2024 MS-CC
ANNUAL MEETING
WASHINGTON D.C.
MAY 29-31, 2024

in partnership with

INTERNET2

Lightning Talks

May 30, 2024

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#MSCCAnnualMeeting #MSCCinDC

Our Speakers Today

Russell Hofmann, MS-CC
Dana Brunson, Campus Research Computing Consortium
Aimee Rullo, Nokia
Jennifer Taylor, Jetstream2
Michael Kowal, Nile
Ewa Deelman, CI Compass & ACCESS
Mike Zawaki, Internet2
Miron Livny, University of Wisconsin-Madison
Richard Knepper, Cornell University
Scott McGregor, Cisco

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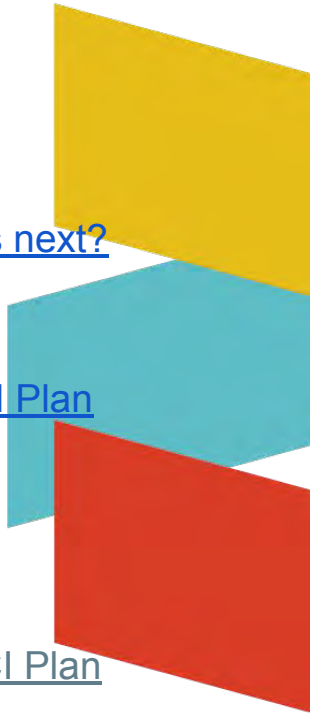
MINORITY SERVING-CYBERINFRASTRUCTURE CONSORTIUM

MS-CC CI Plan Community of Practice Materials and Resources from Year 1

Russell Hofmann, CI Facilitator, MS-CC
rhofmann@internet2.edu

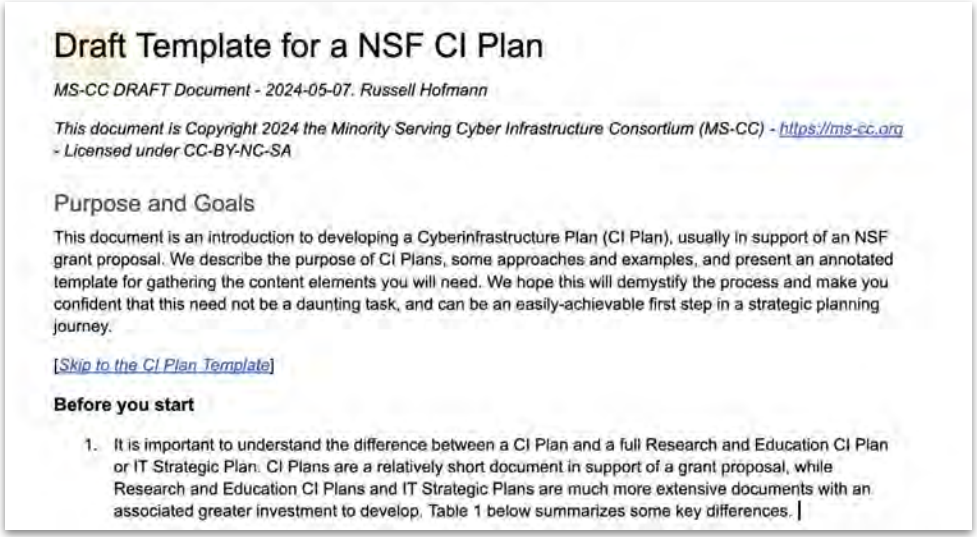
CI Plan CoP Topics YTD

May 16, 2023	CI Plan COP Kickoff Meeting
June 20, 2023	CI Plan Show & Tell
July 21, 2023	Influence Mapping for a CI Plan
Aug 15, 2023	What aspects of CI Plan development would you like to discuss next?
Sep 19, 2023	CI Plan Infrastructure Component Deep Dive
Oct 17, 2023	CI Plan Template and Deep Dive
Dec 5, 2023	Cybersecurity & Network Infrastructure details to include in a CI Plan
Jan 16, 2024	Brainstorming Topics for 2024
Feb 20, 2024	Faculty Engagement - Identifying Cross Campus CI Priorities
Mar 19, 2024	Panel: Faculty engagement to inform CI Priorities
April 16, 2024	Science Driver Tables
May 21, 2024	Cybersecurity & Network Infrastructure Details to Include in a CI Plan



NSF CI Plan Template

https://bit.ly/MSCC-CIPlanTemplate



Draft Template for a NSF CI Plan

MS-CC DRAFT Document - 2024-05-07. Russell Hofmann

Purpose and Goals

This document is an introduction to developing a Cyberinfrastructure Plan (CI Plan), usually in support of an NSF grant proposal. We describe the purpose of CI Plans, some approaches and examples, and present an annotated template for gathering the content elements you will need. We hope this will demystify the process and make you confident that this need not be a daunting task, and can be an easily-achievable first step in a strategic planning journey.

[Skip to the CI Plan Template]

Before you start

1. It is important to understand the difference between a CI Plan and a full Research and Education CI Plan or IT Strategic Plan. CI Plans are a relatively short document in support of a grant proposal, while Research and Education CI Plans and IT Strategic Plans are much more extensive documents with an associated greater investment to develop. Table 1 below summarizes some key differences.

Understanding and Leveraging Influences as you build a Campus CI Plan

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https://bit.ly/MSCCInfluenceMapping

https://youtu.be/sl3xa7ITJ3k

Faculty Engagement - Identifying Cross Campus CI Priorities

https://bit.ly/MSCC-FacultyEngagementGuide

Faculty Engagement - Identifying Cross-Campus CI Priorities

A brief walkthrough by Russell Hofmann

Purpose

This is intended to be a guide for engaging faculty with the general goal of understanding current cyberinfrastructure needs and usage, rather than for any targeted CI activity. To get a picture of cross-campus CI priorities, you are going to need to do more than one engagement, it can take between 10-30 individual meetings with faculty across various departments before you have clear CI priorities identified. This guide does not address individual faculty CI facilitation.

Potential Outcomes

- Insight into Needs and Pain Points: By engaging with faculty, you can gain valuable insight into the specific needs and challenges related to cyberinfrastructure, enabling targeted improvements and solutions.
- Strategic Alignment: Understanding faculty's future goals allows organizations to align their cyberinfrastructure efforts with broader strategic objectives and academic priorities.
- Facilitating Future Discourse: These engagements also serve to open doors for ongoing discussions and collaborations to improve campus cyberinfrastructure.
- Science driver identification: If any faculty member is engaged in a research or education activity which would directly benefit from cyberinfrastructure improvements, they are a science driver.

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MINORITY SERVING-CYBERINFRASTRUCTURE CONSORTIUM

CI Plan Community of Practice
Every 3rd Tuesday @ 2pm ET

Russell Hofmann
CI Facilitator, MS-CC
rhofmann@internet2.edu

bitly

https://bit.ly/MSCC-CIPlanCoP

CaRCC and RCD Nexus: Supporting excellence in research computing and data (RCD)

2024 MS-CC Annual Meeting
Thursday, May 30

Dana Brunson, Internet2
dbrunson@internet2.edu

What do we mean by “Research Computing and Data (RCD)”?

Efforts and programs (largely at colleges and universities, but also at regional networks, national labs, nonprofits, and companies) to provide the **technologies, software, data management, security, outreach, and support required by today’s researchers and educators**.

What is CaRCC?

CaRCC was founded and remains supported by grants from the National Science Foundation (NSF).

CaRCC is organization of RCD and related professionals working to empower institutional research. CaRCC helps institutional RCD programs be effective and efficient, thereby increasing potential for external research funding opportunities. CaRCC works to:

- Identify and share **best practices and guidelines.**
- Provide **tools and resources** to assess, benchmark, and improve institutional RCD programs.
- Offer **training and workshops** to improve the skills and knowledge of those working in RCD roles.

CaRCC works collaboratively with a number of organizations to serve the broader community.

RCD Nexus

The CaRCC Resource and Career Center

Tools, practices, and professional development resources to support individuals and institutions.

Funded by a $1.75M grant from the NSF (#2100003)

RCD Nexus offers:

- A more robust and sustainable implementation of the **CaRCC Capabilities Model assessment tool** and a new **Community Dataset portal**.
- **Curated leading practices** for staff and student professional development.
- An **RCD Job Family Framework** to support successful hiring and recruitment.
- An **RCD Professional Staffing survey** to aid in job satisfaction and employee retention.
- A **Career Arcs resource** for RCD professionals

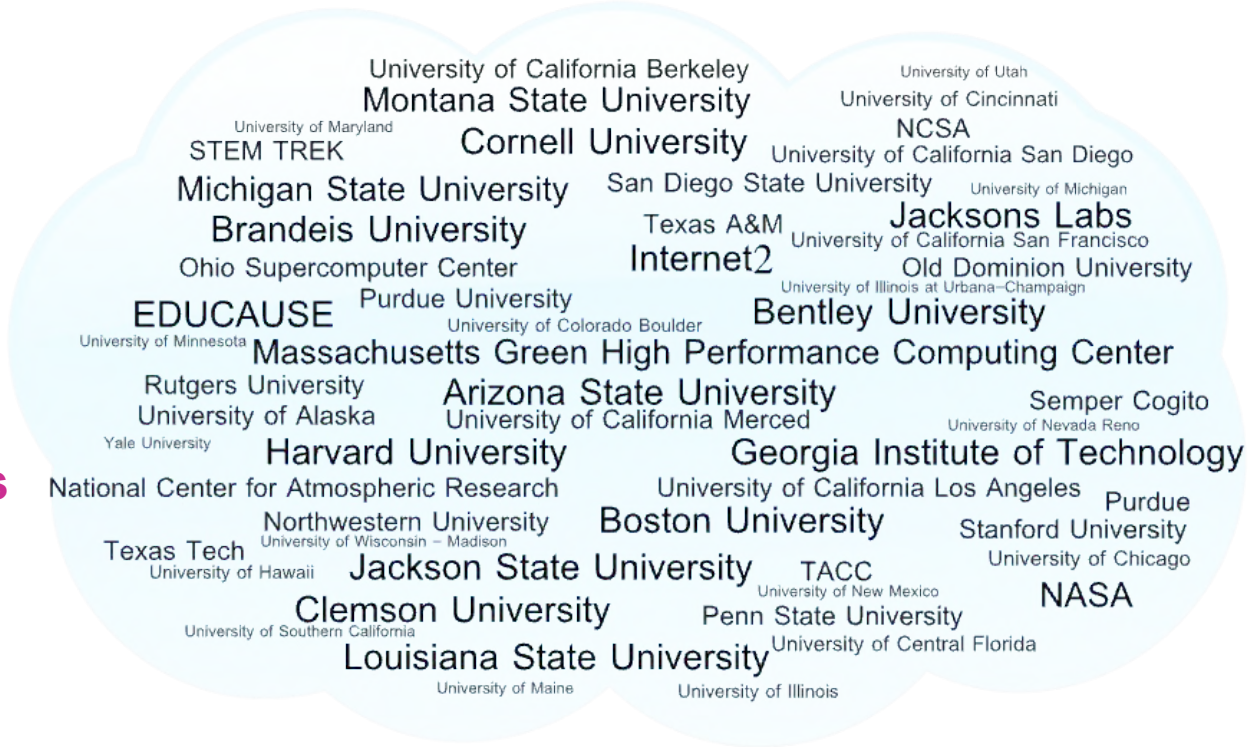
rcd-nexus.org

CaRCC

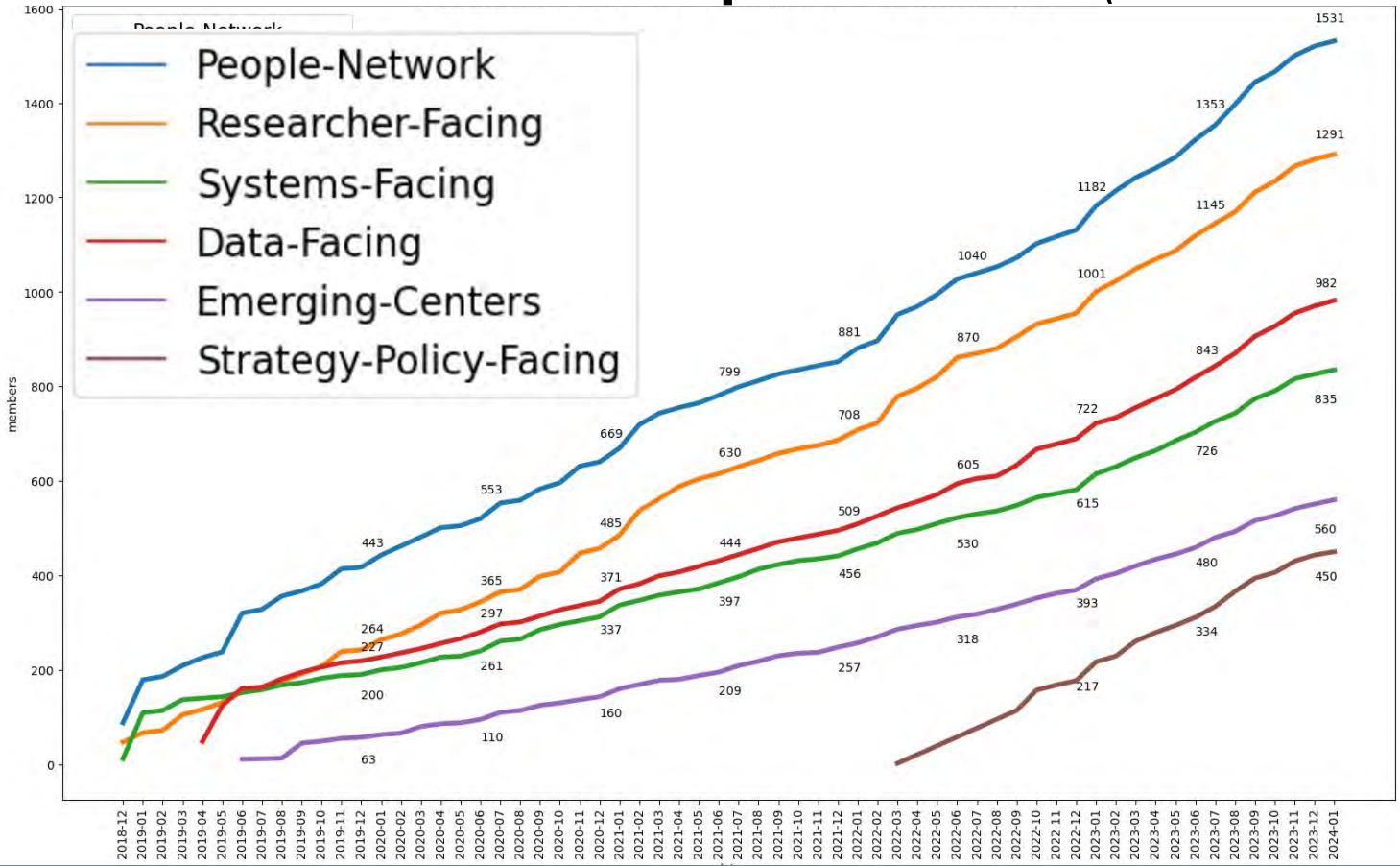
CaRCC is an active, collaborative community

More than **1,600 People Network members**

Leaders and engaged participants representing **numerous organizations**



Growth of the CaRCC People Network *(since 12/2018)*



Why be involved with CaRCC?

Because your institution will gain:

- **A voice in defining the future and establishing best practices** for the RCD profession.
- Access to free **tools and resources** so you can provide high-quality technology and support for research on your campus.
- **Opportunities to collaborate** with other leaders who support faculty and research.
- Access to free **training, professional development,** and a strong RCD **professional network**.

CaRCC Interest and Working Groups

Security and Policy Groups

Cybersecurity Interest Group

HIPAA Challenges Interest Group

Institutional Excellence Groups

CaRCC Capabilities Model Working Group

EPSCoR Cyberinfrastructure (CI) Interest Group

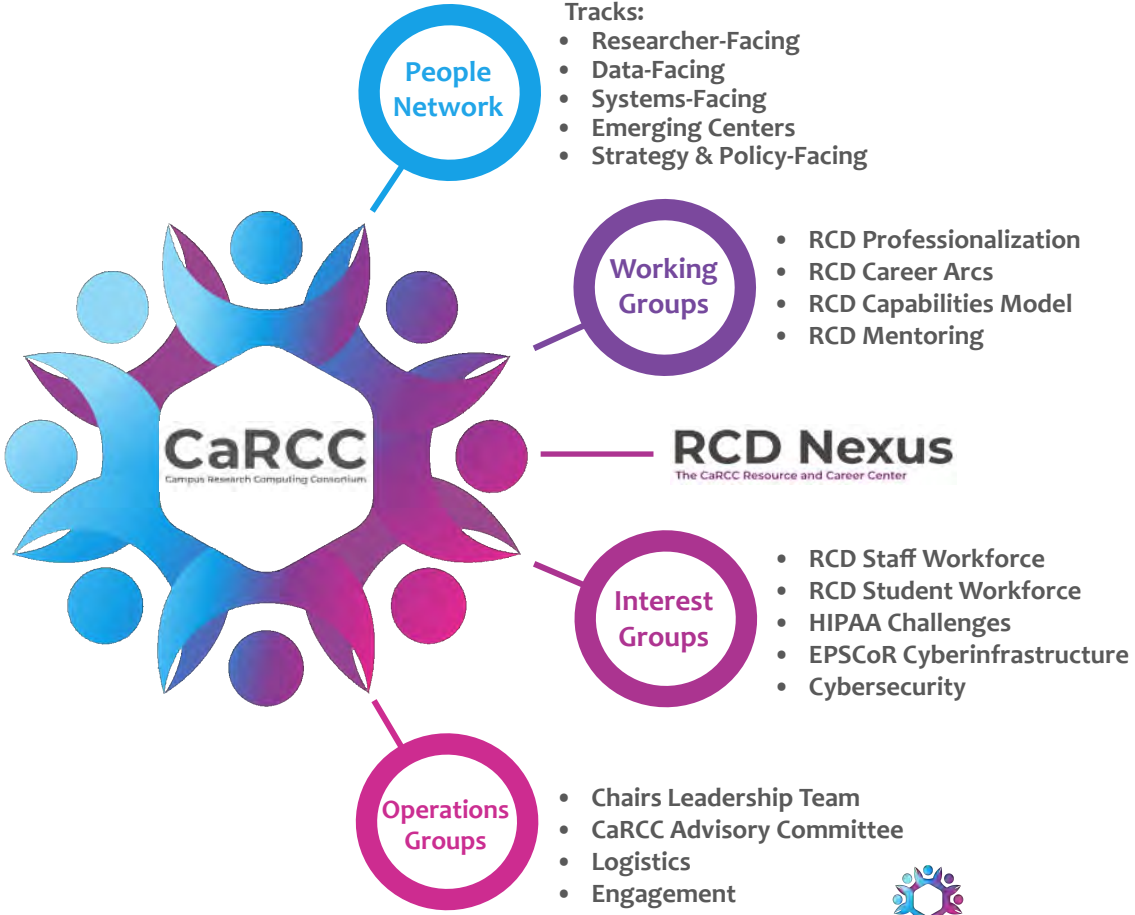
Thanks!

Join the people-network at carcc.org

Link to online tool:
rcd-nexus.org/tools/rcdcm/

Get help, ask questions:
help@carcc.org

Extra slides



CaRCC People Network

CaRCC's professional network. Offers a year-round virtual conference, with affinity-based tracks, email lists, and community-decided monthly call topics. Recordings are shared on YouTube.

Working and Interest Groups

Activities that connect RCD professionals and organizations around objectives and topics that advance the campus RCD and the profession.

Operations Groups

Ensure operational success by coordinating across the network and other groups, and executing project administration

CaRCC People Network

An *Ongoing Virtual/Remote Conference* that supports CaRCC's mission by:

- Fostering, building, and growing an inclusive community of individuals
- Providing opportunities to leverage collective and individual expertise
- Making available resources/products
- Supporting Tracks (*Facings*) that may match one's multiple roles and interests

The first step to getting involved is joining the People Network (carcc.org/people-network)

- Free membership subscribes you to our email list and you can opt-in to our Slack instance.
- Keeps you in the loop about CaRCC events, discussions, volunteer opportunities

Why is RCD important?

- **Research and scholarship is now reliant on technology** across most (if not all) disciplines.
- Research is more frequently conducted by **widely dispersed communities** that are sharing **larger, more complex data sets** and using **more sophisticated tools**.
- **A rapidly increasing level knowledge and skill is required** to make effective use of research computing and data infrastructure, services, support.
- For research that relies on technology, **support from a highly skilled workforce is now required**.
- **This workforce is an emerging profession**: The Research Computing and Data (RCD) professional community.

Without a strong RCD workforce, research stalls.

A relatively new, but fast-growing profession

CaRCC's 2021 survey and related paper "Characterizing the US Research Computing and Data (RCD) Workforce" (Maimone, et al.) estimated there to be **approximately 5,000 RCD professionals in the US** at that time, with the great majority at colleges and universities.

CaRCC **People Network membership has increased by 36%** in the time since that paper was published, indicating continued growth in the profession.

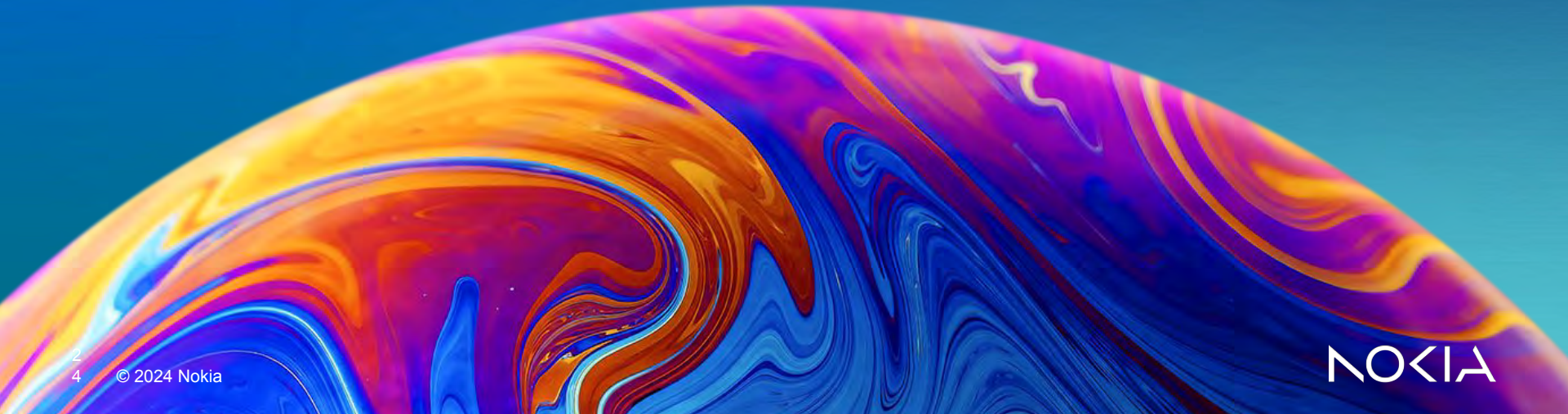
Why is Advancing the RCD Profession Important?

- **Researchers and educators struggle to take advantage of ever-evolving RCD technology**.
  - They have no time to become technology experts
  - They rely heavily on RCD professionals for tech services, support and facilitation.
- **Institutions need support and guidance**.
  - To boot-strap, grow, and sustain their programs
  - To explain to leadership how RCD is critical to research
  - To recruit, retain, and develop RCD professional staff
- **RCD professionals are clamoring for a shared voice**.
  - To advocate for the profession
  - For broader understanding of their roles
  - For training, mentoring, and professional development resources

At Nokia, we create technology that helps the world act together

When the world's people, machines and devices are in sync with each other, we can realize the full potential of digital:

- Sustainable business growth
- Productivity in industry
- Inclusive digital access



Why Nokia ?

Technology Innovator, market leader

1.6M+
Routers shipped to date

#1
in IP Edge Routing globally

1400+
CSP & Cloud Provider customers

1000+
Industry & public sector customers

- Wire-speed performance – FlexPath custom silicon
- Portfolio breath and depth – optimized for customer use-cases
- Software quality – Nokia approach is unique in the industry
- Secure – DoS/DDoS mitigation, quantum resistant encryption
- Automation – Netconf/yang/gNMI, python, modular NSP automation
- IP/Optical integration – coherent routing, multi-domain automation
- Supply chain – has become a big differentiator

Wide Acceptance - Industry Verticals Served

Our technology innovation is pioneering the future where networks meet cloud

Game-changing research

Researching the future of networks and industrial automation to fuel our future portfolio through Nokia Bell Labs, our industrial research arm.

Industry ecosystems and partnerships

Building rich global ecosystems with our customers and partners and sharing expertise to drive development of future technology.

Transformative impact for Nokia business groups and customers that creates sustainable growth

Standards and patents

Defining global standards on cellular, multimedia, device, network, spectrum regulation and ESG, and leading in IP development with over 20,000 patent families.

Incubation and ventures

Driving non-linear growth by incubating Nokia ventures and investing in innovative growth-stage companies through NGP Capital, our venture capital fund.

1. Discovery

Powering scientific research, and collaboration

- Essential for the advancement of knowledge and country/regional development, economic growth & prosperity
- National/regional/global research & education networks (NREN) are extremely demanding (speed, capacity, security)
- Connecting universities, government labs, experimental labs and clouds with high-speed IP/ Optical and DC networking

Powering collaboration

2. Education

Making schools and higher education campuses smarter

- Serving students, staff and academics
- Smart classrooms & apps
- 5G/I4.0 living labs
- Campus operations /security/communications
- Campus e-services (billboards, ticketing, food ordering/delivery, transportation)
- Broadband access for student homes/dormitories

Smarter campus

3. Broadband Access

Bridging the digital divide

- COVID-19 has widened the digital divide and has accelerated home/remote learning
- Need for affordable broadband access at home and at school
- Government funding creates opportunities for local communities and school districts
- Communication technology enables solutions

Closing the digital divide


NOKIA

CLOUD COMPUTING FOR EVERYONE

Jennifer Taylor
Education, Outreach, and Training for Jetstream2
Research Cloud Services at Indiana University

MS-CC Annual Meeting | May 30, 2024

WHAT IS JETSTREAM2?

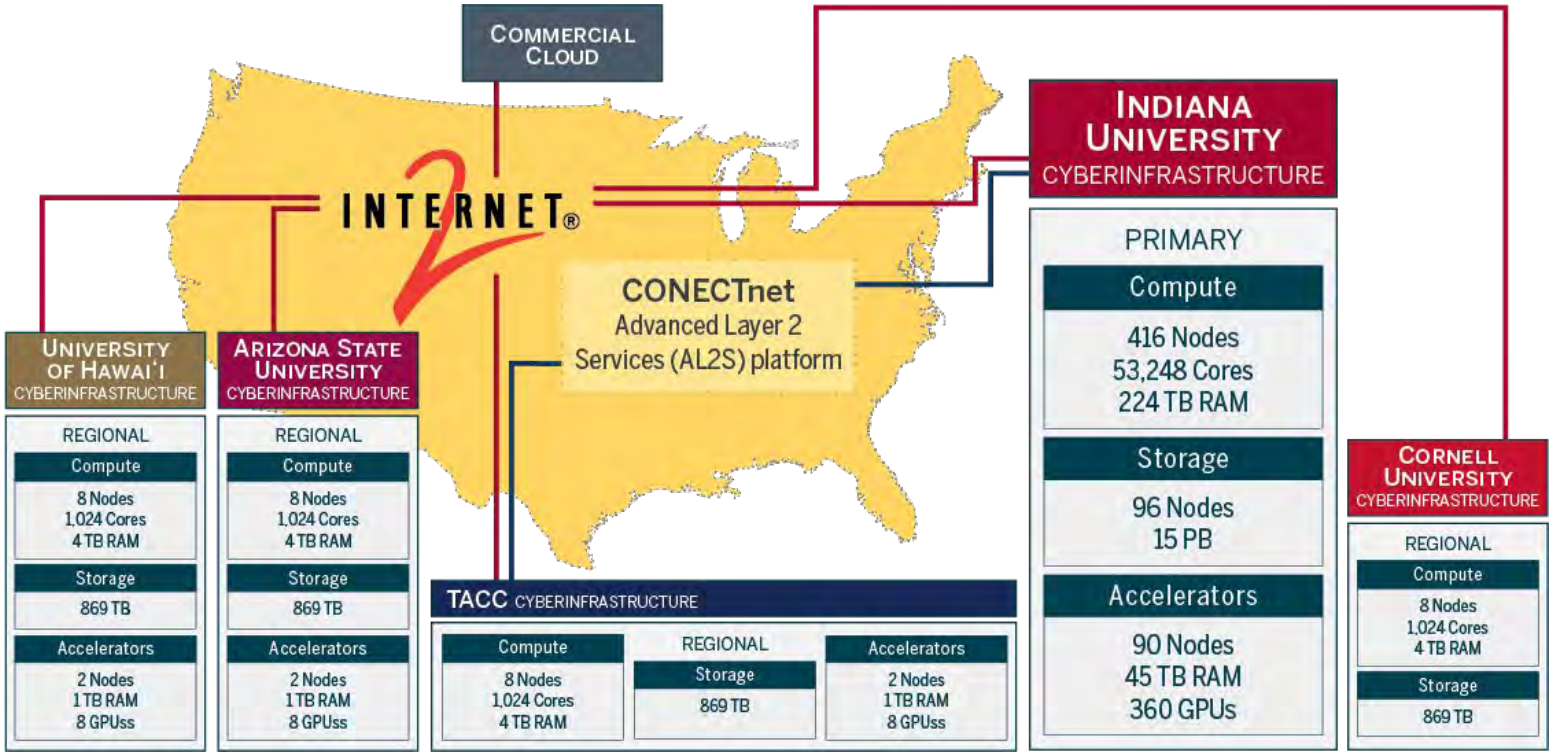
Jetstream2 is a flexible, user-friendly cloud computing environment designed for everyone from researchers with minimal high-performance computing experience to software engineers looking for the latest in cloud-native approaches.

Jetstream2 is available to any US-based researcher or educator at no cost through support from the National Science Foundation (NSF)'s Advanced Cyberinfrastructure Coordination Ecosystem: Services & Support (ACCESS) program.

National Science Foundation
Award #ACI-2005506

ACCESS Advancing Innovation

WHO IS JETSTREAM2?



Arizona State University · The University of Arizona · Cornell University · University of Hawai'i · Indiana University · Johns Hopkins University · TACC · UCAR · SDSC San Diego Supercomputer Center

WHY USE JETSTREAM2?

- **On-demand resources,** no queues or runtime limits
- **Create your own virtual machines** from a variety of sizes
  - CPU, GPU, Large Memory available; 1TB storage by default
- **Interactive computing environment** with graphical desktop
  - Great for users who are less familiar with command line
- **Full admin access** to install software and use instances how you want
- **Software collection** includes R/R Studio, Anaconda, Jupyter, Matlab, and more
- **Full internet access with persistent IPs**, ideal for web hosting or gateways
- **Resources are available at no cost** thanks to our support from the NSF

HOW DO YOU GET ACCESS TO JETSTREAM2?

Create your ACCESS ID at
allocations.access-ci.org

All use of Jetstream2 resources begins with ACCESS!

1. **Register** for an ACCESS ID.
   - *You'll use this to apply for and log in to your resources*
2. **Apply** for an allocation (like a small grant)
   - *Any educator or researcher at a U.S.-based academic or non-profit research institution can apply. Graduate students, too!*
3. **Receive** allocation credits to "spend" on computing resources such as Jetstream2
4. **Log in** to Jetstream2 and launch your first virtual machine!

HOW CAN YOU USE JETSTREAM2?

Education

- Give students access to powerful computing and tools
- Individual virtual machines for training and analysis

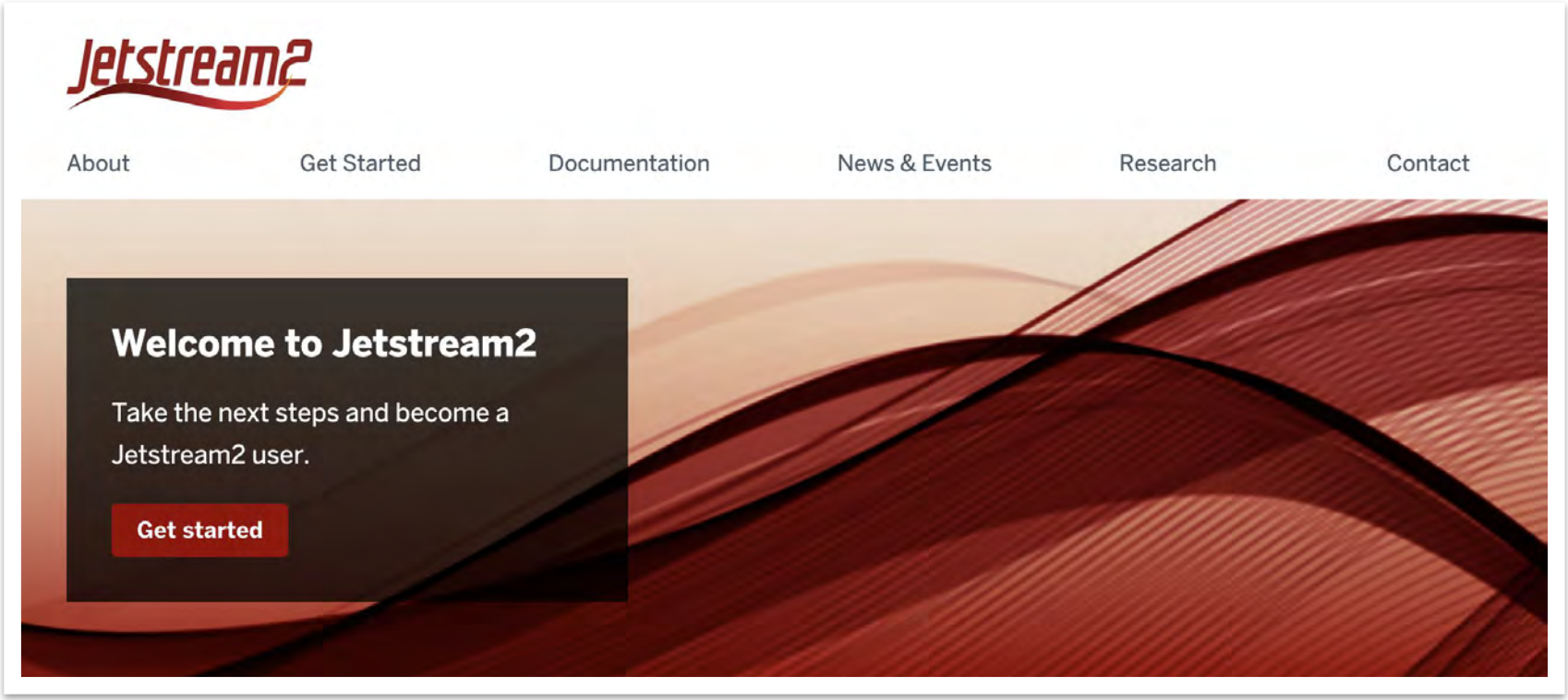
Software & application development

- Write, debug, and execute code
- Use GPUs to develop, train, and refine machine learning models

Sharing data

- Science gateways and application portals
- File servers, databases, websites

jetstream-cloud.org



Home
GET STARTED

Get started with Jetstream2

Jetstream2 is a flexible, user-friendly cloud computing environment available to US-based researchers and educators at no cost through support from the National Science Foundation's Advanced Cyberinfrastructure Coordination Ecosystem: Services & Support (ACCESS) program. **Follow the steps below to get started!**

1. Create your account.

As a resource provider for the NSF's ACCESS program, Jetstream2 users must first register for an ACCESS ID. You'll then use this ID to apply for your allocation, distribute credits, manage your project members, and log in to Jetstream2.

Register for your ACCESS ID →

2. Request an allocation.

Once you've created an ACCESS ID, enroll in our Jetstream2 Trial Allocation program to get familiar with the environment. Once you're ready, you can apply for your own allocation and receive credits toward Jetstream2 resources.

Learn about allocations →

3. Get started.

When you have your ACCESS ID and an allocation, it's time to become a Jetstream2 user! Our Getting Started Guide contains step-by-step instructions on accessing your resources, creating your first instance, and more.

Start using Jetstream2 →

Thank you!

help@jetstream-cloud.org

Jennifer Taylor, **jlrobiso@iu.edu**


Secure Networks for the 21st Century
Reclaim time, reduce institutional risk, and redirect capital expense
nilesecure.com
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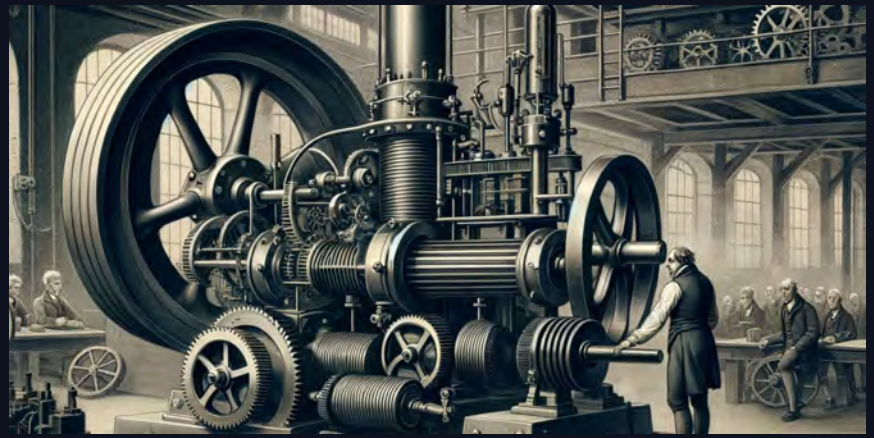
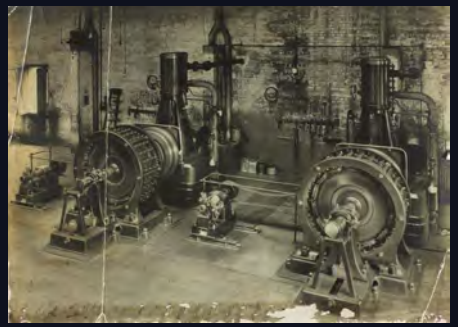
More than a century ago...





nile

Why
Not Networking?

What does Consuming Networks from a Network Utility Look Like for HBCUs and TCUs?

Switches
NAC
VLANs
Licensing
TAC Cases
Day-long Deployments
Malware proliferation
Compatibility Matrices
Coverage Holes

NO

nile

What does Consuming Networks from a Network Utility Look Like for HBCUs and TCUs?

- TCO goes way down
- Performance goes way up
- Reliability soars
- Security becomes embedded
- Upskill Workforce: from maintenance to **innovation**

nile

“The ability to simplify means to eliminate the unnecessary, so that the necessary may speak.”
—Hans Hofman

Funded by the U.S. National Science Foundation, Grant #2127548

CICompass

A U.S. National Science Foundation (NSF) Cyberinfrastructure (CI) Center of Excellence for Navigating the Major Facilities Data Lifecycle

Ewa Deelman
CI Compass, PI
Information Sciences Institute
University of Southern California

MS-CC Annual Meeting 5/30/24

USC Viterbi School of Engineering Information Sciences Institute
INDIANA UNIVERSITY
UNIVERSITY OF NOTRE DAME
THE UNIVERSITY OF UTAH
TEXAS TECH UNIVERSITY
renci

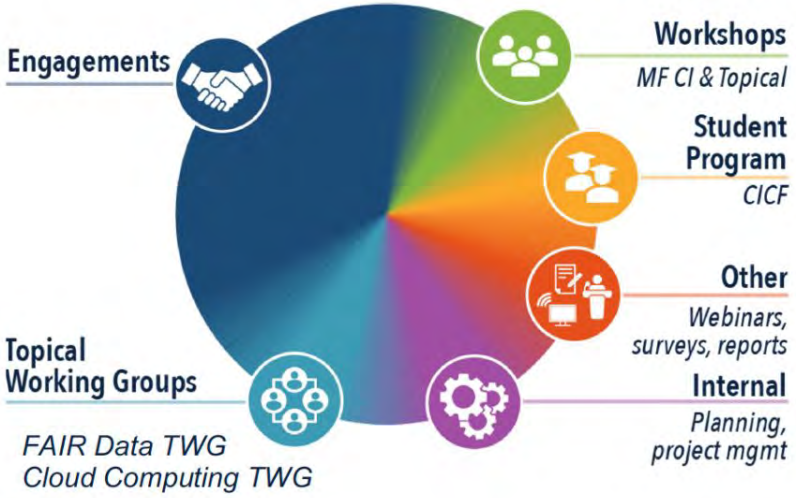
Funded by the U.S. National Science Foundation, Grant #2127548

What is CI Compass?

Mission

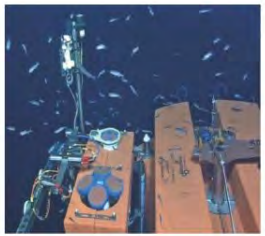
CI Compass provides expertise and active support to cyberinfrastructure practitioners at U.S. NSF Major Facilities (MF) to accelerate the data lifecycle and ensure the integrity and effectiveness of the cyberinfrastructure upon which research and discovery depend.

Activities



IceCube Neutrino Experiment

Rubin Telescope



OOI Ocean Observatory

Team of Experts dedicated to the advancement of cyberinfrastructure for science, engineering, and education.

Funded by the U.S. National Science Foundation, Grant #2127548

CI Compass Fellowship Program (CICF)

CI Compass Student Fellows Edward Lin, Mahee Shah, and Raja Allmdar Tariq Ali stand together in Boulder, Colorado, where they spent Summer 2023 working with the National Center for Atmospheric Research (NCAR).

Goal: Broaden student participation in CI research, development, deployment, and operations

Virtual Spring Program

- Free to undergraduate students. Possibility of course credit.
- *Technical Skills Component*: Students are taught technical skills relevant to CI.
- *Data Lifecycle Component*: Students research MFs and the data lifecycle to understand the importance and context of MFs, and the related data and CI. They present their results at the end of the Spring Program.

(Optional/Invited) Summer Program

- We collaborate with MFs to provide CI-related summer projects for some of our student fellows.
- In-person or virtual, depending on the MF/project.
- Students are paid for their participation.

Funded by the U.S. National Science Foundation, Grant #2127548

CICF curriculum

- We meet with the students for an hour on Tuesdays and Thursdays, with office hours immediately following class time.
- Students also watch a ~1hr pre-recorded Technical Skills lecture before the following Technical Skills lab (i.e. flipped classroom)
- Students do a group project researching the CI and data lifecycle of one MF and present their work at the end of Spring.
- Below is the Syllabus for the 2024 Spring Program. The Technical Skills Component is highlighted in blue, and the Data Life Cycle Component is highlighted in green

2024 SPRING PROGRAM

Week	Tuesday	Thursday
Week 1	Major Facilities, Cyberinfrastructure, and the Data Life Cycle	Command Line
Week 2	Overview of scientific computing	Guest Speaker from TACC
Week 3	Scientific computing, Python, Jupyter, Python Data Analysis Packages	FAIR Data
Week 4	Best Practices in Software Development, Part 1	Guest Speaker from MagLab
Week 5	Best Practices in Software Development, Part 2	MF/DLC Research Project Group Work
Week 6	Cloud Computing, Part 1	Guest Speaker from ORCID
Week 7	Cloud Computing, Part 2	MF/DLC Research Project Group Work
Week 8	Spring Break	Spring Break
Week 9	Software Architecture and Systems; Digital Archives	Guest Speakers from OOI and NEON
Week 10	Data Workflows	Professional Skills, Networking
Week 11	Machine Learning (Classical)	Neural Networks
Week 12	Research Project Group Presentation Day 1	Research Project Group Presentations Day 2

CICF impact

Testimonials from Student Fellows

- *"I didn't know anything about scientific computing, cyberinfrastructure, or Major Facilities before the program. The fellowship introduced me to these and made me curious about how to potentially have a career in scientific computing or cyberinfrastructure and I am more open to working at a Major Facility."*
- *"I was not at all interested by undergraduate research or a graduate degree before starting. I am now researching potential research opportunities in my field and am now interested in learning more about what earning a graduate degree would entail and how it could benefit my future and ability to make an impact."*
- *Before I was very nervous and overwhelmed because it didn't really feel like I was meant to pursue research or further schooling. Now, I feel confident in my ability to become a scientist/academic and have a detailed plan on how I can take next steps towards that goal. Without this program, I would likely still be in a nervous/overwhelmed/paralyzed state and would never independently have learned as much as I did this Spring.*

Institution (17 schools from 11 states)	State
California Polytechnic State University, San Luis Obispo	CA
Merced College	CA
UC Riverside	CA
University of California Merced	CA
University of California, Berkeley	CA
Ball State University	IN
University of Notre Dame	IN
Carroll College	MT
University of North Carolina at Chapel Hill (3 students)	NC
New Jersey Institute of Technology	NJ
Eastern New Mexico University	NM
Brooklyn College	NY
Rochester Institute of Technology (2 students)	NY
The Ohio State University	OH
University of Oklahoma Norman	OK
Villanova University	PA
Texas Tech University	TX

Funded by the U.S. National Science Foundation, Grant #2127548

Want to get involved?

- **Help us spread the word to interested undergraduate students!**

- **We are currently recruiting Faculty Mentors**

During Fall Semester
- Help recruit Student Fellows
- (Applications open mid-September)

During Spring Semester
- Provide course credit or auditing options for students (institutional requirements permitting)
- Hold periodic meetings with mentees and CI Compass

Faculty mentors will receive a stipend for their time and support from the CI Compass team

Connect with us!

Website: www.ci-compass.org

Email: cicf@ci-compass.org

X (formally Twitter): @CiCompass

LinkedIn: linkedin.com/company/ci-compass

YouTube: @cicompass

ACCESS | Advancing Innovation

ACCESS

ACCESS

Ewa Deelman, University of Southern California

Co-PI on ACCESS Support

Leading Workflow Tools

Supported by NSF #2138286

ACCESS | Advancing Innovation

Providing equitable, scalable support to best enable research on NSF-funded cyberinfrastructure

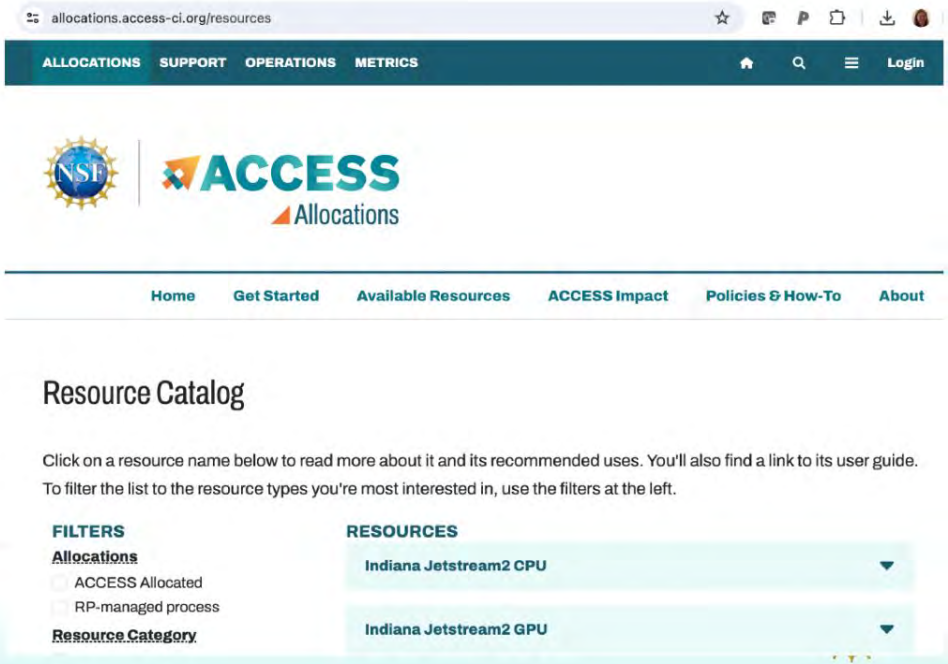
Established to help researchers and educators, with or without supporting grants, to utilize the nation's advanced computing systems and services – ***at no cost***.

Single entry point for over 20 compute, cloud, storage, and networking systems

- Not just for traditional high-performance computing (HPC)
- Education
- Machine learning and data science
- Science gateways building
- Software development

Includes CI Professionals & support tools

ACCESS Support



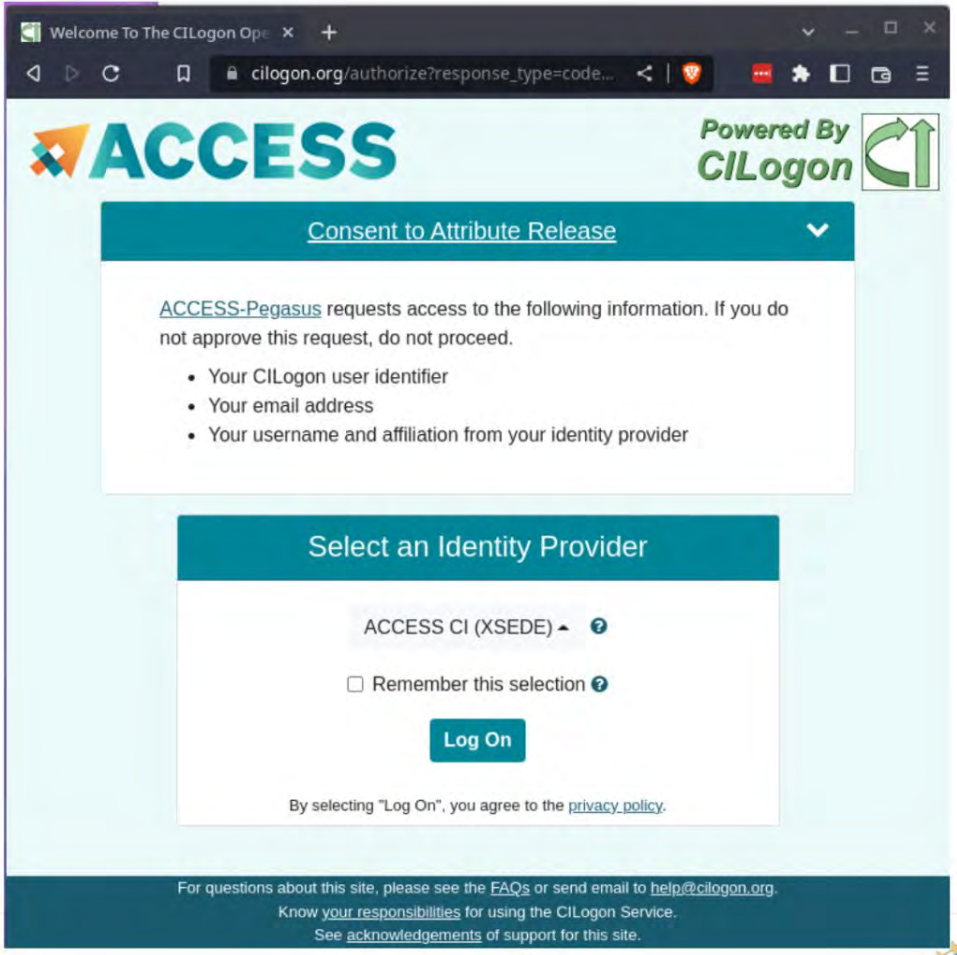
Getting an account

You may use an existing University account to register or get a new one.

Getting an allocation

ACCESS allocations are available to any researcher or educator at a U.S. academic, non-profit research, or educational institutions

- Computing systems: Varying core counts & memory sizes
- Accelerators: GPUs, vector processors, FPGAs
- Data storage systems: Archival, object, tiered
- Data repositories
- Software & workflow managers
- High performance networking
- System performance monitoring



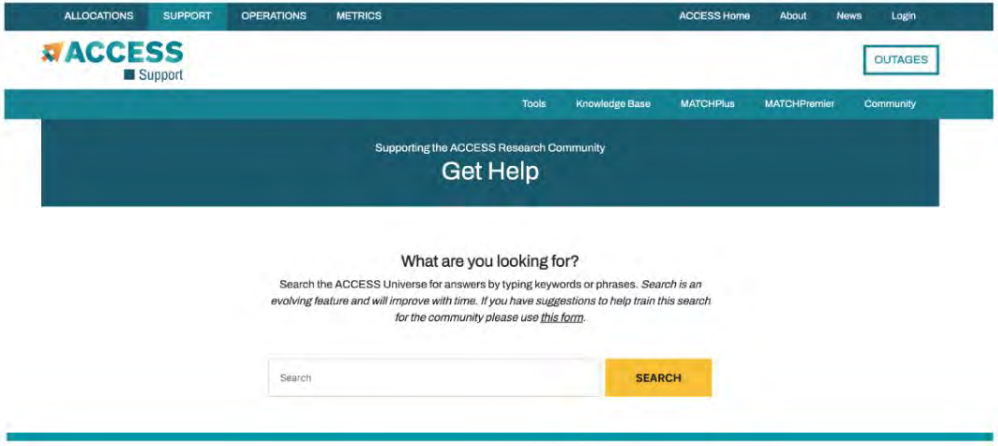
ACCESS Support

NSF

ACCESS

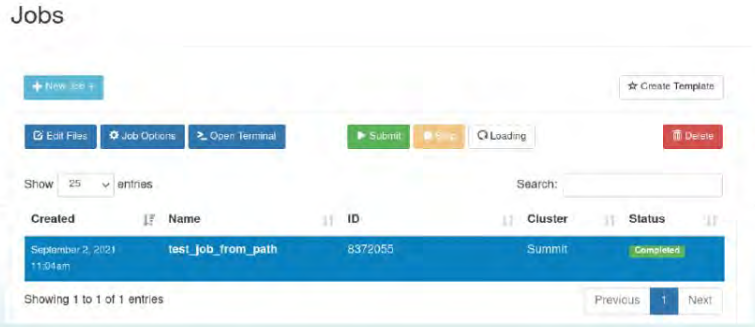
https://access-ci.org/

Getting help



- Traditional documentation
- Ticket system
- Training
- Support via a community driven question/answer system at ask.CI,
- Affinity groups around many topics.
- The MATCH services connects researchers with consultants, mentors, and student.
- Tools:

OnDemand



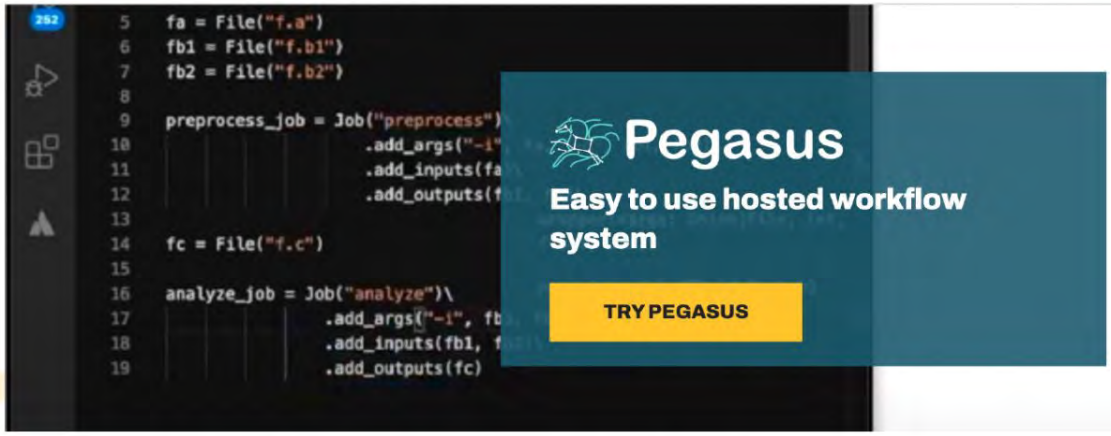
Web portal to allow researchers to submit jobs and transfer data

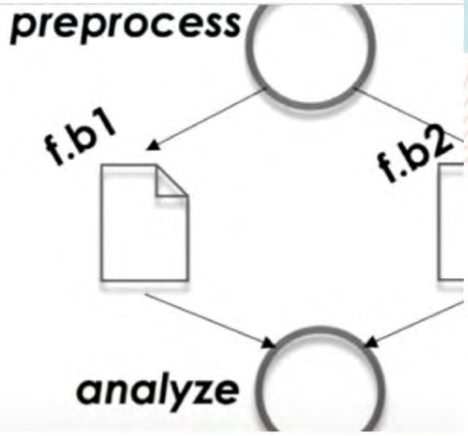
ACCESS Support

NSF

ACCESS Pegasus

SUPPORT / TOOLS / PEGASUS WORKFLOWS





- Hosted workflow management system
- Manage multiple tasks (also dependencies) via Jupyter Notebooks
- Don't need an allocation to get started
- Workflow can run on one resource or across them

- Domain application examples
- Weekly office hours
- User affinity group with Slack channel

REPRODUCIBILITY

AUTOMATION

SCALABILITY

REUSABILITY

ACCESS

MATCH Services

SUPPORT ENGAGEMENTS FOR YOUR RESEARCH NEEDS

ACCESS MATCH Services connects researchers with consultants, mentors, and students to help solve their research problems.

Get Additional Help

MATCH Plus

- Help from a student/mentor team
- 3-6 month engagement
- Free

We will match you with a support team based on your needs.

Solve research needs like expanding code, transitioning from lab computers to HPC, or introducing new technologies.

REQUEST AN ENGAGEMENT

For more information:
alana.romanella@colorado.edu

Contribute Your Expertise

THE CSSN
Computational Science Support Network

Be an active part of the ACCESS research support community.

Join the CSSN, our community is stronger and smarter with every new member.

FIND OUT MORE

- Curate your Community Persona
- Contribute to the Knowledge Base
- Participate in MATCH Engagements
- Apply for CCEP Travel Rewards
- Get invites to special events

Affinity Groups

Join groups within ACCESS with common interests for discussion and the best links to communications, events, and documentation.

Add to the discussions and start new groups to develop topics of interest. ACCESS Resource Provider Affinity Groups receive up to the minute information about the associated resources including downtime, training events, new applications and features.

ALL GROUPS

ACCESS Support

Apply for Travel Grants for Contributions

NSF

eduroam in 5 minutes

(maybe even fewer than 5)

Mike Zawacki - Internet2

mzawacki@internet2.edu

What is it?

- Federated authentication service for global wireless access for the research and education community
- Invented by and for the R&E community in the EU, now a global community available in over 100 countries - Internet2 operates eduroam in the US.
- Participating institutions provide access to their wireless networks to users from other eduroam connected institutions.
- Users are authenticated by their home institutions.

What is it?

Brian, a LSU Student, is visiting University of Tennessee and joins eduroam

Brian has secure, seamless, and instant WiFi

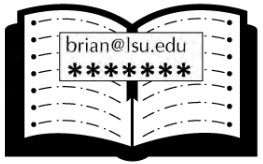
Brian's credentials (brian@lsu.edu) are securely sent to eduroam

UTK grants Brian network access

eduroam routes the information to LSU

eduroam routes the information to UTK

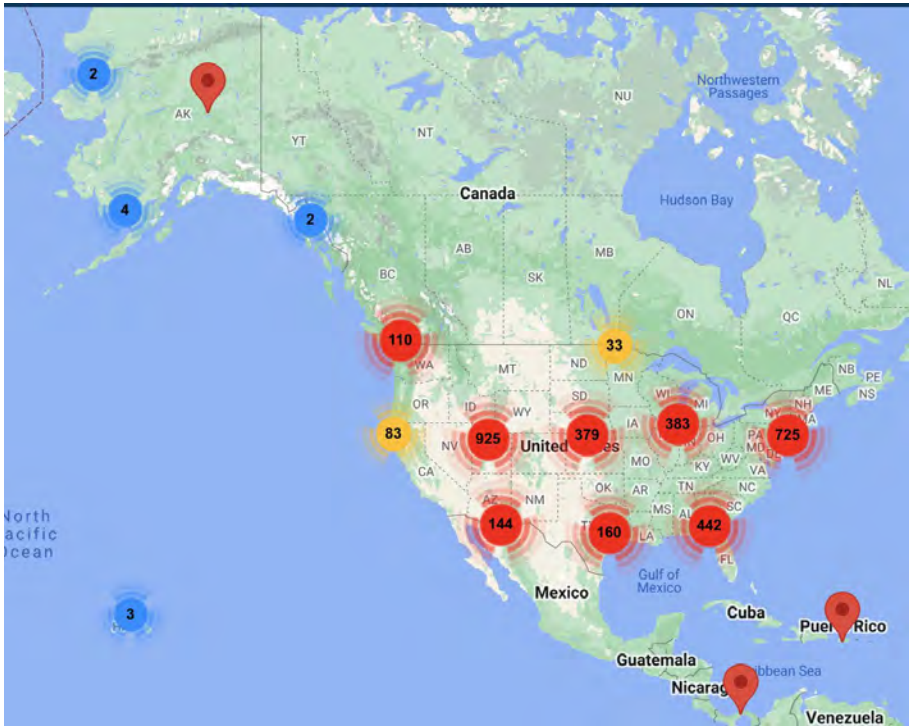
Brian's credentials are verified by LSU



LSU confirms Brian's credentials to UTK

What is it?

- Over 1,400 subscribers
- 3,300+ service locations in the US
  - *2nd highest number in the world!*
- Growing deployments in K12s, libraries, and museums



Who's it for?

- Higher Education *(from R1s to community colleges, tech schools, etc!)*
- Research organizations
- K12s (through partnerships with state education networks)
- Institutions and companies that want to make it easier for all the above to visit them

Who's it for?

- People who learn
- People who educate
- Entities that support learners and educators

How does it help us?

- Simplify network access, reduces support burden for IT staff
- Offers more security for both users and participating institutions compared to guest networks (especially wide open guest networks)
- Professional development/conferences
- Traveling activities - STEM competitions, athletics, debate teams
- Dual enrollment students, continuing education for teachers/staff
- Providing an additional layer of security for all users, especially underserved students who rely on publicly available wifi

What do you need to use it?

- A connection to the internet (through any provider!)
- Enterprise wireless environment
- A RADIUS server (Microsoft NPS, Aruba Clearpass, Cisco ISE, FreeRADIUS, many other flavors)
- *All new eduroam subscribers have 5 hours of consultation time included with the service*

Where can I learn more?

Today:

State Ballroom social hour 5pm - 6pm!

And after today…

Where can I learn more?

Eduroam US website

incommon.org/eduroam

Eduroam US knowledgebase

tiny.cc/eduroamKB

mzawacki@internet2.edu

Join us for

Open Capacity!

Miron Livny
Vilas Research Professor
John P. Morgridge Professor of Computer Science
Director UW Center for High Throughput Computing
Technical Director of the OSG

CHTC Center For High Throughput Computing

PATh PARTNERSHIP to ADVANCE THROUGHPUT COMPUTING

OSG

Open means **Fair-Share**

- **No** proposals
- **No** allocations by a committee
- **No** fees or budgets

CHTC Center For High Throughput Computing

PATh PARTNERSHIP to ADVANCE THROUGHPUT COMPUTING

OSG

We believe that Open Capacity can advance the science of campus researchers who have computational workloads that consist of a list of jobs

- **Extract** a feature from **each** of these images!
- **Run** an inference on **each** of these documents!
- **Perform** a simulation for **each** of these parameters!
- **Train** a model with each of these settings!
- **Compare each** of these pairs of genes!

CHTC Center For High Throughput Computing

PATh PARTNERSHIP to ADVANCE THROUGHPUT COMPUTING

OSG

Become a consumer and/or a provider of Open Capacity

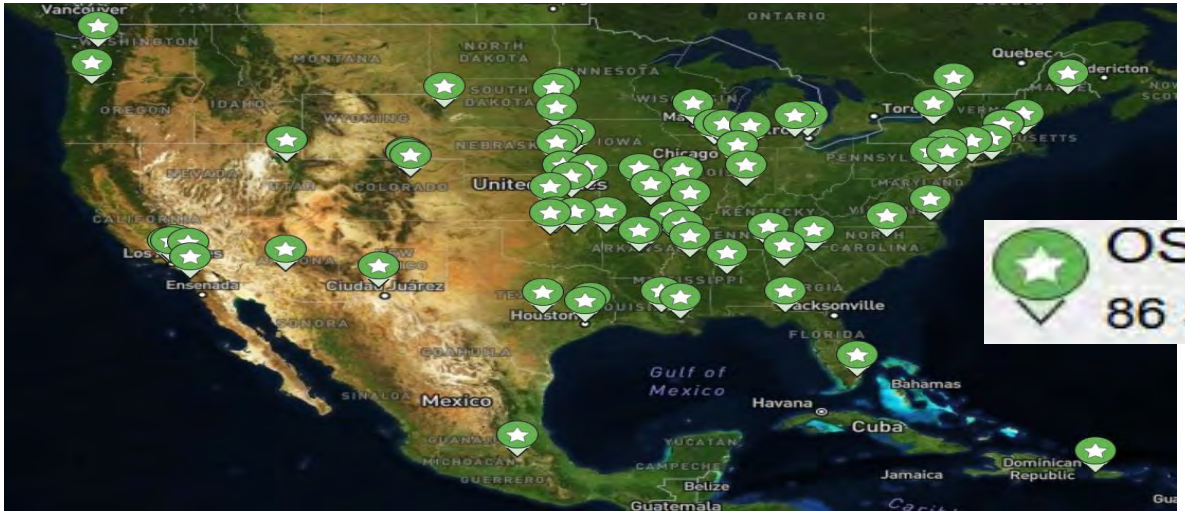
- **Register** as an Open Science Pool (**OSPool**) user and place your workload at an **OSG** operated Access Point (**AP**)
- **Contribute** computing capacity to the **OSPool** (powered by the **HTCondor** Software Suite)
- **Federate** your data sets in the Open Science Data Federation (**OSDF**) (powered by the **Pelican** Platform).

CHTC Center For High Throughput Computing

PATh PARTNERSHIP to ADVANCE THROUGHPUT COMPUTING

OSG

The Open Science Pool (OSPool) is an OSG service that federates open computing capacity contributions in support of Throughput Computing workloads



CHTC Center For High Throughput Computing

PATh PARTNERSHIP to ADVANCE THROUGHPUT COMPUTING

OSG

OSPool: Serving Open Science throughput computing

On **May 28**

375K jobs completed

Placed by **45 researchers**

Triggering **4M file transfers**

Consuming **932K core hours**

View active OSPool Projects

In 12-month open capacity offered by 54 institutions at 86 sites completed

- ›190M jobs placed by
- ›485 researchers from
- ›215 projects from
- ›95 institutions that triggered
- ›5.1B file transfers

✔ 5.7 jobs completions per second

✔ 164.9 file transfers per second

CHTC Center For High Throughput Computing

PATh PARTNERSHIP to ADVANCE THROUGHPUT COMPUTING

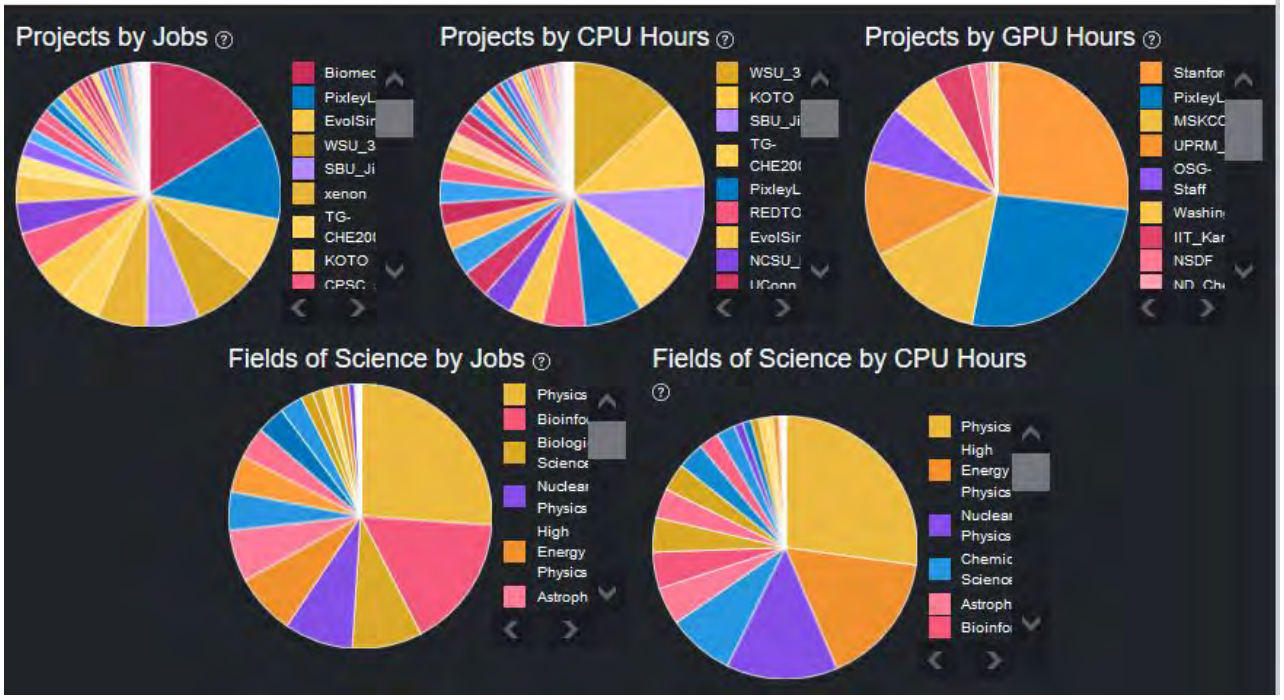
OSG

About Services Campuses Community Contact Docs

OSPool Active Projects 112

Data updated: 4/20/2024, 2:48:13 PM

The below projects used OSPool resources to advance their research in the past year and ran more than 100 jobs. To run your own research on the OSPool sign up now on the OSG Portal.



We also work 1-1 on projects with:

- **Southwestern Indian Polytechnic Institute (SIPI) –** capacity for GIS courses
- **Salish Kootenai College (SKC) –** capacity of a Jupyter Hub (SKCHub)

MORGRIDGE INSTITUTE FOR RESEARCH CHTC WISCONSIN

CHTC Center For High Throughput Computing

PATh PARTNERSHIP to ADVANCE THROUGHPUT COMPUTING

OSG

https://path-cc.io/contact/

Contact

PATh is a unique partnership between the Center for High Throughput Computing (CHTC) and the OSG Consortium.

- For enquiries about the *PATh project*, please contact the PATh leadership.
- For help with *CHTC technologies* such as the HTCondor Software Suite (HTCSS), contact chtc@cs.wisc.edu.
- *Campuses* interested in providing resources to the Open Science Pool (OSPool) can contact support@osg-htc.org
- *Users* interested in using an Access Point to leverage resource like the OSPool can contact support@osgconnect.net.
- *PIs* interested in getting credit accounts on PATh-managed hardware should visit the dedicated page.

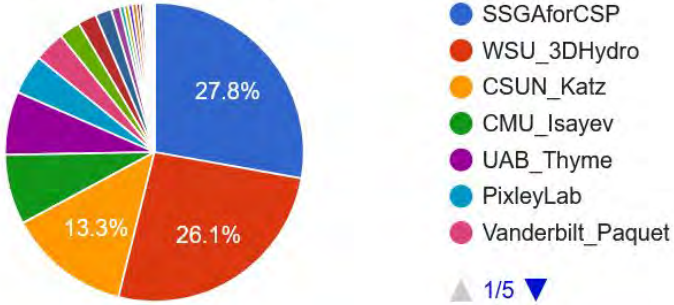
This work is supported by the National Science Foundation under Cooperative Agreements OAC-2030508, OAC-2331480. Any opinions, findings, conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

HTCondor View **UW-Madison Spark**

Past Day | Past Week | Past Month

Totals Range	Project	Field	Organization	avgCpus
Wed May 22 03:36 - Wed May 29 03:36	35	21	30	339.62

CPU Allocation Percentage by Project



Project	Field	Organization	avgCpus	maxCpus
SSGAforCSP	Bioinformatics	University of Utah	94.41	194
WSU_3DHydro	Nuclear Physics	Wayne State University	88.47	357
CSUN_Katz	Mathematics	California State	44.99	293

Project	Field	Organization	avgCpus	maxCpus
SSGAforCSP	Bioinformatics	University of Utah	94.41	194
WSU_3DHydro	Nuclear Physics	Wayne State University	88.47	357
CSUN_Katz	Mathematics	California State University - Northridge	44.99	293
CMU_Isayev	Chemistry	Carnegie-Mellon University	25.71	368
UAB_Thyme	Biological and Biomedical Sciences	The University of Alabama at Birmingham	23.29	194
PixleyLab	Physics	Rutgers - The State University of New Jersey	14.57	167
Vanderbilt_Paquet	Physics	Vanderbilt University	11.31	124
AMNH_MacLow	Astronomy & Astrophysics	American Museum of Natural History	7.92	24
UCSD_Politis	Mathematics and Statistics	University of California - San Diego	6.79	117
Seattle_Herman	Computer and Information Sciences	Seattle University	6.01	226
LBNL_Jensen	Physics	Lawrence Berkeley National Laboratory	3.19	122
UConn_Le	Physics	University of Connecticut	1.58	42
NMSU_Sievert	Physics	New Mexico State University	1.56	18
EvolSims	Biological Sciences	University of Pennsylvania	1.53	22
UCSD_Gilson	Chemistry	University of California - San Diego	1.52	70
UCSD_Bradic	Mathematical Sciences	University of California - San Diego	1.16	14
Columbia_Mandal	Chemistry	Columbia University	1.11	211
NorthwesternMed_Yadav	Physics	Northwestern Medicine	0.81	11
PSI_Kaib	Astronomy and Astrophysics	Planetary Science Institute	0.63	7
PSU_Lynch	Plant Biology	Pennsylvania State University	0.60	4
PSFmodeling	Biological Sciences	State University of New York at Stony Brook	0.53	32
BiomedInfo	Bioinformatics	University of Pittsburgh	0.53	87
ACE_NIAID	Bioinformatics	National Institute of Allergy and Infectious Diseases	0.33	16
DemoSims	Evolutionary Biology	Arizona State University	0.26	19
Etown_Wittmeyer	Psychology and Life Sciences	Elizabethtown College	0.24	5
UCBerkeley_Altman	Physics	University of California - Berkeley	0.17	25
Michigan_Riles	Gravitational Physics	University of Michigan	0.12	6
OSG-Staff	Computer and Information Science and Engineering	OSG	0.10	1
UCSD_Xu	Mathematics	University of California - San Diego	0.09	14

January 2024
First deployment of HTCondor VMs in online GIS course

- Introduction to GIS (ArcGIS Pro)
- 11 VMs in use (13 available)
- Windows desktop interface

Key Insights:

- Successful!
- Positive feedback—superior performance
- Local access to broadband remains limiting factor

Feedback from Introduction to GIS course

Positive Results

- Remote desktop interface makes accessing the system easy
- Access via multiple Operating Systems
- VMs are sufficiently robust for all geospatial analysis capabilities
- VMs allow instructor and student to be on the same machine for teaching and troubleshooting
- Instructor can view desktop of individual student's machine

Ongoing Issue

- Broadband access remains problematic in rural areas.

Lessons Learned

- Cloud-based VMs can be effective for GIS
- Student access to broadband is limiting factor
- Commercial services are problematic
  - Expensive $$$ (Citrix, eLumin)
  - Poor customer service ☹ (Citrix)
- **TCUs need a low-cost solution**

Research&Innovation
Center for Advanced Computing

I-WRF: Containerized Framework for Weather Modeling, Verification, and Visualization

Rich Knepper, CAC Director
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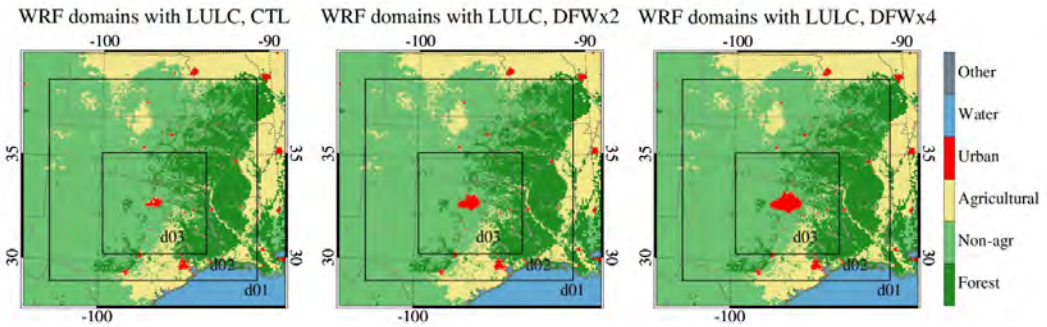
607-255-0313
www.cac.cornell.edu

MS-CC Annual Meeting
Lightning Talks
May 30, 2024

WRF Software



- WRF is weather modeling software with a broad range of applications
  - Weather prediction, climate modeling
  - Simulation of events based on characteristics such as land use or cover
  - Chemistry, wildfire, renewable energy generation
  - Validation and visualization tools for verifying and seeing results
- In development since 2000, with a user base of more than 30,000
- Deployment across a wide range of HPC systems, so much as to be included in benchmark suites

WRF Challenges

Stanczyk, Jan Matejko, 1862. Wikimedia commons

- Despite this, around *50% of users* attending tutorials at NCAR report difficulty configuring the software for use
- Compiling WRF software requires understanding multiple compiler frameworks, a wide range of WRF configuration options
- Output from WRF is not immediate ingestible by verification and visualization tools

- These technical barriers mean that potential researchers and scholars run into hurdles before they can even get to the weather and climate stuff

I-WRF Goals

Application containers support simplicity, portability, and scalability

- Run on a wide range of systems without installation/configuration issues
- Include data management and interoperability with validation and visualization tools
- Allow for large-scale problems with multi-node processing

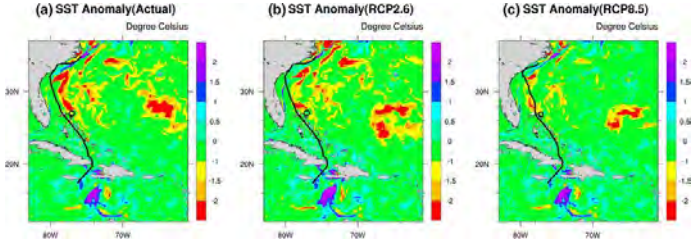
Another goal is to bring more researchers into Atmospheric Science

I-WRF allows a user to try WRF without dealing with installing and compiling software

Model weather on your laptop, in the cloud, or on an HPC resource

Supporting broader engagement in Atmospheric Science

- Users can run sample WRF simulations on a laptop or free cloud resource
- Sample simulation is an event used for NCAR tutorials:
  2016 Hurricane Matthew event



- Making the WRF software easier to run - and relevant to
- Increasing recruitment into Atmospheric Sciences
- Building a pipeline of researchers into the discipline
- Bridging the diversity gap in weather and climate research

I-WRF details

- Run it yourself on Jetstream: https://bit.ly/iwrf-matthew
- Overview website: https://i-wrf.org
- User guide: https://i-wrf.readthedocs.io/en/latest/Users_Guide/index.html
- Github site: https://github.com/NCAR/i-wrf
- Help through help@cac.cornell.edu

This presentation available at the MS-CC annual meeting site and at
https://docs.google.com/presentation/d/16wb9V-K9mOjQLQg1QQLdtTBzu3NjlXvY

Center for Advanced Computing

www.cac.cornell.edu

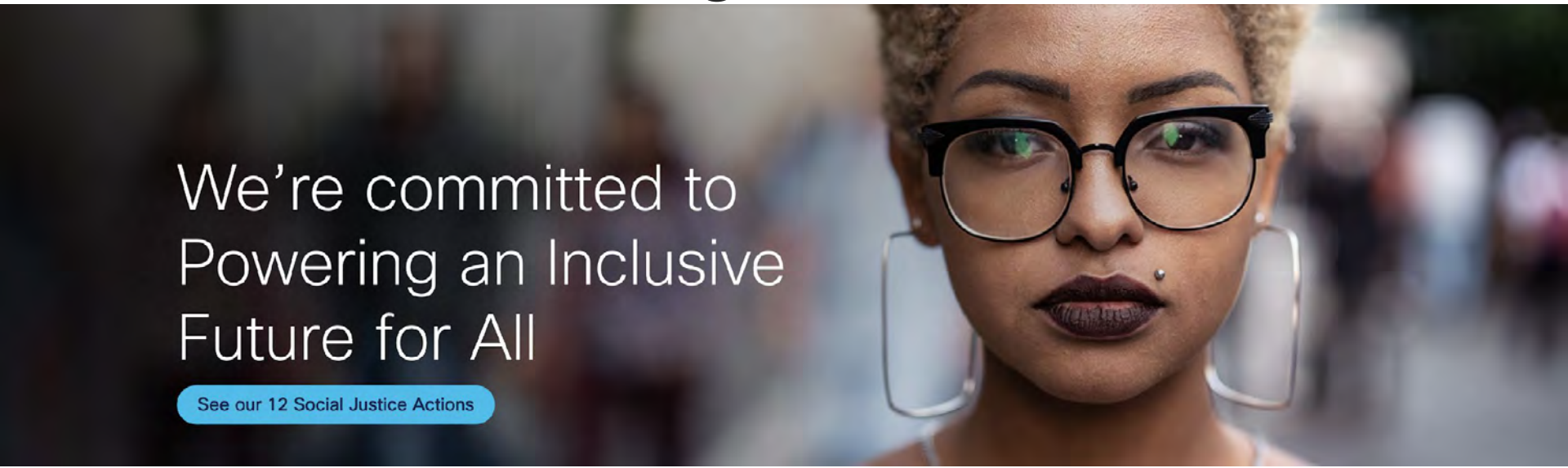
Cisco and Social Justice – A Primer

Scott McGregor

Director, Social Justice

5/29/2024

It is more than a slogan…



…it is our business strategy.

Social Justice Actions: Core Strategies Internally- and Externally-Facing

Action 1

Cisco will **influence our ecosystem** to support policy, legislation and organizations working to ensure equal rights for AA / Black people in 2020 and beyond.

Action 2

Cisco will **increase the representation of AA/Black employees** at all levels of the company.

Action 3

Cisco will **expand our pay parity program** to include additional forms of compensation and promotion practices to ensure fairness for all employees.

Action 4

Cisco will focus on **increasing the diversity of its Board Members**.

Action 5

Cisco will **deliver anti-discrimination education for our workforce** and will make content available to all partners and suppliers by 2022.

Action 6

Cisco will **enable leaders to get proximate to AA/B employees and Cisco Networking Academy students** to create a culture of sponsorship and drive adoption of The Multiplier Effect by partners and suppliers by 2022.

Action 7

Cisco will **require preferred suppliers in 2021 to report** annually on the full spectrum diversity of their US workforce provided to Cisco.

Action 8

Cisco will **commit to the strategic recovery, sustainability and legacy of HBCUs**, post-COVID & beyond.

Action9

Cisco will **provide access to capital, education and customers** for AA/Black-owned financing companies.

Action 10

Cisco will commit $50M over 5 years to **increase the diversity in our partner ecosystem**.

Action 11

Cisco will **invest $50M in innovation** through incubation and venture capital.

Action 12

Cisco will **ensure technology solutions and day-to-day operations maximize human rights benefits**, mitigate potential human rights harms, and respect ethical principles.

Social Justice Action 8: Commit to HBCUs (*in partnership with the Student Freedom Initiative**)

Cisco will commit to the strategic recovery, sustainability and legacy of HBCUs, post-COVID & beyond.

Action Strategy	1 Finance education for STEM students in need *	2 Reinforce institutional excellence*	3 Promote student success beyond graduation	4 Inform and engage Cisco employees and external communities
Activities	Establish an **"Access to Education" endowment** for 4-year HBCU students majoring in STEM $10M/annually over 5 years for juniors and seniors	Support **technology modernization** at 4-year HBCUs by donating Cisco product technology and driving full adoption Support all **HBCUs in achieving NIST compliance** in their IT infrastructure	Expand **NetAcad** relationships, including free instructor training, for all HBCUs **Support recruitment and training for 40 instructors** in career aligned courses for classes starting Spring 2022 **Provide insights into hiring trends** and needs to support professional opportunities for students	Build an **impact dashboard** to track company-wide engagement with HBCUs Create **HBCU Advisory Board** Create a **learning pathway for legacy of HBCUs** Develop internal and external **communications plan**
Impact	500 students in perpetuity	100% of HBCUs receiving NIST compliance assessment and supporting technology	100% of HBCUs have the opportunity to deploy a NetAcad	Cisco's efforts inspire other partners, employees, and customers to join us in creating an impact for HBCUs

Cisco Inclusive Future Action Office

Action 8: Commit to HBCUs

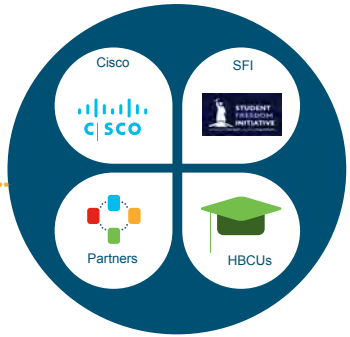
Cisco will commit to the strategic recovery, sustainability and legacy of HBCUs, post-COVID & beyond. Our Inclusive Future Action Office has partnered with the Student Freedom Initiative and multiple technology partners to deliver financial aid, cybersecurity expertise, in addition to networking and educational opportunities.

Scott McGregor
Action 8 Business Owner

Shaunya Ishmael
Action 8 Program Manager

Corben Wall
Action 8 Program Manager

Carla Scott
Action 8 Project Specialist



Creation of Strategic and Inclusive Partnerships

Action 8 Core Objectives

- Finance education for STEM students
- Build technology excellence through IT modernization
- Promote student success before and beyond graduation
- Inform and engage Cisco employees and external communities

Community and Ecosystem Investment

Direct Institutional Support

Talent Development Opportunities

CDA Digital Equity & Sales Interlock	Partner & Supplier Diversity	$50M Education Endowment	$100M in IT Modernization	Cisco Networking Academy	Internships & Skill Building
To-Date: Partnerships with EN and ENG BUs | 5G Pilot Program Planned | 3 New AA/Black Partners		To-Date: 58+ Universities in Progress | $37.5M Donated | 119 STEM Students Supported by Endowment via SFI | $71M in SW Donated		To-Date: 48 HBCUs with Cisco Networking Academy | Active Partnership with InternX | OneTen Project Specialist	

Initiatives driven by Cisco's Inclusive Future Action Office and our commitment to social justice


CISCO

We need your insights!

Please take a few moments to take this quick poll about the Lightning Talks

https://bit.ly/lightningtalksms-cc

Social Hour with Lightning Talks Discussion

May 30, 2024

We need your insights!

Please take a few moments to take the AI Survey

Please take a few moments to provide your thoughts on MS-CC Activities

Please take a few moments to take this quick poll about CI

2024 MS-CC ANNUAL MEETING
WASHINGTON D.C.
MAY 29-31, 2024
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