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Sustaining and Growing Research Computing Services

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Context: IT Strategic Plan

Goal Two: Research and Scholarship

- Create an IT culture and infrastructure responsive to researchers' needs
- Improve core IT services supporting researchers' needs
- Support an IT platform that supports excellence and innovation in research

Guiding Principle

"Excellence in research sustains the University's reputation, its ability to attract talented faculty and students, and its ability to compete for funding. Computing has become fundamental to all fields of research."

Where we started

When Provost's task force began its work, Research Computing had

- 8 FTE, 4 part-time graduate students
- HPC systems: 4096-core Dell cluster, 128-way SGI Altix, small IBM blade center "condo" cluster, GCG server
- Oracle database server
- <10 TB disk storage (scratch, projects, home directories)
- Research tape archive of ~200 TB
- Software licensing ($), building, supporting

Where we are now

Expanded staff, expanded systems, expanded services

- 15 FTE, 7 part-time graduate students, one “loaner” FTE
- High-end computing systems:
  - 8000-core Dell cluster (QDR IB, minimum 4 GB/core, Lustre scratch file system, two big memory (1 TB each) nodes, 64 NVIDIA Teslas
  - Virtual computing for Windows and Linux, Condor grid, desktop Linux, rpm repository
  - Secure computing
  - Engagement with clinical research, biosciences/biomedical research (esp HT Seq), humanities, libraries
- Oracle database server with databases for cancer, drug discovery, highway safety, cheminformatics, clinical research
- Approaching 2 PB disk storage (scratch, projects, home directories). Research archive of ~1 PB, new FileTek StorHouse-based archive for genome data
- Expanded networking capabilities

How we did it

- Reallocation of resources (staffing)
- New funding sources and model
- Faculty support and involvement
- Leadership support
- Expanded engagement and investment in key areas

New Funding Model

Additional new budget of $2.3M/year (beyond current $3.1M) specifically for infrastructure acquisition

- ~ $1.6M/year for compute
- ~ $700K/year for storage and networking

Source of funding:

- 70% F&A (off the top)
- 30% user fees as dictated by Provost*

Four year life-cycle; re-evaluate and index to sponsored research dollars

Funding Model, cont'd

Three primary sources of user fees:

- Patron system – users can pay for priority access to resources
- Charges for CPU hours beyond threshold
- Storage (fees and shared purchases)

Faculty Involvement

- Operational advisory committee
- Strategic governance group as part of overall campus IT decision-making structure
- F2F and 1:1 discussions. What are they doing?
- Helps ensure services are relevant
- Helps build support across departments, areas, and technologies

Engage & invest strategically and broadly

- Target
  - Areas in which university is investing (ex: genomics, clinical research, HTSeq)
  - Areas of emerging need (sensitive data, data management)
  - Underserved areas (ex: humanities, Windows, desktop Linux, lab LIMS) … underserved by us, that is
- Engage leadership throughout
- Invest in PEOPLE, not only “stuff”
- Partner and co-invest with others in ecosystem: libraries, distributed IT units, research centers, compliance officer, research office (and others within central IT)

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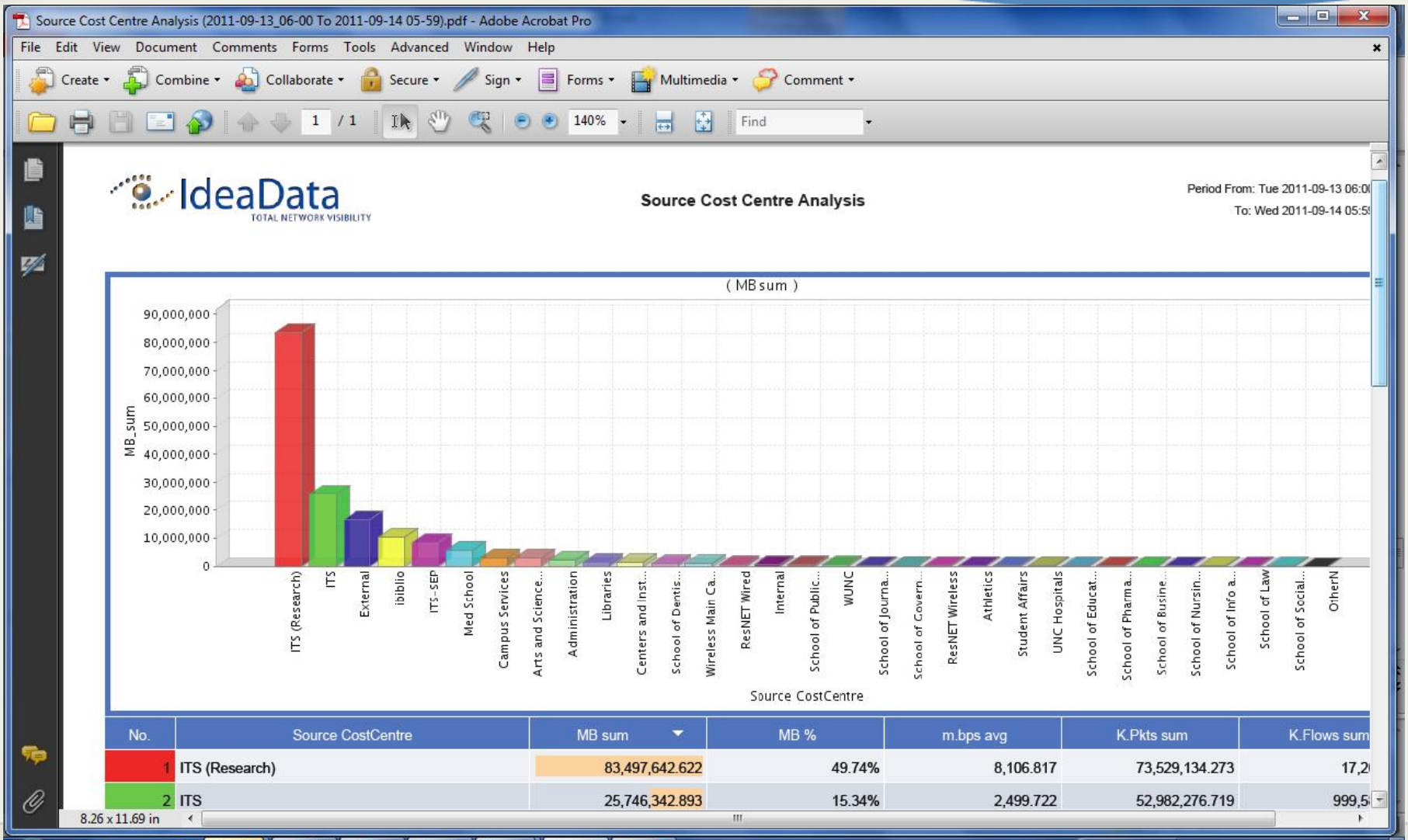
Data, data everywhere …



Parterships Matter

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UNC THE NORTH CAROLINA TRANSLATIONAL & CLINICAL SCIENCES INSTITUTE

renci

High-Throughput
Sequencing Facility
at University of North Carolina

Challenges

- Uncertain budget times
- Needs are difficult to project accurately
- Resources may not be sufficient to meet requirements
- Security
- Multi-institution collaborations
- Must show you are adding value but ROI is difficult to measure

Questions?

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