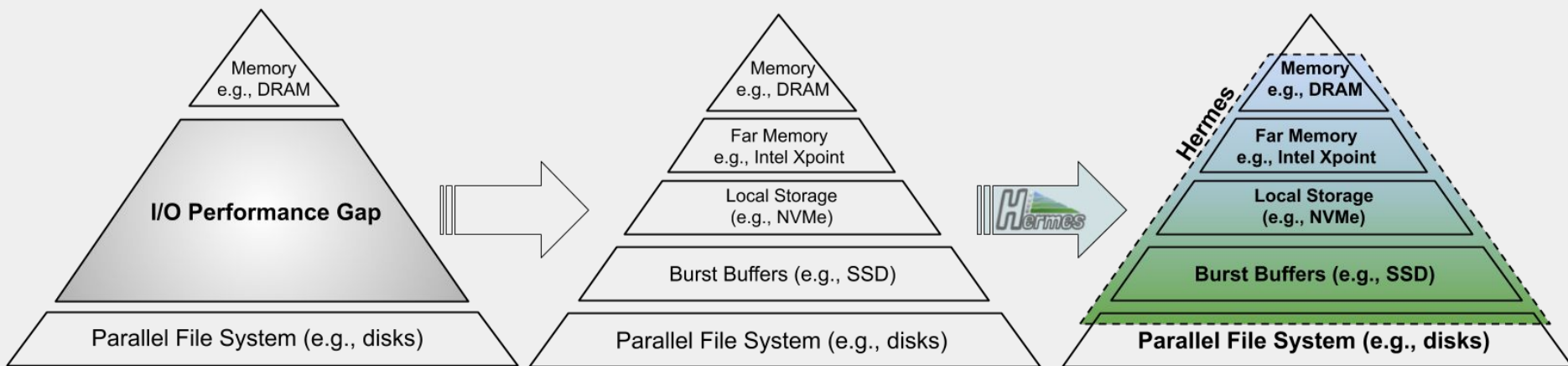Anthony Kougkas
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- Modern storage system designs include multiple tiers of storage organized in a **deep storage hierarchy**. The goal is to mask the I/O gap.
- Hermes is a new distributed I/O buffering software library that abstracts the complexity of managing these multiple tiers and aims to boost performance.

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Hermes Project

The team

Collaborative project

funded by NSF

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The HDF Group

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Hermes ecosystem

1. **Hermes core library**
   a. Manages tiers transparently
   b. Facilitates data movement in the hierarchy
   c. Provides native buffering API
2. **Hermes Adapters**
   a. POSIX, MPI-IO, Object Store, etc
      i. Intercept I/O calls to Hermes
      ii. Boosts legacy app support
3. **Hermes VFD**
   a. Directs HDF5 I/O to Hermes native API
4. **Hermes VOL**
   a. Captures application's behavior and provides hints to Hermes core lib
5. **Hermes Toolkit**

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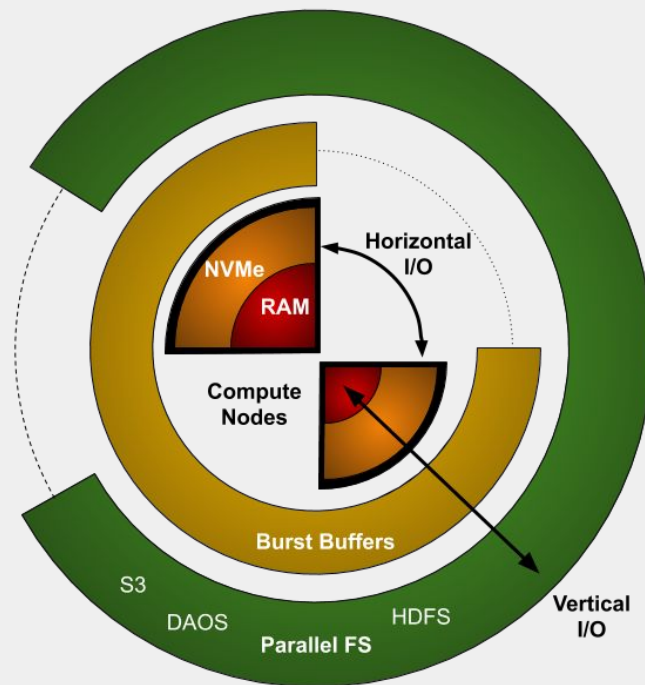SOFTWARE LABORATORY

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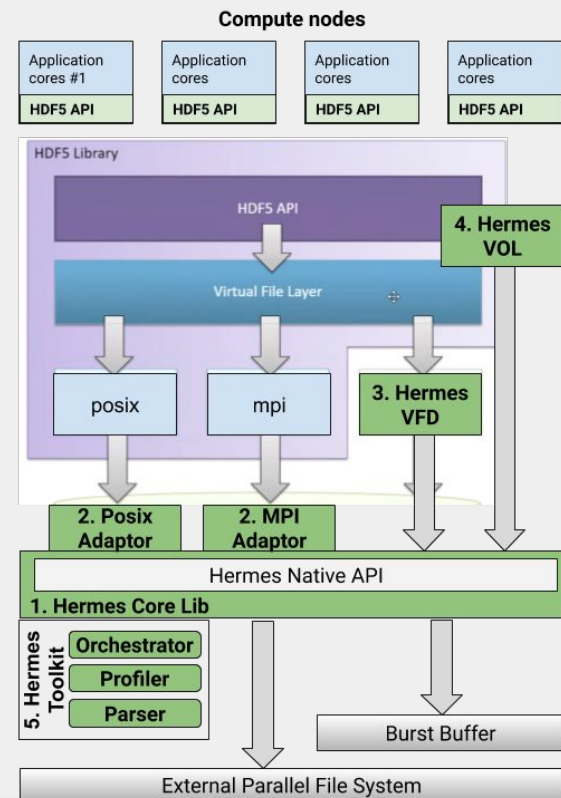
Hermes Container Library (HCL)

- Deep Storage Hierarchy
  - Spans multiple tiers within a node...
  - ...but also multiple nodes in the cluster
- Applications need to distribute data structures across multiple nodes.
  - Hermes Container Library
    - https://github.com/HDFGroup/hcl
  - We invite the community to try it out
    - And please give us feedback.

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HDF5 VOL experience

- We have built a couple of VOL plugins within the Hermes project
  - A global data prefetcher (**HFetch**)
  - An intelligent compression framework (**HCompress**)
- Main VOL functionality we appreciate
  - The ability to intercept HDF5 calls with minimal code changes
- VOLs can now be dynamically loaded using environment variables
  - Makes it easier for us developers
  - No need to recompile
  - Allowed us to experiment with different configurations (On or Off the plugin)

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Thank you