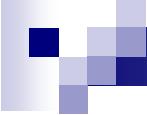


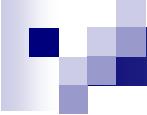
Funding for Research Computing

Erik Deumens
UF Research Computing
Office of IT



Contents

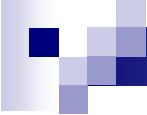
- What is research computing?
- Writing computing support into proposals
- Developing data management plans
- UF Research Computing
- Research Computing Matching Program



Research computing

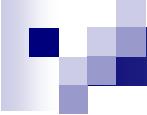
■ What is it?

- all computing and data management activities related to research
- high-performance computing (HPC)
 - is a core capability, but
 - is not all of research computing (RC)



UF Research Computing

- Is an organization in the Office of IT
 - HPC Center
 - <http://www.hpc.ufl.edu>
- With the mission:
 - Support research computing at UF
 - Make researchers at UF more competitive
 - In getting ground breaking results, and
 - grants



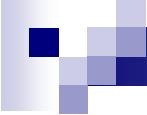
UF Research Computing

- Provide high-quality infrastructure for
 - Grant-funded research
 - Scholarly research
 - Interdisciplinary collaborations
- Provide expertise
 - One place to go for help
 - RC will provide the service, or
 - will take you to an expert who can



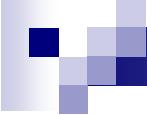
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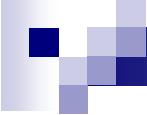
Project planning

- Plan to use UF Research Computing services so that
 - Researchers can focus on science and engineering
 - Graduate students can focus on their work and degree
 - System administration is a separate profession



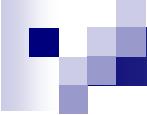
Proposal preparation

- Include services in any of three ways
 - Buy a piece of functional infrastructure
 - Compute capacity
 - Storage capacity
 - For 5 years for use by your group
 - OCO funds, no overhead is charged



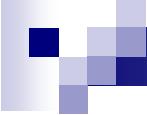
Proposal preparation (2)

- Buy compute and storage services
 - Cloud computing on campus
 - Monthly bill
 - Expense, overhead is charged
- Buy consulting services
 - Add a fraction-FTE expert to your team
 - Small consulting projects are free



Proposal preparation (3)

- Use <http://www.hpc.ufl.edu/proposals/>
 - For templates and text
- Add budget entries
 - Examples for all three types at the above URL
- Copy “Facilities” description of UF services
 - NSF prohibits listing dollar amounts
 - Provide qualitative descriptions of services



Ask for assistance

- Do not hesitate to contact UF Research Computing for
 - Advice
 - Suggestions
 - Descriptions
 - Budget estimates
 - ...
- Emails can be found on later slide



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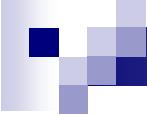
Planning data management

- UF Research Computing
 - Provides infrastructure for PIs to make a credible plan in the proposal
 - Makes it easy to implement the plan
 - Provides training and tools to manage data
 - Provides web server to publish data



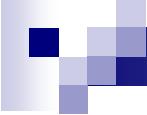
Data lifecycle management

- Data lifecycle management
- this fall DLC committee will develop
 - Architecture
 - Procedures
 - Policies
 - Training



Data categories

- Raw observations
 - Data collection and preservation
- Intermediate stages
 - Data processing continues
 - Limited sharing needed
- Published form
 - Upload to national repository
 - UF web publication



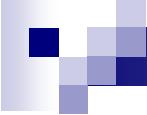
NSF Data Management Plan

- Two page supplementary document
 - Can be very simple
 - E.g. a theoretical modeling effort may publish all data in tables in standard journal publications
 - Can be complex
 - Need hardware and software infrastructure for extended time
 - Use UF Research Computing services for peace of mind



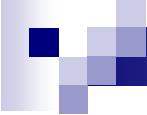
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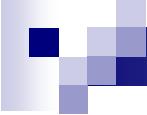
Research Computing expertise

- Three staff members since 2005
 - Charles Taylor, Craig Prescott, Jon Akers
- Four new members since this summer
 - Distributed storage: Yu Fu
 - Application support: Ying Zhang
 - Biological computing: Alex Moskalenko
 - Education and training: Matt Gitzendanner



Research Computing expertise

- Performance analysis & tuning
- Software engineering & code review
- Algorithm development & implementation
- Training & workshops
 - Consulting
 - Small project: free
 - Big project: buy fraction of FTE



HPC service mission

- Provide compute and storage resources
 - Every faculty member at UF
 - Can get a free account for self and collaborators
 - Caveat: low priority and limits apply
 - Buy-in to get priority or special services
 - Mechanisms for funding exist
 - New ones are being developed
 - Goal: suit all needs and restrictions

HPC service options

■ Shared investor

- Buy a number of NCU and OSU
 - Normalized computing unit \$400/core/5yr
 - Optional storage unit \$127/TB/yr
- Access up to 10 times your share
 - Depends on availability, helps with spiked usage pattern

■ Hosted investor

- Buy a share for use by your group only
- Required for running jobs > 1 month

■ Billed investor

- Compute as needed at “cloud” prices of \$0.02/hour



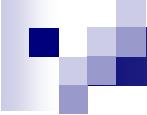
HPC service benefits

- HPC Center provides
 - Space
 - NPB 2250, NPB 1114, Larsen 121
 - Eastside Campus Data Center Nov 2012
 - Power & cooling
 - System administration
 - Training workshops
 - Application support



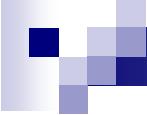
Computational course support

- A new system will be installed this October
 - Support the many courses being taught
 - That require computing by the students
 - For example
 - Large RAM nodes for computational biology
 - Distributed memory cluster for MPI programming
 - GPUs for CUDA programming



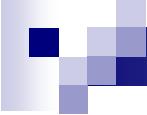
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Research Computing Matching

- NEW! Matching program
 - July 1 through Sept 30, 2011
 - Invest in buying a piece of infrastructure for your research group
 - HPC Center matches every \$ you invest
 - Double your buying power
 - Next round: May 2012

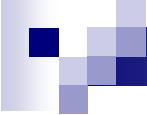


Program terms and conditions

- Must be UF faculty member
- Buy compute capacity
 - Commit to a minimum of \$3,200 to be eligible
 - Shared ownership of compute resource
 - Includes nodes, RAM, network, scratch disk storage
- Buy long term storage capacity

Program options: computation

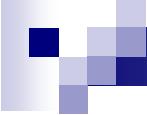
- CPU compute capacity
 - Buy a number of CPU cores: NCUs
 - NCU = normalized compute units
 - Includes RAM, network, scratch storage, power
 - \$400 per NCU for 5 years
- GPU compute capacity
 - Buy a number of GPUs: NGUs
 - Ask for details about the price; not firm yet



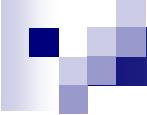
Program options: storage

■ Storage capacity

- Buy a number of OSU
 - OSU = optional storage unit
 - \$127 per TeraByte per year
 - This is not scratch storage, that comes with NCUs
- NEW! We will offer storage that is backed up
 - To other disk storage
 - Tape backup can be obtained through CNS NSAM

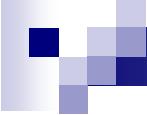


Who you gonna call?
~~Ghostbusters!~~



UF Research Computing

- Website: <http://www.hpc.ufl.edu>
- Director:
 - Erik Deumens deumens@ufl.edu
- Associate director:
 - Charles Taylor taylor@hpc.ufl.edu



Research Computing Advisory Committee

- Website:

<http://www.it.ufl.edu/governance/advisorycommittees/researchcomputing.html>

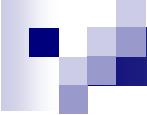
- Chair:

 - Paul Avery avery@phys.ufl.edu

- Subcommittees:

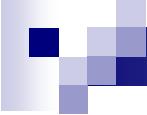
 - HPC Committee (since 2005)

 - DLC (Data LifeCycle) committee (since 2011)



Tell us what you need...

- A plan is being developed
- Priorities are being explored
- Tell us what your needs are
 - so that we may address them, or
 - can plan for addressing them in the near future



We want to hear from you!