# EPI UPDATE

BUSINESS CLUB, ASPROM

**PARIS, JANUARY 15TH, 2020**



PHILIPPE NOTTON / GM EPI – SIPEARL CEO

NSA May Have Backdoors Built Into Intel And AMD Processors

*The New York Times*

## U.S. Blacklists More Chinese Tech Companies Over National Security Concerns

By Ana Swanson, Paul Mozur and Steve Lohr

June 21, 2019

阅读简体中文版 · 閱讀繁體中文版

WASHINGTON — The Trump administration added five Chinese entities to a United States blacklist on Friday, further restricting China's access to American technology and stoking already high tensions before a planned meeting between President Trump and President Xi Jinping of China in Japan next week.

The entities are one of China's leading supercomputer makers, Sugon; three subsidiaries set up to design microchips, Higon, Chengdu Haiguang Integrated Circuit and Chengdu Haiguang Microelectronics Technology; and the Wuxi Jiangnan Institute of Computing Technology. They lead China's development of high-performance computing, some of which is used in military applications like simulating nuclear explosions, the Commerce Department said.

Car hacking real threat a ever more lo

Infrastrukturen für intelligent v Städte u

Smart City-Datenplattformen

**HPC for**

**Citizens**
Addressing major societal challenges of modern society (e.g. health, more efficient public services, cybersecurity, safer and greener transport)

**Industry**
+ innovative
+ efficient (resources and time)
– costly

**Researchers and scientists**
Underpinning innovation in almost all scientific disciplines
Deeper insights into unexplored systems of high complexity

Currently, **EU industry provides about 5% of supercomputing resources worldwide,** but **consumes one third of them**.

Compared to its competitors in the USA, China and Japan, **Europe** is **underinvesting** in **supercomputing**, with an annual **funding gap of €500–750 million**.[2]

But…

In June 2012, the EU had 4 machines in the global top 10 supercomputers. Today **the fastest system in the EU ranks 13 on the global list** – about 10 times slower than the world's fastest machine.[1]

Source: https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=54437
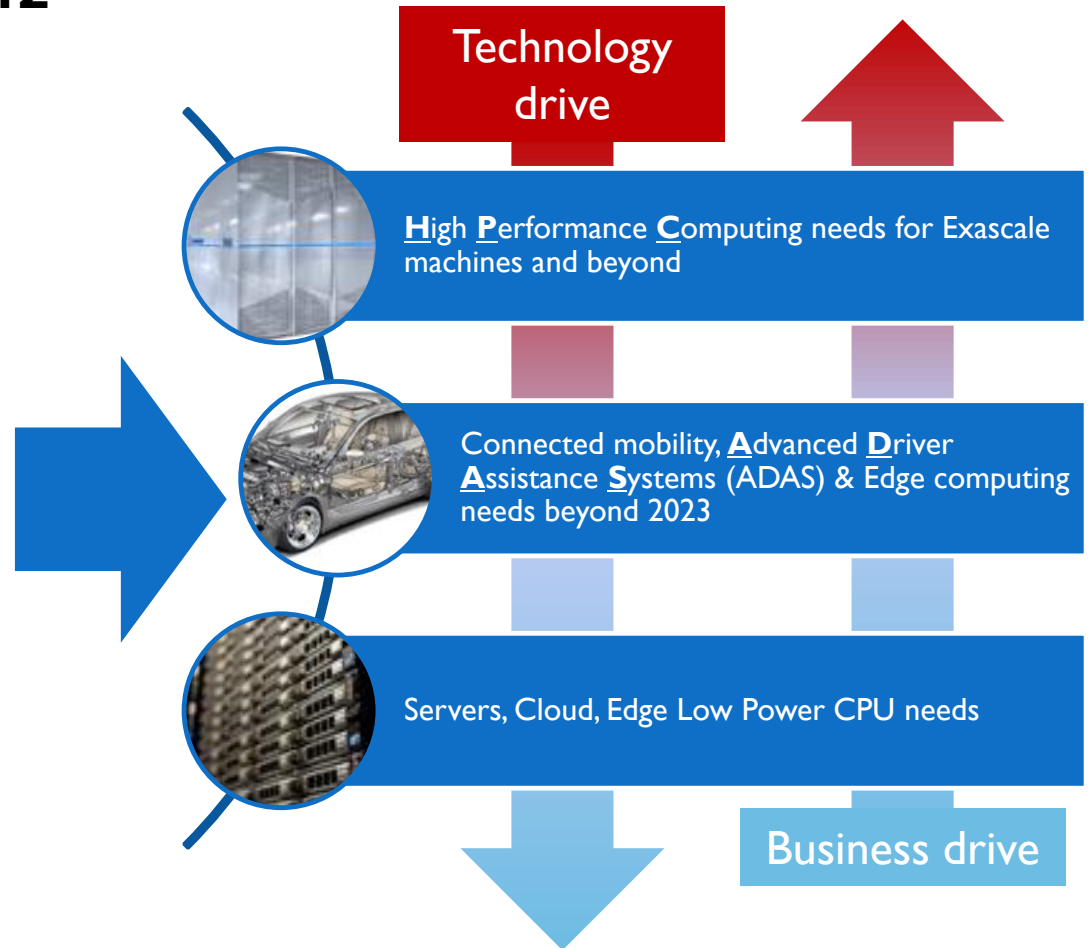
# EUROPEAN PROCESSOR INITIATIVE

- High Performance General Purpose Processor for HPC, ARM based

- High-performance EPI-made accelerator

- Computing platform for edge and autonomous cars

# EC expectations from ICT-42 & EPI value proposal

## EPI expected impacts (as per EC request)

► Get a world class processor for the Exascale machines supplied by EuroHPC in 2023

► Develop a sustainable economic model

EPI is an H2020 program but with industrial mindset & product delivery oriented

**Technology drive**

High Performance Computing needs for Exascale machines and beyond

Connected mobility, Advanced Driver Assistance Systems (ADAS) & Edge computing needs beyond 2023

Servers, Cloud, Edge Low Power CPU needs

**Business drive**

# THE EPI STORY, PART 1

- Having 10 countries, 27 partners working together to win the EU call ?

# THE EPI STORY, PART 2

- Sharing all together a common technical vision in terms of architecture and product ?

# THE EPI STORY, PART 3

- Giving an industrial vision and industrial hand to EPI

# THE EPI STORY, PART 4

- Having access to ARM technology
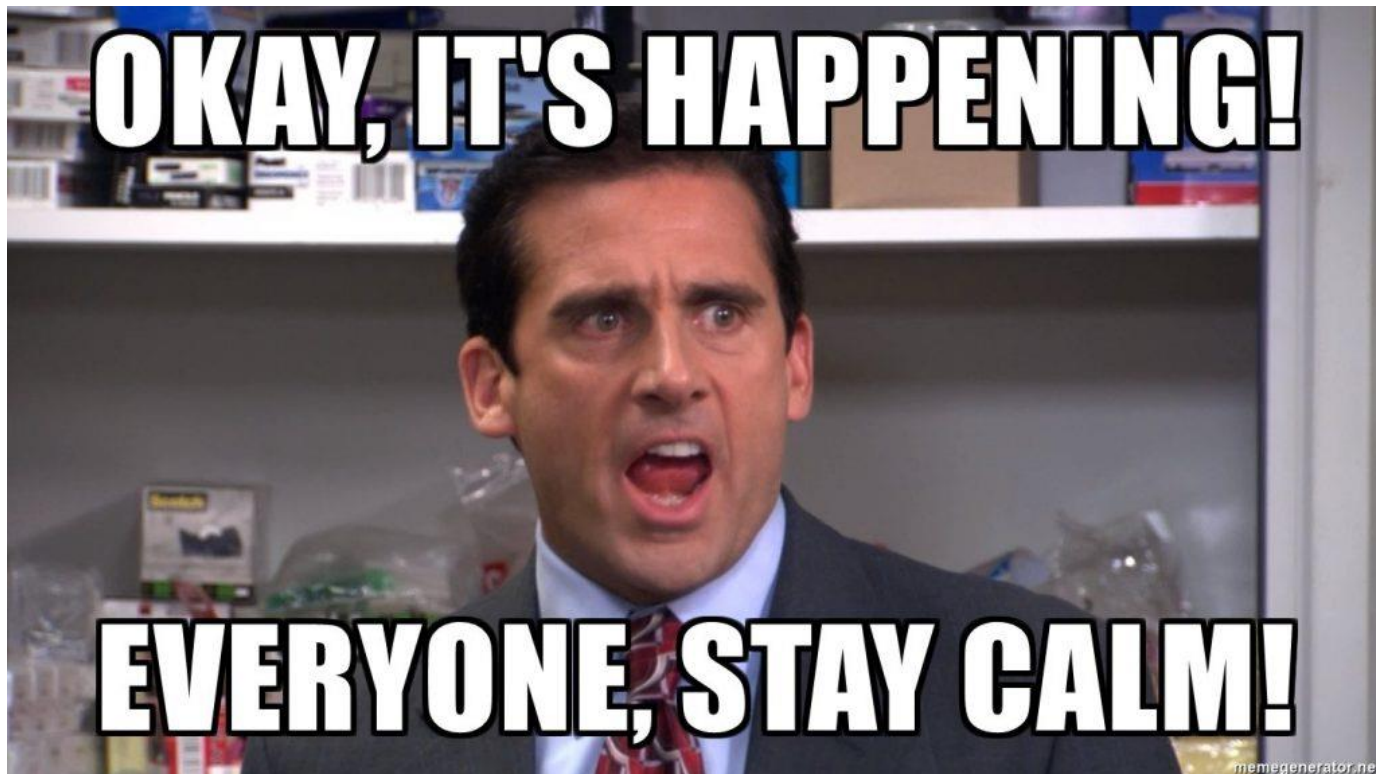
# SO NOW LET'S HAVE THIS EU SOLUTION READY !

# 27 EPI PARTNERS

# EPI FABLESS COMPANY

- EPI's Fabless company
  - licence of IPs from the partners
  - develop own IPs around it
  - licence the missing components from the market (such as ARM IP's)
  - Incorporated now as SIPEARL

  - integrate, market, support & sales the chip
  - generate revenue from both the HPC, IA, server and eHPC markets
  - work on the next generations
  - **The industrial 'hand' of EPI**

# ROADMAP



EPI IP's Launch Pad
&
Pan European Research
Platform for HPC and AI

Gen3 GPP Family

2021

2022-2023

2021-2022

2024-...

**Rhea Family - Gen1 GPP**

EPI Common Platform
ARM & RISC-V
ZEUS Core - N6
External IPs
·
HPC Experimental Platform
Towards Exascale
·
PCIe board
·
Automotive PoC

**Cronos Family - Gen2 GPP**

EPI Common Platform
ARM & RISC-V
TITAN Acc
·
HPC Exascale System
·
Automotive CPU
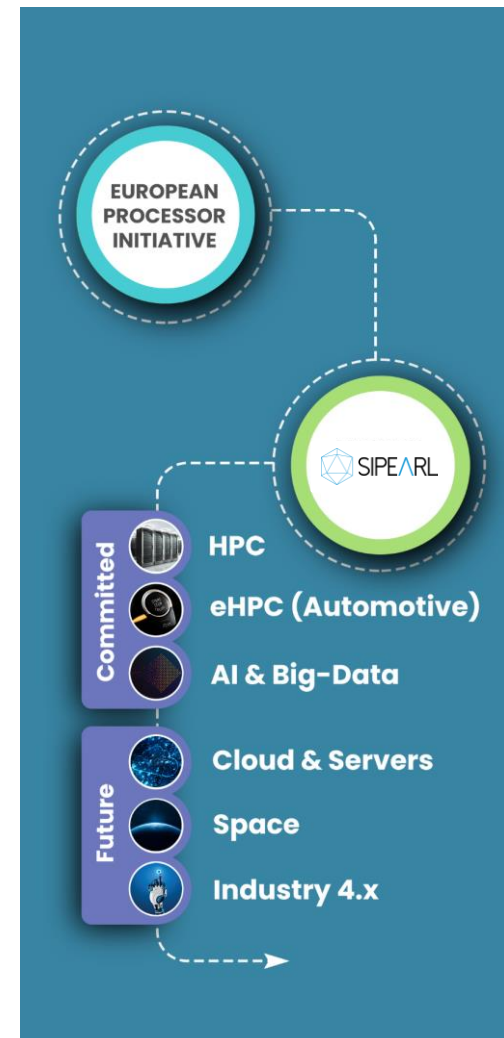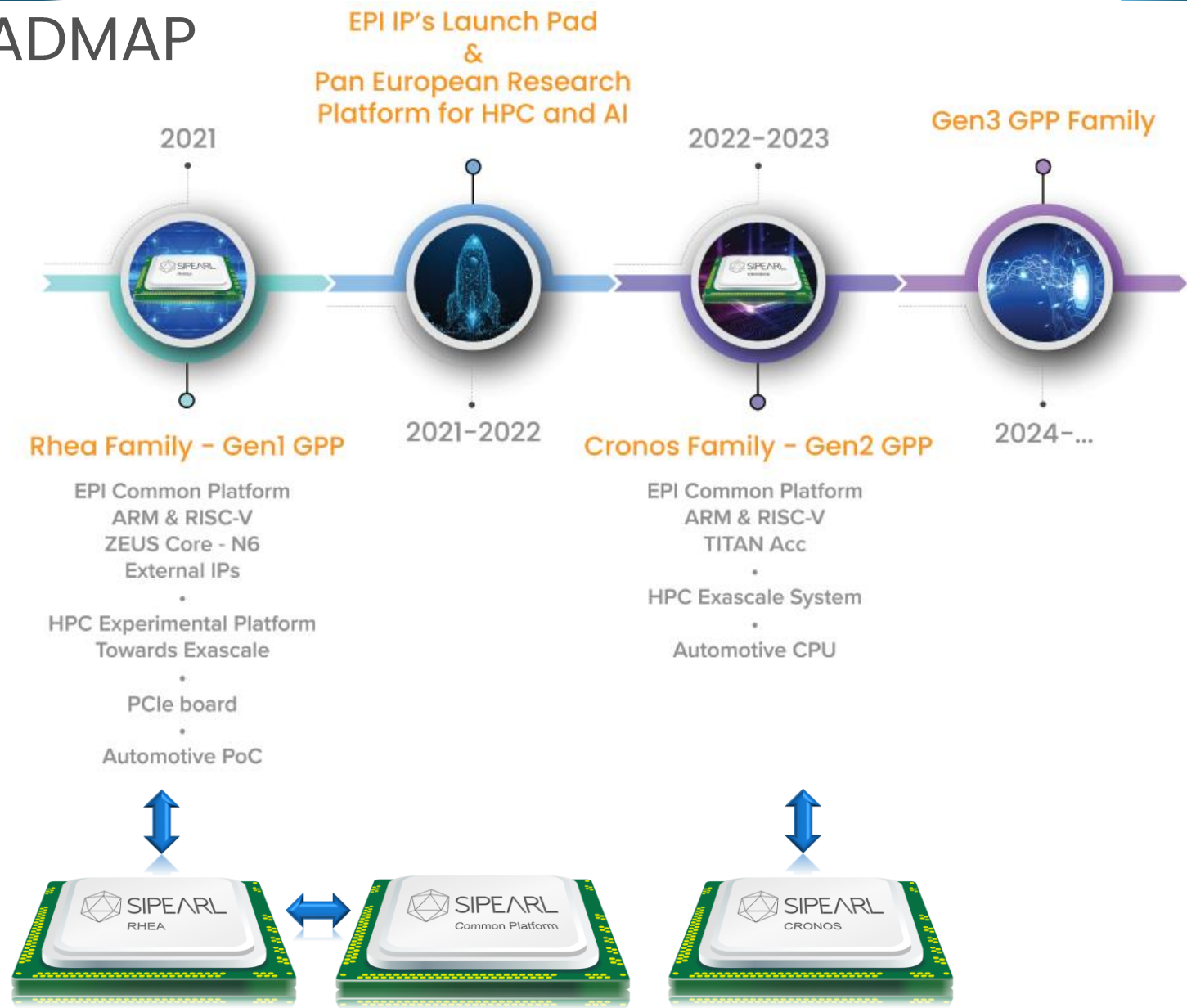
# END2END SECURITY – FROM THE AUTOMOTIVE SYSTEM TO THE CLOUD



Secure channel
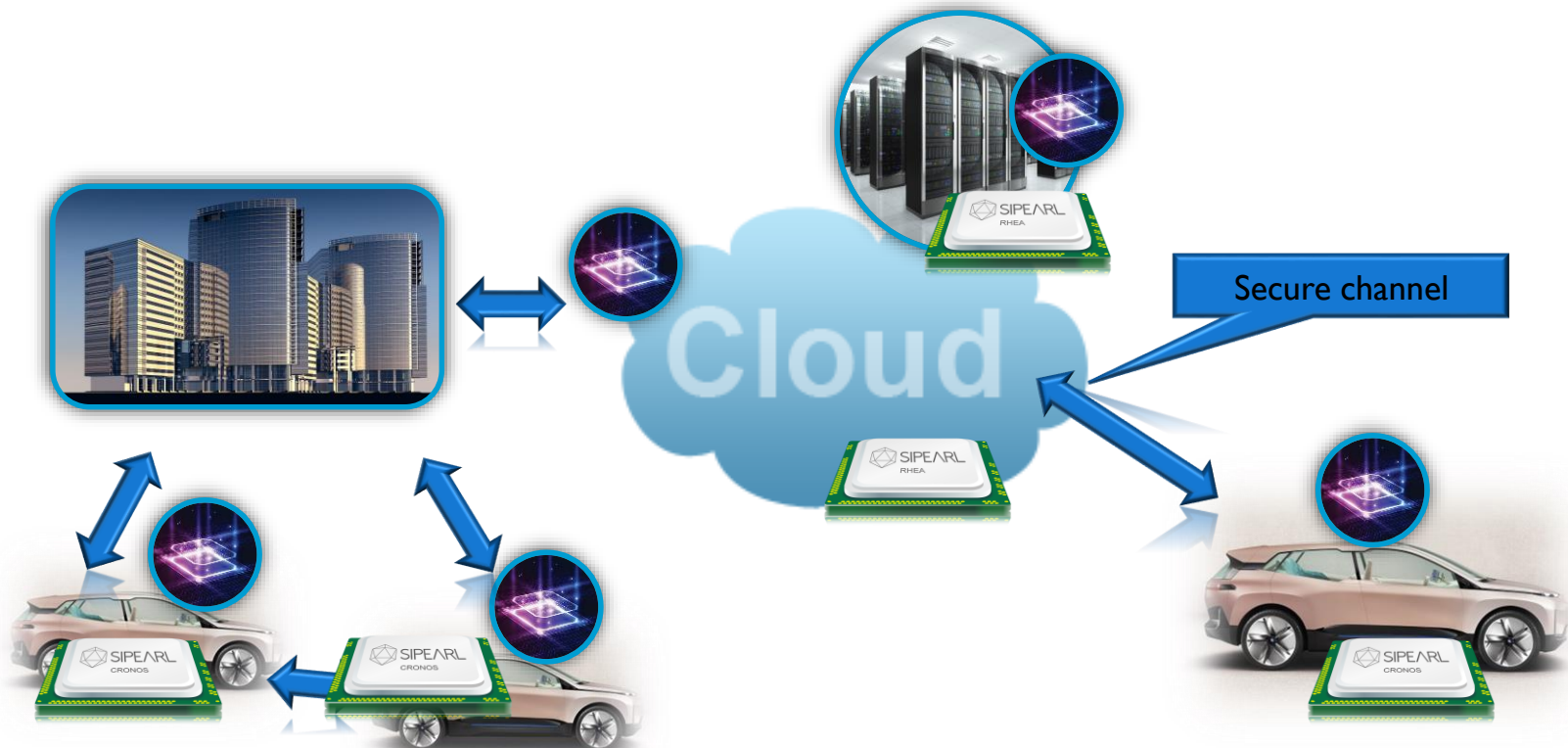
# GPP AND COMMON ARCHITECTURE
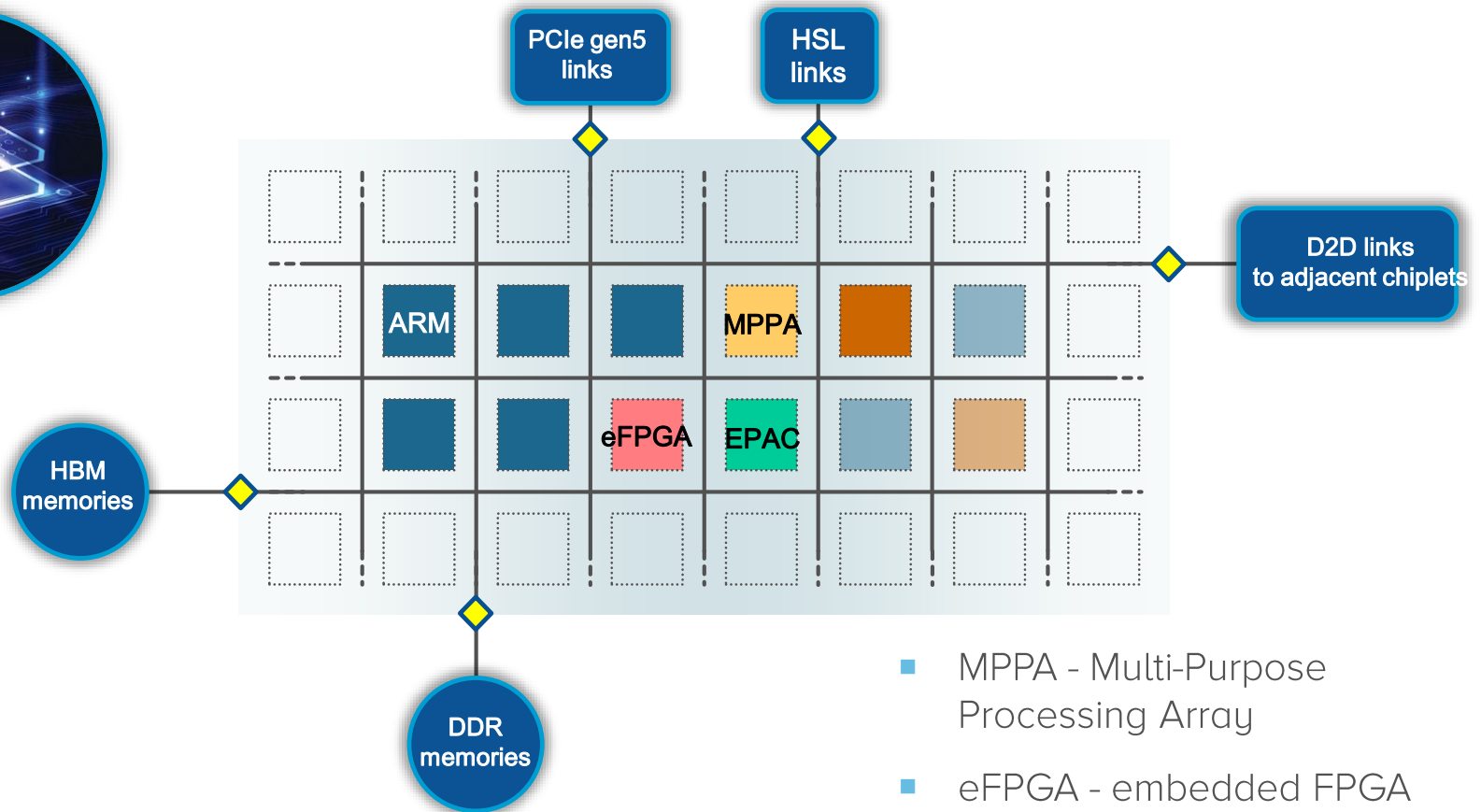


- MPPA - Multi-Purpose Processing Array
- eFPGA - embedded FPGA
- EPAC - EPI Accelerator

# COMMON PLATFORM VISION
# WE ACCELERATE ACCELERATORS !!!



**EPI / SIPEARL RHEA chip**

**Embedded memory (like HBM)**

**Low cost chip from AI start-ups**

HBM Chiplet

HBM Chiplet

AI Chiplet

**AI Start-up accelerator**

**Crypto Accelerator**

**Quantum or photonics accelerator**
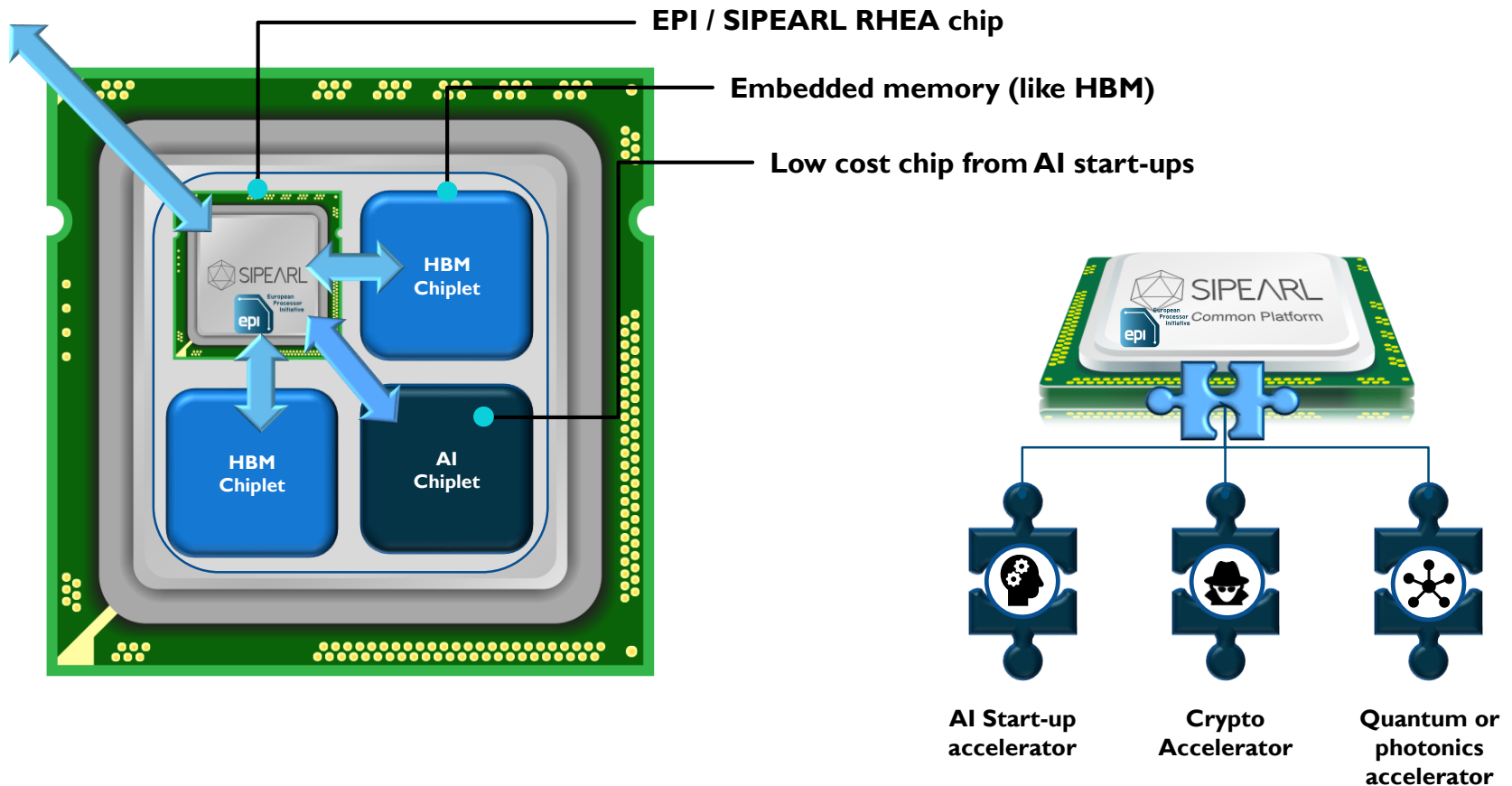
# THANK YOU

- Questions ?



 www.european-processor-initiative.eu

 @EuProcessor

 European Processor Initiative

 European Processor Initiative

# We engine the Future

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# SIPEARL, WHERE WE ARE TODAY

| Q2-2020 | Closure of 1st financial round |  |

| Q1-2020 | Exec team is joining SiPearl |  |
| | Major signature and announcement with Arm | |

| Q4-2020 | SiPearl becomes EPI industrial hand 6,2M€ raised |  |

| June-2019 | SiPearl is incorporated |  |

| **Dec-2018 EPI kick off 80M€ allocation** | EPI kick-off 80M€ H2020 allocations IP / Architecture initiated |  |

| **2017-2018** | European Processor Initiative consortium setup |  |

# BACKUP

# ADVANCED DATA PROCESSING PLATFORM DEVELOPMENT BUDGET
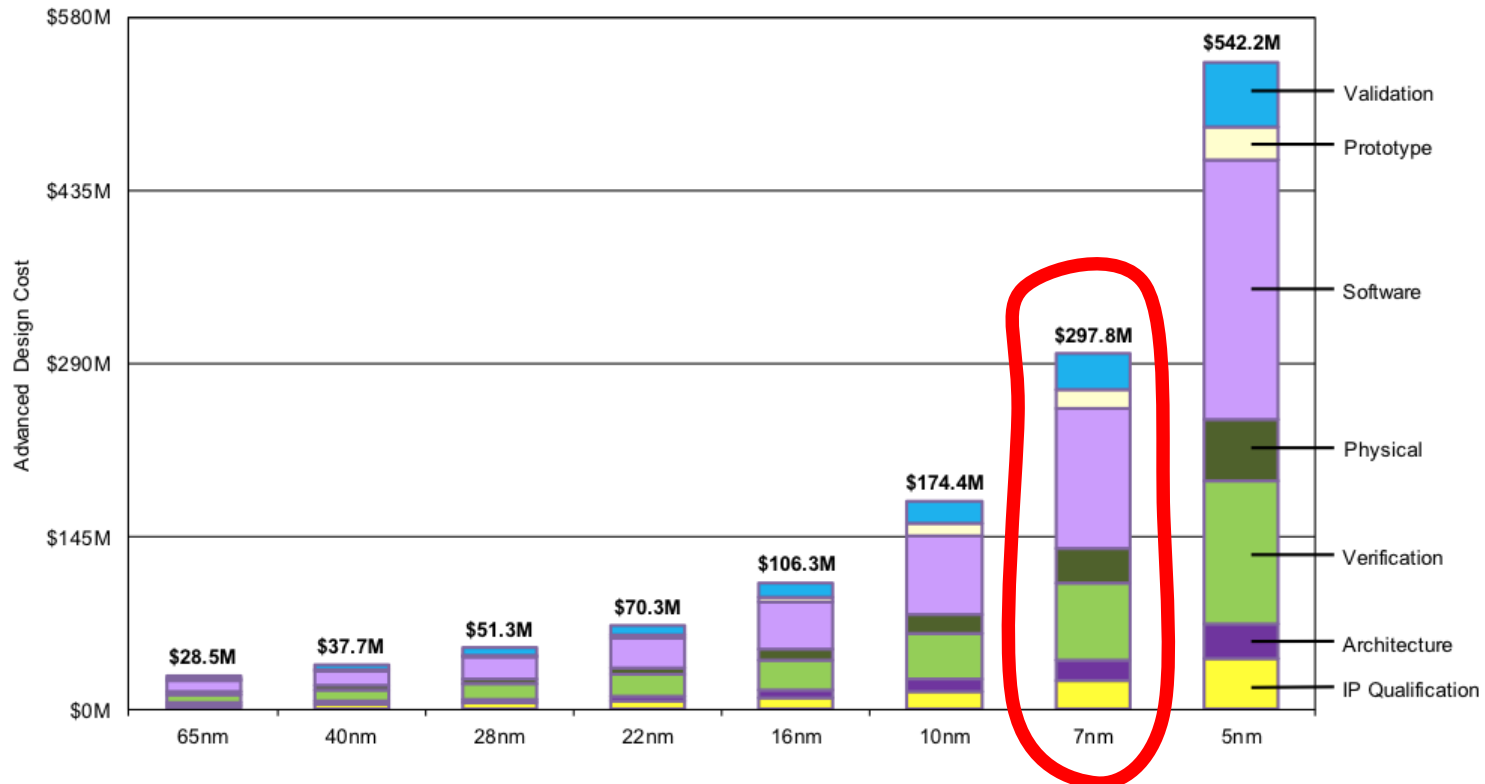


9 digits budget….Building such a Product needs lots of cash…

*Source IBS & semiengineering.com*

The signatory **Member States** commit to **working together** with the Commission for **deploying** an **integrated world-class HPC infrastructure**.

One of the objectives is to have EU exascale supercomputers in the global top 3 ranking by 2022-2023.

**2 1 3**

The EuroHPC declaration has been launched on 23 March 2017 at the Digital Day in Rome.

**#EuroHPC** (High Performance Computing) **Declaration**

*Signatory member states*

Seven countries – France, Germany, Italy, Luxembourg, Netherlands, Portugal and Spain – signed the declaration in March 2017.

Further six countries – Belgium, Slovenia, Bulgaria, Switzerland, Greece and Croatia – have joined them in this effort ever since.

(as of today (Sept. 2018) 17 EU members have joined EuroHPC.

## EuroHPC Joint Undertaking

| | | | | |
|---|---|---|---|---|
| It is a legal and funding instrument to<br><br>• acquire and operate a world-class pre-exascale supercomputing infrastructure;<br><br>• develop exascale supercomputers based on competitive EU technology. | 2019 – 2026<br><br>It is foreseen to **start operating from 2019 until 2026**. | **It will be composed of public members** (until now 20 Member States have signed up) and **private members** (representatives from HPC and Big Data stakeholders, including academia and industry). | It will get a budget of around **€1 billion**, of which 50% comes from the EU and 50% from the participating countries. Private entities will provide conributions in kind. | It will provide **financial support** (procurement or Research & Innovation grants) following **open and competitive calls**. |

# « EU Competition » in one page for SiPearl Gen1 (which is not competition…)

| Segment | ASP (*) | Geo Area | Provider | Software (**) | Silicon Process |
|---------|---------|----------|----------|---------------|-----------------|
| High End *Microprocessor* | US $1K – $10K | 🇪🇺 / 🌍 | SIPEARL / AMD, intel, M MARVELL, FUJITSU | arm / x86, arm | Down to 6/5nm / Down to 7/6/5nm |
| High End *Accelerator* | US $1K – $10K | 🌍 | NVIDIA, GRAPHCORE | NVIDIA CUDA, Proprietary | Down to 7nm |
| Mid End *Accelerator* | US $100 | 🌍 / 🇪🇺 | More than 250… / KALRAY, another brain | Proprietary / Proprietary | Down to 16/22nm |
| Low End *Microcontroller* | US $1 | 🇪🇺 | Infineon, ST life.augmented, NXP | Proprietary, arm | Down to 28/22nm |

(*) ASP = Average Selling Price
(**) Software = Instruction set and software ecosystem

SIPEARL

# Magic Quandrant