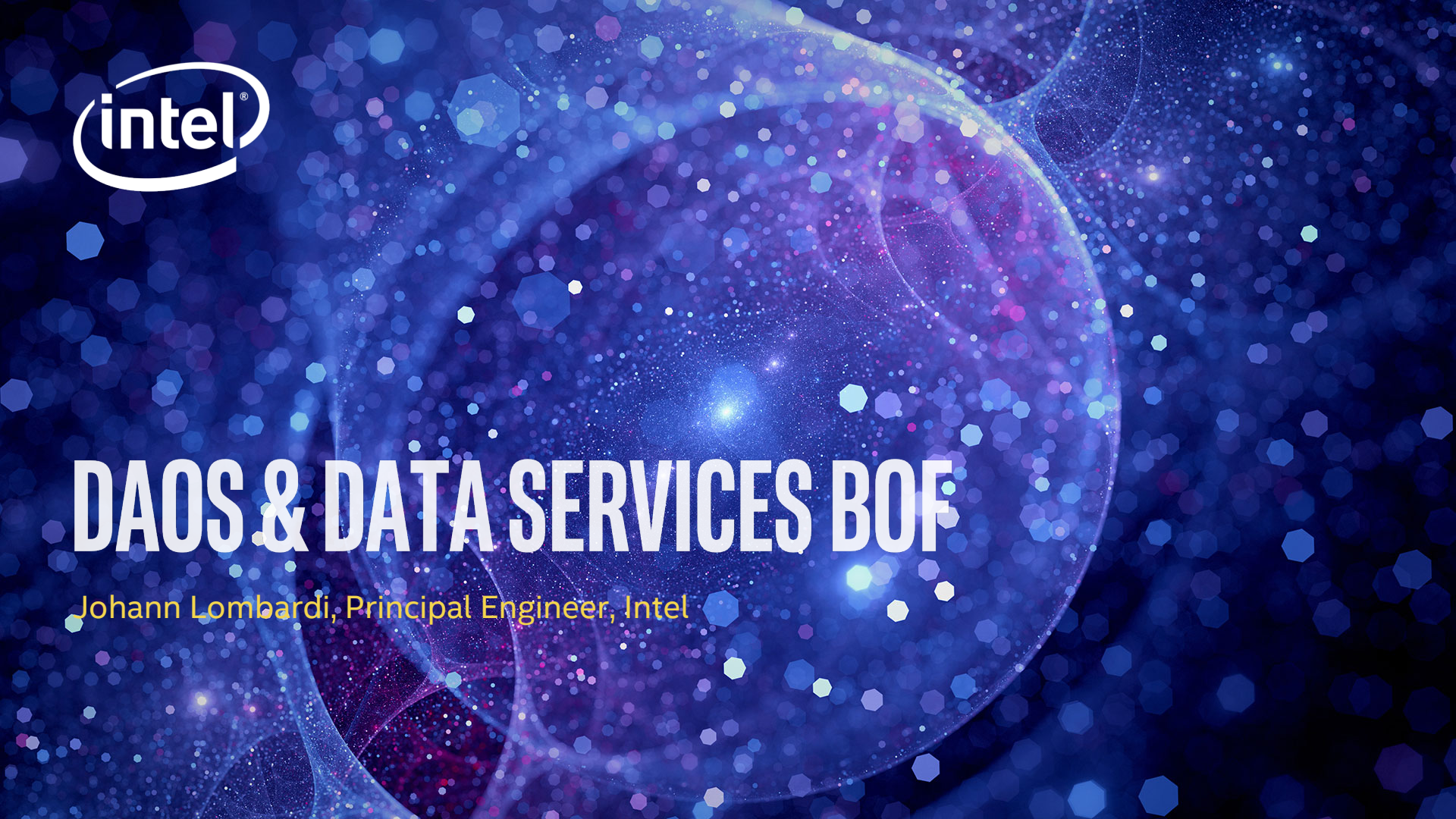


DAOS & DATA SERVICES BOF

Johann Lombardi, Principal Engineer, Intel

INTEL ESAD & MYSELF

Extreme **S**torage **A**rchitecture & **D**evelopment (ESAD)

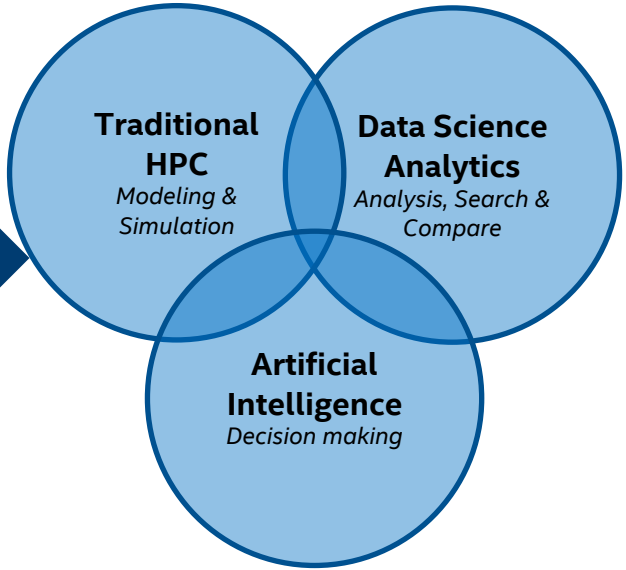
- Part of **E**xtreme **C**omputing **O**rganization (ECO)
- Formerly called **H**igh **P**erformance **D**ata **D**ivision (HPDD)
- New storage semantics for Exascale HPC, Big Data & AI
- Open-source userspace I/O
  - **D**istributed **A**synchronous **O**bject **S**torage (DAOS)
  - **I**/**O** **F**orwarding (IOF)

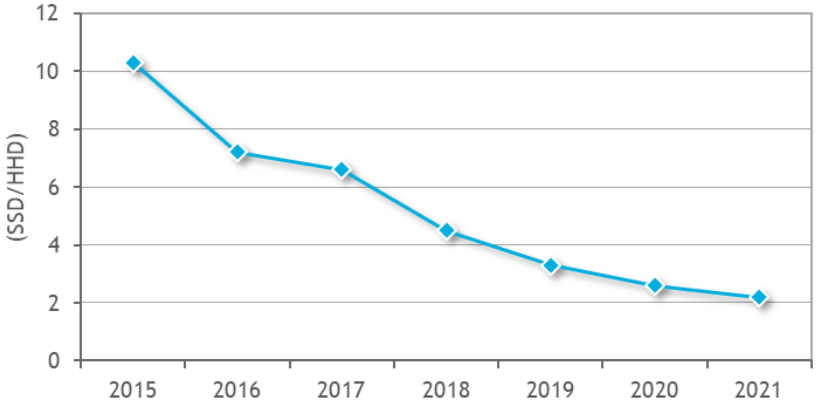
Johann Lombardi

- Lead ESAD architect
- Previously worked on Lustre (CFS, Sun, Oracle, Whamcloud & Intel)

NEXTGEN STORAGE SYSTEMS

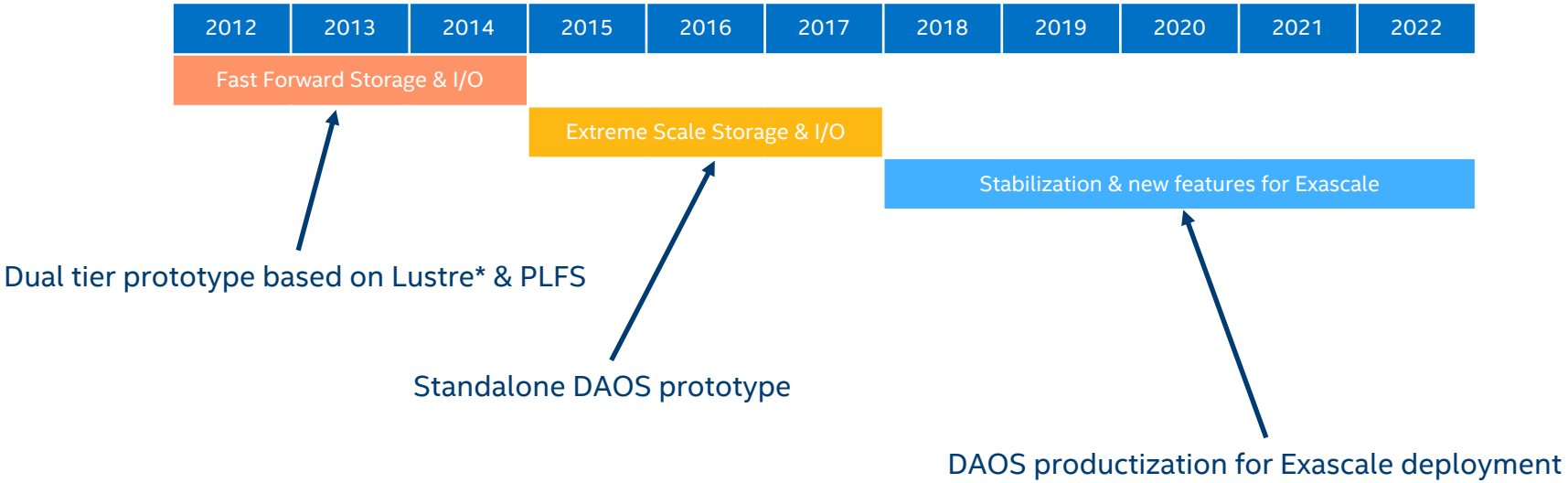
Data streaming from Instruments





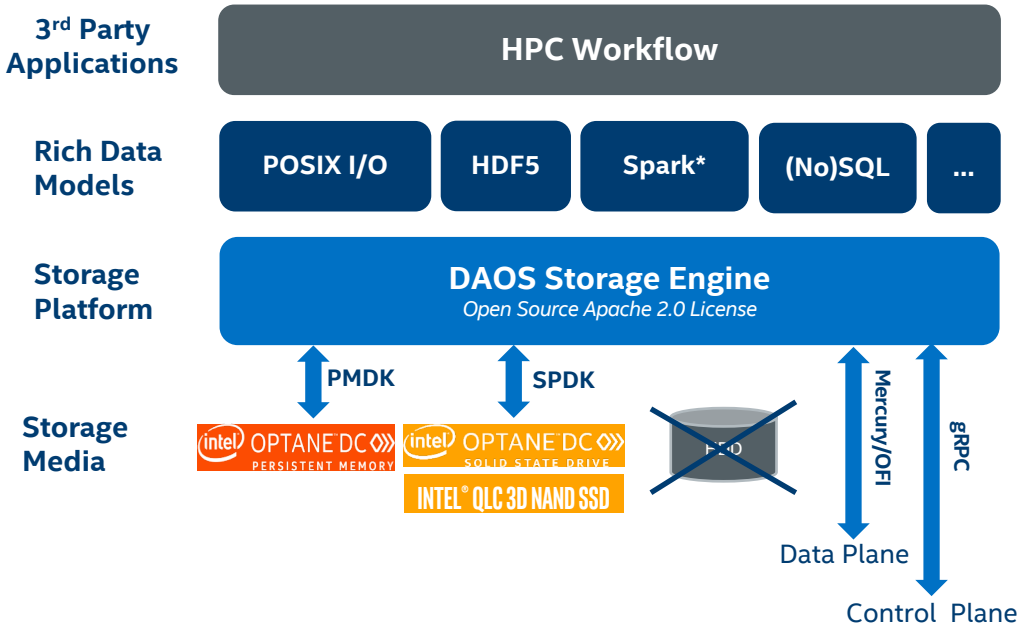
SSD vs HDD Pricing (per-GB ratio)
Source: Hyperion Resources, IDC, Stifel 2018

DAOS PROJECT HISTORY



*Other names and brands may be claimed as the property of others.

DISTRIBUTED ASYNCHRONOUS OBJECT STORAGE



Benefits

- Built natively over **new userspace** PMEM/NVMe software stack
- **Rich** storage semantics
- **Non-blocking**
- High **throughput/IOPS @arbitrary** alignment/size
- **Ultra-fine grained** I/O
- **Scalable** communications & I/Os
- **Software**-managed **redundancy**
- **Open source**

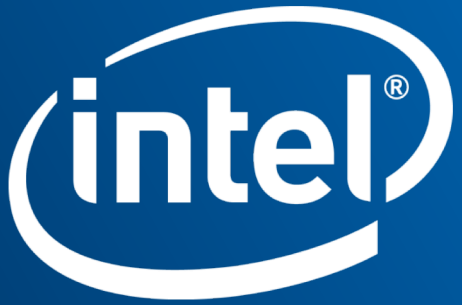
DAOS MICROSERVICE ARCHITECTURE

Collection of Microservices

- Control Plane
- Self-healing
- Pool
- Concurrency Control
- Container
- ...
- Object

Infrastructure

- RPC *Mercury & OFI*
- Common Data Structures
- Collectives *CaRT*
- Security
- Persistent Storage *PMDK & SPDK*
- Logging/Debugging
- Thread Model *Argobots*
- Offload/Accelerator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