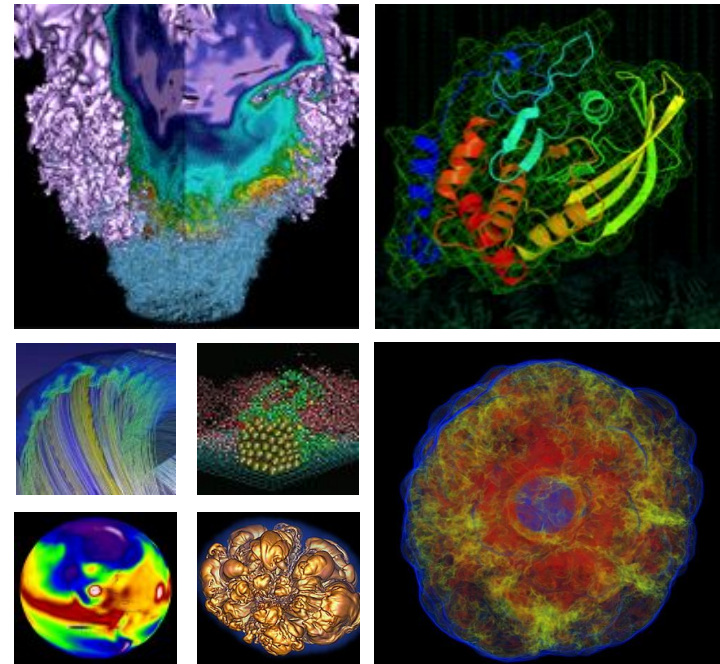# PDSF Site Report

Georg Rath, James Botts, Tony Quan, Jan Balewski, Jefferson Porter

HEPIX18 Fall/08.10.2018
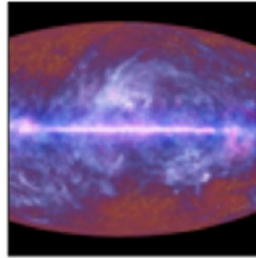
National Energy Research Scientific Computing Center

NERSC history of experimental & observational science projects
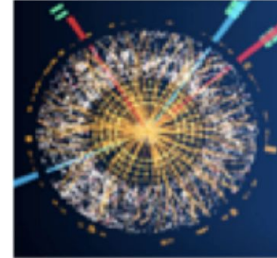
Palomar Transient Factory Supernova
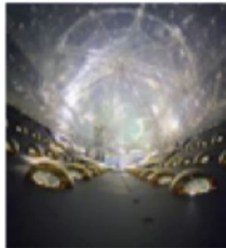
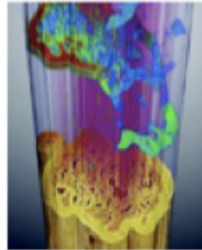**Planck Satellite Cosmic Microwave Background Radiation**

Alice Large Hadron Collider

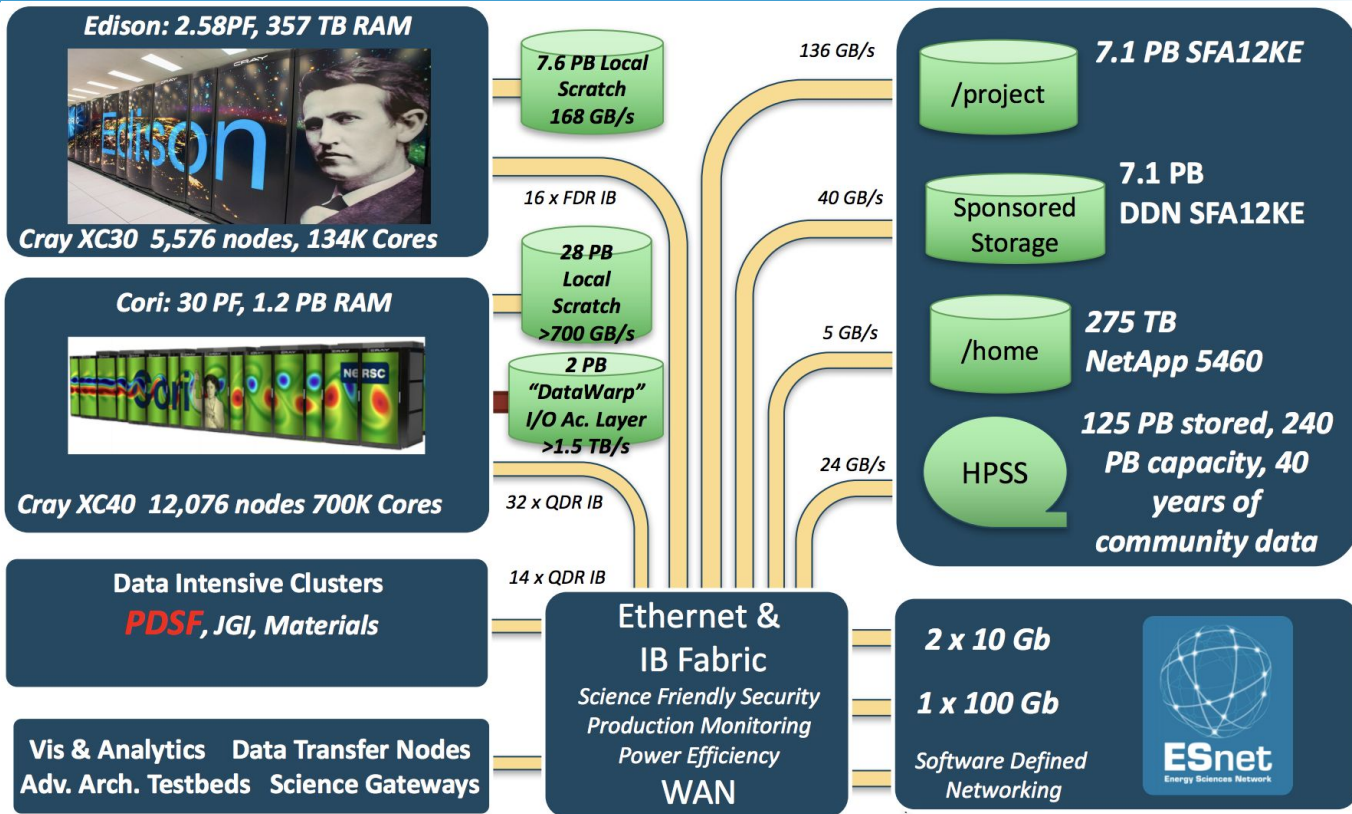**Atlas Large Hadron Collider**

Dayabay Neutrinos

ALS Light Source

LCLS Light Source

Joint Genome Institute Bioinformatics

NERSC Systems Today

Edison: 2.58PF, 357 TB RAM

Cray XC30 5,576 nodes, 134K Cores

Cori: 30 PF, 1.2 PB RAM

Cray XC40 12,076 nodes 700K Cores

Data Intensive Clusters
PDSF, JGI, Materials

Vis & Analytics   Data Transfer Nodes
Adv. Arch. Testbeds   Science Gateways

7.6 PB Local Scratch 168 GB/s

16 x FDR IB

28 PB Local Scratch >700 GB/s

2 PB "DataWarp" I/O Ac. Layer >1.5 TB/s

32 x QDR IB

14 x QDR IB

136 GB/s

40 GB/s

5 GB/s

24 GB/s

Ethernet & IB Fabric
Science Friendly Security
Production Monitoring
Power Efficiency
WAN

/project
7.1 PB SFA12KE

Sponsored Storage
7.1 PB DDN SFA12KE

/home
275 TB NetApp 5460

HPSS
125 PB stored, 240 PB capacity, 40 years of community data

2 x 10 Gb

1 x 100 Gb

Software Defined Networking

ESnet
Energy Sciences Network

PDSF: Parallel Distributed Systems Facility
serving the community since 1996

- **Serial, high throughput**
- **Slurm workload manager**
- **Broad user base**
- **FairShare scheduling**
  - **Projects "buy in" to PDSF and the priority is adjusted accordingly**
- **STAR Tier-1, ALICE Tier-2, ATLAS Tier-3**

What happened since last time...

- **Sunsetting PDSF by April 2019**
- **Migration to Slurm completed**
- **Queues restructured for user needs**
  - **CHOS/non-CHOS partitions**
- **Continuous effort to move to Cori**
  - **CVMFS on Cray**

A year of Slurm

- **Memory limits enforced - stable cluster**
    - **User education necessary**
- **FairShare is problematic**
    - **Fair and Share are overloaded terms**
    - **Needs adaptation to workload**
    - **Set User Expectations**
- **Realtime/Debug queues enable interactive compute**

What happens next

- **Continuous effort to move to Cori**
  - **CVMFS on Cray**
  - **Move to non-CHOS only OS (Shifter)**
- **ALICE moving to Shifter containers**
- **Edge Services will move into SPIN**
- **Migration to Cori will continue**

Thank You