

# *ASCR@40: An Update on the ASCAC Subcommittee Documenting ASCR Impacts*

March 26, 2019

Bruce Hendrickson  
Associate Director for Computation



# Reminder of the Charge

- Steve Binkley charged the ASCAC with producing a report that assesses and documents the historical accomplishments of the Advanced Scientific Computing (ASCR) program and its predecessors over the past four decades.
  - Highlight outstanding examples of major scientific accomplishments that have shaped the fields of ASCR research
  - Identify the lessons learned from these examples to motivate ASCR investment strategies in the future
  - Illuminate the guiding strategies and approaches that will be key to ensuring future U.S. leadership in the full range of disciplines stewarded by ASCR
  - Inform the investment strategy of the Office of Science
- The report should provide technical details as needed for context but should be primarily concerned with the essence of each story as it relates to the larger progress of science
- Report is (was) due December 31, 2018



# Subcommittee Members

- Buddy Bland, ORNL
- **Jon Bashor**, LBL
- Jackie Chen, SNL
- Phil Colella, LBNL
- Jack Dongarra, University of Tennessee and ORNL
- Thom Dunning, PNNL
- **Richard Gerber**, LBL
- **Bruce Hendrickson**, LLNL, Chair (since early-February)
- Wendy Huntoon, KINBER
- Bill Johnston, LBNL (ret.)
- Paul Messina, ANL, Former Chair
- Jim Pool, Caltech (ret.)
- Dan Reed, University of Utah
- John Sarrao, LANL

Red = new



# Previous ASCAC Updates

- Paul briefed ASCAC in September and December of 2018 on the Subcommittee's status
- Focus was on the impressive progress collecting materials from the community that would inform the report
- Briefings did not include
  - Proposed report structure
  - Process to complete the report

ASCAC MEETING



UPDATE ON ASCAC SUBCOMMITTEE  
DOCUMENTING ASCR IMPACTS

PAUL MESSINA  
Argonne National Laboratory

September 18, 2018  
Washington, DC

UPDATE ON ASCAC SUBCOMMITTEE  
DOCUMENTING ASCR IMPACTS

Paul Messina  
Argonne National Laboratory

December 12, 2018

# Proposed Document Outline with Section Owners

## Executive Summary (All)

1. Introduction (Hendrickson, Messina)
2. Criteria for selection of material to include (Hendrickson)
3. Accomplishments
  - i. Computational science (Chen, Dunning)
  - ii. Applied mathematics (Colella, Dongarra)
  - iii. Computer science (Reed, Johnston)
  - iv. Computer architecture (Messina)
  - v. Facilities (Bland, Gerber, ALCF representative)
4. Impact on industry (Bland, Messina)
5. Impact on workforce & education (Hendrickson, Messina)
6. Broader achievements and contributions (Sarraf, Dongarra)
  - i. High-impact workshops and reports sponsored by ASCR
7. Lessons learned from different modes of funding and recommendations for the future (Hendrickson)
8. Summary (All)
9. Appendices



# A New Request from ASCR in Early January

- Can committee help with a broadly accessible document organized around impacts, not disciplines?
  - “40 Years of BES” document is an attractive model
- The team began exploring alternative structures to replace or augment existing plans
- Paul stepped aside in late January before this was resolved
- I was asked to step in shortly thereafter



# Subcommittee Met Yesterday, 3/25/19

---

- Hendrickson, Bashor, Colella, Gerber, Johnston & Sarrao
  - Plus Tiffani Conners (ORAU) and Bill Cannon (Krell) in support
  
- Outcomes:
  - Refined definition of content of document sections
  - Consolidated plan for responding to ASCR's needs
  - Finalized responsibility for content production



# Current Three-Element Plan

---

1. Continue with prior outline towards a detailed history document
  - Structured by discipline
  - Written by Subcommittee members with input from community
2. Contract with Krell to write and produce a glossy, impact-centric document
  - Content guidance & support provided by Subcommittee
  - Aim to minimize burden on Subcommittee
3. Continue to collect and collate raw materials
  - Support follow-on project to index & structure this content as archival material for future use





# Plans for Impact-Centric Document

- Structured around ~10 exemplar impact stories, 3-4 pages each
- Possibilities still being finalized but include:
  - Delivering on the promise of computational science
  - Mathematics is the critical enabler
  - Connectivity changes everything
  - Petaflops for the people
  - When decisions matter
  - Open and patient pays off big
  - Knowledge from data
  - Rules of the road for HPC
  - Industrial impacts of ASCR investments
  - Developing the nation's computing workforce



# Anticipated timeline

---

- Around 4-5 months to complete glossy document
- Around 6-7 months to complete history document
  
- We will update status at next ASCAC meeting

# Questions?

---

