



## EUPEX objectives

- **Co-design** a modular Exascale pilot system
- Build & **deploy** a pilot hardware & software platform integrating European technology
- **Demonstrate** the readiness & scalability of the pilot technology & of the Modular Supercomputing Architecture towards Exascale
- Prepare **applications** & European users to efficiently exploit the future Exascale machines

## Early Access Programme

Phase 1 of our Early Access programme is open! To allow the European applications ecosystem to prepare for the technologies of our Pilot system, we offer access to CEA's Joliot-Curie system with its A64FX partition (similar to the Rhea processors we will use) and to the EUPEX software stack.



## The EUPEX consortium

EUPEX brings together 17 European organisations in a balanced alliance between established European technology suppliers, recognized research centres and universities, European-scale computing centres, and application owners. The project is coordinated by Eviden.



### Follow us

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This project has received funding from the European High-Performance Computing Joint Undertaking (JU) under grant agreement No 101033975. The JU receives support from the European Union's Horizon 2020 research and innovation programme and France, Germany, Italy, Greece, United Kingdom, Czech Republic, Croatia.

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## Covering the full spectrum of required supercomputing technologies with European solutions

### The EUPEX pilot system

Hosted at CEA-TGCC

#### Modular

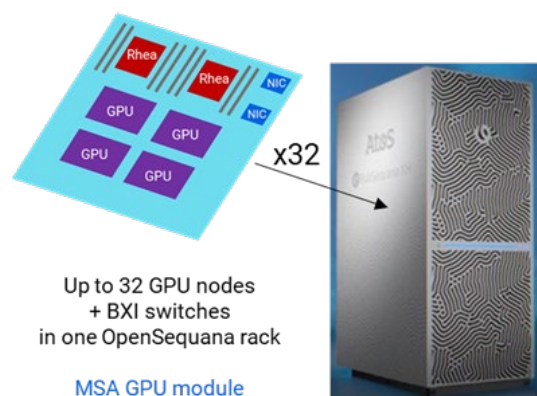
- OpenSequana-compliant hardware platform
- matching HPC software ecosystem implementing the Modular Supercomputing Architecture
- to integrate and manage efficiently a variety of hardware modules and to handle heterogeneous workflows

#### Large enough to be a proof of concept

- for a modular architecture relying on European technologies, and in particular on EPI technology
- to demonstrate the Exascale readiness of a planned EuroHPC exascale HPC cluster
- to explore the Exascale readiness of the applications selected for co-design

#### Production-grade

- technical choices guided by the maturity of the European solutions available



A set of **applications** selected from a large variety of domains (**climate and weather forecast, biology and health, remote sensing analysis, material science, astrophysics, engineering, seismology**) will be optimized for the target architecture, used for benchmarking on the EUPEX Pilot, and analysed to issue recommendations for exploitation on future European Exascale systems.

The block features four white icons on a blue background: a sun behind a cloud, a laboratory flask with a test tube, a planet with a ring, and a landscape with a sun and trees.

## European building blocks and hardware integration

- **Modular Supercomputing Architecture (MSA)** efficiently connects and orchestrates heterogeneous resources.
- **Rhea processor** is the implementation of EPI HPC processor from SiPearl
- **BullSequana X compute cabinet** from Eviden provides maximum flexibility in terms of interconnect, power, and cooling, and achieves a Power Usage Effectiveness close to 1.
- The **OpenSequana initiative** opens the interface specification of the compute blades so that any manufacturer can benefit from the highly efficient BullSequana infrastructure and focus its development on the HPC compute nodes needed by its customer.
- **BXI (Bull eXascale Interconnect)** from Eviden provides state-of-the-art features (low latency, high message rates...).
- **ParaStation Modulo** from Partec is an MSA-enabled supercomputing software suite, which facilitates the efficient and smooth operation of large HPC systems (ParaStation MPI, complete software stack ...)
- **OCEAN** from CEA is an open-source cluster administration stack, which has proven its efficiency in operating large HPC systems.
- Plus a multitude of **open-source tools and libraries for performance and energy optimization** of applications developed in various EU research projects of the EUPEX partners.