

# Northeast Cyberteam

*A Workforce Development Strategy for Research Computing*

HPEC Special Session on HPC Education

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# MGHPCC

Massachusetts Green High Performance Computing Center

- Consortium
  - Boston University, Harvard University, MIT, Northeastern University, UMass System
- Purpose
  - Regional Data Center Dedicated to Research Computing
  - Collaboration on Computationally Intensive Research



# Collaborative Works In Progress

Research Computing  
Facilitation

Northeast Cyberteam\*  
[ask.cyberinfrastructure.org](http://ask.cyberinfrastructure.org)\*

XSEDE Champions\*  
CARC\*  
CASC

Resource Sharing

ATLAS cluster  
Engaging-1\*  
C3DDB  
Mass Open Cloud  
Northeast Storage Exchange\*  
Lincoln Laboratory Jupyter/Matlab cluster  
Northeast Cyberinfrastructure Lab

Open Storage Network\*  
Eastern Regional Network

Community Building

NEREN Seminars  
HPC Day

Region 7 XSEDE Champions

Education and  
Outreach

MGHPCC public meeting space  
Internship program  
Holyoke Codes  
Expanding Computer Education Pathways\*  
Computational Thinking in local Public Schools\*  
Broadening participation commitments from research grants\*



# Northeast Cyberteam Initiative

*Make high performance computing more readily accessible to small and medium sized institutions in Maine, Vermont, New Hampshire and Massachusetts where there may not be critical mass to support Research Computing Facilitators on campus*



# Northeast Cyberteam Initiative

## *Approach*

- Experiential learning
  - Projects that pair a student, mentor, and researcher/educator in need of assistance
  - 32 projects launched over the past 2 years
  - 67 Students and mentors and growing
- Tools and resources
  - Simplify/scale management of projects
  - Expand the pool of knowledge resources



# Project Workflow

- Researcher/educator request support
- Steering Committee reviews/approves in biweekly meeting
- Project “advertised” and tracked on the portal
- Program assists with identifying/recruiting student facilitator and mentor with subject matter expertise
- Students share plans and results in monthly Zoom session
- Program Manager conducts exit interview and captures information in project profile
- Typical duration: 3-6 months



# Current Projects – a Few Examples

- Individual-Based Modeling of Diamond Back Terrapins
- Data Presentation for the Living Bridge
- Foundation of Terrestrial Life: Inferring a Total-Evidence Timeline of Vascular Plant Evolution
- Check Carousel for Latest Submissions  
<https://necyberteam.org>



# Tools and Resources

## *Program Management Portal*

- Goals
  - Track Projects and Student Progress
  - Capture Lessons Learned/Facilitate Reproducibility
  - Single Point of Entry to all NE Cyberteam Resources

<https://necyberteam.org>





# Program Management Portal

- Transactions
  - Join Cyberteam as Researcher, Mentor and/or Student
  - Submit a Project
  - Display Projects, Highlighting Those That are Recruiting
  - Find a Mentor
  - Access Self-Service Learning Resources
- Common Tag Infrastructure enables efficient search for all relevant projects, personnel, tools with a single click

<https://necyberteam.org>



# Tools and Resources

## *Knowledge Resources*

- Frequently Asked Questions Whose Answers Evolve Over Time
  - > Ask.CI
- Relatively Static Information (e.g. Training on Linux, Programming Languages, Schedulers)
  - > Training Resources Wiki
- Dynamic, Situation-Specific, Immediate Help Needed
  - > Regional Help Desk
- Common Voting Infrastructure, Currently Implemented on Ask.CI, Enables Crowd-Sourced Evaluation of Effectiveness of Resources

<https://necyberteam.org>



# Lessons Learned

- Value of RCFs to researchers at small/medium sized institutions confirmed
- 3-6 month projects can have meaningful impact
- Mentors are easy to find
- Sharing resources across institutional boundaries has high value and is not as cumbersome as anticipated
- Large institutions willing to share knowledge
- Active program management is necessary



# Lessons Learned (cont.)

- Regional Focus Has Benefits
  - Co-location of mentor, student, researcher not necessary as day to day interaction can take place over zoom
  - Substantial benefit derived from occasional face to face meetings
- Effective Steering Committee Structure
  - Appropriately Placed Anchor Institution Leads
  - Biweekly Operations Zoom Calls
  - Twice-yearly In Person Strategic Planning Meetings



# Reproducibility

- High Level Commitment from Anchor Institution(s) and Support for Program Management are Critical to Success
- Process and Tools Designed With Portability in Mind



# Opportunities to Collaborate

- Residents in Northeast – Join the NECyberteam!
  - Submit a Project Proposal
  - Sign up as a Mentor or Student Facilitator
- Residents outside the Northeast - Launch a Cyberteam in Your Region!
- Post Questions or Answers on Ask.CI
- Vote on Questions/Answers on Ask.CI
- Submit Content on Training Resources Wiki



# Thank You!

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- <https://necyberteam.org>
- <https://ask.CI>

