

Breakout - Cyberinfrastructure

Participants

- **Deniz Gurkan – not present**
- Chip Elliott
- Russell Clark

- Yan Luo
- Inder Monga
- Tereza Carvalho
- Antônio Abelém
- Michael Stanton
- Flávio Silva - tardy
- Jose Rezende

- Patrick Ferguson - absent
- Julio Ibarra
- Luis Lopez
- Luiz da Silva

Objectives

- Connecting multi-domain (heterogeneous CI and administrative domains) campuses using an SDI approach
- Connecting communities of users, researchers, educators, students future collaborators
- Creating next-gen CI that meets the needs of end users and researchers

Challenges and Important Research Issues: Testbeds for new technologies

- Deployment of testbeds
- **Testbeds** as a service
 - Plug and play for the experimenter
 - Clean up should also be automated. If too many FTEs to manage then unsustainable
 - Managability: interface, end user interacting with testbed, common infrastructure that testbeds can share can improve managability
- Sustainability once funding runs out
- Interoperability, federation
- Evolution of testbeds:
 - Plan for testbed lifecycle. Plan a depreciation.
 - Technology refresh
 - For at testbed it's more compressed.
- How to make the testbed attractive to researchers
- Isolation for experiments for reproducibility
- Surviving multiple iterations of the underlying technologies
- Reproducibility
- Build a generic testbed for problems that have not being articulated or do you build a testbed for a specific problem?

Challenges and Important Research Issues: Science DMZ

- **Science DMZ:** ways to collaborate on technologies and architectures. Increasing good collaborations between USA and Brazil

Challenges and Important Research Issues: SDX

- **SDX**: explore architectures to bridge SDN testbeds among the two countries.

Major Projects and Programs:

- FIBRE and GENI
 - SDI
 - Federations
 - Wireless
- Esnet
 - Tree House/SDX
 - WAN SDN Testbed (in progress)
- FIRE
- NSF Cloud
- Internet of Things (IoT) (aspirational)
- What are the important issues addressed by the projects/programs?
 - Reusability,
- Are there complement projects/programs in the other country?
- What are remaining research challenges and issues (when compared with those listed in the previous question)?
 - Operational Manageability of SDN networks
 - Security
- Anything like NSF Cloud?
- Large research projects co-financed with EU

Existing and Future Collaborations

- What are the mechanisms and methods suggested for breaking down barriers?
 - Using testbeds to showcase potential solutions.
 - Prototyping and innovations that result from a cc-nie type program
- How should the campus networks and WANs evolve given the SDI vision – network is not just for forwarding packets (memory expensive, could not put storage in the routers)
- What's the right architecture given today's constraints?
- What's the relationship with testbeds? Build testbeds to explore various options for future campus networks should be like and what trade offs are
- Using testbeds for education purposes
- Fed4FIRE (EU led project): federation of testbeds, schemes for federating different testbeds. Included GENI control frameworks.
 - Potential solution towards a global testbed federation

Potentials for large-scale collaborations

- What programs work and what does not work within our countries
 - Cloud effort in US, is there a way to carry story back to Brazil?