

# JISC DEVELOPMENT PROGRAMME

## PROJECT PLAN

<b>Project Acronym</b>	A2Z
<b>Project Title</b>	Akenti Access to <b>zetoc</b>
<b>Start Date</b>	11/11/02
<b>End Date</b>	28/11/03
<b>Lead Institution</b>	Manchester Computing & the e-Science Centre for the North West (ESNW), University of Manchester.
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<b>Project Manager &amp; contact details</b>	Ross MacIntyre Manchester Computing, University of Manchester, Oxford Rd, Manchester, M13 9PL. Tel:0161-275-7181 Fax:0161-275-6071 Email: <a href="mailto:ross.macintyre@man.ac.uk">ross.macintyre@man.ac.uk</a>
<b>Partner Institutions</b>	myGrid Project, Computer Science Dept, University of Manchester.  Secure Grid Technologies Group, Lawrence Berkeley National Laboratory, California.

**Document History**

<b>Version</b>	<b>Date</b>	<b>Comments</b>
1.0	Jan 2003	Initial plan

## 1. Introduction

We will implement and conduct a technical evaluation of the authorisation system, Akenti, developed at Lawrence Berkeley National Laboratory. The authorisation evaluation will be conducted in the context of the existing MIMAS current awareness service **zetoc**. The system will be made accessible both as a web *server* (through digital certificates embedded in the user's web browser along side traditional Athens authentication) and as a web *service* (using GSI authentication).

The existing EPSRC-funded e-Science pilot project myGrid will provide the environment for evaluating the interoperability with praxis gaining currency in the UK e-Science programme.

## 2. Aims and Objectives

The overall aims of this project are:

- 1) Implement and evaluate Akenti in a JISC service environment (**zetoc**)
- 2) 'Grid-enable' the **zetoc** services based on the strategy described in the UK e-Science roadmap and demonstrate accessibility from an existing e-Science Project (myGrid).
- 3) Identify associated implementation issues for JISC service providers.

## 3. Overall Approach

The Akenti authorisation will be provided via the implementation of the Apache authorisation module, developed at Lawrence Berkeley Laboratory, with whom there are existing, well-established contacts. Discussions have already taken place between ESNW and the Akenti developers regarding the distinguishing features of Akenti. The code is freely available as (C++) source code or as Linux or Solaris executables, none of which present any technical issues for Manchester Computing.

Akenti requires an X.509 authentication mechanism. An evaluation version of the **zetoc** service will be enhanced to work with X.509 digital certificates, and to be compatible with the Grid Security Infrastructure (GSI) component of the Globus toolkit. This approach has already been successfully used as part of an ESRC-funded e-Science project SAMD (Seamless Access to Multiple Datasets) by Manchester Computing. Authentication for **zetoc** is currently via network domain/IP checking and Athens. The addition of digital certificates will demonstrate a more 'mixed-mode' approach. For the purposes of this evaluation, only certificates issued by the UK e-Science CA (operated by the Grid Support Centre) will be supported.

The access policy for **zetoc** has to satisfy a number of stakeholders:

- British Library, who own the data and have licensed it for use by 'ac.uk', research councils and the NHS
- JISC, who impose a licence fee for all non-JISC supported sites, such as Research Councils, Irish institutions and Chest affiliates
- MIMAS, who must check on subscriptions and maintain data integrity and personalised functions
- Institutions, who may specify configuration settings, for example relating to mediated Document Supply.

Note that some potential users of myGrid would be ineligible for access to some or all parts of **zetoc**, so a variety of user access scenarios can be tested.

The resources included within myGrid are essentially web services and are described using extended UDDI (Universal Description, Discovery and Integration). **zetoc** will be used to provide two types of resource:

- a reference service, the main **zetoc** database of journal articles and conference papers,
- a notification service via the **zetoc** Alert mechanism.

The **zetoc** service is already well documented with existing qualified Dublin Core metadata, encoded in XML. An extension to create WSDL (Web Service Description Language), required for UDDI registry, would inform the technical architectural thinking regarding JISC's evolving Information Environment.

#### **4. Project Consortium**

The Project will be led by Manchester Computing (MC), but is being jointly performed with colleagues within the E-Science centre for the North West (ESNW). Additionally, colleagues from the University's Computer Science Department, working on the myGrid Project will be involved in the second half of the project in a consultancy role.

ESNW assistance and consultancy will be provided by Stephen Pickles, Software Infrastructure Manager (Supercomputing, Visualization and E-Science), Constantinos Astreos, Industrial Projects Manager and his colleague Kevin Garwood. myGrid Consultancy will be provided by Nick Sharman, myGrid Project Manager – University of Manchester, in the first instance.

#### **5. Project Management**

Day-to-day project management will be performed by Ross MacIntyre, Senior Project Manager, Manchester Computing. Working on the project and reporting to the Project Manager will be Andrew Weeks, Manchester Computing and Mike Jones, ESNW.

The Project Manager will regularly report on the progress of the project via the existing management structure in place within MC. Monthly Senior Management Team meetings are held and cover service developments and project status reports.

Progress with the project will be communicated through the use of Web pages, email lists and other established communication channels. Progress reports will be produced as required by the JISC AAA Programme. The financial reporting systems in place at Manchester Computing will enable the financial position to be audited as and when required.

6. Overall Project Structure

A2Z	2002						2003						
	N	D	J	F	M	A	M	J	J	A	S	O	N
	1	2	3	4	5	6	7	8	9	10	11	12	13
<b>1. Project Management</b>													
1.1 Project Management													
<b>2. Evaluation Environment</b>													
2.1 A2Z user account													
2.2 Install Apache													
2.3 Create A2Z web site													
2.4 Copy zetoc application													
<b>3. Digital Certificate Authentication</b>													
3.1 Install e-Science as CA													
3.2 Allow certified access to zetoc													
3.3 Modify zetoc Alert													
<b>4. Akenti Implementation</b>													
4.1 Download Akenti													
4.2 Install Akenti													
4.3 Configure Akenti													
<b>5. Authorisation Policy</b>													
5.1 Formulate zetoc access policy													
5.2 Encapsulate in Akenti													
5.3 Validate policy													
<b>6. Akenti Knowledge Transfer</b>													
6.1 Visit by Akenti developer													
6.2 Visit by A2Z project													
6.3 Akenti-related seminar													
<b>7. myGrid-enablement</b>													
7.1 Investigate approach													
7.2 Create zetoc web services													
7.3 Alert & OGSA													
7.4 myGrid UDDI registration													
7.5 Demonstrate access													
<b>8. Technical Evaluation</b>													
8.1 Compile report													
8.2 Explore GUI development													
	N	D	J	F	M	A	M	J	J	A	S	O	N

**7. Detailed Project Plan**

**Workpackage Number:** 1  
**Workpackage Title:** Project Management  
**Partner Responsible:** MC (Manchester Computing)  
**Other Partners Involved:** ESNW  
**Start Date:** Nov 2002  
**End Date:** Nov 2003

**Objectives:**

Ensure the project completes to schedule and budget.

**Brief Description of Work:**

Management of A2Z project, including planning, execution and reporting.

**Quality Assurance & Review:**

JISC have issued specific project guidelines and reporting requirements which will be adhere to.

**Outputs including reports:**

Project Plan (this document)  
 6-monthly project reports

**Task Descriptions**

<b>Task</b>	<b>Title</b>	<b>Partners</b>	<b>Description</b>
1.1	Project Management	MC ESNW	Oversee and manage A2Z project.

**Workpackage Number:** 2  
**Workpackage Title:** Evaluation Environment  
**Partner Responsible:** MC  
**Other Partners Involved:** ESNW  
**Start Date:** Nov 2002  
**End Date:** Dec 2002

**Objectives:**

Establish suitable environment in which to conduct the evaluation testing.

**Brief Description of Work:**

Create demonstration service environment on existing MC server (Sun E6500 running Solaris 8).

Install & configure an Apache web server.

Creation of **zetoc** application development environment.

**Quality Assurance & Review:**

Internal to project.

**Outputs including reports:**

Demonstration service environment.

**Task Descriptions**

<b>Task</b>	<b>Title</b>	<b>Partners</b>	<b>Description</b>
2.1	A2Z user account	MC	Create user account on E6500 for project work.
2.2	Install Apache	ESNW	Install Apache with SSL
2.3	Create A2Z web site	MC	Create virtual domain a2z.mimas.ac.uk
2.4	Copy <b>zetoc</b> application	MC	Copy <b>zetoc</b> cgi scripts and application code to new user.

**Workpackage Number:** 3  
**Workpackage Title:** Digital certificate authentication  
**Partner Responsible:** ESNW  
**Other Partners Involved:** MC  
**Start Date:** Dec 2002  
**End Date:** Mar 2003

**Objectives:**

To support authentication via digital certificate for **zetoc** in the evaluation environment.

**Brief Description of Work:**

Implement digital certificate authentication for **zetoc**, accessible through end-user's web browser. This will follow on directly from SAMD experience.  
 Restrict certificates to those issued by the (existing) e-Science CA.  
**zetoc** Alert to be modified to use Client's Distinguished Name as identifier for owner of Alert lists created (currently Athens Id used).

**Quality Assurance & Review:**

Internal to project, though external refusal could be meaningfully demonstrated.  
 There are known limitations/restrictions when using e-Science certificates, including requiring Netscape v4.79 specifically as the browser.

**Outputs including reports:**

Digital certificate support for access to **zetoc** application.

**Task Descriptions**

<b>Task</b>	<b>Title</b>	<b>Partners</b>	<b>Description</b>
3.1	Install e-Science as CA	ESNW	Install e-Science as a valid Certificate Authority in A2Z Apache
3.2	Allow certified access to <b>zetoc</b>	MC	Following successful authentication, allow access to <b>zetoc</b> application
3.3	Modify <b>zetoc</b> Alert	MC	Modify <b>zetoc</b> Alert to use Client's SSL DN as identifier for Alert lists



**Workpackage Number:** 4  
**Workpackage Title:** Akenti Implementation  
**Partner Responsible:** ESNW  
**Other Partners Involved:** MC  
 LBNL  
**Start Date:** Jan 2003  
**End Date:** Mar 2003

**Objectives:**

Install the Akenti software in the evaluation environment.

**Brief Description of Work:**

Install and configure Akenti authorisation module within Apache server.  
 Configure with assistance from LBNL.

**Quality Assurance & Review:**

External advice and QA will be obtained via the involvement of the Akenti developers themselves.

**Outputs including reports:**

Initial installation of Akenti software.

**Task Descriptions**

<b>Task</b>	<b>Title</b>	<b>Partners</b>	<b>Description</b>
4.1	Download Akenti	ESNW	Download latest version of Akenti (v1.2a).
4.2	Install Akenti	ESNW	Install require components on E6500 under A2Z user environment.
4.3	Configure Akenti	ESNW MC LBNL	Configure Akenti with assistance from LBNL.

**Workpackage Number:** 5  
**Workpackage Title:** Authorisation policy  
**Partner Responsible:** MC  
**Other Partners Involved:** ESNW  
 LBNL  
**Start Date:** Mar 2003  
**End Date:** Jun 2003

**Objectives:**

Implement the access policy for **zetoc** using Akenti.

**Brief Description of Work:**

Identify and encapsulate access policy for **zetoc** for stakeholders.  
 The documentation will involve a dialogue with LBNL.

**Quality Assurance & Review:**

Stakeholders will be contacted to confirm.

**Outputs including reports:**

Documented **zetoc** authorisation policy.

**Task Descriptions**

<b>Task</b>	<b>Title</b>	<b>Partners</b>	<b>Description</b>
5.1	Formulate <b>zetoc</b> access policy	MC	Identify and define access policy for <b>zetoc</b> stakeholders.
5.2	Encapsulate in Akenti	MC ESNW LBNL	Record access policy in Akenti.
5.3	Validate policy	BL JISC MIMAS	Validate correct access policy with <b>zetoc</b> stakeholders.

**Workpackage Number:** 6  
**Workpackage Title:** Akenti Knowledge Transfer  
**Partner Responsible:** LBNL  
**Other Partners Involved:** MC  
 ESNW  
**Start Date:** Mar 2003  
**End Date:** Aug 2003

**Objectives:**

Gain full understanding of all aspects of Akenti.

**Brief Description of Work:**

Reciprocal visits by project staff with LBNL for detailed discussions with Akenti development staff.  
 Visit to Manchester by LBNL to assist in Akenti configuration.  
 Including presentation at seminar involving others from MC, ESNW, JISC and the AAA Programme.  
 Visit to Akenti development team at LBNL by member(s) of A2Z project team. In light of experience, extensions may need to be made to what the Authorisation policy will allow or to the interface itself.

**Quality Assurance & Review:**

Internal to project, however, information will be disseminated to other AAA projects, including Salford's 'Akenti/Permis comparison'.

**Outputs including reports:**

Advice from Akenti development team  
 Feedback to Akenti development team

**Task Descriptions**

<b>Task</b>	<b>Title</b>	<b>Partners</b>	<b>Description</b>
6.1	Visit by Akenti developer	LBNL	Visit by Akenti developer to Manchester
6.2	Visit by A2Z project	MC ESNW	Visit by A2Z team members to LBNL
6.3	Akenti-related Seminar	MC ESNW LBNL	Organise Akenti-related seminar

**Workpackage Number:** 7  
**Workpackage Title:** myGrid-enablement  
**Partner Responsible:** MC  
**Other Partners Involved:** ESNW  
 myGrid  
**Start Date:** June 2003  
**End Date:** Sept 2003

**Objectives:**

Enable **zetoc** to be used from within myGrid.

**Brief Description of Work:**

This is an area that requires more investigation to identify approach and tasks. The definition of web services based on a Z39.50 target may be possible via SRW.

Outline tasks:

- Investigate approach to web service definition.
- Create web services for **zetoc** & **zetoc** Alert.
- Implement **zetoc** Alert as an OGSA notification port type.
- Include in extended UDDI registry used by myGrid.
- Demonstrate accessibility of **zetoc** from myGrid.

**Quality Assurance & Review:**

Acceptability will be determined by myGrid project staff.

**Outputs including reports:**

Demonstration web services for **zetoc**.

Approach for defining bibliographic web services based on a Z39.50 target.

**Task Descriptions**

<b>Task</b>	<b>Title</b>	<b>Partners</b>	<b>Description</b>
7.1	Investigate approach	MC	Determine technical method for defining web services based on a Z39.50 target.
7.2	Create <b>zetoc</b> web services	MC	Create the web services definitions for <b>zetoc</b> using WSDL.
7.3	Alert & OGSA	MC ESNW myGrid	Implement <b>zetoc</b> Alert as an OGSA notification port type.
7.4	myGrid UDDI registration	MC ESNW myGrid	Include in extended UDDI registry used by myGrid.
7.5	Demonstrate access	MC myGrid	Demonstrate accessibility of <b>zetoc</b> from myGrid.

**Workpackage Number:** 8  
**Workpackage Title:** Technical evaluation  
**Partner Responsible:** MC  
**Other Partners Involved:** ESNW  
 myGrid  
**Start Date:** Sep 2003  
**End Date:** Nov 2003

**Objectives:**

Document evaluation activities and observations.

**Brief Description of Work:**

Describe technical work, problems encountered and their solutions.  
 Investigate and make recommendations on the feasibility and suitability of applying Akenti in other services of relevance to JISC and e-Science.  
 Consider GUI development as was done in the SAMD Project using 'Qt' software.

**Quality Assurance & Review:**

Factual information will be checked by project participants including the Akenti team.

**Outputs including reports:**

Implementation and evaluation report for dissemination.

**Task Descriptions**

<b>Task</b>	<b>Title</b>	<b>Partners</b>	<b>Description</b>
8.1	Compile report	MC ESNW myGrid	Compile technical evaluation document.
8.2	Explore GUI development	ESNW	Look at using 'Qt' software for GUI development.

## 8. Dissemination

A2Z will participate in workshops and project meetings organised by JISC or on their behalf by other-related groups.

The project will participate in email discussion, including via the jiscmail list JISC-AAA.

Papers and presentations will be prepared during the project.

## 9. Project (or cluster) Steering Committees

A2Z will participate in any AAA programme meetings.

No Steering Group will be created, though guidance will be sought from a number of groups as required during the project.

## 10. Quality Assurance and Evaluation

Some significant elements of the project involve getting a mechanism working according to rigid guidelines, so the quality criteria are clear. For example, authentication will either work or not. Where some judgement is required, the project can call upon well-qualified members of MC or Computer Science for guidance. Information will also be disseminated to other AAA projects, most significantly Salford's 'Akenti/Permis Comparison' and JISC. Factual information will also be referred to the Akenti development team to ensure balance.

## 11. Risk Assessment

There is a risk that it proves impossible to define certain key elements, such as: being unable to adequately encapsulate and enforce the stakeholders' access policy or being unable to define **zetoc**'s (Z39.50 protocol-based) online services as web services described in WSDL. But these would be valuable for future planning. There is minimal risk of the Akenti software not being installable or usable, as it is in use elsewhere.

Manchester Computing are partners in, amongst others, the EU-funded Grid projects Eurogrid and GRIP, several e-Science pilot projects, the UK Grid Support Centre, and ESNW, the E-Science centre for the North West. The concentration of expertise in Manchester Computing — e-Science, Grid, databases, data analysis, web programming, systems administration, security, and HPC — makes it possible to re-deploy at short notice the resources necessary to bring the project in on time.

MC also possesses extensive SGML/XML experience, including commercial authoring and maintenance of DTDs as well as experience in relevant technologies: Apache, SSL, LDAP, C, C++ etc.

Of equal relevance is the experience of the e-Science team in authentication and authorisation in the e-Science domain. The team developed and operates the Certificate Authority for the EU-funded EUROGRID project; has incorporated GSI authentication into an existing web server in the ESRC-funded SAMD e-Science demonstrator project; has solved the problem of interoperability between the different formats of X.509 certificates used by Globus and UNICORE; and leads the working group of the UK Grid Engineering Task Force that is concerned with authorisation and accounting.

**12. Budget**

	<b>Total</b>
<b>Staff Costs</b>	
Snr Project Manager, MC (0.2 FTE ALC 5/24)	9,775
Developer, MC (1.0 FTE ALC 2/10)	30,389
Systems Support Officer, MC (0.1 FTE ALC3/20)	4,427
Technical Support, ESNW (0.25 FTE RA 1/11)	7,930
Technical Support, MC (0.2 FTE ALC 3/14)	7,143
<b>Total Staff Costs</b>	<b>59,664</b>
 <b>Consultancy</b>	
E-Science North West	4,500
myGrid	4,000
<b>Total Consultancy</b>	<b>8,500</b>
 <b>Non-Staff Costs</b>	
PC and printer for Developer	2,100
Travel & subsistence	3,000
Visit Akenti Development Team	3,000
Consumables	600
Software licence (Qt developer's licence)	2,457
<b>Total Non-Staff Costs</b>	<b>11,157</b>
 <b>Total Costs</b>	 <b>79,321</b>
	(12 months)

ESNW Consultancy will be called on throughout.  
 myGrid Consultancy will be during the second half of the project.  
 VAT is included where applicable.