

Charter to Breakout Groups 4 & 5

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2nd Day Working Groups

- End-to-End Productivity
 - Jim Belak, LLNL
 - Main meeting room
 - Holistic
 - Crosscutting
 - From question to science
- Productivity/Performance engineering
 - Bob Lucas, ISI
 - Bethesda Room
 - Modeling
 - Predictive
 - Measurable
 - Closed loop adaptive control

End-to-End Productivity

- Focus Area
 - Reflects entire workflow from statement of the initial science question to achieving the final science discovery.
 - Beyond writing and running a program, it engages all of the aspects of designing the experiment, analyzing the results, validating them, testing them against original hypothesis.
- Charter
 - Establish a representative workflow that reflects likely use case scenarios for the full end to end science challenge. Identify those elements that extend beyond the more narrow computational phase.
 - Determine major elements of end to end that strongly impact overall productivity towards mission science goals.
 - Suggest possible research directions that could directly address the challenges of productivity in the total science process.
 - Identify potential risk factors.

Productivity/Performance Engineering

- Focus Area
 - Hardware subsystems (memory systems, interconnect, I/O subsystems) performance modeling.
 - Performance modeling and simulation for productivity prediction.
 - Hardware subsystems instrumentation for performance measurement, monitoring, and debugging.
 - Identifying hardware signals, counters, and executing logs to expose for performance and productivity.
 - Online/offline performance engineering tools and methodologies.
 - Vendor dependencies on hardware counters and signals.
- Charter
 - Delineate, expand, and describe possible objectives and strategy for exploiting Productivity/Performance engineering.
 - Define a representative workflow that could incorporate the necessary functional components to exploit productivity engineering practices.
 - Suggest possible research directions that could directly address the challenges of productivity/performance engineering in the total science process.
 - Identify risk factors to success.