Workshop on Storage Challenges in the UK
3rd SIG-IO-UK Workshop

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Limitless Storage
Limitless Possibilities

https://hps.vi4io.org

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1. SIG IO UK

2. Workshop

3. Next Generation Interfaces: Status Update

The Special Interest Group I/O in the UK

University of
Reading

Goals

- Strengthen networking the community in the UK:
  - System, middleware, ..., researchers and developers
  - Users with I/O-intense workflows
  - Data centers
  - Storage and independent software vendors
- To bring forward RD&E:
  - Research
  - Product development
  - Funding opportunities

Communication

- Bi-annual meetings
- Mailing list for opportunities

Outline

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Sponsoring

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The workshop is funded by

Data Direct Networks

The workshop is powered by

EU funded Project: ESiWACE

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The Centre of Excellence in Simulation of Weather and Climate in Europe

■ Representing the European community for
- ▶ climate modelling and numerical weather simulation

■ Goals in respect to HPC environments:
- ▶ Improve efficiency and productivity
- ▶ Supporting the end-to-end workflow of global Earth system modelling
- ▶ Establish demonstrator simulations that run at highest affordable resolution

■ Funding via the European Union's Horizon 2020 program (grant #675191)

http://esiwace.eu

esiwace

CENTRE OF EXCELLENCE IN SIMULATION OF WEATHER
AND CLIMATE IN EUROPE

The Virtual Institute for I/O

Goals

- Provide a platform for I/O enthusiasts for exchanging information
- Foster training and collaboration in the field of high-performance I/O
- Track and encourage the deployment of large storage systems by hosting information about high-performance storage systems

https://www.vi4io.org

Structure of Today's Agenda

10:00 4 talks

12:00 networking lunch with proper food thanks to DDN!

13:00 3 talks

14:30 Coffee break

15:00 4 talks

17:00 Adjourn

Next Generation Interfaces: Community Approach

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Goal a new data-driven compute/storage and NGI

- Workflows and metadata as first-class citizens
- Storage and compute for heterogenous environments
- Smart software (and hardware) instead of manual
- Improving over time (self-aware/learning)
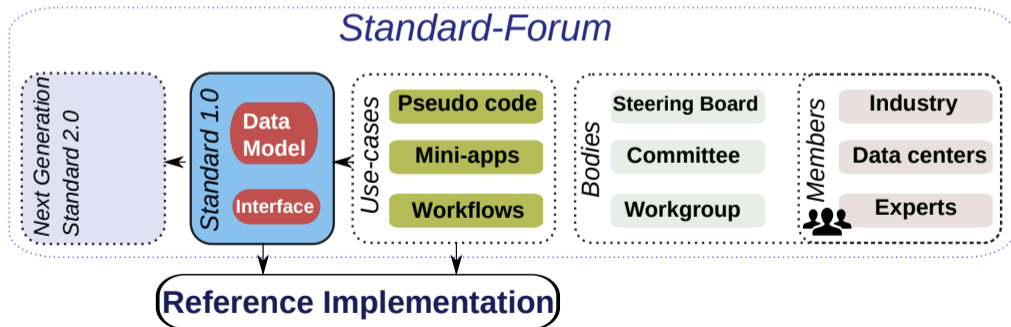- Standardized interfaces beyond POSIX

Why do we need a new domain-independent API?

- Other domains have similar issues: Harness RD&E effort across domains
- It is a hard problem approached by countless approaches
- Existing approaches address only a subset of the problems

Community-Driven Development of Data Model & API

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- Establishing a Forum (similarly to MPI)
- Model targets High-Performance Computing and data-intensive compute
- Open board: encourage community collaboration

Project Plan

Approach

- **Development of a Whitepaper**
  - ▶ Limitations of the current state of practice
  - ▶ A vision for scientific computing in data centers in 2025+
  - ▶ Vision for next generation interfaces
  - ▶ Selected use-cases
  - ▶ Community approach
- **Get more community on board**

Status

- **Submitted a BoF for ISC'19**
- **Coarse draft written by Julian in Dec/2018**
  - ▶ Contributions from individuals
  - ▶ Have to refine the paper; likely to have different papers
    - • Simplify issues for companies that (already) agreed to join consortium