

Part V: Appendix (Section 14) UK Grid Services and Activities

A.1. Summary of Services, Tools and Utilities

A.1.1 Tabular Classification of UK e-Science Services Tools and Utilities

Area	Service	Informant	Project	Reference	Notes
e-Science runtime and hosting environment	Invocation framework	Mike Surridge , IT Innovation	myGrid	A.2.2.1.1	Distinguishes “workflow enactor core” and invocation framework.
		Steven Newhouse , Imperial College	ICENI	A.2.2.1.2	LauncherFrameworkService
Security infrastructure	Application of policies to services	Steven Newhouse , Imperial College	ICENI	A.3.3.5	DomainSecurityService
	Identification of users connecting to service	Steven Newhouse , Imperial College	ICENI	A.3.3.5 A.2.9.1.7	IdentityManagerService
	VO management tools and membership service (VOMS)	David Boyd , Rutherford Laboratory	European DataGrid	A.2.3.2.1	
Workflow	Composition	Yike Guo , Imperial College	DiscoveryNet	A.7.2.3	
		Simon Cox , Southampton University	Geodise	A.3.4.1.7	Outputs workflow as Matlab script for execution in Matlab environment. GUI also allows jobs to be submitted and cancelled.
		Carole Goble , University of Manchester	MyGrid	A.7.3.2.7	Workflow editor
		Yan Huang , Cardiff University	JISGA and GSiB	A.2.4.1.3	
	Enactment	Mike Surridge , IT Innovation	myGrid	A.2.4.1.1 A.2.4.1.4	Luc Moreau also involved at Southampton University.
		Paul Watson , Newcastle	NEReSC	A.2.4.1.2	Part of Core Grid Middleware proposed by Paul Watson (NEReSC).
		Yan Huang , Cardiff University	JISGA	A.2.4.1.3	Also includes discovery and invocation.
		Yike Guo , Imperial College	DiscoveryNet	A.7.2.2	
	Description language/schema	Yan Huang , Cardiff University	JISGA	A.4.1.1	SWFL, an extension of WSFL
		Yike Guo , Imperial College	DiscoveryNet	A.7.2.6	DPML
		John Brooke , Manchester Computing	EuroGrid/GRIP	A.2.6.1.2	Workflow language based on Unicore Protocol Layer and Abstract Job Object.
		Steven Newhouse , Imperial College	European DataGrid	A.3.3	Job Description Markup Language JDML

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Workflow (continued)	Representation conversion	Yan Huang , Cardiff University	JISGA and GSiB	A.2.4.1.3	Converts between workflow diagram, SWFL description, and Java harness code.
	Case-Base Reasoning Workflow Advisor	Jim Austin , University of York	DAME	A.3.1	Decides which of several diagnostic workflows to use in given situation.
Notification service	Notification	Luc Moreau , Southampton University	myGrid	A.2.5.1.1	Wrapped JMS
		Paul Watson , Newcastle	NEReSC	A.2.5.1.2	Part of Core Grid Middleware proposed by Paul Watson (NEReSC).
	Geodise Short Message Service (SMS)	Simon Cox , Southampton University	Geodise	A.3.4.1.8	Sends text message to mobile phone about job status or results from execution environment.
Metadata and Semantic Grid	Provenance	Luc Moreau , Southampton University	myGrid	A.2.6.2.3	
	Ontology support for services, and bioinformatics ontology	Carole Goble , University of Manchester	myGrid	A.7.3	OWL ontology to describe services
	Ontology services	Simon Cox , Southampton University	Geodise	A.3.4.1.9	Used to inform workflow construction.
	General Scientific Metadata Schema	Kerstin Kleese , Daresbury Laboratory	CLRC DataPortal	A.2.6.1.6	
	Resource brokering	John Brooke , Manchester Computing	EuroGrid/GRIP	A.2.6.1.2	GRIP broker based on Unicore
	Service deployment and publication	Luc Moreau , Southampton University	myGrid	A.2.6.1.5	Service Directory Toolkit
		Steven Newhouse , Imperial College	ICENI	A.3.3	ComponentRepositoryService
		Yike Guo , Imperial College	DiscoveryNet	A.7.2.3.2	
		Carole Goble , University of Manchester	myGrid	A.7.3	Includes a Service Registry that federates multiple registries in a VO, and a Service Description and Publication Tool for semantically annotating services. The registry also supports semantic service discovery based on OWL.
	Gateway service to VO	Carole Goble , University of Manchester	myGrid	A.7.3	e-Science Gateway Service gives API and point of access to myGrid resources in VO
	Grid monitoring	David Boyd , Rutherford Laboratory	European DataGrid	A.2.6.1.3	Relational Grid Monitoring Architecture (R-GMA). A service meta-data look-up service
	Service discovery	Steven Newhouse , Imperial College	ICENI	A.3.3	ApplicationMappingService

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Metadata and Semantic Grid (continued)	Scheduling service	Steven Newhouse , Imperial College	ICENI	A.3.3.2	SchedulingFrameworkService
Information Grid technologies	Storage Resource Broker (SRB)	Kerstin Kleese , Daresbury Laboratory	Collaboration between DL and SDSC	A.2.6.2.4 and A.2.7.2.3	Gives uniform interface to access to heterogeneous distributed data sources. Divided into Core SRB and MCAT.
	OGSA-DAI services	Norman Paton , University of Manchester	OGSA-DAI	A.2.7.1.1 A.2.7.1.2 A.2.9.2.2(d)	Registration, creation, and use of Grid Data Services. See also Dave Berry
		Paul Watson , Newcastle	NEReSC	A.2.7.1.3	Part of Core Grid Middleware proposed by Paul Watson (NEReSC).
	Distributed query processing service	Carole Goble , University of Manchester	MyGrid	A.7.3.2.12	Based on OGSA-DAI, and used to federate myGrid information repositories in VO
		Paul Watson , Newcastle	NEReSC	A.2.7.1.3	Part of Core Grid Middleleawre proposed by Paul Watson (NEReSC).
	Advanced Uncertain Reasoning Architecture (AURA-G)	Jim Austin , University of York	DAME	A.3.1	Enables fast searches of very large databases.
	Data staging service	Mike Surridge , IT Innovation	Comb-e-Chem	A.3.2	Based on Grid Resources for Industrial Applications (GRIA) system.
	MySpace directory service	Tony Linde , Leicester University	AstroGrid	A.2.7.2.2	Virtual directory service of data items located anywhere on Grid.
	Storage service	Simon Cox , Southampton University	Geodise	A.3.4.1.6	Storage and retrieval of files.
	Metadata storage and query service	Simon Cox , Southampton University	Geodise	A.3.4.1.6	Allows metadata to be associated with files and used in queries.
Compute/File Grids	Authorization service	Simon Cox , Southampton University	Geodise	A.3.4.1.6	Grants access rights based on authorization database.
	Location service	Simon Cox , Southampton University	Geodise	A.3.4.1.6	Locates files by mapping handle to location.
	Grid interface to mass storage	David Boyd , Rutherford Laboratory	European DataGrid	A.2.8.1.3	Storage Element gives access to data on disk and tape over WAN with Control Interface, Data Interface, and Command Line Interface.
	Replica location service and metadata catalogue	David Boyd , Rutherford Laboratory	European DataGrid	A.2.8.1.1	
	Replica optimisation service				
	Replica storage handler	David Boyd , Rutherford Laboratory	European DataGrid	A.2.8.1.2	RB work being done mainly in Italy, but UK involved in debugging, testing, and quality assurance.
	Resource broker				

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Other technology areas	Grid Access Data Service (GADS)	Keith Haines , Reading University	GODIVA	A.2.9.1.4	Gives access to spatial data sets through web portal.
	Computational steering and visualisation	John Brooke , Manchester Computing	RealityGrid	A.2.9.1.3 A.2.9.2.5 A.2.9.2.6	Steering Grid Service migrating from Unicore to GT2 and GT3.
		Ken Brodlie , Leeds University	gViz	A.2.9.2.5	
		Nick Avis , Cardiff University		A.2.9.2.6	Interactive supercomputing
	Grid-debug, Grid-log, and Grid-make	Jon Crowcroft , University of Cambridge		A.2.9.2.3 A.2.9.2.4	Some proposed systems tools for Grid environments
	GridSite and SlashGrid	David Boyd , Rutherford Laboratory	GridPP and European DataGrid	A.2.9.1.5	GridSite is for Web site maintenance, and SlashGrid is for adding file systems to Unix systems and to give access to remote resources using Grid protocols.
	Logging facility	Tony Linde , Leicester University	AstroGrid	A.2.7.2.2	Log events with custom identifiers.
	Geodise Matlab Toolbox	Simon Cox , Southampton University	Geodise	A.3.4.1.1	Globus job submission and control, file transfer, and proxy certificate management from within a Matlab environment.
	Geodise Jython Toolbox	Simon Cox , Southampton University	Geodise	A.3.4.1.2	Globus job submission and control, file transfer, and proxy certificate management from within Jython.
	Matlab/Condor Toolkit	Simon Cox , Southampton University	Geodise	A.3.4.1.3	Computation toolkit linking Matlab to Condor/
	Geodise Condor/.NET Web service	Simon Cox , Southampton University	Geodise	A.3.4.1.4	.NET Web service enabled interface to the Condor system
	XML Toolbox for Matlab	Simon Cox , Southampton University	Geodise	A.3.4.1.5	Converts from Matlab format to XML, and vice versa.
Portals and Problem-Solving Environments	Case-Based Reasoning Analysis service	Jim Austin , University of York	DAME	A.3.1 A.7.1	Uses CBR to suggest most likely diagnosis.
	Interaction with services and metadata	Carole Goble , University of Manchester	myGrid	A.7.3	e-Science Workbench based on NetBeans. e-Science Portal is alternative with smaller footprint for handheld devices.
	Searching and accessing metadata	Kerstin Kleese , Daresbury Laboratory	CLRC DataPortal	A.2.6.1.6	Parallel search and exploration of distributed heterogeneous metadata catalogues.
Domain specific services	Comb-e-Chem specific services	Mike Surridge , IT Innovation	Comb-e-Chem	A.3.2	Virtual Network Computing service - allows user to simultaneously view GUI used lab-side by experimenter.

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	Geodise specific services	Simon Cox , Southampton University	Geodise	A.3.4.2	Optimisation ontology User ontology Linux and Windows ProE CFD solvers
Domain specific services (continued)	DAME specific services	Jim Austin , University of York	DAME	A.3.1 A.7.1	Extract Tracked Order service (XTO-G), XTO Output Data Visualiser service, Engine Data Store, Simulated Service Data Manager

A.1.2 Caveat to Table 1

We put in this table, capabilities that represented “clear deliverables” from the UK e-Science program. Generic technologies and “projects” have been omitted as have services from outside the UK program. Some entries are completed or ongoing; others are proposed. The granularity of recording and decision as to what to include are clearly rather arbitrary.