

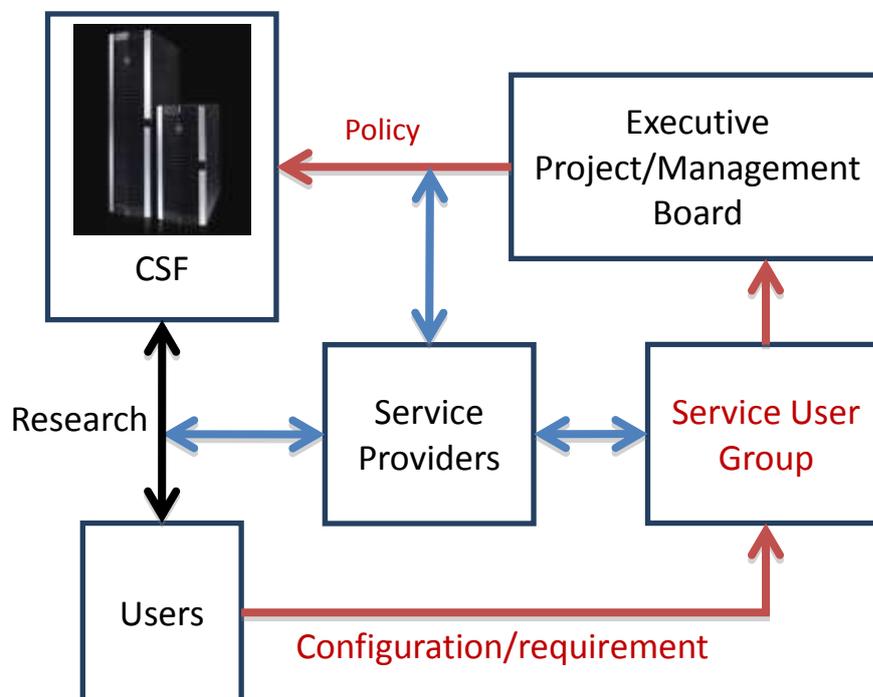
Computational Shared Facility: Summary of the User Group Meeting, Friday 11th March 2011

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- Introduction
 - Terms of Reference of the user group were presented: The group is constituted of the contributors to the CSF (or their representatives). The group is facilitated by representatives from IT Services for Research (ITSfR) and the views of the group are enacted by the Management Board (yet to be defined):



- Project overview was presented by Dr Simon Hood. Slide details from Dr Hood's presentation are included in Appendix 1.
- Computational Science Support and the key points of the CSF Service Level Definition (SLD) document were presented Dr Robin Pinning. Support for the facility is available at various levels from the IT Services for Research (ITSfR) team, comprising members of ITS and Faculty Support. Slides from Dr Pinning's presentation are included as Appendix 1.

Main points arising from the discussion:

The CSF will be part of an integrated system – workload management will be configured to account for different architectures. The CSF is intended to be a more attractive option than individual (or School-based) clusters.

A support email is available for all CSF related queries: ITS-Research@manchester.ac.uk

The contribution model was outlined. The model is currently based on units of a Dell C6100 node with (4 x 2 x 6 cores, 48 GB, cost ca. £12500 exc. VAT). GPU-based options are also available. There will be a one-off additional sustainability payment for each unit added (plus additional storage requirements) to ensure the sustainability of the contribution model.

The University has contributed £90k to initiate the CSF project providing the current racks, PDUs, ethernet networks, head-nodes, 78 TB of total storage, system software and integrator costs, and hardware support.

The sustainability payment is based on contributions to: networking equipment (ca. £385 – ethernet networks); share of infrastructure (£125 - racks and PDU); and separate optional storage costs (eg. a tiered architecture with costs starting at £500 per 250GB of home space). The costs take account of performance hardware and the high costs of storage include filestore backup. [Action: Management Group to clarify the application and conditions of the stability payment]

Several users challenged the high costs involved in the system and it was noted that these are, and will be, a significant barrier to some new contributors. It was proposed that the contribution model should be augmented such that contributions need not be in quanta of C6100 units, and that the contributions from users could be pooled in order to buy new units. [Action: Management Group to develop policy]

Sustainability issues were briefly discussed:

Environmental: There are presently no explicit plans to better utilise excess 'heat' resources.

Operational: Power costs and usage are a major issue for the CSF and are presently included the costs borne by IT Services. Some discussion of possible inclusion of support staff costs in a future fully-costed funding model were discussed - the general feeling was that this should be addressed as part of indirect costs, and these costs will be clarified as part of the current SLD. Only software necessary for the operation of the system is included in the contribution. The discussion focussed on whether a full cost model be kept for the system. This was considered desirable and will be pursued by IT Services.

It is expected that VAT exempt contributions can be accommodated. This point can be clarified with Paul Harness (Director of ITS).

System usage will be accounted. The SLD requires contributors to make a short annual account of their use of the system – this information (impact, publications, funding from research associated with the service) are essential for input into the academic case for such computing facilities. It was noted that this type of information has been lacking or difficult to obtain in the past.

The SLD will mean that all hardware contributions can be switched off 5 years after commissioning (when hardware maintenance expires). This policy was debated. The policy is necessary to prevent build-up of deprecated/inefficient kit and to meet University energy/carbon emission reduction commitments. Although generally agreed as a concern, it was agreed that a minimum period of operation needed to be defined and efficiencies would be considered after that period. It was

agreed that some (reduced) continued access would be offered to contributors after switch-off.
[Action: Soft-landing policy needs to be clarified]

Two job-scheduling strategies were presented by Dr Hood. The second, based on using SGE fairshare scheduling, was proposed in preference to the first option, based on partitioning the job scheduling to specific contributed hardware. The fairshare mechanism was discussed and generally accepted. Concerns regarding the possible misuse of job prioritisation were raised – these aspects will be monitored and tuning of the scheduler parameters (compensation factor) will likely be necessary as the system is utilised. The effect of long-running jobs on this tuning was discussed – very long running jobs impair the effectiveness of this compensation factor. Queue and job limits were then also discussed: It was clear that a breadth of options need be implemented which include the ability for users to run parallel jobs with very long job limits; the scheduler will be configured to discourage abuse, including abuse of ‘credit’. [Action: ITS to instigate an initial configuration based on current usage and discussion – which will be reviewed after a period of operation.]

The formulation of the fairshare parameters has not been defined. Options include a share based on “compute power bought” or on the “initial financial contribution”. The policy will also need to account for an evolving system. [Action: Management Board to define the unit of a “share”]

External access (from collaborators of contributors who are not members of the University) was discussed. Provided that these users are non-commercial, and are registered as official visitors, then there are no technical reasons preventing their access to the CSF. [Action: External access policy to be clarified by Management Board]

The name of the newest CSF server was confirmed to be Danzek – chosen to reflect that the CSF “assimilates servers”. It was noted that the CSF is proving to be popular and that considerations will need to be made for the situation when the facility exceeds its current infrastructure capacity.

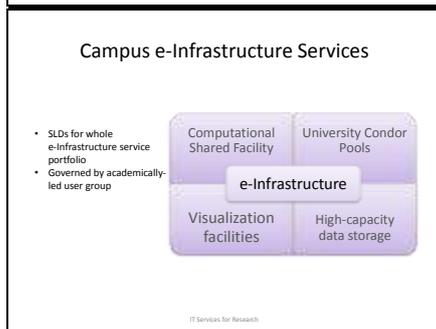
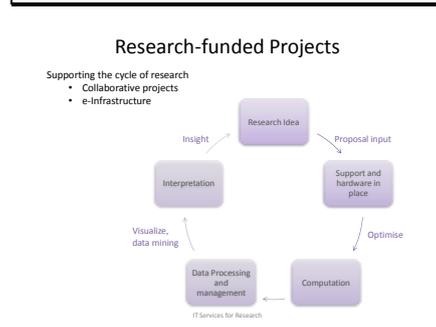
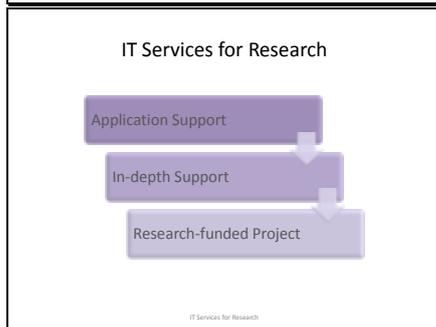
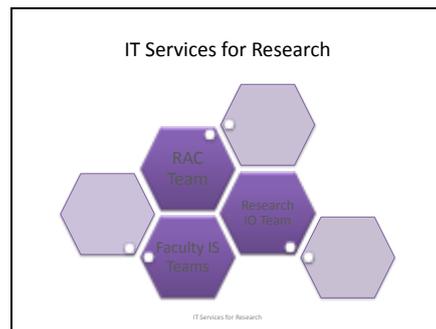
It was agreed that the role of chair of the user group is subject to representations made to the Management Board. Dr Burton agreed to the current role.

The next meeting of the CSF User Group will be scheduled for May/June 2011, and future meetings considered quarterly.

Appendix 1. Slides from the user group meeting (courtesy of Dr Pinning).

Supporting Computational Science

IT Services for Research
Robin Pinning



- SLD - Operation and Costs**
- **Mode of Operation**
 - Upgrade cycle
 - *Technology watch group*
 - **Costs**
 - *Sustainability payment*
 - Energy Costs
 - 5 year hardware service period
 - Pump priming access to unused cycles

- SLD - Resource management principles**
- Share based policy with priorities
 - Low-priority access to unused resource
 - Advanced reservation of resources for guarantee access
- Establishing a sharing principle as a driver for multi-disciplinary/multi-scale/cross cutting research*

- SLD - Sustainability of service**
- Maintain academic case - with Mi Computational Science Strategy
 - Yearly reporting
 - Publications
 - Funding
 - Case studies
 - Annual report

Further slides (courtesy of Dr Hood) on the status and CSF policies can be found at:

http://dormouse.rcs.manchester.ac.uk/~simonh/talks/2011_Mar_11_CSF_UG_Meeting/index.slideshow.html

and

http://dormouse.rcs.manchester.ac.uk/~simonh/talks/2011_Mar_11_CSF_UG_Meeting/policies.slideshow.html