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

Internet2 Community Exchange, March 2024

Dana Brunson, Internet2
Forough Ghahramani, NJEdge
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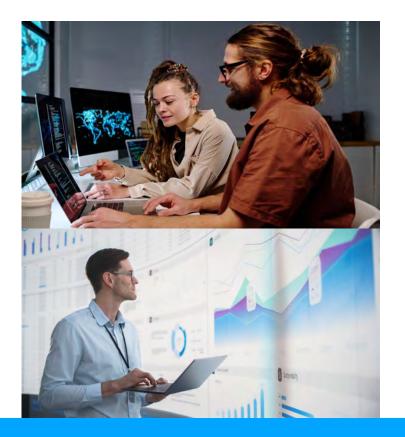Scotty Strachan, NSHE, Nevada

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 scientists and researchers**.

Am I an RCD Professional? Do I lead RCD Professionals?

At larger research institutions, an RCD professional may be entirely dedicated to the RCD program.

➤ Director of Research Cyberinfrastructure, Research IT Facilitator/Outreach Professional, High Performance Computing Engineer, Research Software Developer, Research Visualization Specialist, and many others
➤ They might work in central IT, for a department, or in support of a research project.
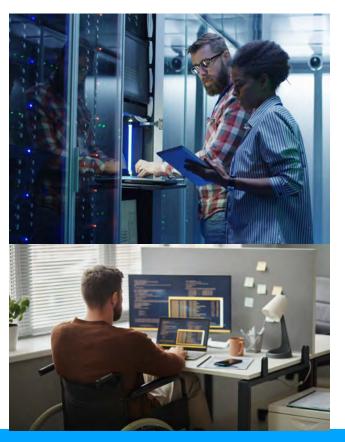
Am I an RCD Professional? Do I lead RCD Professionals?

At other institutions, they may also be responsible for enterprise or departmental IT.

➢ Systems Administrator, IT Professional, Enterprise IT Professional, etc.

There is also some overlap with related fields.

➢ Data Librarians, Data Scientists, Sponsored Research Professionals, Research Security and Compliance Professionals, etc.

CaRCC

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.

What is CaRCC?

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 efforts include:

- Identifying and sharing professional **best practices and guidelines**.

- Providing **tools and resources** to assess, benchmark, and improve institutional RCD programs.

- Offering **training and workshops** to improve the skills and knowledge of those working in RCD roles.

National Science Foundation

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

CaRCC

RCD Nexus

The CaRCC Resource and Career Center

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

Funded by a $1.5M grant from the NSF

National Science Foundation

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

Who leads CaRCC?

CaRCC Advisory Committee provides high-level guidance and helps connect CaRCC to the broader RCD ecosystem. Meets with CaRCC Chairs at an annual retreat.

Jackie Milhans, Northwestern University
Jim Bottum, Retired Professional
Amy Neeser, UC Berkeley
Ann Kovalchick, UC Merced (retired)
Dan Stanzione, TACC/UT Austin
Erik Lundberg, University of Washington
Linda Akli SURA/XSEDE
Ana Hunsinger Internet2
Ashley Stauffer Penn State University
Danielle Cooper Ithaka S&R
Henry Neeman University of Oklahoma
Susan Mehringer Cornell University

CaRCC Chairs is our community-led governing body, comprising leaders from each of CaRCC's groups and initiatives. Chairs set overall direction and vote on motions or changes to CaRCC organization and policy.

Venice Bayrd, Montana State University
Dana Brunson, Internet2
Thomas Cheatham, University of Utah
Sean Cleveland, The University of Hawaii System
Bob Freeman, Harvard Business School
Kimberly Grasch, University of Chicago
Betsy Hillery, Purdue University
Gwen Jacobs, University of Hawaii
Julie Ma, Massachusetts Green HP Computing Center
Ruth Marinshaw, Stanford University
Lauren Michael, Internet2
Timothy Middelkoop, Internet2
Claire Mizumoto, University of California, San Diego
Sam Porter, University of Maryland
Chris Reidy, University of Arizona
Patrick Schmitz, Semper Cogito Consulting
Scotty Strachan, Nevada System of Higher Education
Ashley Stauffer, Penn State University
Scott Yockel, Harvard University

CaRCC

CaRCC is an active, collaborative community

More than **1,500 People Network members**

Leaders and engaged participants representing **numerous organizations**

Is your institution on this list? We'd love to have your voice in the conversation!

University of California Berkeley
University of Utah
University of Cincinnati
Montana State University
University of Maryland
NCSA
STEM TREK
Cornell University
University of California San Diego
Michigan State University
San Diego State University
University of Michigan
Jacksons Labs
Brandeis University
Texas A&M
University of California San Francisco
Ohio Supercomputer Center
Internet2
Old Dominion University
University of Illinois at Urbana–Champaign
EDUCAUSE
Purdue University
University of Colorado Boulder
Bentley University
University of Minnesota
Massachusetts Green High Performance Computing Center
Rutgers University
Arizona State University
Semper Cogito
University of Alaska
University of California Merced
University of Nevada Reno
Yale University
Harvard University
Georgia Institute of Technology
National Center for Atmospheric Research
University of California Los Angeles
Purdue
Northwestern University
Boston University
Stanford University
Texas Tech
University of Wisconsin – Madison
University of Chicago
University of Hawaii
Jackson State University
TACC
University of New Mexico
NASA
Clemson University
Penn State University
University of Central Florida
University of Southern California
Louisiana State University
University of Maine
University of Illinois

CaRCC

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

CaRCC provides a range of opportunities for members to **acquire knowledge and leadership skills to help their home institutions be strong and competitive**.

2023 CaRCC Annual Leadership Retreat

Tracks:
- Researcher-Facing
- Systems-Facing
- Data-Facing
- Emerging Centers
- Strategy & Policy-Facing

People Network

Interest Groups
- RCD Staff Workforce
- RCD Student Workforce
- HIPAA Challenges
- EPSCoR Cyberinfrastructure
- Cybersecurity

CaRCC
Campus Research Computing Consortium

RCD Nexus
The CaRCC Resource and Career Center

Working Groups
- RCD Professionalization
- RCD Capabilities Model
- RCD Career Arcs
- RCD Mentoring

Operations Groups
- Chairs Leadership Team
- CaRCC Advisory Committee
- Logistics
- Engagement

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.

Interest and Working 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

- 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

CaRCC

The Facings: CaRCC People Network Tracks

CaRCC "Facings" represent whom or what are you facing in your daily work.

Data-Facing:
Analysis, curation, preservation, compliance, movement

Emerging-Centers:
Newer or emerging RCD service leaders & programs

Researcher-Facing:
Consulting, bridging, facilitation, outreach, training

Systems-Facing:
Hardware, networks, security, compliance, data centers

Strategy & Policy-Facing:
Institutional alignment, culture, funding, policy, community

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CaRCC Interest and Working Groups

Security and Policy Groups

Cybersecurity Interest Group

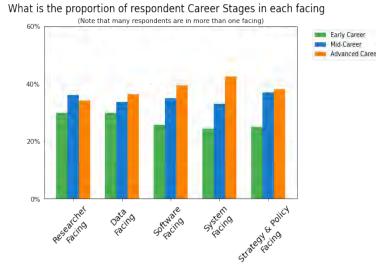HIPAA Challenges Interest Group

Institutional Excellence Groups

CaRCC Capabilities Model Working Group

EPSCoR Cyberinfrastructure (CI) Interest

Group

CaRCC Interest and Working Groups

What is the proportion of respondent Career Stages in each facing
(Note that many respondents are in more than one facing)

Human Resources and Professional Development Groups

RCD Professionalization Working Group

RCD Mentoring Working Group

RCD Staff Workforce Development Interest Group

RCD Student Workforce Development Interest Group

CaRCC

HR Job Framework

As the first national effort to provide a template for RCD hiring managers to use in discussion with their respective administrative and human resources (HR) leadership, the HR Job Framework:

- Aids hiring managers and HR to clarify the distinction between RCD positions versus enterprise IT or pure research positions.
- Helps HR maintain consistency in the language of increasing responsibility from entry to expert levels.
- Provides a flexible template for any institution, whether large or small, public or private, degree granting or purely research.
- Allows users to create their specific RCD Job Family, whether it sits in the IT or Research job function or whether the number of levels matches.
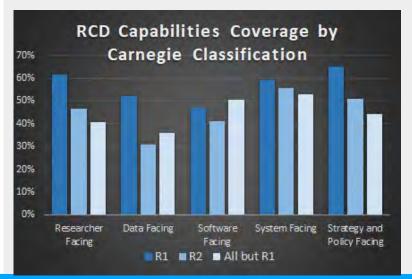
CaRCC Capabilities Model

Assessment tool developed in collaboration with Internet2 and EDUCAUSE and with support from the NSF.

Designed for use by a range of roles, from front-line support through campus leadership and intended to be applicable for small and large, and public and private institutions.

Focused Tools group is working on a simplified version for smaller and emerging programs.

Allows institutions to:

- Assess their support for computationally-and data-intensive research
- Identify potential areas for improvement
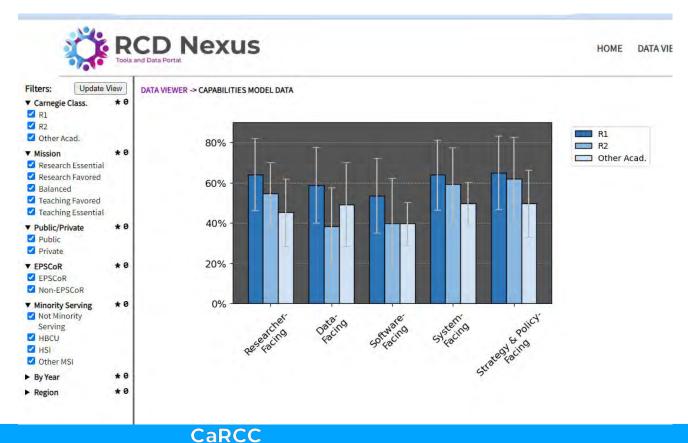- Understand how the broader community views RCD support

RCD Capabilities Coverage by Carnegie Classification

CaRCC Capabilities Model Portal

Capabilities Model Assessment Tool v2

Launched Q4 2023

New Data Portal

Launched Spring 2024

CaRCC Capabilities Model

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CaRCC Capabilities Model

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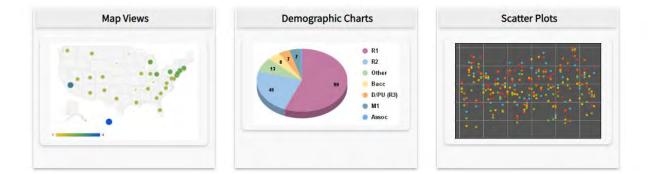**New Data Portal**

Launched Spring 2024

Capabilities Model Users and Data Set Contributors

Arizona State University
Boston University
Carleton College
Chaminade University of Honolulu
Cornell University
George Mason University
Harvard, Engineering & Applied Sciences
Kennesaw State University
Louisiana State University
Michigan State University
Montana State University
North Carolina State University
Northwestern University
Pennsylvania State University
Princeton University
Purdue University
Rochester Institute of Technology

Rutgers University
Southern Methodist University
Tennessee Tech University
Texas A & M University
The Ohio State University
University of Alberta
University of Arkansas
University of British Columbia
University of California, Berkeley
University of California, Los Angeles
University of California, Merced
University of California, San Diego
University of California, Santa Barbara
University of Cincinnati
University of Delaware
University of Florida

University of Guam
University of Hawaii at Hilo
University of Hawaii System
University of Hawaii West Oahu
University of Kentucky
University of Maryland, College Park
University of Massachusetts, Boston
University of Nevada, Reno
University of New Mexico
University of Rhode Island
University of South Carolina
University of South Dakota
University of Texas Health Sciences
Center at San Antonio
University of Utah
University of Washington
Yale University

CaRCC

Join us for RCD Nexus Day

Those who attend the ACM Practice and Experience in Advanced Research Computing (PEARC) conference can plan to arrive early and join our annual RCD Nexus Day event at no additional cost.

Includes workshops and best practice discussions with other RCD professionals. More information on this event as PEARC24 gets closer.

CaRCC

http://bit.ly/3V8pRsP

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Campus Research Computing Consortium

Join CaRCC People Network, or have your
RCD staff join at no cost.

Today's presenters:
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John Hicks, Internet2
Timothy Middelkoop, Internet2
Claire Mizumoto, UC San Diego
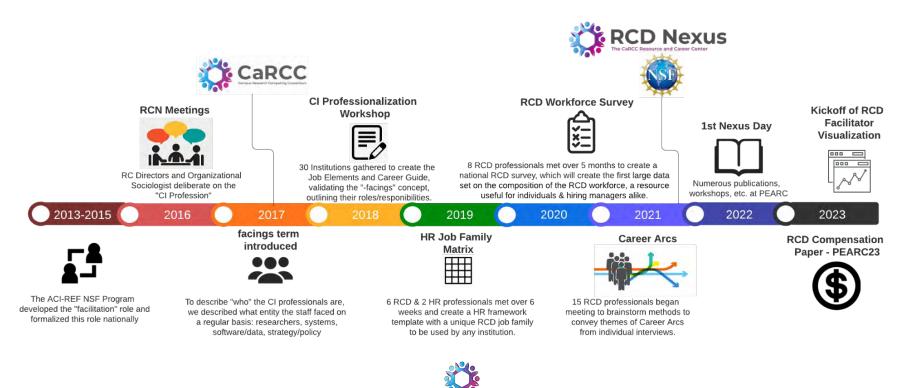Scotty Strachan, NSHE, Nevada

carcc.org

Questions?
help@carcc.org

CaRCC

Backup Slides

CaRCC

RCD Professionalization Timeline

RCN Meetings

RC Directors and Organizational Sociologist deliberate on the "CI Profession"

CI Professionalization Workshop

30 Institutions gathered to create the Job Elements and Career Guide, validating the "-facings" concept, outlining their roles/responbilities.

RCD Workforce Survey

8 RCD professionals met over 5 months to create a national RCD survey, which will create the first large data set on the composition of the RCD workforce, a resource useful for individuals & hiring managers alike.

RCD Nexus
The CaRCC Resource and Career Center

1st Nexus Day

Numerous publications, workshops, etc. at PEARC

Kickoff of RCD Facilitator Visualization

| 2013-2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |

The ACI-REF NSF Program developed the "facilitation" role and formalized this role nationally

facings term introduced

To describe "who" the CI professionals are, we described what entity the staff faced on a regular basis: researchers, systems, software/data, strategy/policy

HR Job Family Matrix

6 RCD & 2 HR professionals met over 6 weeks and create a HR framework template with a unique RCD job family to be used by any institution.

Career Arcs

15 RCD professionals began meeting to brainstorm methods to convey themes of Career Arcs from individual interviews.

RCD Compensation Paper - PEARC23

CaRCC