



# GridPP

UK Computing for Particle Physics

## Computing future News & Views

GridPP36

Pitlochry April 12th 2016

Pete Clarke  
University of Edinburgh



**GridPP**

UK Computing for Particle Physics

Backdrop

UK-T0

SKA

UK investment in e-Infrastructure

EOSC



- **Consolidation and sharing of e-Infrastructure**
    - Many.. many .. discussions going on around consolidation and sharing of e-Infrastructure
    - **Its fractal**
      - Within WLCG
      - Within STFC across PPAN and facilities (UK-T0)
      - Within UK at RC-UK and BIS level
      - Within Europe
  - **Computing Strategy Review**
    - Published by last meeting
  - **CSR outcome**
    - At PP Town Meeting (Sussex IoP) it was said we face flat cash again -> this will be hard
    - This means pressures of last years will continue for next years
    - Confirms that if nothing else changed then tension between Consolidated Grants ⇔ GridPP would remain
- ➔ the backdrop for STFC communities to get together is stronger than ever

# Computing Strategic Review



## Computing Strategic Review

December 2015



### Recommendations:

- PPAN
- Facilities
- Engineering
- External
- Hartree Centre
- Cross Programme

### Particle Physics, Astronomy and Nuclear Physics Research Programme

1. STFC should plan for an order of magnitude increase over the next five years in the computing hardware, storage and network bandwidth available to PPAN researchers. The existing hierarchy (from Tier-1 to Tier-3) should be maintained and strengthened whilst ensuring access to a diverse set of compute resources (high-memory, data intensive, high throughput, massively parallel).
2. STFC should ensure that access to Tier-0 scale computing remains available to those PPAN researchers who require it.
3. STFC should make it easier for the PPAN community to access computing resources. Resources should be better publicised and guidance provided to ensure that projects are making use of the most appropriate resources. When required, assistance should be provided to people moving up (or down) the tiers.
20. STFC-funded R&D or construction projects should be asked to provide a plan for computing from the earliest stages of project planning and provide STFC with updates as plans and costs develop during the project's lifetime. This is intended so that STFC can have a coherent picture of future expectations for planning purposes.
21. New research projects should be expected to seek advice from more advanced projects that already employ long-term cost modelling around computing needs and, if appropriate, develop partnerships to make use of shared resources.
29. STFC needs to provide guidance to grants panels on the role for software engineers and data scientists in research projects and how to handle funding requests for such posts.



- **UK-T0 is established**
  - STFC management are fully aware of initiative
  - Astronomy activities are fully aware, and open to collaboration
  - There is a good spirit of “lets work together”
- **Meetings so far have proved useful for information sharing**
  - First face-to-face meeting was Oct 21/22 at RAL (approx 50 people)
  - Monthly telephone meetings 25<sup>th</sup> November, 27<sup>th</sup> Jan, 24<sup>th</sup> Feb
- **Short term new community activities “using what is there in GridPP-like way”**
  - DiRAC tape store ✓
  - LSST (>160,000 core hours used) ✓
  - CCFE ✓
  - EUCLID starting
- **The longer term requires investment**
  - To develop some national scale solutions
  - To make infrastructure services more agnostic to the user activities
  - To provide activity specific staff needed by other activities
  - To provide marginal costs of capacity hardware, operations and services staff
  - ....



# Tom's recent summary

- #####Communities engaged during GridPP4+
- 
- #####Research users
- 
- \* GalDyn: Contact re-established with GalDyn group (UCLan) - contact now submitted thesis and looking to continue research by moving to large-scale simulations on the grid after renewing their expired grid certificate.
- 
- \* PRaVDA: Contact re-established with Tony Price of the PRaVDA group. It turns out that they have successfully used grid resources for their simulations and have been working on the actual device itself - hence the lack of updates. Simulations to resume. Great support from the local Ganga team (MS/MW), currently looking at integrating file catalogs with DIRAC and Ganga.
- 
- \* SuperNEMO - looking to resurrect the VO - ongoing. Major barrier seems to be lack of time/resource from new user(s).
- 
- \* Climate change (Oxford) - GRIDPP-SUPPORT email list working well to support new user from a climate change group at Oxford. Some issues with using a GridPP CernVM from the university network - NAT networking not working (see LIGO below). To bypass this they have been given an account on the Oxford cluster (thanks to Ewan M!). Testing now proceeding as planned.
- 
- \* SNO+: Matt M (QMUL) has been given considerable assistance via the GRIDPP-SUPPORT mailing list with setting up a Grid FTP endpoint in the SNO+ cavern to allow data transfers to the grid (i.e. the outside world). Test transfers have been conducted, now waiting for it to be used in anger.
- 
- \* LSST: Thanks to Alessandra the LSST effort is now going great guns with thousands of jobs being submitted with DIRAC using the Ganga interface.



## Science Domains remain “sovereign” where appropriate



Share in common where it makes sense to do so



# GridPP

UK Computing for Particle Physics

Its fractal - it applies at UK level

Many discussions going on in this context (PDG, RCUK, NEI meetings)

Particle

bio

.....

.....

Federated  
HTC  
Clusters

Federated  
Data  
Storage

Public &  
Commercial  
Cloud  
access

Services:  
Monitoring  
Accounting  
Incident  
reporting

AAI  
VO tools

Tape  
Archive

.....





- SKA is set to become one of the the largest STFC data intensive projects
- SKA is currently working out what its regional data centres should look like
- The European Science Data Centre (ESDC) is important to STFC
  - H2020 Project submitted (ANEAS)
  - Response to a targeted H2020 call to design the SKA ESDC (European Science Data Centre)
  - The key work package is led by Manchester astronomers
  - SCD/RAL are partners - helped in preparation
  - SKA work package leader is keen to collaborate with GridPP
- This is an opportunity to cross boundaries, and be very helpful.



# Case for e-Infrastructure investment

- **PPAN science + STFC facilities need substantial investment in e-Infrastructure**
  - We are involved Involved in making the case “up the chain” for e-Infrastructure funds
  - This is through:
    - Project Directors Group (PDG)
    - RCUK e-Infrastructure Group
    - UK NEI meetings
- **The famous spreadsheet**
  - In mid January a spreadsheet was submitted to BIS via RCUK
  - This contained a substantive line indicating the requirements for PPAN computing for 5 years
  - Many 10s of £M
  - Included staff element
  - [This was update of a previous version which had separate GridPP/SKA/Astro-archive.. lines]
- **Timeline**
  - Jan STFC in agreement
  - Jan 22 RCUK+PDG+BIS meeting → wants cases
  - March CSR outcome known → unclear if any of this is expected to be within CSR allocations
  - March 14<sup>th</sup>: PDG-RCUK-NEI meeting to discuss further
  - April 26<sup>th</sup>: Next PDG-RCUK-NEI meeting
- **BIS have the information**
- **It is essential to keep pushing on this**



- **Seen as an important EU theme**
  - Many discussions/workshops...etc have been held,
- **However there is still much uncertainty as to what it is:**
  - A widely scoped thing to serve all possible communities
  - Mainly about a data cloud - and making data more available
  - Nothing to do with cloud infrastructure as we mean it
- **It remains unclear as to what is expected in response to the current call INFRADEV-4 “European Open Science cloud” : 10M Euro**
- **Unclear who has the mandate /will /ability to lead it**
  - Many discussions with other EU funding agencies (through EU-T0), with RCUK
  - A set of discussions with EU funding agencies, CERN, EGI and EUDAT
  - ....
- **Best guess**
  - This won't affect any computing infrastructure for LHC any time soon
  - It won't provide any co-funding any time soon
  - We (CERN, STFC, and us) are tightly involved in trying to “direct it”
  - We have to position ourselves to be good supportive partners



- Hybrid Clouds - CERN are pushing this



**GridPP**

UK Computing for Particle Physics

# Discussion - Questions ?