

IESP Breakout Group 4

Funding agency representatives

Group Members

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Governance (1)

- Developing a governance, management and organizational structure for IESP
- Exploring ways for funding agencies to coordinate their support of IESP-related R&D so that they complement each other
- Exploring how laboratories, universities and vendors can work together on coordinated HPC software
- Creating a plan for working closely with HW vendors and applications teams to co-design future architectures

Governance (2)

- Why bother? Business case
- Lifetime – scope – is it a project or a program?
 - Might be a project that evolves? IESP is a facet.
 - End time strategy
- Will there really be a big jump? What is the big difference? Number of threads exceed personal capacity to deal with complexity.
 - Business case/justification, extension of commercial efforts
 - Cost of not doing the software
 - Problem definition and process (R&D or development?)

Governance (3)

- Governance for a large investment
- Loose, joint, coordinated, legal framework
- Alignment or misalignment of interests
 - Commitments and benefits
- Business case to be defined for each funding agency
 - Use of the systems by applications scientists
 - Technology development
 - Workforce development

Governance (4)

- Coordinated calls for proposals
- G8 HORCS is an experiment to be tracked
 - Researchers getting the funding at the same time
 - Will not produce specific deliverables/software
- Delivery of resultant software critical
- Investments in grids – resultant software are not interoperable
- Clear, concise and well-defined roadmap
- International Linear Collider is non-legal entity

Governance (5)

- Generate a roadmap, split it up and fund it separately
- Common roadmap, competing funding – result not productive
 - Now in an uncoordinated environment
- Risk mitigation strategy for the entire international community
- Co-design is necessary this time, etc.

Initial Thoughts on Governance (1)

- International software roadmap group funded by government funding agencies
 - Periodic (semi-annual/annual) updates
 - Contingency planning
 - Clear definition and identification of open source components
 - Open source development project
- Deliverables funded by agency
- International coordination/monitoring team funded by gov't funding agencies
 - Keep up to date on the status of the software efforts
 - Provide non-binding information to the funding agencies and to the software roadmap group
- Software roadmap group keeps up with the international coordination team

Initial Thoughts on Governance (2)

- Vendor interactions for co-design?
 - Software/hardware
 - TBD
- Testing resources (cases and platforms) need to be identified and organized
 - TBD
- Need funding agencies to have effective coordination
 - Separately funded efforts that are coordinated
 - Demonstrable commitments to the project

Open Source

- Gov't funding
- Reproducible results, need access to the details, modulo some practical limits
- Time phase to address vendor sensitivity?
 - Details of hw architecture
 - Compilers, network protocols
 - Low levels of the control system
 - Different levels of open openness
- Which open source license?
- Separation of hardware and software efforts for funding
- Roadmap: Exascale only software, Critical path software
 - Roadmappers define open, vendors raise an exception for discussion
- Software lifecycle costs for community software

Open Source

- Which open source license?
 - Non-viral license
- Pedigree and certificates of originality
 - Do the contributors have the right to contribute?
 - Who has the right to change the code?
 - Lessons learned from Linux community

IP

- Software IP
 - Not locked up with a specific vendor
 - Identified early
- Restrictions might be different with specific ministries or funding programs
- Pre-commercial procurement method
- Begin the IP working group asap
 - Suggest a template

Co-Design

- Business case
- Apps <- -> Software <- -> Hardware
- Openness increases risk for vendors
 - Too many people can result in non-patentable technologies
- Process to match apps requirements to the sw and hw
- Responsibility for SW roadmap group
- Support for simulators and models, performance models
- Possibly design study to be funded for HW/SW

Governance Model

- Development and testing on intermediate platforms on the way to exascale systems
 - Timeline is already under pressure due to DOE early systems in ~2015
- Test and integration – function and platform
- Exascale Test and Monitor facility
 - Patches and regression testing
 - Change management
 - 1:1 of software org staff might be doing test and integration vs developing software
 - What are the funding agencies supporting now with large scale projects?

Governance Model - Timelines

- 2020 – One or more exascale systems in production
- 2018 - initial delivery, full, integrated stack
- 2015 – early technology deliveries,
 - mini-exascale ~200 PF, minimum software stack
 - 6 months ahead start final integration of all components
- 2012 budgets
- 2010, Software roadmap outline to feed into solicitations
 - Funding agency coordination or clearinghouse
 - DOE NNSA (with Office of Science) to begin this fall, lead on funding, conservative choices, minimal research, basis for others to build on
 - Software support models definition