IRIS – A Co-Designed Common Distributed e-Infrastructure

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UK Atomic Energy Authority

iris

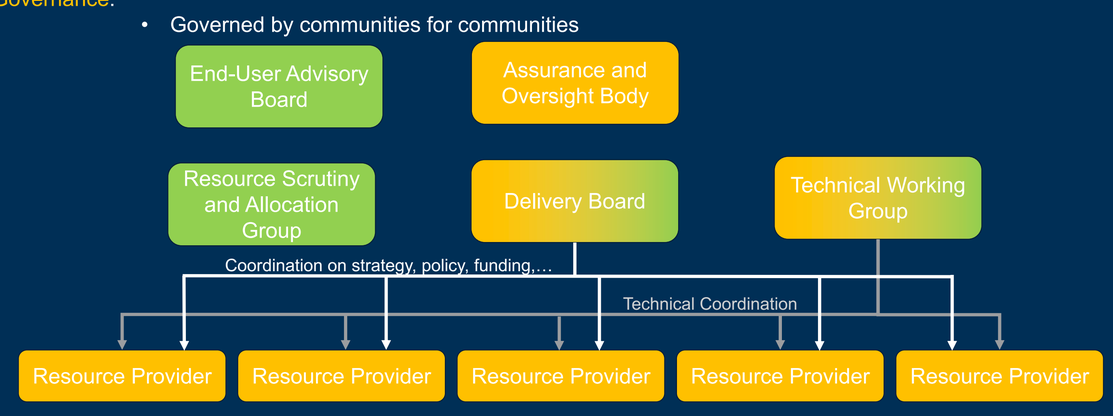
Background:

STFC Computing Review 2015:
"All STFC programme areas anticipate an order of magnitude increase over the next five years in data volumes, with implications for requirements for computing hardware, storage and network bandwidth…. Longterm planning will be critical, as will more efficient use of resources.
The scientific disciplines supported by STFC should work more closely together to find ways of sharing computing infrastructure, with new projects encouraged to make use of existing expertise and infrastructure. "
STFC e-Infrastructure Strategy:
"By co-operating across organisational and project boundaries to make UKT0 a reality it will be possible to ensure the consolidation of computing resources and provide HTC access in a cost effective manner."
Investment:
2017 - £1.2M for "under supported" communities (~3000 cores, 3PB disk)
- £300K for "digital assets" to support facilities (data movement service, virtual machine manager, openstack federation…)
2018 – £16M over 4 years
- £4M for further "digital assets"

Evolution:

Bottom-Up Approach:
- Formed by communities working together
  - Not driven by existing e-Infrastructures or projects
- Interfaces to Infrastructure defined by communities
  - the infrastructure adapts to the community needs not the other way around
- Share where it makes sense
  - scalability, reliability, collaboration are all essential
  - Make use of local infrastructure where best suited
- Make use of and discover synergies
  - Communities better able to share experience with cross fertilization of ideas

Governance:
- Governed by communities for communities



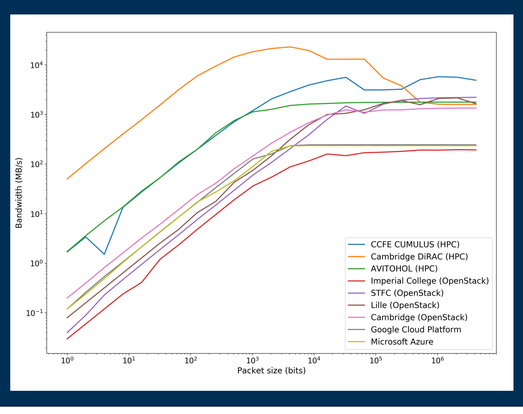
Deployment:

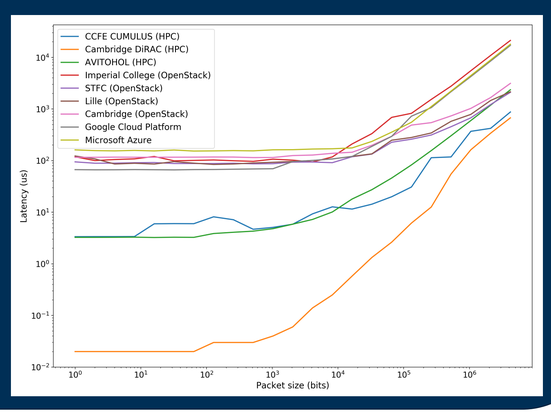
Commodity HTC + Storage:
- Q42014: 4200 cores + 4PB disk
- Q32019: 7700 cores + 9.6PB disk + tape
- Q40219: 12000 cores + 16PB disk+ tape

Specialist:
- Large memory machines (0.5-1.5TB)for radio astronomy & GAIA
- High Performance Storage for CLF and DLS
- Support for large scale astronomical archives (CASU + WAFU)

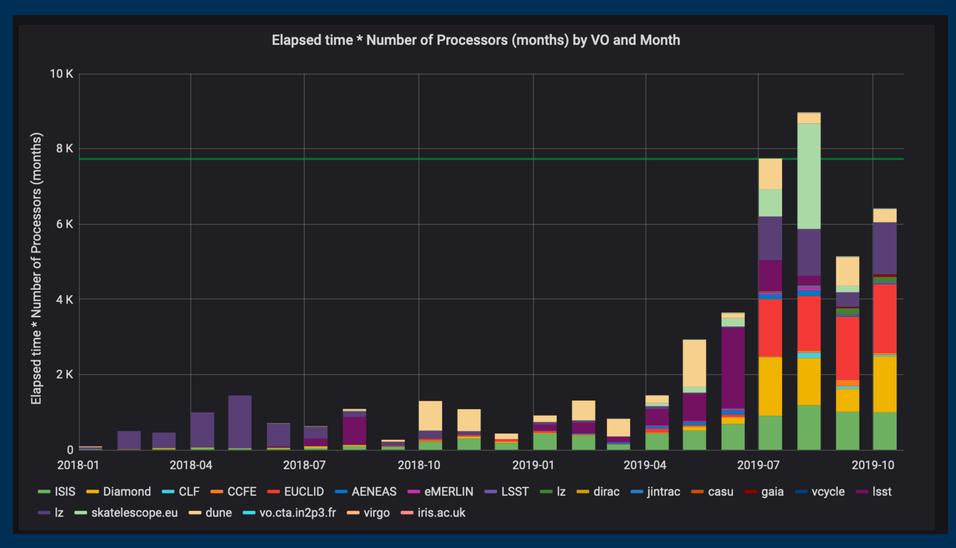
Software:
- Data Analysis as a Service (DAaaS) for ISIS, DLS, CLF and RSI
- TUX (Tomographic User Experience) for ISIS and DLS
- OCTOPUS Imaging Cluster for CLF
- DITTO high speed object transfer service for CCFE

Performance:

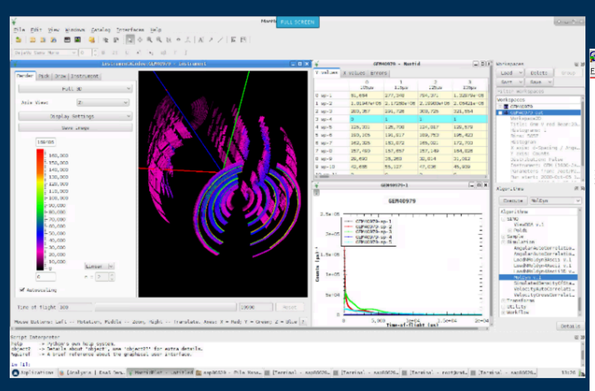


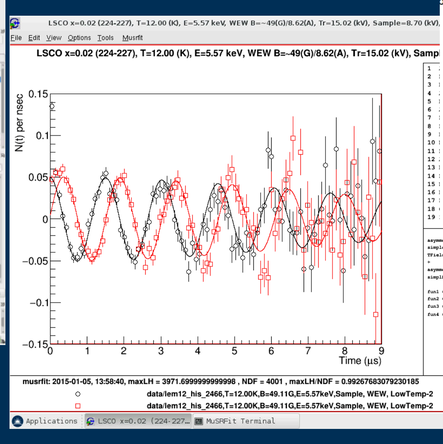


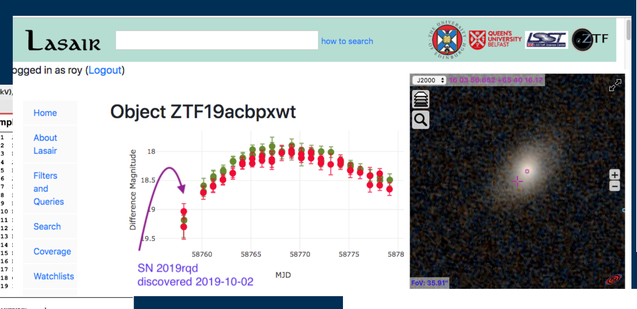
Usage:

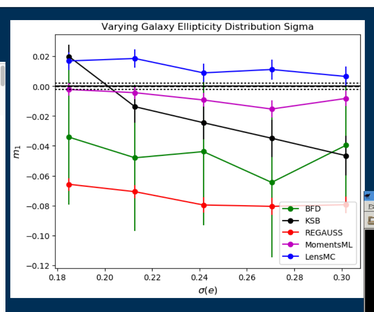


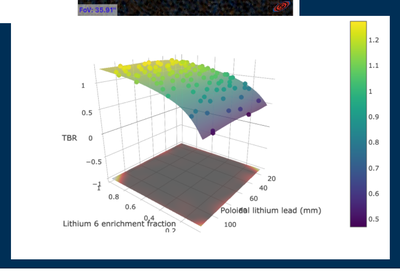
Results:

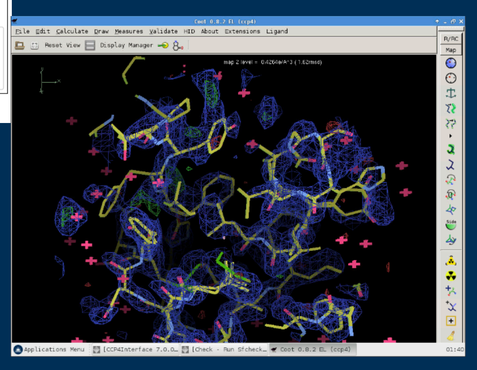












The UK Atomic Energy Authority's mission is to lead the commercial development of fusion power and related technology, and position the UK as a leader in sustainable nuclear energy

Find out more
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