

Some Odds and Ends About Computational Infrastructure

Rob Quick <rquick@iu.edu>

Associate Director Science Gateways Research Center
Manager High Throughput Computing



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)
 - NCC (Brazil)



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





Open Science Grid

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.



- <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:
Rob Quick rquick@iu.edu

Exercises start here:

<https://opensciencegrid.org/dosar/Trieste2019/Materials/>

Presentations are also available from this URL.

