CI User Support

Elyn Fritz-Waters, HPC Research Facilitator III, Research Infrastructure Services

Washington University in St. Louis
INFORMATION TECHNOLOGY

About Myself

- BS Animal Science – Iowa State University 2007
- MS Animal Breeding & Genetics – Iowa State University 2009
- Assistant Scientist II – Iowa State University 2010-2017
- Research Scientist II – University of Washington 2018
- HPC Research Facilitator III – Washington University in St Louis 2020-Present

The Importance of CI User Support

The Role of CI User Support

- Education
- Consultation
- Problem Solving
- Outreach

CI User Support is the most visible aspect of a CI team and is often the “Front Door”

The Importance of User Support

Improvements in User Support (documentation, trainings, automation, request handling) result in an increase in allocation requests.

This comes from a study done by researchers at the University of Colorado Boulder in 2019. (Knuth et al., 2019)

The Roles of User Support

- User Support in many cases has an adaptive role as they have a wide range of responsibilities. These can change day to day and even minute to minute.
- These responsibilities may include
  - Teaching
  - Troubleshooting
  - Bridging Communications
  - Outreach Coordination
  - Conflict Resolution Specialist

Classifications of Users

- User experience, like most things, comes in a spectrum, but to be able to better teach and help users, we need to be able to separate them into classifications.
  - Beginner (Introductory)
  - Intermediate (Intermediary)
  - Skilled (Advanced)

Topics Covered

- Roles of User Support
  - **Teaching**
  - Troubleshooting
  - **Bridging Communications**
  - Outreach Coordination
  - Conflict Resolution Specialist
- Classifications of Users
  - **Beginner**
  - **Intermediate**
  - **Skilled**
- Expectations
- Bridging the Gap
- Summary

Teaching

Teaching

- One of the most important roles is that of teaching. User Support's role in this aspect is to provide researchers with the knowledge and tools they need.
- These can include workshops/trainings, one-on-one consultations, and guest lectures.
- Teaching extends into other roles as well.

Teaching: The Challenges

- Motivation – Why is it worth it?
- Format – What is the best delivery?
- Effectiveness – Was the goal achieved?
- Improvement – What could be better?

Teaching: Motivation

- Motivation is important to the role of teaching. Those who are teaching must be motivated to provide the knowledge and the users must be motivated to seek out and engage in the opportunities for learning.
- User Support Motivators
  - Reduce Support Needed
  - Fulfillment
  - Building Relationships
- User Motivators
  - Barrier removal
  - Self-sufficiency

Teaching: Formats

- There are many widely available and used formats and there are pros and cons to all of them. There is no single way that works for those teaching or those learning.
  - Documentation – adaptable, accessible, persistent
  - Workshops/Training – digital and in-person
  - Multimedia – Hybrid, videos and published presentations

Teaching: Effectiveness

- Are user expectations and understanding being met?
  - Was there clear communication?
    - Why do users wish to engage?
    - What knowledge to they already have?
    - What are users looking to get out of it?
  - Are the users understanding the material?
    - Is there engagement?
    - Was the pacing adequate?
    - Was there user feedback?
    - Was there a check for understanding?
    - Was there time allowed for questions?

Teaching: Improvement

- There is always room for improvement in anything we do. There are some important tools that can be used to aid in this improvement.
  - Self assessment
  - Feedback
  - Peer review

Teaching: Skills

- Communication
- Listening
- Collaboration
- Adaptability
- Engagement
- Empathy
- Patience

Beginner

Beginner: Characteristics

- Little to no experience with CLI
- Some knowledge of statistics software
- Limited knowledge of other programming
- Little to no experience with parallelization
- Little to no experience with schedulers
- Little to no experience with research

Beginner: Common Issues

- Compute setup
- Login procedures
- Finding software
- Getting help and documentation

Beginner: Needs

- Orientation and training
- Lists
- Text editors
- How to access software
- New software not previously used
- Movement of data
- Knowledge of job submission

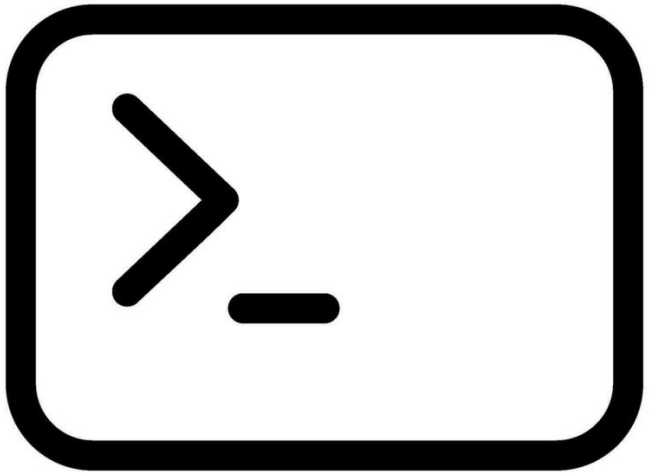
Beginner: Teaching

- Provide orientation and beginner level instruction
- Maintain up to date documentation
- Provide links
- Build trust
  - Feel better about asking questions
  - Explain things simply
  - Be thorough

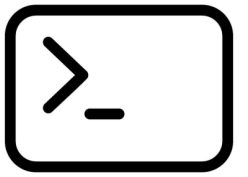
Intermediate

Intermediate: Characteristics

- Prior CLI experience
- Varying experience with different languages
- Knowledge of workflows
- Will notice and report potential problems
- Ability to use searches and troubleshooting

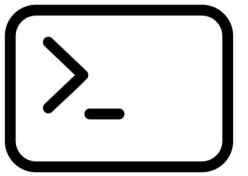


Intermediate: Common Issues



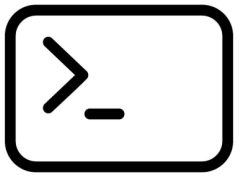
- The largest portion of users
- First to notice and report problems
- Mix of questions, both simple and complex
- Aware of standard help channels
- Have own way of doing things
- May not like how system works or policies

Intermediate: Needs



- More specific training
- Effective solutions
- Better performance and efficiency
- Specific versions of software
- Higher level of control
- Setups that may conflict with system specs
- Code support

Intermediate: Teaching



- Build mutual trust
- More advanced classes
- One on one meetings
- Add additional information to documentation
- Present data and evidence
- Transparency
- Encourage contact of vendor support or user forums

Advanced

Advanced: Characteristics

- Can be faculty, research staff, or advanced students
- Experience and access to multiple HPC systems
- Proficient in scripting or programming languages
- Develop/Use parallel applications
- Complex workflows and scripts
- Willing to try new things

Advanced: Common Issues

- Only a small fraction of support requests
- Use of complex software/tools
- Too advanced to act as local expert
- Bug identification in hardware, 3rd party applications, or libraries
- Try to troubleshoot themselves and support is last resort
- Contact often bypasses ticket system

Advanced: Needs

- VIP treatment
- Direct/Open communication avenues
- Acknowledgement of their level of knowledge
- High level and direct vendor/developer support
- Exceptions, violations of existing policies
- Root access (Will never happen)

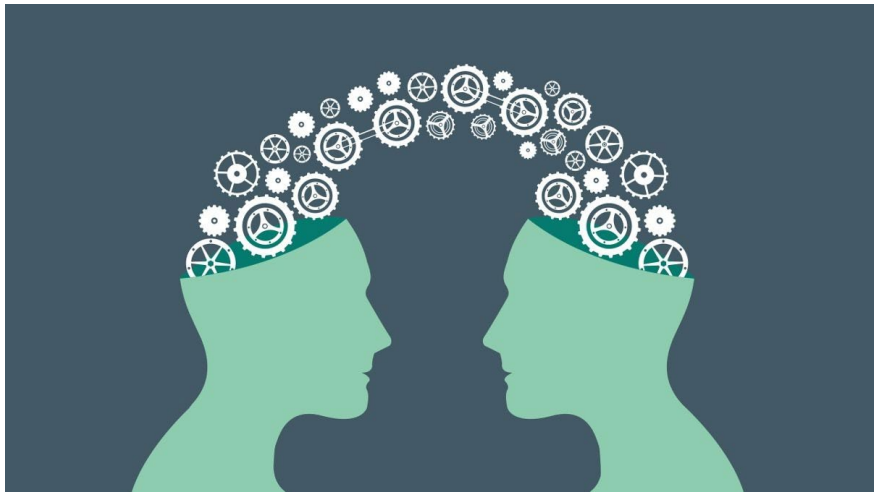
Advanced: Teaching

- Build mutual trust
- One on one meetings
- Learn about their research
- Don’t say something is impossible
- Small exceptions that don’t impact other users
- Transparent
- Encourage contact of vendor support or user forums

Bridging Communications

Bridging Communications

- Researchers and CI professionals often have varying nomenclature and ways of thinking that can lead to ambiguity, confusion, and frustration.
- This is further complicated by the diversity of researchers regarding background and cultural differences, including language barriers.



Bridging Communications: Examples

- Acronyms
  - SSD
    - CI professional: Solid State Drive (hard drive)
    - Researcher: Speech Sound Disorders
- Technical terms
  - Singularity
    - CI professional: container platform common in HPC settings
    - Researcher: a point of infinite density and gravity within which no object inside can ever escape

Bridging Communications: Background and Cultural Differences

- Support should make attempts to be mindful of backgrounds or cultures of the users they work with
- Important things to remember
  - Not all research disciplines are as open as others in sharing ideas
  - Personalities differ
  - Primary and secondary languages
  - Cultural backgrounds can impede communication
  - Users may not keep these things in mind

Bridging Communications: Skillsets

- Attention to detail
- Adaptability
- Curiosity
- Motivation
- Writing
- Effective Communication

Bridging Communications: Methods

- Reducing jargon and acronyms
- Using analogies
- Checking for understanding
- Active listening
- Paraphrasing
- Clarifying questions

Expectations

Expectations: Faculty

- Do it my way
- I need X, why doesn't the system support X?
- Teach my students this stuff.
- I and my time is important.

Expectations: Students

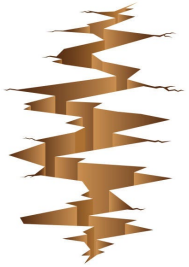
- Help me write my code.
- It’s too hard to use your system.
- Can you help me write my homework?
- Why do I have to use command line?

Bridging the Gap

Bridging the Gap: Identifying the Gaps

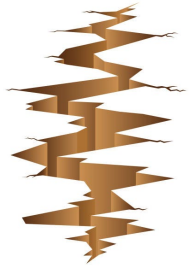
- User Expectations vs CI Offerings
- User Assumptions vs User Actual Needs
- User Education vs CI Offered Trainings
- User Education vs University Training
- CI Offered Trainings vs University Training

Bridging the Gap: Identifying the Bridges



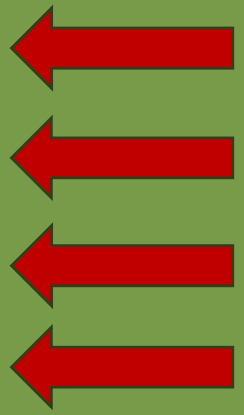
- What can CI do to reach out?
- Who can be engaged to help?
- What is the user responsible for?
- What tools can be used?
- What outside resources can be used?

Bridging the Gap: Examples



Introductory Compute

- Topic 1
- Topic 2
- Topic 3
- Topic 4



Intermediary Compute

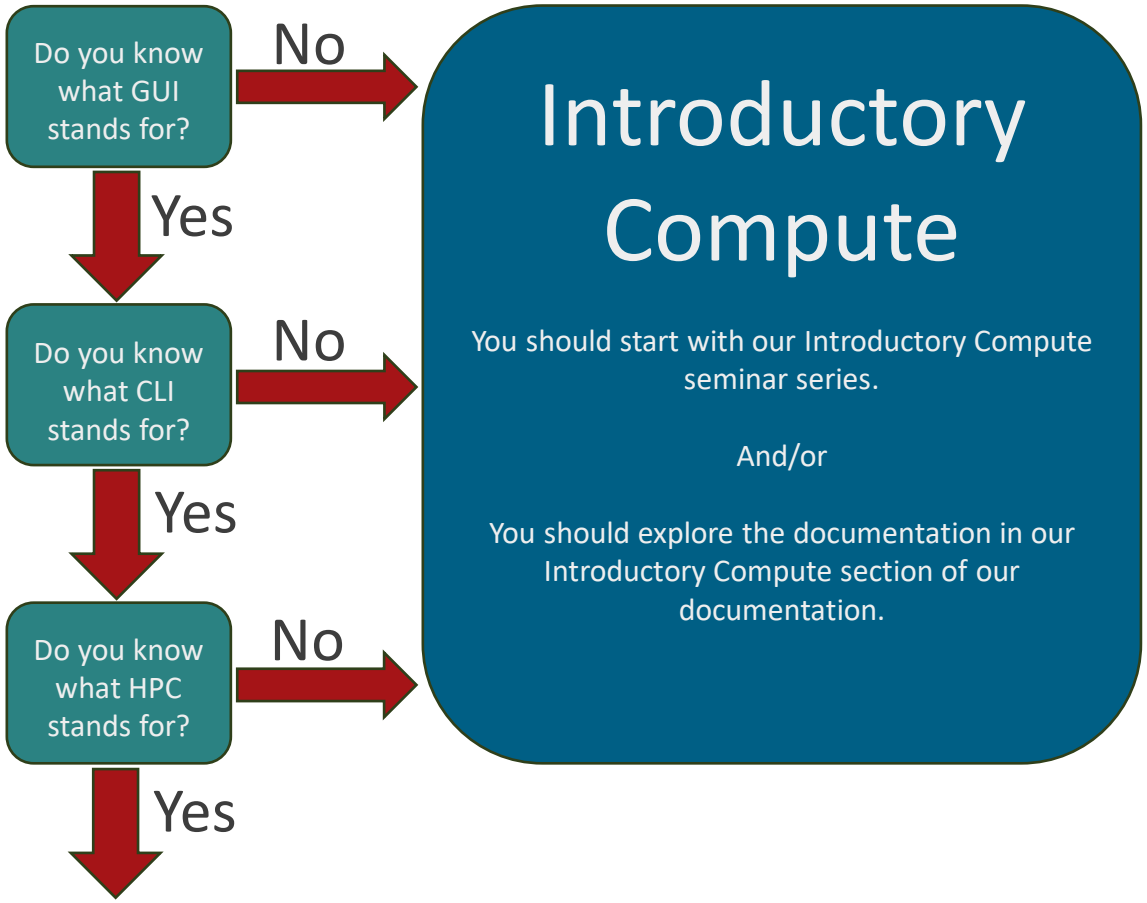
- Topic 1
- Topic 2
- Topic 3
- Topic 4

Advanced Compute

- Topic 1
- Topic 2
- Topic 3
- Topic 4

Bridging the Gap: Examples

- Self assessment for users



Bridging the Gap: Examples

A user submits a ticket about an ‘Out of Space’ error

Do Not

Your home directory is full please delete or move files from it.

Do

It looks like your home directory is full. You can monitor this with the following command.

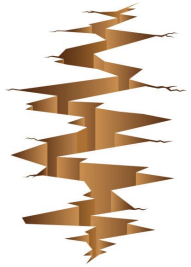
./command _to_see_allocation

As you can see, this shows your home directory is full. You can use the following command to find out what data is taking up the space.

./command_to_see_usage

From this, you can see X, Y, and Z are using up most of your space. You can do A, B, or C to free up space.

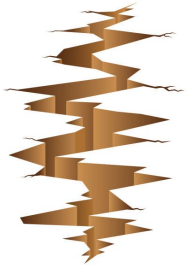
Bridging the Gap: Examples



Multiple tickets have been created, over time, asking the same or very similar question.

- Identify why that may be.
- Take steps to address the issues.
  - Add the information to documentation.
  - Create a video of the topic.
  - Increase the visibility.

Bridging the Gap: Other Ideas



- Certification – Allow certification through seminars/classes.
- Paid Seminar – Summer, in person, week-long session.
- Hackathons – Allow users to bring problems/issues/software and help them to get things working.
- Providers – Bring in providers to help costs and with expertise.
- Hybrid/In person – Look at offering hybrid or in person options

Summary

Summary

- User support is a role that encompasses a myriad of skillsets.
- It is a challenging but rewarding role.
- There is no single solution.
- User expectations are a driving factor.
- Teaching is one of the most important aspects.

Thanks!

Questions?