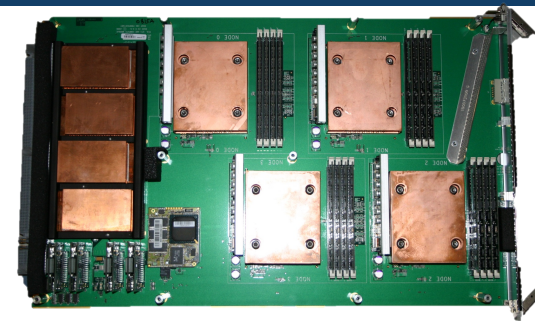
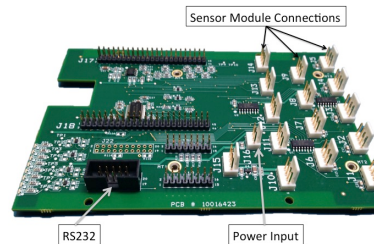


Building Energy Efficient HPC: 4th Annual Energy Efficient HPC WG Workshop

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National Leadership in High Performance Computing

COMPUTING RESEARCH

Robert W. Leland, Director



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Moving State of the Art Forward

- Trinity procurement requirements intentionally vague
 - Vendor capabilities all over the map
- Invest NRE to push state of the art
 - Approach:
 - Vendor delivers base capability
 - Collaborate on Advanced Capabilities
 - Advanced relative to base
- Accelerates path from Research to Production capability
- Future procurements will require specifics
- Leveraged **Scenarios** to describe what we were looking for

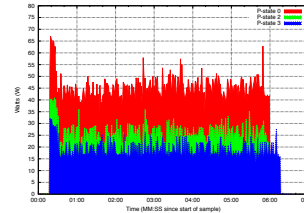
Scenarios and Procurement

- Scenarios can be very useful in procurements
 - At RFP
 - Communicate motivations, needs, intentions, etc. to Vendors
 - Avoids proscribing the solution
 - Describes what we want not how to accomplish it
 - At acceptance
 - Scenarios become test cases
 - Verify a number of base requirements using a single test scenario

Scenario Goal: Increase Energy Efficiency

① Run Application

- Collect Data – “Energy Profile”



② Analyze Data

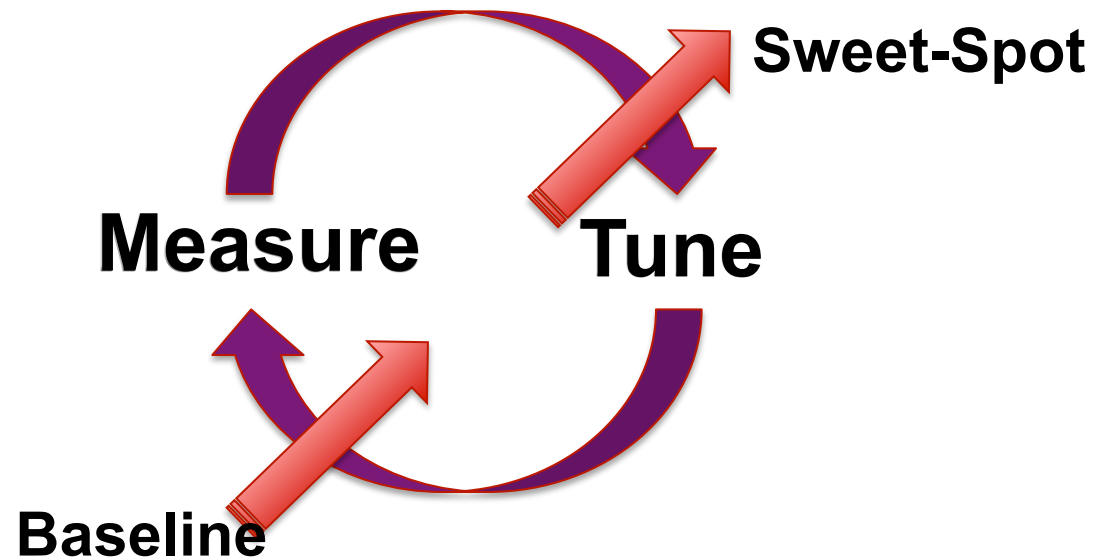
③ Run Application with new settings (e.g. P-state change)

- Collect Data

④ Analyze Data

- Good? Bad?

😊 Repeat



We are ALL blazing the trail

- Other Scenarios for power capping and power aware scheduling
 - Overloaded terms
- Move towards Standards
 - Power API

