NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

October 3-4| Albuquerque, New Mexico

NSF Program: CICI

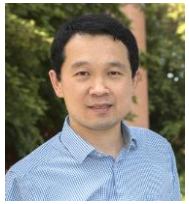
Program Area: **Secure and Resilient Architecture**

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



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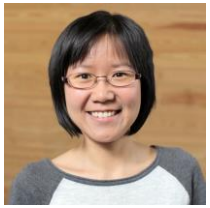

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Quad Chart for:

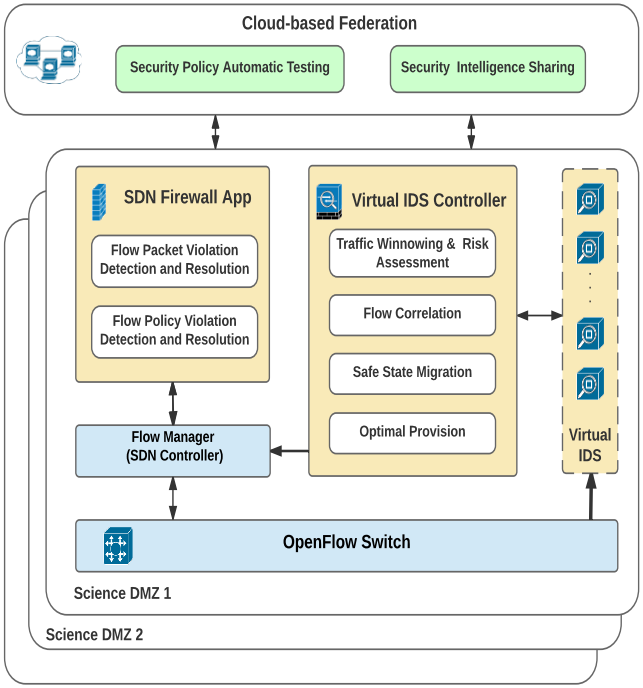
SciGuard: Building a Security Architecture for Science DMZ Based on SDN and NFV Technologies

Challenge

- Institutional firewalls are ill-suited to high-performance science environments
- Existing solutions for securing the Science DMZ depend on legacy institutional firewalls and IDS clusters, both of which are expensive and rigid to adapt

Solution

- Develop a new secure and resilient architecture for Science DMZs based SDN and NFV
- Design an SDN firewall application, which can scale well without bypassing firewalls
- Build a virtual IDS to deal with attack traffic variation in Science DMZs



Scientific Impact

- This research provides novel analysis, design techniques, and toolkits to better protect our critical Science DMZ infrastructures from attacks and unauthorized access leveraging emerging SDN and NFV Technologies

Metadata tag:

- A paper about building robust SDN firewall applications has been submitted to a security journal
- A paper about designing virtual IDSes has been preparing and will be submitted to to a top-tier security conference
- Looking for transition target

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NSF Program : CICI

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

PI: : Jill Gemmill, Clemson University

co-PIs: Nuyun Zhang, Jan Holmevik, Hongxin Hu; Clemson University
Richard Alo, Jackson State University

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

PI: Jill Gemmill
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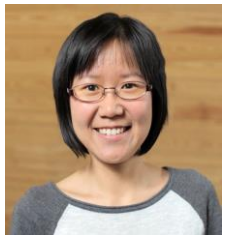

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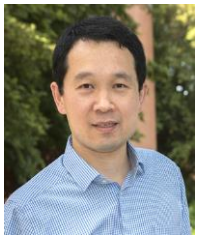

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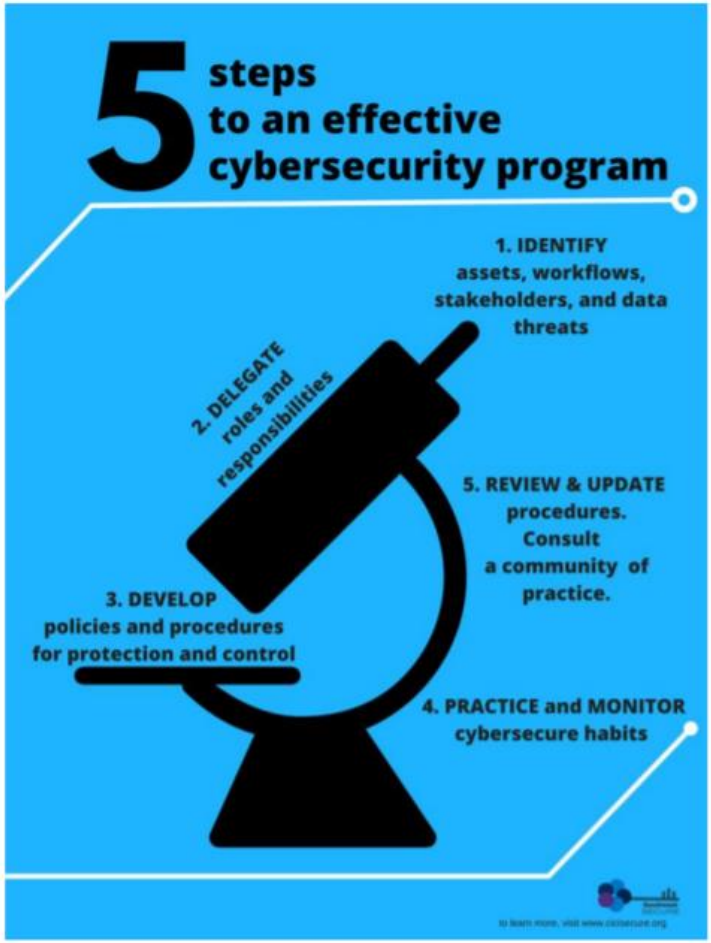
Quad Chart for: *SouthEast SciEntific Cybersecurity for University REsearch (SouthEast SECURE)*

Challenge:

- Provide education, training & select cybersecurity services to NSF-funded investigators across the SouthEast.
- 34% of investigators maintain & secure their own systems!

Deliverables:

- Survey of NSF-funded researchers
- "Toolkit" to test local security
- Provide online training
- Fieldtest new software to quantify website cybersecurity



Scientific Impact:

- Increase knowledge of NSF-funded investigators' specific concerns and needs
- Help scientists with limited resources safeguard data and IP

Metadata tag:

- https://cicisecure.org/
- Collaborators welcome
- Need sustainability partners