



# Next EU Vector Accelerators for World-Wide HPC Customers

NEC Users Group, Hamburg. June 12<sup>th</sup> 2024.

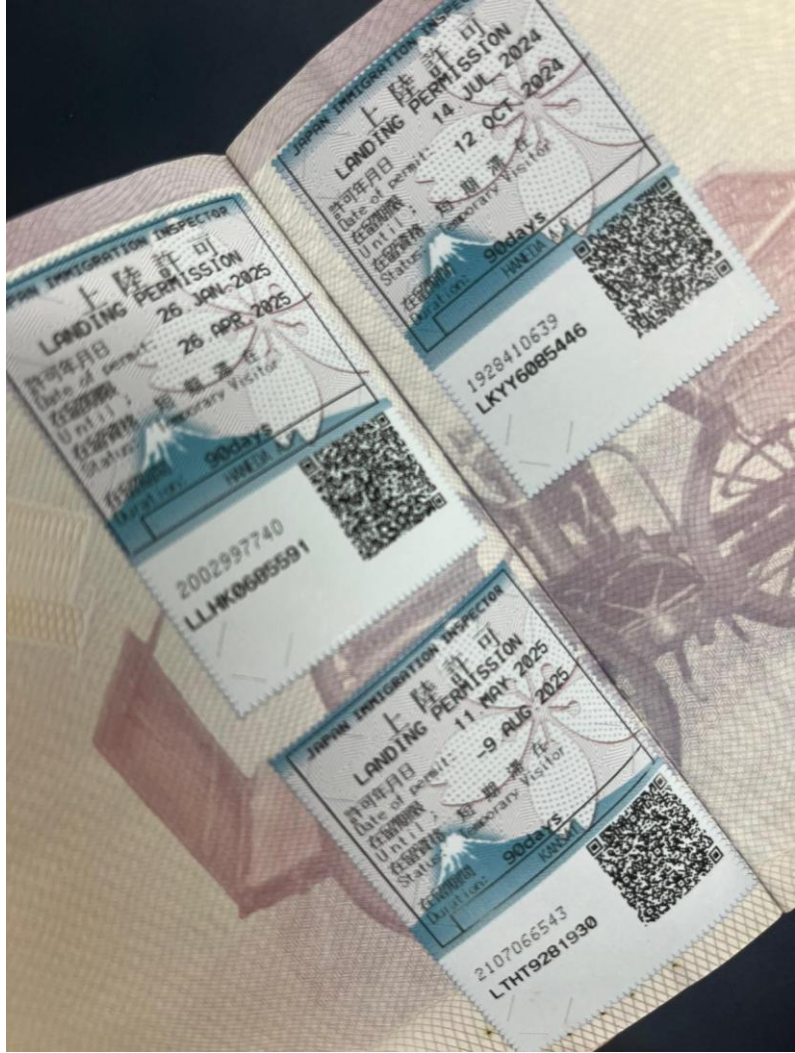
 **openchip**  
Enabling the Digital World

**NEC**

SLIDE PRESENTED MAY 2024 – NEC USERS GROUP



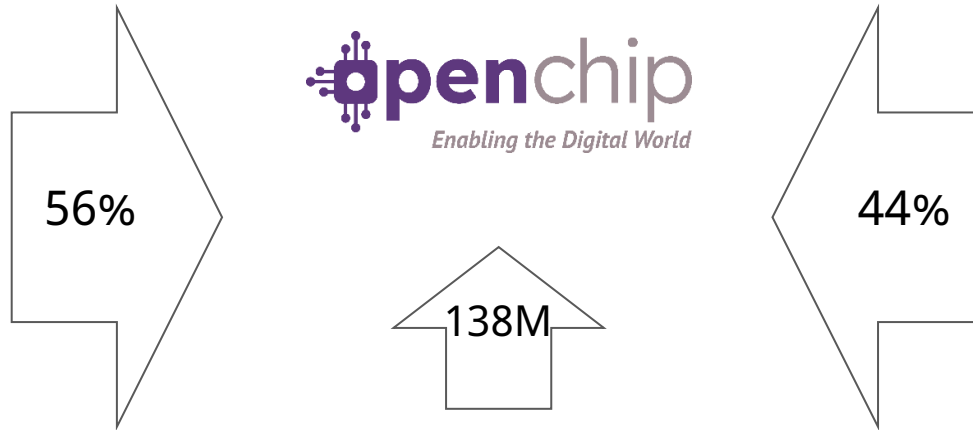
“Why are you traveling that much to Japan last year?”



# COMPANY UPDATE



Shareholders, Board, etc



Clients in 15 Countries - More than 1.500 high-tech projects

GTD works across some of the most demanding industries, providing software, systems, and services for safety, mission, and business-critical applications. We provide our clients with secure, reliable technology around the world. Out in space, our software orbits the Earth 24/7, 365 days a year. Closer to home, our software keeps aircraft flying high, makes vehicles safer, powers smart meter networks, and does much more. For over **34 years**, we've been transforming the way the world uses technology.

**OPENCHIP – NEC Users Group Confidential**



EuroHPC  
Joint Undertaking



Una manera de hacer Europa

## Senior Executives



### Cesc Guim – CEO

PhD in Architecture and Computational Science (UPC). 60+ scientific publications, 500+ patents. Former Senior Principal Engineer & Chief Architect for Network & Edge at Intel. 5 years at Barcelona Supercomputing Center. Intel Top Inventor (2019–2023).



### Violante Moschiano – Chief HW Arch

20+ years in semiconductors. Former Micron Fellow and Intel Senior Director. Expert in memory systems, with 330+ patents. Active in IEEE and ISSCC committees.



### Edgar González – Head of Software/BI & AI

PhD in AI (UPC). Former researcher at Google Research and Google Assistant, focusing on NLP and semantic analysis. Leads software at Openchip, applying AI to semiconductor design.



### Gaspar Mora - CTO

PhD in Computer Engineering (UPV). 16+ years at Intel and Nvidia. Architect behind Intel Omni-Path and GPU memory systems at Nvidia. Expert in interconnects, HPC networks, and adaptive routing. 11 patents.



### Marc Fernández – CFO

25+ years of experience in business growth and organizational strategy. MBA from ESADE. Expert in finance, legal, and operations across sectors. Advisor to startups and NGOs.



### Tommaso Vali – Head of Hardware Engineering

30+ years in semiconductors (TI, Micron, Intel). Led 30+ IC designs. Holds 269 US patents in memory, analog, and digital design.



### Steven Latré – Chief AI & Software Systems Officer

PhD in Computer Science Engineering (Ghent University). 200+ publications. Former VP of AI & Algorithms at imec and Director of IDLab (U. Antwerp). Expert in scalable AI-hardware co-design. Professor at University of Antwerp.



### Ignacio Astilleros – Chief of Strategy

25+ years in ICT (Intel, Huawei, Sun, Indra). Led Intel's MEA telecom division. Physics degree, Executive MBA, Master's in Economics & Innovation. Expert in Cloud, Edge, 5G, AI. Co-author of 6 patents.



### Iván Rodero – Head of Innovation

PhD in HPC (UPC/BSC). 20+ years in advanced computing (IBM, Oak Ridge, Rutgers, BSC). 180+ publications. PI in EU, NASA, NSF, and DoE projects. IEEE and ACM senior member.

## VPs, Fellows & Senior Fellows



### Akira Tsukamoto – Fellow in Security and Ecosystem Architecture

Master of Science Degree in Computer Science Co-Chair of IoT Security Working Group at IETF +20 year experience in Developments, Cell/B.E. ARM



### Satoru Tagaya – Chief HPC Architect and Senior Fellow

Master's aComputer Science, 10 patents, 30 years in vector system architecture (NEC).



### Erich Focht – Chief HPC Software Architect and Fellow

PhD in HPC, 70 publications. 27 years at NEC, developing Top 500 HPC computers.



### Gilberto Rodríguez – VP BizDev - Chiplets & HW IP

EMBA from London Business School, Master's in Telecommunications. 25+ years in semiconductors (Imagination Tec., Nokia, Alcatel, Lucent).

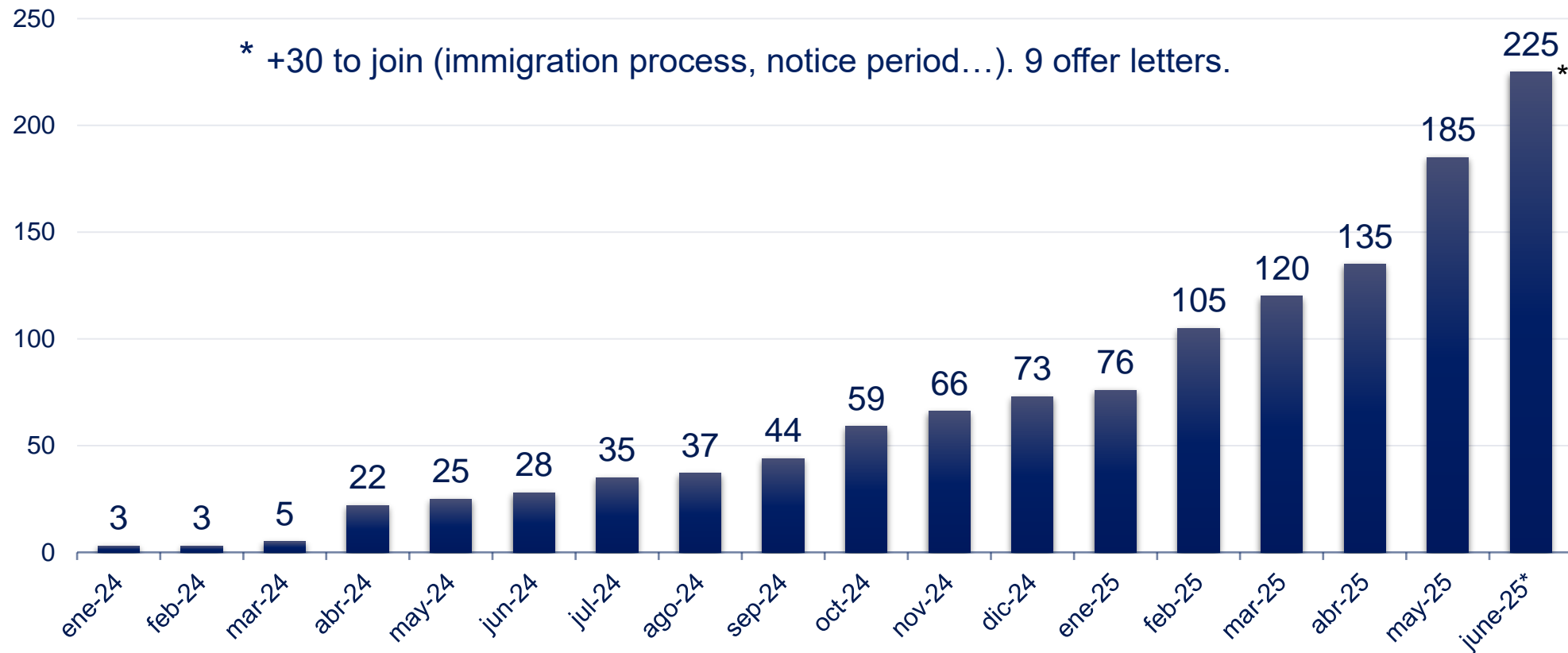


### Therese Jamaa Vice — Vice President of Industrial Alliances

25+ years in tech leadership (GSMA, Vodafone, Qualcomm). Champion for diversity and tech-for-good. Expert in telecom, public affairs, CSR, and industrial alliances. Leads strategic stakeholder engagement at Openchip.

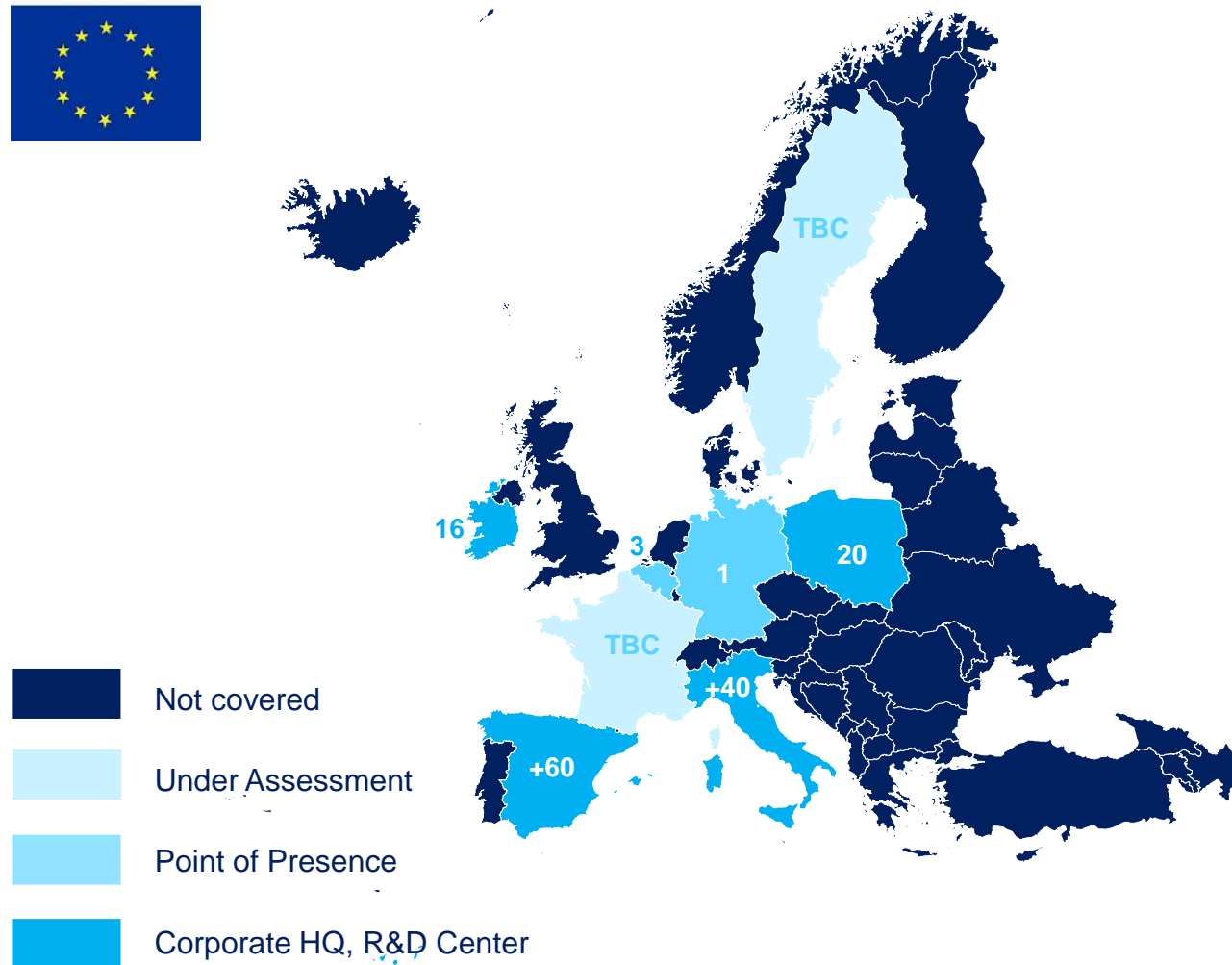
# Talent attracts talent

## Openchip Growth 24'-25'





# OpenChip in Europe



## Strategy for European Union Geo Expansion

- Openchip is a Spanish Project truly **multinational** and **multicultural**: Europe is in our DNA.
- **+134** employees from **+20 nationalities**: Spain, Italy, Poland, Germany, France, UK, USA, Romania, Armenia, India, Pakistan, Ukraine, Japan, ...
- We are determined to promote the **collaboration** within EU countries: Hiring a **talented team**, distributing R&D facilities and having a point of presence next to our priority customers.
- Company **HQ** is located in **Barcelona**, Spain, a global hub for business.
- We aim to lead the efforts of European Union for **Digital Sovereignty** and adoption of **RISC-V** as the ISA for **Supercomputing** and **Artificial Intelligence**.

TBC = To be confirmed

# IMEC & ALIANCES

“With the arrival of the Spanish company Openchip, a European pioneer in digital chips, Flanders once again reaffirms its leading position in the EU when it comes to innovation,” says Flemish Minister-President **Matthias Diependaele**.



≡ Semiconductor IP

The Pulse

## Openchip and imec Sign Strategic MoU to Advance AI Technologies

**Barcelona – March 12, 2025** – Openchip is pleased to announce the plans of a long-term collaboration with imec, a global leader in nanoelectronics and digital technologies to jointly contribute to European Digital Sovereignty. This strategic partnership will drive the development of cutting-edge artificial intelligence (AI) systems that seamlessly integrate hardware and software, pushing the boundaries of AI innovation.

This step deepens the collaboration between the two organizations, combining Openchip's expertise in semiconductor and AI system design with imec's advanced research in AI, sensor technologies and chip design. This partnership will accelerate the creation of disruptive AI solutions tailored to real-world applications, spanning industries such as healthcare, smart industries and high-performance computing.

For this, Openchip will open an office in Ghent, Belgium.

“With the arrival of the Spanish company Openchip, a European pioneer in digital chips, Flanders once again reaffirms its leading position in the EU when it comes to innovation,” says Flemish Minister-President **Matthias Diependaele**. “Flanders is a knowledge-driven region that, thanks to its strong research centers, brilliant scientists, flexible workforce and favorable business climate, attracts companies eager to invest here and contribute to our prosperity. Openchip, backed by both the Spanish government and the Catalanian government, is a testament to the strength of European

### Related Semiconductor IP

- [Power and Clock Generation IP - GLOBALFOUNDRIES® 22FDX®](#)
- [Post-Quantum Key Encapsulation IP Core](#)
- [SHA-256 IP](#)
- [AES256/AES128 IP](#)
- [AES256-XTS IP Core](#)

### Related News

- [Imec and Analog Devices sign strategic research partnership for development of next-generation IoT devices](#)
- [Chiplet interconnect pioneer Eliyan](#)



“Deepening our strategic collaboration with OpenChip offers an opportunity to leverage the advanced SoC technologies developed on the NanoIC pilotline and to strengthen the strategy of an ambitious European fabless player. This is a prime example of how the R&D leadership of the pilot lines creates growth opportunities for the European ecosystem in booming fields like AI and HPC”, says **Patrick Vandenameele**, Executive Vice President & Co-Chief Operating Officer at imec.

# COMPANY VISION & DIRECTION

# Sovereign Technologies

*From nice to have to must*

Tech

## Biden divides EU with new AI chip export controls

The move elevates 10 of the EU's member states above the remaining 17.

## Trump revokes Biden executive order on addressing AI risks

By David Shephardson  
January 21, 2025 9:33 PM GMT+1 · Updated 2 months ago



## Google turns to nuclear to power AI data centres

2 days ago Share Save

João da Silva  
Business reporter

## Sam Altman Seeks Trillions of Dollars to Reshape Business of Chips and AI

OpenAI chief pursues investors including the U.A.E. for a project possibly requiring up to \$7 trillion


By [Keach Hagey](#) [Follow](#) and [Asa Fitch](#) [Follow](#)

Feb. 8, 2024 9:00 pm ET

Platform Leader, Public Sector and Government, Product News

## Offering a sovereign cloud designed for the European Union

June 20, 2023 | 4 minute read

 **Scott Twaddle**  
Senior Vice President, Oracle Cloud Infrastructure Product and Industries

We're pleased to announce the launch of Oracle EU Sovereign Cloud, a hyperscale cloud that addresses data residency and sovereignty requirements in the European Union and delivers the services, value and service level agreements (SLAs) offered in Oracle Cloud Infrastructure (OCI) commercial public cloud regions. Customers want the benefits and efficiency of a global cloud platform but are increasingly concerned with control over their data and the ability to meet evolving regulatory requirements in global hyperscale clouds. Oracle EU Sovereign Cloud is designed to help meet these requirements for both private companies in regulated industries and public sector organizations that use cloud computing to host their applications and sensitive data in the EU.

Oracle Newsroom

## Meta Fined \$1.3 Billion for Violating E.U. Data Privacy Rules

The Facebook owner said it would appeal an order to stop sending data about European Union users to the United States.

## Google Cloud fleshes out sovereign cloud capabilities for European enterprises

Google Cloud uses the first day of its user conference to provide an update on how its efforts to meet the data sovereignty needs of European enterprises are progressing

 **Caroline Donnelly**, Datacentre Editor Published: 11 Oct 2022 13:45

Google Cloud has provided an update on how its pledge to provide European enterprises with access to sovereign cloud services is progressing.



[Digital sovereignty for Europe \(europa.eu\)](https://europa.eu)

## FINANCIAL TIMES

US COMPANIES TECH MARKETS CLIMATE OPINION LEX WORK & CAREERS LIFE & ARTS HTSI

Opinion **European Union**

## Macron and Scholz: we must strengthen European sovereignty

The EU needs more single market, innovation and investment to secure a common future

OLAF SCHOLZ [+ Add to myFT](#)



President Emmanuel Macron, left, at a recent press conference with Chancellor Olaf Scholz. France and Germany are proposing a renewed impetus for competitiveness for the EU's next term © Halil Sagirkaya/Anadolu/Getty Images

# Key Pillars

## Sustainability



### ADVANCED TECHNOLOGY

- HW/SW co-design
- Renewal Energy
- Advanced Cooling
- Extended Life

## Scalability



### HIGHLY SCALED ARCHITECTURE

- Software Defined Architecture
- Open standard (RISC-V)
- Chiplet-based

## Security & Safety

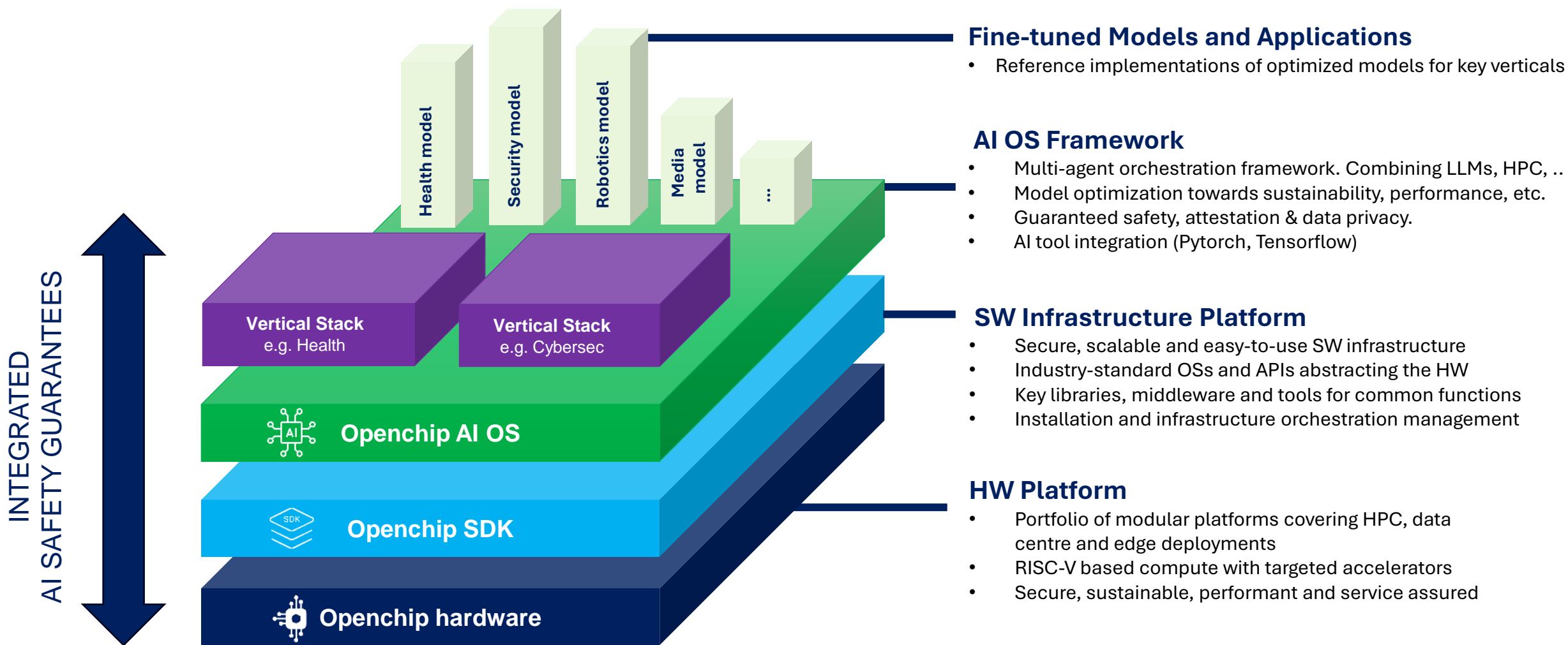


### SECURITY ON THE CHIP

- Data protection data
- AI model verification
- Secure Training
- Traceability
- AI Guardrails

# Product Stack

## Serving Multiple Verticals with a Horizontal Platform Approach

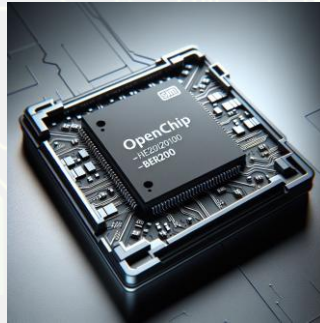


# COMPANY TECHNOLOGY ROADMAP – HPC, AI NEC & OPENCHIP ENDEAVOR

# CHIP ARCHITECTURE ROADMAP (BERNIA FAMILY)

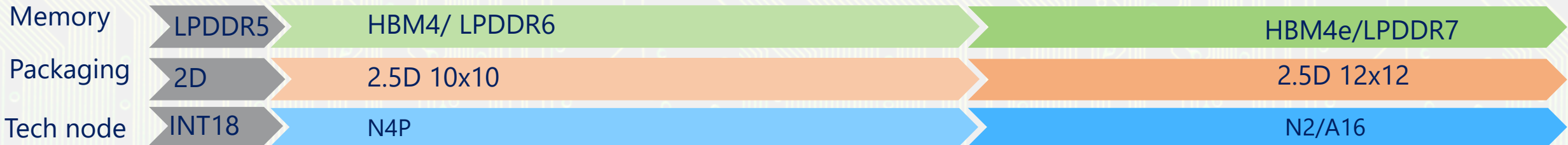
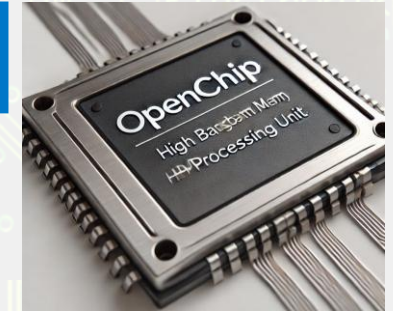
2026				2027				2028				2029			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

TEstChip

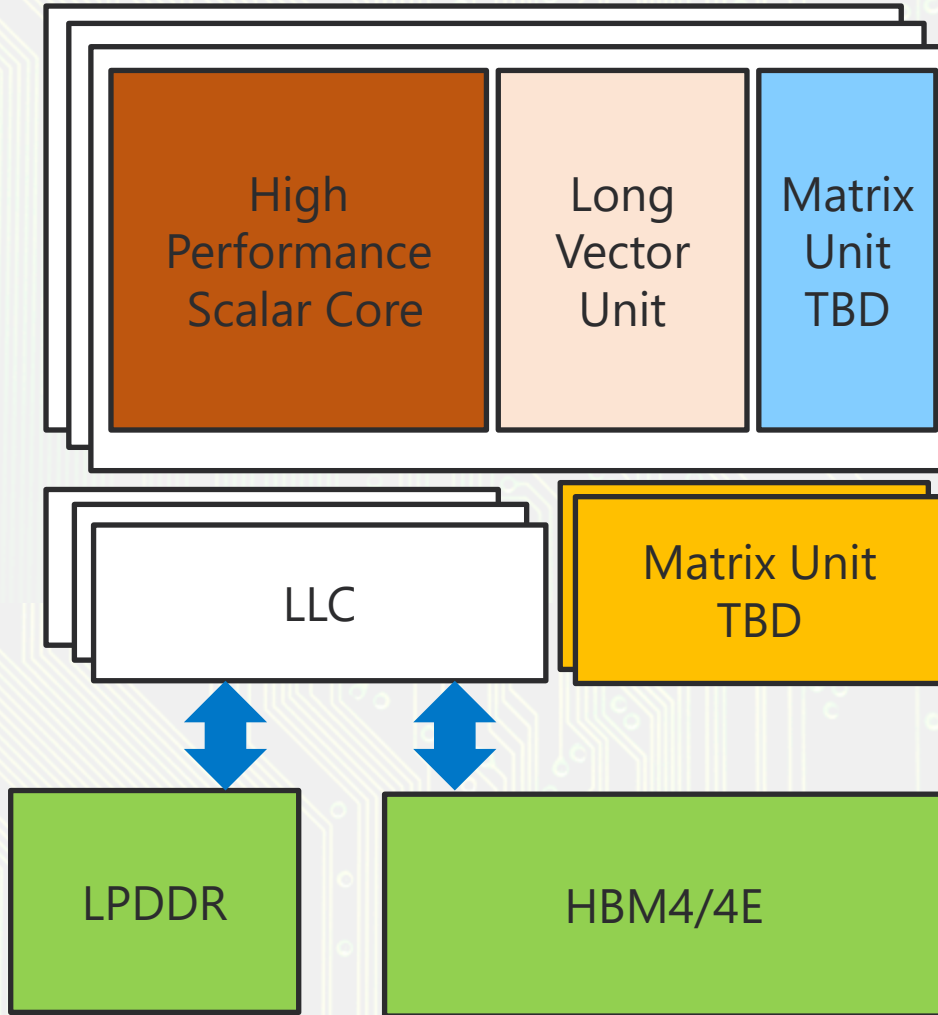


BER200

BER100



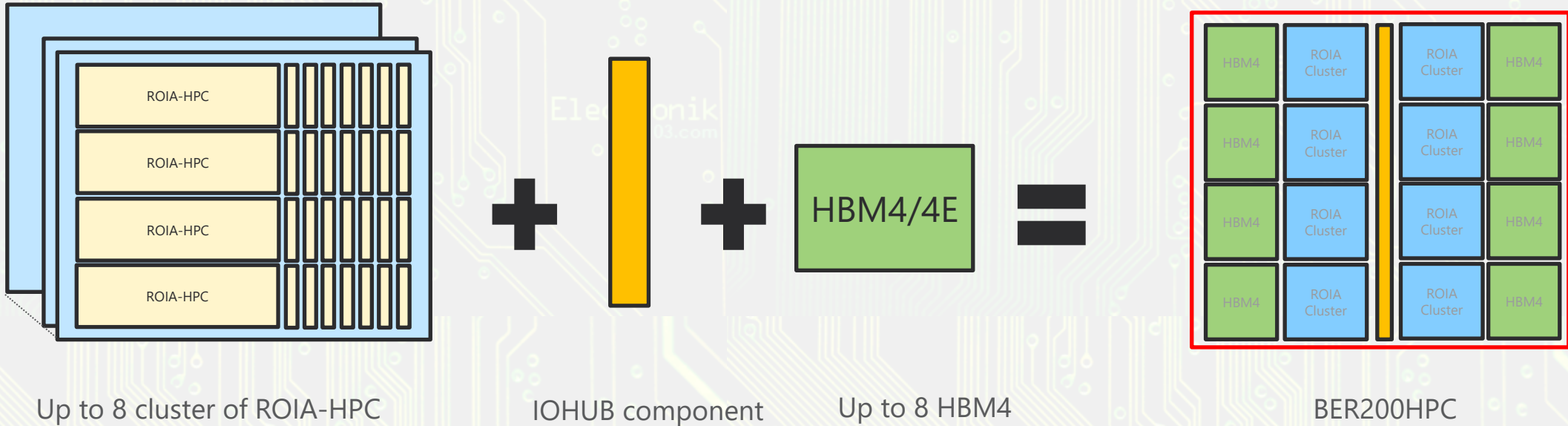
# RISCV-OPENCHIP-INTEGRATED-ARCHITECTURE (ROIA)



## ROIA

- ✓ High Performance Scalar Core
- ✓ RISC-V : RV64GC+ RVV-1.0 + addition ext..
- ✓ Long Vector Unit for HPC workload
- ✓ Matrix Unit Support (TBD)
- ✓ HBM & LPDDR options
- ✓ UCIE I/F for Chiplet integration in SiP
- ✓ High Performance Coherent NOC

# ROIA BASED SYSTEM IN PACKAGE (HBM VERSION)



# NEC-OPENCHIP SOFTWARE COLLABORATION

**NEC**

VECTORIZER TECHNOLOGY  
COMPILER OPTIONS  
PRAGMAS  
FTRACE/PROGINF

OPENMP/MPI  
NLC LIBRARIES  
BLAS, FFT, LAPACK,  
STENCIL LIBRARIES,  
DENSE SOLVER, ...

KNOWLEDGE ON USER CODES  
STRONG USER RELATIONS

C/C++, FORTAN COMPILER  
OPTION/PRAGMA COMPATIBILITY

NUMERICAL LIBRARIES

OPEN & SECURE ENVIRONMENT  
OS/SYSTEM SW

AI SDK/ APPLICATIONS

HPC APPLICATIONS

 **openchip**

CLANG FRONTEND  
LLVM-IR TECHNOLOGY  
INTRINSICS OPTIMIZATION

OS/SYSTEM SW/OSS

WW SOFTWARE TALENT  
AI EXPERTISE

EXPERIENCE IN  
AUTOMOTIVE & TELECOM

EXPERIENCE IN SECURITY



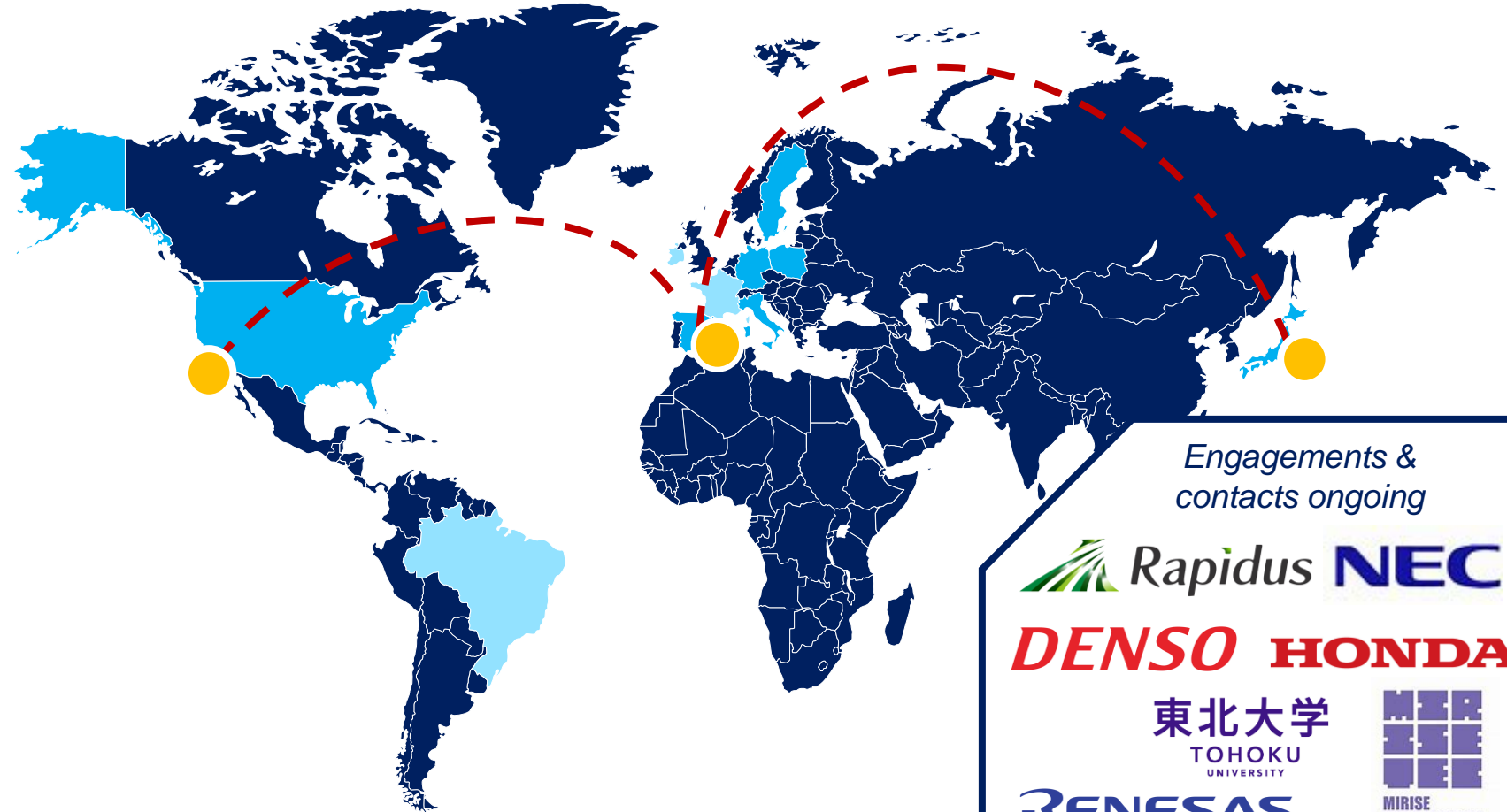
# OPENCHIP IN JAPAN

# Openchip International Expansion

Cultivating an Iron Triangle

## Aiming to be a Global Leader

- **+175 employees** from **22 nationalities** in an ultra-competitive labor market.
- **Openchip, Ventana Micro & NEC** represent an example of innovative technologies that, combined, could bring a **unique value proposition** to address multiple markets: EU, JP and US.
- The alliance with **NEC** and **Rapidus**, would represent a strength that beyond **Innovation** and **Technology**, could bring the values of **Resilience** and **Trust** in a world that is changing.



Engagements & contacts ongoing

**Rapidus** **NEC**

**DENSO** **HONDA**

**東北大学**  
TOHOKU UNIVERSITY

**RENESAS**

... because Silicon Valley continue being Silicon Valley, and Japan is the 3<sup>rd</sup> economy of the world.



# CALL FOR ACTION

## CALL TO ACTION



Do you want join us ? - [recruitment@openchip.com](mailto:recruitment@openchip.com)  
Do want to do an Internship with us? - [academy@openchip.com](mailto:academy@openchip.com):

SW Emulation

HW Emulation

Do you want to have early access to SDP ?

BER43

Applications

Reach out to us as - [info@openchip.com](mailto:info@openchip.com),



**Thanks!**

Elektronik  
cr103.com

Elektronik  
cr103.com

# BACKUP SECTION

Elektronik  
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# NEC-OPENCHIP ARCHITECTURE COLLABORATION

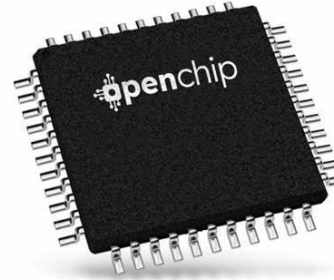
## POWERFUL CORES

- RISC-V RV64GC+RVA23 COMPLIANT
- VECTOR ARCHITECTURE
  - NEC+OPENCHIP COLLABORATIVE WORK
  - RISC-V VECTOR EXTENSION 1.0
  - OUT OF ORDER VECTOR EXECUTION UNIT
- POWERFUL SCALAR PROCESSING UNIT
- OPENCHIP AI EXTENSION
- HBM4/4E MEMORY

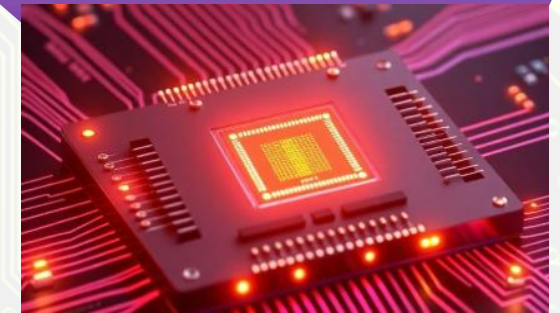
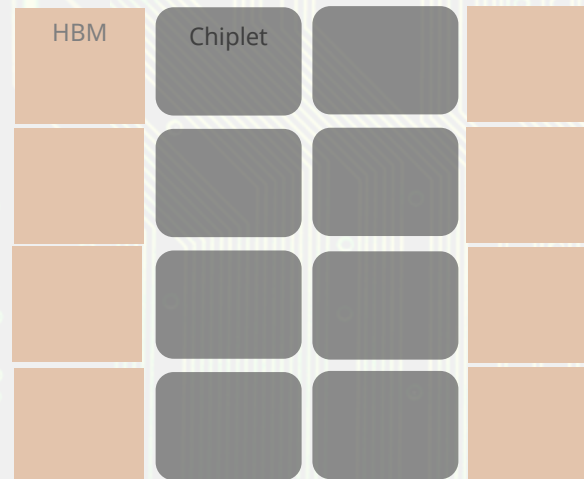
## MULTI-CHIPLET CPU

- 1-8+ CHIPLETS ON LSI
- OCT COHERENT NETWORK
- IO HUB CHIPLET

 openchip

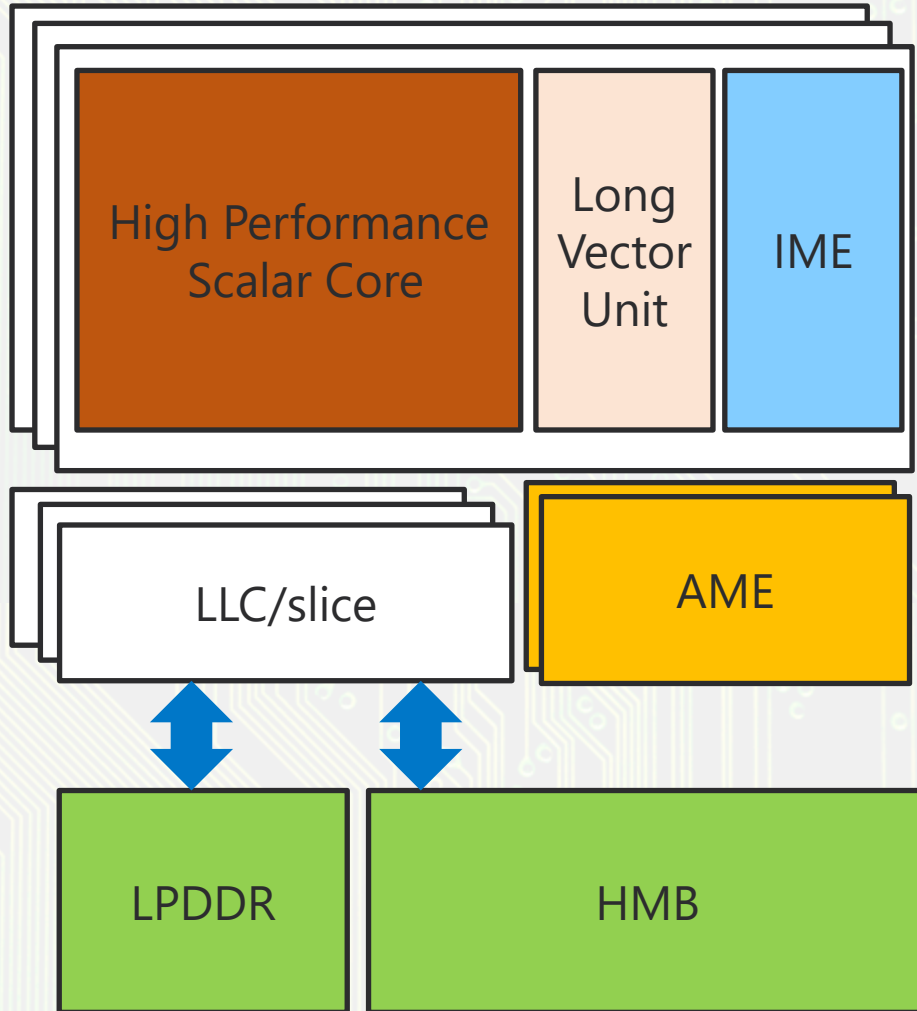


**NEC** Vector architecture



 openchip **VECTOR**

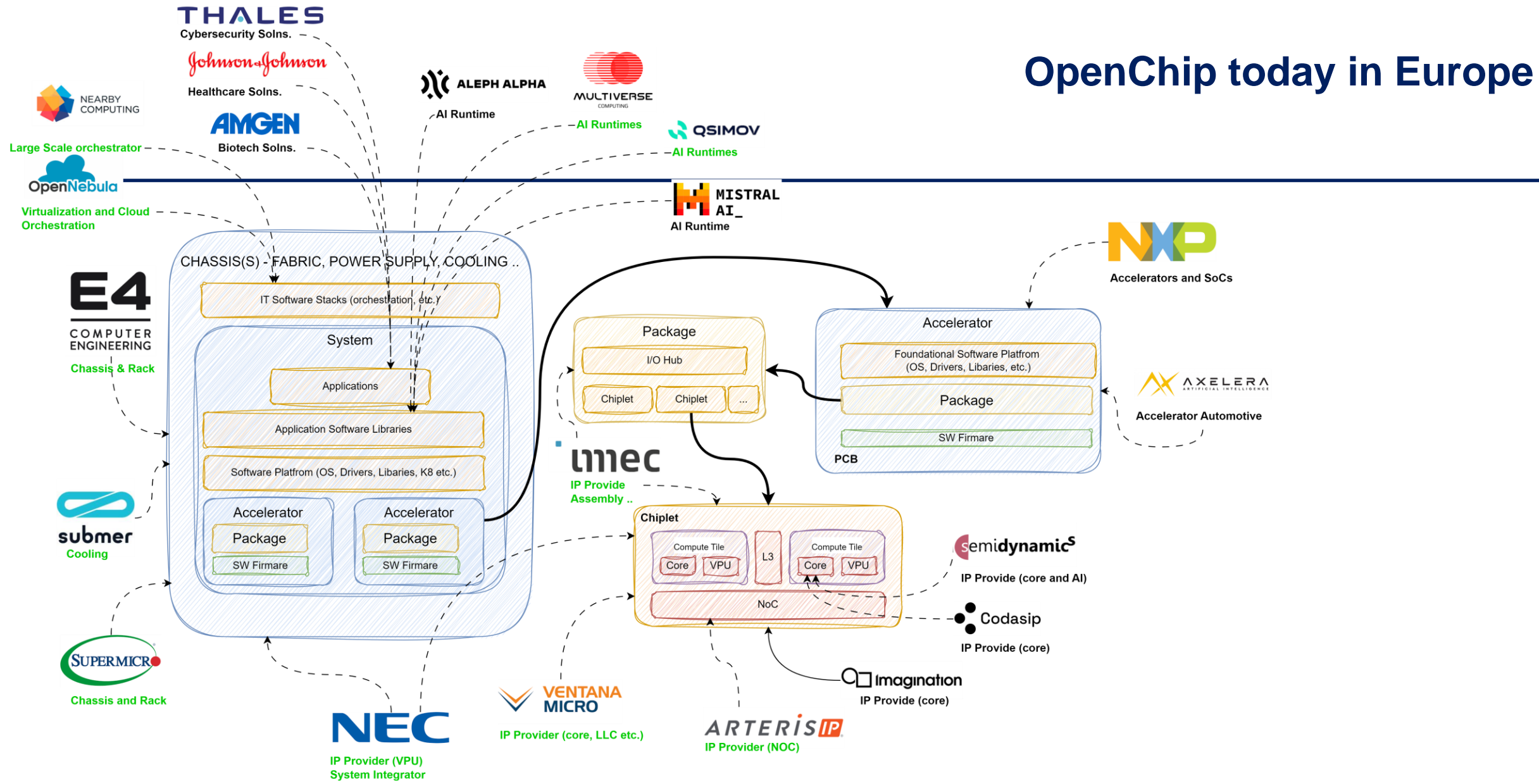
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# OpenChip today in Europe



In green the companies that OCT is currently working with to stitch a comprehensive and holistic system product.