RESEARCH COMPUTING FACILITATORS
AT
WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON
• Development of distributed computing technologies like HTCondor
• Computing infrastructure for UW-Madison research
• Research Computing *Facilitation*
Agile, Shared Compute Systems

“submit locally, run globally”
### In 2018 Quick Facts

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>400</td>
<td>Million Hours Served</td>
</tr>
<tr>
<td>280</td>
<td>Research Projects</td>
</tr>
<tr>
<td>60</td>
<td>Departments</td>
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Research Computing Facilitation

accelerating research transformations

proactive engagement
personalized guidance
teach-to-fish training
technology agnostic
collaboration liaising
upward advocacy
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accelerating research transformations

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upward advocacy

On Engaging the Long Tail ...

interactioninstitute.org – Arthur Maquire
Research Computing Facilitators

- Communication and Leadership Skills
- Scholarship Experience
- Technical Skills

designated, dedicated, deliberate
1. Meet with every potential new user.
Research Computing Facilitation

1. Meet with every potential new user.
2. Ask progressively for details.
Research Computing Facilitation

1. Meet with every potential new user.
2. Ask progressively for details.
   • Tell me about your research ...
   • ... and how does computing fit in?
   • What is your near-term bottleneck?
   • How are your running it now?
     (the compute/data requirements?)
     (your computing background?)
   • How much/big do you need to run?
Research Computing Facilitation

1. Meet with every potential new user.
2. Ask progressively for details.
3. Set expectations.

If you …
   > execute your work this way
   > requiring these learning steps and this much time

Then you …
   > can reach your research goal after this much walltime and
   > could really achieve this much more research outcome
Research Computing Facilitation

1. Meet with every potential new user.
2. Ask progressively for details.
3. Set expectations.
4. Follow up with the personalized plan in #3.
5. Make ongoing support accessible.

_over-emphasize your willingness to help!
Facilitation = Engineering
Research Computing Facilitation

1. Meet with every potential new user.
2. Ask progressively for details.
3. Set expectations.
4. Follow up with the personalized plan in #3.
5. Make ongoing support accessible. **over**-emphasize your willingness to help!
Understanding Facilitator Impact

Millions of CPU Hours via CHTC

Facilitators hired: Jan 2013, Nov 2014
Impact Across Domains

Millions of CPU Hours via CHTC

>95% high throughput computing
Impact Across Domains

Millions of CPU Hours via CHTC

>60% high throughput computing
Impact Across Domains

Millions of CPU Hours via CHTC

- uncategorized
- Off-Campus
- Humanities
- Med/Pharm/Vet
- Interdisciplinary
- CS/Math/Stats
- Social Sciences
- Engineering
- Life Sciences
- Physical Sciences

>60% high throughput computing

Future Directions for NSF Advanced Computing Infrastructure to Support U.S. Science and Engineering in 2017-2020
Impact Across Domains

CPU Hours via CHTC

In 2018

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<table>
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<tr>
<td>Research Groups Supported</td>
<td>280</td>
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<tr>
<td>Researcher Consultations</td>
<td>495</td>
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<tr>
<td>Office Hours Visits</td>
<td>420</td>
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Understanding Facilitator Impact

“[The RCF’s] value to the overall enterprise is hard to overestimate. Putting someone so capable of explaining procedures in simple but powerful terms greatly enhances the effective power and utility of the millions invested in the hardware.”

-Tom Givnish, Botany

“With extensive help from [RCFs] we adapted our workflow to run seamlessly on the HTC platform and have now utilized these resources to construct the largest computed diffusion database in the world.”

-Dane Morgan, Materials Science and Engineering
Research Computing Facilitators
The Missing Human Link in Needs-Based Research Cyberinfrastructure

ECAR Research Bulletin | May 16, 2016

Lauren Michael, University of Wisconsin–Madison
Bruce Maas, University of Wisconsin–Madison

Overview

As the roles of core, campus-supported IT services for research have expanded—including the emergence of cloud-based models—the benefits of on-campus human support and user engagement have become increasingly apparent. Ongoing challenges in securing research funding reemphasize a need to demonstrate significant societal impact via effective and efficient investments. At the same time, many campus research computing providers still face challenges in engaging researchers represented in the “long tail” of computing needs, where potentially significant, compute-enabled transformations to scholarship have yet to be realized. The most common models for research computing resources may already meet the significant needs of well-established or “traditional” users, typically in the physical sciences, engineering, and economics, but may miss opportunities to serve others.
The ACI-REF Network
Advanced Cyberinfrastructure – Research and Education Facilitators

- $5.3M NSF award supporting project leadership and 2 Facilitators at each of 6 partnering sites for 2 years
- research and development of the “Facilitator” role for adoption by the community

aciref.org
Let’s Talk

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