Evaluation, Optimization, and Application of Execution Models for Exascale Computing

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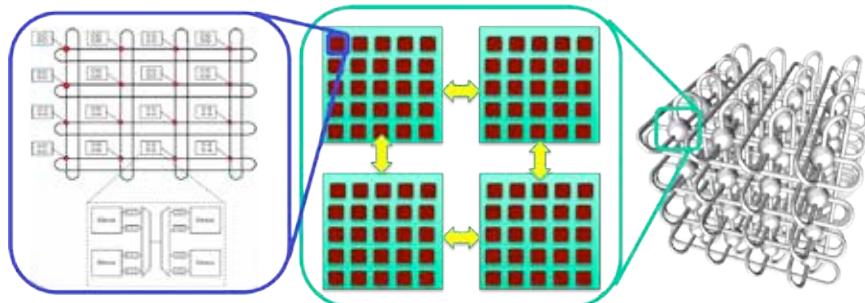
Hierarchical Abstract Machine Model

Novel Ideas

Two parallel tracts will be used to investigate execution models: top-down and bottom-up, interfaced at the layer of an abstract machine model

Top-down:

- **Accurate, yet fast methodology for EM modeling**
- **Based on full application models mapped onto Exascale architectures**

Bottom-up:

- **Use simulation and application surrogates**
- **Rapid turn-around investigation of execution model choices**

Impact and Champions

- **Demonstrate a revolutionary path to exascale**
- **Provide the community with a methodology for assessing execution execution models**
  - **Modeling**
  - **Simulation**
  - **Terminology**
  - **Metrics**
- **Working closely with Co-Design Centers, including the ones on Combustion and Nuclear Energy**

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Milestones/Dates/Status

Milestone	Scheduled	Actual
Demonstrate execution model co-design and report	FEB 2012	
Deliver phase 2 apps and surrogates	OCT 2012	
Complete phase 2 hardware/ software systems systems	JUN 2013	
Complete investigation of additional execution models and report	AUG 2014	

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2011-10-05