

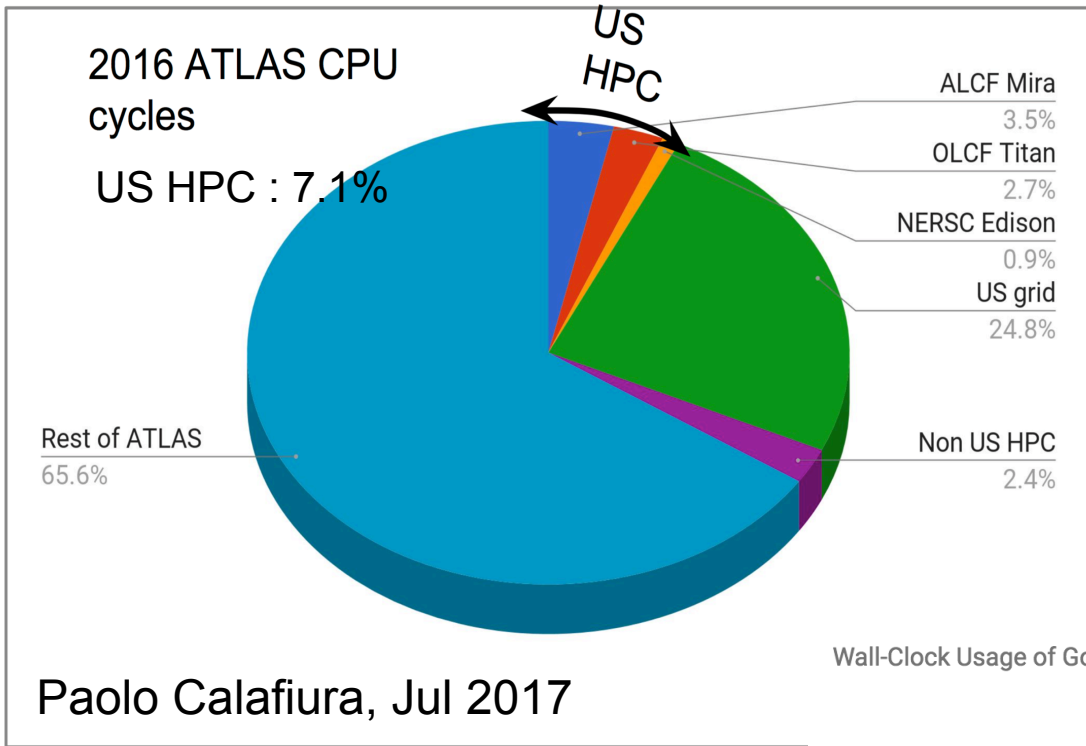
US Leadership Class Facilities



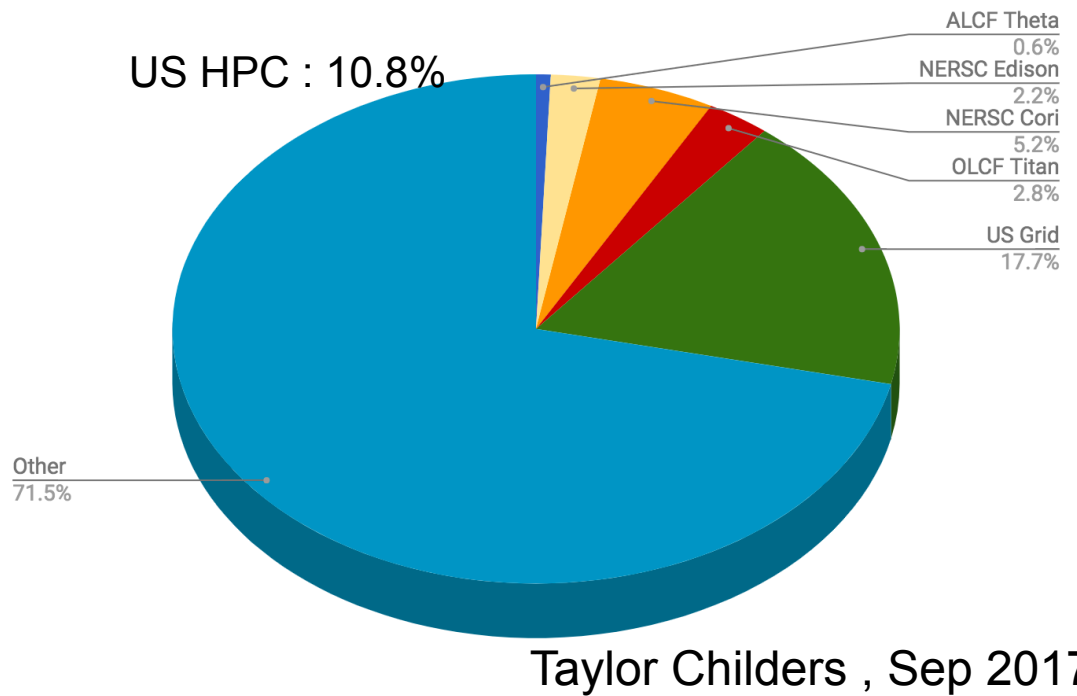
Alexei Klimentov
ATLAS Distributed Computing Technical Interchange Meeting
Sep 20, 2017, CERN

Thanks

- P.Calafiura, T.Childers, K.De, E.Lancon and many others



Wall-Clock Usage of Good Jobs in 2017 as of mid-September



ALCC and INCITE Mission

- The mission of the **ASCR Leadership Computing Challenge (ALCC)** is to provide an allocation program for projects of interest to the Department of Energy (DOE) with an emphasis on high-risk, high-payoff simulations in areas directly related to the DOE mission and for broadening the community of researchers capable of using leadership computing resources.
- Open to researchers from academia, government labs, and industry, the **Innovative and Novel Computational Impact on Theory and Experiment (INCITE)** program is the major means by which the scientific community gains access to some of the fastest supercomputers. The program aims to accelerate scientific discoveries and technological innovations by awarding, on a competitive basis, time on supercomputers to researchers with large-scale, computationally intensive projects that address “grand challenges” in science and engineering.

- ATLAS received **2017** ALCC allocation starting July 1
 - Amount: **188,000,000 processor hours**
 - Award Duration: 1 year
- Proposal titled ‘Large Scale Detector Simulation for the ATLAS Experiment at LHC’ was submitted to INCITE program in June 2017 (K.De, AK, S.Panitkin et al) – 100M CPU hours in 2017-2019
 - Including DL and ML ATLAS core SW development

Oak Ridge Leadership Computing Facility	80,000,000	Titan-core hours
Argonne Leadership Computing Facility	18,000,000	Mira-core hours
	40,000,000	Theta-core hours
National Energy Research Scientific Computing Center	20,000,000	Cori Phase 1/ Edison NERSC-core hours
	30,000,000	Cori Phase 2 NERSC-core hours

US ATLAS Long Term HPC Request

US ATLAS HPC CPU Allocation Request (Millions of core-hours)

2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
240	410	550	400	400	400	650	1140	2930	2930	2930	2930	2930

- Rationale beyond long-term request
 - Demonstrate the perspective and importance of our requests to funding agencies
 - negotiate a multi-year allocation with the three DOE LCF sites
 - Establish long-term relations with sites
 - Process “non-urgent” US ATLAS simulation samples on HPCs (estimated to be 75% of the US share (23%) of G4 events)

Previously discussed topics

- Use HPC allocation primarily for ATLAS
 - The ALCC proposals mention other HEP experiments
 - ATLAS will need resources during LHC Run 2 immediately
 - Target – 15M core-hours per month (per LCF)
- Initially ALCC allocation dedicated for official production
 - Take any tasks – possibly longer jobs (but backfill jobs are fine too)
 - When do we start new scenario for ATLAS production ?
- R&D and Prototype efforts in parallel
 - Harvester tests, with and without Event Service
 - NGE tests (NGE as Harvester), without Event Service