



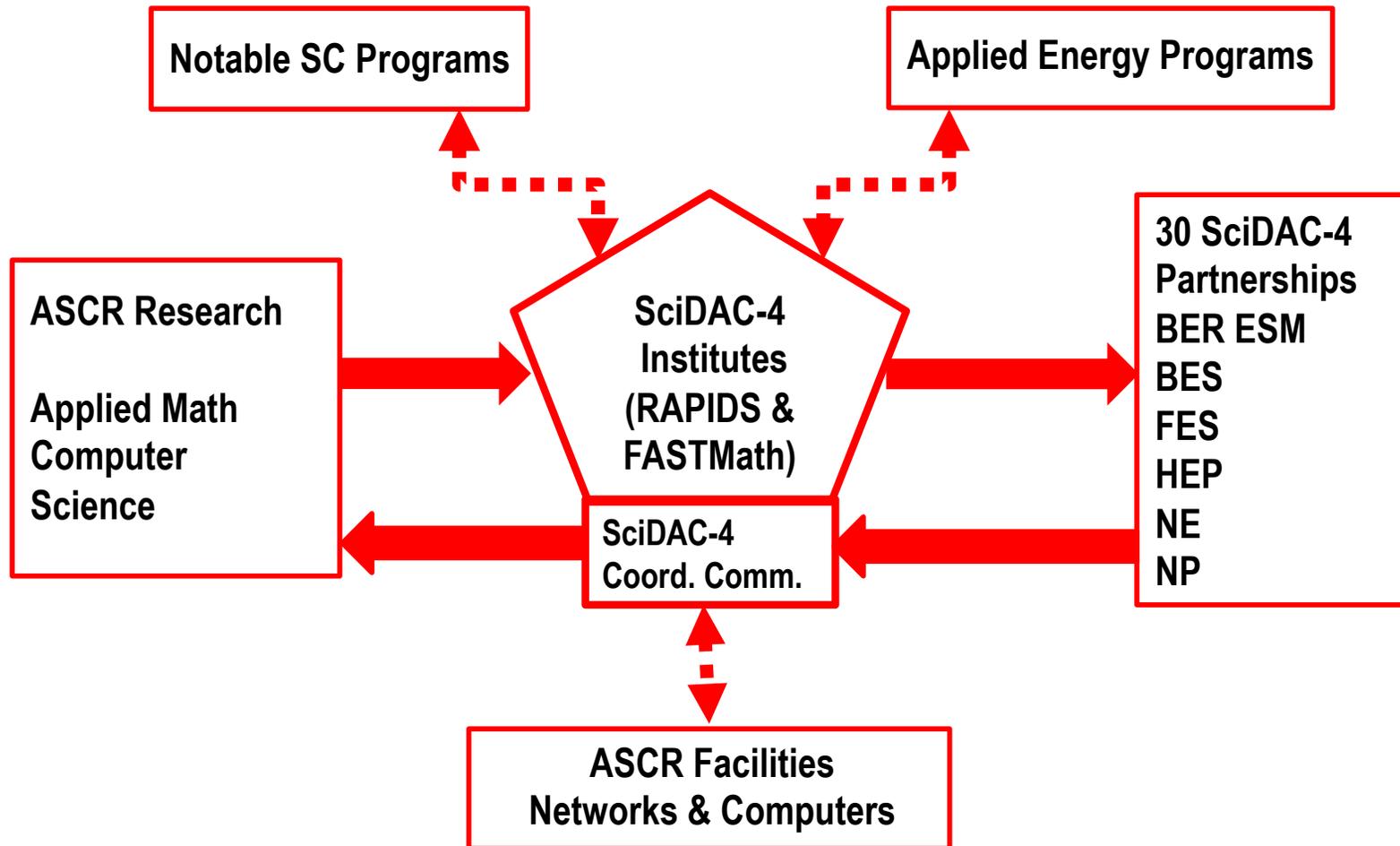
U.S. DEPARTMENT OF
ENERGY

Office of
Science

FASTMath Institute – All-Hands Meeting

June 10th, 2019

Ceren Susut
Advanced Scientific Computing Research
U.S. Department of Energy



ASCR FY2020 Budget Request: “SciDAC Institutes will be recompeted....”

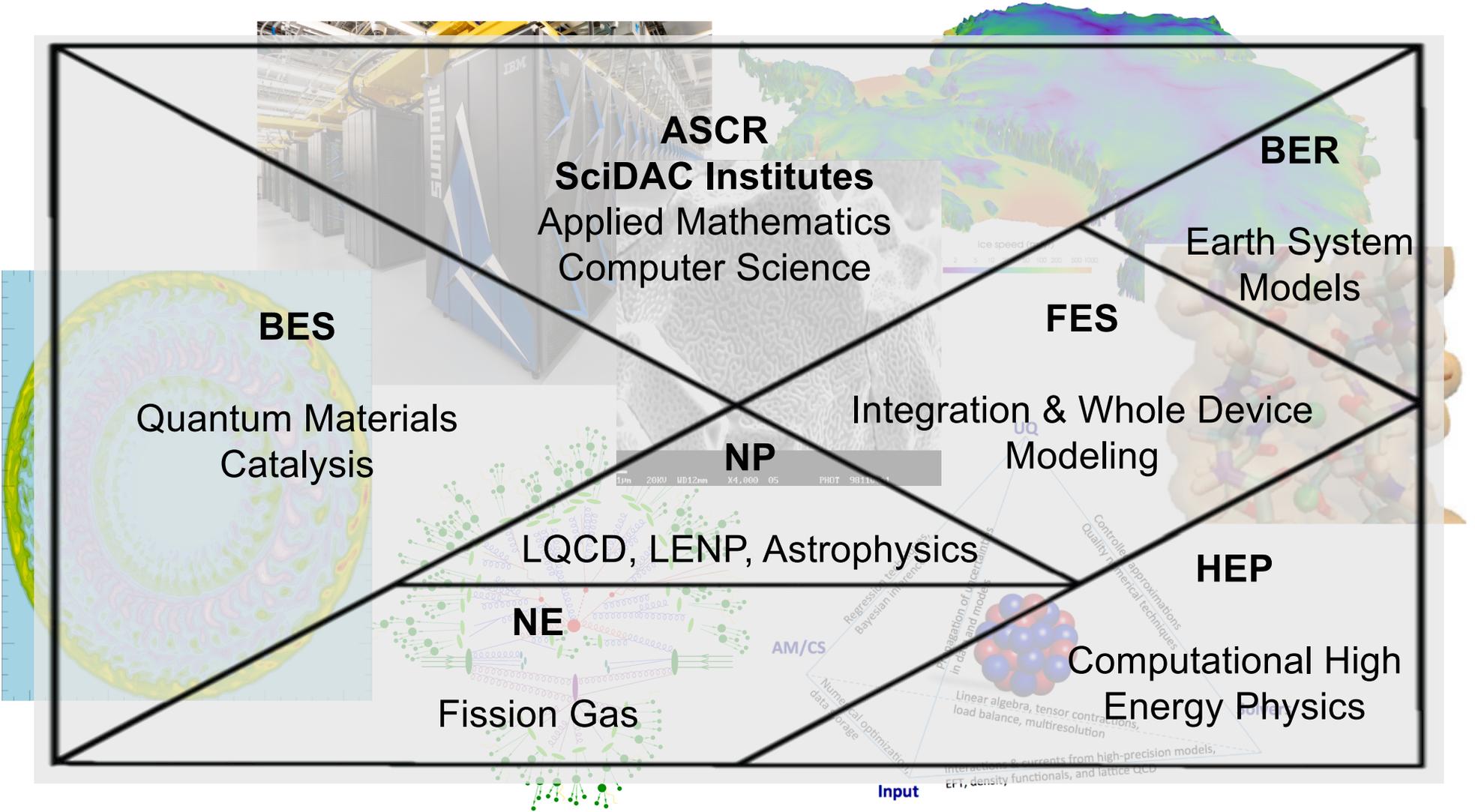


SciDAC is an Evolving Program

Program	Time Frame	Description	Result
SciDAC-1	2001 – 2006	Created scientific software infrastructure for parallel computing; Funded collaborations in DOE science domains	Science at the Terascale
SciDAC-2	2006 – 2011	Added DOE science domains; Enhanced university involvement; Outreach to broader scientific community; Added Data&Visualization	Science to the Petascale
SciDAC-3	2011 – 2016	Improved collaborations among SciDAC Institutes and between ASCR-SC programs; Enhanced architecture- and applications-awareness within each Institute; Added Uncertainty Quantification	Science on multi-core and emerging hybrid architectures
SciDAC-4	2017 - 2021	Outreach to broader scientific community; First connection to Applied Energy; Built-in flexibility; Added Machine Learning	Science on pre-exascale architectures
SciDAC-5	2020 - >2025		Science at the Exascale



SciDAC Institutes Enable Scientific Breakthroughs





Goals

- ❖ Coordinate interactions between SciDAC-4 Institutes and Partnerships
- ❖ Assess emerging needs across SciDAC-4 projects
- ❖ Junction point for SciDAC-4, ASCR facilities and broader DOE computational science community

Activities

- ❖ Kick-off meeting on December 7th, 2017
- ❖ RAPIDS Webinar on February 13th, 2018
- ❖ FASTMath Webinar on March 14th, 2018
- ❖ Partnership Telecoms, April-December 2018
- ❖ ALCF Telecom on May 30th, 2019
- ❖ 2 Sessions in 2019 SciDAC-4 PI Meeting
- ❖ More to come...

SciDAC-4 PI Meeting: <https://www.orau.gov/scidac4pi2019/>

Committee

Rob Ross (ANL, RAPIDS Director, chair)
Esmond Ng (LBNL, FASTMath Director)
Katherine Evans (ORNL, BER POC)
Teresa Head-Gordon (LBNL, BES POC)
David Hatch (U. Texas-Austin, FES POC)
Jim Kowalkowski (FNAL, HEP POC)
Brian Wirth (ORNL, NE POC)
James Vary (Iowa State, NP POC)

DOE

Randall Laviolette (ASCR)
Ceren Susut (ASCR)
Renu Joseph (BER)
James Davenport (BES lead)
John Mandrekas (FES)
Lali Chatterjee (HEP)
David Henderson (NE)
Tim Hallman (NP)

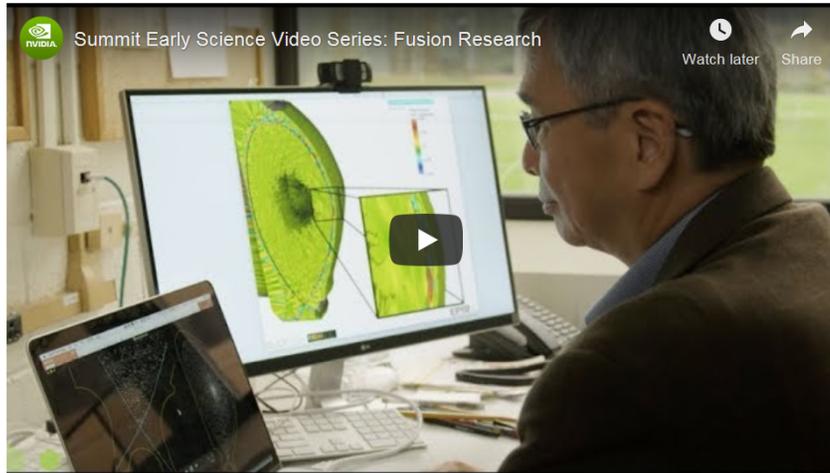


Scientific Discovery through Advanced Computing

Home About Participants Resources

SciDAC Feature

Summit: Fusion Research



Researchers at the Department of Energy's Princeton Plasma Physics Laboratory are using Oak Ridge National Laboratory's Summit supercomputer, currently the world's most powerful, to simulate the process necessary to produce energy via nuclear fusion. If successful, nuclear fusion could provide the world with a clean, virtually unlimited source of energy.

Mission

In today's world, supercomputers are essential to addressing scientific topics of national interest, including

Highlights

- LANL's Joseph Carlson receives 2017 APS - Division of Nuclear Physics Feshbach Prize
- Nuclear Pasta: strongest material in the universe
- Neutron-Rich Helium Isotopes: Complex Made Simple
- Bayesian approach to model-based extrapolation of nuclear observables
- Nucleon momentum distributions for local chiral interactions
- First Direct Evidence for the Fastest Neutrino Emission Mechanism in a Neutron Star

[View All Highlights](#)

ASCR

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