

# Panel: Role of State, Federal & Regional Government in creating new infrastructure; Models that are working; Support?

**Jim Bottum, Clemson University**

CIO & Vice Provost for Computing and Information Technology

CASC - Sustainable Funding Workshop

Arlington, VA

October 2, 2013

# Perspective

- Former NSF program official
- Former NSF Center deputy director
- Current university CIO
- Current Internet2 Fellow

# Federal Role

- **Mission agencies** – display a concern over sustainability of mission critical cyberinfrastructure
- **Non-mission agencies** – e.g., programmatically and peer review driven, bi-modal funding routes: DACI and individual programs, no long-term strategy
- **Impact on campus and faculty**
  - Mission funded faculty at Clemson upgrade like clock work
  - Faculty funded by non-mission agencies less predictable

# HPC Center Evolution

1980

- Small number of university centers
- FCCSET (agency knowledge transfer)

1983

- Phase 1 centers – NSF bought access
- Colorado State, Minnesota, Purdue

1985

- Phase II – NSF established five centers
- “fully funded”

1990s

- Emergence of state centers
- 1989 – “several” institutions formed CASC

2000

- Campus centers begin growth curve
- CASC = 60 members

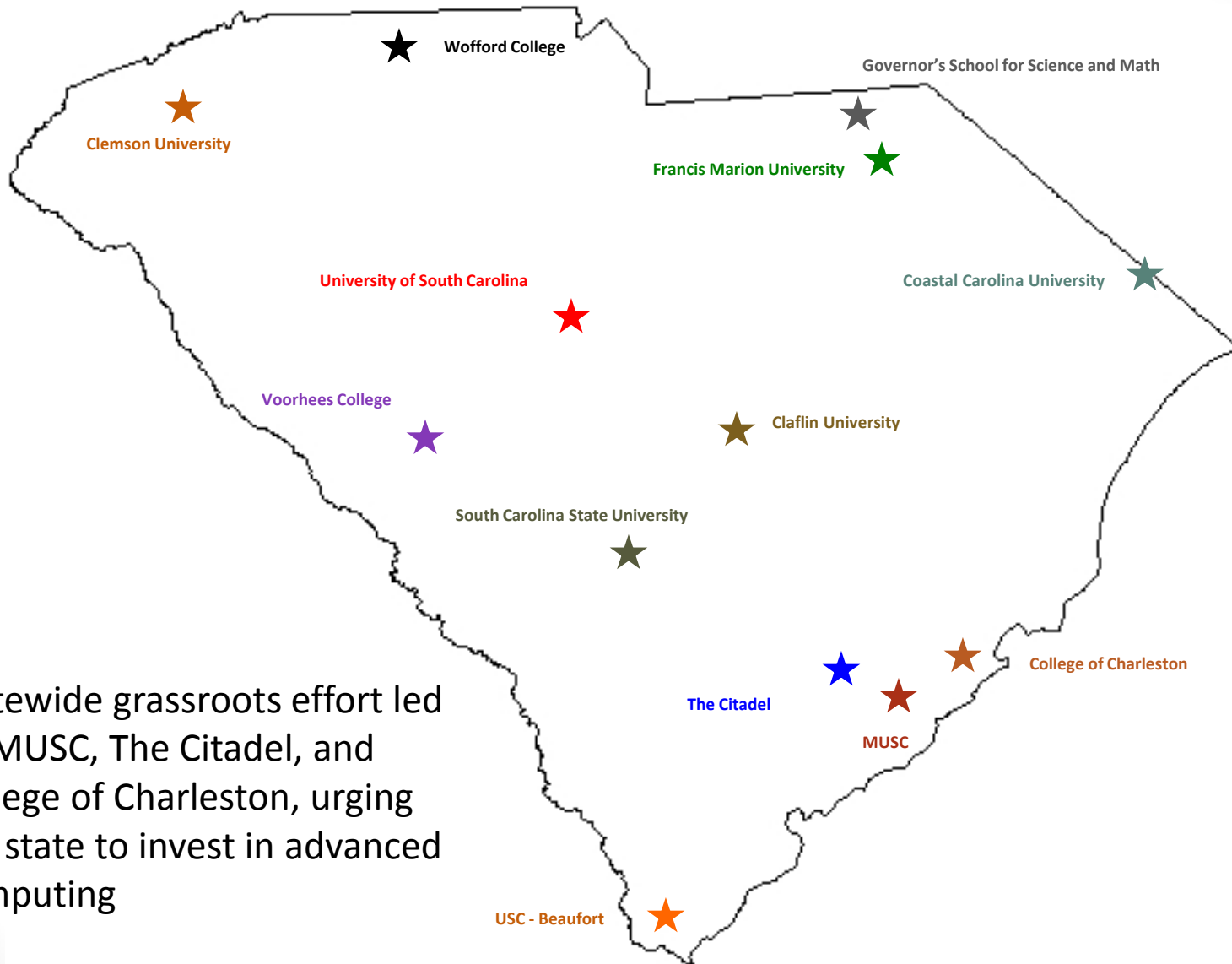
2010

- Campus HPC centers proliferate
- CASC at 74 members
- Stimulus funding for infrastructure and people

# State Government – some models

- Massachusetts – MGHPC
  - Economic development
- Florida – SSERCA and FLR
- Ohio – OSC and OAR.net
- For many states it is a struggle

# Campus Bridging in South Carolina



Statewide grassroots effort led by MUSC, The Citadel, and College of Charleston, urging the state to invest in advanced computing

# Sustainability - considerations

- Strategic alignment of mission
- Communicating value and strategy
- Business model
- Evaluation, mid-course correction and “reinvention”

# Institutional Alignment

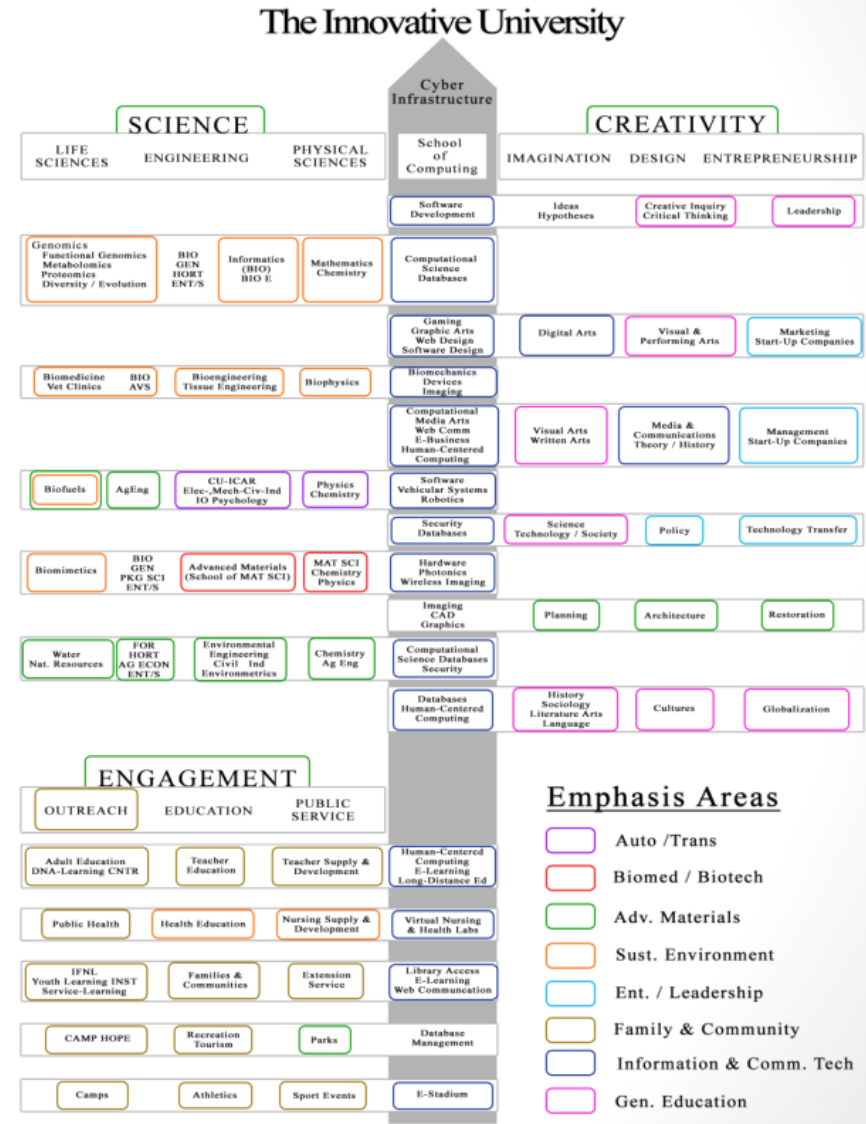




# Institutional Alignment During Transition

“Cyberinfrastructure is the primary backbone that ties together innovation in research, instruction, and service to elevate Clemson to the Top 20”

Doris Helms,  
Clemson Univ. Provost [Ret. 2013]



# Investment and Governance Framework

*Effective reference point for educating Administrators & Trustees*

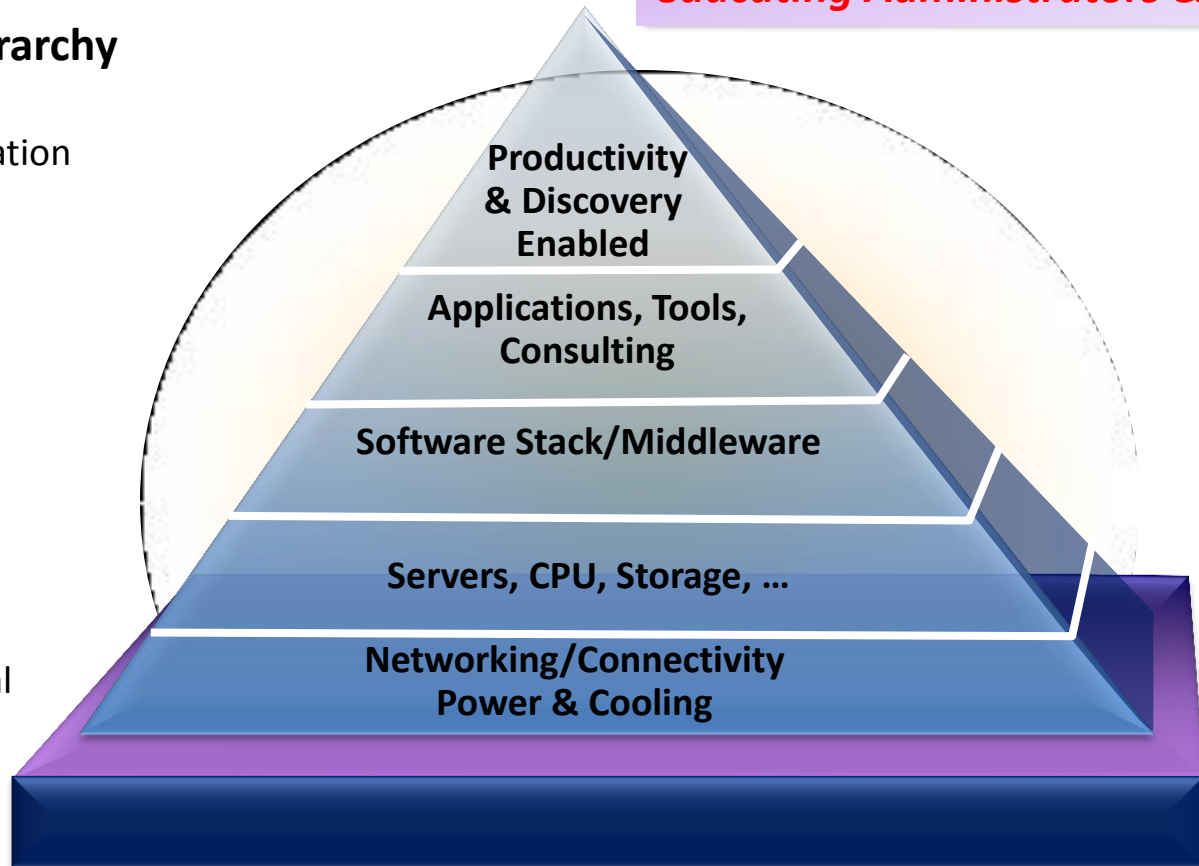
## Maslow' Hierarchy

Self-Actualization



Safety

Physiological



Planning, timelines, budgeting, decision-making

†Maslow, A. H. (1943). *A Theory of Human Motivation*. *Psychological Review*, 50, 370-396.

Courtesy: John Cobb, ORNL

# Trustees Presentation - outline

## Funding

- 25% of sponsored research awards used Clemson Palmetto cluster

## Degrees Conferred and Publications

- PhD degrees conferred and refereed publications growing

## Economic Development

## “Paying for ourselves”

- CIO and growing number of staff bringing in salary dollars

## Faculty Voices: “The HPC resources at Clemson are...”

- Support Environment; made me more scientifically productive
- A competitive advantage in faculty recruiting
- Enabling publications
- Fostering interdisciplinary research
- Integrating research with entire university

# Clemson Approach – 2008

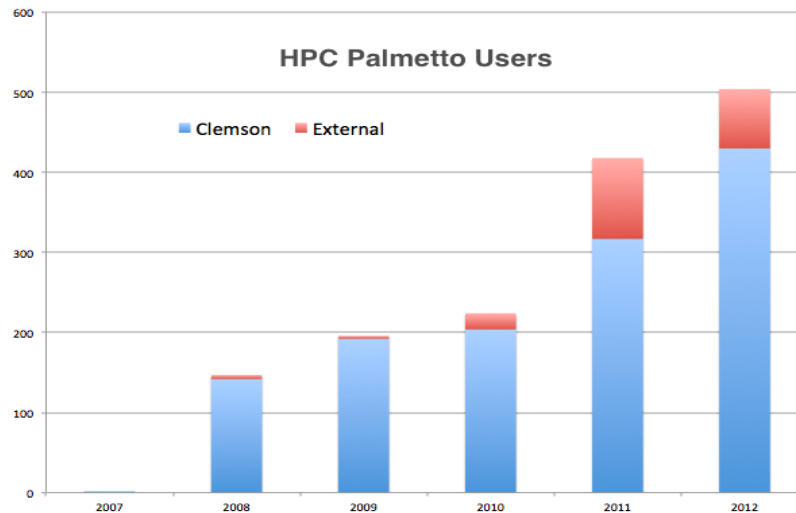
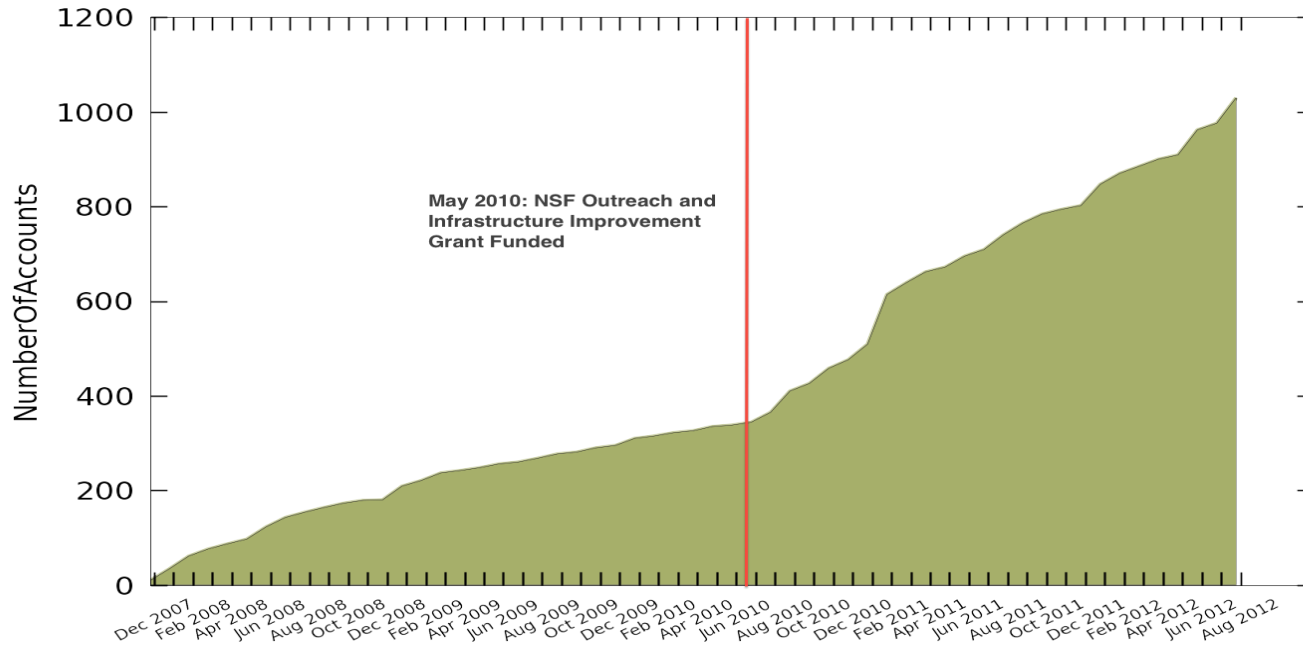
- **Assumptions**
  - No state help; competition v cooperation among universities
- **Networking**
  - Founded LLC and bought fiber with private funds
- **Computing**
  - Funding split between:
    - Central academic budget &
    - Faculty grants & start-up packages
    - (NO funds initially from OVPR)
  - Upgrade twice a year
- **Staffing**
  - Baseline funded through CIO budget – 3 FTE – split across system administration and user support

# Clemson Approach – 5 years later

- **Assumptions**
  - No state assistance – consistent; some movement toward university collaboration
- **Federal**
  - Faculty receive funding for computing base is growing
  - CC-NIE campus networking awards (**new**)
- **Campus - OVPR**
  - Added recurring funding line for hardware purchases (**2013**)
  - **Proposal to divert % of research funding increase into “cyberinfrastructure” – VPR agreed in principle; details being worked out and including CU-CAT in discussion**
- **Staffing growth**
  - + 4 FTE, CIO re-prioritize
  - + 3 FTE, external funds

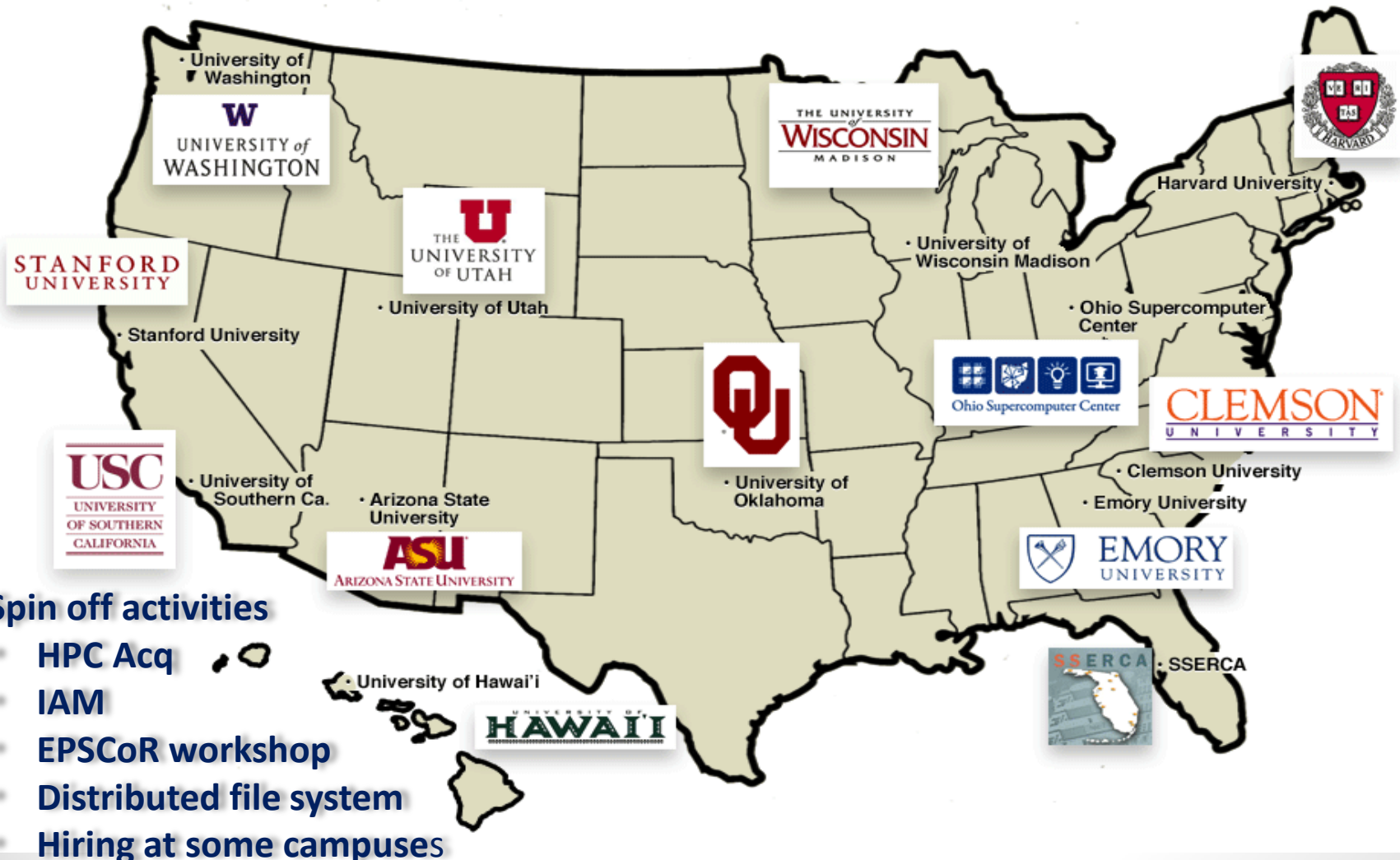
Future?

# Demons are Coming



# Self Organize

## Condo of Condos Founding Consortium Members



- Spin off activities**
- HPC Acq
  - IAM
  - EPSCoR workshop
  - Distributed file system
  - Hiring at some campuses



# DISCUSSION