BOF Session: Accelerator

DMA ST1 Synergy Workshop

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HELMHOLTZ RESEARCH FOR GRAND CHALLENGES

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Data Storage

- ST3 milestones like near-real time analysis with feedback requires fast and efficient storage solutions

  →Not for the prototype but ultimately if this used in production environments.

  →ST3 cannot provide this but relies on future solutions from ST1

- Example from FLASH: 30 minutes waiting until files were in the file storage

  → that inhibits to use the same workflows for off- and online analysis

Data Management

- ST3 aims for operation-critical knowledge extraction from experiment and machine.

  → This process requires intelligent and smart classification of data, aka it needs a meta data approach suitable for large accelerator data collections as well as for beamline controls and experiments of any scale.

  → Support / collaboration with ST1 on this topic is desirable / essential ?? Which role plays the HMC, HELPMI etc. in ST1?

- FAIR data management ?
- Data file types

  → Scaling things up requires new approaches here

  → Example for the European XFEL: reading out 20 minutes of data takes more than 20 minutes

- Also Surrogate Models are data

Data Reduction

- Goes along with data selection, compression, knowledge extraction.

  → What is exactly the overlap between ST1 and ST3 here? Where is the reduction and extraction done?

  → General framework provided by an IT department or individual, flexible and smaller frameworks on the beamline / experiment / accelerator side?

Computing Infrastructure

- Exascale computing / fast simulations require a corresponding infrastructure, is classic HPC the answer?

  →Also here ST1 solutions would be the / a base for this ST3 milestone

  →some collaboration desired
- Online Compute is missing
- Facilitated automated access to HPC infrastructure
- Digital twins require easy switch between simulation and real machine with 1000 data interfaces

Thank you

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