

The Institute for Cyber-Enabled Research: Regional Organization to Promote Computation in Science

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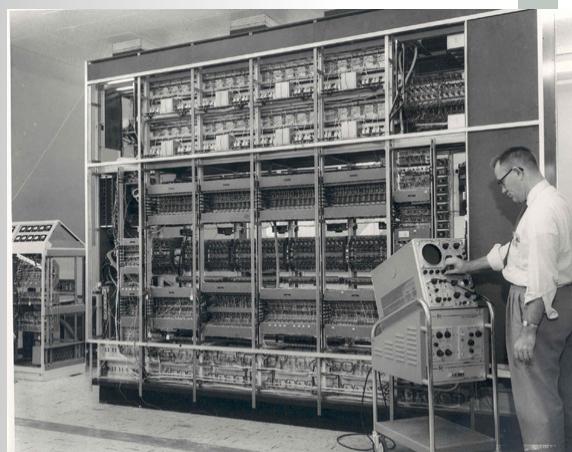
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1957 MISTIC Mainframe

- MSU's first mainframe
- Hand built by grad students
 - Dick Reid
 - Glen Keeney



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After MISTIC

- 1957 MISTIC
- 1963-1973 CDC 3600
- 1967 Computer Science Department
- 1968 CDC 6500
- 1971 MERIT
- 1978 Cyber 750
- **2005 HPCC**
- **2009 ICER**

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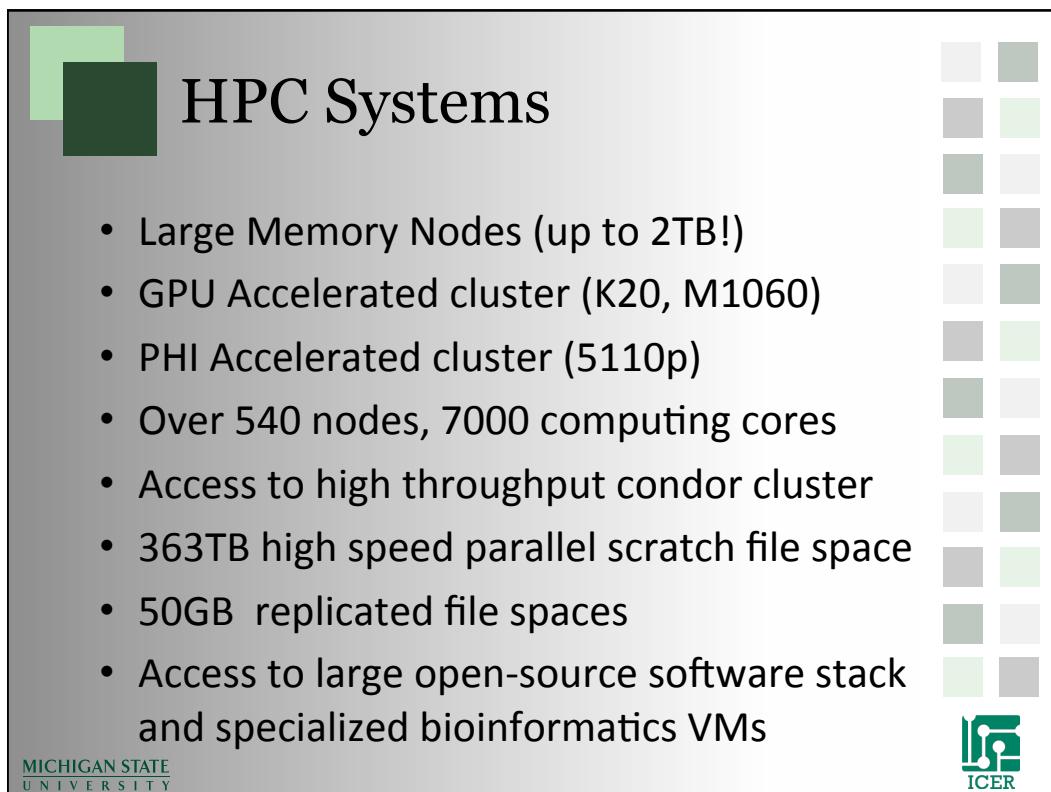
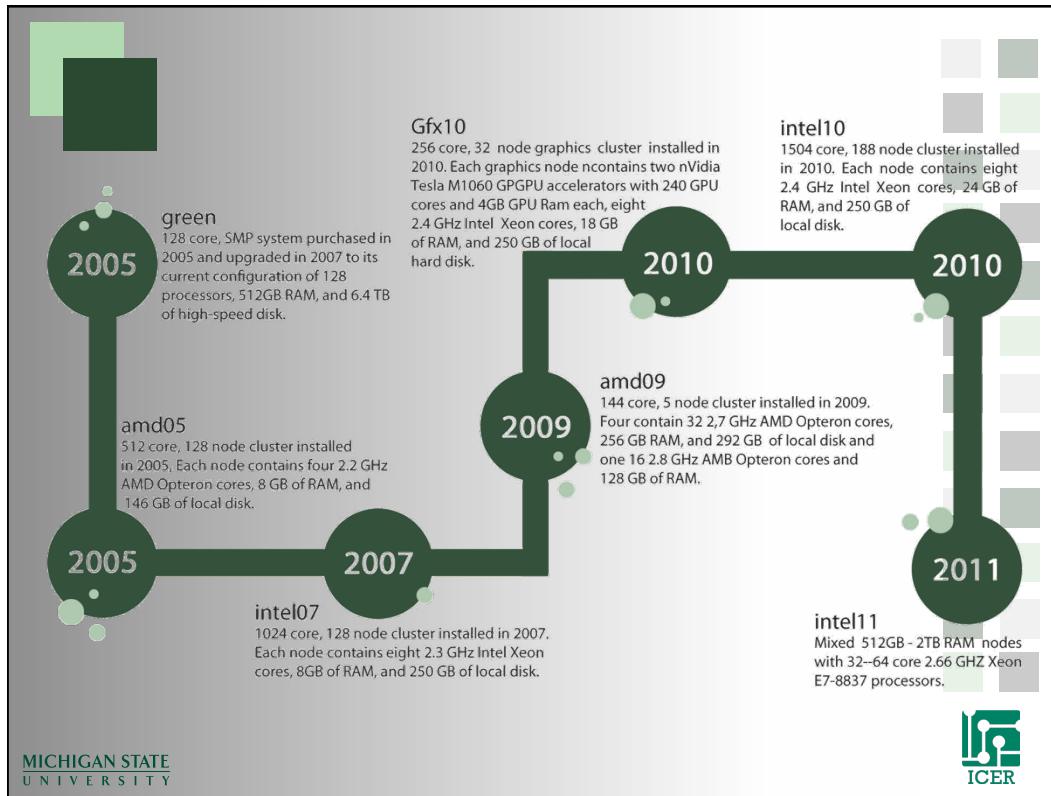


2005 HPCC

- Provide a level of performance beyond what you could get and reasonably maintain as a small group
- Provide a variety of technology, hardware and software, that would allow for innovation not easily found

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2009 iCER

The Institute for Cyber Enabled Research(iCER) at Michigan State University (MSU) was established to coordinate and support multidisciplinary resource for computation and computational sciences. The Center's goal is to enhance MSU's national and international presence and competitive edge in disciplines and research thrusts that rely on advanced computing.

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Bigger Science

- The goal of iCER is NOT:
 - Kflops
(floating point operations per second)
- Instead, the goal of iCER IS:
 - KSciences / second
- Doing More Science, Faster
 - Reducing the “Mean time to Science”
- iCER is designed to help researchers do their science and when appropriate scale them up to one of the national labs



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Buy-In Opportunities

- Every 1–2 years
- Researchers get exclusive use of their nodes within 4 hours of submitting a job (Perdue Model)
- Buy-in jobs will automatically overflow into the general resources
- Buy-in users own their nodes. They can request to take them out at any time (although no one has so far).

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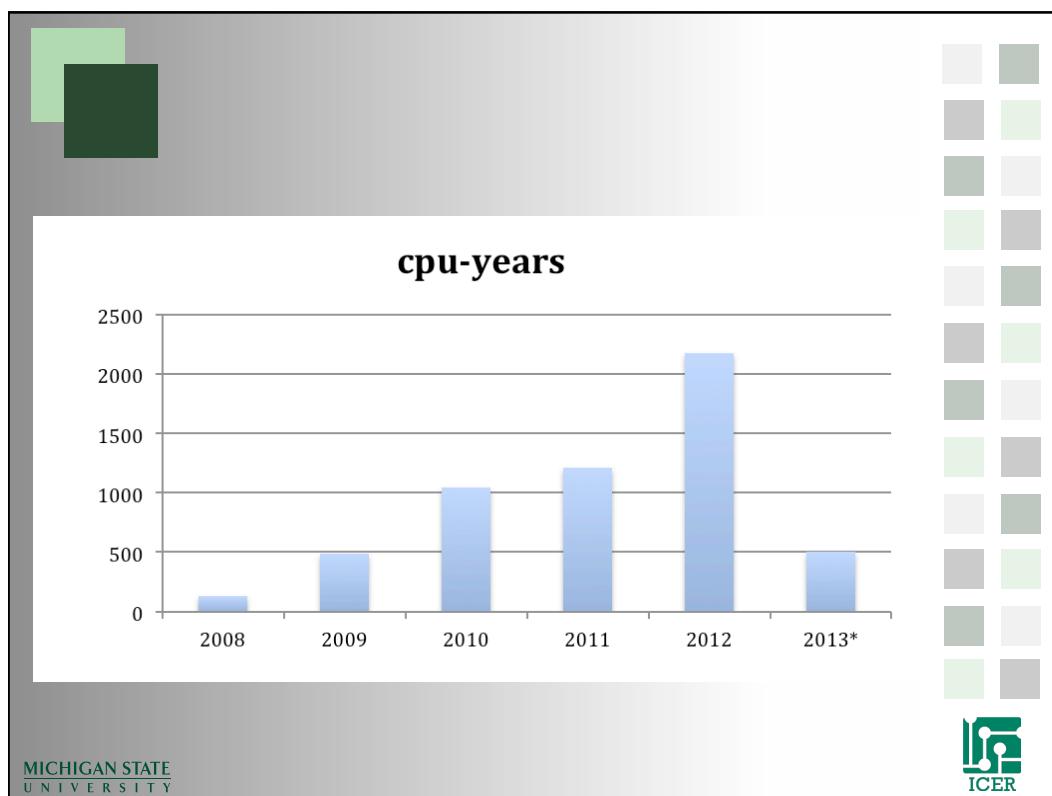
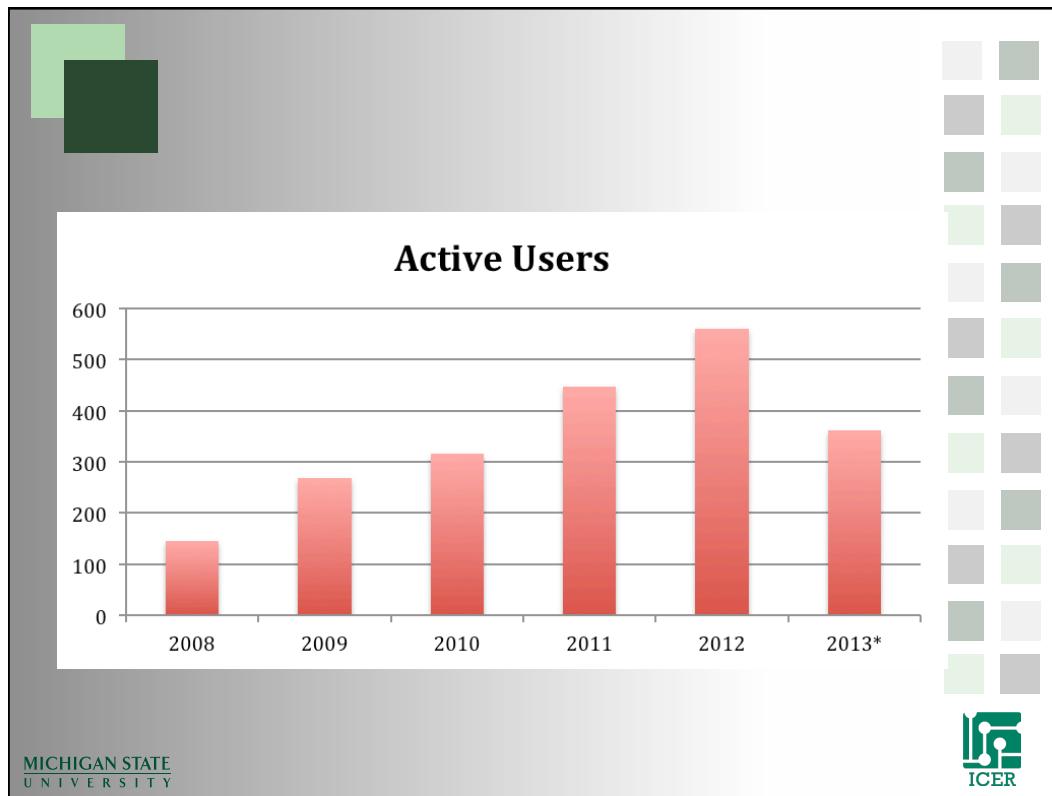


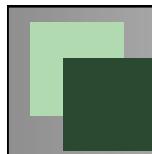
2010 CMU / MSU Partnership



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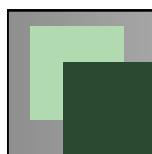
ICER programs

- Training Workshops
- Seminars
- CI-Days
- Student Interns
- One-on-one consulting
- Help desk support
- Grant writing support

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iCER Research Specialist

Ben Ong and Me

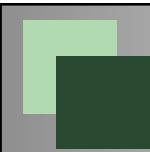
- Research Consulting
- Documentation
- HPCC Programming
- Proposal Writing
- Training and Education
- Outreach
- XSEDE Campus Champions



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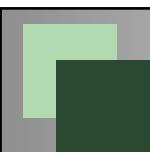






iCER Intern Program

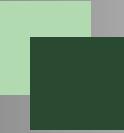
- Bigbrother, a user-level job monitoring tool that works directly with PBS
- Evaluating and deploying CONDOR for high throughput computing
- Visualization of MSU's machine room status [16]
- Creating a YUM repo server
- Node maintenance (hardware trouble shooting, replacement, burn in tests, etc.)
- Many others...



System Usability

- Large Software Stack
- Lmod
- 50GB (up to 1TB) home directories
 - Samba
 - Globus Online
- Single Queue Model
- Lots of working examples





User Training, Education and Support

- Local Workshops
 - Software carpentry
 - Introduction to Linux and HPCC
 - Advanced HPCC
- Remote Training
 - VSCSE – Virtual School for Computer Science Education
 - XSEDE training Workshops



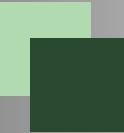


Extreme Science and Engineering Discovery Environment





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Transition to national resources

- VSCSE
- Blue Waters
- XSEDE
- Amazon
- Etc.



Extreme Science and Engineering Discovery Environment



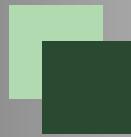




SUSTAINED PETASCALE COMPUTING



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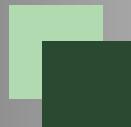
2013
CYBER
INFRASTRUCTURE
DAYS
OCTOBER 24-25
Save The Date!



<http://tech.msu.edu/CI-Days/>



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QUESTIONS?



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