Strategic Value and Sustainable Cost Structure
of
Advanced Computing

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Medical College

- We are in Manhattan
  - and Doha, Qatar
- Most of Cornell is in Ithaca
- 404 MD, 6?? Graduate Students in NYC
- ~900 Clinical and ~250 Science Faculty
- 18 domestic and 8 international affiliates
  - New York Presbyterian
  - Memorial Sloan Kettering Cancer Center
  - Methodist Hospital
  - Weill Bugando
  - Hamad Medical Corporation

ITS/POIS

- ~250 IT Employees
- 6000-10,000 Users
- 20,000 Devices
- 19 Enterprise Class Systems
- 3 Data Centers
  - 700 Servers, ½ Virtual
  - <1PB Storage
  - No HPC
- 2GPS Internet Connection
  - 25% mean utilization
  - 10% is for BitTorrent
  - 1% is for Adult Content

What Keeps Me Up At Night?

People

- 10 Difficult Faculty/Staff
- My Boss
- His Boss
- The Hospital
- The Board
- Congress
- Chairs/Senior Faculty
- Other Faculty/Staff
- Qatar
- Students
- My Staff

Other Nouns

- Lack of Group Empathy
- Security Threats
  - External: >1 attack/min
    - that we know about
  - Internal: see column 1
- Project Overload
  - Staff burnout/Retention
  - Operating/Capital mismatch
- Usability
  - Legitimate whining
  - Transaction costs
 - Right thing ≠ Easy thing

What are we doing at WCMC?

- New Data Center
  - First attempt to centralize HPC
- Hybrid-Cloud Collaboration with Ithaca
  - Sharing resources and expertise with Ithaca
    - RedCloud, RedCloud Secure
- HPC Co-op
    - Group purchasing
    - Subsidy once 50% of capital is purchased
    - Heavy operating subsidy
      - System administration
      - Data center; networking
- Layered Security
    - Research Network
    - Virtual Desktops
    - Identity Management
- Operational Excellence Initiative
  - ITIL/Service Now
  - Project Management Office
  - Governance Committees
  - Architectural Standards

What are we NOT doing?

- Never enough communication
  - Essential to balance standards with flexibility
  - Essential to fair pricing
  - Essential to obtain buy in
- Never enough collaboration
  - NYP, MKSCC
- Never enough funding
- Never enough "free"

Fast

Good ⟷ Cheap
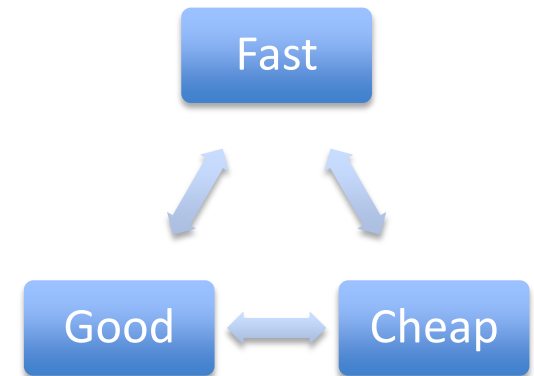
Are we doing the right thing?

- Is Precision Medicine just for the 1%?
- Will HPC further the digital divide?
- Is big data destroying privacy?
- Is HPC environmentally sustainable?
- Can collaboration really overcome the mythical man-month?