Future Computing Community of Interest Meeting

NITRD NCO, 490 *L'Enfant Plaza SW, Suite 8001 (8th floor), Washington, DC 20024*

August 5-6, 2019

Day 1: August 5, 2019

8:20 AM	**Welcome and Introductions from Fast-Track Action Committee On Strategic Computing**	Manish Parashar, NSF/ Barry Schneider, NIST/ Bill Vanderlinde, DOE
8:30 AM	**Opening Remarks**	Jake Taylor, OSTP
8:50 AM	**Transition, Introduction of Plenary Speakers**	Manish Parashar, NSF
8:55 AM	**Plenary Talks: The Future of Computing**	
	○ *The Path Beyond Moore's Law: non von Neumann Architectures*	Thomas Sterling, Indiana University
	○ *Delivering the Future of High-Performance Computing*	Mark Papermaster, AMD
	○ *Seismic Shift: What's Next in the Post-Moore, Post-ISA Era?*	Margaret Martonosi, Princeton

10:10 AM **Session I Panel: Current Landscape, Use Cases, and Applications**

Moderator: Manish Parashar, NSF

Panelists: Martin Berzins, University of Utah; Ian Foster, University of Chicago; Miron Livny, University of Wisconsin-Madison; Bill Tang, Princeton University

We are witnessing dramatic changes in the nature of applications across all of science and engineering. These changes are driven in part by the increasing availability and scales of experimental and observational data, the desire and ability to model phenomena more holistically across multiple scales and physics, the desire for near-real-time data processing and actuation, and the growing role of artificial intelligence/machine learning. This session will explore opportunities for emerging applications and their impact on future computing systems and paradigms in the next decade.

11:10 AM **Break**

11:25 AM	**Session I Breakout Discussions**	
	○ Breakout I: Software in Support of the Applications (Rm A)	Mike Heroux, SNL
	○ Breakout II: Reducing Barriers to Partnerships (Rm B)	Jake Taylor, OSTP
	○ Breakout III: Enabling Data (Rm C)	David Bader, NJIT
	○ Breakout IV: Emerging New Applications (Rm 8006)	Bob Chadduck, NSF

12:25 PM **Lunch, Summary Preparation Time** (Bring or buy lunch at L'Enfant Plaza food court)

1:25 PM **Brief out of Session I Breakout Discussions, Open Microphone** (7 min/brief out)

Moderator: Bill Vanderlinde, DOE

- Breakout I Lead — Mike Heroux, SNL
- Breakout II Lead — Jake Taylor, OSTP
- Breakout III Lead — David Bader, NJIT
- Breakout IV Lead — Bob Chadduck, NSF

2:10 PM **Keynote: Beyond Exascale: Playing the CMOS Endgame** — Steve Scott, Cray

2:22 PM **Session II Panel: Emerging Computing Paradigms**

Moderator: Rajeev Thakur, ANL

Panelists: Nicolas Dube, HPE; Howard Pfeffer, Internet2; Jeff Vetter, ORNL; Mark Wade, Ayar Labs

A number of new computing paradigms for high-end computing are emerging and many of these technologies could be disruptive in terms of programmability and wide-spread acceptance. This session explores emerging computing paradigms and technologies that may come into use over the next 5 - 10 years. This includes infrastructure, security, systems software, development and applications software, and how integrating these technologies with the current infrastructure.

3:10 PM **Break**

3:25 PM **Session II Breakout Discussions**

- Breakout I: Seamless Integration and Software (Rm A) — Vivek Sarkar, GA Tech
- Breakout II: Potholes in the Hardware Roadmap (Rm B) — Hal Finkel, ANL
- Breakout III: Architectural and Systems Considerations (Rm C) — Michela Becchi, NCSU
- Breakout IV: Enabling New Partnership Opportunities (Rm 8006) — Corey Stambaugh, OSTP

4:25 PM **Break, Summary Preparation Time**

4:55 PM **Brief Out of Session II Breakout Discussions and Open Microphone** (7 min/brief out)

Moderator: Leslie Hart, NOAA

- Breakout I Lead — Vivek Sarkar, GA Tech
- Breakout II Lead — Hal Finkel, ANL
- Breakout III Lead — Michela Becchi, NCSU
- Breakout IV Lead — Corey Stambaugh, OSTP

5:45 PM **Wrap Up Day 1**

Day 2: August 6, 2019

8:30 AM	**Welcome and Introductions**	Manish Parashar, NSF
8:35 AM	**Opening Remarks**	Kamie Roberts, NITRD
8:45 AM	**Keynote: Future Computing Models, Technology in the 2030-2040 Horizon**	Mike Mayberry, Intel

8:57 AM **Session III Panel: Future Computing Models**

Moderator: Eric Debenedictis, IEEE

Panelists: Gert Cauwenberghs, UCSD; Yi-Kai Liu, NIST; Heike Riel, IBM; John West, University of Texas

The landscape of strategic computing has become quite complex. This is exacerbated by the impact of edge and fog devices which must work seamlessly with higher end devices. We are seeing a very diverse set of technologies coming on the market over the next few years; this session will explore where we will be in 10-20 years.

9:45 AM **Break**

10:00 AM **Session III Breakout Discussions**

- Breakout I: Workforce (Rm 8018) — Tsengdar Lee, NASA
- Breakout II: Academia to Industry to Government (Rm B) — Piyush Mehrotra, NASA
- Breakout III: Applications and Users of Future Computing (Rm C) — Christian Trott, SNL
- Breakout IV: Quantification, Verification, and Validation (Rm A) of Novel Computing Architectures — Jeff Shainline, NIST

11:00 AM **Break, Summary Preparation Time**

11: 30 AM **Brief Out of Session III Breakout Discussions and Open Microphone** (7 min/brief out)

Moderator: Manish Parashar, NSF

- Breakout I Lead — Tsengdar Lee, NASA
- Breakout II Lead — Piyush Mehrotra, NASA
- Breakout III Lead — Christian Trott, SNL
- Breakout IV — Jeff Shainline, NIST

12:25 PM **Closing Statement** Manish Parashar, NSF