

## A Computing Accelerator Designed for High Precision Computation (up to 512-bit mantissa)

### OVERVIEW

The variable extended precision processor (VXP) is a dedicated hardware/software **accelerator suitable for the resolution of large ill-conditioned systems of equations**. Its **tunable, dynamic precision speeds up convergence** and **improves memory usage** and **computational efficiency**.

### BENEFIT : HIGHER PRECISION FOR IMPROVED EFFICIENCY

Increased precision greatly reduces rounding errors, and improves the computing efficiency of algebraic computations at the compute node level. Certain problems do not even converge with standard double precision.

The VXP accelerator supports **arithmetic operations in hardware with up to 512 bits of mantissa**. Its **dynamic precision is fine grain tunable** for **optimal use of near processor memory**.

### KEY FEATURES

The VXP is a complete hardware and software solution with:

- Dedicated hardware :
  - Silicon proven in GF 22nm FDX and new design in TSMC 7nm (European Processor Initiative)
  - FPGA board for early access

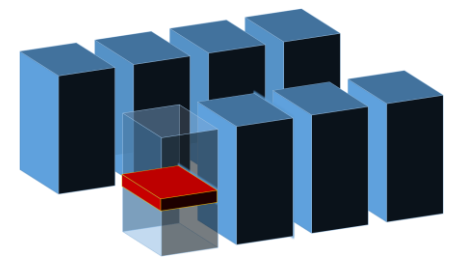
Software stack :

- C-like programming environment (compiler and assembler)
  - Library for mathematic and low-level algebraic subroutines
  - Runtime environment

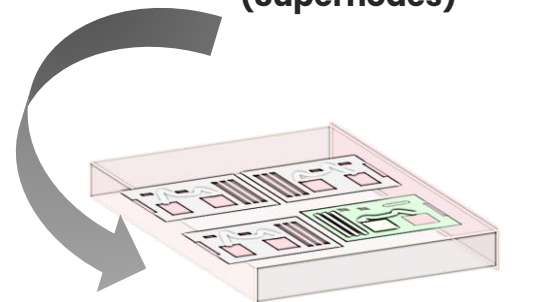
### APPLICATIONS

Improve the efficiency of computing for algebraic solvers and eigensolvers :

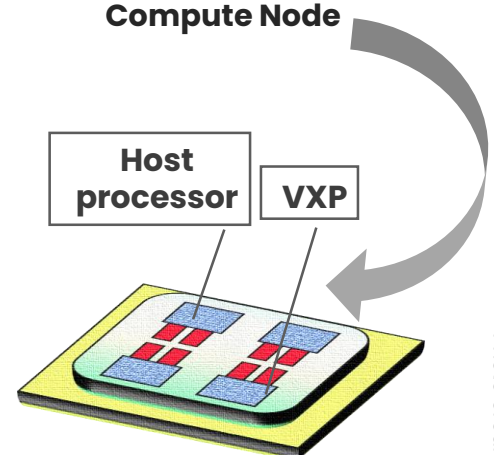
- Scientific computing : computational physics and chemistry, electronic simulation, structural computation, climate models, weather prediction, fluid dynamics.
- Model order reduction : learning for AI, large dynamic systems.



Computing Infrastructure (Supernodes)



Compute Node



Processor + Accelerator(s)

