EUROPEAN PROCESSOR INITIATIVE

FRAMEWORK PARTNERSHIP AGREEMENT IN EUROPEAN LOW-POWER MICROPROCESSOR TECHNOLOGIES

27 Partners

10 Countries

EUROPE'S AMBITION

Design a roadmap of future European low power processors targeting
- Extreme scale computing,
- High performance big data,
- Emerging applications
- Sovereignty (data, economical, embargo)

MISSION

- European independence in High Performance Computing Processor Technologies
- EU Exascale machine based on EU processor by 2023
- Based on solid, long-term economic model, go beyond the HPC market
- Address the needs of European Industry (Car manufacturing market)
- End-to-end security
- Sovereignty (data, economical, embargo)

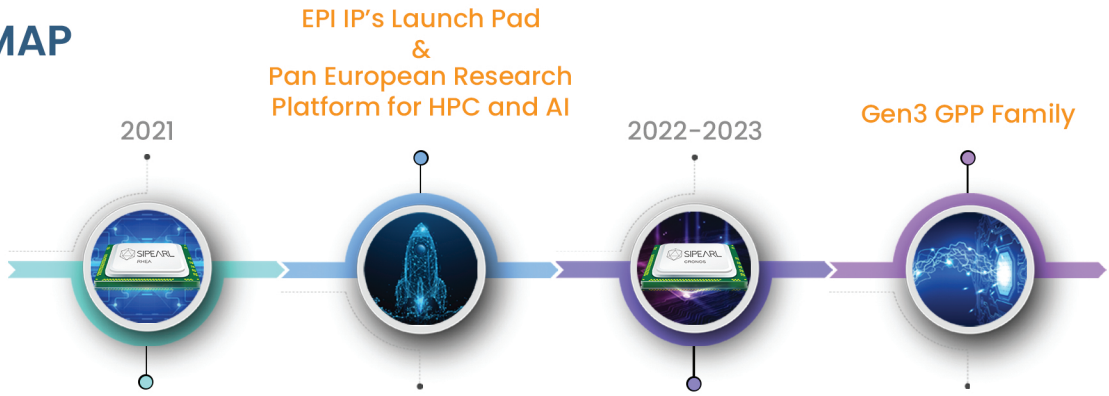
VISION

- High Performance Computing needs for Exascale machines beyond 2022
- Connected mobility and Autonomous Driving computing needs beyond 2023
- Low power CPU needs for Servers and Cloud
- Other markets under exploration (Server, Cloud)

IMPACT

- Strengthening the competitiveness and leadership of European industry and science
- European microprocessor technology with drastically better performance/power ratios
- Tackling important segments of broader and/or emerging HPC and Big-Data markets

ROADMAP



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

Common platform	Codesign, Architecture, System software and key technologies for the Common Platform
General purpose processor	Design and implement of the processor chip(s) and PoC system
Accelerator	Foster acceleration technologies and create building blocks IPs
Automotive	Address automotive market needs and create a pilot eHPC system
Coordination	Management and support activities

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826647

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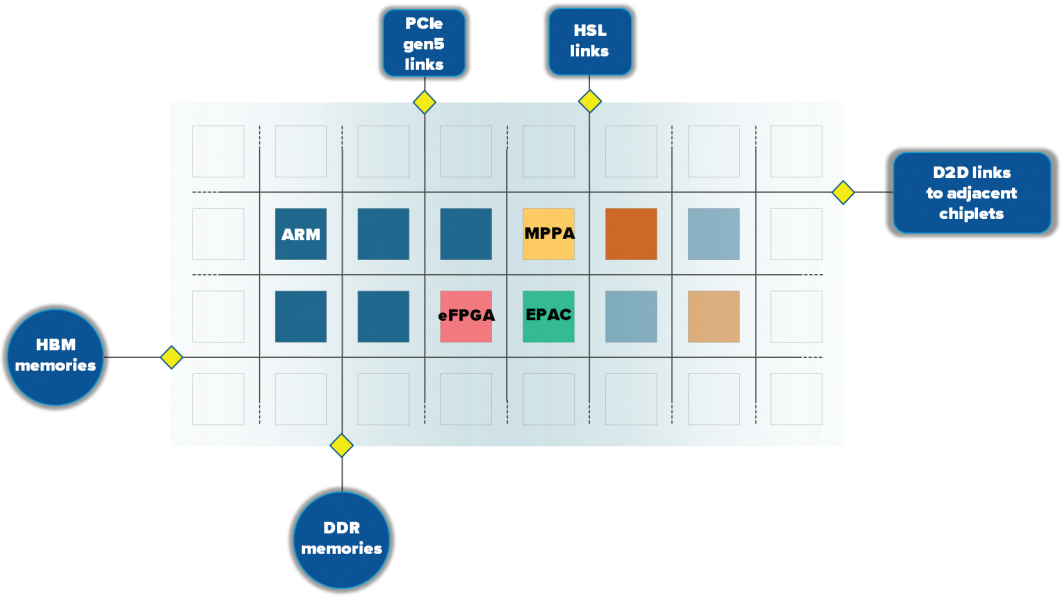
COMMON PLATFORM



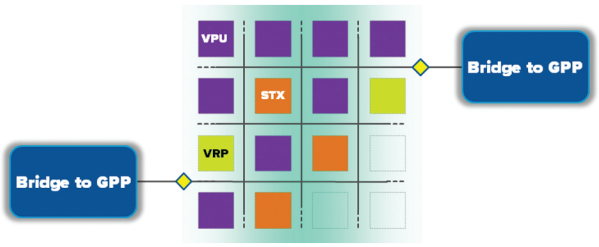
OBJECTIVES

- Common Platform (CP) architecture to accommodate the developed technologies that will include the global architecture specification (hardware and software), common design methodology and global approach for power management and security
- General Purpose Processor (RheaR1), based on ZEUS core from Arm, ready for Exascale pilot machines
- Accelerator technologies (EPAC) based on RISC-V ISA accommodating HPC workloads
- Post-production dynamic hardware updates using programmable logic (eFPGA)
- Real-time acceleration PoC based on MPPA core
- Interfacing with the Automotive MCU
- Efficient power conversion technologies
- PoC systems (test-chip, ref. board, HPC blades, PCIe card and automotive PoC)
- Software activities based on the platform built
- Related research around the EPI project scopes

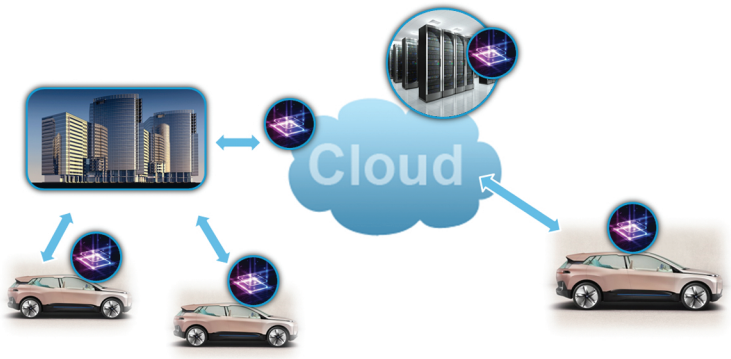
TARGETS

- Energy efficiency for exascale level with general -purpose CPU core in the first EPI GPP chip
- Acceleration technologies for better DP GFLOPS/Watt performance
- Ease of use with adoption of Arm general-purpose CPU cores
- Best memory bandwidth and Byte per Flops ratio to maximize performance and efficiency for any application

ACCELERATOR



AUTOMOTIVE



PARTNERS

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