

European Exascale System Interconnect and Storage

FORTH, Allinea, EngiinSoft, eXact Labs, Fraunhofer, Iceotope, INFN, INAF, MonetDB Solutions, University of Manchester, **University of Valenica, Virtual Open Systems**

Objectives - Approach

Objectives

• Interconnects

Low-latency, unified compute & storage traffic

• Storage

Fast, distributed, in-node non-volatile memory

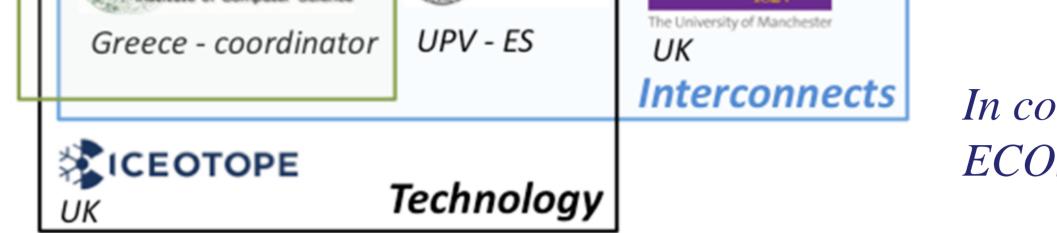
Applications

Real applications: scientific computing, data analytics



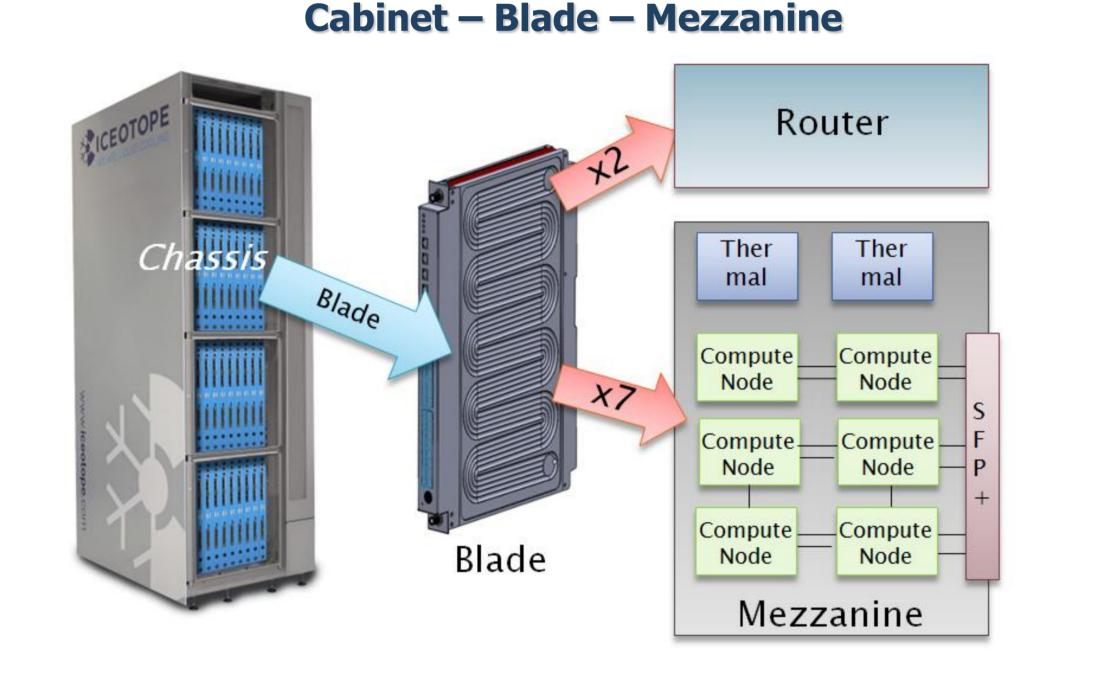
System Packaging Technology

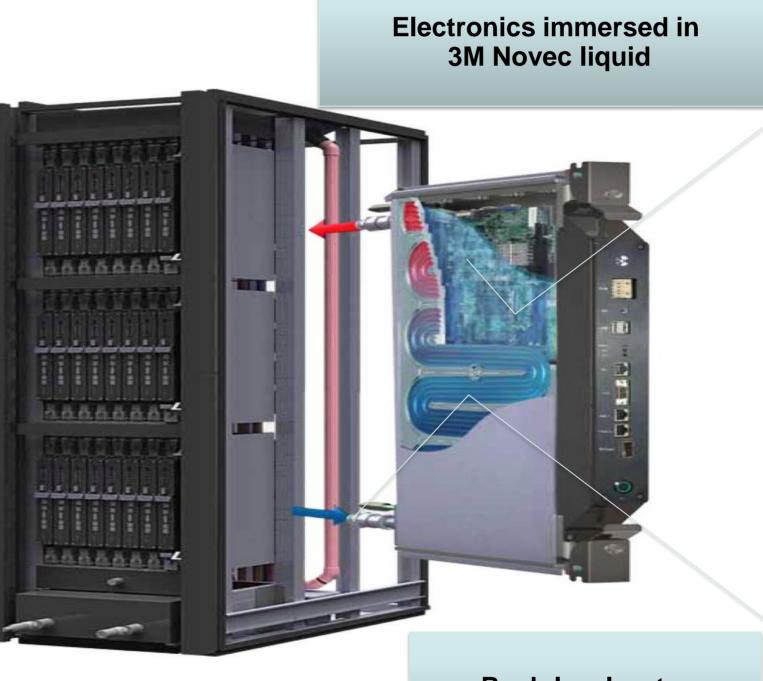
Compact, fully-immersed liquid cooling technology



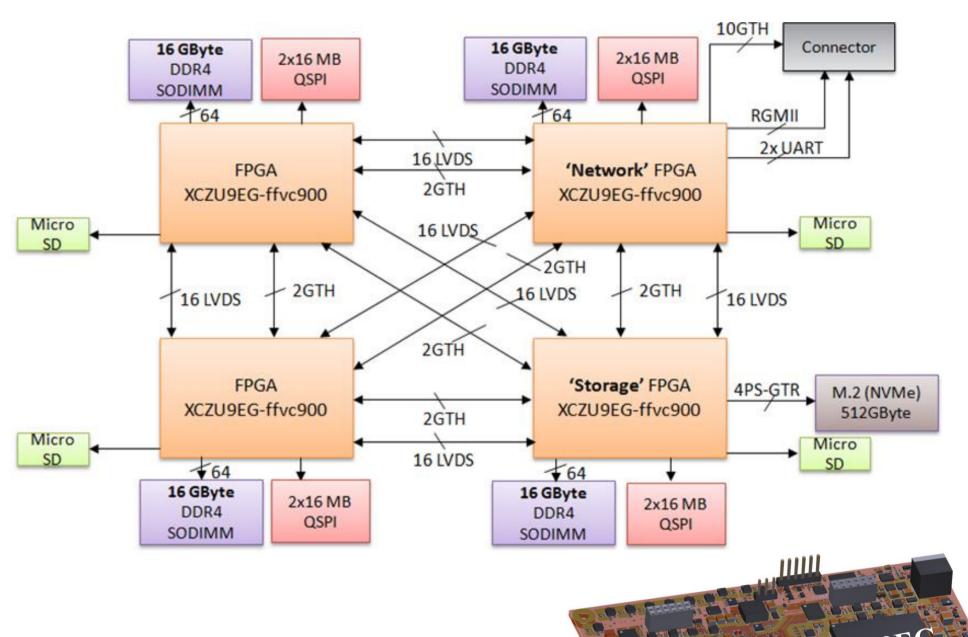
In collaboration with ExaNoDe & **ECOSCALE:** FPGA Accelerators

ExaNeSt Rack-Scale Prototype





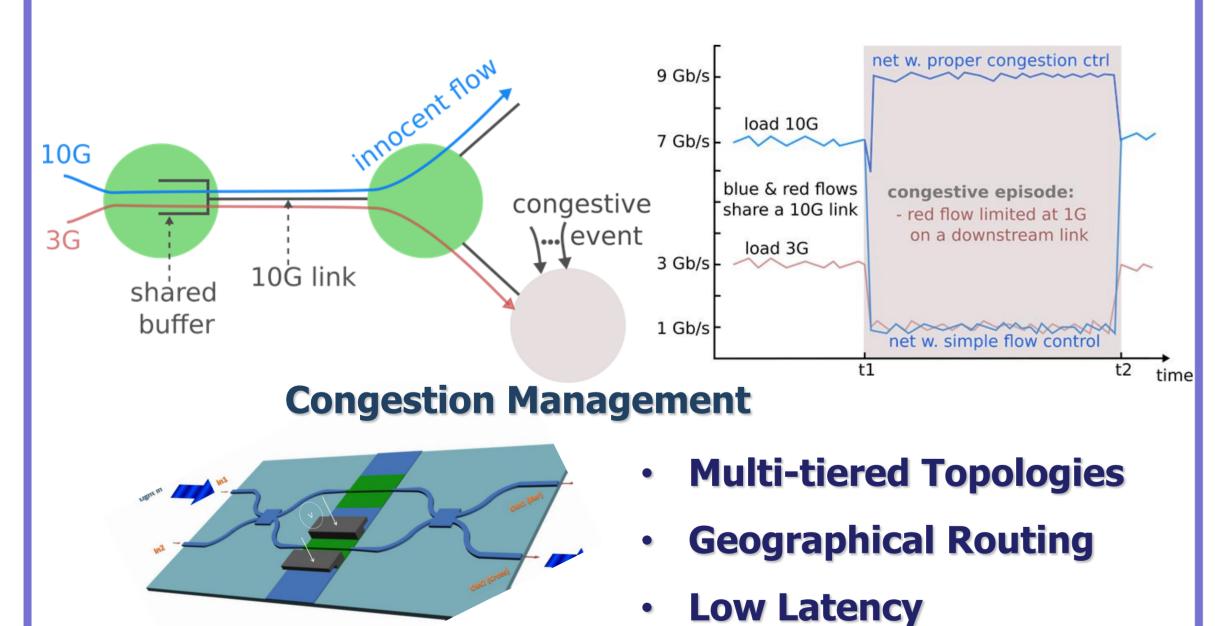
Compute Node (daughterboard)



Rack-level water circulation



Interconnect



Communication (APEnet)

UNIMEM - PGAS

BeeGFS Filesystem

HPC Virtualization

Status Monitoring

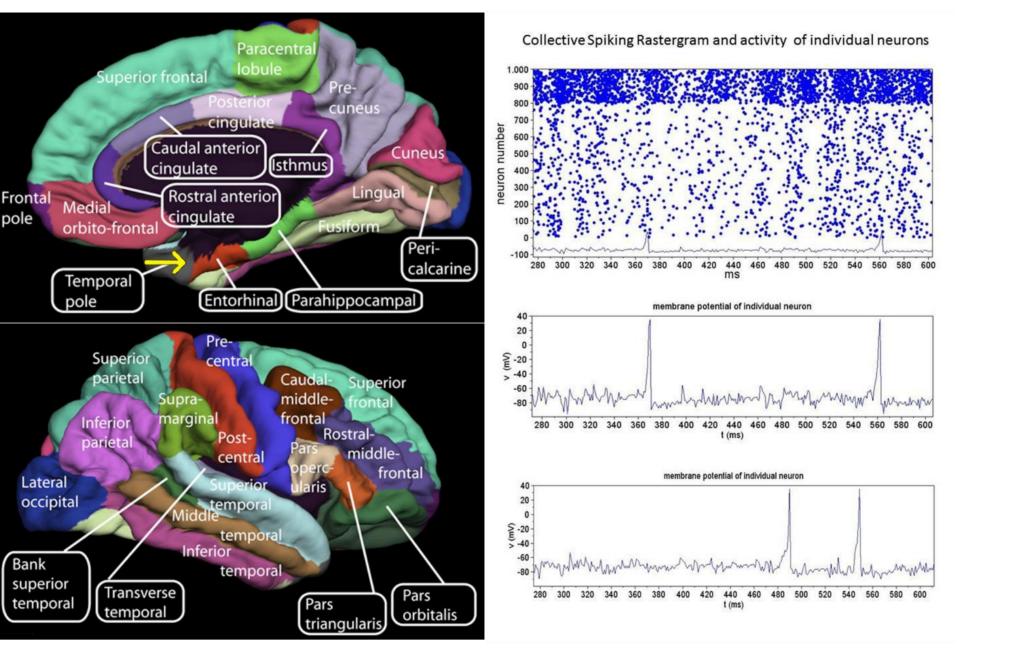
Profiling Tools

Checkpointing

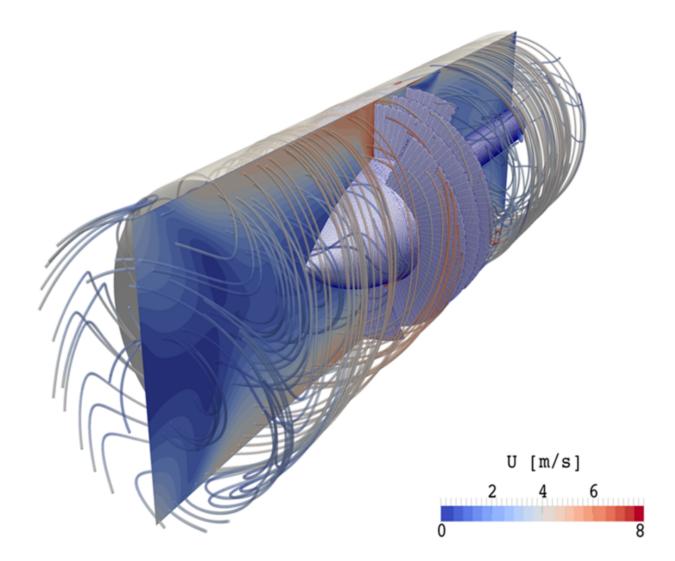
Silicon Photonics

Storage

Applications



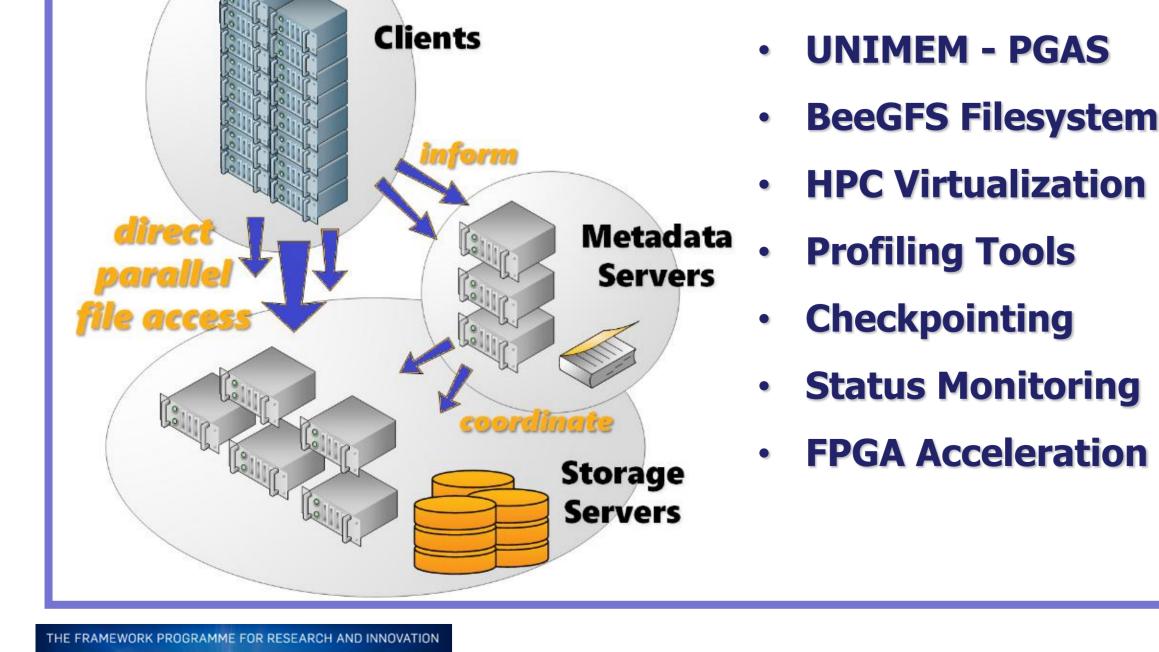
Brain simulation



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Simulated Galaxy Cluster

								Front-End
contract	client	date	name	price	city	product		
12302346	10042334		Епо		Redmond	Car		
37611373	10987097		Gotz		Redmond	House		1
51213123	10032423		Jones		Wash ington	Travel		logical



Flow Simulation

54535545 10087823 45447894 10013232	Smith Doe	New York House Boston Car		data model
95371001 10032112		Seattle House		
				mapping rules
oidcontract100012302346100137611373100251213123100354535545100445447894100595371001	1000 10042334 1000 1001 10987097 1001	nameoidcityEno1000RedmondGotz1001RedmondJones1002WashingtonSmith1003New YorkDoe1004BostonChen1005Seattle	oid product 1000 Car 1001 House 1002 Travel 1003 House 1004 Car 1005 House	physical data model (BATs) Monet

In-Memory Data Analytics

ExaNeSt (H2020-ICT-671553), Horizon 2020 Program

2020

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