



THE EUROPEAN APPROACH FOR EXASCALE AGES

THE ROAD TOWARD SOVEREIGNTY

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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!

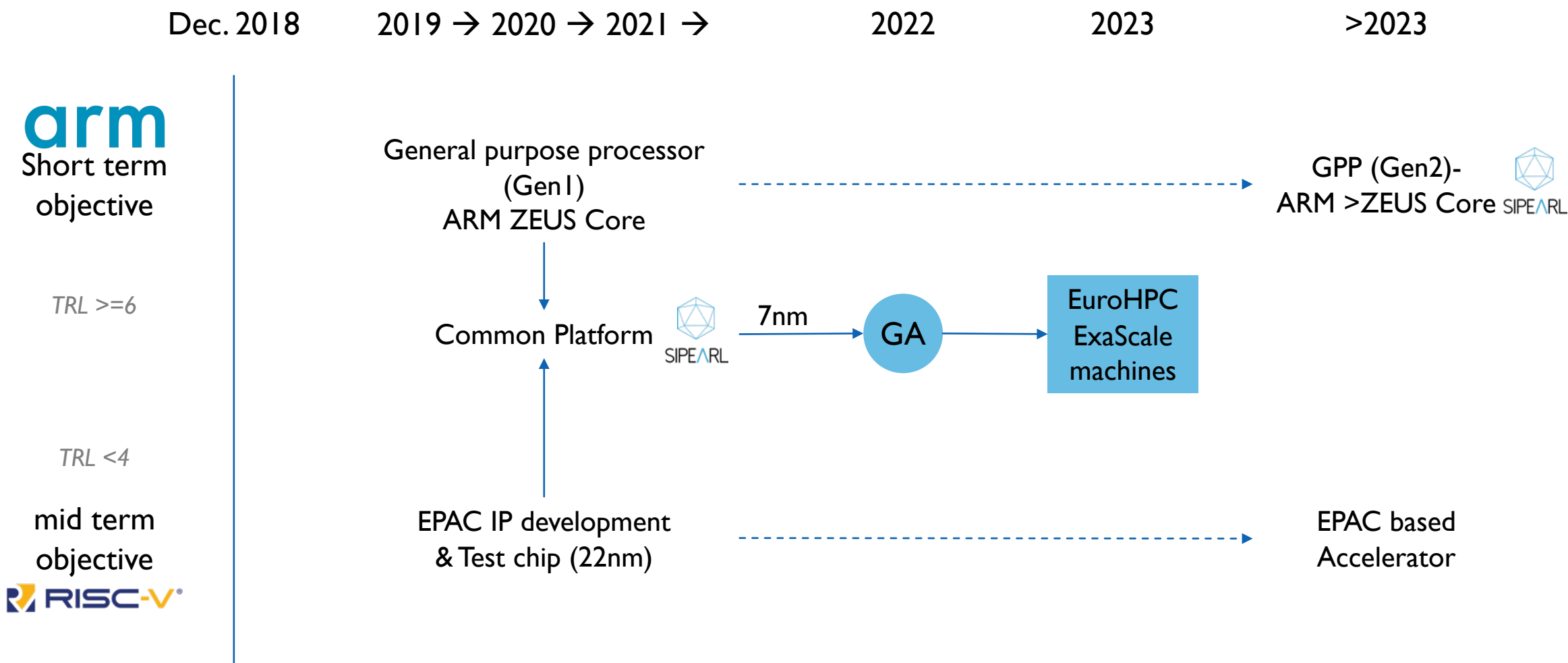
https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_20_1655

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

**BMW
GROUP**



Rolls-Royce
Motor Cars Limited

Atos



**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

E4

**COMPUTER
ENGINEERING**



GENCI



FORTH
INSTITUTE OF COMPUTER SCIENCE



EXTOLL
latency matters.



Karlsruher Institut für Technologie



PROVE & RUN

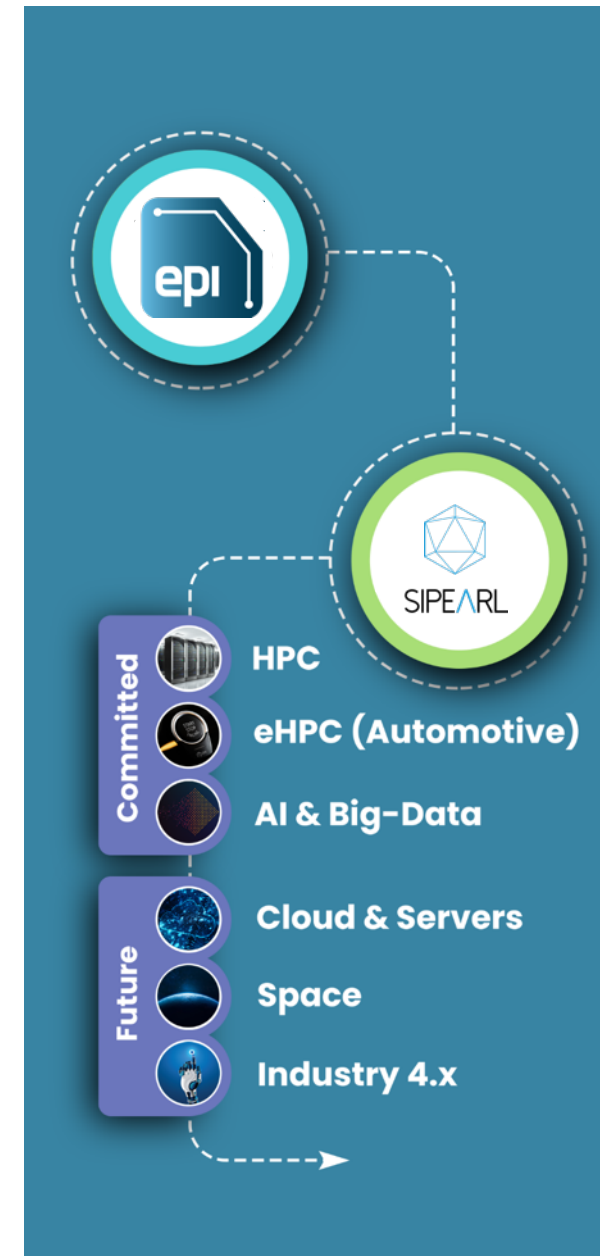
ETH zürich



SIPEARL

FROM IPR TO PRODUCTS FROM EPI TO SIPEARL

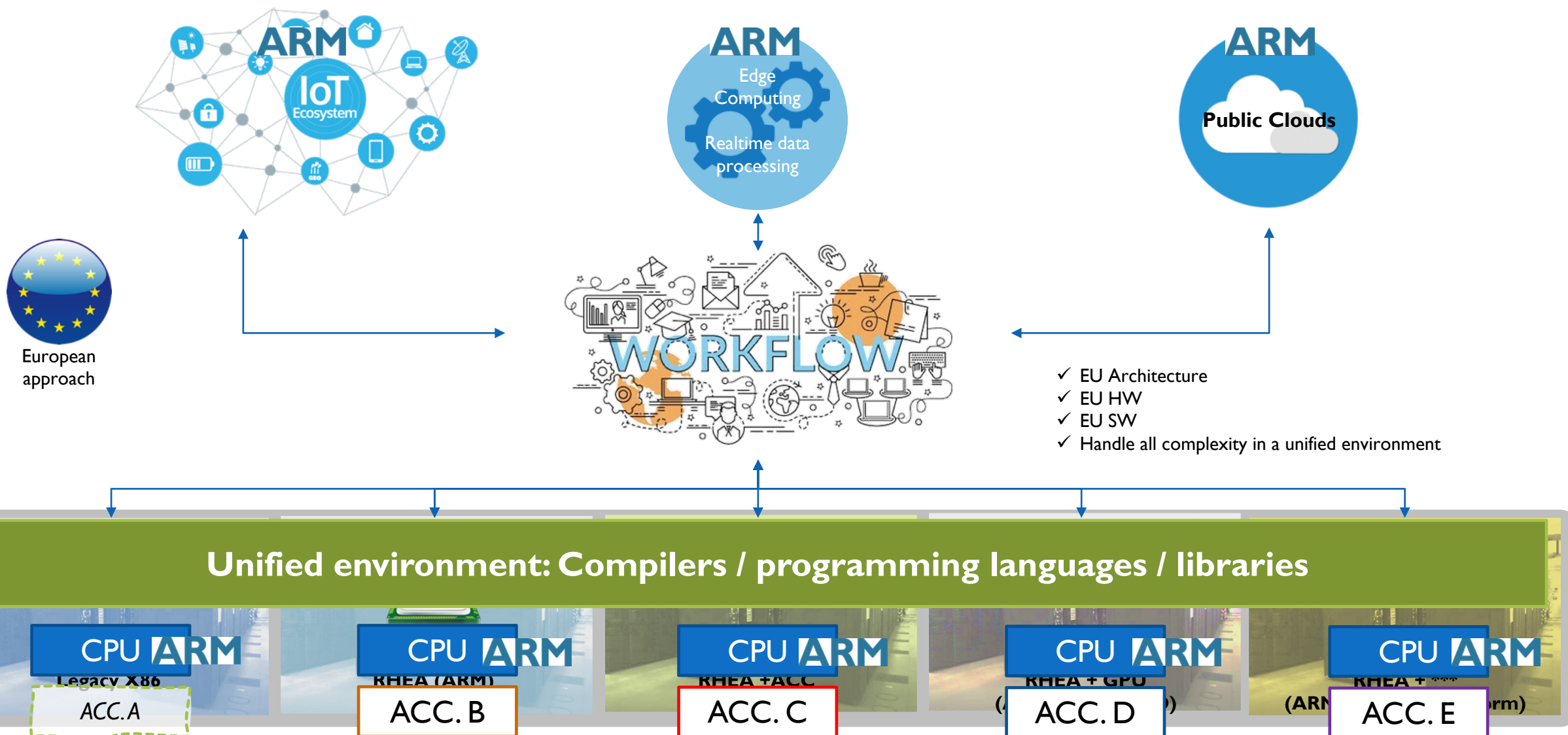
- SIPEARL is
 - Incorporated in EU (France)
 - the industrial and business 'hand' of EPI
 - the Fabless company
- licence of IPs from the partners
- develop own IPs around it
- licence the missing components from the market
- Raise in equity the missing budget (~100M€)
- generate revenue from both the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



TECHNOLOGY

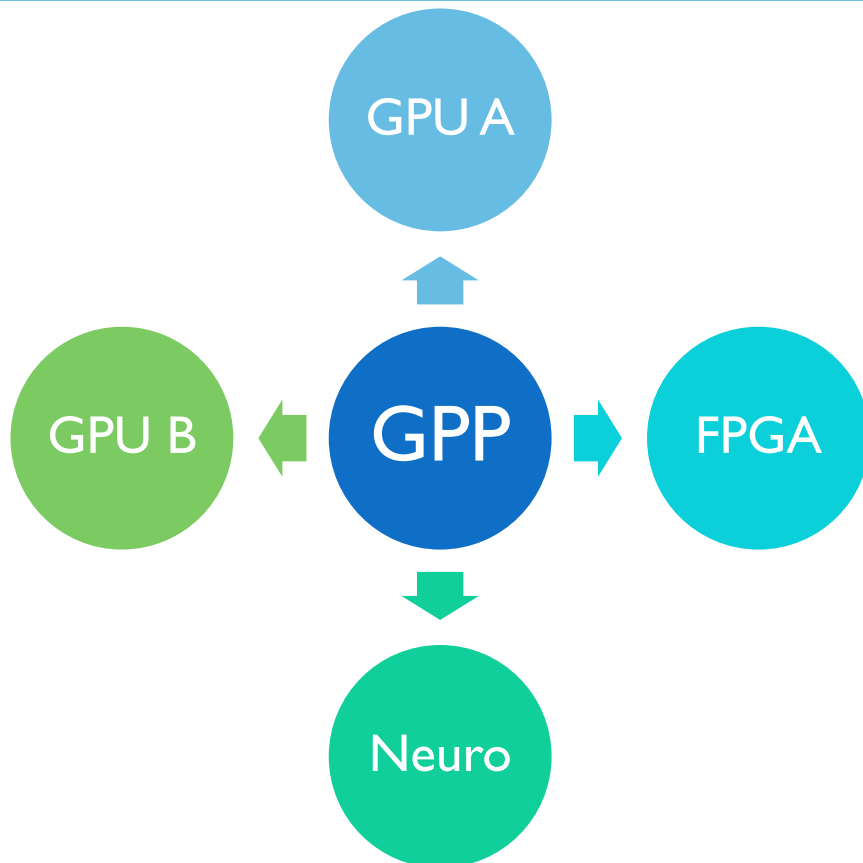


HPC & AI AT EXASCALE: IT'S ALL ABOUT WORKFLOWS AND HYBRID SOLUTIONS



CONSEQUENCES

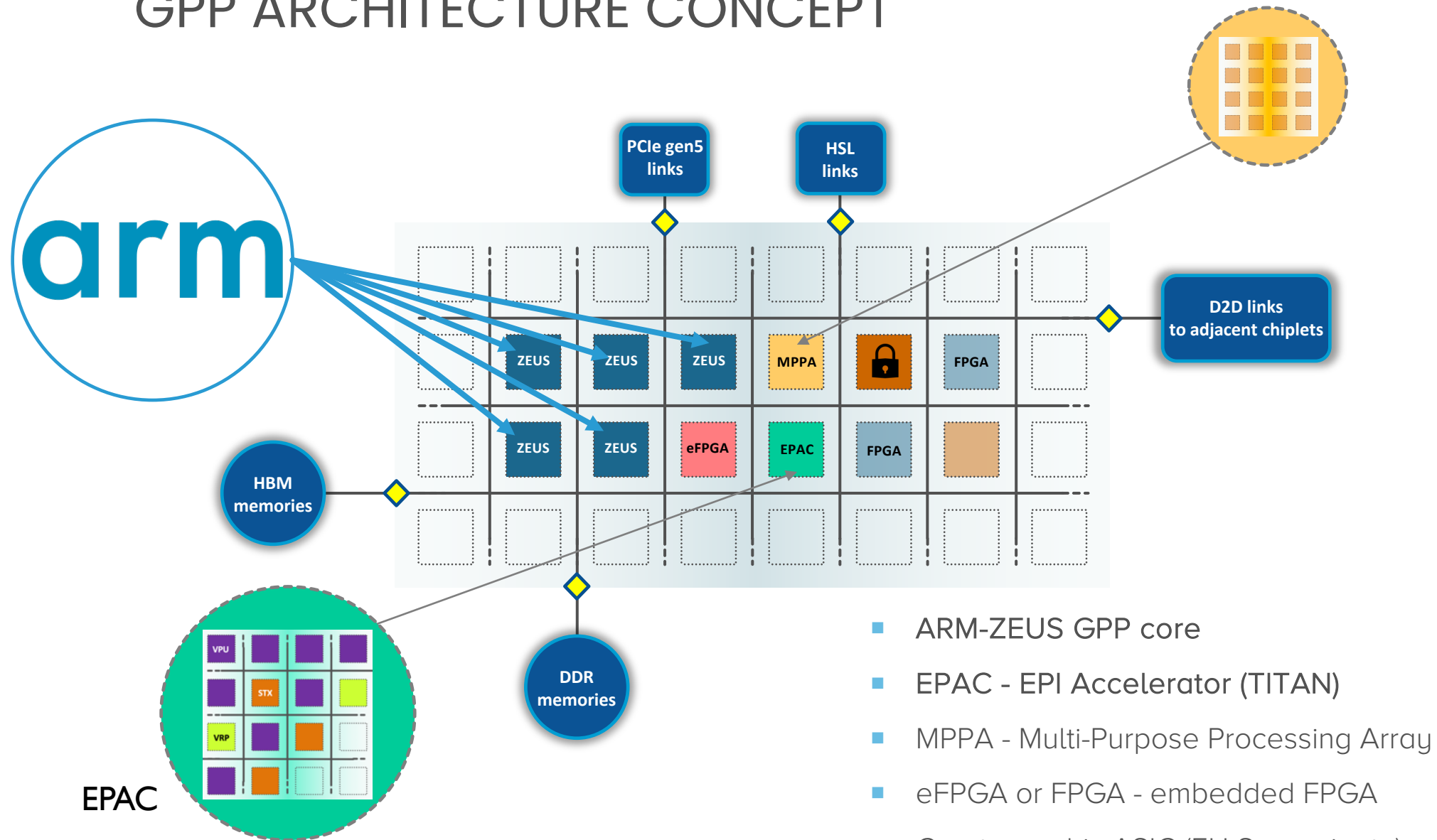
**General Purpose Processors
have to be more open**



**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

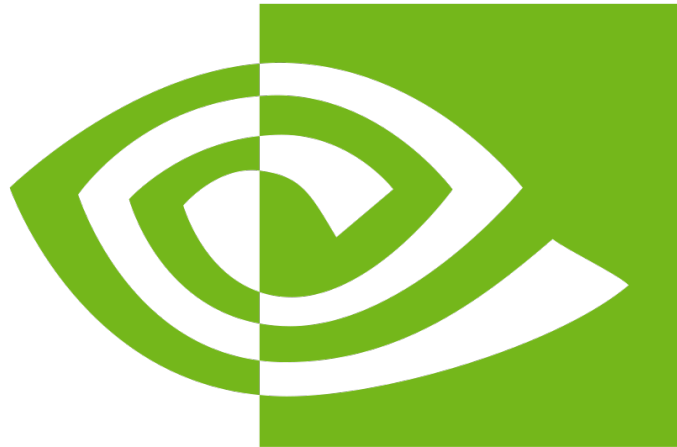


BY 2022-23, EPI DELIVERS!

- 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?

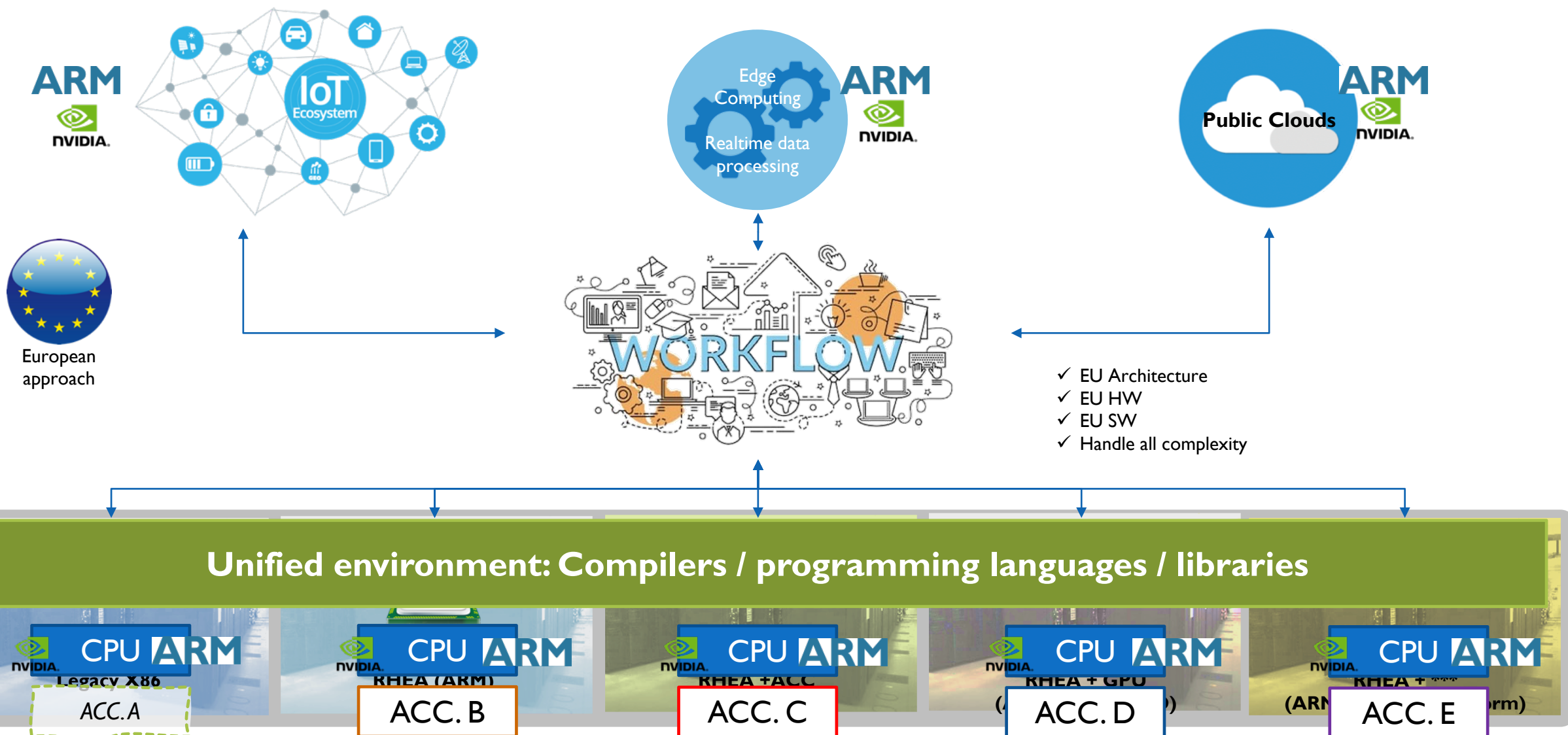


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DATAFLOW

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



THANK YOU FOR YOUR ATTENTION



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