

# Runtime Roadmap

Session VIII

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3/13/2015

# Roadmap and Research agenda

- Roadmap –
  - Lines in the sand...
- Research Agenda
  - Best based on lines in the sand..

*Where are our lines in the sand?*

# Roadmap focus points have ~ 5 years

- Bounding the scope of Runtime
- Convergence- efforts and with other areas
- Industry Integration – buy-in and help
- first 3 items are fairly large – then we can start building sustainable community
- Research agenda

# Bounding Scope of Runtime

- Not doing this is a barrier to moving forward
- Some things can be bound – use Software life-cycle mgmt process
  - Do tactical vs strategic bounding
- Use services as potential handles for this – start with minimum needed / use best practices to define
- Came up with initial definition - Runtime is resource management plus scheduling of computation and communication and resilience | whole ecosystem – this is a starting point

# Bounding Scope of Runtime cont.

- Define what it is and what it's not – OS | R | Pgm Models, other, global/local, etc. -
- Various architecture pictures developed that are not dissimilar – converge on one or two
- Can interface points to be identified
- Define as a spec? – down the line possibly as sub-components
- Articulating requirements

# Convergence

- Need to map efforts to scoping – **take inventory**
  - Assess differences
- How do we converge efforts and leverage
  - And keep identity
  - Take it slow
- Converge with other ECI areas above and below
  - Use bounding output
- Drive to develop and articulate requirements

# Industry Integration

- Need industry to produce Exascale machine
  - Engage on Runtime development / implementation
  - Fast Forward, other?
  - What is needed for engagement and what does it look like
    - **Needs to be developed**
  - Production needs and drivers are in conflict with industry driving forward
    - Need benchmarks in procurement – AMT mini-apps, others
    - Product timelines are long
  - Continuous communication to vendors
  - Involvement in research and development of components as they evolve – simulators
  - If we want HW capabilities – Need defined by 2018

# Research Agenda

- Many good questions to focus on – how do we converge on what is important. – filter through the noise.. Base on strategic objectives for year and out years
- What does a good research agenda look like?
- Go through the research questions and identify what's conceptual and what is implementation – the latter can come later – but conceptual needs to be done early to fix concepts

Ready for standardization- ? (bounding discussion)

- User level threads
- Load balancing