HTC'23: The Great Plains Network and the OSG Consortium

July 11, 2023

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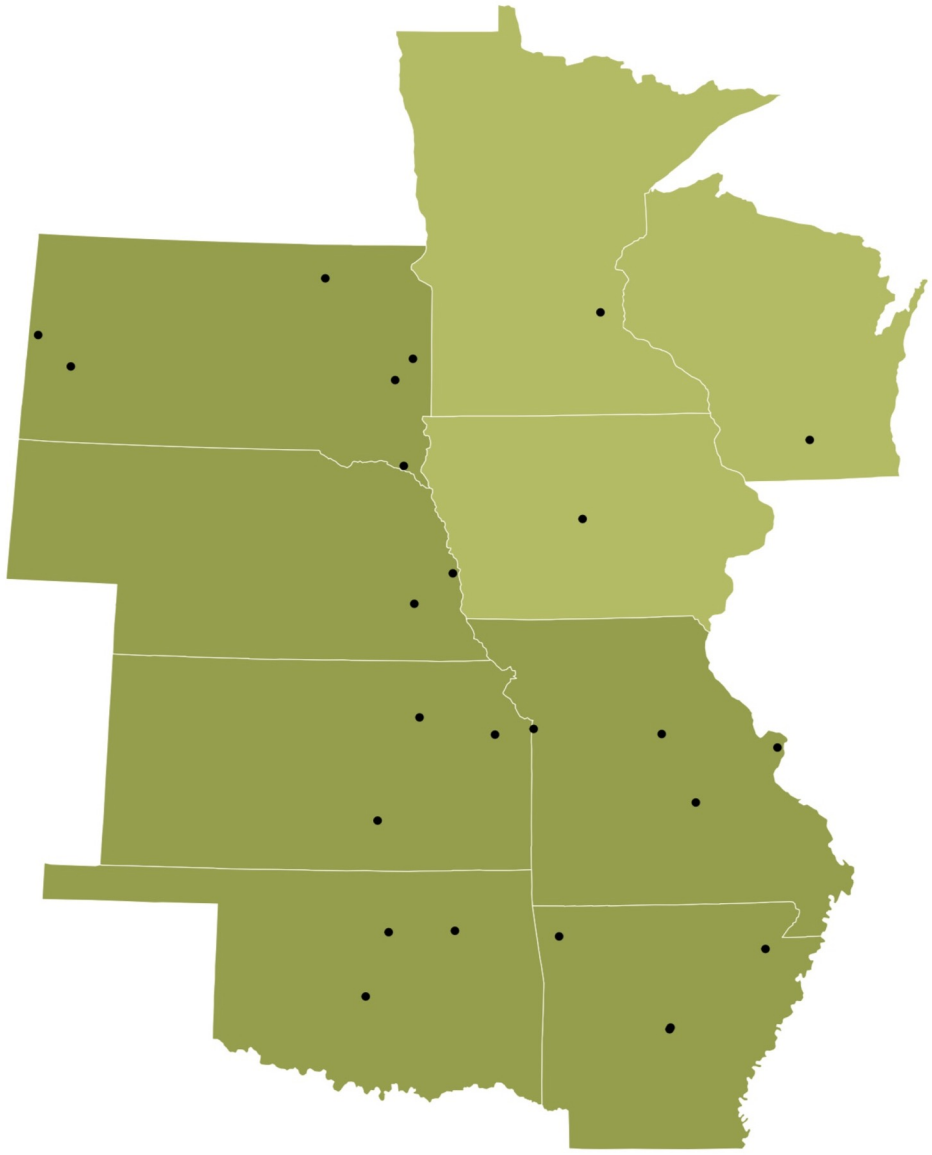
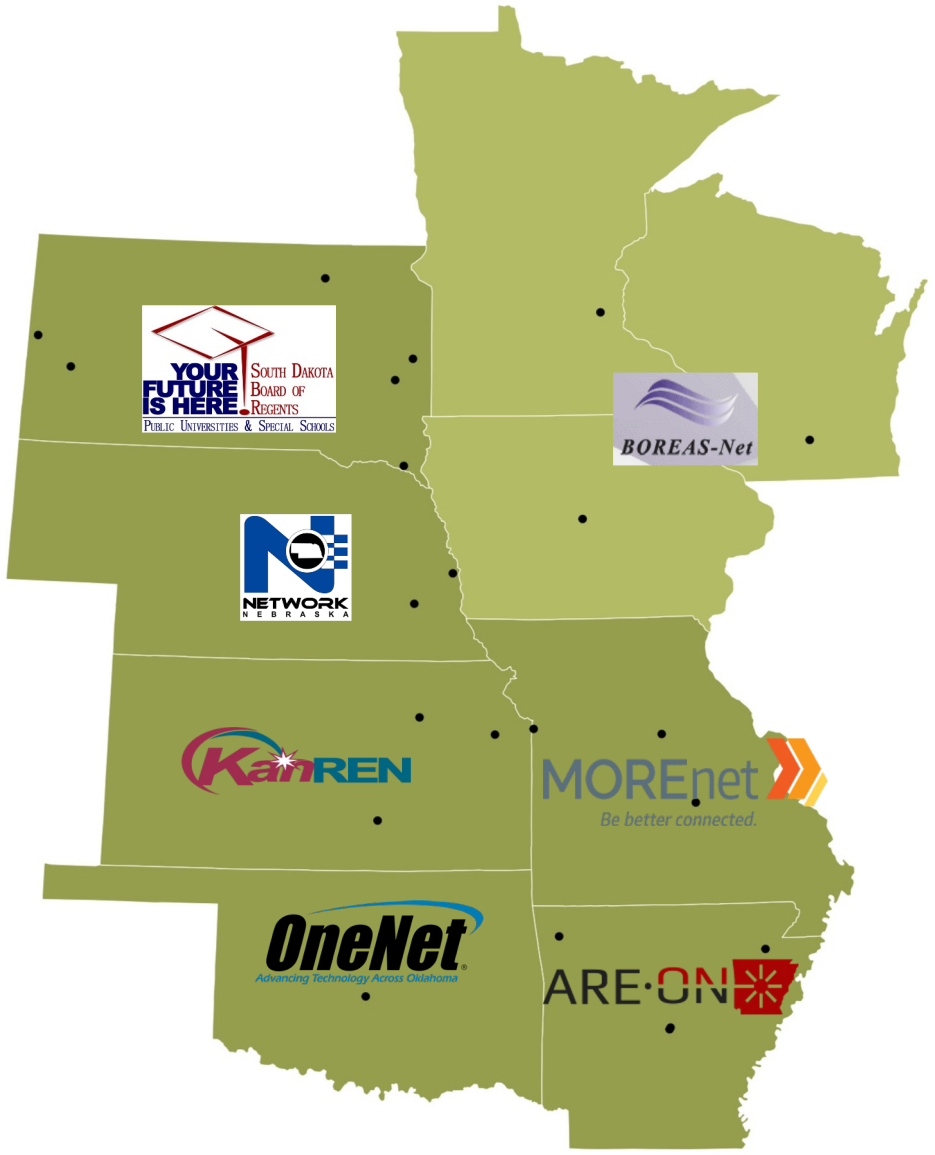


- The Great Plains Network (GPN) is a non-profit consortium **aggregating networks** through GigaPoP connections while advocating research on behalf of universities and community innovators across the Midwest and Great Plains who seek **collaboration, cyberinfrastructure and support**.

- Over two dozen universities
  - Across 9 states
    - More than 20 years of collaborating in research and education networking

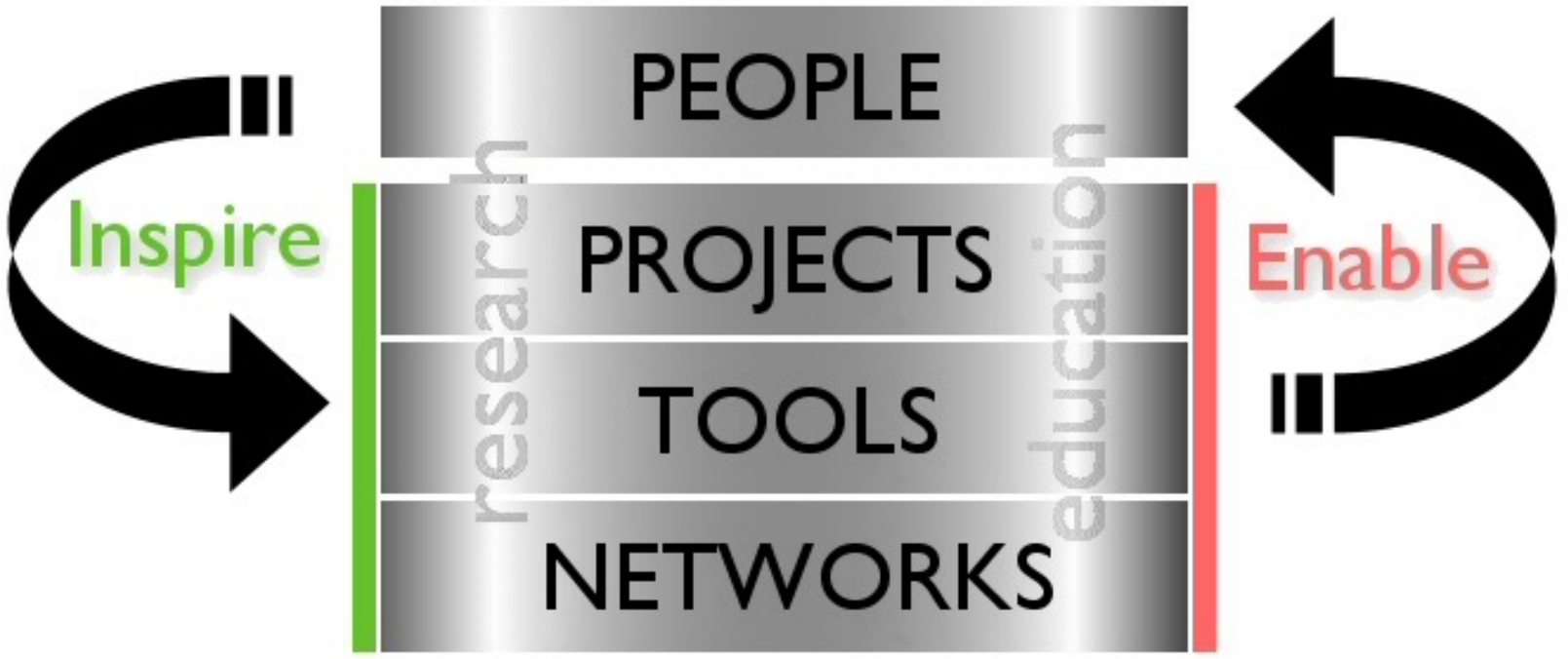


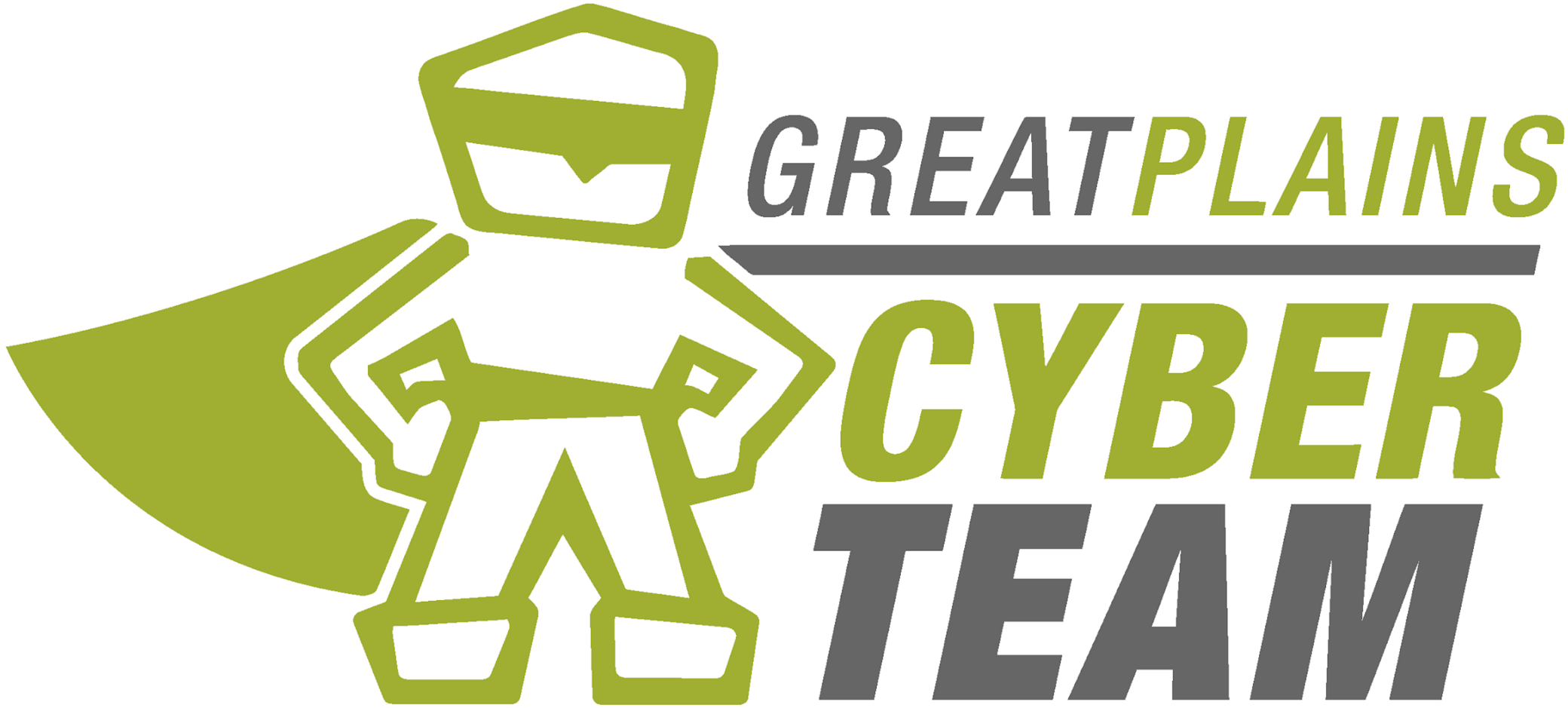
Connected via 6 state networks and a RON

- ARE-ON
- KanREN
- MOREnet
- Network Nebraska
- OneNet
- SD-REED

- BOREAS

GPN Collaborative Framework





NSF CC* Program Award #1925681
NSF Award Search: Award#1925681 - CC* Team: Great Plains Regional CyberTeam

NSF CC* Program Award #2018766
NSF Award Search: Award#2018766 - CC* Compute: GP-ARGO: The Great Plains Augmented Regional Gateway to the Open Science Grid

NSF Campus Cyberinfrastructure PI and
Cybersecurity Innovation for Cyberinfrastructure PI Workshop
September 23 – 25, 2019 | Minneapolis, MN

Quad Chart for: *The Great Plains Regional CyberTeam*

Challenge:

Supporting computational and data-intensive research at under-resourced institutions in rural states is challenging.

Rural states have:

- Sparse populations
- Fewer trained CI staff
- Smaller research output
- Less participation in national CI community.

Broader Impact:

- Drives CI development and adoption in EPSCoR States
- Enables advancements on campuses currently underserved by advanced CI
- Develops and disseminates CI best practices for an effective CyberTeam

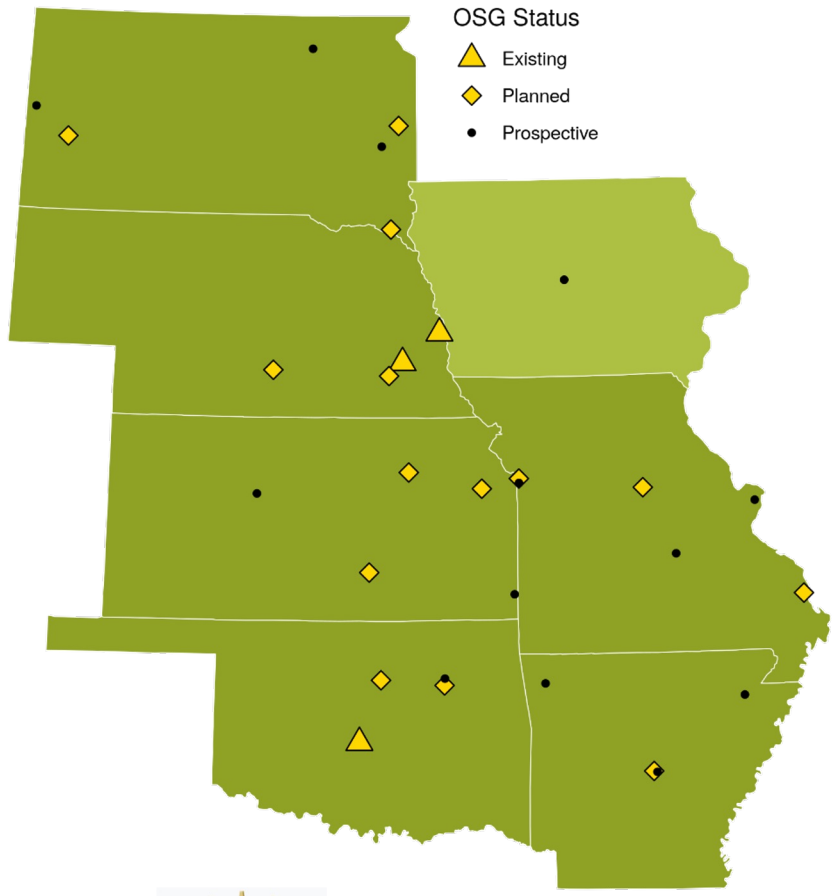
GREAT PLAINS NETWORK

Approach:

- Bring CI expertise directly to rural campuses.
- Cross-institutional distributed support team with 4 key foci:
  - **Networking**
  - **System Administration**
  - **Security**
  - **Researcher Training and Outreach**
- Leverages existing collaboration model of regional networks
- Pairs regional mentors with mentees and students
- Onsite campus engagement focused on enabling specific science workflows

CC* Compute: GP-ARGO: The Great Plains Augmented Regional Gateway to the Open Science Grid

- Expand GPNRP model
- Train and develop local/regional researcher-facing staff
- Deploy 18 HTC compute nodes across region, *including gateways to local HPC resources*
- Augment CyberTeam CC* to train users, engage administration



NSF

Open Science Grid

Resources contributed to the Open Science Grid

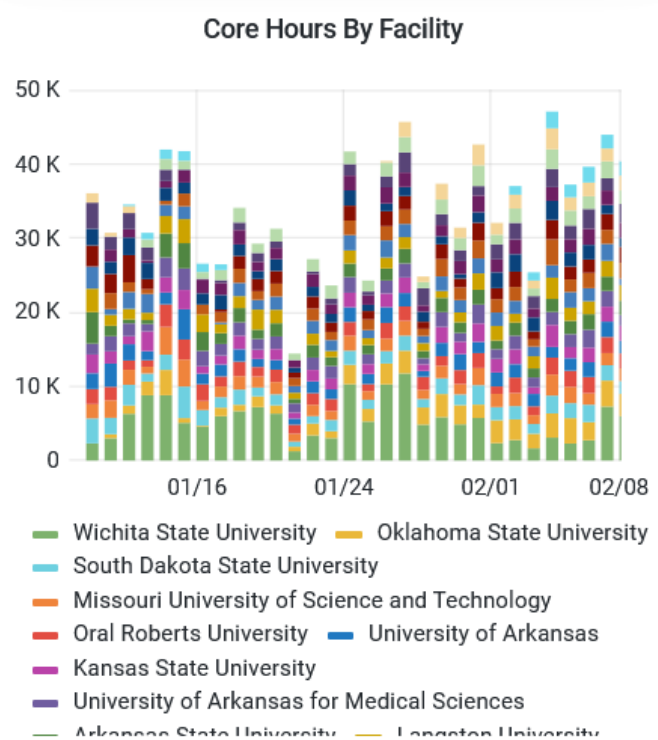
Core Hours Contributed
16,028,709 ↑~34k/day

OSG Projects
85

Institutions Supported
59

Collaborating Campuses
Arkansas State University
Cameron University
Creighton University
Dakota State University
Doane University
Emporia State University
Kansas State University
Langston University
Missouri S&T
Oklahoma State University
Oral Roberts University
South Dakota School of Mines and Technology
South Dakota State University
Southeast Missouri State University
University of Arkansas

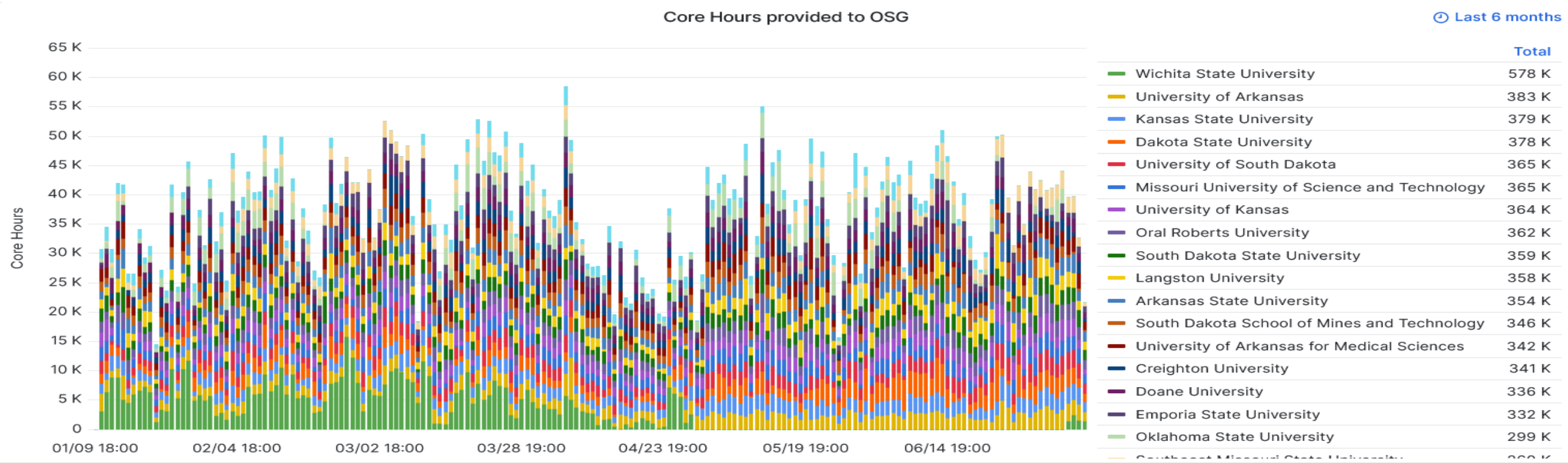
OSG Project	Core Hours
Nuclear Physics Wayne State University *ID: WSU_3DHydro*	2,318,881
Gravitational Physics University of Michigan *ID: Michigan_Riles*	2,177,066
Astrophysics University of Chicago *ID: spt.all*	1,679,570
Physics Rutgers, The State University of New Jersey *ID: PixleyLab*	1,021,939
Chemical Sciences Carnegie-Mellon University *ID: TG-CHE200122*	998,385
Astronomy American Museum of Natural History *ID: AMNH.astro*	732,285
Astronomy and Astrophysics Rochester Institute of Technology *ID: CompBinFormMod*	618,884



Top 5 in OSPool!!

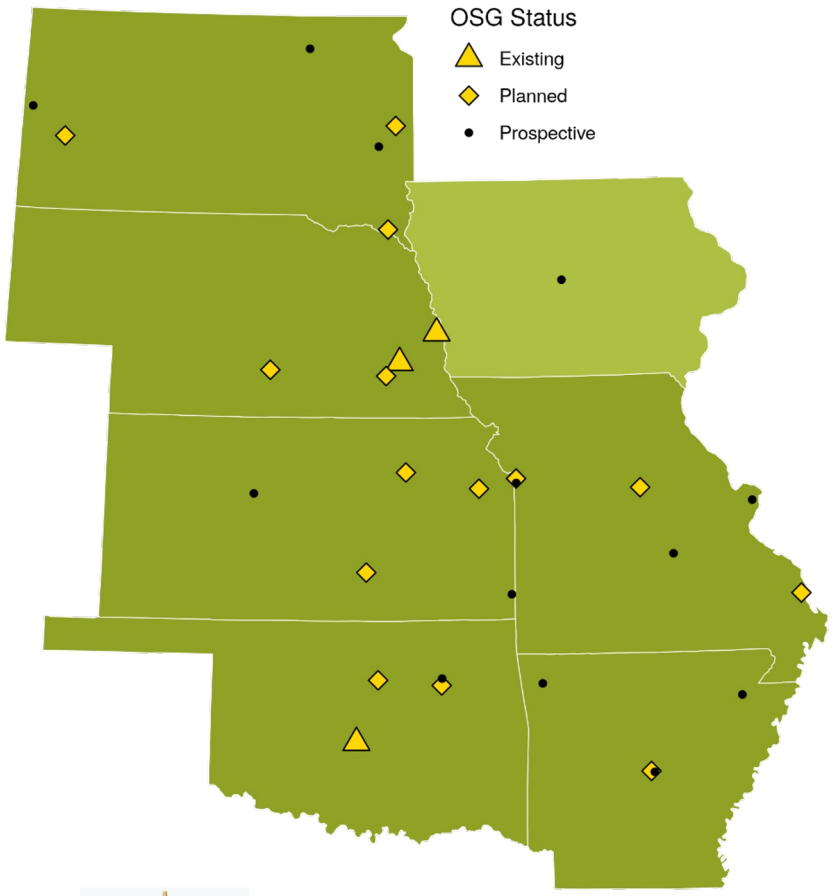
GP-ARGO Status

- Built team & institutional partnerships
- Developed software systems
- Added existing HPC clusters
- Kyle, Derek, & OSG rock!
- Declare victory and go home!



CC* Regional Computing: Great Plains Extended Network of GPUs for Interactive Experimenters (GP-ENGINE)

- From Throughput to Interaction
- National Research Platform integration
- Deploy 8 Research Platform compute nodes across region (~$1M!)
  - 128 cores/1TB RAM/4 A100 GPUs/100GbE
- Augment CyberTeam CC* framework to train users, engage administration



NSF CC* Program Award #2322218
CC* Regional Computing: Great Plains Extended Network of GPUs for Interactive Experimenters (GP-ENGINE), $981,182

NSF 23-526 Campus Cyberinfrastructure (CC*)

- Data-Driven Networking Infrastructure for the Campus and Researcher awards will be supported at up to $650,000 total for up to 2 years;
- Regional Connectivity for Small Institutions of Higher Education awards will be supported at up to $1,200,000 total for up to 2 years;
- Network Integration and Applied Innovation awards will be supported at up to $1,000,000 total for up to 2 years;
- Campus Computing and the Computing Continuum awards will be supported at up to $500,000 total for up to 2 years;
- Regional Computing awards will be supported at up to $1,000,000 total for up to 2 years;
- Data Storage awards will be supported at up to $500,000 total for up to 2 years; and
- Planning Grants will be supported for up to $100,000 for 1 year and CI-Research Alignment awards will be supported for up to $200,000 total for up to 2 years.

Source: NSF 23-526

DEADLINES are March 1st and September 11th

Universities in the Region Directly Impacted by CC* Grants

Black Hills State University
Cameron University
East Central Oklahoma University
Fort Hays State University
Kansas State University
Langston University
Northeastern State University
Oklahoma State University
Oral Roberts University
Rogers State University
South Dakota School of Mines and Technology
South Dakota State University
Southwestern Oklahoma State University
University of Arkansas
University of Arkansas at Pine Bluff
University of Central Oklahoma
University of Kansas
University of Missouri-Columbia
University of Missouri-Kansas City
University of Nebraska-Lincoln
University of Oklahoma Norman Campus
University of South Dakota Main Campus
University of Tulsa

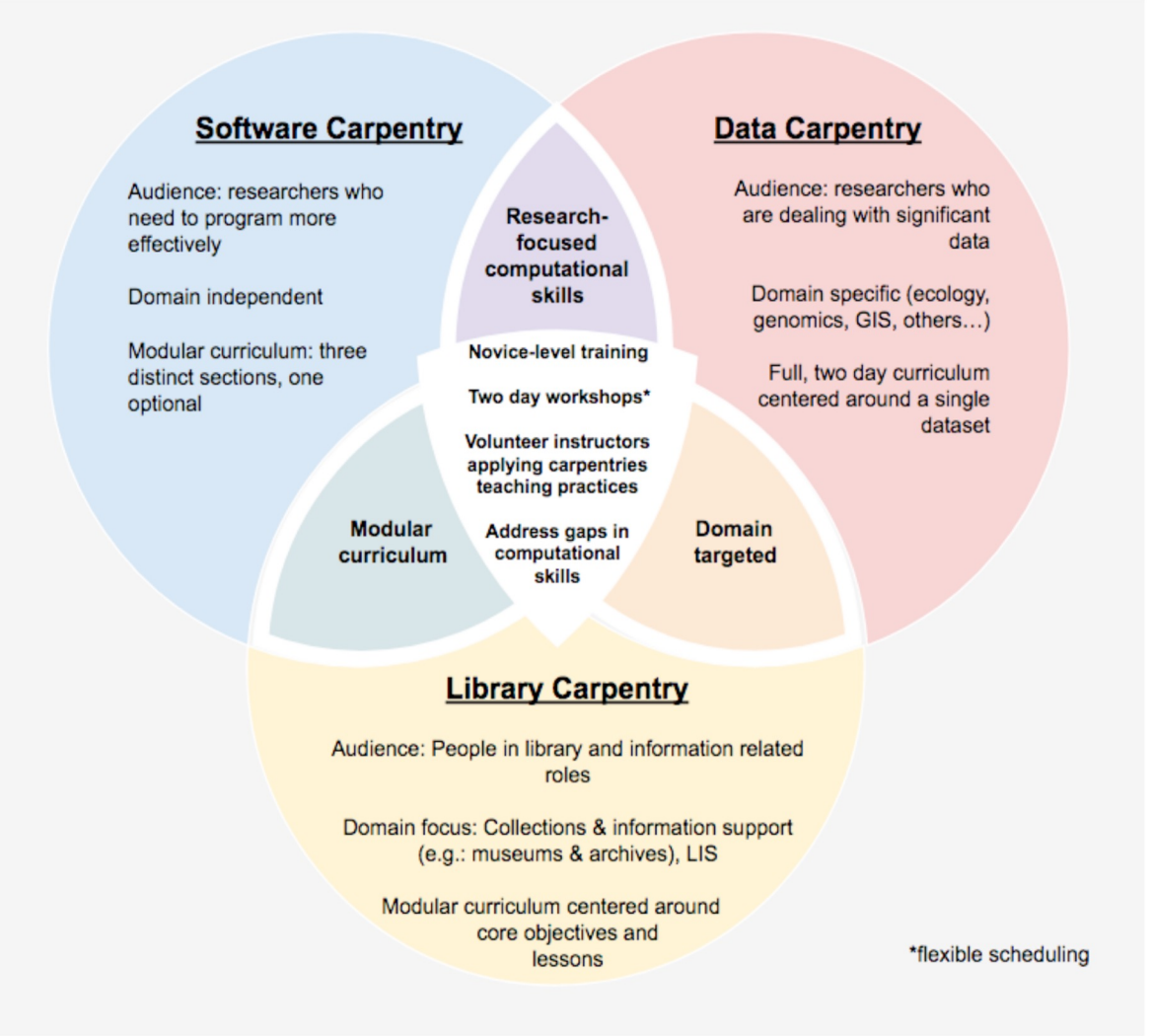
GPN CC* Proposal Repository

GPN members continue to make past successful proposals available. Feel free to request access!

Examples across many categories are available

THE CARPENTRIES

- 6 GPN seats annually for instructor training
- Numerous Carpentries organized workshops



GPN Chapter of Women in HPC

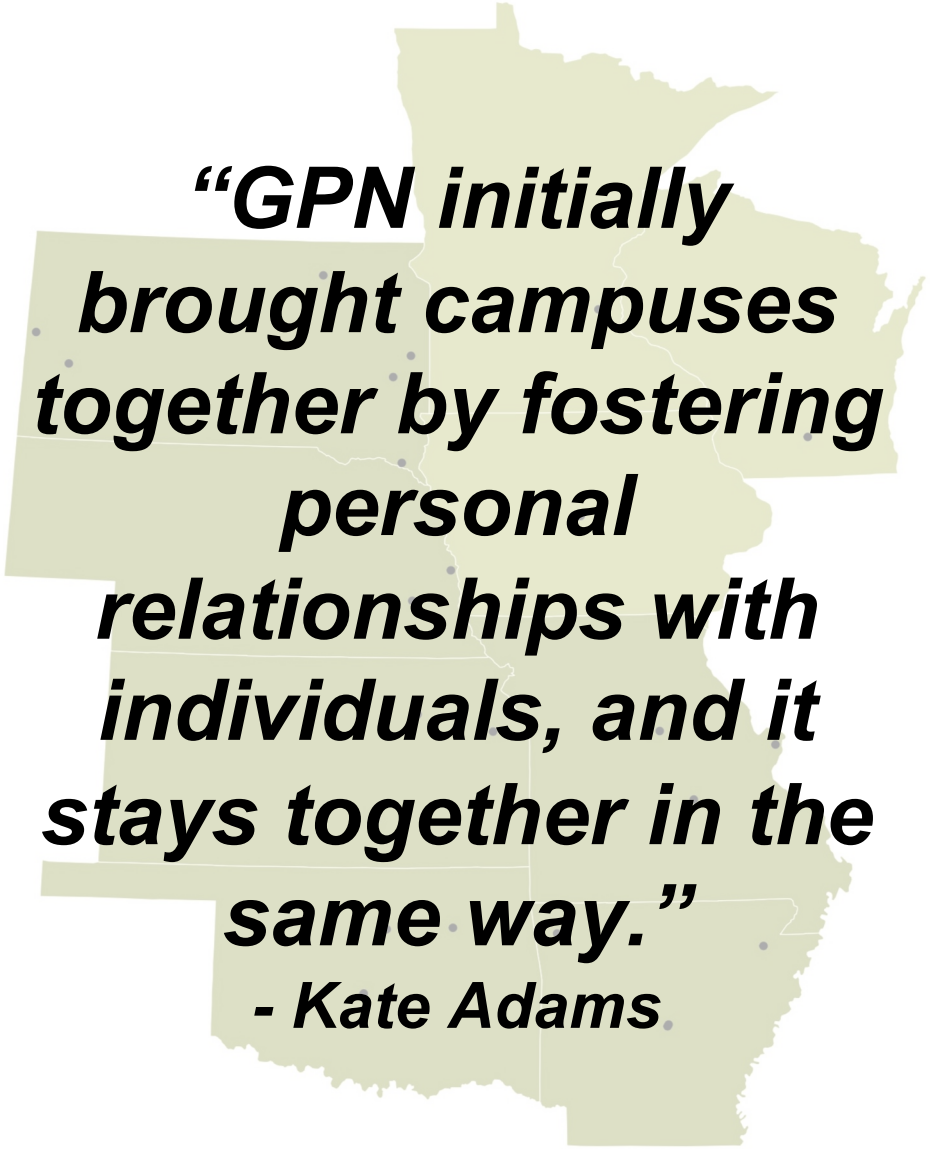
GPN Supcomputing Exhibit Space and SCinet Volunteer Support

- Exhibit space for member universities
- Coordination for volunteers for SCinet Teams
- Opportunity to present research computing activities during event

Nautilus Compute & Storage

DDoS Mitigation

radware | Support



"GPN initially brought campuses together by fostering personal relationships with individuals, and it stays together in the same way."

- Kate Adams

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- Over two dozen universities across 9 states
- NSF funding is a great way to start/turbocharge activities
- **OSG remains a crucial partner in current & future activities**