Some (Post-)Exascale Challenges
The NumPEx Program and InPEx project contributions

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The challenges of Exascale and the technological and scientific breakthrough it represents have been widely discussed in Europe and internationally for over 15 years. Some of the participants at the 2024 ETP4HPC conference may remember their involvement in the IESP and BDEC projects, as well as in the European EESI and EXDCI contributions. Exascale systems are currently being installed in the USA and China, others will soon arrive in Europe, and post-exascale systems are already announced for Japan at the end of this decade. This presentation will detail some Exascale issues that remain (partially) unresolved, then discuss some challenges of the Post-Exascale age. We will focus in particular on four of these, which have been discussed as part of the French NumPEx program and of the international InPEx project: "From the edge to HPC systems, the digital continuum", "Co-design of software/applications", "Software, the new frontier" and "AI4Science - Science4AI".