HECToR Quarterly Report

October - December 2009

1 Introduction

This report covers the period from 1 October 2009 at 0800 to 1 January 2010 at 0800.

Section 3 summarises service availability and performance statistics for this quarter. Utilisation statistics are also available in Section 3. A summary table of the key performance metrics is included. Section 4 shows Helpdesk statistics.

The Appendices define some of the terminology and incident severity levels and list the current HECToR projects together with their overall utilisation profile to date.

This report and the additional SAFE report are available to view online at http://www.hector.ac.uk/about-us/reports/quarterly/4Q09.php

2 Executive Summary

- XT utilisation in 4Q09 was 57%, slightly down on 3Q09 at 61%. Further details are available in Section 3.2 of the report.

- A Capability Incentive scheme for discounting large jobs was implemented on 7th October. Initial results from this appear to be positive. Further details are available in Section 3.2.1.

- A Low Priority Access queue was enabled on HECToR on 16th December. This allows Class 1a users to run jobs which are uncharged, but which only run at times when there is a low backlog of jobs on HECToR. Further data is required in order to ascertain the success of this initiative.

- The EPSRC Resource Allocation Panel (RAP) call was announced in 4Q09. The initial meeting of the panel will be in February 2010.

- There were 8 service failures in 4Q09 as opposed to 13 in 3Q09. 6 failures were attributed to technology problems compared to 9 in 3Q09. There was one site failure in relation to a faulty UPS (Uninterruptable Power Supply). The final failure was as a result of a Linux Security Vulnerability. The overall MTBF improved on 3Q09 from 169 to 275 hours. A more detailed analysis of all service failures will be included in the HECToR Annual Report.

- The volume of single node failures has reduced from the previous quarter. There were 50 node failures in 4Q09, as opposed to 82 in 3Q09. We are continuing to track and investigate the cause of all failures. Further details on node failures will be provided in the HECToR Annual Report.

- The X2 Vector system was very reliable in 4Q09. Charging remained suspended in 4Q09, resulting in an overall utilisation of 45.6%. Further details on the impact of the suspension of X2 charging are available in Section 3.2.2.

- At the Helpdesk 1062 queries were resolved, compared to 842 in 3Q09. The main increase in volume was due to the automatic administration type queries. User feedback was varied, with a number of both positive and negative quality tokens received. The negative tokens all related to service outages.

- The HECToR Archive solution was made available for early access users in November. No major issues were encountered and the archive is now available for all users. To date over 9TB of data has been archived.

- The HPCx service closes on 31st Jan 2010. In relation to this a number of projects have recently moved resources from HPCx to HECToR. Additional HECToR introductory training has also been scheduled in order to support any new HECToR users.

3 Quantitative Metrics

3.1 Reliability

The monthly numbers of incidents and failures (SEV 1 incidents) are shown in the table below:

	October	*November*	*December*
Incidents	15	22	23
Failures	0	4	4

3.1.1 Performance Statistics

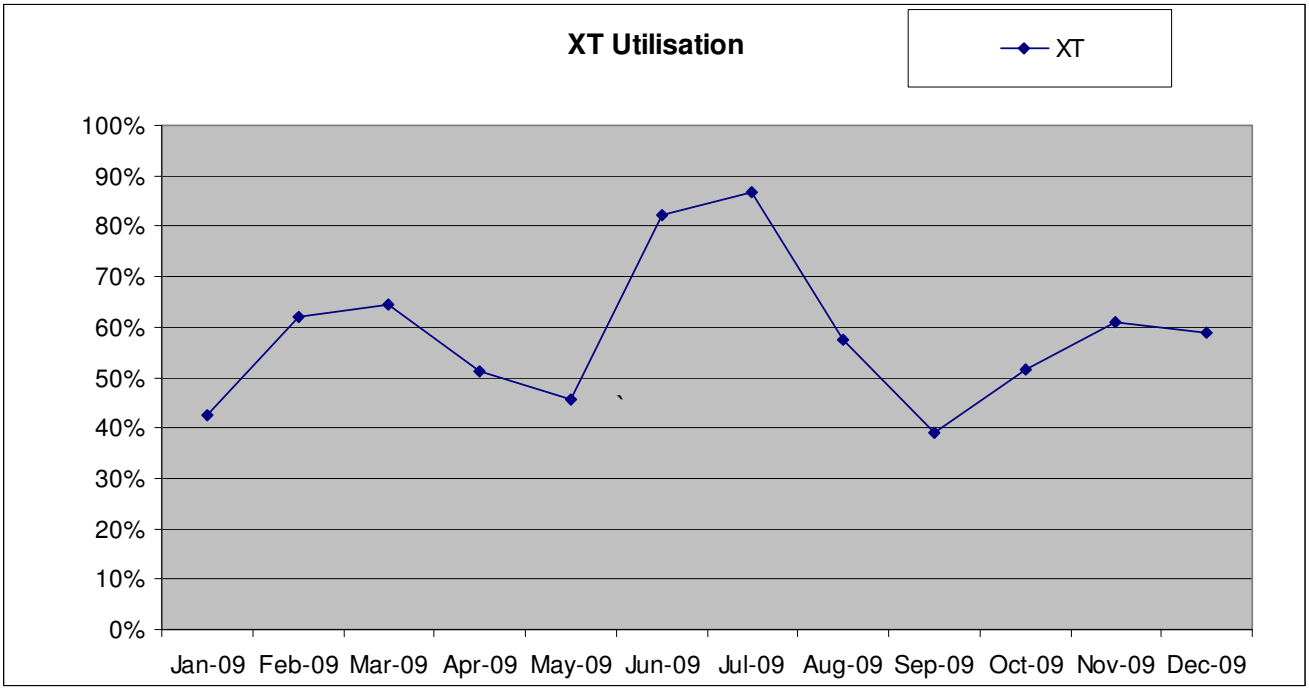
- MTBF = (732)/(number of failures in a month)

  Quarterly MTBF=(3x732)/(number of failures in a quarter)

Attribution	*Metric*	*October*	*November*	*December*	*Quarterly*
Technology	Failures	0	3	3	6
	MTBF	∞	244	244	366
Service Provision	Failures	0	0	1	1
	MTBF	∞	∞	732	2196
External	Failures	0	1	0	1
	MTBF	∞	732	∞	2196
Overall	Failures	0	4	4	8
	MTBF	∞	183	183	275

3.2 HECToR Utilisation

3.2.1 XT Utilisation



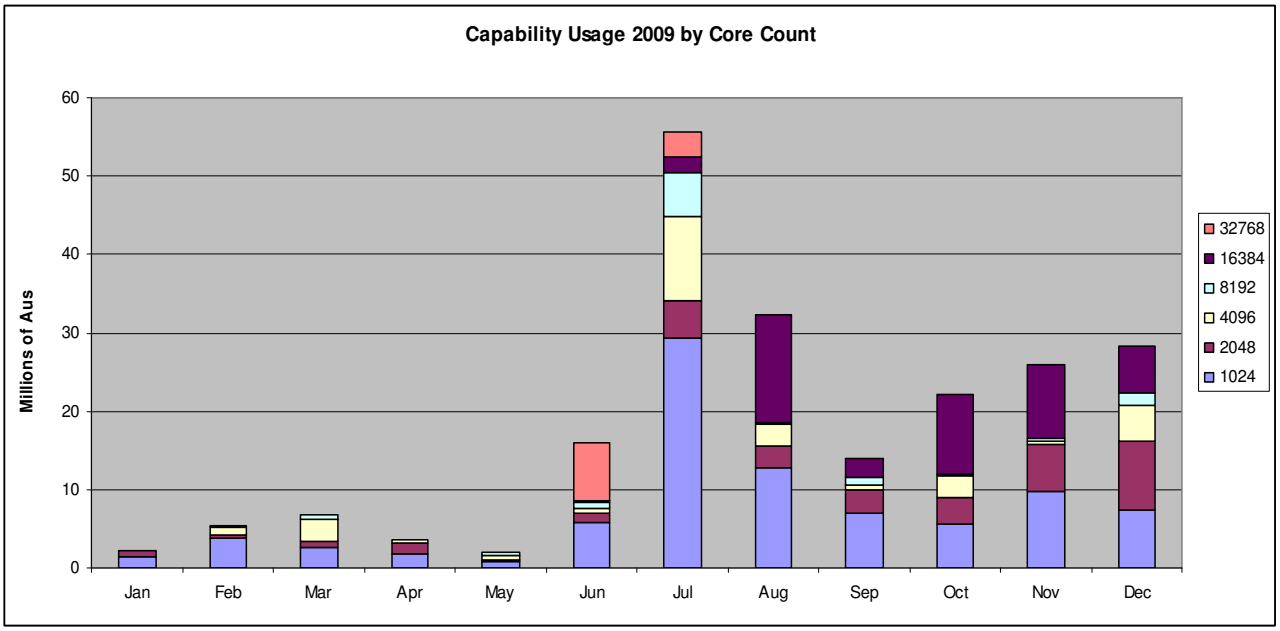
The utilisation quarterly average in 4Q09 was 57%, compared to 61% in 3Q09. The peak in utilisation witnessed back in July was as a result of the open access during the quad-core upgrade. A number of initiatives were introduced in 4Q09 in order to address concerns over utilisation.

Capability Incentives

Capability Incentives were introduced on 7th October. Jobs are now discounted as follows:

Level	***Minimum Number of Cores***	***Discount***
Bronze	1024	5%
Silver	2048	15%
Gold	4096	30%

As per the graph below, capability usage has improved since this was introduced.

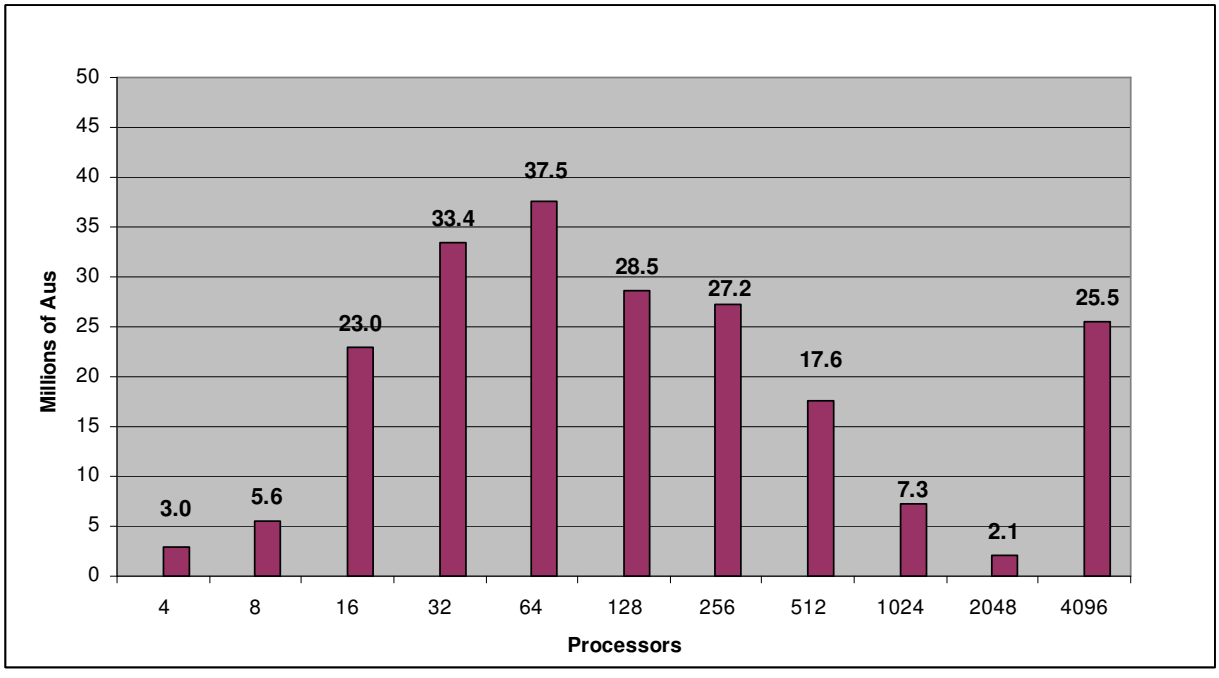


Note: The 32,768 core jobs run in June and July were Linpack runs.

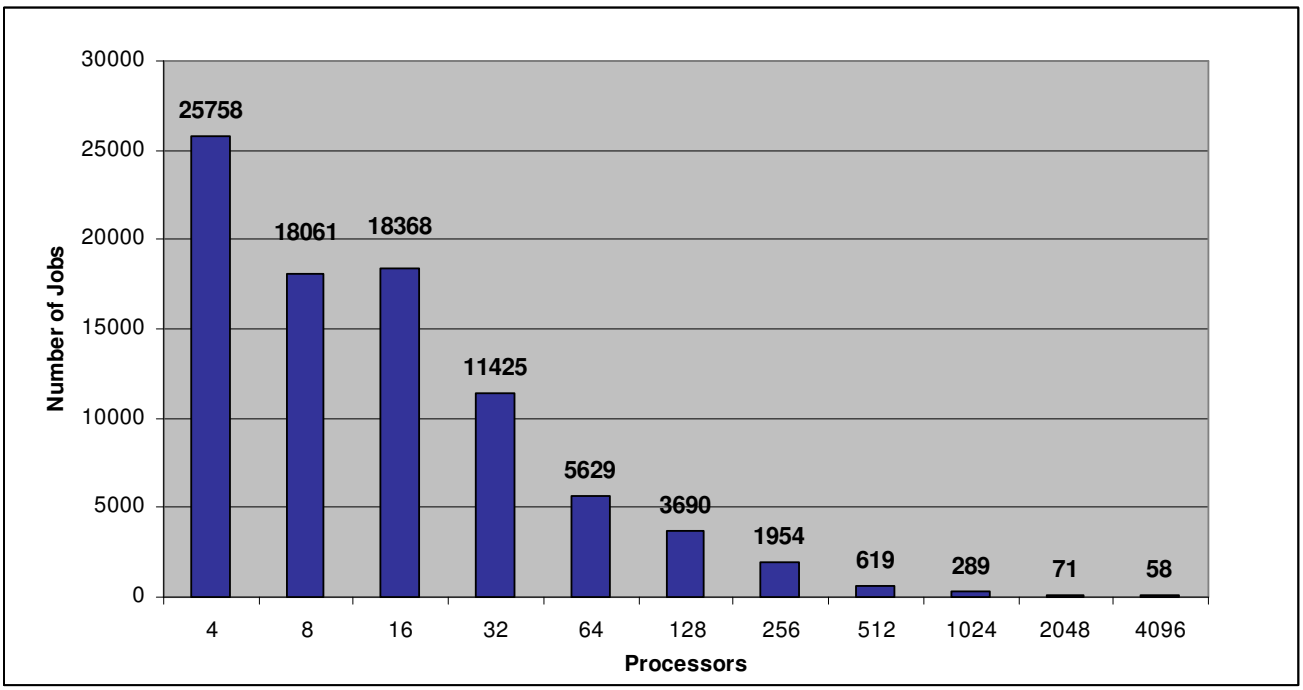
Low Priority Access

A low priority access queue was introduced on 16th December. Throughout the remainder of December, the low priority jobs accounted for 13% of the overall AUs used. Further data is required in order to ascertain the success of this initiative.

3.2.1.1 XT Utilisation by Queue



3.2.1.2 XT Number of jobs per queue

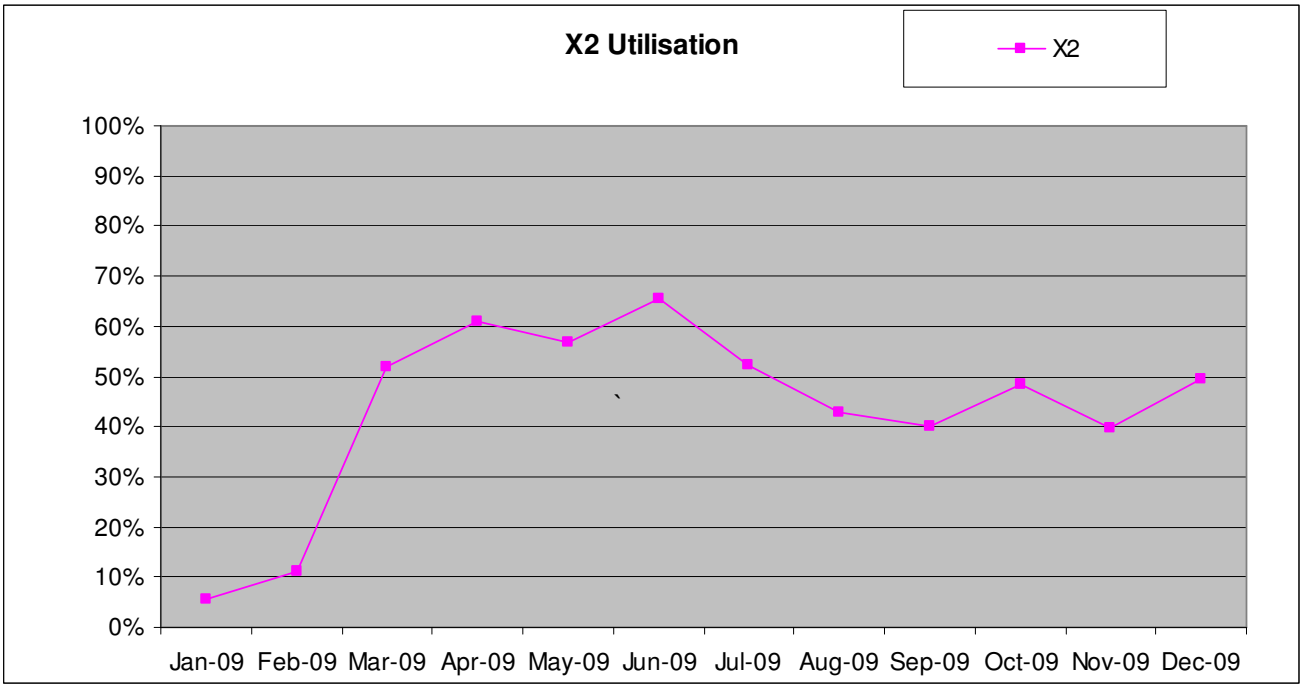


3.2.1.3 XT Utilisation by Consortium

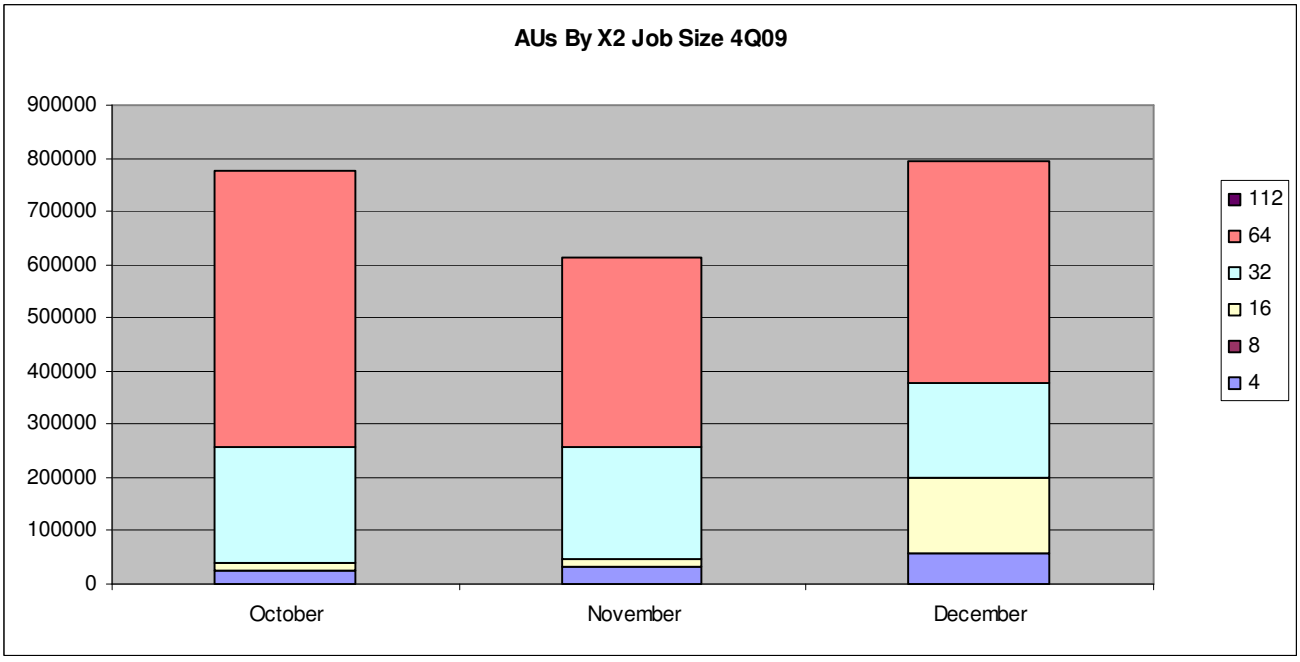
Project	AUs	Raw AUs	Low Priority Discount	Discounted AUs	Number of Jobs	%age of Use	Raw %age	Utilisation
y01	58	58	0	0	17	0.00%	0.00%	0.00%
y03	485	1,638	0	1,153	672	0.00%	0.00%	0.00%
y04	33	33	0	0	5	0.00%	0.00%	0.00%
y05	59,478	144,882	0	85,404	272	0.03%	0.07%	0.04%
y06	54	54	0	0	2415	0.00%	0.00%	0.00%
y07	3	24	0	20	4	0.00%	0.00%	0.00%
y11	0	0	0	0	1	0.00%	0.00%	0.00%
z01	112,046	137,376	0	25,330	1360	0.06%	0.06%	0.04%
z02	47,193	49,208	0	2,015	469	0.02%	0.02%	0.01%
z03	673,999	878,365	0	204,366	3334	0.34%	0.41%	0.23%
Internal Total	**893,349**	**1,211,637**	**0**	**318,288**	**8549**	**0.45%**	**0.56%**	**0.32%**
c01	1,519,444	1,788,434	0	268,991	1844	0.77%	0.83%	0.48%
e01	581,181	581,280	0	99	1624	0.30%	0.27%	0.15%
e05	18,090,780	18,256,100	0	165,320	6089	9.20%	8.50%	4.86%
e10	47,691	48,366	0	675	89	0.02%	0.02%	0.01%
e101	180,942	180,951	0	8	123	0.09%	0.08%	0.05%
e102	482,807	500,866	0	18,059	335	0.25%	0.23%	0.13%
e104	2,561	2,654	0	93	11	0.00%	0.00%	0.00%
e105	252,770	252,770	0	0	153	0.13%	0.12%	0.07%
e107	119,691	140,007	0	20,316	185	0.06%	0.07%	0.04%
e108	27,415	27,421	0	6	75	0.01%	0.01%	0.01%
e110	3,470,659	3,472,580	0	1,921	788	1.77%	1.62%	0.93%
e113	5,592	5,596	0	4	66	0.00%	0.00%	0.00%
e116	18,191	18,767	0	575	64	0.01%	0.01%	0.00%
e121	345,277	345,279	0	3	316	0.18%	0.16%	0.09%
e122	6,619,528	9,175,253	191,497	2,555,725	506	3.37%	4.27%	2.44%
e124	1,599,222	1,800,874	0	201,652	361	0.81%	0.84%	0.48%
e126	604,440	622,648	0	18,209	85	0.31%	0.29%	0.17%
e127	144	144	0	0	12	0.00%	0.00%	0.00%
e132	10,184	10,230	0	47	154	0.01%	0.00%	0.00%
e134	473	473	0	0	4	0.00%	0.00%	0.00%
e135	19,675	19,677	0	2	181	0.01%	0.01%	0.01%
e136	42,787	42,787	0	0	37	0.02%	0.02%	0.01%
e137	190,349	190,349	0	0	78	0.10%	0.09%	0.05%
e24	30,424,023	33,849,217	0	3,425,195	2699	15.47%	15.76%	9.02%
e34	11,767	11,767	0	0	29	0.01%	0.01%	0.00%
e35	929,972	1,093,910	0	163,938	19	0.47%	0.51%	0.29%
e42	9,752,448	10,735,017	0	982,569	2914	4.96%	5.00%	2.86%
e59	15	15	0	0	26	0.00%	0.00%	0.00%
e63	1,257,429	1,258,638	0	1,209	419	0.64%	0.59%	0.34%
e68	5,835,743	9,107,915	3,174,234	3,272,172	1528	2.97%	4.24%	2.43%
e70	141,624	141,624	0	0	28	0.07%	0.07%	0.04%
e71	0	0	0	0	2	0.00%	0.00%	0.00%
e72	123,609	129,764	0	6,155	56	0.06%	0.06%	0.03%

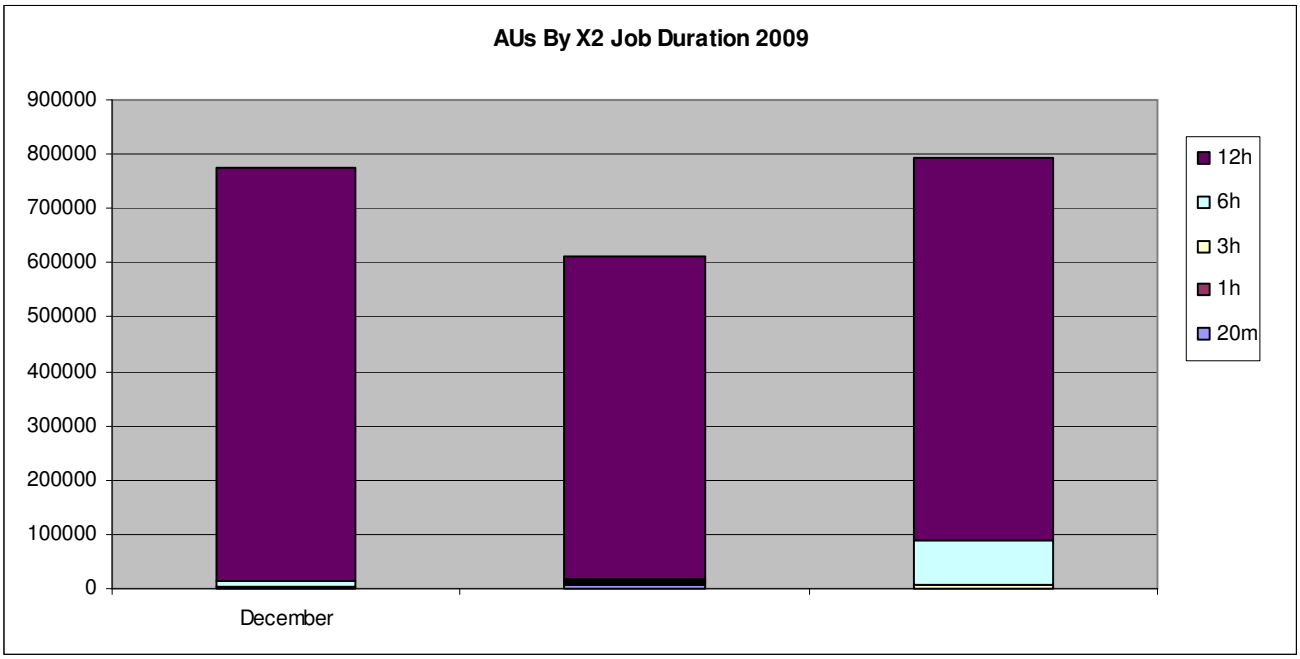
Project	AUs	Raw AUs	Low Priority Discount	Discounted AUs	Number of Jobs	%age of Use	Raw %age	Utilisation
e75	55,209	55,209	0	0	59	0.03%	0.03%	0.01%
e76	9,808,553	13,851,143	0	4,042,589	165	4.99%	6.45%	3.69%
e77	0	0	0	0	2	0.00%	0.00%	0.00%
e81	10,492	11,259	0	767	12	0.01%	0.01%	0.00%
e82	10,415	10,415	0	0	21	0.01%	0.00%	0.00%
e84	4,299	4,312	0	13	66	0.00%	0.00%	0.00%
e85	1,595,173	2,279,328	0	684,155	105	0.81%	1.06%	0.61%
e89	21,359,973	22,410,085	586,788	1,050,111	7238	10.86%	10.43%	5.97%
e90	34,908	39,218	0	4,310	169	0.02%	0.02%	0.01%
e93	64,927	64,992	0	65	225	0.03%	0.03%	0.02%
u03	1	1	0	0	1	0.00%	0.00%	0.00%
u10	93,287	115,827	0	22,540	270	0.05%	0.05%	0.03%
EPSRC Total	**115,745,668**	**132,653,161**	**3,952,518**	**16,907,493**	**29233**	**58.87%**	**61.75%**	**35.34%**
n01	5,722,684	5,793,667	0	70,983	4919	2.91%	2.70%	1.54%
n02	24,712,904	24,897,534	0	184,629	31125	12.57%	11.59%	6.63%
n03	34,661,179	34,982,170	0	320,991	10028	17.63%	16.28%	9.32%
n04	9,484,021	9,682,684	0	198,663	972	4.82%	4.51%	2.58%
NERC Total	**74,580,788**	**75,356,054**	**0**	**775,266**	**47044**	**37.93%**	**35.08%**	**20.08%**
b08	864,295	864,295	0	0	6497	0.44%	0.40%	0.23%
b09	1,667	2,323	0	655	5	0.00%	0.00%	0.00%
b10	2,705	2,761	0	57	430	0.00%	0.00%	0.00%
b11	0	0	0	0	25	0.00%	0.00%	0.00%
BBSRC Total	**868,668**	**869,380**	**0**	**712**	**6957**	**0.44%**	**0.40%**	**0.23%**
p01	0	622	0	622	34	0.00%	0.00%	0.00%
STFC Total	**0**	**622**	**0**	**622**	**34**	**0.00%**	**0.00%**	**0.00%**
T01	567,557	568,796	0	1,239	445	0.29%	0.26%	0.15%
x01	696,969	784,557	71,750	87,588	1219	0.35%	0.37%	0.21%
x04	821,218	890,496	0	69,278	220	0.42%	0.41%	0.24%
x05	9,808	9,870	0	63	311	0.00%	0.00%	0.00%
External Total	**2,095,551**	**2,253,718**	**71,750**	**158,167**	**2195**	**1.07%**	**1.05%**	**0.60%**
d03	113,433	151,619	0	38,185	278	0.06%	0.07%	0.04%
d04	1	3,191	0	3,191	198	0.00%	0.00%	0.00%
d07	703,797	714,580	0	10,783	82	0.36%	0.33%	0.19%
d09	555,627	555,627	0	0	196	0.28%	0.26%	0.15%
d11	2,374	2,374	0	0	16	0.00%	0.00%	0.00%
d14	1,046,153	1,046,244	0	91	512	0.53%	0.49%	0.28%
d15	51	61	0	9	38	0.00%	0.00%	0.00%
Directors' Time Total	**2,421,436**	**2,473,696**	**0**	**52,260**	**1320**	**1.23%**	**1.15%**	**0.66%**
Total	**196,605,460**	**214,818,268**	**4,024,268**	**18,212,808**	**95332**	**100.00%**	**100.00%**	**57.23%**

3.2.2 X2 Utilisation



X2 utilisation in 4Q09 was 45.6%, an increase of 0.5% on 3Q09. The decision was taken by EPSRC in August to extend the suspension of charging on the X2 through to the end of 2009. Clarification is now required from EPSRC as to whether the suspension of charging will continue.





3.2.2.1 X2 Utilisation by Consortium

Project	AUs	Raw AUs	Low Priority Discount	Discounted AUs	Number of Jobs	Raw %age	Utilisation
y02	0	7	0	7	9	0.00%	0.00%
y05	0	73	0	73	6	0.00%	0.00%
z03	0	8,269	0	8,269	53	0.38%	0.17%
Internal Total	**0**	**8,349**	**0**	**8,349**	**68**	**0.38%**	**0.18%**
e01	0	495,796	0	495,796	373	22.72%	10.44%
e05	0	655,895	0	655,895	269	30.05%	13.81%
e102	0	13	0	13	20	0.00%	0.00%
e24	0	914,248	0	914,248	115	41.89%	19.25%
e42	0	87	0	87	3	0.00%	0.00%
e69	0	1	0	1	3	0.00%	0.00%
e75	0	92,586	0	92,586	208	4.24%	1.95%
e89	0	3,198	0	3,198	6	0.15%	0.07%
EPSRC Total	**0**	**2,161,824**	**0**	**2,161,824**	**997**	**99.05%**	**45.51%**
n02	0	12,400	0	12,400	22	0.57%	0.26%
NERC Total	**0**	**12,400**	**0**	**12,400**	**22**	**0.57%**	**0.26%**
d04	0	31	0	31	5	0.00%	0.00%
DirectorsTime Total	**0**	**31**	**0**	**31**	**5**	**0.00%**	**0.00%**
Total	**0**	**2,182,604**	**0**	**2,182,604**	**1092**	**100.00%**	**45.95%**

3.3. Performance Metrics

Metric	TSL(%)	FSL(%)	Oct-09	Nov-09	Dec-09	4Q09
Technology reliability (%)	85.00%	98.50%	100.0%	98.1%	98.9%	99.0%
Technology MTBF (hours)	100	126.4	∞	183.0	183.0	274.5
Technology Throughput, hours/year	7000	8367	8604	8099	8012	8328
Capability jobs completion rate	70%	90%	100.0%	100.0%	100.0%	100.0%
Non in-depth queries resolved within 1 day (%)	85%	97%	98.8%	100.0%	100.0%	99.6%
Number of SP FTEs	7.3	8.0	8.9	9.2	8.8	8.8
SP Serviceability (%)	80.00%	99.00%	100.0%	100.0%	93.9%	97.9%

Colour coding:

Exceeds FSL	
Between TSL and FSL	
Below TSL	

4. Helpdesk

A total of 1062 queries with a specified service metric were completed in this period.

Helpdesk Targets

Metric	Pass	Total	Fraction	Target
All queries finished in 1 day	899	903	99.6%	97.0%
Admin queries finished in 1 day	826	827	99.9%	97.0%
Queries assigned in 30 min	1047	1055	99.2%	97.0%
Technical assessments in 10 days	25	31	80.6%	97.0%

Queries by Service Metric

Service Metric	Queries	Percentage
Automatic	576	54.2%
Admin	251	23.6%
In-depth	128	12.1%
Technical	76	7.2%
Technical assessment class-1a	18	1.7%
Technical assessment class-2a	6	0.6%
Technical assessment class-1b	5	0.5%
Technical assessment class-2b	2	0.2%

Queries by Category

Query Category	Queries	Percentage
New User	163	15.30%
Set group quotas	133	12.50%
None	117	11.00%
Set user quotas	96	9.00%
New Password	64	6.00%
Add to group	64	6.00%
Access to HECToR	64	6.00%
3rd Party Software	59	5.60%
User behaviour	41	3.90%
Disk, tapes, resources	39	3.70%
Node Failure	36	3.40%
New Group	26	2.40%
User programs	23	2.20%
Login, passwords and ssh	20	1.90%
Batch system and queues	20	1.90%
Join Project	17	1.60%
Compilers and system software	17	1.60%
Other	14	1.30%
SAFE	12	1.10%
Static website	7	0.70%
Archive	6	0.60%

Update account	5	0.50%
Grid	5	0.50%
Delete from group	4	0.40%
Courses	4	0.40%
Remove account	2	0.20%
Performance and scaling	2	0.20%
Create certificate	2	0.20%

Queries by Handler Category

Handlers	Total	Admin	Technical	Automatic	In-depth	Technical assessment class 2	Technical assessment class 1	%age
USL	313	237	42		34	0	0	29.47%
OSG	625	14	29	576	6			58.85%
CSE	102				71	13	18	9.60%
Cray Systems	22		5		17			2.07%

Appendix A: Terminology

TSL : Threshold Service Level

FSL : Full Service Level

SDT : Scheduled Down Time

UDT : Unscheduled Down Time

WCT : Wall Clock Time

MTBF : Mean Time Between Failures = 732/Number of Failures

SP : Service Provision

SP Serviceability% = 100*(WCT-SDT-UDT(SP))/(WCT-SDT)

Technology Reliability % = 100*(1-(UDT(Technology)/(WCT-SDT))

Incident Severity Levels

SEV 1 — anything that comprises a FAILURE as defined in the contract with EPSRC.

SEV 2 — NON-FATAL incidents that typically cause immediate termination of a user application, but not the entire user service.

The service may be so degraded (or liable to collapse completely) that a controlled, but unplanned (and often very short-notice) shutdown is required or unplanned downtime subsequent to the next planned reload is necessary.

This category includes unrecovered disc errors where damage to file systems may occur if the service was allowed to continue in operation; incidents when although the service can continue in operation in a degraded state until the next reload, downtime at less than 24 hours notice is required to fix or investigate the problem; and incidents whereby the throughput of user work is affected (typically by the unrecovered disabling of a portion of the system) even though no subsequent unplanned downtime results.

SEV 3 — NON-FATAL incidents that typically cause immediate termination of a user application, but the service is able to continue in operation until the next planned reload or re-configuration.

SEV 4 — NON-FATAL recoverable incidents that typically include the loss of a storage device, or a peripheral component, but the service is able to continue in operation largely unaffected, and typically the component may be replaced without any future loss of service.

Appendix B: Projects on HECToR

Code	Title	Funding Body	Class	PI	Total AUs allocated	AUs used	AUs left
EPSRC Projects							
c01	Support of EPSRC/STFC SLA	EPSRC	Class1a	Dr Richard Blake	30,803,723	14,506,707	16,297,016
e01	UK Turbulence Consortium	EPSRC	Class1a	Dr Gary N Coleman	483,969,876	2,534,261	481,435,615
e05	Materials Chemistry HPC Consortium	EPSRC	Class1a	Prof C Richard A Catlow	1,129,327,228	41,005,046	1,088,262,182
e10	GENIUS	EPSRC	Class1a	Prof Peter Coveney	9,257,856	5,561,423	3,696,433
e100	Large scale MD and quantum embedding for biological systems	EPSRC	Class2a	Prof Zheng X Guo	100,000	27	99,973
e101	Optimization of HPCx LES code	EPSRC	Class2a	Prof Michael Leschziner	641,009	390,356	250,653
e102	Numerical investigation of aerofoil noise	EPSRC	Class1a	Dr Richard D Sandberg	6,484,191	3,076,792	3,407,399
e103	Micromagnetic simulations on HPC architectures	EPSRC	Class2a	Dr Hans Fangohr	100,000	0	100,000
e104	Fluid-Mechanical Models applied to Heart Failure	EPSRC	Class1a	Dr Nicolas Smiths	2,400,000	2,562	2,397,438
e105	Joint Euler/Lagrange Method for Multi-Scale Problems	EPSRC	Class1a	Dr Andreas M Kempf	1,300,000	252,770	1,047,230
e106	Numerical Simulation of Multiphase Flow: From Mesocales to	EPSRC	Class1a	Prof Kai Luo	3,650,000	0	3,650,000
e107	Parallel Brain Surgery Simulation	EPSRC	Class1a	Dr Stephane P. A. Bordas	6,000,000	119,724	5,880,276
e108	Unsteady Propeller Noise	EPSRC	Class2a	Dr Sergey Karabasov	100,000	56,374	43,626
e110	Computational Aeroacoustics Consortium	EPSRC	Class1a	Prof Paul Tucker	39,100,000	7,084,657	32,015,343
e112	Assessment of the ONETEP code	EPSRC	Class2a	Mr Andrew J Scott	100,000	102,500	-2,500

Code	Title	Funding Body	Class	PI	Total AUs allocated	AUs used	AUs left
e113	[dCSE] MRBV ? Massive Remove Batch Visualizer	EPSRC	Class2b	Dr Martin Turner	85,440	15,484	69,956
e114	[dCSE] OpenFOAM	EPSRC	Class2b	Mr Paul Graham	100,000	0	100,000
e115	Multiscale Modelling of Biological Systems	EPSRC	Class2a	Prof Jonathan W Essex	100,000	0	100,000
e116	Scaling and Benchmarking Spectral Codes	EPSRC	Class2a	Dr Benson Muite	100,000	19,133	80,867
e117	Getting started on HECTOR	EPSRC	Class2a	Dr Carmen Domene	100,000	247,664	-147,664
e118	Adaptive coupled radiation-transport and fluids modelling.	EPSRC	Class2a	Prof Christopher Pain	100,000	0	100,000
e119	Nanoscale Energy Transportation	EPSRC	Class2a	Dr Dongsheng Wen	100,000	0	100,000
e120	[dCSE] FF Transformations for plasma simulations	EPSRC	Class2b	Dr Colin M Roach	200,000	0	200,000
e121	[dCSE] Improving Performance using Wannier functions	EPSRC	Class2b	Prof Maria Merlyne DeSouza	1,700,000	405,764	1,294,236
e122	Multiscale Modelling of Magnetised Plasma Turbulence	EPSRC	Class1a	Dr Colin M Roach	65,000,000	11,082,229	53,917,771
e123	Finger-jets and turbulent structures	EPSRC	Class2a	Dr David Ingram	15,040	0	15,040
e124	Compressible Axisymmetric Flows	EPSRC	Class1a	Dr Richard D Sandberg	15,000,000	1,756,481	13,243,519
e125	Fermion Monte Carlo in Slater Determinant spaces	EPSRC	Class2a	Dr Ali Alavi	100,000	252,826	-152,826
e126	Clean Coal Combustion: Burning Issues of Syngas Burning	EPSRC	Class1a	Dr Xi Jiang	9,984,000	945,564	9,038,436
e127	Alternative drag-reduction strategies	EPSRC	Class1a	Prof Michael Leschziner	7,000,000	144	6,999,856
e128	Rate-Controlled Constrained Equilibrium	EPSRC	Class1a	Dr Stelios Rigopoulos	6,230,000	0	6,230,000
e129	Novel Hybrid LES-RANS schemes [ICL]	EPSRC	Class1a	Prof Michael Leschziner	7,500,000	0	7,500,000
e130	Novel hybrid LES-RANS schemes [MAN]	EPSRC	Class1a	Prof Dominique Laurence	10,500,000	0	10,500,000
e131	Direct Simulation of a Pure Plume impinging on a density surface	EPSRC	Class2a	Dr Maarten V Reeuwijk	200,000	0	200,000

Code	Title	Funding Body	Class	PI	Total AUs allocated	AUs used	AUs left
e132	Parallel Version of a Design Sensitivity Tensegrity Code	EPSRC	Class2a	Prof Rod Smallwood	200,000	10,184	189,816
e133	Implementation of Established Algorithms to Extend HELIUM	EPSRC	Class2b	Prof Ken Taylor	400,000	0	400,000
e134	Numerical Simulation of Turbomachinery Flows	EPSRC	Class2a	Dr Francesco Montomoli	200,000	473	199,527
e135	DNS of unsteady turbulent flow over a smooth or a rough surface	EPSRC	Class2a	Dr Shuisheng He	200,000	19,675	180,325
e136	Modelling the UK Wind Power Resource	EPSRC	Class2a	Dr Gareth Harrison	200,000	42,787	157,213
e137	Turbulent Pipe Flow	EPSRC	Class2a	Prof Dwight Barkley	200,000	190,349	9,651
e138	[dCSE] Naturally occurring magnetic mineral systems on HECToR	EPSRC	Class2b	Prof Wyn Williams	400,000	0	400,000
e139	Scalability Optimization for Largescale in-silico Simulations	EPSRC	Class2b	Dr Gernot Plank	400,000	0	400,000
e141	A numerical study of turbulent manoeuvering-body wakes	EPSRC	Class1a	Dr Gary N Coleman	16,350,000	0	16,350,000
e142	A Study of Doped Semiconducting Nanowires	EPSRC	Class2a	Mr Arash A Mostofi	200,000	0	200,000
e143	Numerical Investigation of Jet Noise	EPSRC	Class1a	Dr Anurag Agarwal	2	0	2
e144	Numerical Simulation of Rotating Stall and Surge	EPSRC	Class1a	Dr Mehdi Vahdati	1	0	1
e145	UK-SHEC Consortium	EPSRC	Class1a	Dr T.J. Mays	1	0	1
e19	Edinburgh Soft Matter and Statistical Physics Group	EPSRC	Class1a	Prof Michael Cates	1	0	1
e24	DEISA	EPSRC	Class1a	Mrs Alison Kennedy	61,165,221	49,896,062	11,269,159
e34	Hydrogen vacancy distribution in magnesium hydride	EPSRC	Class2a	Prof Nora de Leeuw	100,000	34,124	65,876
e35	Non-adiabatic processes	EPSRC	Class1a	Dr Tchavdar Todorov	11,246,869	1,825,246	9,421,623
e42	Computational Combustion for Engineering Applications	EPSRC	Class1a	Prof Kai Luo	32,000,001	18,843,617	13,156,384
e59	Turbulence in Breaking Gravity Waves	EPSRC	Class1a	Prof Ian P Castro	708,922	440,752	268,170

Code	Title	Funding Body	Class	PI	Total AUs allocated	AUs used	AUs left
e63	UK Applied Aerodynamics Consortium 2	EPSRC	Class1a	Dr Nick Hills	15,904,086	10,726,288	5,177,798
e68	Hydrogenation Reactions at Metal Surfaces	EPSRC	Class1a	Dr Angelos Michaelides	50,000,000	31,450,200	18,549,800
e69	Simulations of a Subsonic Cylindrical Cavity Flow	EPSRC	Class2a	Dr Aldo Rona	125,001	125,273	-272
e70	Computation of Electron Transfer Properties	EPSRC	Class1a	Dr Jochen Blumberger	960,000	477,401	482,599
e71	Simulating the control of calcite crystallisation	EPSRC	Class1a	Prof John Harding	40,403,522	40,203,133	200,389
e72	Ultrascalable Modelling of Materials	EPSRC	Class2a	Dr Lee Margetts	8,622,547	8,717,865	-95,318
e75	Terascale DNS of Turbulence	EPSRC	Class1a	Prof Christos Vassilicos	27,881,306	27,844,966	36,341
e76	HELIUM Developments	EPSRC	Class1a	Prof Ken Taylor	42,521,798	19,056,038	23,465,760
e77	Porting of DFT/GW Codes	EPSRC	Class2a	Prof Maria Merlyne DeSouza	160,000	60,676	99,324
e81	e-Collision experiments using HPC	EPSRC	Class2a	Prof NS Scott	257,095	11,106	245,989
e82	ONETEP: linear-scaling method on High Performance Computers	EPSRC	Class2a	Dr Peter Haynes	100,000	101,352	-1,352
e84	Vortical Mode Interactions	EPSRC	Class1a	Dr Tamer Zaki	9,600,000	19,405	9,580,595
e85	Study of Interacting Turbulent Flames	EPSRC	Class1a	Dr N Swaminathan	5,588,610	2,050,132	3,538,478
e89	Support for UK Car-Parrinello Consortium	EPSRC	Class1a	Dr Matt Probert	360,000,001	80,418,419	279,581,582
e90	Network modelling of wireless cities	EPSRC	Class2a	Prof Jonathan M Pitts	100,000	58,605	41,395
e92	Dynamo Action In Compressible Convection	EPSRC	Class1a	Mr Paul Bushby	4,075,000	74,433	4,000,567
e93	ACE - Architecture Exercise	EPSRC	Service	Dr Alan Gray	750,000	573,606	176,394
e96	Materials Property Relationships	EPSRC	Class2a	Dr Shoufeng Yang	100,000	0	100,000
e98	Non-linear magnetohydrodynamic modelling of tokamak plasmas	EPSRC	Class2a	Mr Ian T Chapman	100,000	26,287	73,713

Code	Title	Funding Body	Class	PI	Total AUs allocated	AUs used	AUs left
u02	Materials simulation using AIMPRO	EPSRC	Early use	Dr Patrick R Briddon	4,000,000	3,080,443	919,557
u03	DNS of NACA-0012 aerofoil at Mach 0.4	EPSRC	Early use	Dr Gary N Coleman	2,500,000	2,309,233	190,767
u10	Turbulent Plasma Transport in Tokamaks	EPSRC	Early use	Dr Colin M Roach	2,500,000	2,538,943	-38,943
y08	Testing	EPSRC	Early use	Dr David Jenkins	1,000	0	1,000
NERC Projects							
n01	Global Ocean Modelling Consortium	NERC	Class1a	Dr Thomas Anderson	19,343,840	16,181,887	3,161,953
n02	NCAS (National Centre for Atmospheric Science)	NERC	Class1a	Dr Lois Steenman-Clark	121,032,034	86,476,388	34,555,646
n03	Computational Mineral Physics Consortium	NERC	Class1a	Prof John P Brodholt	150,618,316	124,636,877	25,981,439
n04	Shelf Seas Consortium	NERC	Class1a	Dr Roger Proctor	39,009,435	26,557,147	12,452,288
u07	NCAS	NERC	Early use	Dr Lois Steenman-Clark	2,000,000	131,438	1,868,562
BBSRC Projects							
b08	Int BioSim	BBSRC	Class1a	Mr Mark M Sansom	866,000	909,998	-43,998
b09	Circadian Clock	BBSRC	Class1a	Prof Andrew A Millar	2,000,000	1,667	1,998,333
b10	SPRINTing with HECToR [dCSE]	BBSRC	Class2b	Mr Terry Sloan	400,000	2,709	397,291
b100	Widening the BBSRC HPC User Base	BBSRC	Class1a	Dr Michael Ball	10,000,000	0	10,000,000
b11	ExeterBioSeq	BBSRC	Class2a	Prof Richard ffrench-Constant	200,000	0	200,000
STFC Projects							
p01	Atomic Physics for APARC	STFC	Class1a	Dr Penny Scott	3,020,000	0	3,020,000
External Projects							

Code	Title	Funding Body	Class	PI	Total AUs allocated	AUs used	AUs left
T01	NIMES: New Improved Muds from Environmental Sources.	External	Class1a	Dr Chris Greenwell	4,113,669	864,202	3,249,467
x01	HPC-Europa	External	Class1a	Dr Judy Hardy	2,183,338	2,046,434	136,904
x02	BlueArc (TDS)	External	Service	Mr M W Brown	1,000	0	1,000
x03	Prospect FS	External	Class1a	Mr Davy Virdee	384,000	0	384,000
x04	Futuretec	External	Class1a	Mr Davy Virdee	1,191,200	874,931	316,269
x05	FIOS	External	Class1a	Mr Davy Virdee	460,800	10,283	450,517
Director's Time							
d01	UKQCD-DT	DirectorsTime	Early use	Dr Jonathan Flynn	3,968,929	3,968,926	3
d03	EUFORIA	DirectorsTime	Service	Mr Adrian Jackson	2,200,000	1,164,046	1,035,954
d04	MSc Projects	DirectorsTime	Service	Dr David Henty	93,500	58,151	35,349
d09	ICHEC	DirectorsTime	Class2a	Dr Jean-Christophe Desplat	1,000,000	1,014,928	-14,928
d10	d10	DirectorsTime	Service	Prof Ken Taylor	10,000,000	10,426,109	-426,109
d11	NAIS	DirectorsTime	Service	Prof Mark Ainsworth	416,667	2,374	414,293
d12	CoE HiGEM	DirectorsTime	Service	Dr Len L C Shaffrey	10,000,000	0	10,000,000
d13	CoE SENGA	DirectorsTime	Service	Dr Stewart Cant	10,000,000	0	10,000,000
d14	CoE HiPSTAR	DirectorsTime	Service	Dr Richard D Sandberg	1,000,000	1,046,153	-46,153
d15	HPC-GAP	DirectorsTime	Service	Dr David Henty	1,000	51	949
y09	Director's Time	DirectorsTime	Service	Prof Arthur S Trew	29,685,133	82,538	764,170