

# Roundtable: Experiences in The Advanced Cyberinfrastructure Research and Education Facilitators Virtual Residency Program

**Creator: Henry Neeman, University of Oklahoma**

**Roundtable Participants:**

**Marcus Bond, Southeast Missouri State University**

**Dana Brunson, Oklahoma State University**

**James Deaton, OneNet**

**Perdeep Mehta, Samuel Roberts Noble Foundation**

**Horst Severini, University of Oklahoma**

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# What is an ACI-REF?

- Advanced Cyberinfrastructure Research & Education Facilitator (term invented by Miron Livny)
- Work with users -- researchers and educators -- to help them improve their research and/or education productivity using advanced cyberinfrastructure.
- Typically, one or a few ACI-REFs have responsibility for an entire institution, or multiple institutions.
- Some ACI-REFs are:
  - faculty or former faculty;
  - postdocs or former postdocs;
  - research staff or former research staff;
  - IT professionals;
  - graduate or undergraduate students.

# Virtual Residency

- OU (PI Henry Neeman) submitted a proposal to the Campus CI Engineer subprogram:
  - “A Model for Advanced Cyberinfrastructure Research and Education Facilitators”
  - \$400K
  - Highlights the relationship between OU and the original ACI-REF project.
- Included:
  - National training regime: Provide a “virtual residency” program for Campus CI Engineers and other ACI-REFs, open to not only CC\*IIE awardees and ACI-REF members but any institution that needs.

# ACI-REF Virtual Residency: Why?

- CI Facilitators have strong experience within their discipline (often non-CS).
- Most CI Facilitators and CI Engineers haven't been faculty.
- Sometimes little or no research experience (especially for SDN-focused CI Engineers).
- Even if strong research background, typically little or no experience with research outside their own discipline.
- When the Virtual Residency started in 2015, there were no local, regional or national programs to teach people how to be an ACI-REF.
- In the olden days, you could take your time learning how to do this -- but not anymore ....

# Lots of Interest

## ■ Participants

- 2015: 50 total from 38 institutions in 26 states and territories (28 onsite and 22 offsite via videoconferencing), including:
  - 21 institutions in 12 EPSCoR jurisdictions;
  - 5 Minority Serving Institutions;
  - 5 non-PhD-granting institutions.
- 2016: 98 total from 67 institutions in 33 states & territories plus 3 other countries (43 onsite and 56 offsite via videoconferencing), including:
  - 20 institutions in 13 EPSCoR jurisdictions;
  - 10 Minority Serving Institutions;
  - 13 non-PhD-granting institutions.

# What Did We Cover?

- How to work with researchers who are using CI.
  - How to talk to them.
  - How to help them.
- How to contribute to, and ultimately to lead, grant proposals.
  - Some already us knew how to do this, so our job was to help the rest.
- Science DMZ Track
  - How to manage a Science DMZ.
- Computational Science & Engineering Track
  - Get some practice working with researchers.

# What Weren't We Trying to Do?

- On the Computational & Data-enabled Science & Engineering track, we **WEREN'T** trying to cover a lot of ~~technical content~~.
  - People can learn that from other sources.
- Instead, the goal was to learn them the **PROFESSION** of ACI-REF.

# What Was the Hidden Agenda?

- The real goal was to prepare for an upcoming transition to:
  - more need for this kind of skilled workforce, but
  - fewer people who know how to do it, with
  - no mechanism to prepare a sufficiently large cohort.
- Some of the participants already knew how to do this.
  - But it took a very long time to learn on their own.
  - To keep up with demand, the community needs us to streamline the process so that new ACI-REFs can become fully productive quickly.
- These are the CI leaders of tomorrow.



# ACI-REF Workshop Agenda 2016

- **SUNDAY** (evening pizza party)
  - Welcome and virtual residency overview
  - Introduction to Research  
Cyberinfrastructure Facilitation
  - How to Give a CI Tour
- **MONDAY**
  - Early AM: Effective Communication:  
How to Talk to Researchers about Their Research
  - Computational and Data-enabled Science & Engineering (CDS&E) Track
    - Mid AM: Deploying Community Codes
    - Early PM: Real user presents their CDS&E research
  - SCIENCE DMZ Track
    - Mid AM: OpenFlow - Lecture
    - Early PM: OpenFlow - Lab
  - Mid PM: Faculty: Tenure, Promotion, Reward System
- **TUESDAY**
  - Very Early AM: Project Guidelines
  - Early AM: Grant Proposal Basics
  - Mid AM: Exploring the Faculty  
Entrepreneurial Mindset
  - CDS&E Track
    - Early PM: How to do an intake interview
    - Early PM 2: Real users: CI consulting practicum (“speed dating”)
    - Mid PM: Best Practices from ACI-REF Phase 1
    - Mid PM 2: Ongoing assistance of researchers
  - SCIENCE DMZ Track
    - Mid AM: Exploring Open Daylight - Lecture
    - PM: Exploring Open Daylight - Lab
- **WEDNESDAY**
  - Early AM: CI Milieu
  - Mid AM: Creating and Evaluating Training workshops
  - Late AM: Creating Effective Documentation
  - PM: BREAK (free time)

# ACI-REF Workshop Agenda

## ■ THURSDAY

- Early AM: The Shifting Landscape of CI Funding Opportunities
- How to Design a Cluster
- CI user support
- CDS&E Track
  - Early PM: Real users present CDS&E research
  - Mid PM: “Speed Dating”
- SCIENCE DMZ Track
  - Early PM: The Software in SDN
  - Mid PM: Exploring SDN Software

## ■ FRIDAY

- Early AM: So You Want to Write a CI Proposal
- Mid AM: Research Data Management
- Lunch: Stories from the trenches
- Early PM: Project work time
- Mid PM: Project work time
- Late PM: Project presentations from early departers

## ■ SATURDAY

- AM: Project presentations

# What's the ACI-REF Career Path?

- Preferably an advanced degree in a STEM discipline.
  - But, at most doctoral institutions, you could easily have only one person doing everything CI-related (HPC sysadmin, ACI-REF, Campus Champion, proposal writing, etc).
- ACI-REF Virtual Residency early on
- Campus Champion
- Lots of CI workshops (National Computational Science Institute, Linux Clusters Institute, XSEDE, etc)
- Coalition for Academic Scientific Computation and Campus Research Computing (CaRC) Consortium
- Institutional center deputy director, then director
- Aspiration: training and mentoring opportunities at every career stage

# Why ACI-REF is the Best Job Ever

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Every day, you get to see how the work you do helps other people to be successful.

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