Quad Chart for: **CC* Integration: Rutgers University Next-Generation Edge Testbed (RU-NET)**

**Challenge Project Seeks to Address:**
- Data transfers from the edge within a distributed federated hybrid environment
- Simplify the deployment of user owned devices at the edge
- Predictable network QoS
- Orchestration of services, including slices of the network
- How to couple AI/HPC with the network for real-time analysis + intelligence

**Solution(s) or Deliverables:**
- Programmable host networking testbed using new and emerging technologies
- Hardware, software, and processes to on-board new testbeds to RU-NET
- Work with real world use cases to figure out & implement data transfer and QoS requirements

**Solution(s) or Deliverables Cont:**
- Develop low-latency real-time traffic recognition and QoS with FPGAs
- Rapid re-programmable FPGA blocks for dynamic network management and flexible reporting

**Scientific Impact or Broader Impact:**
- Novel edge and core networking technology to support a flexible edge
- Development of labs and course material for students
- Act as a model for other campus and enterprise testbeds

**Metadata tag:**
- We are interested in partnering with others who have interest in building edge solutions/testbeds
- Would like to know what QoS your edge applications require
- We are open to suggestions and feedback
RU-Net Team

Barr von Oehsen  
Associate Vice President  
Rutgers Office of Advanced Research Computing

Richard Martin  
Associate Professor  
Rutgers Department of Computer Science

Srinivas Narayana  
Assistant Professor  
Rutgers Department of Computer Science

Thu Nguyen  
Dean of Mathematical and Physical Sciences  
Rutgers School of Arts & Sciences

Ivan Seskar  
Associate Director & Chief Technologist  
Rutgers Wireless Information Network Laboratory (WINLAB)

Initial Science Drivers

• Computer Science
• Cryo-EM
• Genomics

• Chemistry
• Marine and Coastal
• Brain Imaging
Leveraging NSF Funded CICNet

State-wide multi-campus, distributed HPC and storage, fast, low-latency network that is part of global Science DMZs:

- NSF CC* Funded (OAC-1659232)
- SDN Based 100 Gbps Network Core
- Data Transfer Nodes
- Advanced Computing and Storage
- Performance and monitoring support (perfSONAR, XDMoD)
- Containerized workflows
- Federated across campuses and Commercial Cloud
- Policy driven priorities levels
Eastern Regional Network
FABRIC: Adaptive Programmable Research Infrastructure for Computer Science and Science Applications