NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: Campus Cyberinfrastructure (CC*)

Program Area: Regional **Award Number:** 1644335

PI: Wendy Huntoon, KINBER

co-PI: Jen Leasure, The Quilt

Project Title: 2016 NSF Campus Cyberinfrastructure and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

Project Goals:

- Develop strong ties between campus cyberinfrastructure, science driven applications and regional and national cyberinfrastructure resources.
- Promote dialogue in the networking community across a range of important and timely topics in campus networking, including the larger context of campus cyberinfrastructure.
- Discuss how to systematically evaluate and assess the impact of the investments in cyberinfrastructure, particularly at the campus level.

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*DNI

Program Area: CAMPUS DESIGN **Award Number:** 1541342

PI: Mark (Adam) Klemann, Malone University

co-PIs: Jason Courter, Shawn Campbell, James Shaffer

Project Title: Supporting Scientific Research Using Technology at Malone and other Small Institutions

Project Goals:

- Implement an advanced network with application-level network visibility to optimize researcher connections to peer institutions including a ScienceDMZ, InCommon, and Internet2
- Upgrade local network infrastructure to facilitate connectivity for researchers
- Create a pool of technical support resources to directly support campus researchers

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: Campus Cyberinfrastructure (CC*)

Program Area: Small Inst. **Award Number:** 1440661

PI: Adam Albina, Saint Anselm College

co-PI: Scott Valcourt, University of New Hampshire

Project Title: CC*IIE Campus Design: Saint Anselm Science DMZ

Project Goals:

- Understand the design of Science DMZ at a small college with big research interests
- Gain insight into how the Science DMZ will interface with those of research partners and collaborators regionally and ultimately those with whom we collaborate nationally and internationally
- Document the steps, processes, work break down structure, collaborations and design elements of a successful Science DMZ
- Establish metrics to assess the effectiveness of a Science DMZ
- Participate and contribute to related community events and engineering exchanges

SAINT ANSELM COLLEGE

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University of New Hampshire

Scott Valcourt

Director, Strategic Technology

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: Cybersecurity Innovation for CI (CICI)

Program Area: Sec Data Arch Award Number: 1547268

PI: Jim Basney, NCSA

co-PI: Scott Koranda, Spherical Cow Group

Project Title: CILogon 2.0 - An Integrated Identity and Access Management Platform for Science

Project Goals:

- Integrate and expand on the existing CILogon and COmanage software to provide an integrated IAM platform for cyberinfrastructure.
- Engage with scientific research projects (e.g., NANOGrav PFC, LIGO, and DataONE) on evaluation and adoption of the platform.
- Provide training and support for adoption of the platform by other science projects.
- Provide a sustainable software-as-a-service product.

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: Campus Cyberinfrastructure (CC*)

Program Area: DNI **Award Number:** 1541442

PI: Byrav Ramamurthy, University of Nebraska Lincoln

co-PI: David Swanson, University of Nebraska Lincoln

co-PI: Brian Bockelman, University of Nebraska-Lincoln

Project Title: CC*DNI Integration: Innovating Network Cyberinfrastructure through Openflow and Content Centric Networking in Nebraska

Project Goals:

- Network resource management for GridFTP transfers using an SDN controller ➔Enables application-driven bandwidth provisioning.
- Network security with SDN-based dynamic routing ➔ Enables automated reaction to security alerts raised by devices.
- Content-Centric Networking (CCN) techniques such as MobilityFirst and NDN to provide access to the Compact Muon Solenoid (CMS) experiment data ➔ Enables in-network caching and content-based routing.

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*DNI **Award Number:** 1541407

Program Area: Networking Infrastructure

PI: Timothy J. Fawcett, University of South Florida

co-PIs: Joseph Walton, Jeffery Krischer, Ann Eddins, Kenneth Christensen

Project Title: Campus Research Network - High Bandwidth Private Network Path for Research Data from Experiment to Analysis and Back Again at USF

Project Goals:

- Implement dedicated 100 Gb/s Science DMZ network between several experimental systems and the central HPC resources at USF
- Design and implement high performance data transfer node (DTN) capable of sustaining 100 Gb/s read/write from/to disk
- Enable real-time science data-driven experimental work
- Enable the analysis of extremely large data sets

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NSF Campus Cyberinfrastructure PI and
Cybersecurity Innovation for Cyberinfrastructure PI Workshop
October 18-20, 2016 | Philadelphia, PA

NSF Program: CICI

Program Area: Secure and Resilient Architecture **Award Number:** 1642031

PI: Gail-Joon Ahn, Arizona State University

co-PIs: Dijiang Huang, Adam Doupe

Project Title: SciGuard: Building a Security Architecture for Science DMZ Based on SDN and NFV Technologies

Project Goals:

- Develop a secure and resilient architecture called SciGuard that addresses the security challenges and the inherent weaknesses in Science DMZs based SDN and NFV
- Design an SDN firewall application, which can scale well without bypassing the firewall using per-flow/per-connection network traffic processing
- Build a virtual IDS, which can be quickly instantiated and elastically scaled to deal with attack traffic variation in Science DMZs

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Dr. Adam Doupe
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NSF Program: CICI

Program Area: Secure and Resilient Architecture **Award Number:** 1642129

PI: Guofei Gu, Texas A&M University;
Douglas M Swany, Indiana University;
Phillip A Porras, SRI International

co-Pi: Vinod Yegneswaran, SRI International

Project Title: S3D: A New SDN-based Security Framework for the Science DMZ

Project Goals:

- Design and prototype an integrated SDN security framework (S3D) for managing data-intensive science DMZ applications
- Define fine-grained network flow controls using dynamically deployable security services
- Define a new class of network privilege management policies
- Establish high-performance virtual circuits that enable data intensive applications to register and fast-path their authenticated flows


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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC-IIE **Award Number 1341024**

Program Areas: Integration - Advanced Science Applications, SDN and Data Infrastructures

PI: Harvey B Newman, Caltech; Co-PIs: K. De (UT Arlington), S. McKee (Michigan), P. Sheldon (Vanderbilt)

Project Title: Advanced Network Services for Experiments

Project Goals:

- **Integrate network awareness and advanced monitoring services into the software stacks and data operations of the major LHC experiments CMS and ATLAS**
- **Develop state of the art SDN methods and services for dynamic network provisioning and large scale high throughput load-balanced flow management across the LHC and other worldwide grids**
- **Assist the LHC and other major programs on and beyond the Caltech campus, such as LIGO, LSST and the IPAC Science Data Center, to achieve high throughput with advanced DTN and storage system designs, and applications such as Caltech's Fast Data Transfer**
- **Pave the way for future data intensive science programs to benefit from these developments**

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC-IIE **Award Number 1246133**

Program Areas: Advanced Network and SDN Infrastructures and Applications for Data Intensive Sciences

PI: Harvey B Newman, Caltech

Project Title: CHOPIN: Caltech High-performance Integrated Optical Network

Project Goals:

- **Deploy 100G SDN enabled campus connections to CENIC and onward to ESnet, Internet2, ANA-300 and other major R&E networks**
- **Deploy data transfer nodes and high throughput storage systems and applications serving the LHC, LIGO, LSST, the IPAC Science Data Center and other major science collaborations and groups on campus**
- **Development and deployment of a state of the art SDN testbed, dynamic SDN services and controllers serving data intensive sciences**
- **Assist the LHC and other major programs on and beyond the Caltech campus, such as LIGO, LSST and the IPAC Science Data Center, to achieve high throughput with advanced DTN and storage system designs, and applications such as Caltech's Fast Data Transfer**
- **Pave the way for future data intensive science programs to benefit from these developments**

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CICI:Regional **Award Number 1642102**

PI: Jill Gemmill, Clemson University; Collab-PIs: Sara Graves (Univ. Of Alabama-Huntsville); Tony Skjellum (Auburn U.); Barbara Nimmons (Voorhees College) Arlington)

Project Title: SouthEast SciEntific Cybersecurity for University Research (SouthEast SECURE)

Project Goals:

- **e science programs to benefit from these developments**

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC* **Award Number: 1440743**

Program Area: IIE: Networking Infrastructure

PI: Ardoth Hassler, Georgetown University

co-PIs: Stephen Moore and Clay Shields

Project Title: NWIRED - Network Innovation for Research and Education at Georgetown: Science DMZ and Cloud Services

Project Goals:

- Goal 1: Create a Science DMZ for collaboration between our research community and other institutions
- Goal 2: Securely extend the IP networks into cloud services, starting with accessing the Amazon network, server and storage resources.

PI

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CO-PI

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NSF Campus Cyberinfrastructure PI and
Cybersecurity Innovation for Cyberinfrastructure PI Workshop
October 18-20, 2016 | Philadelphia, PA

NSF Program: CICI

Program Area: Secure and Resilient Architecture **Award Number:** 1642143

PI: Hongxin Hu, Clemson University

co-PIs: Richard Brooks, Kuang-Ching Wang, Nuyun Zhang

Project Title: SciGuard: Building a Security Architecture for Science DMZ Based on SDN and NFV Technologies

Project Goals:

- Develop a secure and resilient architecture called SciGuard that addresses the security challenges and the inherent weaknesses in Science DMZs based SDN and NFV
- Design an SDN firewall application, which can scale well without bypassing the firewall using per-flow/per-connection network traffic processing
- Build a virtual IDS, which can be quickly instantiated and elastically scaled to deal with attack traffic variation in Science DMZs


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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: Campus Cyberinfrastructure (CC*)

Program Area: Regional **Award Number: 1440699**

PI: Wendy Huntoon, KINBER

co-PIs: Michael Carey, KINBER; Patti Campbell; KINBER

Project Title: Accelerating the Adoption of Campus Cyberinfrastructure Technologies in Pennsylvania

Project Goals:

- Develop leadership activities that will improve the ability of PA colleges and universities to better understand and utilize their network infrastructure to support cyberinfrastructure based scientific applications and research
- Expand the community understanding of network capabilities, technologies and resources
- Focus on the understanding, deployment, integration and support of campus cyberinfrastructure technologies, such as perfSONAR, campus science DMZ, end-to-end performance monitoring and campus cybersecurity
- Foster collaboration

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CICI

Program Area: Regional

Award Number: 1642118

PI: Jaroslav Flidr

co-PIs: Frederic Lemieux and Donald DuRousseau

The George Washington University

Project Title: *Substrate for Cybersecurity Education; a Platform for Training, Research and Experimentation (SCEPTRE)*

Project Goals:

- Cybersecurity workforce development
- (Inter-)Regional Collaboration (CAAREN – Merit)
- Accredited, hands-on training and education for long-term careers in Cybersecurity
- Hybrid Cybersecurity Platform development and cross-regional integration

PI: Jaroslav Flidr
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THE GEORGE WASHINGTON UNIVERSITY
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Co-PIs:

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*

Program Area: DNI

Award Number: 1541344

PI: Fred Kass, Trinity College

co-PI: Bryan Adams, Scott Smedley

Project Title: Trinity College Next Generation Science Network and DMZ

Project Goals:

To create a network which brings big data and "long tail" science research into the liberal arts and small college undergraduate experience facilitated with:

- Improved Network Infrastructure in the Science Buildings
- A Science DMZ
- Increased bandwidth to Regional R&E Network and Internet2

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: Cyber Security - Cyberinfrastructure

Program Area: Data provenance **Award Number:** 1547301

PI: Leon Reznik (Rochester Institute of Technology, NY)

Project Title: CICI: Data Provenance: Data Quality and Security Evaluation Framework for Mobile Devices Platform

Project Goal is to build a proof-of-concept design, which will be used to develop, verify and promote a comprehensive framework to collect data from ordinary citizen's owned smartphones and to provide the user with the data security and overall quality evaluation along with the data themselves.

PI Picture

Name :

Leon Reznik

Title: **Prof.**

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NSF Campus Cyberinfrastructure PI and
Cybersecurity Innovation for Cyberinfrastructure PI Workshop
October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*DNI **Award Number: 1541332**

Program Area: Networking Infrastructure

PI: Kemal Badur, University of Minnesota

co-PIs: Paul Morin, Charles Nguyen, James Wilgenbusch, Tim Griffin

Project Title: The Gopher Science Network – A Dedicated Science Network for the University of Minnesota

Project Goals:

- Goal 1: deploy a dedicated campus research network to selected locations with a 100Gbps backbone;
- Goal 2: create a ScienceDMZ for large data transfers between institutions;
- Goal 3: promote use of advanced networking technologies throughout the University.

PI

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Co-PI

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC-*

Program Area: NIE

Award Number: 1441376

PI: Manish Parashar, Rutgers University

co-PI: Javier Diaz-Montes, Rutgers University

Project Title: EAGER: Exploring Federations of Campus and National Cyberinfrastructure as Scalable Platforms for Science: A Case Study using Open Science Grid

Project Goals:

- Explore the establishment of a campus ACI for CDS&E research at Rutgers that aligns and is integrated with the national ACI
- Develop the necessary research partnerships based on the OSG federated ACI to address important research problems in an end-to-end manner and lead to significant insights
- Document processes, experiences, and lesson learnt during this process to share with the broader community

PI Picture

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Co-PI Picture

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CNS

Program Area: SaTC

Award Number: 1650445

PI: Florence Hudson, Internet2

Core team: Emily Nichols, Internet2

Project Title:

EAGER: Cybersecurity Transition To Practice (TTP) Acceleration

Project Goals:

- Goal 1 – Enable Internet2 to serve as a ”matchmaker” between academic cybersecurity researchers and IT operational staff in the research and education community
- Goal 2 – Encourage the adoption of later stage cybersecurity research by operational users
- Goal 3 - Develop insights and suggestions for a Transition To Practice program framework to enable sustainable TTP

PI Picture

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Core Team Picture

Name Emily Nichols
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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: ACI, CISE

Program Area: CC-NIE

Award Number: 1541310

PI: Purushotham V. Bangalore, University of Alabama at Birmingham

Project Title: A Dedicated High-Speed Campus Research Network

Project Goals:

- Establish a secure science DMZ
- Establish a 40Gbps dedicated high-speed research network
- Explore Software Defined Networking (SDN) technologies

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*

Program Area: IEE, DNI

Award Numbers: 1541286,1440778

PI: Michael Turner, Office of Information Technology

co-PI: Dr. Ray Vaughn, Office of Research

Project Titles: Campus CI Engineer in Support of Data-Intensive Science and Knowledge-Sharing State Wide; Campus Network Enhancement to Support Data Intensive Research at UAH

Project Goals:

- Bridge the communication gap between the Office of Information Technology (OIT) and campus researchers and scientists
- Develop and implement a Science DMZ to support both on-campus and off campus large volume data transfers
- Continue to develop and research future cyberinfrastructure initiatives with both regional and local partners

PI Picture

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Co-PI Picture

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*DNI

Program Area: Campus Design **Award Number:** 1541307

PI: Carrie Rampp, Franklin & Marshall College

Senior Personnel: Alan Sutter, Franklin & Marshall College

Project Title:

Building a state-of-the-art research network at Franklin & Marshall

Project Goals:

- Greatly expand and strengthen capacity for faculty to collaborate with internal and external partners
- Expand capacity for multi-site collaborations involving research computing
- Better prepare F&M students, especially those who pursue careers in data-intensive fields, for postgraduate work and study
- Within the small college context, understand the security challenges a Science DMZ will bring; thoughtfully plan to address these and share findings to encourage other similarly sized institutions

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NSF Program: Campus Cyberinfrastrc (CC-NIE)
Program Area: CC*DNI **Award Number: 1541440**

PI: Dr. Robert Placido, Texas Woman's University
co-PI: Andrew Clemens, Texas Woman's University
co-PI: Clay Till, Texas Woman's University

Project Title: TWU Science Research Network

Project Goals:

- Build an edge network to allow large data sets to be transferred to and from other institutions via the Texas LEARN network, the Internet, and Internet2.

- Create an internal Science Research Network allowing large data streams to be moved and utilized on campus.

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*DNI

Program Area: CI Engineer

Award Number: 1541393

PI: Dana Roode, University of California, Irvine

CI Engineer: Joulien Tatar, University of California, Irvine

Project Title: CC*DNI Engineer: Data Safety, Transfer and Performance

Project Goals:

- Establish Full-Time CI Engineer at UCI to bridge gaps between what technology allows researchers to do and their ability to do it
- CI training, outreach and support for faculty, students, staff
- Enhance/facilitate use of UCI LightPath dedicated science network
- Help design/implement campus storage pool, hybrid backup system, tools to facilitate data movement and sharing
- Cluster “cloud bursting” to leverage cloud from campus compute cluster

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CICI **Award Number(s):** 1642142,1642140

Program Area: Secure and Resilient Architecture

PI UNC: (Paul Ruth, RENCI – UNC Chapel Hill)

PI Duke: (Jeff Chase, Duke University)

Project Title: Creating Dynamic Superfacilities the SAFE Way

Project Goals:

- Enable automated superfacilites composed of dynamic infrastructure (i.e. GENI, Science DMZs, Virtual SDX).
- Create trusted Science DMZ connectivity using SAFE logic.
- Move NSF research advances (i.e. GENI, SAFE, Science DMZs) closer to production utilization.

PI: UNC

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PI: Duke

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*IIE

Program Area: Regional

Award Number: 1440450

PI: Paul Schopis, OARnet (OSU)

Project Title: Transforming a Regional Network and the Regional Community to Serve Diverse and Emerging Research Needs

Project Goals:

- Convening a forum for regional stakeholders to articulate needs, solutions and best practices via a workshop series
- Providing technical engagement and knowledge exchange directly with stakeholders, developing the "human network" of support
- Deploying perfSonar widely throughout the Ohio Academic Resources Network (OARnet) infrastructure, for highly granular data collection

PI Picture

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: Campus Cyberinfrastructure (CC*)

Program Area:

Award Number: 1541346

PI: Bruce Segee, University of Maine

co-PI: Jeff Letourneau, University of Maine System

Project Title: Cyber Infrastructure Engineer to Improve Research Effectiveness Across the University of Maine System

Project Goals:

- Improve the utilization of existing computational infrastructure
- Promote the use of advanced computing across all campuses of the University of Maine System
- Assist individual researchers with data management throughout the data lifecycle and with optimizing code

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*

Program Area: DNI

Award Number: 1541001

PI: Mark Berman, Siena College

co-PI: John Moustakas, Mary Parlett-Sweeney, George Barnes, Allan Weatherwax

Project Title: Networking Infrastructure: Building a high performance network to support advanced instrumentation, computation-intensive analysis and data-intensive science research

Project Goals:

- Improve Network Infrastructure in the Science Buildings and create a Science DMZ
- Increase bandwidth between research facilities and DataCenter housing the HPC
- Increase internal network speeds in the HPC and between the HPC and the Science DMZ core

PI Picture

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*

Program Area: DNI

Award Number: 761577

PI: Daniel Chace, SIUE

co-PI: Kade Cole and Dr. Eddie Ackad

Project Title: Dedicated High-Speed Research and Education Network Connection

Project Goals: Enhance connectivity to MREN / Internet2

- Dedicated 10Gbps link to StarLight
- Upgrade routers and PerfSonar servers, and provide a DTN
- Increase faculty awareness and involvement

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*IIE

Program Area:

Award Number: 1440637

PI: Xiao Chen, Texas State University

co-PI: Michael O'Connor, Jennifer Jensen, Ronald B. Walter, Hongchi Shi

Project Title: Enabling and Improving Data-Driven Research at Texas State University

Project Goals:

- Goal 1: Improve the routers in the Texas State University System Network to enable 10Gb capability.
- Goal 2: Upgrade Texas State Campus Network uplink from 1Gb to 10Gb.
- Goal 3: Upgrade Texas State Campus Network by creating a Science DMZ.

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*DNI **Award Number:** 1541270

Program Area: Campus CI Engineer

PI: Brad Smith, UC Santa Cruz

co-PI: Mary Doyle, UC Santa Cruz

Project Title: Extending the UC Cyberinfrastructure through Innovation in Engineering

Project Goals:

- Collaborate with ISSDM researchers to integrate Ceph storage system into UCSC's Science DMZ.
- Work with campus researchers to identify their CI needs and integrate new CI technology into their research workflows.
- Work with the CI community (PRP, CENIC, etc.) to disseminate and identify new CI tools, techniques and models.

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UNIVERSITY OF CALIFORNIA SANTA CRUZ

NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*IIE Networking Infrastructure

Program Area: **Award Number:** 1440477

PI: Jack Suess, U. of MD, Baltimore County (UMBC)

co-PI: Don Engel, UMBC

co-PI: Matthias Gobbert, UMBC

Project Title: Enabling Big Computing and Data Intensive Cyberinfrastructure (EBCDIC)

Project Goals:

- Redesign the campus network for 100 Gb to better support data-intensive computing.
- Upgrade Internet2 connection to MidAtlantic Crossroads (MAX) Gigapop for fastest possible connection to Internet2
- Deploy software-defined networks (SDNs) on campus to: (1) enable big-data, low latency projects, (2) increase UMBC participation in the Global Environment of Network Innovation (GENI), (3) advance UMBC cybersecurity research

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CCNIE

Program Area:

Award Number: 1340959

PI: José Ortiz-Ubarri, U. of Puerto Rico, Río Piedras (UPRRP)

co-PI: Humberto Ortiz-Zuazaga, UPRRP

co-PI: Rafael Arce-Nazario, UPRRP

Project Title: Perimeter Network to Expedite The Transmission of Science (PR-NETS)

Project Goals:

- Accelerate advanced networking at UPR-RP through targeted investment in networking equipment.
- Implement a Science DMZ consisting of firewall-less interconnection among seven PoAs.
- Promote data intensive research using PR-NETS as a model for other campuses.
- Implement a network monitoring system for network traffic, security, and device availability.

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: Campus Cyberinfrastructure (CC*)

Program Area: CI Engineer **Award Number:** 1541430

PI: Scott Valcourt, University of New Hampshire

co-PI: Patrick Messer, University of New Hampshire

Project Title: CC*DNI Engineer: CI Leadership for the University of New Hampshire

Project Goals:

- Establish a 1 FTE CI Engineer at the University of New Hampshire.
- Develop strong ties between campus cyberinfrastructure, science driven applications and regional and national cyberinfrastructure resources.
- Promote dialogue in the networking community across a range of important and timely topics in campus networking, including the larger context of campus cyberinfrastructure.
- Discuss how to systematically evaluate and assess the impact of the investments in cyberinfrastructure, particularly at the campus level.

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*DNI **Award Number: 1541368**

Program Area: Networking Infrastructure

PI: Deniz Gurkan, PhD, University of Houston

co-PI: Nicholas Bastin, University of Houston

Project Title: Custom Science DMZ per Research Lab with a Secure Invitation to Opt-In

Project Goals:

- Goal 1: deploy network function instantiation (NFI) within main distribution frame (MDF) components at strategic buildings with research labs on university campuses;
- Goal 2: implement an interdisciplinary data sharing isolated network customized for an air quality and healthcare research use case;
- Goal 3: deploy the NFI capability as a pilot on LEARN (Lonestar Education and Research Network) for future support of science data flows

PI

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: Cyber Security - Cyberinfrastructure

Program Area:

Award Number: 1547249

PI: Alex Withers

co-PI: Jim Marsteller, Adam Slagell, Ravishankar Iyer, Randal Butler

Project Title: CICI: Secure Data Architecture: Shared Intelligence Platform for Protecting our National Cyberinfrastructure

Project Goals:

- A virtual security appliance that will significantly enhance the security posture of open science networks. Appliance can be very easily deployed, not require expensive networking hardware, and take active measures if desired
- Focus on actively promoting sharing of intelligence among science DMZ participants as well as with national academic computational resources and organizations that wish to participate.
- Lay the foundation for an intelligence sharing infrastructure that will provide a significant benefit to the cybersecurity research community.

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: Campus Cyberinfrastructure

Program Area: Regional

Award Number: 1541421

PI: Jon-Paul Herron, Indiana University

Project Title: Campus Cyberinfrastructure/Operating Innovative Networks (CC*OIN)

Project Goals:

- Develops and host, with collaboration from Universities and regional networks, hands-on advanced technology workshops
- Hands on experience with the Science DMZ paradigm, perfSONAR, and Software Defined Networking (SDN) technologies
- Advances the expertise large and small campuses in every region of the country, supports technical staff to become regional resources supporting science, and bring each region's community together to collaborate on improving network capabilities for better science outcomes

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI V

October 18-20, 2016 | Philadelphia, PA

NSF Program: CICI

Program Area: Regional **Award Number:** 1642102

PI: Jill Gemmill, Clemson University

collab-PI: Tony Skjellum (Auburn), Sara Graves (U. Alabama-Huntsville), Barbara Nimmons (Voorhees)

Project Title: SouthEast SciEntific Cybersecurity for University Research (SouthEast SECURE)

Project Goals:

- Raise cybersecurity awareness among NSF funded investigators
- Provide concrete and practical assistance in how to do right-sized risk assessment
- Provide a "toolkit" to test and validate local cybersecurity
- Create and field-test measures of cybersecurity
- Facilitate communication between research faculty and university IT/Data Security staff.

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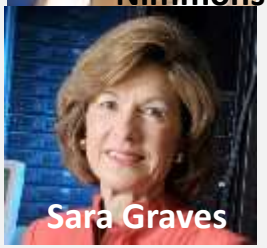
Barbara Nimmons



Sara Graves

Tony Skjellum

NSF Campus Cyberinfrastructure PI and
Cybersecurity Innovation for Cyberinfrastructure PI Workshop
October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*IIE **Award Number:1440761/1440797**

Program Area: Integration/Innovation

PI: Rajkumar Kettimuthu, U. of Chicago / Argonne
co-PI: Michael E. Papka, Northern Illinois University

Project Title: EPSON: Embracing Parallel Networks and Storage for Predictable End-to-End Data Movement

Project Goals:

- Exploit parallelism and heterogeneity in a network infrastructure for data movement
- Leverage parallel I/O interfaces to improve the performance of reading/writing to storage
- Reliable parallel data transfer with pipelined end-to-end checksum verification

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: ACI **Award Number: 1541338**

Program Area: CC*DNI Networking Infrastructure

PI: Dr. Scott F. Midkiff

co-PI: Dr. Terry L. Herdman

Project Title:

A Campus Research Network and Distributed Science DMZ

Project Goals:

- Goal 1: Transform the scope and scale of research on campus via providing 10 Gbps connections to many laboratories and offices.
- Goal 2: Make sustained 10 Gbps ubiquitous between local and national resources.
- Goal 3: Eliminate data-related barriers to curiosity-driven research which often seeds funded research projects.

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*DNI

Program Area: Data Driven Networking Infrastructure for the Campus and Researcher **Award Number: 1541252**

Project Title: Montana State University's Bridger: A Science Driven Networking Cyberinfrastructure (CC*DNI)

PI: Jerry Sheehan, Montana State University
Co-PIs: Kenning Arlitsch, Philip Stewart, Benjamin Poulter, and Mark Young, Montana State University

Project Goals:

- Upgrade Science DMZ to 40 GB/s to fully leverage the current University's Wide Area Network capacity.
- Extend the Science DMZ to data-intensive scientific instruments (10 Gb/s) and "Big Data" labs on campus (1Gb/s) based on user needs.
- Using the network as a tool, examine reuse of research data for classroom instruction and outreach.

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NSF Campus Cyberinfrastructure PI and
Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*IIE

Program Area: Integration

Award Number: 1440745

PI and co-PIs (Yale): Y. Richard Yang, Andrew Sherman, Robert Bjornson, Robert Starr

Project Title: CC-IIE Integration: Dynamically Optimizing Research Data Workflow with a Software Defined Science Network

Project Goals:

- Goal 1: Design and implement a high-level SDN programming framework, including FAST, Maple and Magellan as key techniques, to support high-level interfaces, automated rule and network configuration and updates for SDN-controlled networks.
- Goal 2: Design and implement Application Layer Traffic Optimization (ALTO), an Internet Draft Standard, for integrated network and application joint optimization.
- Goal 3: Deploy the preceding systems at Yale ScienceNet, a 100G high-speed network.

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program:

Program Area: Campus Design **Award Number: 1541194**

PI: David Schmidt, Fort Hays State University

Project Title: Enhanced data delivery at Fort Hays State U.

Project Goals:

- Create a high bandwidth Science DMZ
- Create high bandwidth infrastructure for research scientists
- Train the researchers to use the infrastructure and have the researchers train other FHSU faculty.

PI Picture

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Co-PI Picture

Name
Title
Organization
Email

NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CICI

Program Area: Regional

Award Number:

PI: James Joshi, University of Pittsburgh

Co-PI: David Tipper, Michael Spring, Brian Stengel, University of Pittsburgh

Project Title: SAC-PA: Towards Security Assured Cyberinfrastructure in Pennsylvania

Project Goals:

- Establish a framework for regional collaboration focused on Security Assured Cyberinfrastructure
- Develop and deliver workshops targeted at bringing big-campus security skills and knowledge to smaller campuses (KINBER members)
- Exploit and leverage Pittsburgh's growing community of cybersecurity expertise, knowledge, and skills to promote cybersecurity innovations for cyberinfrastructure.

PI Picture

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Co-PI Picture

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*DNI

Program Area: CI Engineer

Award Number: 1540990

PI: Brian Stengel, University of Pittsburgh

co-PI: Chris Keslar, University of Pittsburgh

Project Title: An Engagement Model for Accelerating use and Knowledge of Cyberinfrastructure in Virtual Science Organizations at the University of Pittsburgh

Project Goals:

- Embed a CI Engineer/Facilitator/Cyberpractioner into four key virtual science organizations (centers) at Pitt.
- Facilitate cyberinfrastructure engineering and consulting at the center level by helping center leaders understand and exploit CI resources (local, national, etc..
- Develop and deliver a curriculum of "CI Consulting" to campus workforce currently engaged in IT support of campus depts/schools/centers. Share curriculum with peer organizations and projects.

PI Picture

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Co-PI Picture

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*DNI

Program Area: CI Engineer

Award Number: 1541170

PI: Roger Bielefeld, Case Western Reserve University

co-PI: Sue Workman, Case Western Reserve University

Project Title: Cyberinfrastructure Engineer at CWRU

Project Goals:

- Understand needs of researchers and guide their use of campus CI to ensure optimal benefit
- Make architectural, design, and configuration changes to the campus CI to better serve the research community
- Ensure that campus researchers are able to fully leverage local, regional, and national cyberinfrsatructure

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC NIE

Program Area: Integration

Award Number: 1341008

PI: Seung-Jong Park, Louisiana State University

co-PI: Lonnie Leger, K. Kousoulas, Sean Robbins, LSU

Project Title: CC-NIE Integration: Bridging, Transferring and Analyzing Big Data over 10Gbps Campus-Wide Software Defined Networks

Project Goals:

(1) Building Big Data Bridges, the 40Gbps software-defined campus-wide network based on OpenFlow switch technology
(2) Transferring Big Data with Automatically Tuned Operation through campus or external high speed networks
(3) Analyzing Big Data by developing data-intensive frameworks using Big Data Software technologies including Hadoop, etc.

PI Picture

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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: Cybersecurity Innovation for CI (CICI)

Program Area: CCoE **Award Number:** 1547272

PI: Von Welch, Indiana University

co-PIs: J. Basney, C. Jackson, J. Marsteller, B. Miller

Project Title: CICI: Center of Excellence: Center for Trustworthy Scientific Cyberinfrastructure

Project Goals:

- For the NSF science community to understand fully the role of cybersecurity in producing trustworthy science.
- For all NSF projects and facilities to have the information and resources they need to build and maintain effective cybersecurity programs appropriate for their science missions and responsive to evolving risks and requirements.
- For all Large Facilities to have highly effective cybersecurity programs.

trustedci.org

CTSC
CENTER FOR TRUSTWORTHY SCIENTIFIC CYBERINFRASTRUCTURE
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NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 18-20, 2016 | Philadelphia, PA

NSF Program: CC*DNI

Program Area: Campus Design **Award Number: 1541376**

PI: Robert Messner Jr., Harrisburg Area Comm. College

Co-PIs: Morgan Horton

Project Title: Midtown WAN Redesign for GIS and CIS Science Research

Project Goals:

- To expand the connectivity between HACC's Midtown site and the Harrisburg Campus to facilitate greater data bandwidth.
- Expand classroom connectivity from 100Mbps to 1Gbps at the Midtown classrooms to support the large data sets for GIS and the large internet downloads for CIS programs.

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