



GridPP

UK Computing for Particle Physics



UNIVERSITY
of
GLASGOW

GridPP31 Planning for GridPP5

GridPP31

24th Sep 2013

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GridPP Project leader
University of Glasgow



- Spending Review (CSR 2013) outcome.
- STFC Programmatic Review (2012/13).
- Evolution in Europe (EMI finished, EGI final year).
- Evolution of the Computing Models.
- Development of the UK e-ecosystem (ELC, PDG, SIGs etc).
- Development of GridPP5 proposal.



- Announcement in June: Ring fenced flat-cash to BIS for operational science budget.
- The art of Tucking (e.g. Talk of MRC funding being moved to Department of Health).
- Negotiation/competition with/between Research Councils.
- STFC budgets for 14/15 and 15/16 won't be known until December (?)
- GridPP5 scope can't be fully defined until that point.



- Review has been performed.
- Science Board met in May and June to review input from sub-groups and agree recommendations to Council.
- Presented to Council in July (?)
- The report is a contextualised report setting out long term priorities.
- Meeting on Oct-14th has been repurposed.

“We plan to publish the final Programmatic Review report once the STFC budget allocations arising from the Spending Review are known; we will then be able to understand how to apply these recommendations to the programme.”



- EGI ends in April 2014.
- Any new funding would not start for at least 6, and possibly 9, months.
- Bridging extension being investigated (using underspend and subscriptions).
- Vision of what is being bridged-to, is unclear because both EU-funding and subscription levels are unclear.
- JISC aren't going to fund the UK EGI subscription after this year (which was partly funded by GridPP anyway).
- RCUK are setting up a review of it in terms of its value for the UK.
- Tucking ensues.



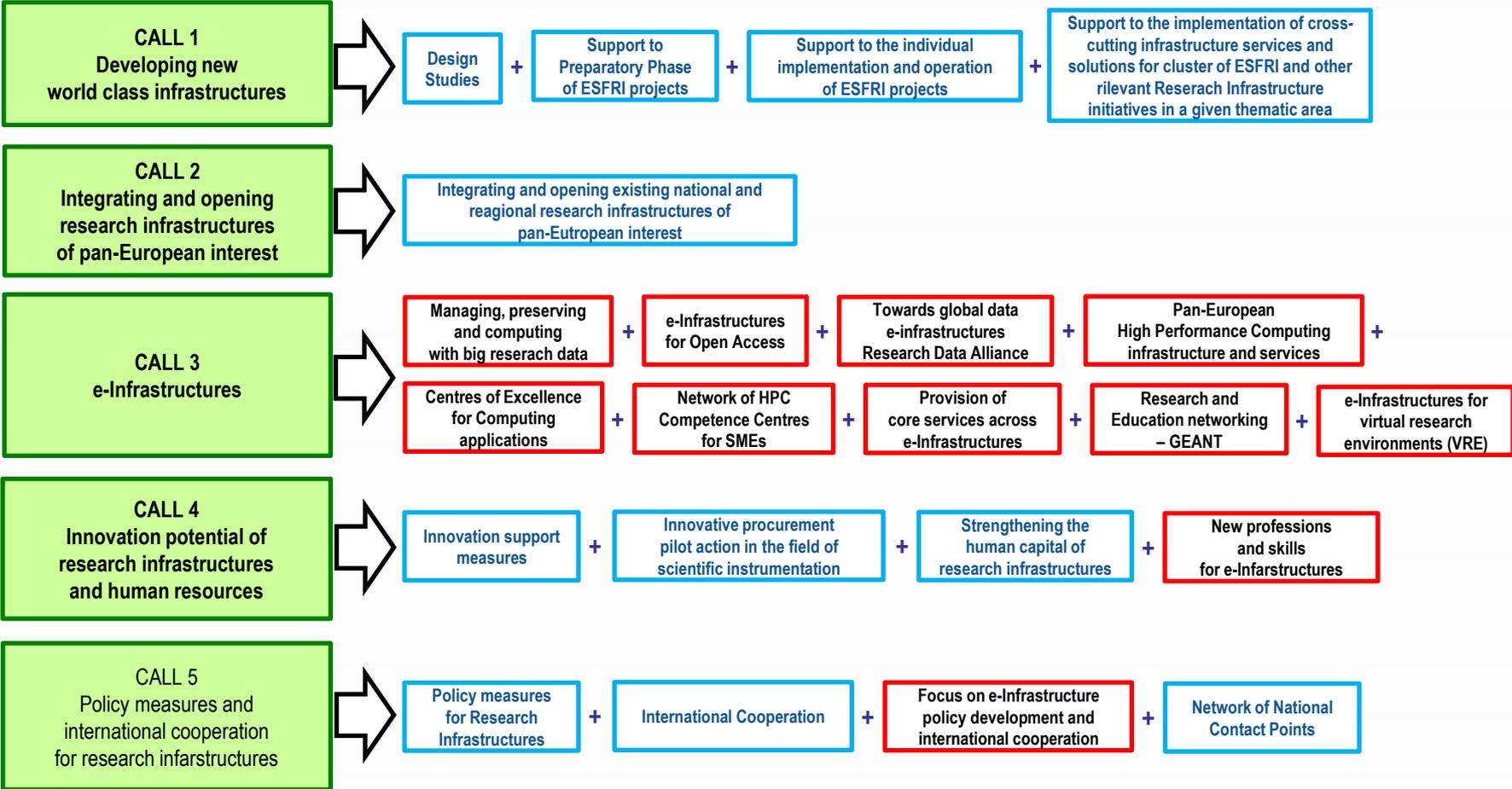
(Luis Busquets)

- → HORIZON 2020
- Main action → WP 2014-2015 on European Research Infrastructures
- E-infrastructures topics → unit mission
- Expected Budget under discussion
- Meeting with Member States:
 - 2 October 2013





RESEARCH INFRASTRUCTURE Draft Work Programme 2014-2015

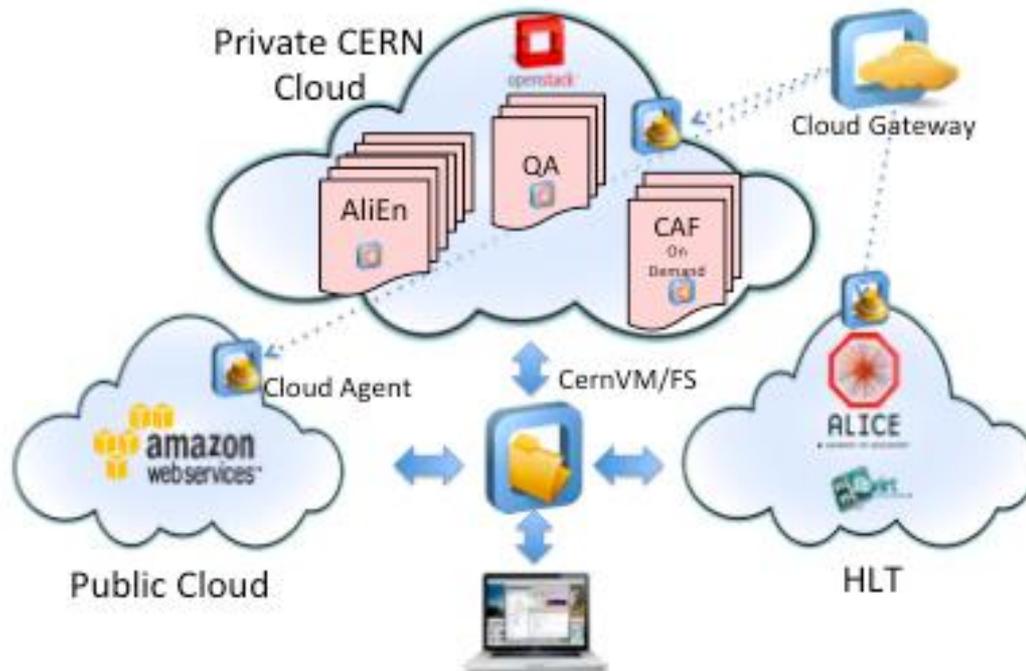




Evolution of Computing Models

Worldwide LHC Computing

Computing Model Upda



E.g. ALICE

Figure 2: Using CernVM family of tools as a foundation for future ALICE grid on the Clouds



- Figure showing Eco-system
- The e-Infrastructure Special Interest Group is an industry-led activity sponsored by the Technology Strategy Board to build on UK strengths in the design and exploitation of high performance computing.
- 27-June: Big Data Workshop leading to Big Data SIG: To help to form a cross disciplinary research community whose activities are being enhanced through access to volumes of data that were previously impossible to acquire or process. This community will be formed both from researchers and from resource providers.
- 23-July: Cloud and Virtualisation Workshop.
- 24-July: JANET-led high-throughput networking SIG meeting.
- Formation of the JANET-led AAI working group encouraged by the RCUK e-infrastructure group (Cyber Security, Information Assurance and Access Working Group). This subsumes the UK3A proposal we wrote last year.
- Education and Training strategies.



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The e-Infrastructure Pipeline

Redacted



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“Data is the new oil.”

“Data is the life blood of the knowledge economy and the elixir of innovation. It is magical because if you give me your car you no longer have it and no wealth is created, but if you give me your data then we both have it and can exploit it, and wealth is created.”

Big Data characteristics:

- **Volume** - talking petabytes, or at least 100s terabytes.
- **Variety** - Can be structured or unstructured or a a mixture.
- **Velocity** - A big driver: need iterations in O(day).
- **Veracity** - Accuracy... “dirty-data” is common but harder to handle.
- **Value** - What is the information worth? Very much a driver of the technology.



No intention of throwing away our (brilliantly) working Grid. But, (in addition) a cloud interface to some of our Grid resources would;

- could* allow us to offer a simplified experience to new user groups (academic and/or pre-commercial work with industry);
- gain understanding of the cost and performance of commercial clouds;
- match aspects of the developing experiment computing models.

*but not if it's a clunky home-grown thing!



- Dave Colling has been leading the GridPP cloud investigations; Synergistic with CMS work to use HLT and linked into both the EGI federated cloud and the UK cloud SIG.
- Despite the stage on the Hype-cycle (see GridPP30 talk) there is a lot going on around Clouds.



CSIC Scientific Cloud

- IFCA — CSIC Cloud infrastructure is being user by a broad range of scientific users since 2011.
- Starting from a set of virtualized resources and a separated small cloud testbed, we have moved to a complete cloud integration¹.
- We have worked closely with our users to adapt their workloads to a Cloud environment whenever we have seen that they will profit from it.
- From our experience, we have obtained a set of common requirements that are needed form a Cloud testbed to be suitable to accommodate scientific computing.

FutureGrid Testbed as a Service

- FutureGrid is part of **XSEDE** set up as a **testbed** with cloud focus
- Operational since Summer 2010 (i.e. has had three years of use)
- The FutureGrid testbed provides to its users:
 - Support of **Computer Science** and **Computational Science** research
 - A flexible development and testing platform for middleware and application users looking at **interoperability, functionality, performance or evaluation**
 - FutureGrid is **user-customizable, accessed interactively** and supports **Grid, Cloud** and **HPC** software with and without VM's
 - A rich **education and teaching** platform for classes
- Offers **OpenStack, Eucalyptus, Nimbus, OpenNebula, HPC (MPI)** on same hardware moving to software defined systems; supports both classic HPC and Cloud storage
- Mainly support staff limited





XSEDE Cloud Use Survey

- XSEDE announced survey August 2012 and closed May 1, 2013
 - 80 cloud projects from around globe
 - broad participation: 21 disciplines + HASS
 - extensive technical data: 19 categories
 - user perspectives: e.g., cloud benefits/challenges
 - focused exclusively on use of cloud for research and education
- Full Web-based report will be available very soon
 - <https://www.xsede.org/project-documents>

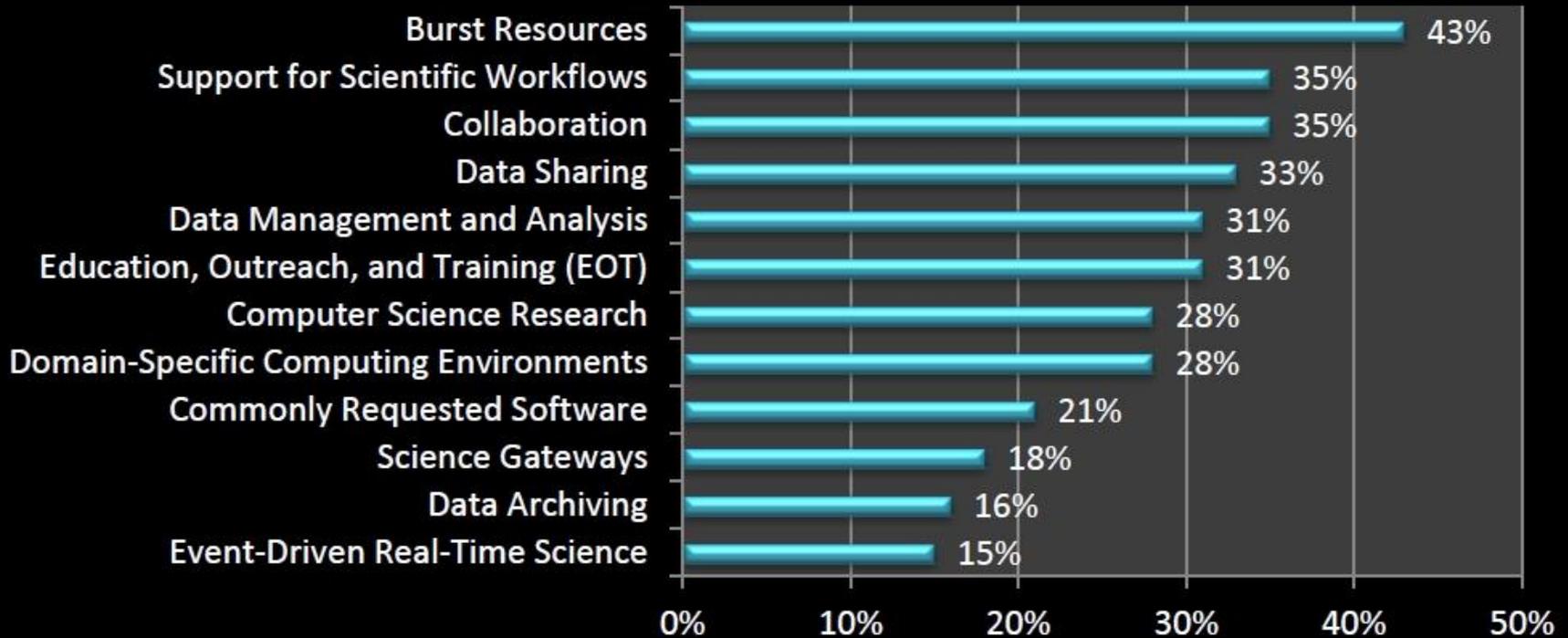




Cloud Use

What cloud use cases are represented by your research or education project? Check all that apply.

Cloud Use Cases





Summary so far...

So:

- We don't know what CSR-2013 means for STFC.
- We don't know the outcome of the STFC programmatic review or what it means for GridPP.
- We see an explosion of SIGs/forums/groups springing up around UK e-infrastructure - context is more complicated.
- We don't know how EGI will evolve or if/how UK involvement in EGI will continue.
- We don't know all the details about where the experimental computing models are going, or how quickly.
- We do know we have to write a new GridPP proposal.
- Good, lets get started...



- **Agenda Day-1**

- Requirements (talks from experiments and vision from Ian Bird as to where CERN/wLCG are going).
- A discussion on the technology: How are we going to meet these requirements?

- **Agenda Day-2**

- The case for the Tier-1: A look back at what we did and a look forward at what we need to do.
- The case for the Tier-2s: A discussion session on the Tier-2s. What are the strengths and weaknesses of the current arrangement?
- The additional services (security, accounting, CA, etc.).



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Erika Check Hayden

04 September 2013

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The work would not have been possible without the genetic sequence data now available for dozens of different mammals — including four newly sequenced bat genomes — and the use of the Queen Mary GridPP High Throughput Cluster, a powerful computing grid. GridPP is normally used to churn through data from the Large Hadron Collider at CERN, Europe's particle-physics lab near Geneva in Switzerland. It took Rossiter and Parker's team roughly a month to perform its analyses using the cluster; it would have taken years on a desktop computer, Parker says.



Tier-2 Hardware

- Approximately £1.8m to spend on Tier-2 Hardware in the remainder of GridPP4.
- Three institutes have asked for the funding this FY - STFC has agreed.
- Propose to use accounting at the end of this month to determine the share for those three institutes.
- Remainder of funding will be distributed in the new FY according to the accounting at that point (proposal).



- GridPP Oversight Committee reconvenes after a 2.5 year hiatus, on Nov 1st.
 - Project Status
 - Resource Report
 - Preliminary discussions on GridPP5 and the timetable.
- Possibly another OC around February (?) 2014 to finalise GridPP5 project planning.
 - STFC are aware of requirement to issue grants 6-months before end of GridPP4.



- Due next week.



Provisionally 26th and 27th March 2014 in
Pitlochry (Scotland)

