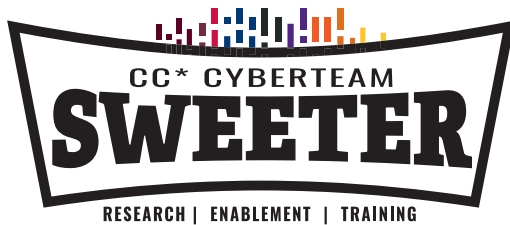# BRICCs: Campus Computing for Everyone
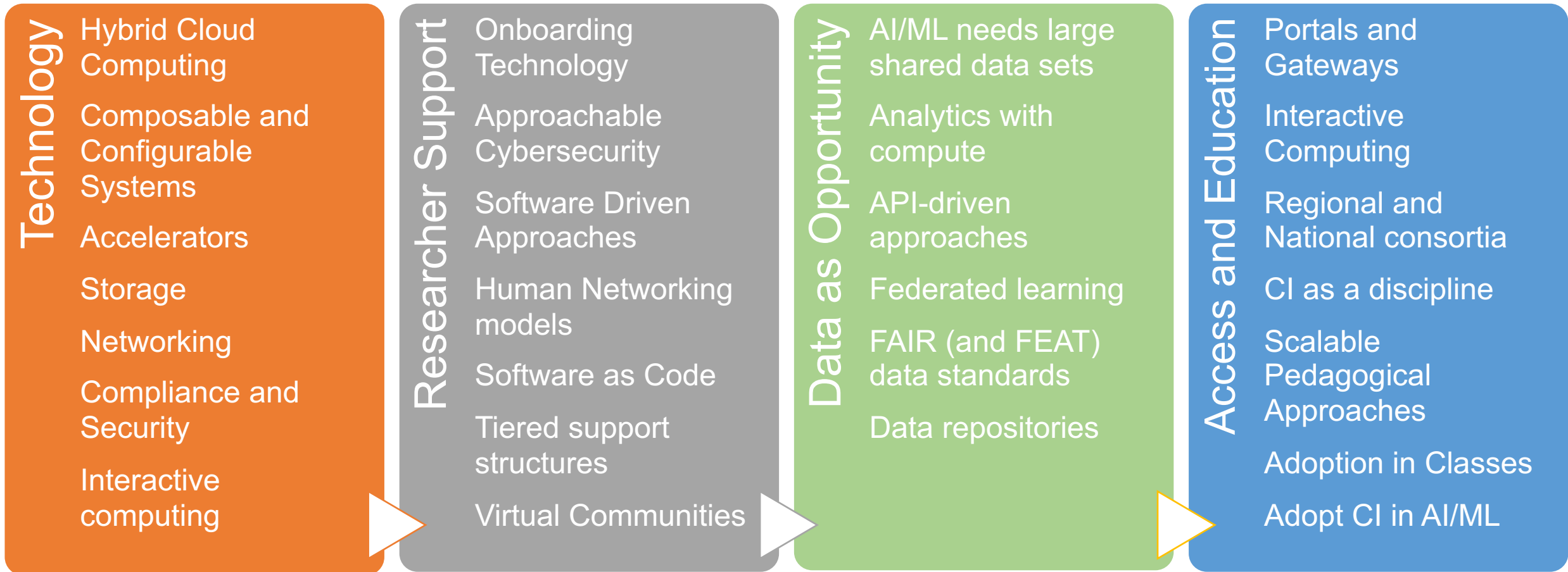
Dhruva Chakravorty

10/18/2021

High Performance
Research Computing
DIVISION OF RESEARCH
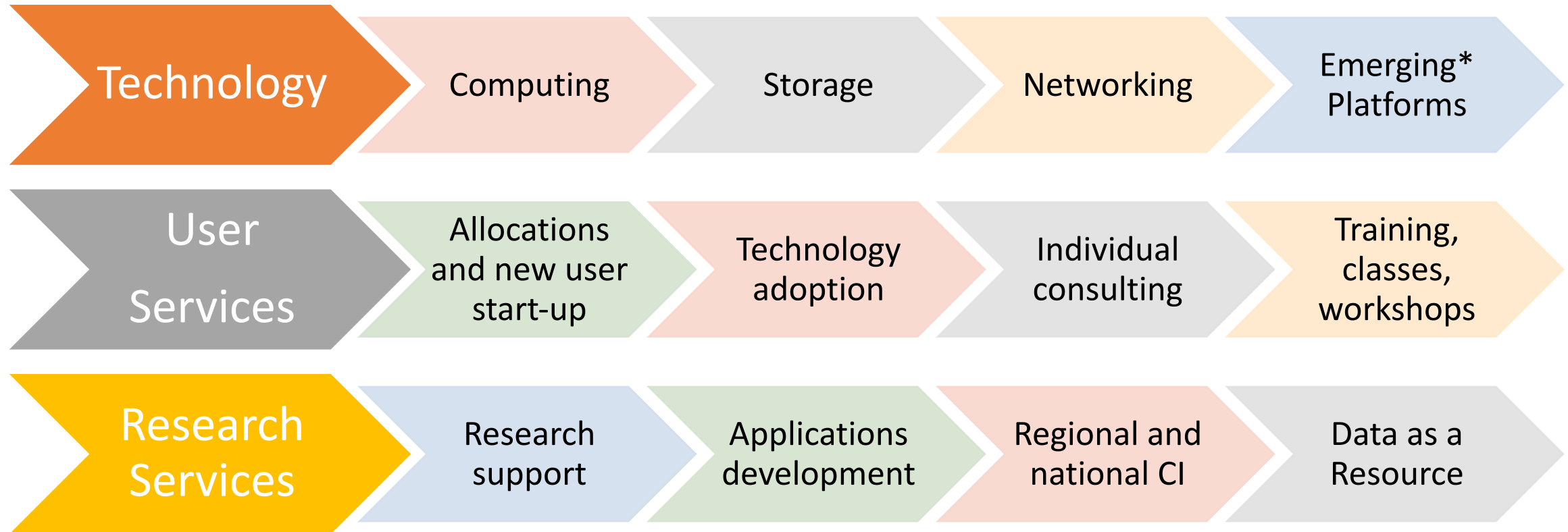
The Emerging CI Landscape

Technology
- Hybrid Cloud Computing
- Composable and Configurable Systems
- Accelerators
- Storage
- Networking
- Compliance and Security
- Interactive computing

Researcher Support
- Onboarding Technology
- Approachable Cybersecurity
- Software Driven Approaches
- Human Networking models
- Software as Code
- Tiered support structures
- Virtual Communities

Data as Opportunity
- AI/ML needs large shared data sets
- Analytics with compute
- API-driven approaches
- Federated learning
- FAIR (and FEAT) data standards
- Data repositories

Access and Education
- Portals and Gateways
- Interactive Computing
- Regional and National consortia
- CI as a discipline
- Scalable Pedagogical Approaches
- Adoption in Classes
- Adopt CI in AI/ML

2022 ⟶ 2027

Academic Computing Services

Technology	Computing	Storage	Networking	Emerging* Platforms
User Services	Allocations and new user start-up	Technology adoption	Individual consulting	Training, classes, workshops
Research Services	Research support	Applications development	Regional and national CI	Data as a Resource

*hybrid computing with cloud, quantum computing, interactive computing etc.

Scalable Academic Computing Services

User-centric approach

- Software driven approaches to trouble shoot issues and accessible knowledgebase
- Agile management framework – strengths and weaknesses
- Offer information in several formats and different structures

Tiered Support

- L1 (easy tasks; Students), L2 (software technical solutions; Students + Staff), L3 (scientific solutions; Scientists)
- Identify how will a person live in your infrastructure after funding and pre-funding?
- Develop user and security policies that reflect campus concerns

Community

- Engage with researchers and CI professional to expand pool of expertise
- Develop framework for quick on-boarding, competency development, and certification
- Create opportunities for workforce development, inclusivity, diversity, community building and networking

Supporting Academic Programs

Academics

- Faculty supported
- Collaborations & programs developed
- Grants/papers/reports submitted
- Champions in institutions adopting practices

The People

- Student fellowships
- Training, retention, certification, and initiatives completed
- Researcher and Gap surveys
- Community participation

Technology

- Computing Support
- Software and application development
- Technology and Emerging platform adoption/enablement strategies implemented

Outreach

- Support formal and informal efforts
- Dissemination - papers , reports, and presentations
- Symposia, workshop, events

2022   2027

A Community Fostering Research and Innovation at Smaller Schools and Community Colleges

Challenge Project Seeks to Address:

- Expand research cyberinfrastructure adoption at smaller institutions and community colleges
- Develop a communication mechanism to identify and ameliorate local issues
- Offer (local) campus CI expertise for researchers

Deliverables:

- Developed a CI adoption plan for two-year institutions
- Targeted technical, policy and learning resources are offered on our website: https://hprc.tamu.edu/briccs/
- Engage with CIO, faculty and administration at smaller institutions
- Rotating annual workshop and site activities
- Assist institutions and groups working on CC* proposals

CI Technologies

Research   **Academics**

Scientific Impact:

- Building support mechanisms for curricular and research involving CI
- Engaged with the science team in CC* SWEETER Cyberteam
- Engaged community – volunteers are CIOs and senior faculty members
- Assisting in faculty-engagement at smaller schools

Community Workshop:

- Join us in mid-October for our BRICCs workshop virtually or at South Plains College in Levelland, TX.
- Workshop collocated with Texas Association of Community Colleges CIO group

Project Updates:

- Stay tuned for updates on twitter and the HPRC YouTube channel
- Resources available for faculty and student CI programs

Quad Chart for: *BRICCs: Building Research Innovation at Community Colleges*

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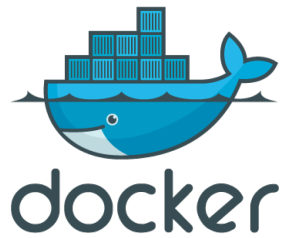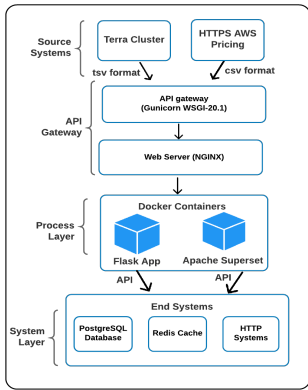- Assisting in faculty-engagement at smaller schools

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Workflows Cloud + Containerized Jupyter Notebooks

- **Jupyter Interactive App drop-down menu to select environment type**

https://hprc.tamu.edu

Texas A&M University

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Trends on Training and YouTube
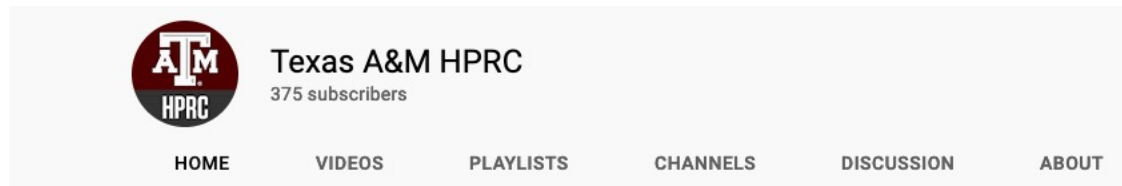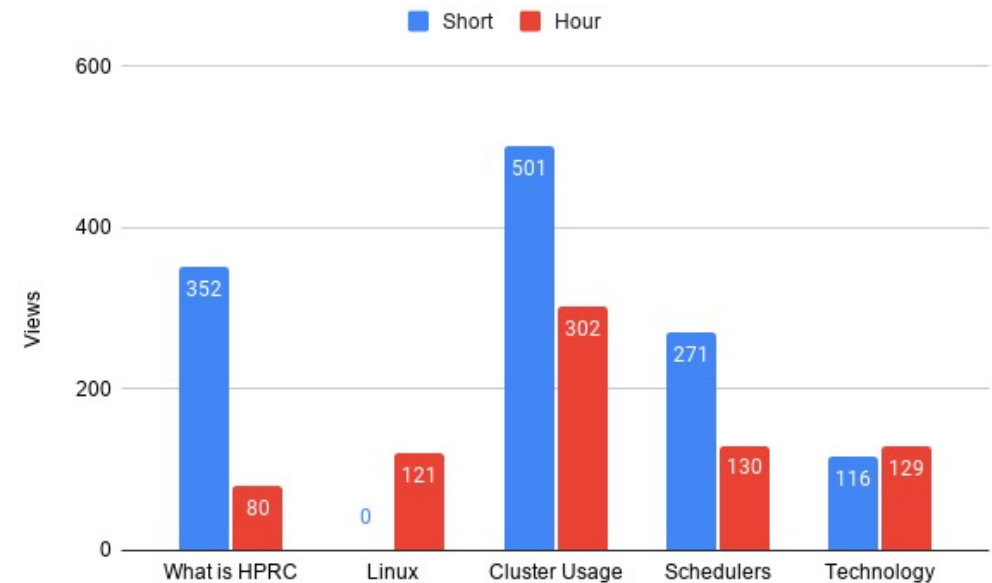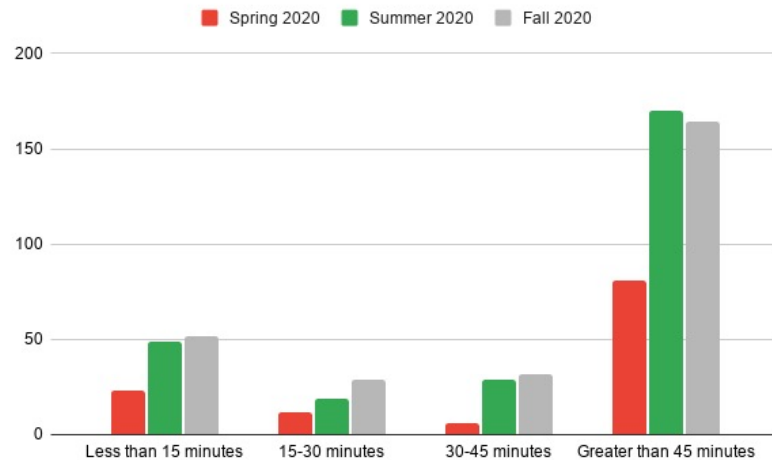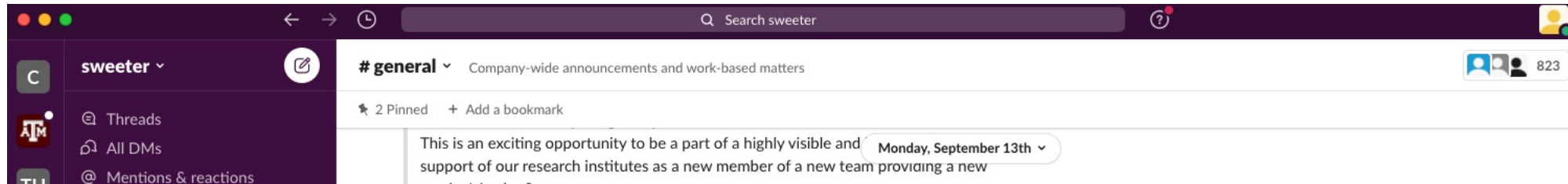
YouTube Viewership

PEARC 2020, JOCSE 2021

CC* BRICCs

Home
Join BRICCs Slack
Resources
   Video Links
Contact BRICCs

RESOURCES

Below are a few BRICCs program resources. This list will continue to grow. **Check back frequently!**

Reproducibility Resources

- ReproZip can automatically pack your research along with all necessary data files, libraries, environment variables and options into a self-contained bundle.

Data Classification Resources

- The Data Classification Calculator can help determine the appropriate classification for your data. Appropriate data classification is an essential component for the development of a successful data security strategy.

Engagement Resources

- Research Computing Questions
- Funding and Regulations Questions
- Student Engagement and Outreach Questions
- Training Logistics Questions

Education and Training Resources

- TAMIDS Resources
- HPRC Resources
- NMSU ICT Supercomputing Resources

Texas A&M Information Security Controls Catalog

- Texas A&M Information Security Controls Catalog

Campus CI Engagement Reports

- EPOC Materials
- Requirements Review Case Study Template
- Trinity University Campus-Wide Deep Dive
- Arcadia University Bioinformatics Application Deep Dive

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 of research CI
- Site ambassadors support campuses
- Educational resources developed
- Engage community colleges
- Rotating annual conference and annual site activities

CC* CYBERTEAM SWEETER
RESEARCH | ENABLEMENT | TRAINING

Enablement
Education
Training
Researcher Exchange
User portal

Scientific Impact:

- Holistic vision for researcher success envisioned
- Uses CI as the means for researcher engagement and collaborations
- Enablement is reimagined
- Regional MSI, emergent MSIs non-profits and industry learn together
- Several CI projects implemented

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, UT Rio Grade Valley, LEARN, 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!