A Sustainable Business Model for Advanced Research Computing

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The Funding Rollercoaster

I want to get off of this ride!  
In search of sustainability…
Research Computing Challenges
What keeps us up at night....

**Budget & Funding**
- Staff
- Computing
- Data storage & archival
- Networking
- Visualization
- Facilities (power, space & cooling)

**Technology & Infrastructure**
- Constantly changing
- Expensive
- One size does NOT fit all

**Strategic Planning**
- Understanding your researcher’s needs and challenges
- Funding opportunities: leadership vs. partnership
- Campus Bridging to National CI
2007 – Launched Center for Advanced Computing

• Provost, Vice-Provosts, Deans & representative faculty involved
• Understand the technical requirements and financial limitations
  – Costs for staff and services were documented and reviewed
  – Open discussions on what faculty need AND were willing to pay for
  – Develop services that meet these requirements and provide competitive rates, seeking economies of scale and scope wherever possible
    • Retain only the staff and services that faculty were willing to pay for
• Created a “Core Facility” that serves the Cornell research community
  – Director reports to the Vice Provost for Research
  – 80% Cost recovery required
  – Provost subsidy provided to create proper incentives for centralization
    • Must be better than graduate student labor AND cheaper
• Deans provided bridge funding to their faculty to assist transition to new model
Goals of Sustainable Model

• A successful recovery/funding model must be institutionalized
  – Enable a broad array of researchers
  – Provide value
  – Efficient and fair
  – Provide economies of scale and scope
  – Save money

• Not based on winning a single major grant or on the efforts of a particular director and/or management team
  – Model documented so that the institution can stand behind it over time and expect it to be acted upon
  – *Model must allow room for strategic change, growth and adaptation*
  – Model should allow core staff to focus on their jobs rather than constantly worrying about funding for their jobs
Foster Innovation, Adaptation and Growth

- CAC’s focus on providing advanced computing services based on technologies which provide optimal economies of scale makes us more relevant to funding agencies, partners, industry and vendors.

- Having a sustainable recovery model forces us to do a great job of identifying key technologies and implementing “right-sized solutions”.

- Having vendor partners we can rely on to provide the best price/performance and maintenance support is essential.
Focused on Service

Enabling the success of Cornell researchers, collaborators and supporters whose work demands advanced computing solutions

Consulting

• Assisting with start-up packages for new faculty
• Benchmarking & performance analysis
• Proposal development & participation
• Custom programming, debugging, parallelization & optimization
• Development and support for scientific workflows
• Custom training (live & web-based)
• Desktop & remote visualization
• Strategic partnerships with HPC vendors, national computational science centers and researchers

Computing

• Subscriptions for Red Cloud
• Private cluster maintenance agreements (secure data hosting arrangements possible)

Data storage and management

• Scalable disk storage
• Archival storage
• Database resources
• 10Gb connectivity to the Internet

National cyberinfrastructure partnerships

• NSF XSEDE – Extreme Science and Engineering Discovery Environment
• TACC Stampede – Enabling, Enhancing, and Extending Petascale Computing for Science and Engineering

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