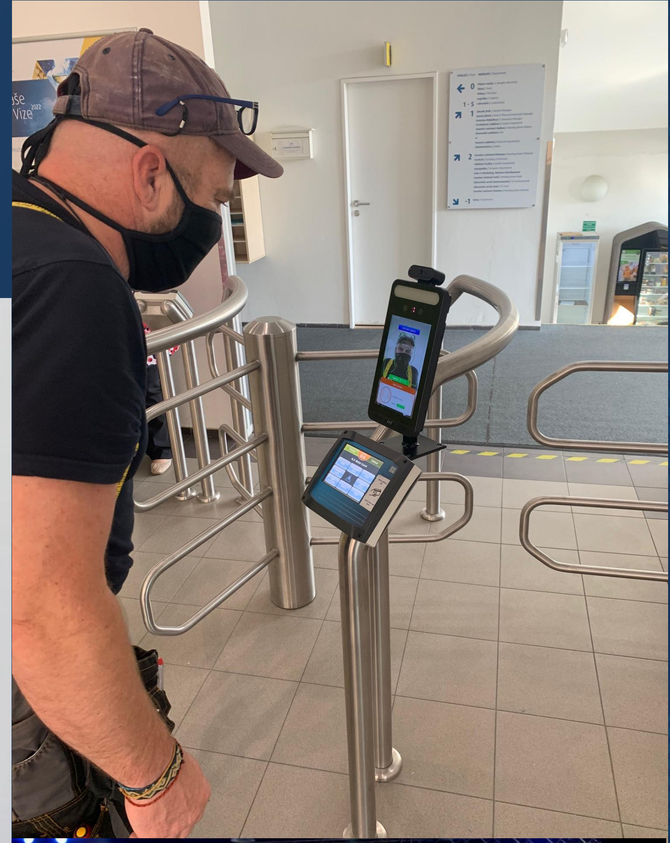
-> IMA R&D in Automotive

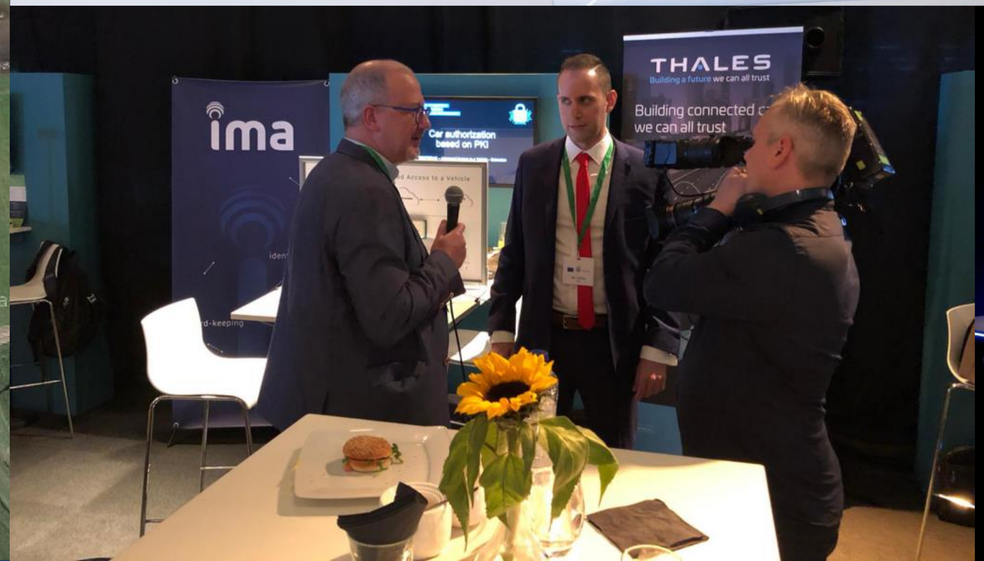
Member of WITTE AUTOMOTIVE

IMA novelties

IMA reflects novelties within its core businesses (at random)







EDGE
COMPUTING

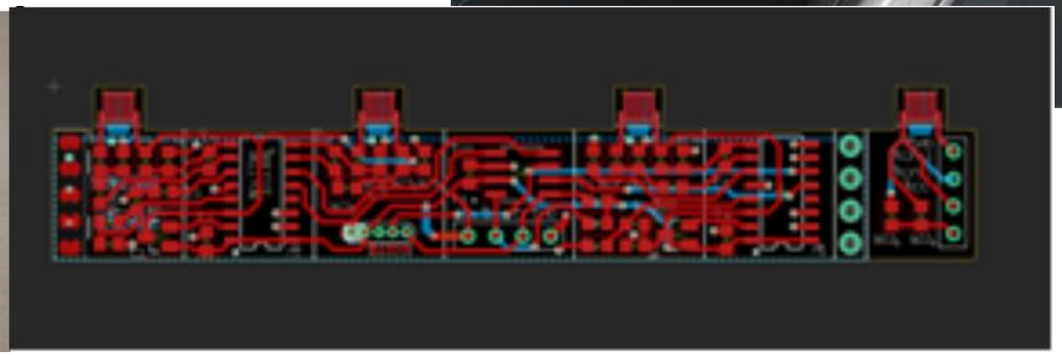
AmeCo – Advanced mechatronic component
Use cases of WITOL®

Automotive
- Roof racks, Seats

Building construction
- Glass mounting

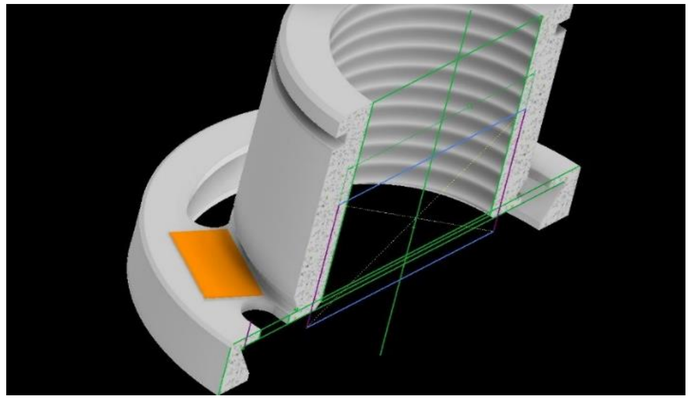
Health
- Surgery

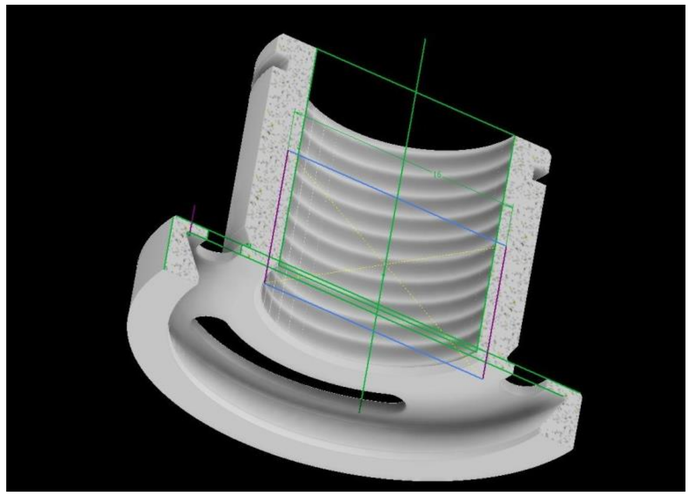
Main functions:
- Precise AD conversion (3+ channels)
- Communication module
- Edge computational unit

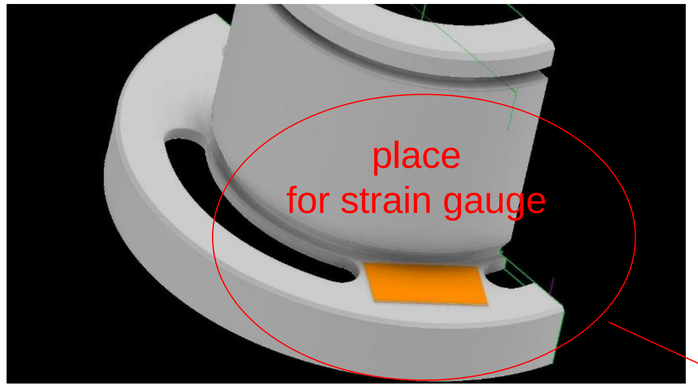


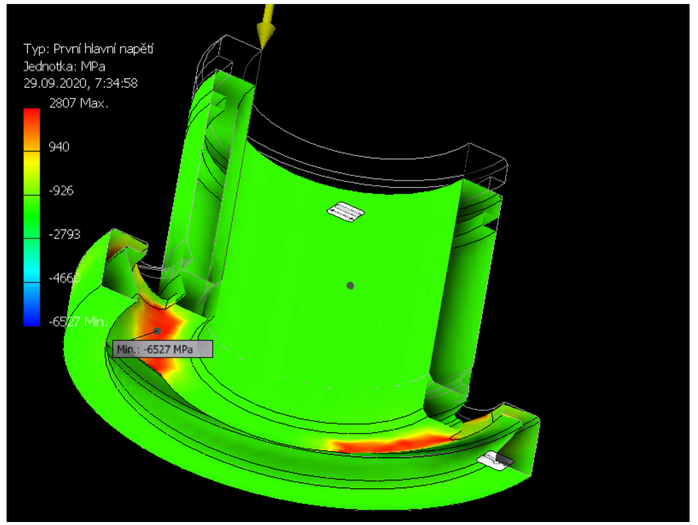
Analysing of surface for a strain gauge application

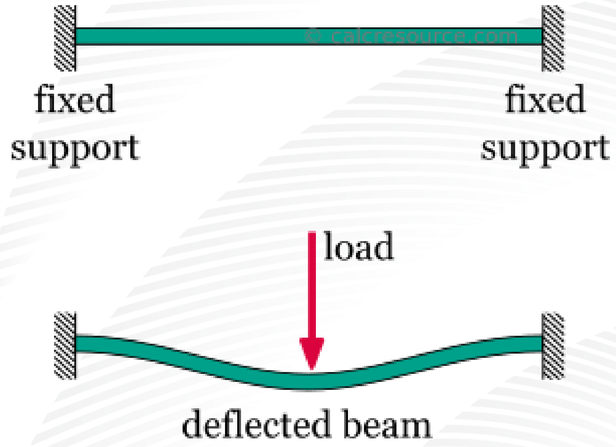
Design and material is realized (by TUL) in accordance with requirements for electronic component installation by IMA and BUT

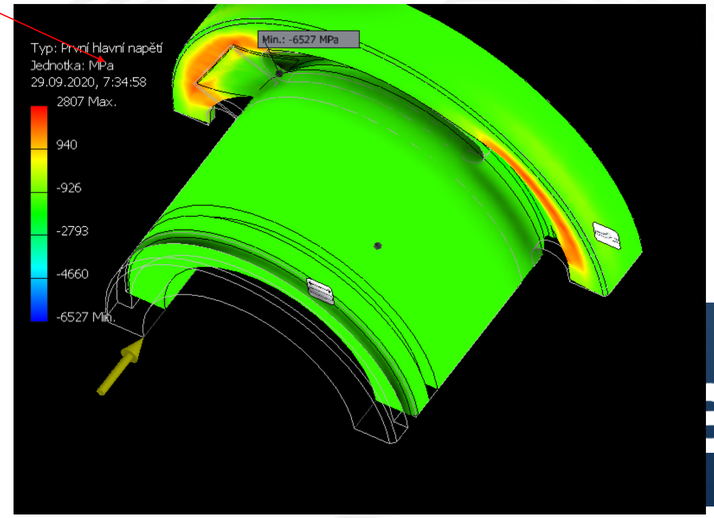










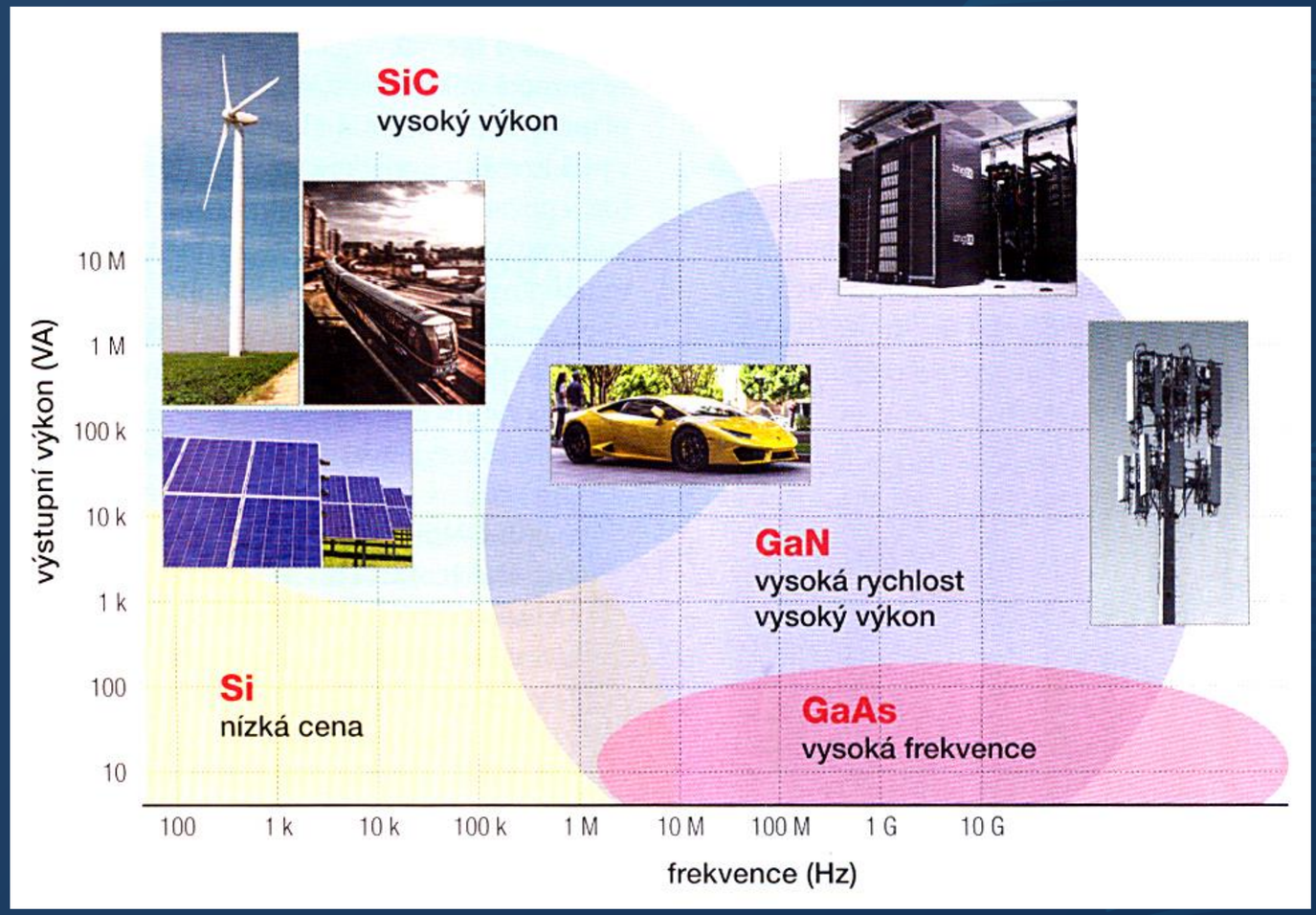


WITOL®
Mechatronic component
Automated clearance elimination
50 mil. Units per year sold

Now, where we are?

In terms of tools (computers) available for solving our daily needs…

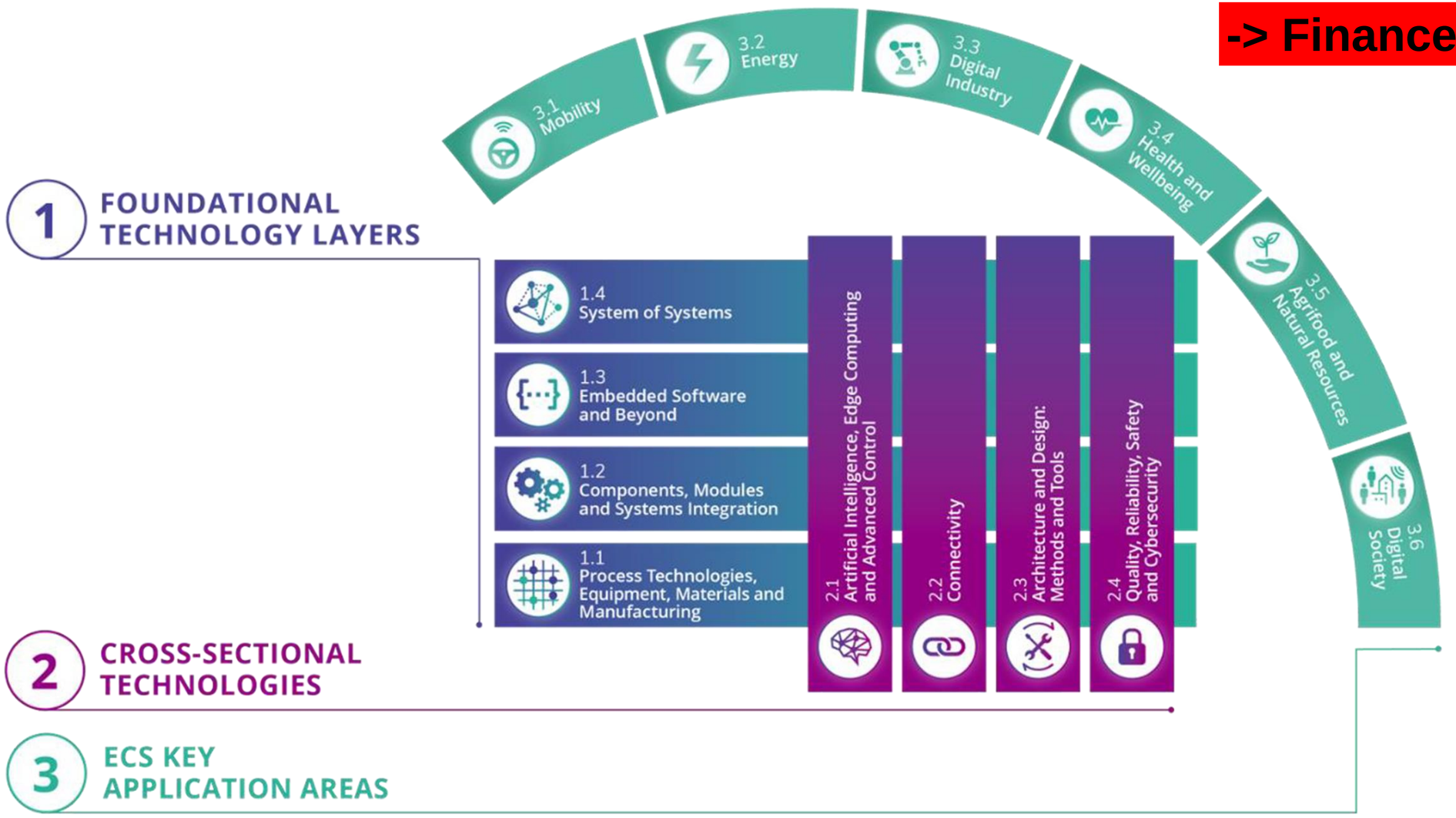
- 1947 First transistor
- 2021 onsemi
  Rožnov
  10 mil chips/day
  2 mld CZK planned



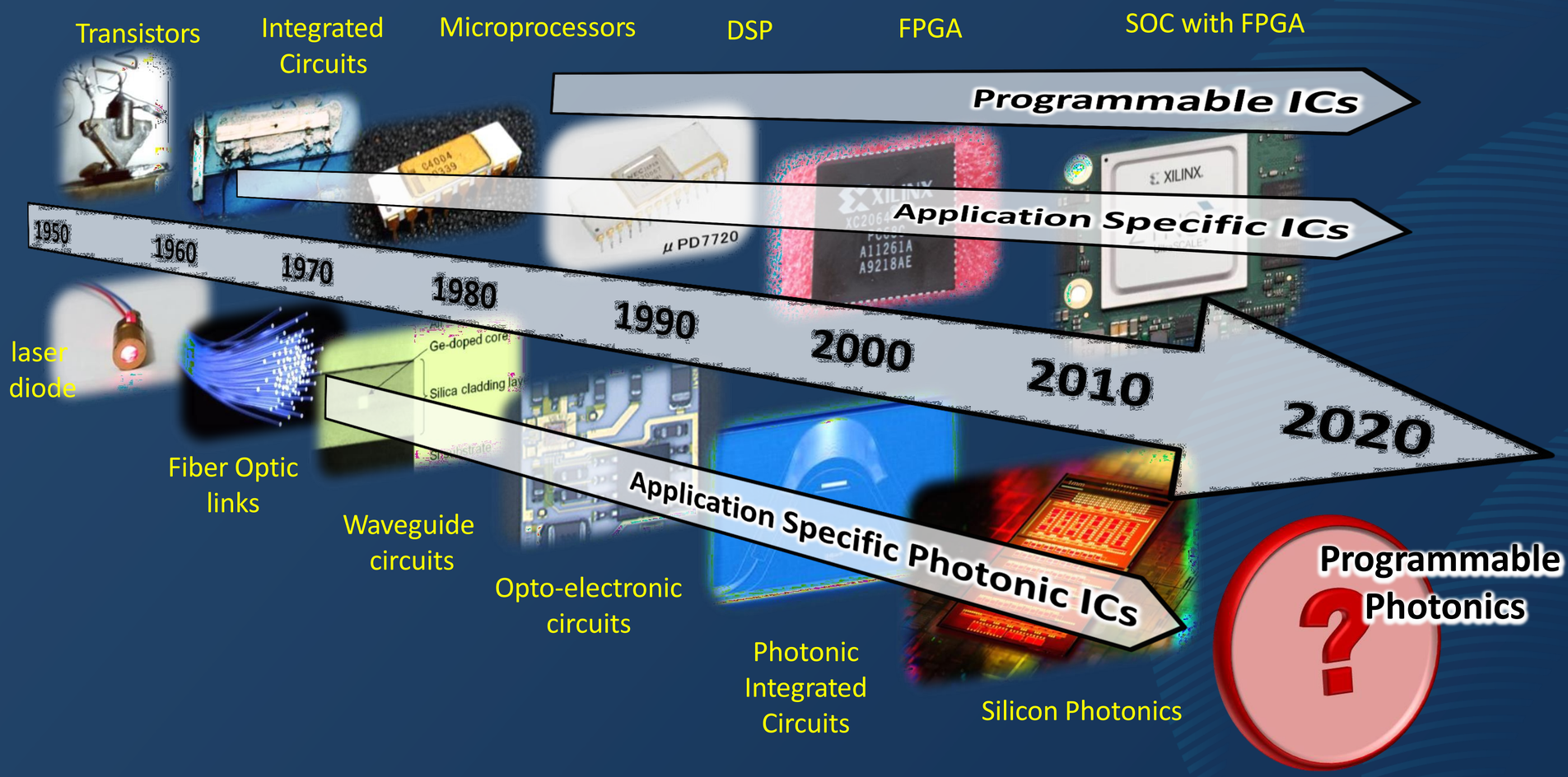
Source: Vesmír 7-8/2021

European research agenda ECS-SRIA

-> Financed priorities



New Challenges…Photonics



Courtesy: Wim Bogaerts (UGent-imec)

Printed flexible Q-dot & micro LED

Anonymous driving cars

Smart buildings

Smart objects

Smart textiles

https://i.pinimg.com/originals/19/2c/ab/192cab31a29359b8c284e1e71ebf9530.jpg

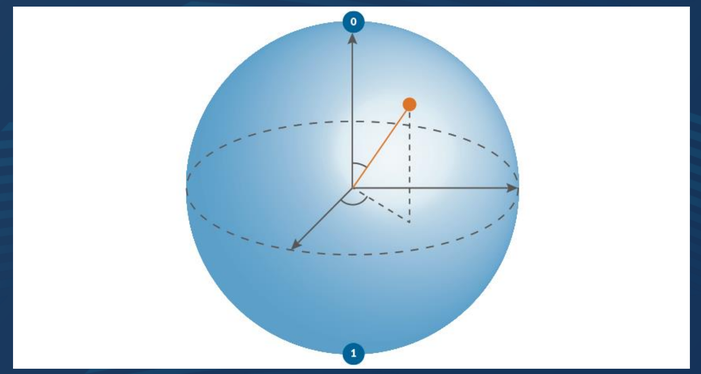
Bit – Qubit? or Bio-inspired computing

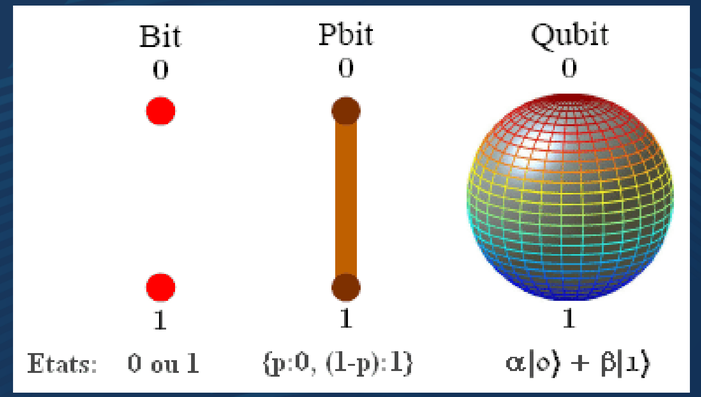
Bit (Classical) bit

Pbit (Probabelistic) bit

Qubit (Quantum) bit – entity of Hilbert space

excitation of electrons by laser, polarization of photons





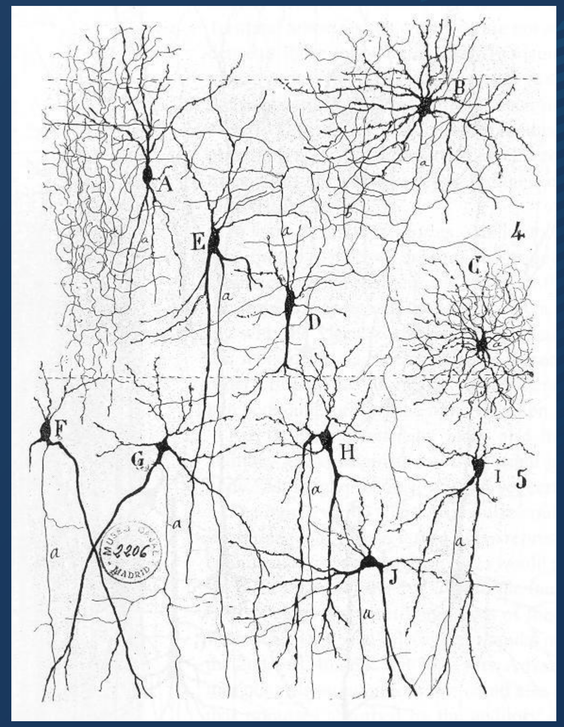
300 km/sec

Wetware computer

Cognitive biology

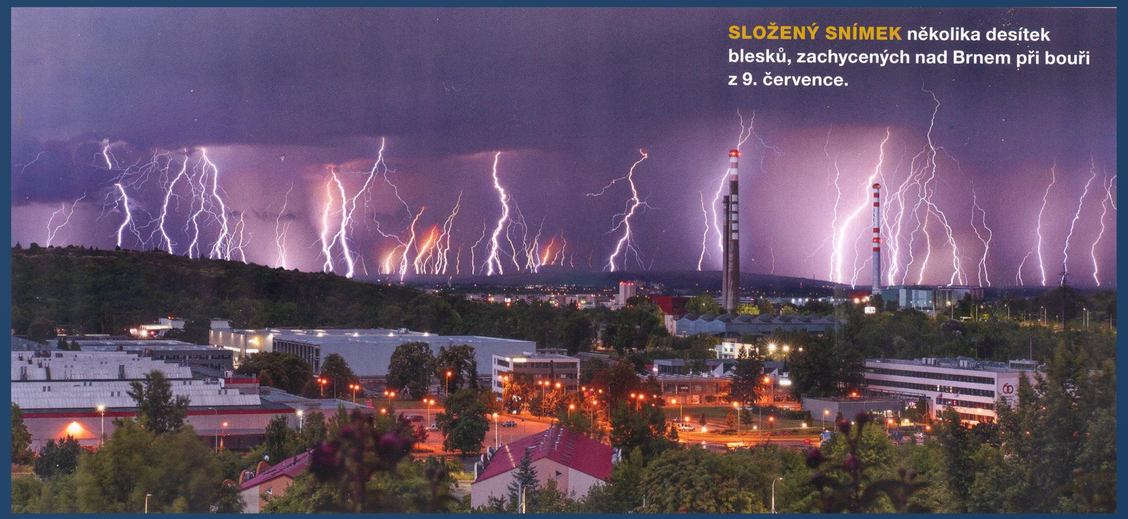
Chemical computer

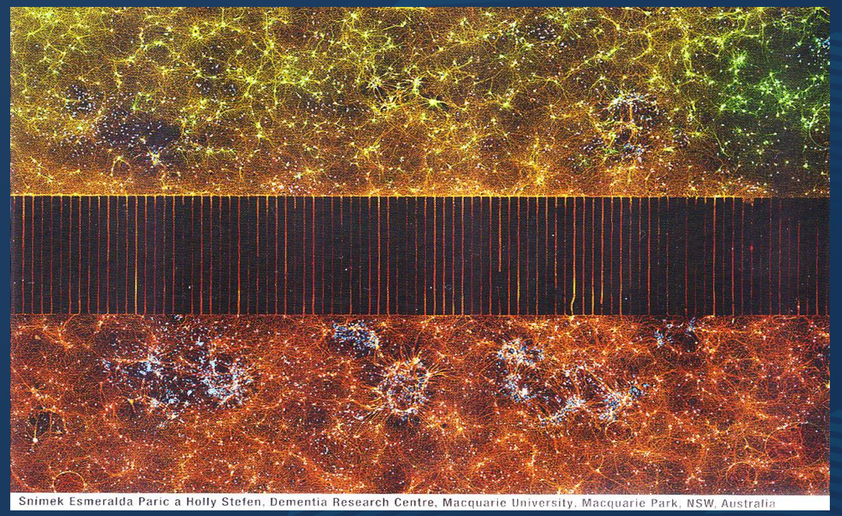
Wetware (brain)



1-120 m/sec

Much more analogies….

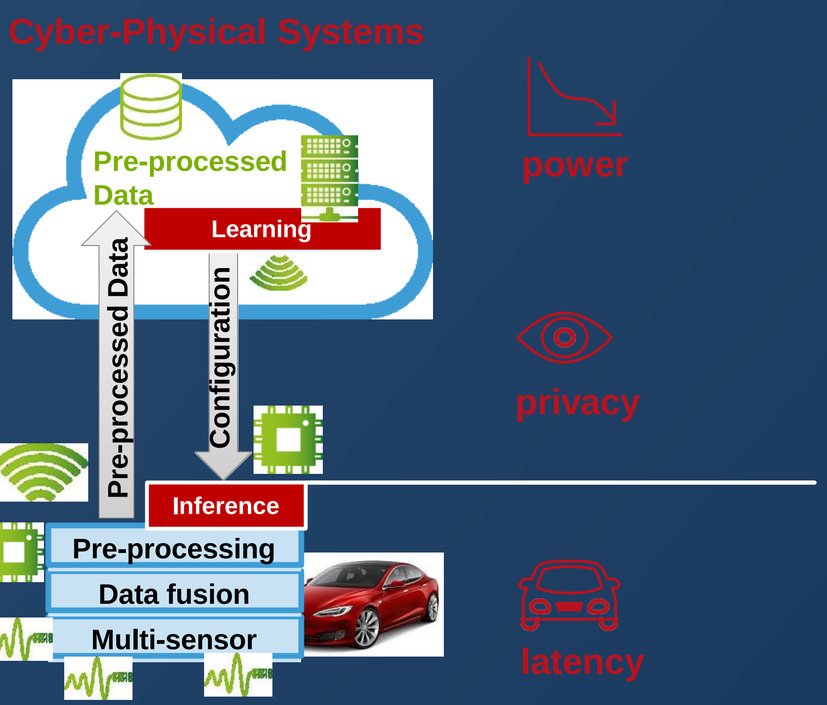




- Power elecronics:
  Dozens of lightning bolts in Brno region
  (Source Vesmír 9/2021)

- 300 thousand neurons in two isolated parts connected via axons (Source: Vesmír 10/2021)

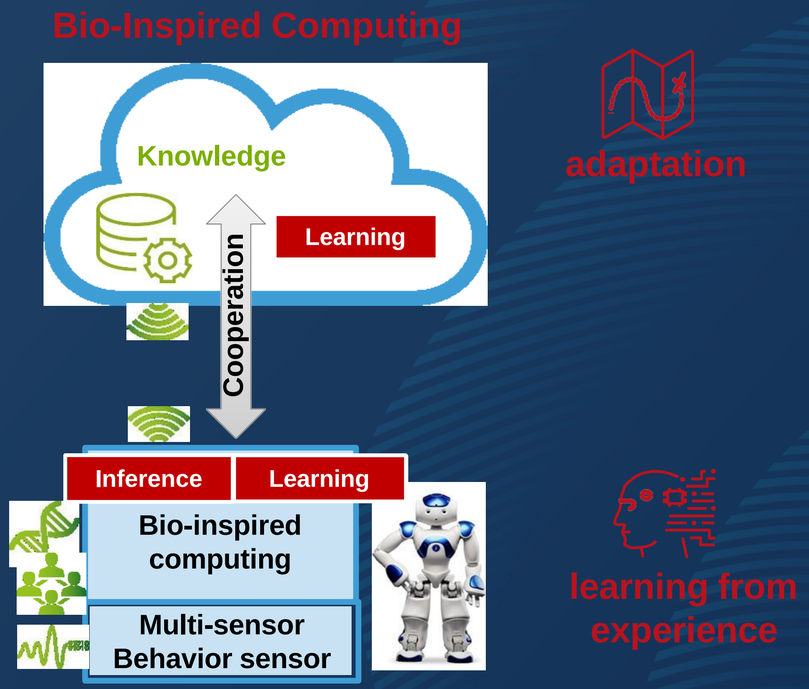
EDGE AI ACCELERATORS ARE REQUIRED



power

privacy

latency



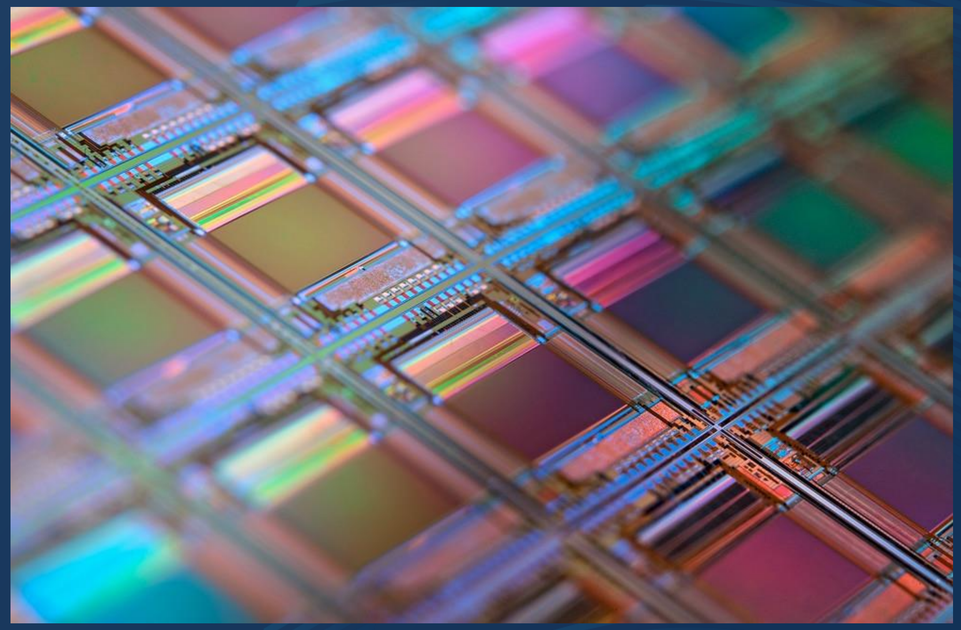
adaptation

learning from experience

Source: LETI CEATECH

AI / ML
(Artificial Intelligence / Machine Learning)

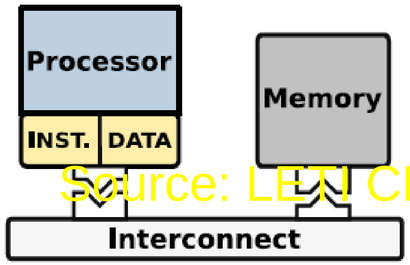
- **Since more and more intelligent devices surround us**



STM Grenoble 28nm FD SOI
(Source: ECSEL StorAIge)

SOLVING THE ENERGY CHALLENGE

Reduce the cost of moving data



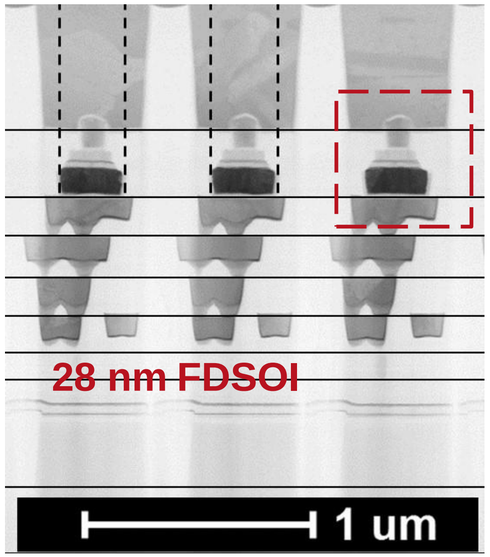
Source: LETI CEATECH

~90% of the total energy

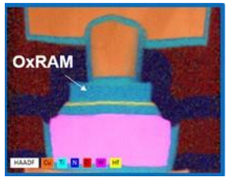
Operation	Energy
Addition of data (fixed point)	1×
Access data (onchip cache)	60×
Access data (offchip RAM)	3500×

Pedram et al , IEEE D&T 2016

Need of high dense on-chip memory Resistive memory can play a crucial role



Resistive memory



imec 2021

Source: LETI CEATECH

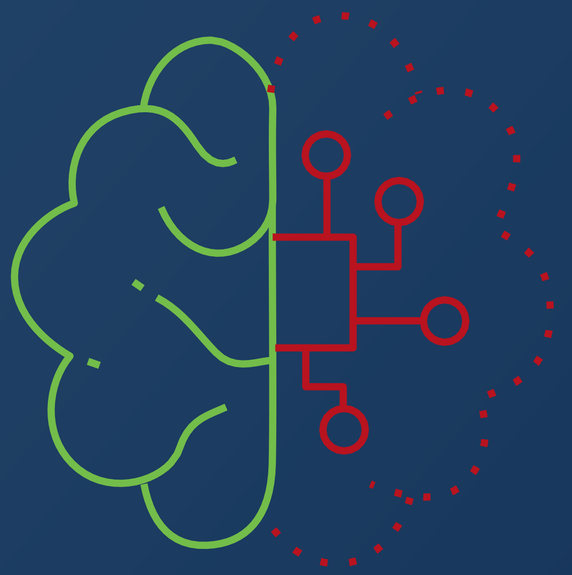
BRAIN-INSPIRED COMPUTING

› **A radical paradigm shift**

Massively parallel
10^{11} neurons and 10^{15} synapses

Processes using memory elements

Brains process and percept sensory signals in multiple time scales



Use parallel arrays of processing elements

Co-localize memory and computation

Sparsity in time (spike coding)
Match circuit time constants to input signal dynamics

Source: LETI CEATECH

Let‘s go…

- Jiří Bárta, Jan Schlechter, Karel Kalivoda: Novinky v identifikačních systémech IMA
- Michael Tüllmann: WITTE Digital — Introduction of flinkey & beyond
- Jiří Havlík, Michal Kašpárek: Novinky v oblastech grantových projektů s účastí IMA

15:00—17:30

- Technologické zajímavosti
- Petr Panec: OKbase — základy docházkového systému
- Věra Šmídová: EIA blockchain nejsou kryptoměny
- Miroslav Husák: Mikro/nano — novinky a výhled
- Tomáš Bureš: Využití ML a NN v embedded systémech pro rozpoznání gest
- Jaap Kautz: Eurostars SACON — Smart access control for smart buildings
- Jaroslav Kadlec: Autosar — Automotive technologie v praxi
- Josef Lazar: Moderní technologie Ústavu přístrojové techniky AV ČR
- Jakub Rozkydal: ISIC — identifikační systémy na školách

ima

ima
ima
Member of
WiTTE
AUTOMOTIVE