

Exploratory PEPR

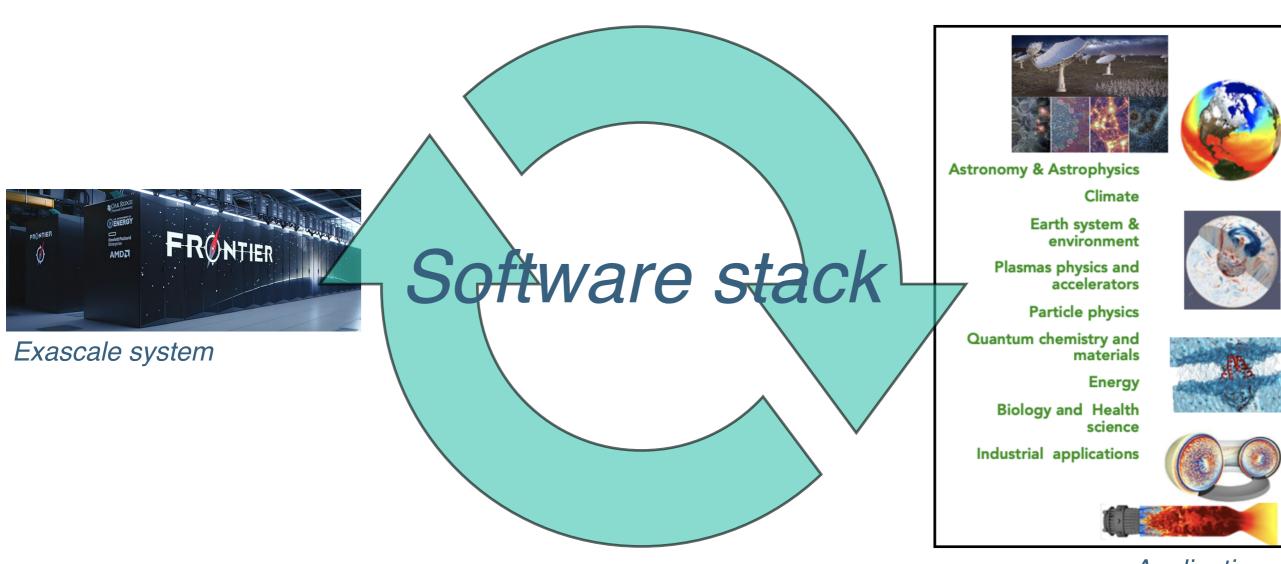


NumPEx

High Performance Numerics for Exascale

Dr J. BOBIN CEA, co-director of NumPEx
Pr M. DAYDE CNRS, co-director of NumPEx
Dr J-Y. BERTHOU INRIA, co-director of NumPEx

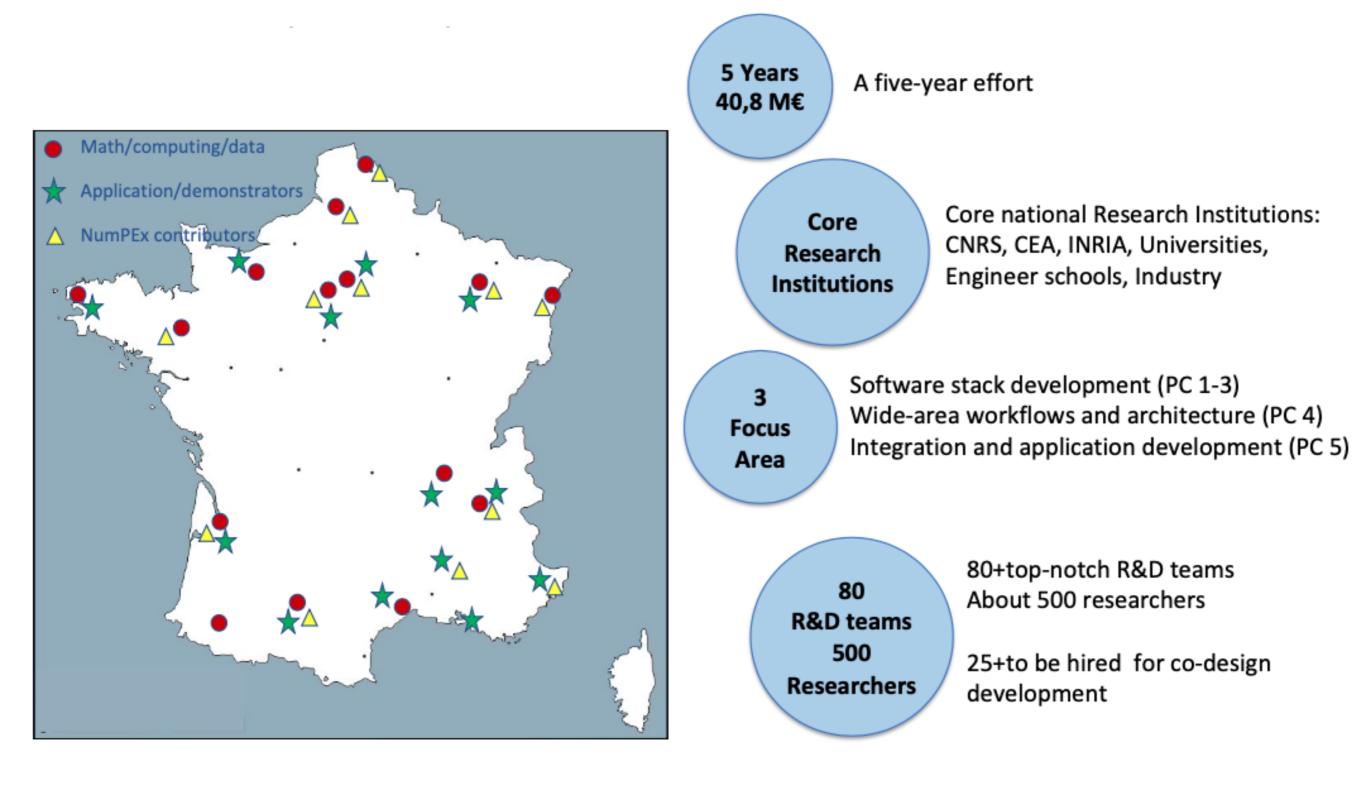
Towards the Exascale: challenges



Applications

Preparing the applications for the Exascale era requires a major effort to re-design the software stack, by co-design

In the national ecosystem

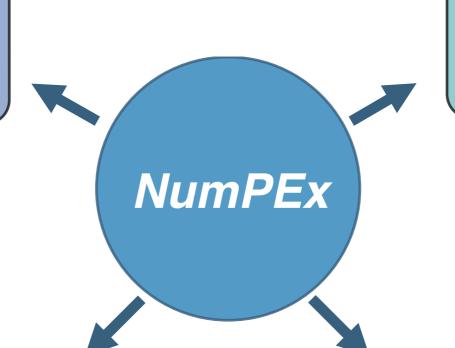


NumPEx as the software/middleware component of France Exascale

NumPEx, an overview

Prepare the applications for the Exascale era

Contribute/accelerate to the emergence of a European Software Stack and strategic applications Exascale capability

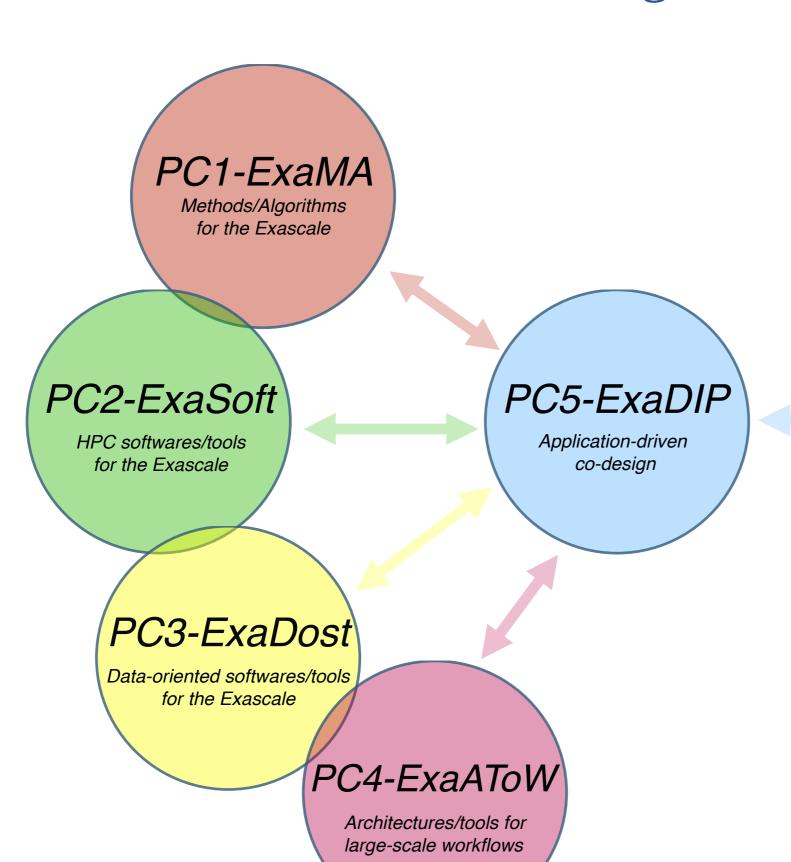


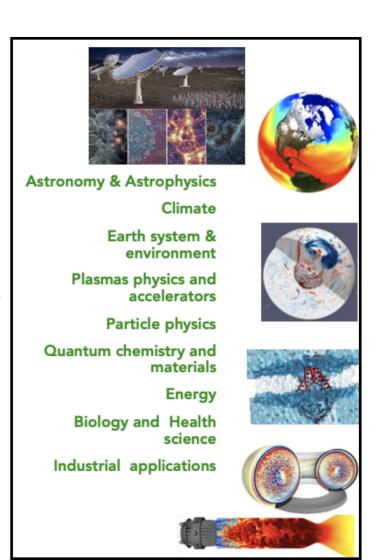
Aggregate the French
HPC/HPDA/IA
Community

Accelerate science/engineering-driven developers training and software productivity

Integrate/validate co-designed methods/libraires with demonstrators and strategic appli.

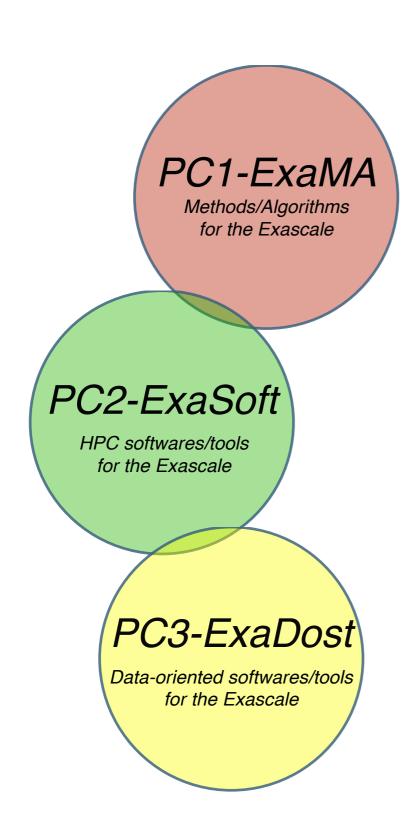
NumPEx Organisation

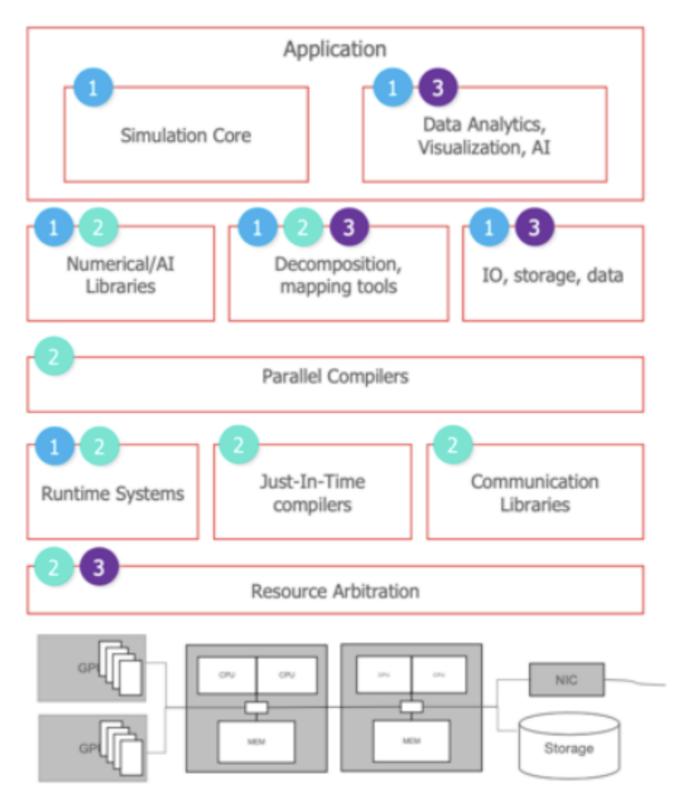




Applications

NumPEx software stack





NumPEx ExaDIP

Application-driven co-design software development, integration and productivity

Co-design management

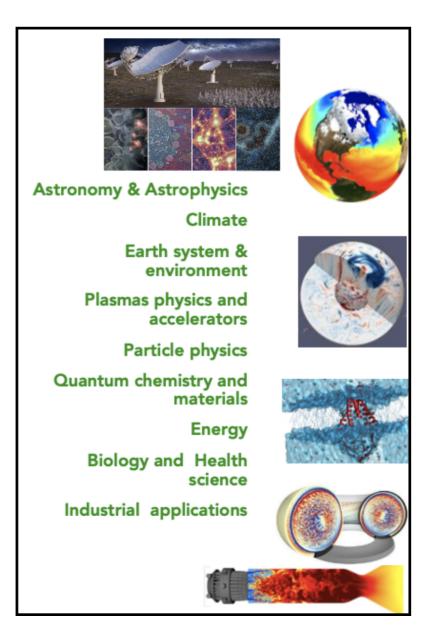
Co-design

PC5-ExaDIP

Application-driven co-design

Integration and productivity

Training

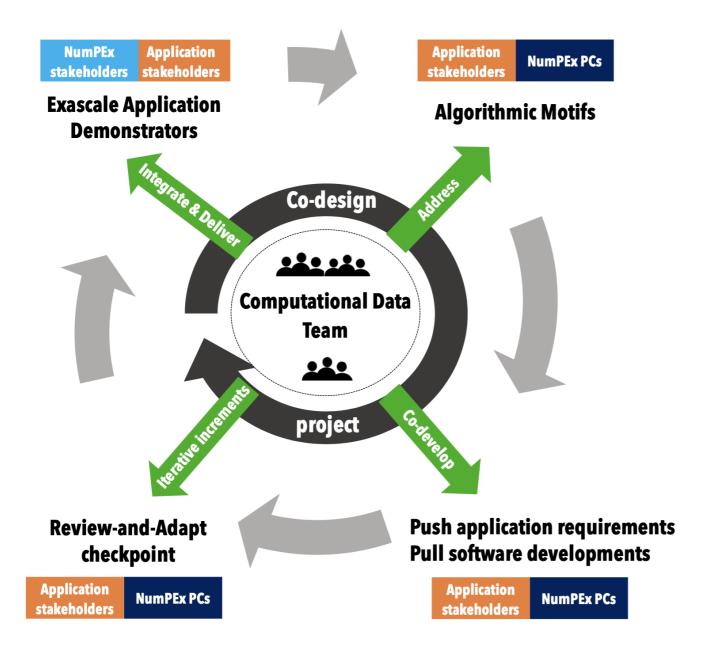


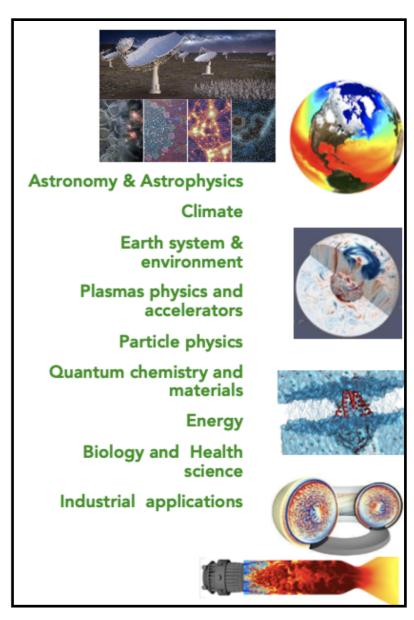
Applications

NumPEx, co-design

Application-driven co-design software development, integration and productivity

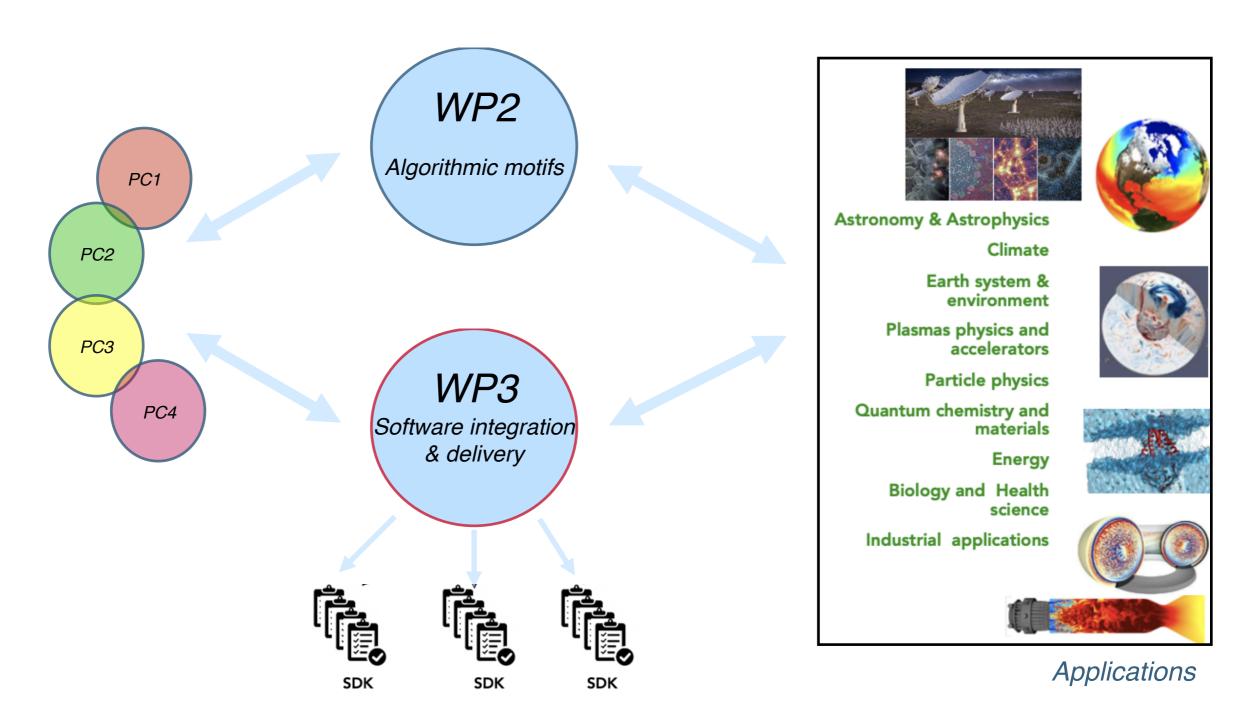
Identify/develop common/transverse algorithmic/library motifs





NumPEx, co-design integration/productivity

Application-driven co-design software development, integration and productivity



- Logical application-driven collections of value-added interoperable software components
- Integrated and packaged using common meta-builder systems enabling combined deployment of software components as needed by CSE applications

NumPEx, sum-up

PC1-ExaMA

Methods/Algorithms for the Exascale

6.4M€

Call for proposal 4M€

PC0

Coordination/Governance

3.8M€

PC2-ExaSoft

HPC softwares/tools for the Exascale

6.2M€

PC5-ExaDIP

9M€

Application-driven co-design

PC3-ExaDost

Data-oriented softwares/tools for the Exascale

5.9M€

PC4-ExaAToW

Architectures/tools for large-scale workflows

5.3M€

Board of directors

Project office

Steering committee

Industrial board

Programme management

Communication/dissemination

Training

NumPEx, take-away messages

NumPEx is an ambitious program to:

- prepare the scientific/engineering applications for the forthcoming HPC syst.
- contribute to the French/European software stack for future Exascale systems
 - bridge the gap between the computer science/application communities
 - help building a community for advanced scientific software development

Open to propositions of applicative demonstrators! Many job openings too!

www.numpex.fr