



THE EUROPEAN APPROACH FOR EXASCALE AGES

THE ROAD TOWARD SOVEREIGNTY

jean-marc.denis@European-processor-initiative.eu

Chairman of the Board

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION PROGRAM UNDER GRANT AGREEMENT NO 826647

THE EUROPEAN COMMISSION & HPC



European Commission President Jean-Claude Juncker

« Our ambition is for Europe to become one of the top 3 world leaders in high-performance computing by 2020 »

Paris, 27 October 2015



Vice President Andrus Ansip

« I encourage even more EU countries to engage in this ambitious endeavour »

Digital Day Rome, 23 March 2017

Ministers from seven MS (France, Germany, Italy, Luxembourg, Netherlands, Portugal and Spain) sign a declaration to support the next generation of computing and data infrastructures

THE PRESIDENT OF THE EUROPEAN UNION HAS SET NEW AMBITIONS

SEPTEMBER, 16TH, 2020



State of the Union Brussels – September, 16th, 2020

- NextGenerationEU is also a unique opportunity to develop a more coherent European approach to connectivity and digital infrastructure deployment.
- None of this is an end in itself - it is about Europe's digital sovereignty, on a small and large scale.
- In this spirit, I am pleased to announce an investment of 8 billion euros in the next generation of supercomputers - cutting-edge technology made in Europe.
- And we want the European industry to develop our own next-generation microprocessor that will allow us to use the increasing data volumes energy-efficient and securely.
- This is what Europe's Digital Decade is all about!

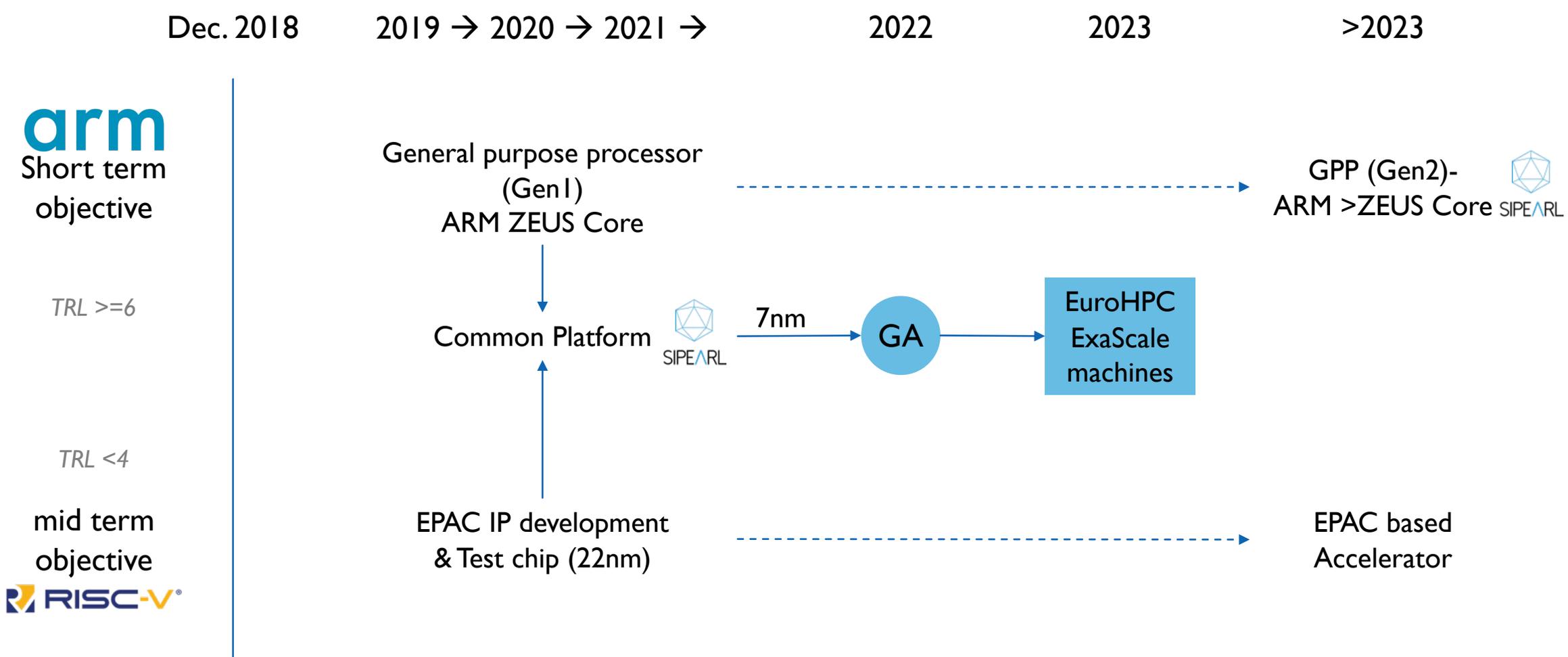
https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_20_1655

EPI OBJECTIVES

- Overall: Develop a complete EU designed high-end microprocessor, addressing Supercomputing and edge-HPC segments
 - Short-term objective
 - supply the EU-designed microprocessor to empower the EU Exascale machines
 - Long-term objective
 - Europe needs a sovereign (=not at risk of limitation or embargo by non-EU countries) access to high-performance, low-power microprocessors, from IP to products
 - EPI has been set to fulfil this objective
 - EPI has to cover all Technical Readiness levels (TRL)
 - TRL 1-3 are for long-term objectives (EU IP)
- *and*
- TRL 4-9 are for short to mid-term objectives (decade) with products designed in EU



FROM OBJECTIVES TO ROADMAP, FROM ROADMAP TO PRODUCTS



27 PARTNERS FROM 10 EU COUNTRIES



Rolls-Royce
Motor Cars Limited



Barcelona
Supercomputing
Center
Centro Nacional de Supercomputación



KALRAY



JÜLICH
Forschungszentrum



semidynamicS
silicon design and verification services



TÉCNICO
LISBOA



Fraunhofer
ITWM



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA



CHALMERS



UNIVERSITÀ DI PISA



FER
UNIVERSITY OF ZAGREB
FACULTY OF
ELECTRICAL
ENGINEERING
AND COMPUTING



COMPUTER
ENGINEERING



GENCI



FORTH
INSTITUTE OF COMPUTER SCIENCE



EXTOLL
latency matters.



Karlsruher Institut für Technologie



PROVE & RUN

ETH zürich

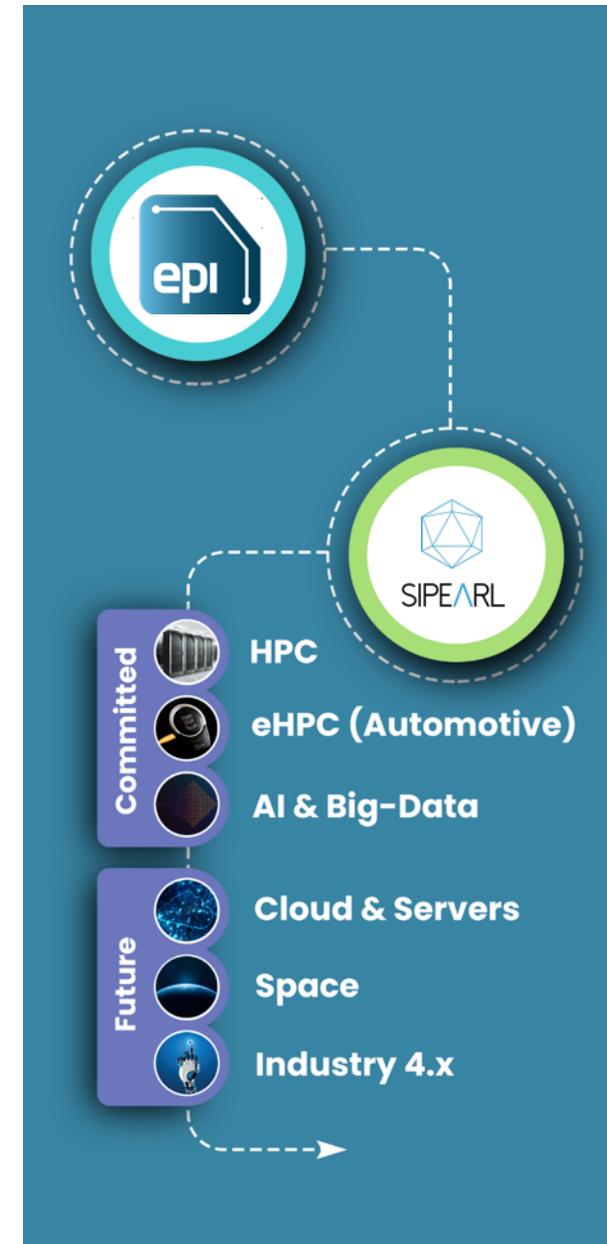


SIPEARL

FROM IPR TO PRODUCTS

FROM EPI TO SIPEARL

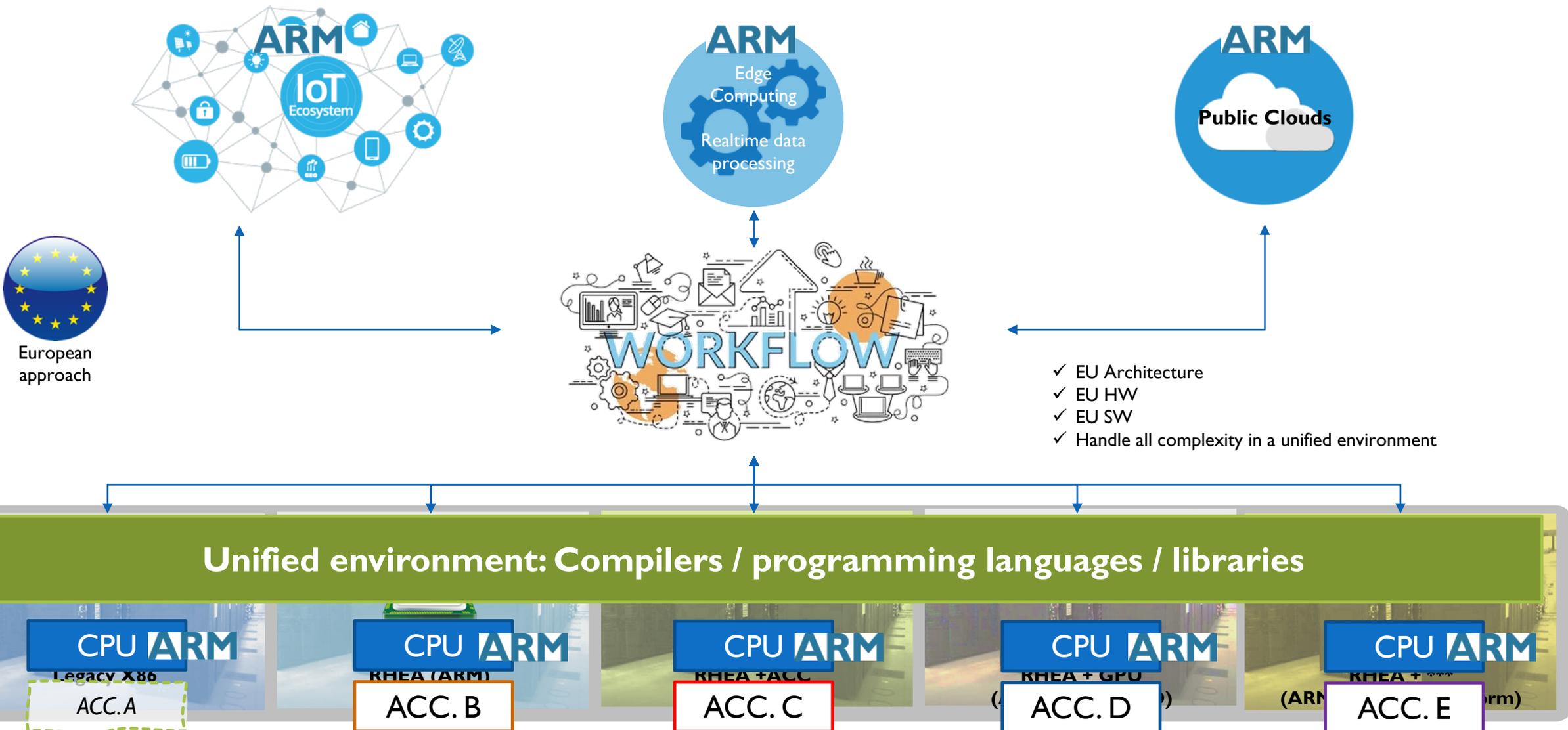
- SIPEARL is
 - Incorporated in EU (France)
 - the industrial and business ‘hand’ of EPI
 - the Fabless company
- licence of IPs from the partners
- develop own IPs around it
- licence the missing components from the market
- Raise in equity the missing budget (~100M€)
- generate revenue from both the HPC, IA, server and eHPC markets
- integrate, market, support & sell the chip
- work on the next generations



TECHNOLOGY

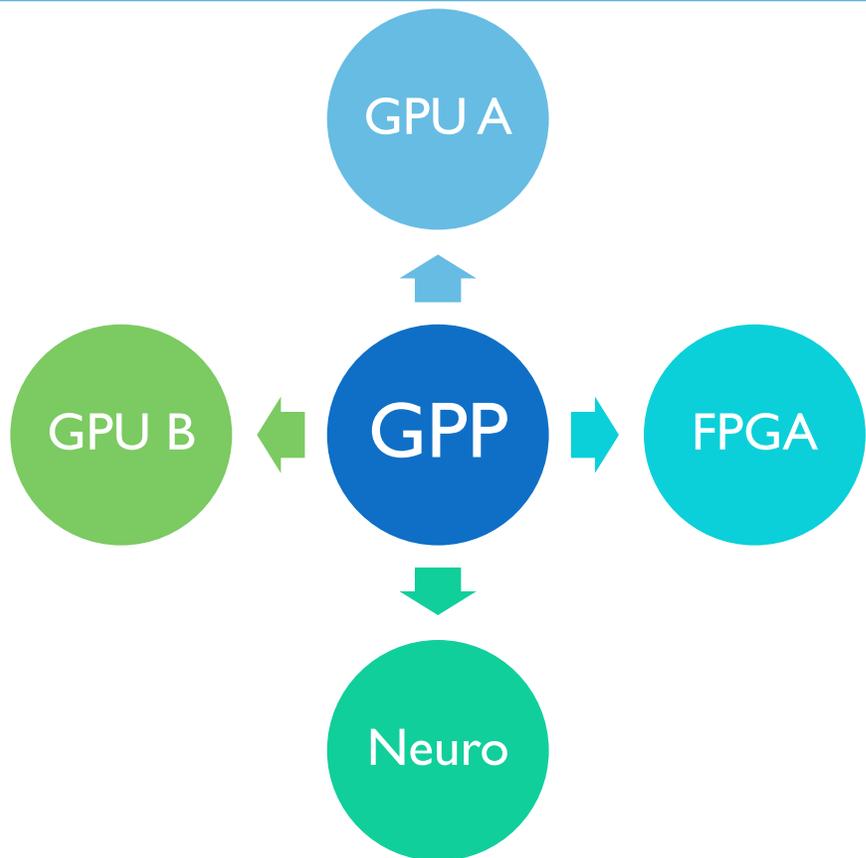


HPC & AI AT EXASCALE: IT'S ALL ABOUT WORKFLOWS AND HYBRID SOLUTIONS



CONSEQUENCES

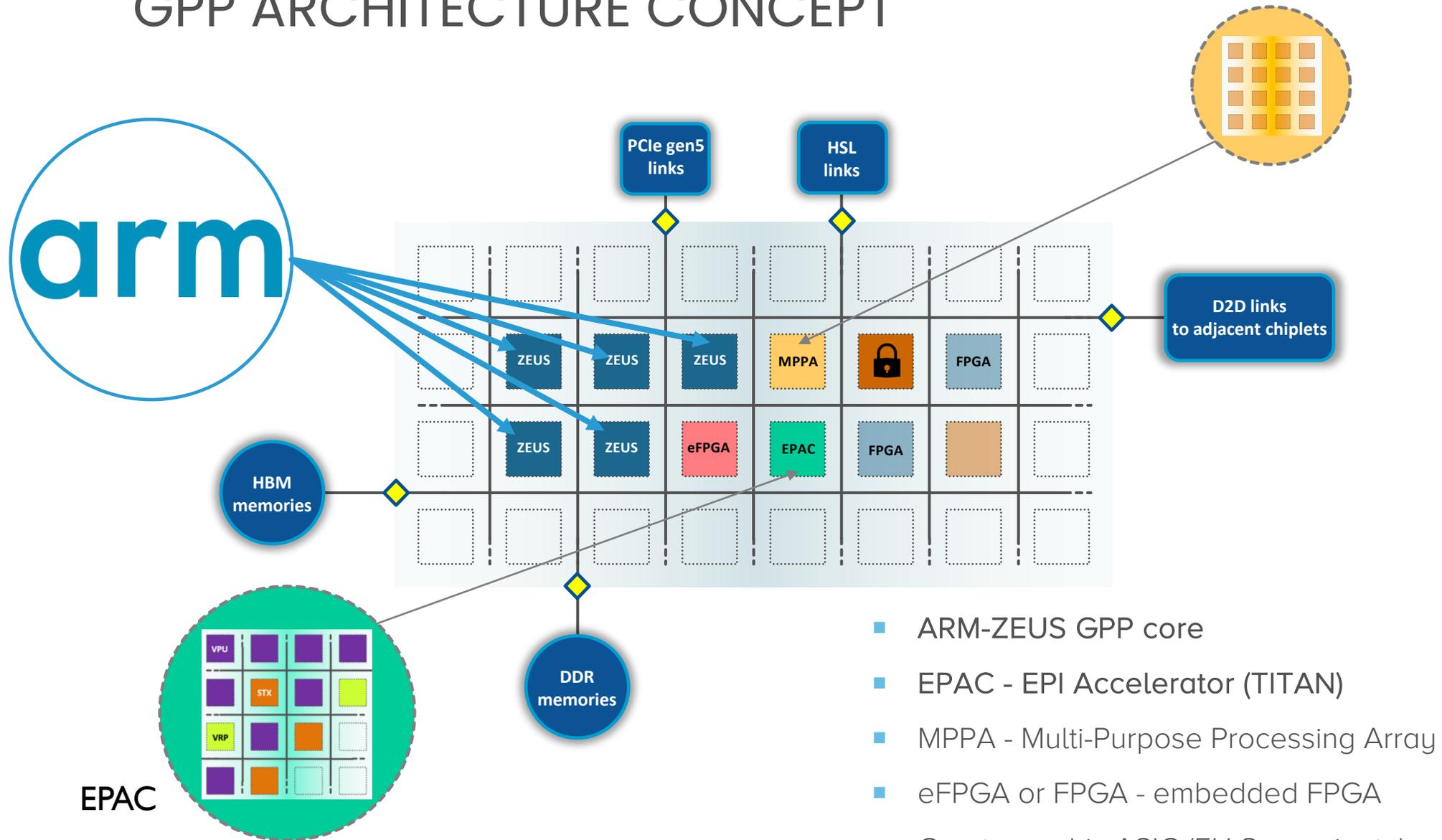
General Purpose Processors
have to be more open



The race to FLOPS is now in the
accelerators area



GPP ARCHITECTURE CONCEPT



- ARM-ZEUS GPP core
- EPAC - EPI Accelerator (TITAN)
- MPPA - Multi-Purpose Processing Array
- eFPGA or FPGA - embedded FPGA
- Cryptographic ASIC (EU Sovereignty)

PERSPECTIVES AND CHALLENGES

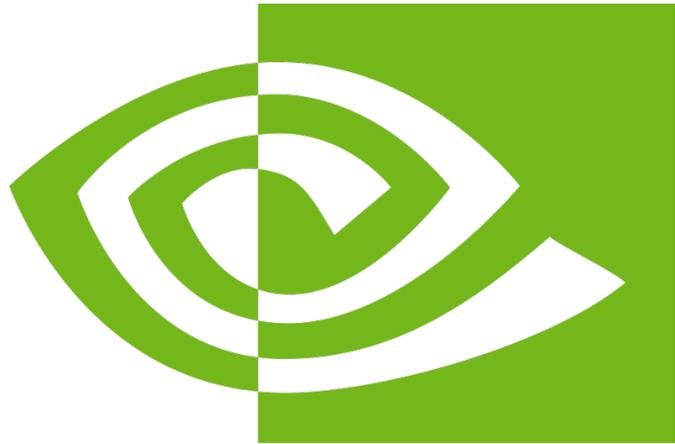


BY 2022-23, EPI DELIVERS!

- The expertise for developing high-end and complex processing units in Europe, after decades of dis-investment
- A General Purpose Processor for HPC machines can be developed in EU by a EU Company (SiPearl)
- We'll be ready to move to the next step: engage on the development on a general purpose processor.



CHALLENGES?

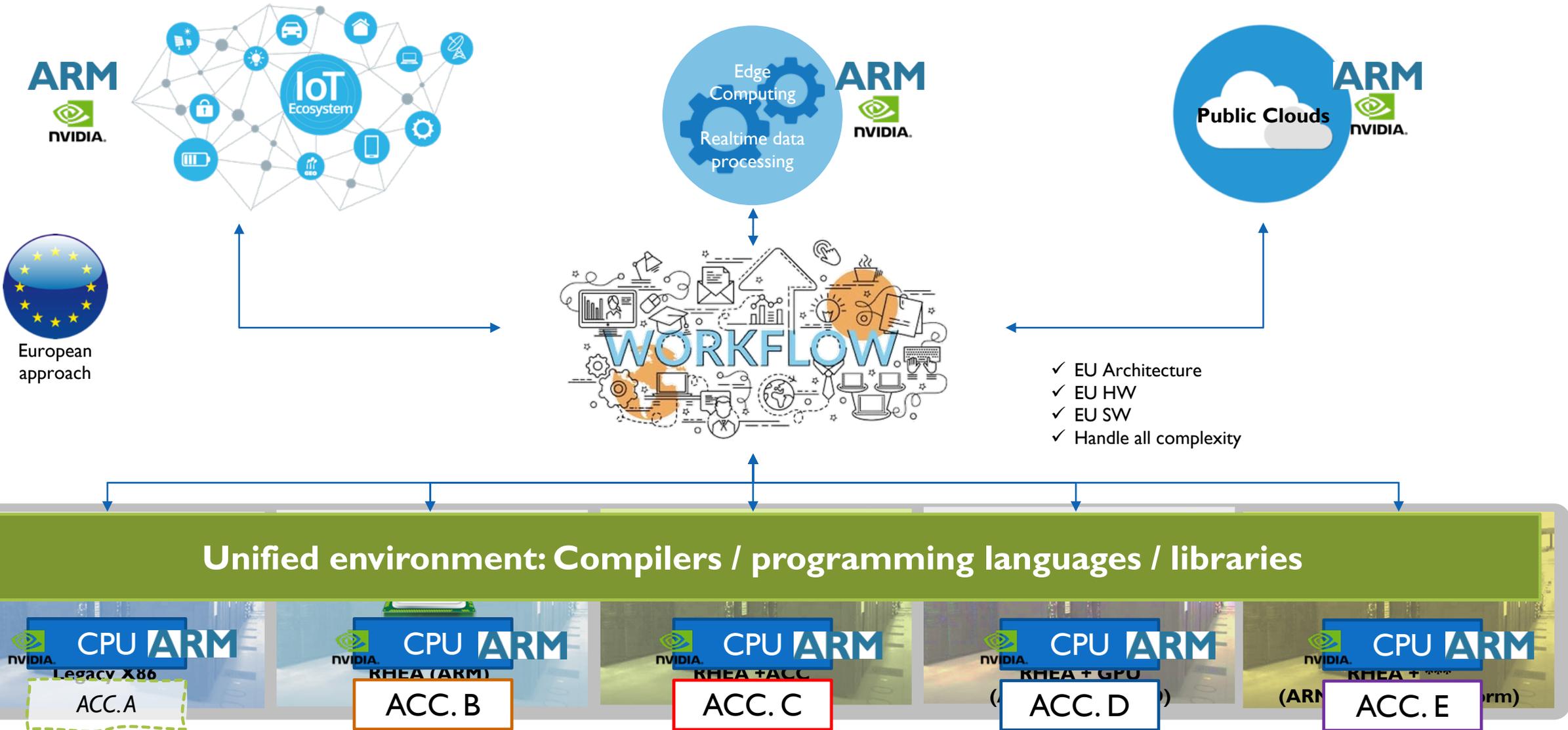


arm

nvidia®

DATAFLOW

UNIQUE ARM/NVIDIA COMBINATION FROM DATA CREATION UP TO DATACENTER AND CLOUD?



THANK YOU FOR YOUR ATTENTION



European Processor Initiative

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