

August 15, 2017

# XSEDE

Extreme Science and Engineering  
Discovery Environment

## Cyberinfrastructure Workforce: or... Why are we in Arlington Anyhow?

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# Professionalization in Cyberinfrastructure

- Why is it important?
  - ... or is it?!?
- What can we do about it?
- Some reactions to comments/topics thus far....

# Who is this guy?



- John Towns
  - Executive Director for Science & Technology at NCSA
    - PI and Project Director of XSEDE
    - Director, XSEDE Project Office
  - Deputy CIO for Research IT @ Illinois
    - co-Founder, Illinois Campus Cluster Program
    - much more in development (?)...
- Background
  - just a mid-western boy from Missouri
    - I don't see a lot of folks from Missouri in the circles I am in
  - failed physicist
    - general relativity
  - failed computational scientist
    - numerical simulation of black hole spacetimes
  - failed networked applications guy
    - NLANR-DAST: National Laboratory for Applied Network Research-Distributed Applications Support Team
  - budding social engineer

*So what should I call myself?*

*Is this the way it should happen?*

# A bit of professional development stuff I have been involved in...

- Lots of training in '90s
- LCI workshops and conferences
- Student programs for TGxy/XSEDExy/PEARCxy starting in 2009
- The big question:
  - “Where is your successor?”
- Mentoring
- LCI, round 2
- PEARCxy

# Some things I have learned...

- Parts of our community already identify with professional organizations
  - largely outgrowth of (what we now call) enterprise IT: IT Professionals
    - network engineers, storage engineers, desktop support...
- Parts of our community do not..
  - Research Technology Facilitators (also known by many other names), research applications support, research software developers, research concierge, CI engineer, research computing professional, CI professional...

# “Being there really matters.”

- I’m not sure I agree
  - What about “being there” matters?
- It’s not about proximity to the machine
  - Don’t build office space adjacent to blinking lights, they won’t teach you anything.
- It’s about building relationships and learning
  - This requires proximity to other humans!
  - “traveling to Mecca” is not the only answer

# Some Related Efforts in Our Community

- IEEE
- ACM
  - SIGHPC
- Society of HPC Professionals
  - <http://hpcsociety.org/>
  - focus is on HPC/supercomputing
  - small organization in Houston, TX
- All of these are more narrowly focused on HPC

## More recently..

- Campus Champions
  - expanded to regional, state, domain
- LCI, Round 2
  - workshops only at this point
- ACI-REF/CaRC
- Regional organizations
  - RMACC, CADRE, HPC<sup>2</sup>, GPN,...

## Other things of note...

- Permeation of research IT into (nearly?) all fields of research
  - greater responsibility being taken by campuses
  - will rapidly follow to industry
- Strong projections of needs for PhDs, particularly in industry
- Similar projections for technical staff
  - Where will these people come from?

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## FULL-TIME ACADEMIC PROFESSIONAL

Salaried positions. Applicants must possess, at minimum, a bachelor's degree from an accredited university, with additional requirements as listed.

- Data Engineer, Blue Waters Project Office – *search extended*
- System Engineer / Senior System Engineer, Scientific Computing Services Division – *search extended*
- Assistant Director of Industry Operations, Integrated Cyberinfrastructure Directorate
- Storage Engineer / Senior Storage Engineer, Storage Enabling Technologies Group – *search extended*
- Research Programmer / Senior Research Programmer, Blue Waters Project Office – *search extended*
- Senior Research Programmer, Blue Waters Project Office – *search extended*

# Some things that we need...

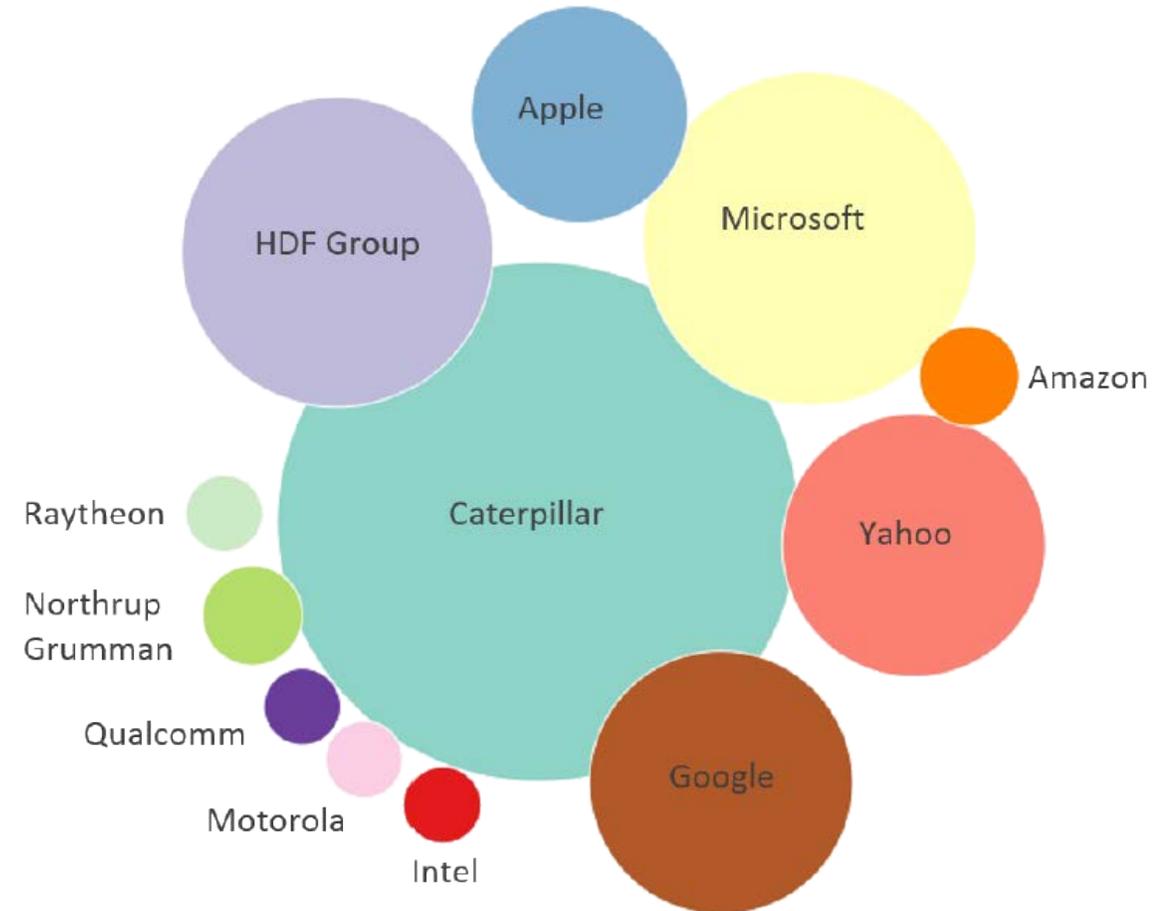
- Education and training opportunities
  - degrees and certifications
  - ongoing professional development
- Advocacy for the emerging profession
  - perception of second class status
- Definition of the profession
  - titles and career paths
- and so much more....

*We must fight the tendency to reward technical prowess with management responsibility. Too often we fail to prepare technical staff we promote and put them at risk!*

# Celebrate Success!!

*or... don't bemoan loss of staff*

- We are at universities!
  - it is our job to train people and set them off into the world to do Good Things!
- NCSA Diaspora Study (10 year period)
  - NCSA's diaspora is responsible for intellectual property for a number of key U.S. firms, including Apple, Google, Facebook, etc.
  - 113 patents, 2,500+ publications, \$10s of millions in grants



NCSA Diaspora Destinations; range 3-22

*Source: Impact of a Cyberinfrastructure Enterprise on the Nation's Workforce: Visualizations of a Decade of NCSA's Diaspora, Howison et.al.*

# So what do we do?

- Focus on the outcomes we want for this community
  - a professional organization is perhaps only one way to accomplish them
- Many efforts emerging in the community to attempt to address these needs
  - efforts are not aligned; we need to organize the organizations
- We must develop coherence in the community
  - create a space for doing this

# XSEDE Annual Meeting has been Spun-Off to Create PEARC

- PEARC is an independent activity
  - Practice & Experience in Advanced Research Computing
  - leverages momentum of XSEDE conference series
- Unite the advanced research computing community
  - focus on state of the practice and practitioners
- Creates a community-owned event facilitating the multiple efforts of the community to come together
- See press release:
  - <http://tinyurl.com/PEARC-Spin-Off>

# Creating Reality

- Desire of PEARC Steering Committee is a community-driven conference series

- PEARC Vision (DRAFT):

*The vision of PEARC is the creation of a dynamic and connected community of advanced research computing professionals who advance leading practices and the frontiers of research, scholarship, and teaching.*

NOTE: this needs to incorporate connections to industry and government organizations.

- PEARC Mission (DRAFT):

*PEARC advances the vision by providing a forum **owned by the community** to foster exchanges around the ‘state of the practice’ in advanced research computing—discussing challenges, opportunities, and solutions.*

# Thank you!

*Questions?*

