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

http://computing.ornl.gov/HMC

First Annual Workshop
January 20-21, 2010
Hyatt Regency San Francisco Airport Hotel

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

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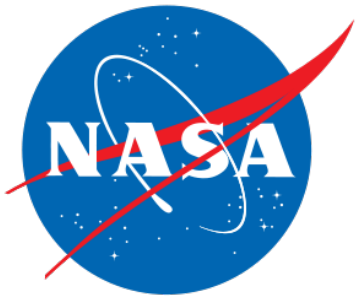
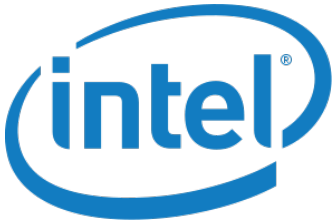
ORGANIZING PARTNERS



ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

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

INDUSTRIAL AFFILIATES



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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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")

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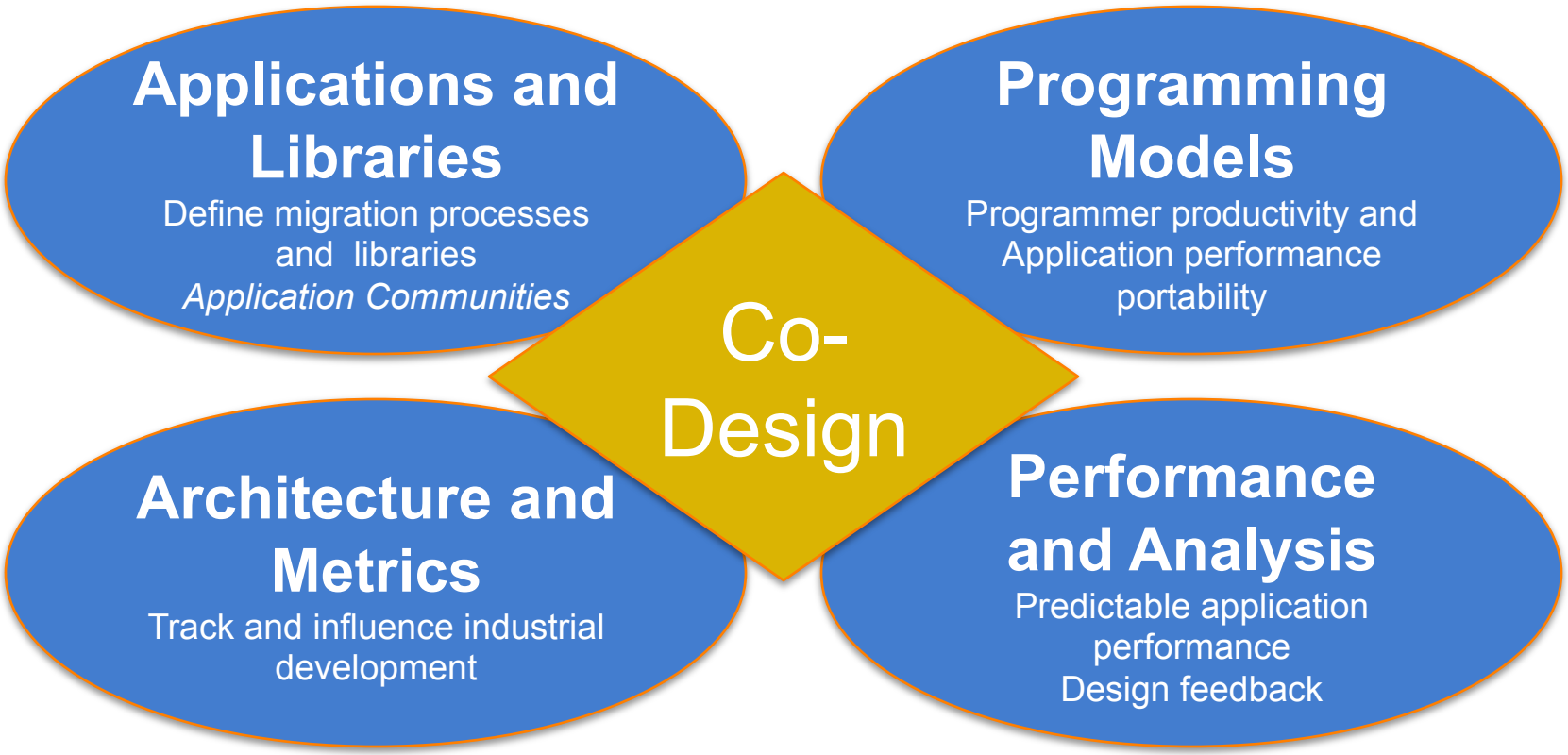
TECHNICAL COMMITTEES (TC)



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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)

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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

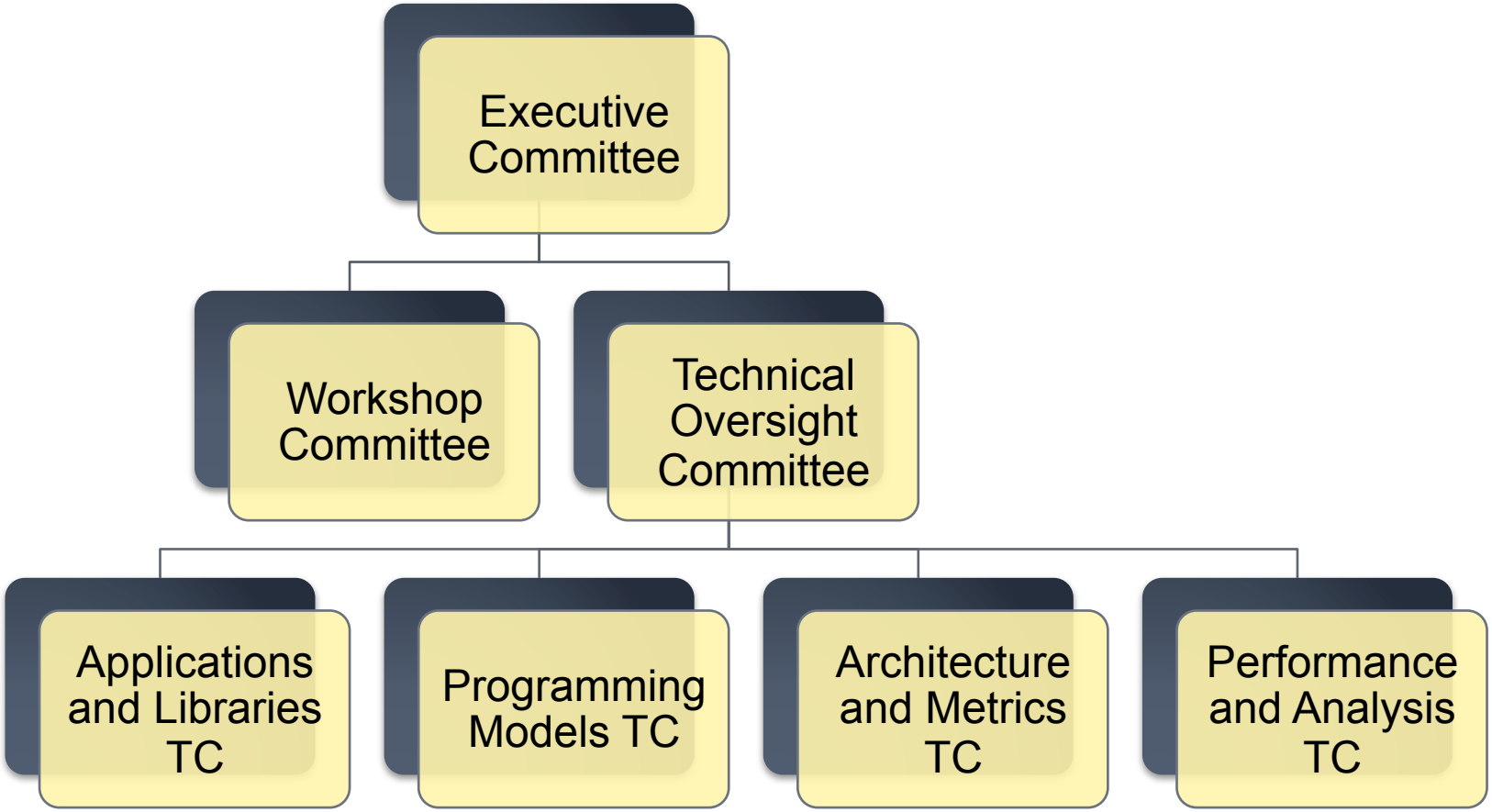
EXECUTIVE COMMITTEE

- 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



SCHEDULE FOR THE NEXT TWO DAYS

- This morning
  - Experiences with accelerator based systems
  - Plans for new accelerator based systems
  - ORNL Application Readiness plan
  - Exascale Activities (tracking the future)
  - Structure of the Roadmap
- This afternoon: Breakout sessions to develop the roadmap
- Tomorrow
  - Morning: Review roadmap
  - Morning and afternoon: Pairwise exchanges
  - Afternoon: Breakouts to refine the roadmap
  - Late afternoon: Review roadmap
- Friday morning: writing

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