IRIS (UK)
eInfrastructure for Research and Innovation for STFC

WLCG/HSF Meeting
22-Mar-2019
JLAB/ Virginia

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On behalf of IRIS Community
This talk

ARCHER HPC - 10 PFlop
STFC

National Laboratories

Large scale Facilities

(Science) Programmes

National Facilities:

Diamond Light Source
ISIS (neutrons)
Central Laser Facility
RAL Space

Supports programmes
HEP,
Astronomy,
Astro-Particle,
Nuclear
Computing Provision from STFC

STFC

National Laboratories
Science & Technologies

Hartree Centre
Scientific Computing Department (SCD)

(Science) Programmes

HPC Computing for Industry

Computing for National Facilities, NERC, LHC Tier1

HTC Computing for HEP

HPC Computing for Theory PP, Astro Cosmology, Solar Nuclear
Computing Provision from STFC

IRIS: a mutually consenting coordination body

HTC Computing for HEP
HPC Computing for Theory PP, Astro Cosmology, Solar Nuclear
Computing for National Facilities, NERC, LHC Tier1
HPC Computing for Industry

STFC
National Laboratories
(Science) Programmes
Hartree Centre
Scientific Computing Department (SCD)

GridPP
DiRAC
IRIS: a Community Initiative

- A Community Initiative to bring STFC computing interests together
  - Formed bottom up by the science communities and compute providers

- It is an association of peer interests:
  - Particle Physics: GridPP: LHC + other HEP
  - Astro: LOFAR, LSST, EUCLID, SKA, ....
  - Astro-particle: LZ, Advanced-LIGO, CTA
  - STFC Scientific Computing Dept (SCD)
  - Nuclear Physics (growing demand)
  - DiRAC HPC Facility
  - Diamond Light Source
  - ISIS Neutron Source
  - Central Laser Facility
  - Hartree HPC Centre
  - CCFE (Culham Fusion Centre)
As we are in an HEP meeting.....

- GridPP was of course a major part of starting this

- GridPP de-facto centralises all computing provision for HEP in UK
  - Physical Hardware
  - People to run WLCG services
  - ~ 10% of WLCG

- GridPP has provided resources to “others” since a long time
  - ~ 10% of its resources

- GridPP staff help other communities
  - on best efforts basis
IRIS - what does it do (1): Coordinate

IRIS: The Community Coordination body

Coordinates Interests & Shares Resources
Governance Structure

User Advisory Board (UAB)

Reports to

STFC Project Review Committee

Advises and receives reports

Resource Scrutiny and Allocation Group (RSA)

Delivery Board (DB)

Coordinates on strategy, policy, funding,.....

Coordinates all technical matters

Technical Working Group (TWG)

SCD

GridPP

DIRAC-HPC

University Sites

ALC

HARTREE

..........
What does it do (2): argue for resources

IRIS: The Community Coordination body

Represents eInfrastructure up the chain

Argues for resources

Owned by

Astronomy
PA
Particle
Nuclear
Hartree
SCD
ALC
DLS
ISIS
CLF

Owned by

IRIS:
The Community Coordination body

Represents eInfrastructure up the chain

Argues for resources

STFC
UKRI
BEIS
(Gov.)
What does it do (3):
Spends money with actual “providers”

IRIS

Provides ££££ for additional CPU and storage resources via

SCD  GridPP  DiRAC

Run hardware & supports communities where possible

DLS  ISIS  LZ  LIGO  CTA

CLF  All Particle  SKA  LSST  ???

Note: IRIS is not funded consistently - capital only - no staff for support
IRIS: “what has IRIS ever done for us”
Established spirit of consenting cooperation

- This does not come by top down edict
- This comes by establishing trust slowly
- By helping people on their own terms
- Can never be taken for granted - so needs constant work
• 2017:
  • £1.5M Capital for hardware

• 2018:
  • £16M (4M p.a. for 4 years)
  11.5M Capital for Hardware
  5.5M for RSE staff (Research Software Engineers) but NOT for HEP

• 2018:
  • Case presented to UKRI for long term investment of ~ £20M p.a.
  • Lots of “Roadmaps” written
    • Cloud
    • Data&HTC
    • HPC
    • Networking
    • Software and People
• 2017:
  • £1.5M Capital for hardware

• 2018:
  • £16M (4M p.a. for 4 years)
    11.5M Capital for Hardware
    5.5M for RSE staff (Research Software Engineers)
  but NOT for HEP

• 2018:
  • Case presented to UKRI for long term investment of ~ £12M p.a.
  • Lots of “Roadmaps” written
    • Cloud
    • Data&HTC
    • HPC
    • Networking
    • Software and People

Obtained significant funds & lobbied for more
Deployed physical resource:
- 2018: 8000 cores + 7 PB disk + tape
- 2019: 14000 cores + 14 PB disk + tape

Invested in some software development:
- Deployment of OpenStack federation/deployment tools
- Developing Rucio for multi-community use
- Developing DIRAC for multi community use
- Advancing AAAI across STFC

Includes:
- LSST
- SKA
- EUCLID (Satellite)
- Lux Zeplin
- DUNE
• RSAP
  - Modelled on RRB/CRSG
    [ & DiRAC RAC ]

• Partners provide annual resource requirements doc
  - Justify resources
  - Not science

This means the “co-operative” is so far trusted to disburse its own funds for benefit of its partners using internal due diligence
• All user communities are different
  - Sociology
  - Tradition
  - Support for computing (or lack thereof)
  - Scale of their computing challenge
  - Stage of their computing challenge

• One cannot/should not (aggressively) tell other communities that they should do it your way.
  - Particularly don’t say we have “solved all this so you should use it”
  - It is irrelevant whether this is true or not ➔ Other Communities have to come to problems by themselves

• So you have to help them do what they feel they need to do “at this time”
• Most other communities (in UK at least) do not, and will never have, a distributed computing problem
  - So they probably don’t need WLCG technology

• But some do: SKA
  - SKA SRC (Science Regional Centre) people know they have a lot of data and a distributed computing challenge.
  - They are working with CERN, and working with GridPP in UK
  - In UK happy with Grid+DIRAC so far
    - Looking at Rucio

• Other examples:
  - Case study: EUCLID
  - Case study: LSST

Enabled by local expertise and good will in IRIS sites
• Many other communities need > 2 Gb/core