

Introduction to the Oak Ridge Leadership Computing Facility (OLCF)

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ORNL is managed by UT-Battelle LLC for the US Department of Energy

Office of Science User Facilities

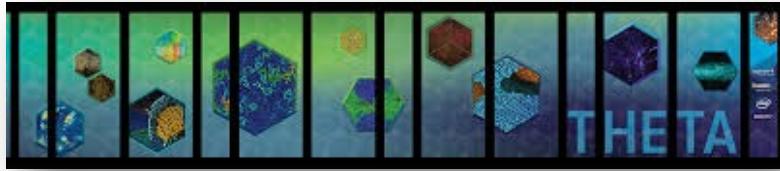


28 world-leading facilities serving over 33,000 researchers annually

- supercomputers,
 - high intensity x-ray, neutron, and electron sources,
 - nanoscience facilities,
 - genomic sequencing facilities,
 - particle accelerators,
 - fusion/plasma physics facilities, and
 - atmospheric monitoring capabilities.
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- **Open access; allocation determined through peer review of proposals**
 - **Free for non-proprietary work published in the open literature**
 - Full cost recovery for proprietary work

<http://science.energy.gov/user-facilities/user-facilities-at-a-glance/>

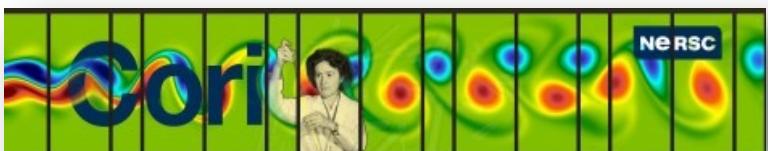
We are one of the DOE's Office of Science computing user facilities



Argonne Leadership Computing Center



Oak Ridge Leadership Computing Center



- DOE is leader in open high-performance computing
- Provide the world's most powerful computational tools for open science
- Access is free to researchers who publish
- Boost US competitiveness
- Attract the best and brightest researchers

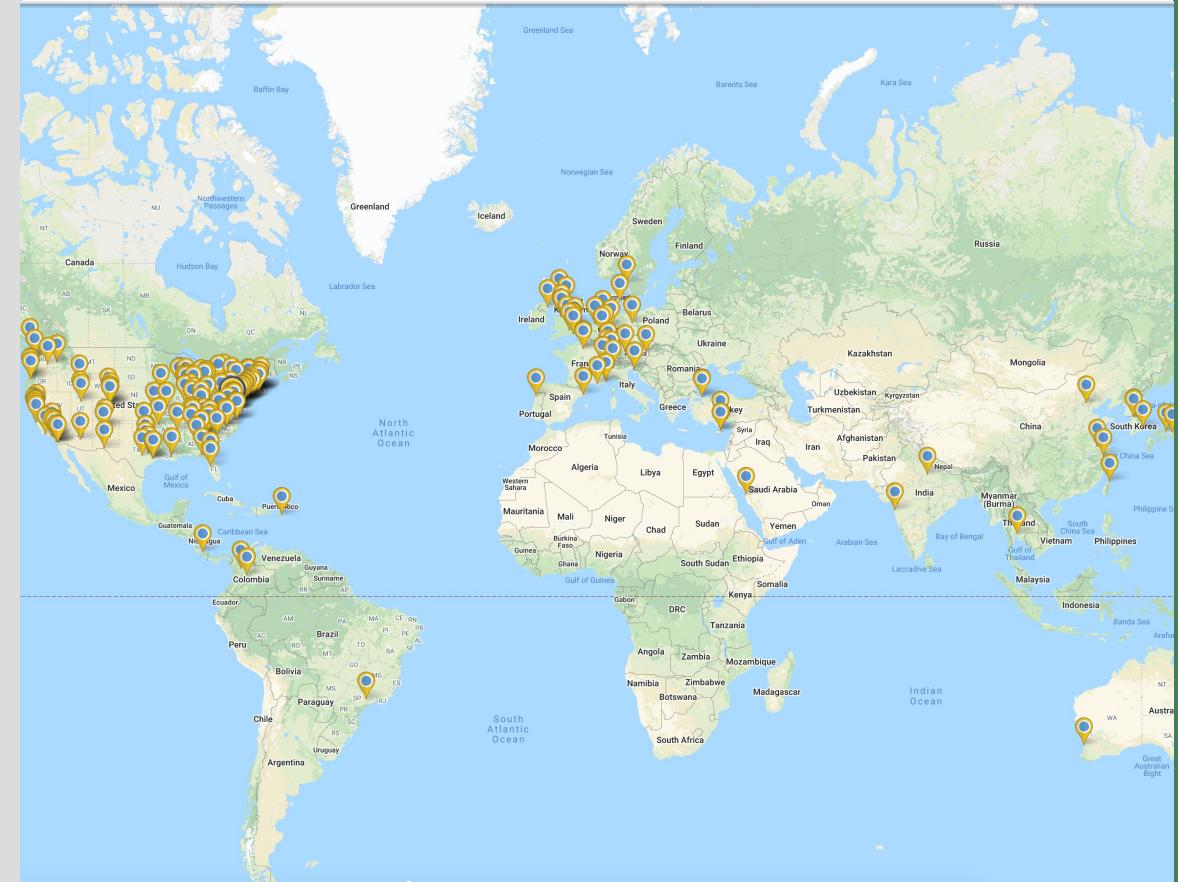
What is a Leadership Computing Facility (LCF)?

- Collaborative, multi-lab DOE initiative (2 centers / 2 architectures)
- Mission: Provide an ecosystem that enables capability computing opportunities to solve the most challenging problems.
- Administer and support two highly competitive user allocation programs
 - Innovative and Novel Computational Impact on Theory and Experiment (INCITE)
 - ASCR Leadership Computing Challenge (ALCC)
 - Computational allocations typically 100x larger than generally available in university, laboratory, and industrial (scientific and engineering) environments.



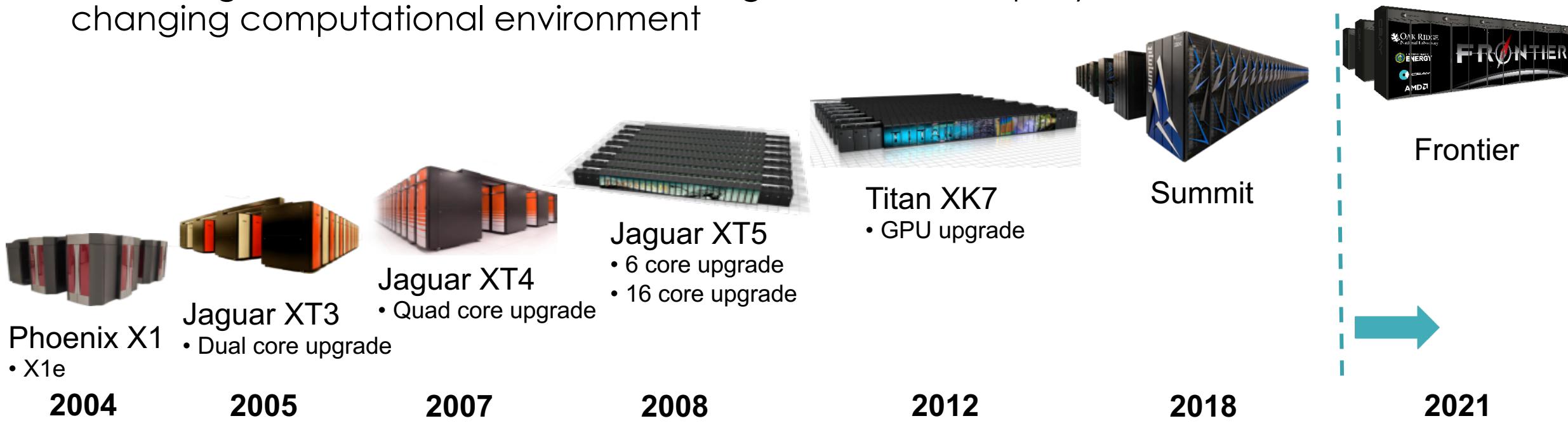
OLCF Users

- The OLCF averages about 1,500 unique users who are located around the world
- OLCF users come from academia, industry, and govt institutions
- Users are attached to projects which run up to 3 years in duration. We average about 250 research projects per year.
- OLCF resources are allocated through three highly competitive allocation programs requiring peer-reviewed proposals



The OLCF has Successfully Delivered Six Systems Since 2004

- Frontier will be system number seven and will provide an increased capability of over 80,000x
- Large part of success has been strong user partnerships to scale & refactor codes/methods
- Partnering has been essential to delivering science in a rapidly changing computational environment



Summit IBM AC922

Specifications and Features

- Processor: IBM Power9™ (2/node)
- GPUs: 27,648 NVIDIA Volta V100s (6/node)
- Nodes: 4,608
- Node Performance: 42TF
- Memory/node: 512GB DDR4 + 96GB HBM2
- NV Memory/node: 1600GB
- Total System Memory: >10PB DDR4 + HBM + Non-volatile
- Interconnect Topology: Mellanox EDR 100G InfiniBand, Non-blocking Fat Tree
- Peak Power Consumption: 13MW



We are hiring!

- Oak Ridge National Laboratory has numerous scientific and technical positions available in HPC, AI, Computational Science and Mathematics
- For a complete listing of positions available in Computing and Computational Sciences visit, <https://jobs.ornl.gov/go/Computational-Sciences-Jobs/4534300/>

We also have Student Opportunities!

- Pathways to Computing Internship Program
 - Encourages participation from group underrepresented in computing
 - 2021: <https://www.zintellect.com/Opportunity/Details/ORNL-USO-PCIP-2021>
- Virtual Undergraduate Research Summer Internships
 - 2021: <https://zintellect.com/Opportunity/Details/ORNL-USO-2021vURSI>
- Virtual Graduate Research Summer Internships
 - 2021: <https://zintellect.com/Opportunity/Details/ORNL-GSO-2021vGRSI>
- DOE Internships:
 - [Science Undergraduate Laboratory Internship](#)
 - [Community College Internship](#)

Questions?

