Some Odds and Ends About Computational Infrastructure

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Computing Infrastructures

- Local Laptop/Desktop – Short jobs with small data
- Local Cluster – Larger jobs and larger data but subject to availability
- HPC – Prime performance with parallelized code
- HTC – Sustained computing over a long period for serialized workflows
- Cloud – Need deeper permission on an OS and/or have deeper pockets

Some Examples of Academic CIs Worldwide

- HTC
  - EGI (formally European Grid Initiative)
  - OSG (Open Science Grid)
  - ASGI (Asia Pacific Grid Initiative)
  - NorduGrid
  - Earth System Grid (ESG)
  - Many other regional and national infrastructures

Some Examples of Academic CIs Worldwide

- HPC
  - XSEDE (eXtreme Science and Engineering Discovery Environment)
  - PRACE (Partnership for Advanced Computing in Europe)
  - Compute Canada
  - Greek Research and Technology Network (GRNET)
  - Centre for HPC (South Africa)
  - Many other national infrastructures

Some Examples of Academic CIs Worldwide

- Cloud
  - EGI Federated Cloud
  - NeCTaR – National eResearch Collaboration Tools and Resources
  - Jetstream (Part of XSEDE)
  - SwissACC (Swiss Academic Computing Cloud)
  - Many other national cloud infrastructures

What happens when you go home?

- DOSAR: Distributed Organization for Scientific and Academic Research http://www.dosar.org/
- You are welcome to join our bi--weekly video (Vidyo) meetings. Send request to be added to DOSAR email list to Prof. Greenwood: greenw@phys.latech.edu reference you attended the Data Science Summer School in Trieste
- If you want long-term grid access, you can request membership in the DOSAR Project

ACM-SIGHPC-RCE
https://sighpc-rce.acm.org/

- Promoting the mentoring and education of HPC professionals; and serving as a source of information about the field to other parts of SIGHPC and the larger scientific community in Resource Constrained Environments.
- Organizing sessions at conferences of the ACM.
- Organizing outreach initiatives for the exchange of information and to foster collaboration in education and research.
- Serving as a source of technical information for it's members, the Council and other units of the ACM.
- Serving as an external technical representative of it's members and the ACM when authorized by the Council or the Executive Committee of the ACM;
- Working with other units of the ACM on technical activities such as lectureships or professional development seminars.

Science Gateways Research Center

- https://sciencegateways.org/
- Abstract complex cyberinfrastructure from researchers
- Behind Web UI or Client
- Provide Consulting and Development Effort in Gateway Creation

Apache Airavata

- https://airavata.apache.org/
- Software framework that enables you to compose, manage, execute, and monitor large scale applications and workflows.
- Distributed computing resources such as local clusters, supercomputers, computational grids, and computing clouds.

Other Things to Consider

- Join ACM SIGHPC RCE
- Join and RDA IG/WG
- Just like DMP you should consider computational resources during the planning stages of your research
- If you develop code, use static analysis tools
- Pass on to your colleagues and collaborators the things you've learned

Questions?

- Questions? Comments?
  - Feel free to ask me questions now or later:

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Exercises start here:

https://opensciencegrid.org/dosar/SaoPaulo2018/Materials/

Presentations are also available from this URL.