

Working Group Goals : Overall

- **Identify and prioritize the top challenges for your WG as it pertains to building an Exaflop scale supercomputer in the 2015-18 timeframe**
- **Background information on applications, programming models used by DOE, and sketches of Exascale system configurations**
- **Expect a 'top 10' list for your 2-3 page section of the final report**

Working Groups

1. Topology, Routing

> Chita Das, Craig Stunkel

2. Device Technology (e.g., SERDES, Optics)

> Keren Bergman, Azita Emami

3. Processor Network Interface

> Keith Underwood, DK Panda

4. Performance Prediction and Simulation

> Sudhakar Yalamanchili, Curtis Janssen

Recommended Dimensions for Prioritization

- **Probability that the challenge will not be solved by relying on current technology trends: high, med, low**
- **Impact that the lack of a solution for this challenge will have on the ability of the HPC community to build an exascale computer by 2016: high, med, low**
 - > That is, HIGH means that if we don't have a solution for this problem, there is no workaround solution that will allow us to build the exascale system
- **Approximate NRE cost for a solution: high (greater than \$15M), med (\$5-10M), low (less than \$5M)**
- **Strategic non-technical challenges**
 - > Keep separate list

Working Group Deliverables

- **For each topic**
 - > Current Status
 - > Exascale Requirements
 - > Findings
- **Challenges**
 - > Ordered List of Priorities
 - > Impact
 - High, medium, low
 - > Probability
 - High, medium, low
 - > Cost
 - High, medium, low
 - > Slightly different for device technology panel
- **You have ~3 hours**
- **WG chairs have organized**
- **WG chairs have been asked to keep the conversations on track**
 - > Don't be offended
- **Divide and conquer if necessary**
- **Don't try to solve the technical problems per se**
- **Participate**

Factors

- **Performance**
 - > Bandwidth, latency, messaging rate, application performance
- **Power**
- **Reliability, Resilience**
- **Scalability**
- **Manufacturability**
- **Cost**