Campus Research Computing (CaRC) Consortium

Preliminary Stakeholder Map, 2017

NSF Award #1620695 RCN: Advancing Research and Education Through a National Network of Campus Research Computing Infrastructures - The CaRC Consortium

Respondent profile (n=255) – Selected items

Select one:

4.3%	CaRC Leadership
6.7%	CaRC Council
83.1%	Involved in RC, but not a member of CaRC
5.9%	Other

Years experience in primary role:

16.7%	Under 5 years
23.0%	5-10 years
29.4%	11-20 years
19.8%	21-30 years
11.1%	Over 30 years

Gender:

18%	Female
80.4%	Male
1.6%	Prefer not to answer

Check all that apply:

5.1%	Campus executive leadership (Provost, CIO, VPR)
25.9%	Campus research computing leadership (VP, Director RC)
25.1%	Campus IT services (systems, security, networking, engineering)
36.5%	Campus RC facilitators (not part of CaRC or ACI-REF)
24.7%	Campus RC/data science instructor
26.7%	Campus IT/RC training and workforce development
36.1%	XSEDE Campions (campus champion, domain champion, student champion)
7.8%	ACI-REF Facilitator
16.9%	CASC Leader or member
18.4%	XSEDE leader or member

Check all that apply:

46.3%	Principal Investigator
24.7%	Research software developer
18.0%	Research team member
2.4%	Government research lab

Universities with one or more responses

1. Albany State University
2. Arizona State University
3. Auburn University at Montgomery
4. Austin Peay State University
5. Binghamton University
6. Boise State University
7. Boston University
8. Brandeis University
9. Brown University
10. Caltech
11. Carnegie Mellon University
12. Case Western Reserve University
13. Clemson University
14. Clinton College and JPRA, LLC
15. Colorado School of Mines
16. Colorado State University
17. Columbia University
18. Earlham College
19. Florida Atlantic University
20. Florida International University
21. Florida Southern College
22. Florida State University
23. George Mason University
24. George Washington University, The
25. Georgia Institute of Technology
26. Georgia Southern University
27. Harvard University
28. Idaho State University
29. Indiana University
30. Iowa State University
31. Johns Hopkins University
32. Juniata College
33. Kansas State University
34. Kennesaw State University
35. KINBER
36. Lehigh University
37. Louisiana State University
38. Marshall University
39. Michigan State University
40. Middle Tennessee State University
41. Montana State University
42. Montana State University
43. National Center for Supercomputing Applications
44. NCAR
45. New Jersey Institute of Technology
46. New Mexico State University
47. New York University
48. NOAA/OAR/NSSL
49. Noble Research Institute
50. North Carolina State University
51. Northeastern University
52. Northwest Missouri State University
53. Northwestern University
54. Ohio State University, The
55. Ohio State University, James Cancer Hospital Comprehensive Cancer Center, The
56. Ohio Supercomputer Center
57. Oklahoma Innovation Institute, Tulsa Research Partners consortium
58. Oklahoma State University
59. Old Dominion University
60. Penn State University
61. Pittsburgh Supercomputing Center
62. Portland State University
63. Purdue University
64. Rice University
65. Rochester Institute of Technology
66. Rowan University
67. San Diego State University
68. Shodor Education Foundation
69. South Dakota State University
70. Southern CT State University
71. Southern Illinois University
72. Southwestern Oklahoma State University
73. Stanford
74. Stanford University
75. Stony Brook University
76. SUNY, Genesco
77. Texas A&M University
78. Texas A&M University, Corpus Christi
79. The Jackson Laboratory
80. UCAR
81. University of Alaska, Fairbanks
82. University of Arizona, The
83. University of Arkansas
84. University of Benin
85. University of Buffalo, SUNY
86. University of California, Merced
87. University of California, Berkeley
88. University of California, Irvine
89. University of California, Los Angeles
90. University of California, San Diego
91. University of California, Santa Barbara
92. University of Chicago
93. University of Cincinnati
94. University of Colorado
95. University of Colorado, Boulder
96. University of Connecticut
97. University of Florida
98. University of Georgia
99. University of Hawaii
100. University of Houston
101. University of Illinois, Chicago
102. University of Illinois, Urbana-Champaign
103. University of Illinois, NCSA
104. University of Iowa
105. University of Kansas
106. University of Louisville
107. University of Maryland
108. University of Miami
109. University of Michigan
110. University of Minnesota
111. University of Minnesota
112. University of Mississippi
113. University of Missouri
114. University of Missouri, Columbia
115. University of Missouri, St Louis
116. University of Nebraska
117. University of Nebraska, Lincoln
118. University of Nevada, Las Vegas
119. University of Nevada, Reno
120. University of New Hampshire
121. University of New Mexico
122. University of North Carolina, Chapel Hill
123. University of North Carolina, Wilmington
124. University of North Dakota
125. University of Notre Dame
126. University of Oklahoma, The
127. University of Pittsburgh
128. University of Rhode Island
129. University of Science and Arts of Oklahoma
130. University of South Alabama
131. University of South Carolina
132. University of South Dakota
133. University of South Florida
134. University of Southern California
135. University of Southern California, Marshal School of Business
136. University of Tennessee
137. University of Texas, Austin
138. University of Texas, Dallas
139. University of the Virgin Islands
140. University of Utah, The
141. University of Virginia
142. University of Waterloo
143. University of Wisconsin, Madison
144. University of Wisconsin, Milwaukee
145. University of Wisconsin System
146. University of Wyoming
147. Vassar College
148. Virginia Tech
149. West Virginia State University
150. Yale University

If CaRC Consortium could deliver one thing to you, "a must have," what would it be? (Something that you personally value or that is professionally useful to you. It would motivate you to want this to move forward.)

Size of words in illustration based on frequency in qualitative responses to the question.

Illustrative "Must Have" responses (with approximate distribution). Note that many responses span multiple categories (so percentages are approximate).

Standardized practices and training (31%)
- Standardized best-practices that are adopted by multiple institutions
- A means for teaching at least some basic best practices to all researchers who use advanced computing.
- HPC Carpentry (like software/data carpentry), workshops that scale and train the trainers and nurture powerful user groups
- Basic HPC course materials at an undergraduate level

Community of practice (18%)
- Easy to find people working on similar issues simultaneously across colleges and universities
- A shared community across HPC/RC sys admins
- Exposure to advances in cyberinfrastructure development at other research-tier universities so I can gain insight and ideas for continued NSF ACI proposal writing and funding.

Resource use and sharing (18%)
- Help campuses become part of a federation of shared resources
- Easy access to computational resources (CPU time and storage) without needing to know details about high performance computing architecture
- Making used equipment available when HPC providers retire equipment.
- Seamless cross-campus access to supplement lack of cores, or for when cores are down (failure or maintenance)

Career development (13%)
- Recognition of research computing professionals as a profession and defining career path
- Improved development of career tracks and pipelines for new CI workers/leadership

Illustrative "Must Have" responses (with approximate distribution). Note that many responses span multiple categories (so percentages are approximate).

Career development (13%) (cont.)
- A model or program for self-development, with a competitive edge, like a competition but just the right fit to get me motivated to learn.
- Additional release time

Advancing research (6%)
- Democratize the long tail of HPC
- Gateways, portals to facilitate use of HPC by non-computational scientists
- Modernizing the delivery of research computing support to go beyond HPC
- Analysis of next generation sequencing data
- Better coordination of cross-institutional research initiatives

Awareness and leadership support (6%)
- Institutional validation and support for research computing
- Concrete justification/examples/ROI, administration-level focus

Funding (4%)
- Sustainable funding model
- Universal access and long- term accounts to well supported resources (e.g. XSEDE)

Regulatory compliance and policy support (1%)
- Solutions that meet regulatory requirements (HIPPA, NIST 800-171, DFARS, etc.)

Misc. (4%)
- Outreach to undergraduate and community college institutions
- Unsure waiting to see what develops
- Pizza

What is the biggest barrier preventing or limiting your “must have?

Size of words in illustration based on frequency in qualitative responses to the question.

Illustrative “Barriers” (with approximate distribution). Note that many responses span multiple categories (so percentages are approximate).

Insufficient funding and other resources (23%)

- Institutional funding model
- Financial constraints
- Time, money, and community consensus.
- Physical location, teaching load, lack of resources

Issues with interoperability and variation (15%)

- Differing policies within an institution (e.g., by college) and between institutions
- Components exist but they are either not inclusive or not agnostic.
- There is no "one stop shop" for general computational resources.
- Diversity in campus organizations that limit the ability to identify and share best practices
- Every HPC setup is semi-custom, with a unique environment

Gaps in communication and available information (14%)

- Finding an effective communications channel (that does not involve excessive travel). Slack doesn't work for me.
- Access to people providing/maintaining CI who have the time to participate in discussion.
- Islands of expertise; fast pace of change of "best practice" software/configuration
- Lack of opportunity to connect staff to experienced people in the field.

Lack of time (11%)

- Don't know anyone who has time to regularly mentor someone out in the hinterlands who doesn't already mentor a lot of people. I often feel alone in this job even though I communicate with Campus Champions and participate in ACI-REF VR. I don't know what the next step of my career should be.

Illustrative “Barriers” (with approximate distribution). Note that many responses span multiple categories (so percentages are approximate).

Lack of time (11%) (cont.)
- Time to work with all the great service providers to get them to buy in to the unified access point and one stop shop idea.
- The extreme pressure that many researchers have to "just make it work" as fast as possible.

Status of research computing (7%)
- Unclear role of research computing in the bigger IT picture of universities
- A social organization requires management to support the time committed by the staff at each campus.

Absence of a coordinating group (7%)
- No broad-based group that really focuses on this.
- Lack of sustained support and well established institutional models for supporting research computing

Absence of a coordinating group (7%) (cont.)
- Currently fragmented organizations, no formal venue for sharing (other than venues like Educause, CASC, et al which aren't ideal)

Lack of consensus (3%)
- Lack of consensus in the field concerning job descriptions and names
- Too much confusion between facilitators and other professionals. We need to get our story straight…
- Lack of salient training programs and differences in opinion about professionalization of workforce (norms, certifications, etc.)

Challenges for smaller universities (3%)
- Enough peer university (or lower tier university) sharing/examples
- Resources exclusively devoted to research universities

Illustrative “Barriers” (with approximate distribution). Note that many responses span multiple categories (so percentages are approximate).

Competition in the community (2%)
- Political competition for funding and due credit...both institutionally and at the nat'l level.
- Grants are usually very competitive and private. Difficult to achieve a public and open discussion.

Lack of professional development opportunities (2%)
- The lack of paths to advancement in my career at my institution
- Lack of clear development in this profession

Misc. (11%)
- Most grants are geared towards tenure-stream faculty with science research focus
- Communications to individual faculty is difficult
- Firewall and security issues
- Resistance to change

Top interests *(not important=0; very important=1; very difficult=0; very easy=1)*

Rank by importance:

1. **Workforce development** for cyberinfrastructure administrators and staff (mean=.84)
2. **Supporting facilitators** (broadly defined) on campus, bridging between research teams and research computing resources (mean=.84)
3. Research computing **expertise sharing** among universities (mean=.84)

Rank by difficulty:

1. Influencing **state and federal policies** impacting research cyberinfrastructure (mean=.18)
2. Research computing **resource sharing** among universities (mean=.26)
3. Effective models for demonstrating **return on investment (ROI)** in research computing resources (mean=.26)

Gaps between importance and difficulty:

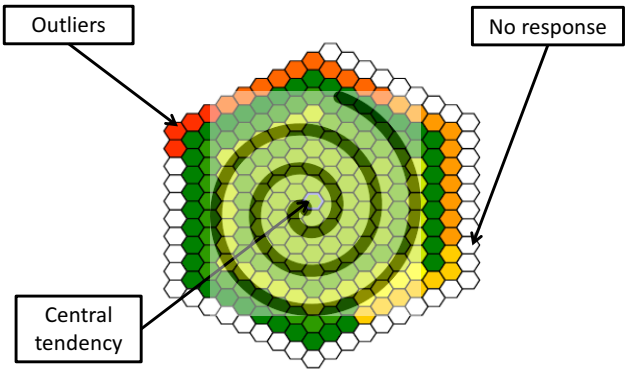
1. Influencing **state and federal policies** impacting research cyberinfrastructure (gap=.59)
2. **Workforce development** for cyberinfrastructure administrators and staff (gap=.56)
3. **Supporting facilitators** (broadly defined) on campus, bridging between research teams and research computing resources (gap=.56)

Reading a z-flower™

A color coded hexagon for every stakeholder

Key:

Shades of green: Positive
Shades of yellow: Neutral
Shades of red: Negative
Blank: Don't know/Not applicable/No response



Importance: Research computing resource sharing among universities.

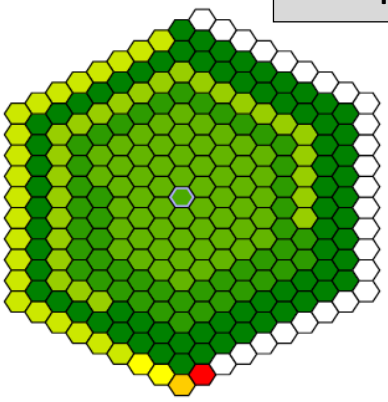
ave: 0.72 std: 0.23

Hexagons tiled in a spiral, from the mean in the middle, alternating above and below the mean

Visualizations available at: http://waymarksystems.org:8000/report/CARC2017

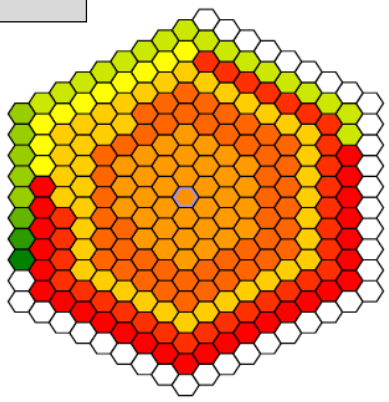
Workforce Development: Importance and Ease

Gap: .84 -.28 = .56



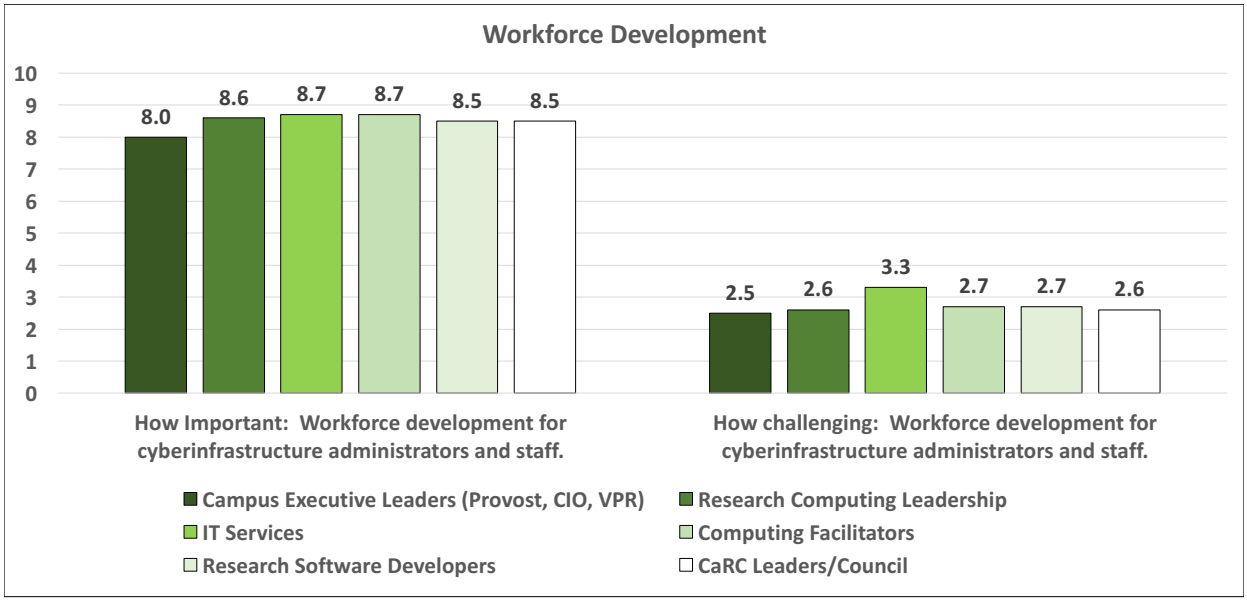
Importance: Workforce development for cyberinfrastructure administrators and staff.

ave: 0.84 std: 0.15



Ease: Workforce development for cyberinfrastructure administrators and staff.

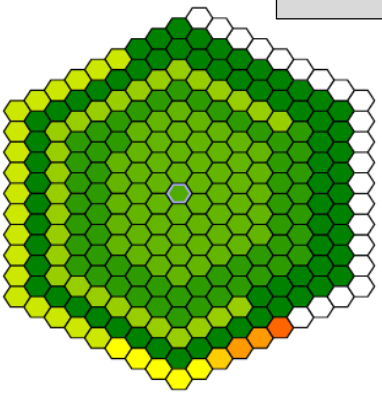
ave: 0.28 std: 0.20



Comment: *Workforce development is very important for all stakeholder groups. The response from campus executive leaders is lower than the rest. Although this difference is not statistically significant, it may still be reflective of an important gap in views on the part of these leaders. IT leadership see workforce development as less challenging than others (sig. at the .05 level).*

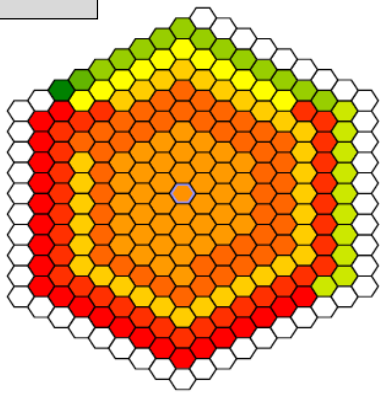
Supporting Facilitators: Importance and Ease

Gap: .84 -.28 = .56



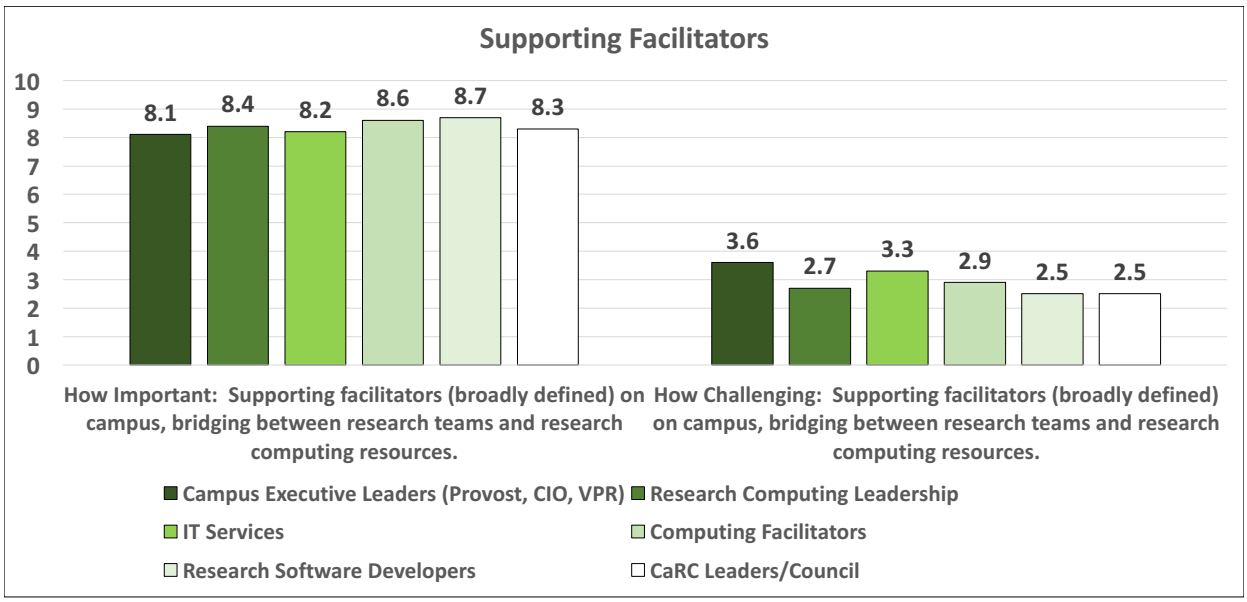
Importance: Supporting facilitators (broadly defined) on campus, bridging between research teams

ave: 0.84 std: 0.15



Ease: Supporting facilitators (broadly defined) on campus, bridging between research teams and

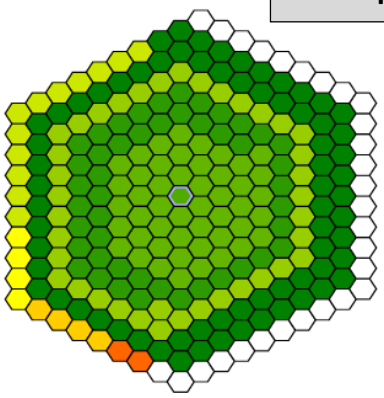
ave: 0.28 std: 0.20



Comment: *All stakeholders see supporting facilitators as very important and most see it as very hard to do. Executives do not see this as challenging as others do (while the difference is not statistically significant, that may reflect the relative small n for executives (n=13). There are also some bright spots on the visualization on the prior slide to be explored.*

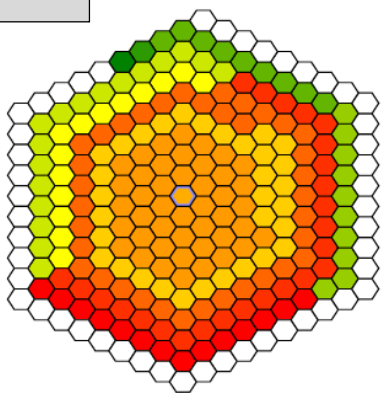
Expertise Sharing: Importance and Ease

Gap: .84 -.34 = .50



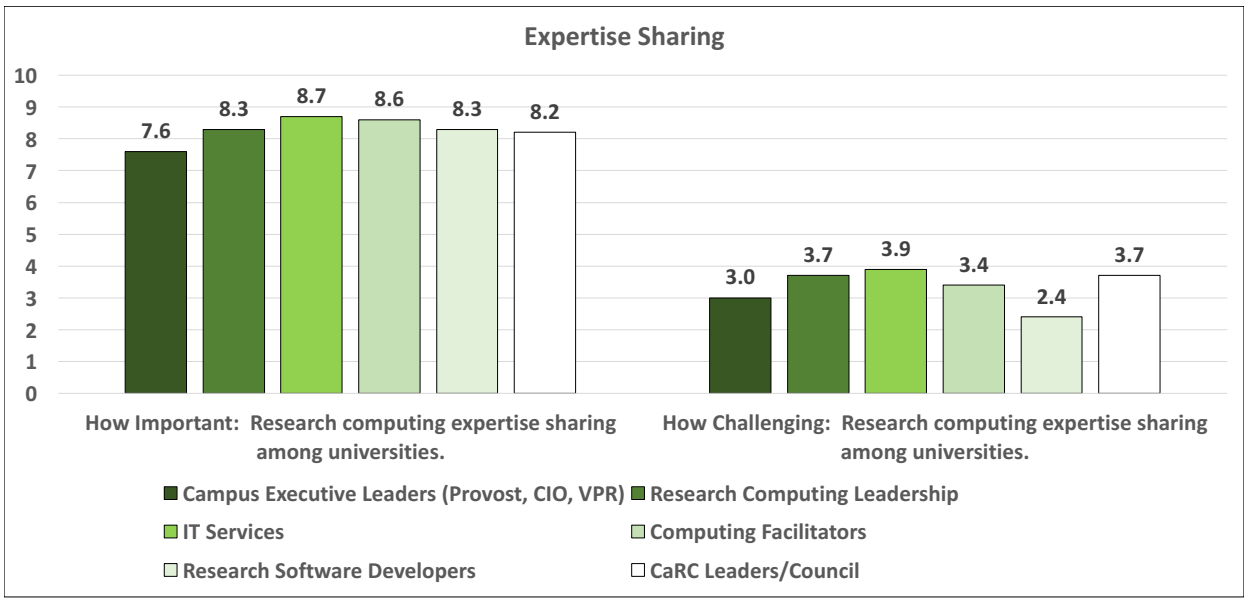
Importance: Research computing expertise sharing among universities.

ave: 0.84 std: 0.16



Ease: Research computing expertise sharing among universities.

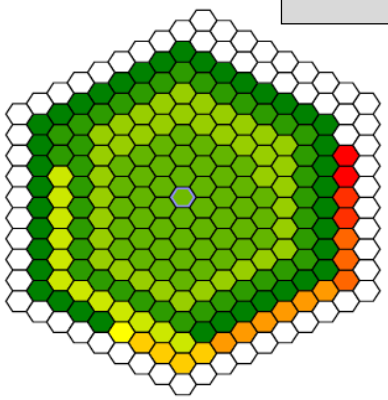
ave: 0.34 std: 0.22



Comment: *Sharing expertise is important for all stakeholders (and more important than sharing resources), with slightly lower importance by campus executive leaders. Research software developers see this as the the most challenging (though the difference is not statistically significant). There are some bright spots on the "how challenging" visualization to be investigate.*

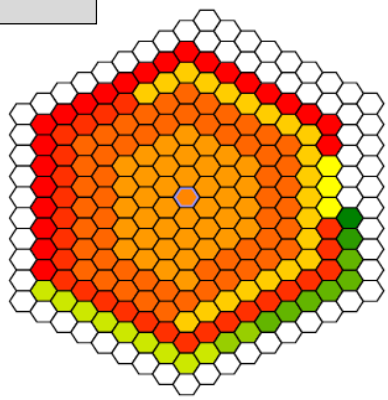
ROI for Research Computing: Importance and Ease

Gap: .78 -.26 = .52



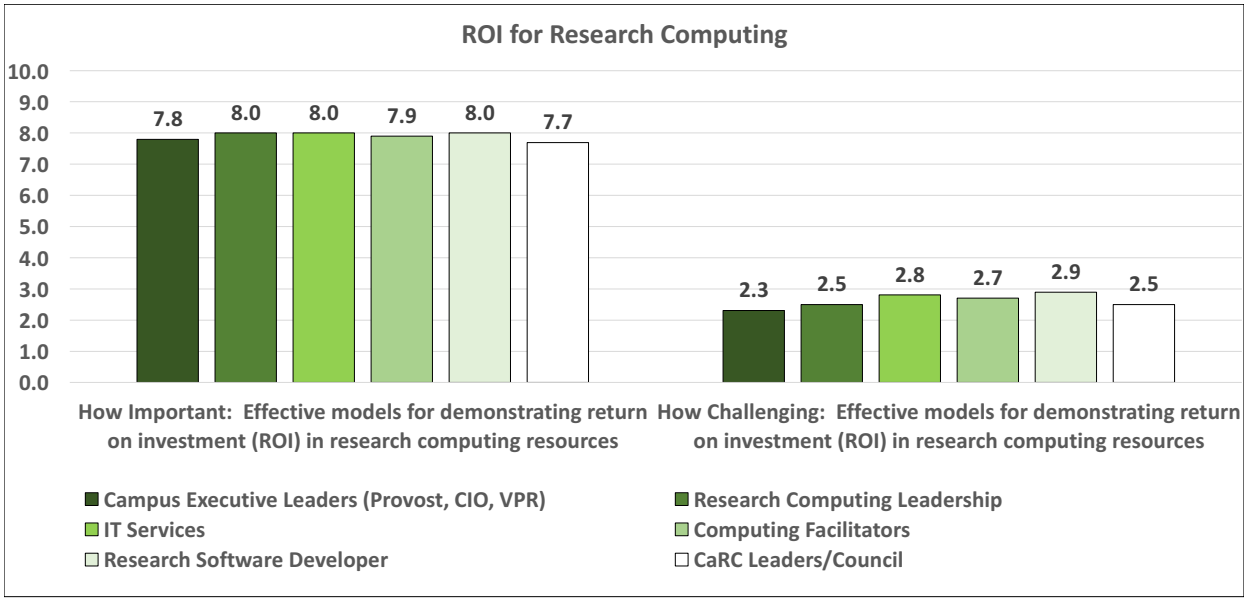
Importance: Effective models for demonstrating return on investment (ROI) in research computing

ave: 0.78 std: 0.21



Ease: Effective models for demonstrating return on investment (ROI) in research computing

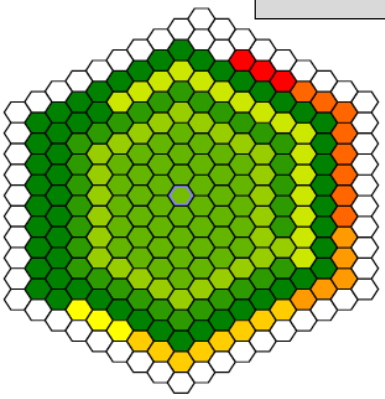
ave: 0.26 std: 0.20



Comment: *Importance of effective models for demonstrating ROI is high for all stakeholders. It is also hard to do. Visualization indicates a few who say it is not hard and one quarter (25.5%) who either don't know or indicate it is not applicable.*

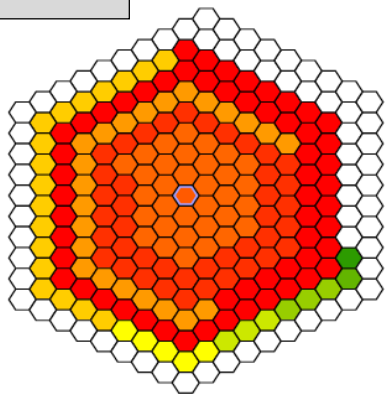
Government Cyberinfrastructure Policy: Importance and Ease

Gap: .77 -.18 = .59



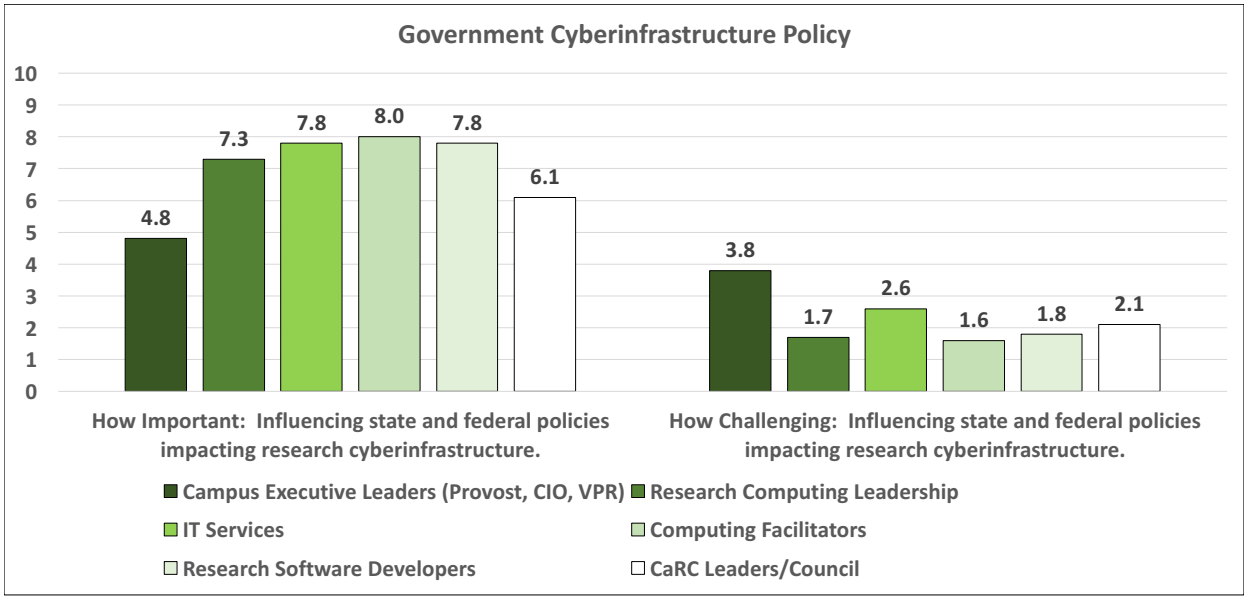
Importance: Influencing state and federal policies impacting research cyberinfrastructure.

ave: 0.77 std: 0.23



Ease: Influencing state and federal policies impacting research cyberinfrastructure.

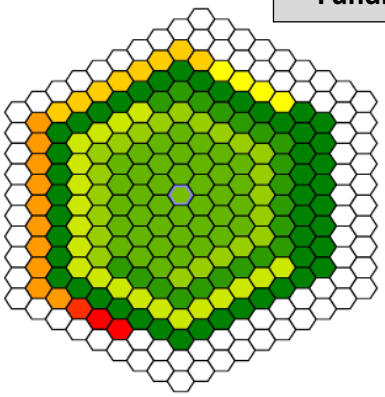
ave: 0.18 std: 0.18



Comment: *Both Campus executive leaders and CaRC leaders see influencing state and federal policy impacting research cyberinfrastructure as a much lower priority than other stakeholders. Campus executive leadership do not see this as challenging as do others.*

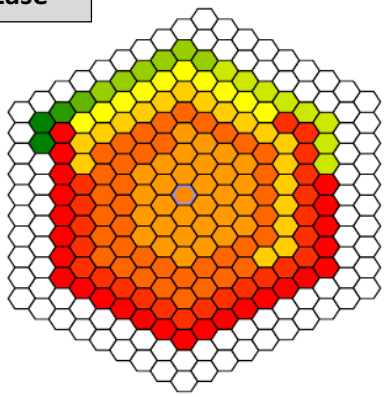
Regulatory Compliance with Mixed Funding: Importance and Ease

Gap: .76 -.27 = .49



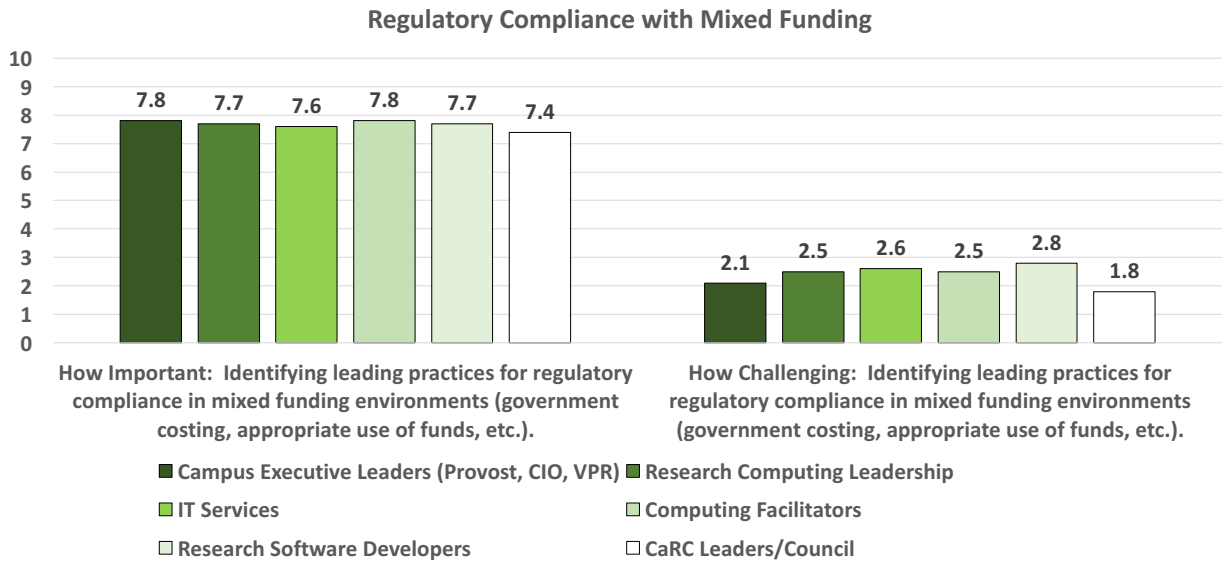
Importance: Identifying leading practices for regulatory compliance in mixed funding environments

ave: 0.76 std: 0.23



Ease: Identifying leading practices for regulatory compliance in mixed funding environments (government

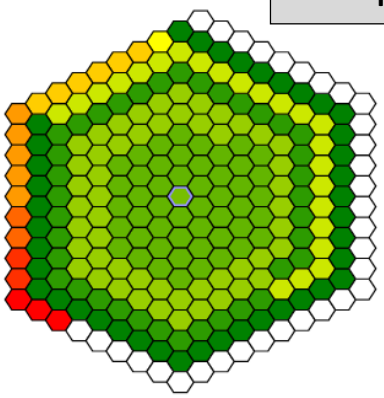
ave: 0.27 std: 0.21



Comment: *Regulatory compliance with mixed funding is important to all, but not the most important matter. It seen as very hard to do, particularly to campus executive leaders and CaRC leaders. Over one third (36.1%) indicate that they don't know or that it is not applicable.*

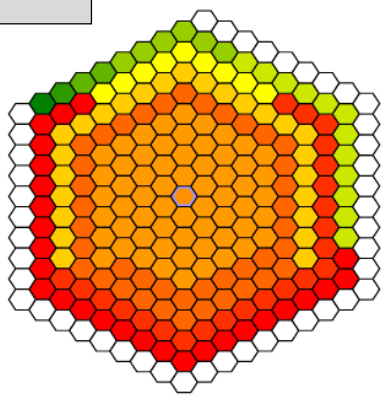
Campus Cyberinfrastructure Design: Importance and Ease

Gap: .76 -.28 = .48



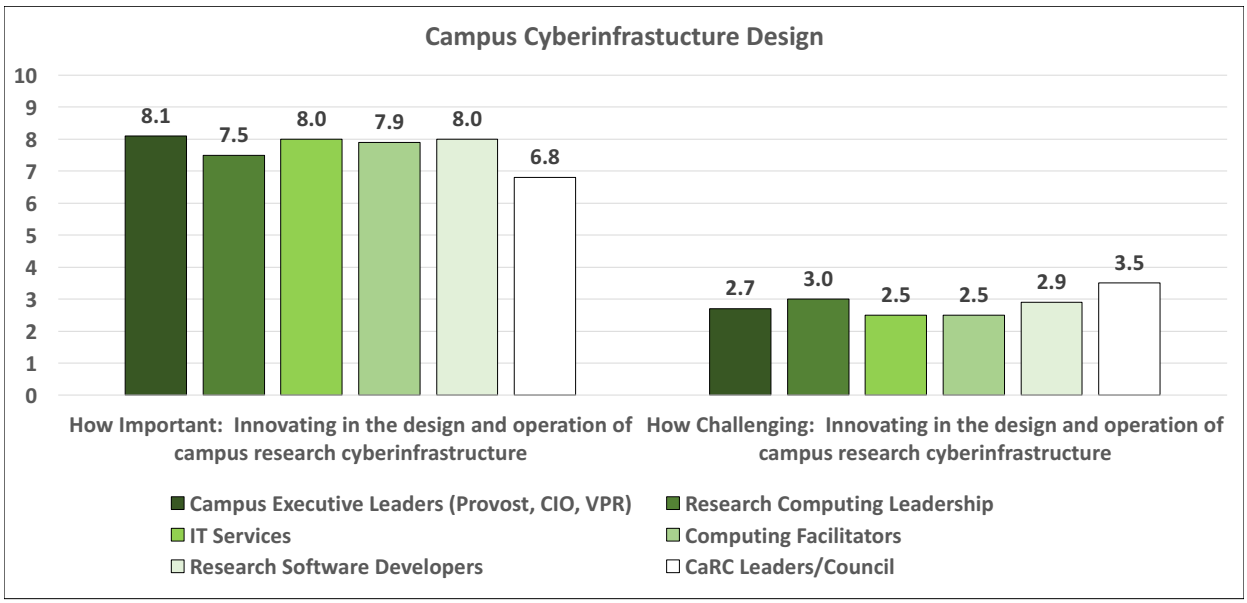
Importance: Innovating in the design and operation of campus research cyberinfrastructure.

ave: 0.76 std: 0.20



Ease: Innovating in the design and operation of campus research cyberinfrastructure.

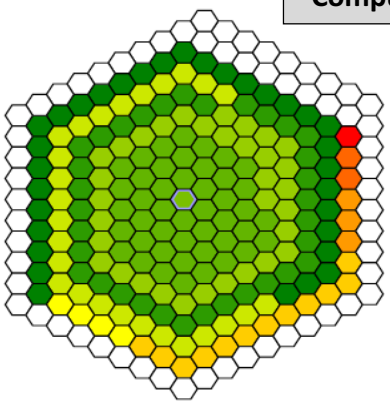
ave: 0.28 std: 0.19



Comment: *CaRC Council and Leadership see this as lower importance relative to other stakeholders (difference is statistically significant at .05 level) and also as less challenging (approaching, but not achieving statistical significance).*

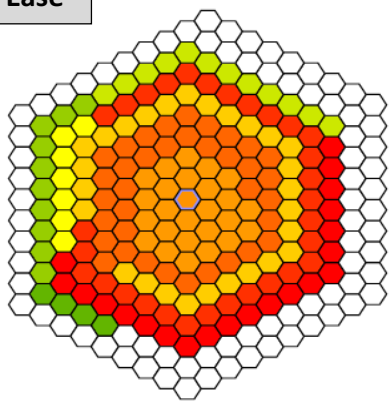
Balancing IT and Research Computing: Importance and Ease

Gap: .76 -.29 = .47



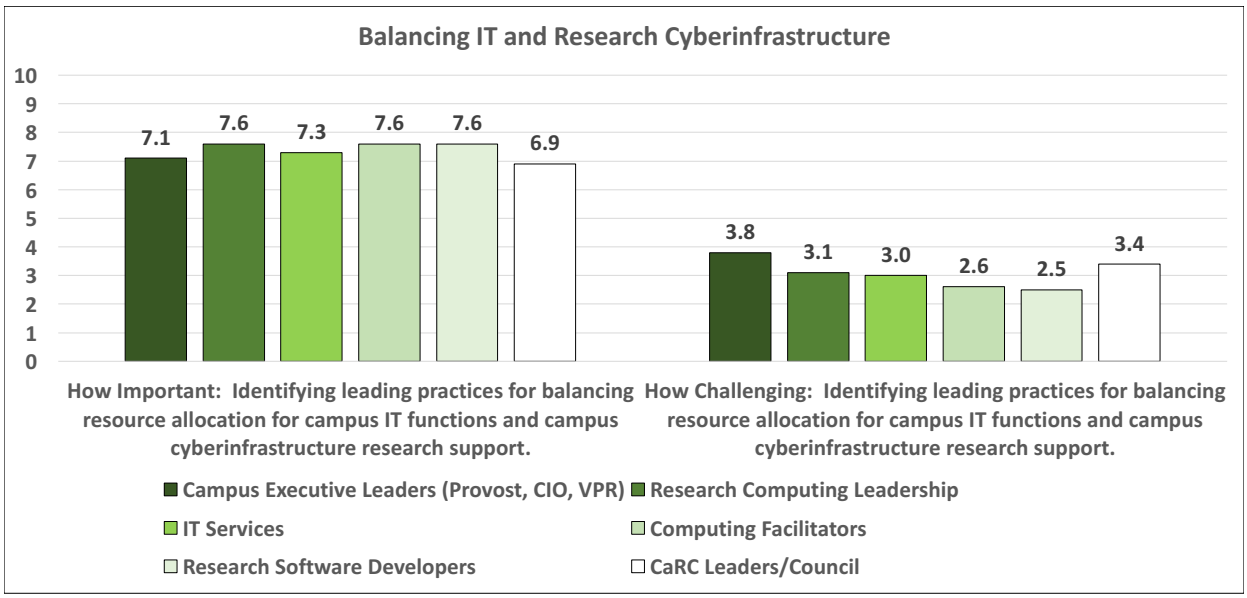
Importance: Identifying leading practices for balancing resource allocation for campus IT functions

ave: 0.76 std: 0.19



Ease: Identifying leading practices for balancing resource allocation for campus IT functions and campus

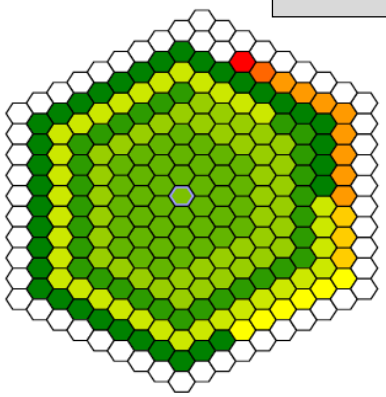
ave: 0.29 std: 0.21



Comment: *Campus executive leaders and CaRC leaders see balancing resources for IT and campus research cyberinfrastructure as slightly less important than others and, also, as slightly less challenging. Overall, the response on challenge includes a number who do not see it as challenging at all.*

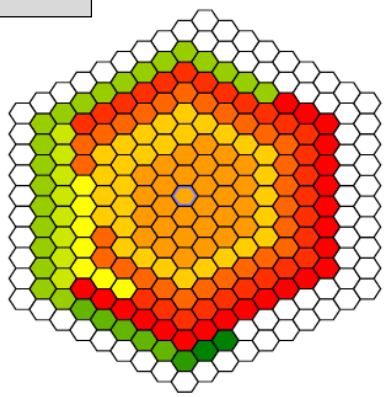
Roles and Career Paths: Importance and Ease

Gap: .75 -.33 = .42



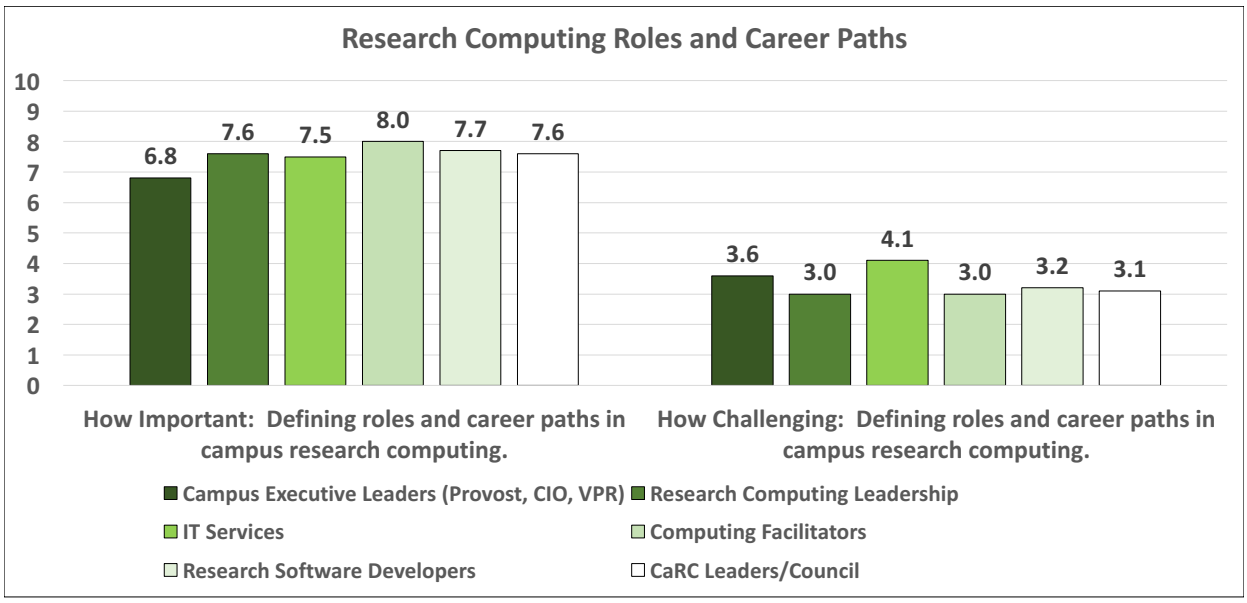
Importance: Defining roles and career paths in campus research computing.

ave: 0.75 std: 0.19



Ease: Defining roles and career paths in campus research computing.

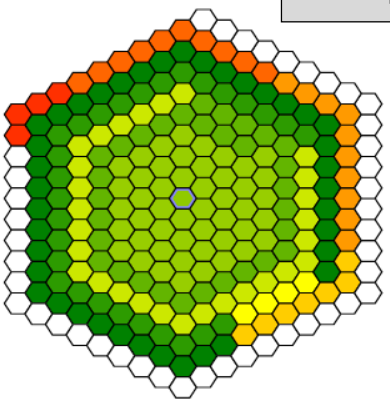
ave: 0.33 std: 0.24



Comment: *Campus executive leaders are somewhat less likely to see defining roles and career paths for research computing as important (the difference is not statistically significant, but the "n" is small). This points to the need for increased education and awareness. A substantial number (28.6%) indicate don't know or not applicable.*

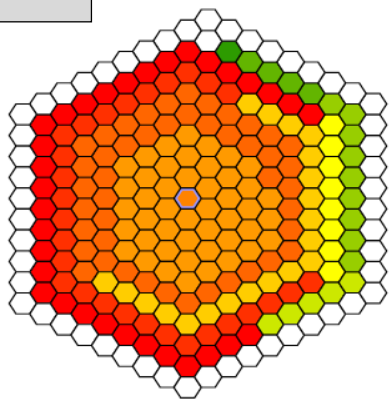
Resource Sharing: Importance and Ease

Gap: .72 -.26 = .46



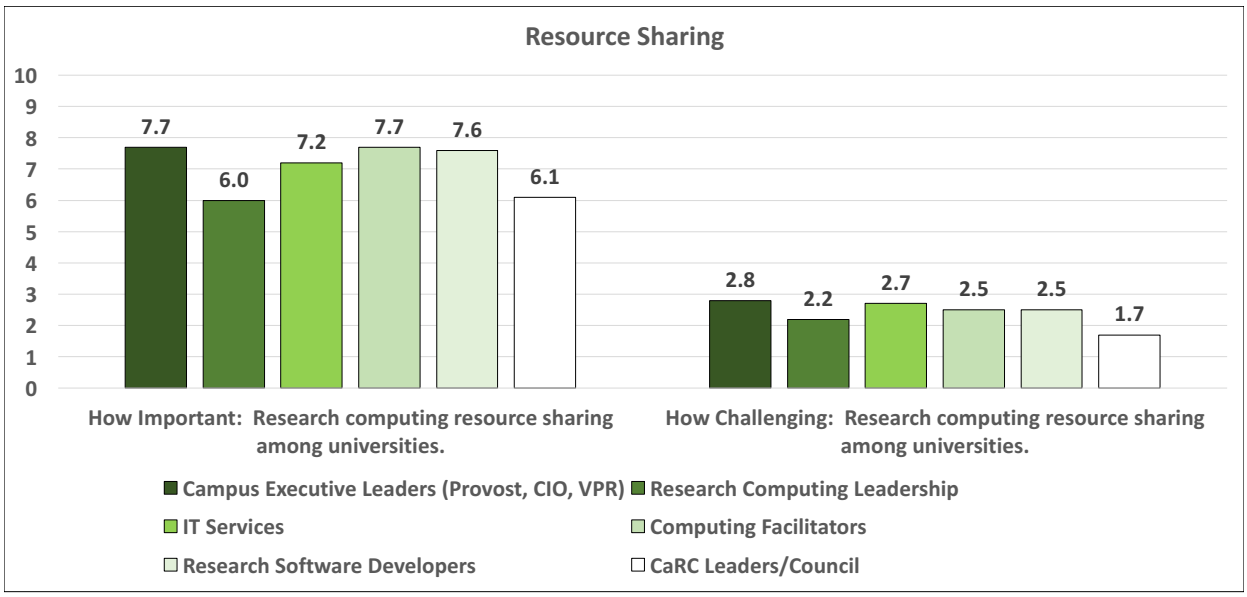
Importance: Research computing resource sharing among universities.

ave: 0.72 std: 0.23



Ease: Research computing resource sharing among universities.

ave: 0.26 std: 0.20



Comment: *Views on resource sharing are mixed, with campus executive leaders giving it relatively high priority and research computing leadership and CaRC leadership (a high overlap between the two) rating it much lower.*

Rating challenges facing CaRC (strategy, structure, process, culture, technology)

Strategy

- Creating **value** (1,228 pts., 45 people)
- Building a **shared vision** (766 pts., 28 people)
- Sharing a sense of **urgency** (294 pts., 11 people)
- Mitigating **risk** (80 pts., 3 people)

Structure

- Maintaining dependable **funding** (1,590 pts., 58 people)
- Making **metrics** visible (430 pts., 16 people)
- Providing effective **incentives** (374 pts., 14 people)
- Ensuring **transparent information** (295 pts., 11 people)
- Specifying **roles/responsibilities** (216 pts., 8 people)

Process

- Ensuring effective **learning and education** (1,084 pts., 40 people)
- Ensuring effective **leadership** (728 pts., 27 people)
- Ensuring effective **communication** (672 pts., 25 people)
- Fostering **inclusivity** in decision making (216 pts., 8 people)
- Providing timely **feedback** (52 pts., 2 people)

Process (cont.)

- Supporting **problem-solving** in decisions (80 pts., 3 people)
- Ensuring effective **conflict resolution** (27 pts., 1 people)

Culture

- Ensuring effective **cooperation** (644 pts., 25 people)
- Appreciating **shared and separate interests** (478 pts., 18 people)
- Being open to **change** (401 pts., 15 people)
- Transforming **underlying assumptions** (138 pts., 5 people)
- Sustaining **trust** (134 pts., 5 people)
- Reinforcing **shared values** (53 pts., 2 people)
- Ensuring constructive **competition** (108 pts., 4 people)

Technology

- Developing an effective **technology architecture** (695 pts., 26 people)
- Addressing **disruptive technology** changes (666 pts., 25 people)
- Using shared **technology standards** (487 pts., 18 people)
- Addressing **incremental technology** changes (265 pts., 10 people)

Rating challenges facing CaRC (all items together)

1. Maintaining dependable **funding** (1,590 pts., 58 people)
2. Creating **value** (1,228 pts., 45 people)
3. Ensuring effective **learning and education** (1,084 pts., 40 people)
4. Building a **shared vision** (766 pts., 28 people)
5. Ensuring effective **leadership** (728 pts., 27 people)
6. Developing an effective **technology architecture** (695 pts., 26 people)
7. Ensuring effective **communication** (672 pts., 25 people)
8. Addressing **disruptive technology** changes (666 pts., 25 people)
9. Ensuring effective **cooperation** (644 pts., 25 people)
10. Using shared **technology standards** (487 pts., 18 people)
11. Appreciating **shared and separate interests** (478 pts., 18 people)
12. Making **metrics** visible (430 pts., 16 people)
13. Being open to **change** (401 pts., 15 people)
14. Providing effective **incentives** (374 pts., 14 people)
15. Ensuring **transparent information** (295 pts., 11 people)
16. Sharing a sense of **urgency** (294 pts., 11 people)
17. Addressing **incremental technology** changes (265 pts., 10 people)
18. Specifying **roles/responsibilities** (216 pts., 8 people)
19. Fostering **inclusivity** in decision making (216 pts., 8 people)
20. Transforming **underlying assumptions** (138 pts., 5 people)
21. Sustaining **trust** (134 pts., 5 people)
22. Ensuring constructive **competition** (108 pts., 4 people)
23. Supporting **problem-solving** in decisions (80 pts., 3 people)
24. Mitigating **risk** (80 pts., 3 people)
25. Reinforcing **shared values** (53 pts., 2 people)
26. Providing timely **feedback** (52 pts., 2 people)
27. Ensuring effective **conflict resolution** (27 pts., 1 people)

If you could use one phrase or metaphor to summarize your current view of the CaRC Consortium what would it be?

- Why another org?
- Was unaware of its mission before today.
- What is CaRC exactly and how does it work?
- Yet another valiant effort to give structure to a vital resource...hopefully it will succeed!
- Birds of a Feather looking for a roost.
- Be more inclusive.
- Byzantine.
- The CaRC Consortium is a cyberinfrastructure guild.
- Nascent.
- I think of it as ACI-REF, similar to XSEDE/ECSS support
- Understaffed to serve the very many and very diverse needs
- An important effort but needs to be defined and publicized better.
- I hear their lunch at SC every year is pretty awesome.
- Umbrella of support for research computing roles.
- Bridge building; leveraging successes across campuses
- CaRC is attempting to bridge a great divide among coequal (not really, but we all think we're equal) computational resource centers and bring them together
- Supporting those who support researchers.
- Scalable, transformative.
- A Family.
- Looking to the future of HPC in the US.
- The "Google" of Research Computing.
- National coordination community.
- A research computing enabling organization.
- Building a cyberinfrastructure ecosystem.
- A weaver, using a system to pull together vastly different threads into something greater.

Please use one sentence to summarize your vision of success for CaRC Consortium.

- A national forum for the exchange and dissemination of best practices, expertise, and technologies to enable the advancement of campus-based research computing activities. ref: http://newsstand.clemson.edu/clemson-nsf-carc-consortium/
- The vision articulated in the survey is correct.
- CaRC would be successful if it provide a sustainable community of best practice for improving the ability of researchers to take advantage of advanced cyberinfrastructure.
- Built on the success of those that came before, CaRC can become a more effective and more inclusive community of practice.
- Being more effective in professional and career development of advanced computing resources facilitators.
- Shared community to advance RC everywhere.
- Sustainability of CI through career development.
- 95% Standardization, 5% Innovation. The "position is everywhere, momentum is therefore zero" problem is still very much in effect.
- CaRC makes it much simpler to learn from successes and mistakes, across the broad set of member institutions.
- Shared resources for small and large schools alike.
- Grad students know how to do and share repeatable analysis on Linux.
- Developing active and productive research computing teams at institutions.
- CaRC would be successful if it could create effective communities of practice for computing professionals.
- CaRC is lowering barriers to advanced research computing.

Please use one sentence to summarize your vision of success for CaRC Consortium. (cont.)

- Material artifacts produced (training, standards, best practices, shared definitions)
- Membership grows rapidly for the next two years.
- Helping me help my administration and researchers.
- Establishes a home for cyberinfrastructure facilitators without increasing institutional expense.
- Membership in CaRC consortium is 90% of universities with research computing groups and strong participation of research computing professionals in SIGs.
- To build on what already exists, and not setup a new power structure,
- I would like to see CaRC as an extended version of the XSEDE campus champions, where non-XSEDE support staff can go to learn new and/or best practices.
- One stop shop to satisfy global research needs.
- Success would be the empowerment of facilitators and researchers to achieve science they may not have been able to without this collaboration of knowledge.
- "A rising tide floats all boats." Observe the impact on HPC as a whole, nationwide.
- Optimal use of cybersystem resources for solving challenging and pressing research problems.

Additional Notes:

- I hear it costs money for an institution to be a member, which means my institution will never be a member. As such, I don't know how CaRC will benefit me or the researchers I support.
- Please include opportunities for Minorities and HBCUs.
- Thank-you for leading this work.