Preparing a NSF CC*2020 Proposal – A Regional Network Perspective

November 15, 2019
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Agenda

- Background on NSF Campus Cyberinfrastructure Solicitations

- CC* 2020 Areas and Program Wide Criteria and Approach

- Areas Specific: 2, 5 & 6

- Best Practices

- Resources

- Q&A

Background Information

Background and Resources

- Summary slide taken from Kevin Thompson's presentation at the Minneapolis PI Workshop and Quilt Fall meeting
  - https://www.thequilt.net/wp-content/uploads/2_CC_PIMeeting2019_KLT.pdf
  - Provides background on the program to date including what has been funded
- NSF Award Database (Advanced Search)
  - https://www.nsf.gov/awardsearch/advancedSearch.jsp
  - Restrict it to OAC; use CC as a keyword and look at both active and expired award.
  - Know what has been funded in your region

Summary #s for NSF's Campus CI Program 2012-2019

- ~290 awards (not including workshops, EAGER)
- $100M+ invested over 8 years (FY12-FY19)
- 49 states and jurisdictions represented on award map
- Award categories [aggregate (FY19)]:
  - Campus Networking Upgrades: 137 (7)
  - Network Integration/Innovation: 50 (3)
  - Regional/Network Design (small institutions): 34 (5)
  - CI Engineer/Cyberteam: 28 (3)
  - Compute: 14 (12)
  - Other: 27 (0)

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From Kevin Thompson, PI Workshop, Sept 2019

CC2020 Areas and Program Wide Criteria and Guidance

CC2020 Program Areas

1. Data-Driven Networking Infrastructure for the Campus and Researcher awards will be supported at up to $500,000 total for up to 2 years;

2. Regional Connectivity for Small Institutions of Higher Education awards will be supported at up to $800,000 total for up to 2 years;

3. Network Integration and Applied Innovation awards will be supported at up to $1,000,000 [in some cases these awards are limited to $500,000 total;

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CC2020 Program Areas

4. Campus Computing and the Computing Continuum awards will be supported at up to $400,000 total for up to 2 years;

5. Cyber Team-Research and Education CI-based Regional Facilitation awards will be supported at up to $1,400,000 total for up to 3 years; and,

6. Planning Grants and CI-Research Alignment awards will be supported for up to $250,000 total for up to two years, in some cases, these awards are

limited to $100,000.

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Areas of Interest to the Regional Networks

- Three Areas are applicable to Regional Networks
  - Area 2: Regional Connectivity for Small Institutions of Higher Education awards will be supported at up to $800,000 total for up to 2 years;
  - Area 5: Cyber Team-Research and Education CI-based Regional Facilitation awards will be supported at up to $1,400,000 total for up to 3 years; and,
  - Area 6: Planning Grants ($100,000) and CI-Research Alignment ($250,000) awards will be supported for up total for up to two years.
- All allow both Higher Ed and Nonprofit organizations to submit

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Program Wide Guidance

- Read entire CC* solicitation
  - Identify area of submission
  - Review Program wide criteria
  - Review Area specific criteria
  - Review Proposal Preparation and Submission Instructions (Section V)
    - Both full proposal requirements and area specific requirements (Section V.A.)
  - Solicitation Review Criteria (Section VI)

Program Wide Guidance

- Pay careful attention to solicitation language. It indicates specifically what is expected, required and preferred in the proposal.

- Language to look for:
  - **Must** – proposal is expected to address this information
    - Make a list of "musts" when reviewing the solicitation including if the proposal will be returned if not included
  - **Should** - generally to be included in the proposal
  - **Strongly encouraged** – not a requirement, but viewed favorably if included
  - **Preference** – not required, but would make the proposal stronger.

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General Program Guidance

- Collaborative solicitation – for a regional network submission, it must be a **Partnership** between
  - Regional Network
  - Campus level **CI-experts** (CIO, IT staff and facilitators) and
  - Contributing **domain** scientists, research groups and educators.
  - Not an individual research project or researcher proposal

- Think carefully about your PI, co-PI and collaborating personnel
  - Make sure it represents the different components and the diversity of your collaboration
    - If possible, include a researcher as on the PI list

Program Wide Guidance

- Science-driven
  - The main motivation for any proposal submitted to the NSF.
  - Primary applications **must** be in the science or engineering field(s) and **NOT** humanities, arts, etc.
  - Proposals will be evaluated on the strength of the science enabled
    - Research and/or education application drivers
    - Needs to be tied to the requested financial investment in people and equipment

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Science Application Drivers

- Must identify a set of science research or education application drivers
  - Identify specific scientific applications that would benefit from the proposed infrastructure – science research and education applications drivers.
- Data-driven Applications
  - Data movement in support of research and education applications is a key concept of the solicitation
  - Link the application drivers to specific network requirements, including the ability to transfer data efficiently.

Science Drivers and Applications

- Highlight unique characteristics/qualifications of your team and campus
  - Strategic areas of focus in science or engineering
  - Strategic plans that call out specific focus areas
  - Existing regional or campus resources
    - STEM curriculum or investments
    - Student or region demographics
    - Specific regional or campus areas of expertise
- Unique characteristics could be some limitation your area is trying to overcome
  - And the proposed solution addresses that limitation

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Program Wide Example List of "Must/Should"

- Must be Science Driven
- Must demonstrate collaboration between campus level IT staff and domain scientists, research groups and educators
  - For regional proposals, this includes regional IT staff
- Must include a Campus CI Plan submitted as a supplemental document (not needed for Area 6)
  - Expected to address within the Campus CI plan the sustainability of the proposed work in terms of ongoing operational and engineering costs
- Should represent opportunities for student engagement, education and training.

Area 2: **Regional Connectivity for Small Institutions of Higher Education**

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Area 2 Overview

- Supports broadening participation and widening the set of institutions connected to the regional and national research and education network fabric.

    - Specifically for smaller institutions with fundamental challenges in networking infrastructure and resources

    - Supports increased R&E network connectivity across smaller institutions

        - Coordinated by a **regional network** OR a **leadership institution** in the region

        - Leadership institution in a region with a RON must have coordinated activities with the RON

- Should focus on establishing the institutions' science research and education needs and its relationship to network capacity

Area 2: What has been Funded (2019)

PI	Organization	Title	Amount
Arviso, Jason K	Navajo Technical University	CC* Regional: Tribal Consortium Research Network	$792,181
Wheat, Stephen R	Oral Roberts University	CC* Regional: Extended Vital Education Reach Multiple Organization Regional OneOklahoma Friction Free Network (EVER-MORe-OFFN)	$500,000
Burrell, Steven C	Northern Arizona University	CC* Regional: Sun Corridor Network - Arizona Community College Research Expansion	$690,708
Meehl, Marla	University Corporation For Atmospheric Res	CC* Regional: Integrating the Colorado Western Slope Research and Education (R&E) Community into the National R&E Infrastructure	$85,000
Shah, Pankaj	LEARN: Lonestar Education and Research Network	CC* Regional: Accelerating Research and Education at Small Colleges in Texas via an Advanced Networking Ecosystem Using a Virtual LEARN Science DMZ	$799,649

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Area 2 General Guidance

- Proposals will be evaluated mainly on:
  - The strength of the science research and education use cases presented;
  - Quantification of those use cases, and
  - How the use cases relate to the proposed networking upgrades.
- Proposals will also be evaluated on the strength of institutional partnerships as they are expected to play a central role in developing and implementing the eventual network upgrades.

Area 2 General Guidance

- Identify the science research and education application drivers AND the set of campuses associated with the application drivers is an essential first step
  - It does not have to be an extensive list, but a compelling set that relates to the regional network (or area) and collaborating campuses
  - Not all campuses have to participate (or support) all of the application drivers
  - But the mix should make sense
- Identify the infrastructure being proposed
  - Regional and campus components
  - Must support the application drivers (and make sense)

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For Example: Science Drivers and Applications

- Research that requires access to computational facilities external to the individual research group
  - Efficient transfer of data sets between researcher(s) and computing facilities including augmenting current campus computational resources
  - Access to computing facilities for educational purposes, including within a classroom or classroom lab environment
  - Augmenting current campus computational capacity
  - Can be regional, national or international computational resources
    - Can be research or commercial cloud resources
    - For commercial cloud resources, indicate how connectivity will be provides (such as Internet2 cloud connect, regional peering, etc.)
  - Must have specific applications that are using the facilities
    - Do not have to be in the same science domain

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Common Science Driver and Application Resources

- Regional or national computing facilities, including: XSEDE, Open Science Grid, DoE Lab

- Shared instruments: Telescopes, microscopes

- Databases: Genomics, GIS data

- Online curriculum or educational materials that require real-time access or have current limitations associated with access (download or upload)

- Opportunity to share resources, such as a computational resource at one site that could be shared through the project

Area 2: Infrastructure

- Identify the infrastructure being proposed
  - Regional and campus components
  - Tie to the science research and education application drivers
- Provide quantitative information on
  - The limitations the current infrastructure has on the set of selected application drivers
- Identify the expected outcomes associated with implementing the requested infrastructure.

Area 2: Infrastructure

- Basic infrastructure concepts are a good place to start
  - Additional bandwidth – upgrading a campus connection from 1 GE to 10 GE
  - Science DMZ concept: specifically separating enterprise and research traffic to facilitate faster flow of research and education data traffic
  - Data Transfer Nodes – within the campus or the region
- There must be a link between your science drivers and the requested infrastructure

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Area 2: Infrastructure

- Re-architecting the regional and/or campus networks to support large science data flows
  - Could be combined with upgrading connections
  - Designing and building a Science DMZ within the campus or regional network
    - See http://fasterdata.es.net/fasterdata/science-dmz/ for more information on the Science DMZ approach
- Deploying some or all components of a research platform
  - Integrating with the NRP or PRP or simply adopting some of the technologies

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Area 2: Infrastructure Examples

- Science DMZ (regional and/or campus) will allow faster transfer of the data sets associated with specific application drivers

  – Indicate current limited data transfer rates and what the improved rates would be.

- Shared infrastructure, such as a Data Transfer Node or FIONA will support the more efficient data transfer between applications and external resources.

  – Minimizes the role of the internal campus network; demonstrates the collaboration between the campus IT staff and the research & education community.

Area 2: Application Table

- Required element of the Project Description
  - "summary table of the science drivers and their network requirements"
  - **Critical** part of the proposal; allows the reviewers to tie together the information
  - No specific format, but pick one that works for your set of application drivers and sites
  - Be clear and concise
  - Make sure to include quantitative information where possible (follow the directions in the solicitation)

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Area 2: Additional Advice

- Do not ask for regular regional network or campus network infrastructure
  – Not a way to just fund needed upgrades
  – Reviewers are very savvy in noticing when there is not a solid connection between the requested network infrastructure and the application drivers.
- Security is important, focused on application drivers
  – Must be able to distinguish between campus enterprise security and security for the identified application drivers
  – Science DMZ is a good reference
- Reference any IPv6 application drivers and regional and campus implementations – if you have them.
  – Extra credit if you have this (but okay if you don't)

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Examples of COMPELLING Application Drivers

- **Compelling:**
  - Claiming that STEM faculty at an individual or multiple campuses can not participate in specific projects involving large data exchange or remote interaction
    - Cite the applications, the researchers and the specific limitations (both campus and regional network – if applicable)
    - Provide data to back up the assertion
    - Indicate how the limitations will be resolved based on your proposed solution
- **Not compelling:**
  - Simply claiming you need 10G or 100G connections in the regional network and to the specific campus without citing any examples

Area 2: Additional Considerations

- Cyberinfrastructure planning
  - General understanding of the connection between the campus infrastructure and the campus science drivers
- Can use the Cyberinfrastructure Plan to provide additional supporting documentation that does not fit into the Project Description
  - But critical information should be in the Project Description itself
- Reference strategic planning documents that demonstrate the institutional support of cyberinfrastructure for research and education purposes
  - Be careful not to use up too much Project Description space on this however

Quad Chart for: Sun Corridor Network Arizona Community College Research Expansion

Challenge Project Seeks to Address:

Research and specialized network connectivity at Arizona community colleges are limited and generally unavailable to academic or to specialized technical programs. This project connects one of the nation's largest community college systems and the northern NAU collaborator to the Sun Corridor Network.

Deliverables:

NAU and SCN will improve campus network performance, increasing external connectivity to each campus by connecting them to SCN as a regional aggregator

By building new collaborations and by expanding connectivity, NAU and SCN improve undergraduate science and technical instruction for over 200,000 students in the Phoenix metropolitan area and northern Arizona.

Broader Impact:

The network expansion advances the use of science-oriented workflows, high performance computing in undergraduate research, instrument sharing, STEM education, and homework gap connectivity and introduces wide area and campus networking capacities that align with cybersecurity academic requirements.

Arizona State University
Chandler Gilbert Community College
Coconino Community College
Estrella Mountain Comm College
Northern Arizona University
Phoenix College
University of Arizona

https://sites.google.com/nau.edu/nsf-scn/home

https://www.nsf.gov/awardsearch/showAward?AWD_ID=1925632

Quad Chart for: CC* Regional: Extended Vital Education Reach Multiple Organization Regional OneOklahoma Friction Free Network (EVER-MORe-OFFN)

Challenge Project Seeks to Address:

- Extending the friction-free network in OK to enable even more broad collaboration of research at the undergraduate level

Solution(s) or Deliverables:

- Highly functional and efficient research network
- Best known methods for replicating in other states
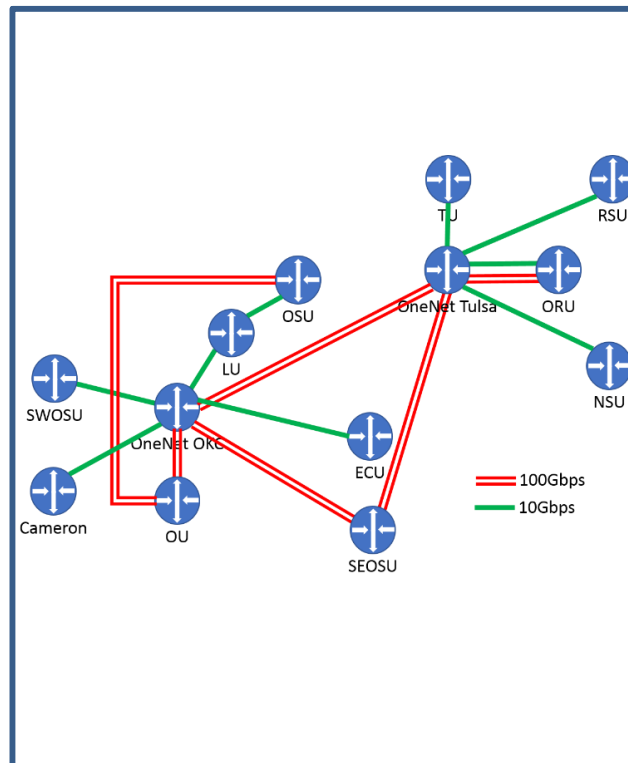
Scientific Impact or Broader Impact:

- Advancement of undergraduate science research and education at all three institutions in an EPSCoR state, specifically in the more effective use of computational and data resources both on and off campus.

- Expanding network capabilities at each institution which will allow more researchers to pursue big data type of research.

Metadata tag:

- *<project url> TBD*
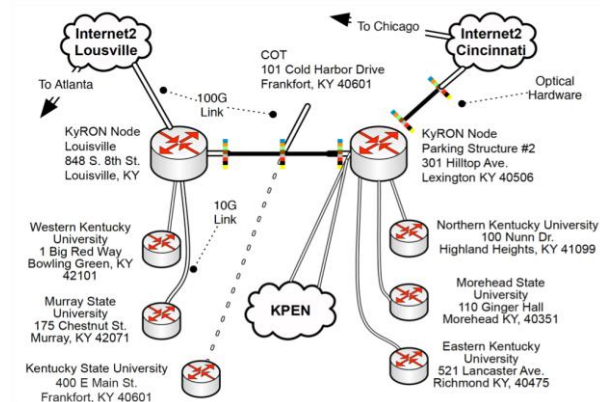- *<Just getting started!>*
- *<Friction Free Networking>*
- *<HPCC>*

Quad Chart for:

CC* Team: KyRC - A Kentucky Research Computing Team

Brian Nichols, James Griffioen, Doyle Friskney
University of Kentucky

Challenge:

- Researchers increasingly use big data to drive research discoveries.
- Big data introduces compute, storage, and data transport challenges.
- Selecting the appropriate or best Cyber Infrastructure (CI) solution requires significant expertise.
- Big data CI expertise has become a key challenge for campus IT groups.

Solution/Approach:

- Goal: Support research at regional institutions through the use of advanced cyberinfrastructure (CI)
- Key Institutions: EKU, KCTCS, KSU, Morehead State, Murray State NKU, UofL, WKU, and UK
- Form a regional CI support team – the *Kentucky Research Computing Team*
- Hire three new CI Engineers and a Community Facilitator
- Build on existing CI expertise

BroaderImpacts:

- Enable institutions with limited computational resources to participate in research and new discoveries that require big data.
- Enable research in areas heretofore not part of the computational community.
- Address the shortage of qualified CI support staff at regional universities

Research/Education Drivers:

- Biological Sciences – Murray State
- Chemistry – UofL
- Software Security – NKU
- Big Data/Data Visualization – UofL
- Statistics/Computer Vision – NKU
- Cancer Research – UofL
- Pathology Informatics – UK
- Biomedical Imaging – UofL
- Epidemiology – EKU
- Neuroscience – UofL
- High wage/high demand Educational Programs – KCTCS

Area 5: **Cyber Team - Research and Education CI-based Regional Facilitation**

Area 5: Background

- Supports facilitation of campus cluster, cloud, and distributed computing resource use by scientists and scientific collaborations

- Most likely last year for this award

- Up to $1.4M for 3-years
  - With the additional limitation of up to four full-time equivalents for up to three years

- Demonstrates the recognition that facilitator role as critical to responding to, and helping to define, current needs and opportunities in advancing scientific discovery
  - At both the campus and regional level

Area 5: What Has Been Funded

PI Name	Institution	Title	Award
Middelkoop, Timothy	University of Missouri-Columbia	CC* Team: Great Plains Regional CyberTeam	$1,399,479
Chakravorty, Dhruva K	Texas A&M University Main Campus	CC* Team: SWEETER -- SouthWest Expertise in Expanding, Training, Education and Research	$1,400,000
Nichols, Brian	University of Kentucky Research Foundation	CC* Team: KyRC - A Kentucky Research Computing Team	$1,399,638

Area 5: Background

- Multi-institution teams, regional network organizations or leadership institutions may submit
    - Key component is that the submitting organization should represent a consortia that serves the cyberinfrastructure needs of academic institutions within a designated region of the U.S.

Area 5: Engagement and Science Drivers

- Science drivers are still a critical component of this area
- Focus is different – relationship between engagement, science drivers and cyberinfrastructure
- Should describe in detail the multi-institutional science-driven needs and enabling impact of long-term access to and engagement with a shared Cyber Team
- Good to understand the CC* projects funded within the CyberTeam region and indicate how they fit within the planned CyberTeam

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Area 5: Engagement and Science Drivers

- If there are funded CC* projects, possible approaches:
  - Leverage the expertise developed through these projects
  - Build upon the science drivers enabled by the projects, including how they can be expanded to the sites included in the project
- If there are no or few CC* funded projects,
  - Use that to help justify the need for a CyberTeam in the area
  - Indicate how it will accelerate the planning and use for science applications and the appropriate cyberinfrastructure in the region

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Area 5: Example - SWEETER

- Quad chart from the PI Workshop (Sept 2019) provides overview of projects that were funded

- Abstract of the recently funded grant provides an excellent idea of what can be funded

- While short on details, does provide information on important focus areas and structure

PI Name	Institution	Title	Award
Chakravorty, Dhruva K	Texas A&M University Main Campus	CC* Team: SWEETER -- SouthWest Expertise in Expanding, Training, Education and Research	$1,400,000

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Quad Chart for: *SWEETER: South West Expertise in Expanding Training, Education, and Research*

Challenge Project Seeks to Address:

- Multi-disciplinary research will be strengthened by offering opportunities to researchers to collaborate
- There is a need for computing research support at institutions at all levels of learning
- Research projects need more than enablement to succeed

Deliverables:

- Research exchange supports 20+ fields of science
- A boots-on-the-ground approach using existing CI resources is adopted
- All institutions are providers and consumers
- Site ambassadors support campuses
- Educational resources developed
- Engage community colleges
- Rotating annual conference and annual site activities

Scientific Impact:

- Holistic vision for researcher success envisioned
- Pushes envelope from cyber training to cyber research support
- Enablement is reimagined
- Regional MSI, emergent MSIs non-profits and industry learn together
- Three-pronged evaluation strategy

Team:

- Texas A&M, UT Austin, New Mexico State, West Texas A&M, UT San Antonio, Texas A&M San Antonio, University of Arizona, Prairie View A&M, LEARN, GCP, AWS, and the National Center for Genome Research

Project Updates:

- Stay tuned for updates at hprc.tamu.edu/sweeter/
- Lots of faculty and student programs
- Need more funds to support programs at other regional MSIs!

Area 5: Example - SWEETER

- Focus and Composition of the CyberTeam

"The efficacy of an interdisciplinary research team is frequently limited by a researcher's ability to draw together a cohort of collaborators with needed scientific expertise. SWEETER: South West Expertise in Expanding Training, Education and Research is a network of resources, both training and personnel, that collaborate and foster cooperation across the boundaries of disciplines and institutions. SWEETER unites not-for-profits, community colleges, minority serving institutions, research-intensive universities, and industry from multiple states to develop this research network."

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Area 5: Example - SWEETER

-What the CyberTeam does:

"Research specialists from various sites will support domain scientists at site workshops, SWEETER annual events, and online avenues. To encourage these relationships, SWEETER offers a web-portal and shared cyberinfrastructure that will help remove resource barriers faced by community colleges and smaller institutions."

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

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

Area 6: **Planning Grants and CI-Research Alignment**

Area 6: Background – New in CC* 2020

- Supports two areas:
  - Planning Grants
    - Up to $100,000 for 1 year
    - For PIs and teams requiring resources and time to coordinate and develop an approach to CC*-related activities – particularly those looking at submitting an Area 2 grant at a later date
  - CI-Research Alignment (CRIA) activities
    - Up to $250,000 for 2 years
    - Provides opportunities to foster new collaborations, including international partnerships, and address interdisciplinary topics

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Area 6: Background – New in CC* 2020

- Proposals in this area will be reviewed and evaluated the same as other CC* proposals
  - Must be science driven
- Equipment costs are not allowed in this area
- A Campus CI plan is not required in this area of CC*

Area 6: Planning Grant

- Planning proposals should define a clear set of goals and a set of coordination and planning activities to meet those goals.

- Equipment costs are **NOT** allowed as part of a Planning Grant,

- Proposed costs are expected to include support for community coordination and planning activities.

- Planning proposals are welcome for areas (1) through (4) in CC*

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Area 6: Example Planning

- First year of the planning grants, however one of the Area 2 proposals from CC*2019 is more in line with a Planning Grant

- PI is Marla Meehl, Area 2 grant for a total of $85K

| PI	Organization	Title	Amount
Meehl, Marla	University Corporation For Atmospheric Res	CC* Regional: Integrating the Colorado Western Slope Research and Education (R&E) Community into the National R&E Infrastructure	$85,000

Quad Chart for: *Integrating the Colorado Western Slope Research and Education (R&E) Community into the National R&E Infrastructure*

Continental Divide
Independence Pass - Colorado

Challenge Project Seeks to Address:

- Western Colorado's mountains and geography exacerbate the digital divide for research and education in rural areas
- Students & faculty have inadequate network access to R&E tools and resources
- Commercial providers lack a business case to justify fiber builds to these communities
- Available fiber is cost-prohibitive

Deliverables:

- Design the BiSON-West network to expand FRGP network and expertise to the western slope
- Collaborate with colleges, communities, state and regional entities to establish redundant, high-speed network connectivity
- Create a sustainable model to perpetuate equitable access to these underserved communities
- Partner and collaborate with CDOT, CenturyLink, WAPA, Region10
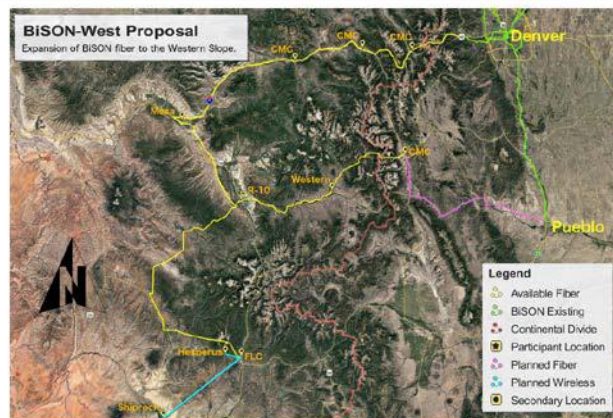
Broader Impact:

- Enable research and discovery for underserved communities
- Deliver a network poised to support leading edge, interactive STEM education modalities to students in remote, rural, underserved areas
- Engage diverse, underserved, and non-traditional students
- Facilitate rural colleges and universities to accelerate and expand their educational mission
- Enhance economic and workforce development and job opportunities
- Build inter-regional partnerships and collaboration
- Expand state, federal, commercial relationships

BiSON-West Proposal
Expansion of BiSON fiber to the Western Slope.

Metadata tag:

https://sites.google.com/ucar.edu/bison-west-nets/nets-projects/bison-west-planning-grant

Area 6: CI-Research Alignment (CRIA) activities

- Provides opportunities to foster new collaborations, including international partnerships, and address interdisciplinary topics.
    - Innovative ideas for implementing novel networking strategies, collaborative technologies, training, broadening participation, and development of community standards for data and meta-data are especially encouraged.
    - CRIA awards do not support primary research.
- Proposal is expected to develop a comprehensive CI strategy encompassing a campus, multiple campuses, or a state or regional research and education network entity.

Area 6: CI-Research Alignment (CRIA) activities

- May encompass planning for a future CC* proposal
  - But goes beyond a specific campus network design, assessment of campus computing needs, or compilation of demanding science drivers to address integrated CI planning and scoping across the relevant scientific communities on campus, across multiple campuses, state-wide, or regionally.

- Should define a clear set of goals and a set of coordination and planning activities to meet those goals.

- Proposed costs are expected to request community coordination and planning activities.

Best Practices

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Best Practices For Successful Proposals

- Describe how you have the capacity to make this successful.
  - Demonstration a track record of coordinating and leading regional projects in collaboration with the schools in your region
    - Does not have to be an existing NSF grant; could be other regional or national leadership activities, preferably bringing together different types of communities
- Include confirmations of institutional commitment and evidence support your project
  - Include commitment and sustainability of investment with Letters of Commitment confirming resource continuity
  - Must be for both the regional network and the campuses involved in the proposal

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Best Practices For Successful Proposals

- Be very clear in wording; state project goal and focus near the beginning of summary and introduction of project description.

- State you case early on in the project description.

- Tell a story:
    - What problem have you identified,
    - What do you propose to address this,
    - How are you and your team qualified to do this,
    - How will you sustain the project's results, and
    - What impact this have beyond the project/campus

Best Practices For Successful Proposals

- Yours will not be the only proposal being reviewed.

- All part of the proposal are considered as part of the review process.

  – Project Summary is the first part of the proposal typically read by a reviewer; make sure it is a compelling summary of your proposal and includes required components including intellectual merit and broader impact.

- Reviewers want to understand value, cost-efficiencies, leveraging, and pedigree/proven ability beyond scientific merit.

  – Make sure to clearly articulate where appropriate.

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Important: Intellectual Merit/Broader Impact

- **Required** sections in 1-page Fastlane text-box summary.

- **Intellectual Merit:** potential to advance knowledge.

- **Broader Impact:** potential to benefit society/help achieve specific, desired societal outcomes.

- **Diversity:** broad opportunities for diversity from gender diversity, to under-represented organizations or individuals, disciplines or communities.

Important: Intellectual Merit/Broader Impact

- Explicitly address both Intellectual Merit and Broader Impact in the Project Description itself.

- Techniques vary, but make sure you call out each of the areas and describe how you meet the criteria, examples include:

  - Paragraph with section header
  - include the wording (some people bold it):
    - The intellectual merit of this project …
    - The broader impact of the project is..
  - Look at the NSF abstracts for the projects funded in this area, each must specifically reference intellectual merit and broader impact.

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Proposal Submission

Making Fastlane/Grants.Gov Your Bff

- **Be careful**!

- Don't start the process the day before the proposal is due, particularly if you have never submitted a proposal before. Open the proposal process, start submitting supporting documents as they are completed and review to make sure they are accurate and complete.

- Make a **checklist** of solicitation-specific requirements including supplementary documents and where they should be included!! Make sure to check the list before you actually submit the full proposal.

- **Pay attention** to page limits, font sizes, required components, limits on or requirements for supplementary documents!!!

- **Very important for format and content:** Biosketch, Current/Pending Funding lists, Intellectual Merit/Broader Impact, Collaborator Template!!!!

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Common Mistakes

- Waiting until the last minute
- Not including required forms or completing them correctly
- Not completing text boxes in Fastlane's program summary page for Intellectual Merit and Broader Impact
- Not uploading required forms in the appropriate places
- Not including the proposal for which you are applying in your required list of current/pending funding
- Not including Fastlane's new mandatory collaboration template for each participant
- Not including an explanation in your facilities statement of why you profiled 0% effort for your PI in your budget

Resources

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Fastlane, Research.Gov, Grants.Gov Resources

- https://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg

- https://www.fastlane.nsf.gov/NSFHelp/webhelp/fastlane/FastLane_Help/fastlane_help.htm

- https://www.research.gov/common/robohelp/public/WebHelp/Research.htm

- https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide0117

- https://www.grants.gov/web/grants/applicants/workspace-overview.html

- https://www.grants.gov/web/grants/outreach/releases.html

Resources and Help

- Proposal review
  - Have someone who has not been involved in the proposal preparation review and provide comments on project description
- Technical consultation
  - Use community resources for understanding technical options
    - Best practices for science DMZs;
    - End-to-end performance resources.
    - PerfSONAR,

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Resources and Help

- Letters of Collaboration (LoC)
  - Most NSF solicitations limit supplementary documents, including LoC
  - Limited to partners directly involved in collaboration/committing resource
  - Ask for them well in advance – often the most difficult part of the proposal preparation phase, other than identifying your applications
    - Finalize your project title so that you can send out draft letters of collaboration in parallel to preparing your proposal
    - At minimum have a good project summary or abstract

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Resources and Help

- Internet2 LoC requirements:
  - Always good to as for one if it is relevant to your proposal
- Specific information required
  - Ask Nili Tannenbaum (ntannen@internet2.edu)
  - Require draft of project narrative; name/title/address of PI, solicitation link and proposal title
  - Requests accompanied by expectation of proposal review should be submitted at least 7 working days prior to deadline
  - Cannot guarantee letters for requests submitted less than 5 working days before solicitation deadline

Closing Comments

- Supplemental documents, including CI Plan, were not addressed in any significant detail but are a critical component of a submitted (and fundable) proposal

- Documents include (but not limited to)
  - Campus Cyberinfrastructure Plan
  - Data Management Plan
  - Facilities Document
  - Biosketch
  - Current and Pending

- Quilt Webinar on Friday, December 13th will go over the supplemental documents

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Questions ?