



## Authenticated Networked Guided Environment for Learning

Angel Inside provides middleware solutions to authentication, authorisation, and interoperability for the educational community.

Angel Inside is about integrating external resources into the work environment (whether that be a VLE, MLE, or institutional portal) of students, staff and researchers, and making access seamless and consistent. This means the user isn't challenged by confusing instructions from external data providers, which in turn cuts down on administration and support. Angel Inside also addresses duplication of effort within an institution concerning authentication and makes it easier for academics to gather accessible collections of resources for course sites without maintenance problems.

### Why middleware?

Middleware can be seen as the 'glue' that helps join-up distinct services within an online environment. The type of solutions offered by middleware are often services that can be provided by each individual piece of software, but which are all generally proprietary, competing and non-standard. Use of middleware promotes standards and interoperability, which essentially make services easier to run and maintain.

Angel Inside offers three separate services for dealing with important issues within the online environment: the Resource Manager, the User Manager, and the Scheduled Services Manager.

### Features and Benefits.

The three ANGEL Managers can be used in conjunction with a variety of different

interfaces and back-end services to enhance the user experience. The Managers are packaged separately, and can be adopted individually, or as a complete service.

The ANGEL applications can be used to obtain information from, and present information through, a variety of formats. Institutions can choose to present the information through a specific channel such as WebCT, Blackboard, an institutionally designed portal, or through the main website. The ANGEL applications can obtain information from a variety of sources, including resource providers and local services such as the Student Record System and the Library Management System.

### Using Angel Inside.

The ANGEL software is open source, and can be downloaded from the ANGEL website <[www.angel.ac.uk](http://www.angel.ac.uk)> Use of the software is supported through the installation document, and by the mailing list <[angel-insiders@jiscmail.ac.uk](mailto:angel-insiders@jiscmail.ac.uk)> (you are required to register to join this list, please contact the list owner for more details).

The ANGEL project asks that the Angel Inside logo is placed on front-end user interface page of a system that uses ANGEL as middleware. The following html should be inserted:

```
<!-- ANGEL-inside logo and reference -->
<p align=right> This online service is powered by an
  <a href="http://www.angel.ac.uk/inside">
    <img SRC="http://www.angel.ac.uk/inside/logo.jpg"
      ALT="ANGEL inside" BORDER=0 height=41 width=75
      align=ABSCENTER> </a></p>
```



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### How ANGEL relates to external services

ANGEL interoperates with external clients by offering a variety of standard protocol server interfaces, including the capability to act as a Z39.50 target (server). At its 'bottom-end' ANGEL acts as a client to various external services where data can be searched and retrieved using standard protocols (such as Z39.50 and IMS). This includes the various Information Management Systems utilised by educational institutions such as the patron management elements of Library Management Systems, and Student Record Systems. This information is then fed back through the interface of choice. There is also the potential for ANGEL service systems installed separately at different institutions to 'talk to' each other and share resource metadata.

The ANGEL system interface is provided purely to enable management of configuration and internal metadata.

### Installation

Each major ANGEL component is a socket that can be queried in a standardised XML syntax with a published DTD for each major message type. These DTDs are independent to aid third party developers in interaction with the components involved. Queries and responses will be encrypted using SSL, and certificates will be verified to ensure that only permitted services will talk to each other.

The ANGEL system has been purposefully designed as three separate components (Resource Manager, User Manager, Scheduled Services Manager) to allow institutions to install and use each component independently. This allows institutions to utilise resource management and user management tools separately if desired.

[www.angel.ac.uk/inside/](http://www.angel.ac.uk/inside/)