

# Xpert Network - Best Practices and Tools for Computational and Data-intensive Research

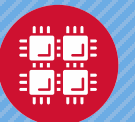
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27 Ohio  
universities



47  
companies



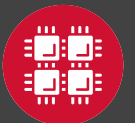
4,419 clients



64 college  
courses  
used OSC

# OSC Scientific Applications group

- Ohio Supercomputer Center (OSC)
  - High performance computing services for all universities in Ohio
  - Industry R&D also
- The Sci Apps group
  - Currently myself and 3+ staff members
  - A range of Computer Science, Applied Math and Computational Science backgrounds
- What we do
  - Operational activities
    - Deploy the “science stack” on our clusters
    - Help desk support – install software, debugging, performance issues
  - Investigate/evaluate new technology
  - **Collaboration with research software development teams**



# Current Collaborations

- **HPC Middleware**

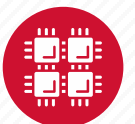
- MVAPICH MPI Project with DK Panda, CSE, OSU
- Large well established project

- **Data Analysis Project**

- Software team for SETSM Terrain Generation code with Ian Howat and MJ Noh, BPCRC OSU
- Primarily used by Paul Morin, et. al. at the PGC Univ. of Minn.
- Arctic and Antarctic mapping projects

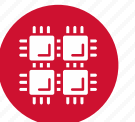
- **Traditional HPC**

- Collaborative Center for Aeronautical Sciences (CCAS)
- CFD software modernization with Datta Gaitonde, Aerospace Engr., OSU, Daniel Garmann, AFRL



# What best practices have worked for us?

- Frequent **face-to-face meetings** with collaborators
- Establish a **working baseline**
- Establish **good testing** procedures
  - Quick test and more comprehensive tests
  - Automation, we use the **ReFrame** test framework from CSCS
  - Testing on a **wide range of systems, software stacks, and scales**
- **Use available tools**
  - We have several **performance analysis** and **debugging tools**
  - Gain expertise with the tools and investigate new ones



# How to create synergy among ‘Xperts’ supporting domain science teams?

- Existing venues
  - **Share experiences**
    - Example Seminar Series: ECSS Symposium, IDEAS Best Practices
    - Topics: New tools, New language features, methodologies, etc.
  - **Ask specific questions**
    - Example forums: Campus Champion list, CaRCC people network, AskCI
    - Questions like: “Has anyone seen this error message?”
- What’s lacking?
  - Opportunities for **in depth sharing** of expertise
  - Some possibilities:
    - Provide a venue for **small group discussion** of complex issues
    - Sponsor **visits** with other groups to gain or share knowledge
    - Hold **workshops** that have sufficient **unscheduled time** for discussion

