THE HYBRID MULTICORE CONSORTIUM (HMC)

A multi-organizational partnership to support the effective development (productivity) and execution (performance) of high-end scientific codes on large-scale, accelerator based systems

Announcement at SC '09
Wednesday November 18, 2009; 11:00 am
Rooms D139/140 of the Oregon Convention Center

Membership is open to all parties with an interest in large-scale systems based on hybrid multicore technologies

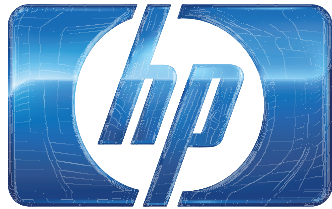**OAK RIDGE** National Laboratory

BERKELEY LAB

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ORGANIZING PARTNERS

The organizing partners have made substantial investments in the deployment of large-scale, accelerator based systems

VENDOR INTEREST

GOAL: FACILITATE PRODUCTION READINESS OF HYBRID MULTICORE SYSTEMS

- Challenge
  - Existing applications require significant re-engineering to effectively manage the resources provided by large-scale, accelerator based systems
- Immediate goal
  - Identify obstacles to migrating high-end scientific applications to large-scale, accelerator based systems
  - Maintain long term perspective to ensure that today's efforts are not lost on tomorrow's platforms
- Long term goal
  - Identify strategies and processes, based on **co-design** among applications, programming models, and architectures, to support the effective development (**productivity**) and execution (**performance**) of large-scale scientific application

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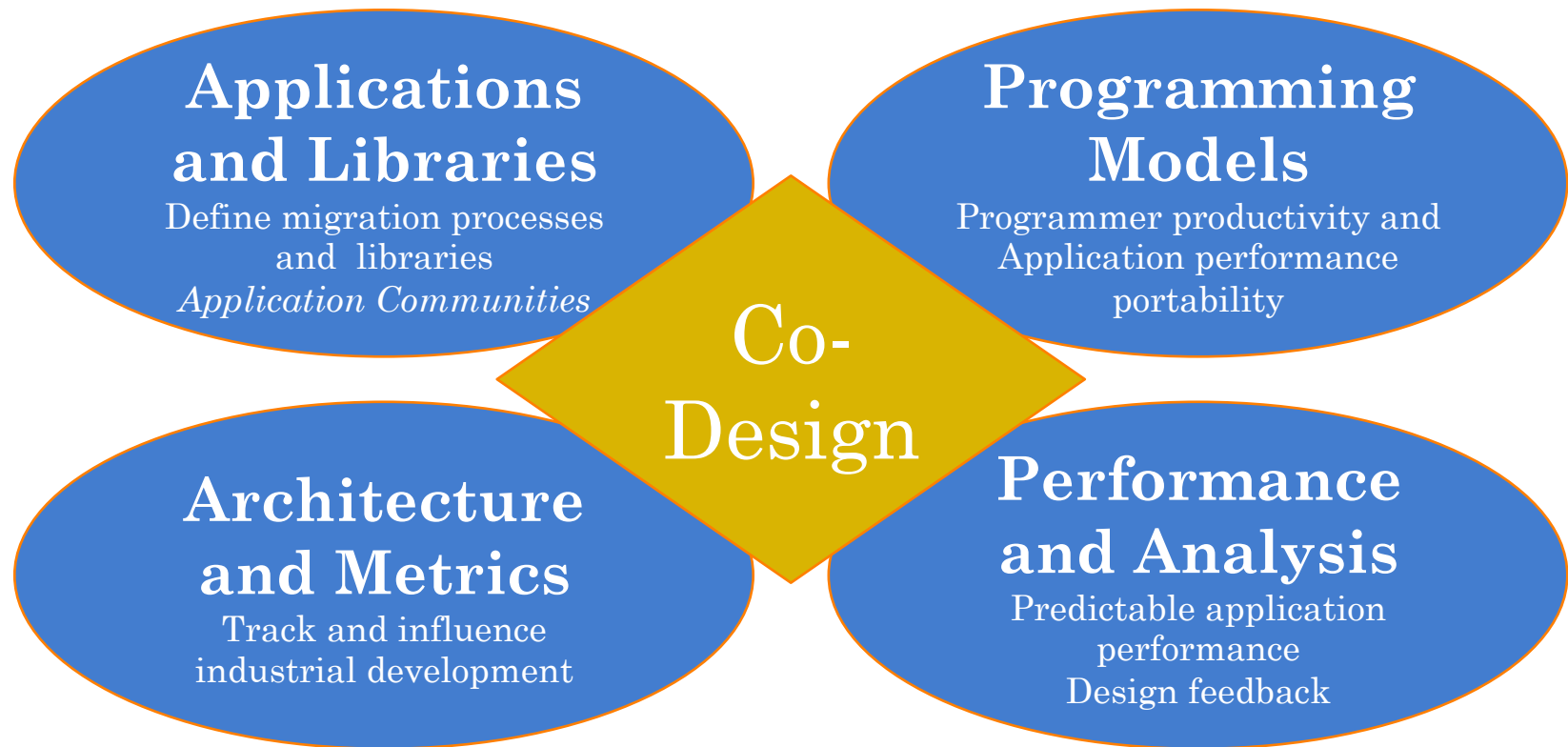
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APPROACH

- Engage the broad community, including:
  - HW and SW developers (vendors),
  - Scientific computing community (users), and
  - Education / Training
- Maintain a **roadmap** documenting relevant projects and gaps
- Provide a unified voice to influence emerging standards and developers (both hardware and software)
- Serve as a clearinghouse to communicate successes and lessons learned
- Workshops and Web site
  - Define and update the roadmap
  - Support interactions (clearinghouse and engagement)
- Maintain long term vision while providing solutions for near term systems ("Think globally, act locally")

TECHNICAL COMMITTEES (TC)

Applications and Libraries
Define migration processes and libraries
Application Communities

Programming Models
Programmer productivity and Application performance portability

Co-Design

Architecture and Metrics
Track and influence industrial development

Performance and Analysis
Predictable application performance
Design feedback

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TC MEMBERSHIP

- **Applications and Libraries (AL)**
  - John Turner (ORNL) and Sriram Swaminarayan (LANL), co-chairs
  - Erich Strohmaier (LBNL) and Thomas Schulthess (ETH)
- **Programming Models (PM)**
  - Kathy Yelick (LBNL), chair
  - Ken Koch (LANL) and John Turner (ORNL)
- **Architecture and Metrics (AM)**
  - Steve Poole (ORNL), chair
  - Jeff Broughton (LBNL) and Ken Koch (LANL)
- **Performance and Analysis (PA)**
  - Adolfy Hoisie (LANL), chair
  - Jeffrey Vetter (Georgia Tech, ORNL) and Costin Iancu (LBNL)

TECHNICAL OVERSIGHT COMMITTEE

- Barney Maccabe (ORNL), chair

- Stephen Lee (LANL), John Shalf (LBNL), and TC chairs

- Responsible for
  - Managing consortium activities
    - Workshops
    - Web site
    - Roadmap
  - Internal communication within the consortium

- **Workshop Committee**
  - Al Geist (ORNL), chair
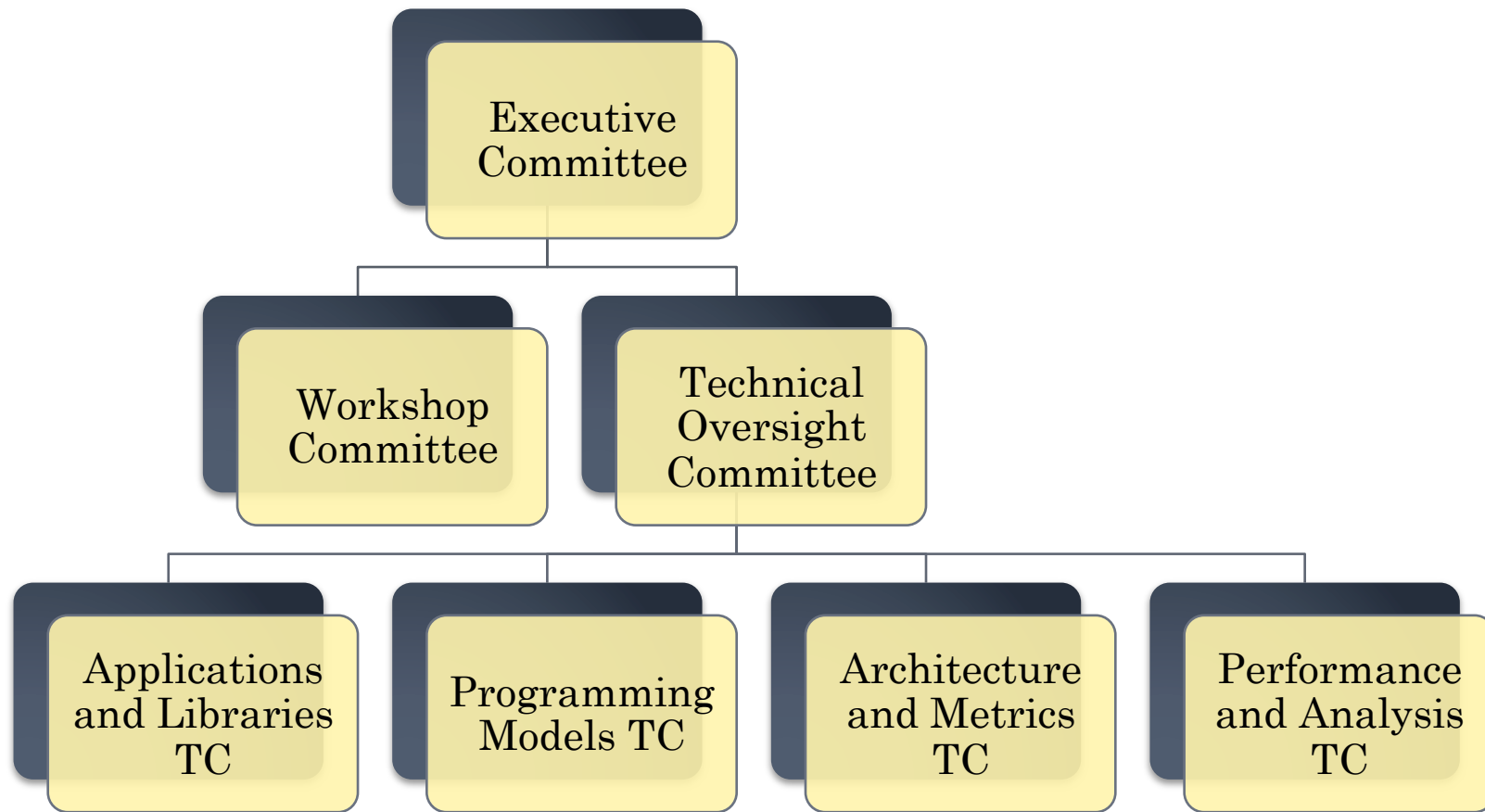 - Technical Oversight Committee

EXECUTIVE COMMITTEE

- Jeff Nichols (ORNL), chair
- Horst Simon (LBNL) and Andy White (LANL)

- Broad oversight of consortium activities

- Responsible for
  - Providing strategic direction and
  - External communication

STRUCTURE OF THE HMC ORGANIZING MEMBERS

THANK YOU

- Consortium web site
  - http://computing.ornl.gov/HMC
  - Membership signup page is coming!
  - Project description page is coming!
- First workshop
  - late January 2010 (the week of 1/18 or 1/25)
  - Bay area – looking for a hotel with easy airport access
  - Two days to develop the initial roadmap
    - Members of the TCs will develop and present a straw man roadmap, based on anticipated needs and known projects
    - Breakout session will be used to critique and refine the roadmap