

- Addressing the I/O performance challenge not only for Exascale, but also for HPC and data intensive computing
- Developing a prototype computing platform with non-volatile memory, bridging the latency gap between DRAM and disk
- Developing the software stack that goes hand-in-hand with this new hardware architecture

→ A key outcome of NEXTGenIO will be a detailed understanding of the wide range of use cases for non-volatile memory in the context of Exascale systems.

- **Anticipated technologies suggested for inclusion in an EsD project**
 - Prototype hardware platform with non-volatile memory
 - Profiling and debugging tools that support non-volatile memory
 - Data & power/energy aware job scheduler that understands non-volatile memory
 - Filesystem and object store for non-volatile memory
 - Library for development of high-level persistent data structures in non-volatile memory
 - Workload benchmark generator (Kronos) and I/O workflow simulator

All the technologies developed in the project will be integrated into and validated on the NEXTGenIO prototype system

- Some components are generic tools that can be seen as independent of the NEXTGenIO hardware

- **Pre- or co-requisite items**
 - Non-volatile on-node memory is a key requirement for certain system software components.
- **Any extra work/interaction (on top of current project roadmap) needed to make them ready?**
 - For testing and validation purposes, third-party access to the NEXTGenIO prototype towards the end of the project would be beneficial to prove HW and SW technologies
- **What information / actions are needed to best prepare for EsD projects?**
 - Creating a clear picture of the technologies that are being developed.
 - Making sure the EsDs are *use case* and not technology driven