

Mapping the Information Environment

Introduction

The library community is beginning to find its way around the technological innovations of the Web 2.0 world. Information professionals are podcasting, blogging and wiki-ing their way into the new digital mainstream, while continuing to develop their existing electronic resources so that they too can be used by portals, federated search tools and back-bedroom mash-up mongers.

It is an exciting time, even allowing for the healthy dollop of hype that seems to accompany any new advances in technology. For information professionals the most exciting aspects are the development of new ways of reaching out to existing and potential users and the chance to share our painstakingly-curated materials and our knowledge of their worth and utility with as wide an audience as possible.

How are the developers of these new and as-yet-undeveloped resources going to discover these new ways of getting at our raw materials? We're good at the description of physical resources, as we've been doing that for a long time and the appropriate standards are well-established. We are also getting increasingly adept at sharing those descriptions with others through standardised interoperable routes (although many would acknowledge that there is still room for improvement here). But building an application that makes use of other electronic resources requires knowledge of the services that are available for re-use within any particular community, and information about these services can be hard to track down.

The IESR approach

The Joint Information Systems Committee¹ (JISC) has funded MIMAS at the University of Manchester to run the Information Environment Service Registry² (IESR) to provide details of such services within the JISC Information Environment. JISC's definition of the concept runs like this:

The aim of the Information Environment is to help provide convenient access to resources for research and learning through the use of resource discovery and resource management tools and the development of better services and practice. The Information Environment aims to allow discovery, access and use of resources for research and learning irrespective of their location.³

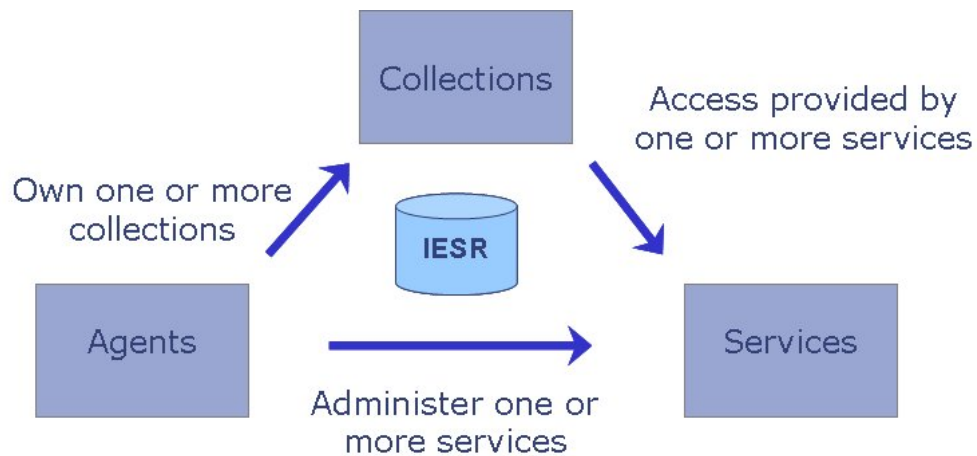
The role of IESR is to provide a catalogue of these resources and the services through which they can be accessed. Its design was informed by the work undertaken by

¹ <http://www.jisc.ac.uk/>

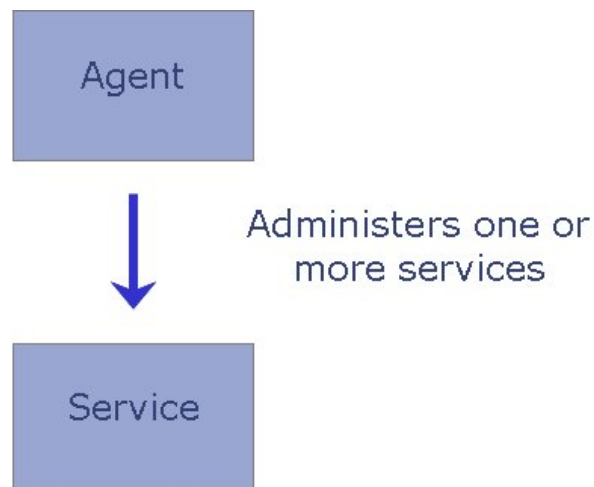
² <http://iesr.ac.uk/>

³ http://www.jisc.ac.uk/whatwedo/themes/information_environment/

Michael Heaney in his *Analytical Model of Collections and their Catalogues*.⁴ The figure below illustrates the three entities that are described for most of the electronic resources that are mapped within the Service Registry. The resources are usually collections of some kind (following the Heaney definition); library catalogues, online image libraries or the items held within institutional repositories, for example. Each collection is described in IESR and then associated with further records which provide details of the technical services which relate to the collection (search interfaces, newsfeeds, webpages etc.) and information about the owners and administrators of the collections and services.



Some services provide functionality but are not associated with an electronic collection (an OpenURL resolver is one example). These are termed 'transactional services' in IESR and as there is no collection to describe, the model is somewhat simpler:



⁴ <http://www.ukoln.ac.uk/metadata/rslp/model/>

Each of the entities within IESR is described with a metadata set which is based, wherever possible, on existing standards and continues to be informed by developing standards such as the Dublin Core Metadata Initiative (DMCI) Collection Description Application Profile.⁵ For collections, the RSLP Collection Description Schema⁶ was used as the basis for the information recorded about each electronic resource. Some of the properties (those relating to physical collections) were not needed for IESR's purposes, and there were other cases where IESR needs additional information not provided by the RSLP schema (for example the URL of a logo for a resource). Few of these properties are mandatory, so a valid IESR collection record could be as simple as:

Title : Scran

Description: Scran is a learning resource base and toolset with 336,500 images, movies and sounds from museums, galleries, archives and the media.

Subject (Dewey):000; 200; 300; 500; 600; 700; 800; 900

Has Service: <http://purl.org/poi/iesr.ac.uk/1163175297-17711>; <http://purl.org/poi/iesr.ac.uk/1163175016-17237>; <http://purl.org/poi/iesr.ac.uk/1163174355-16157>; <http://purl.org/poi/iesr.ac.uk/1161704683-2782>

Owner (Agent):
<http://purl.org/poi/iesr.ac.uk/1161704881-3079>

The PURL-based object identifiers link to the records for the other IESR entities associated with this collection. Other properties beyond this minimum set are recommended, in order to make the record more useful to users; particularly 'Item Type' (taken from the DCMI Type vocabulary⁷) and subjects in the form of words. For the Scran record these are:

Item Type: Dataset; Image; InteractiveResource; MovingImage; Service; Sound; StillImage; Text

Subject (local):On the Move; People; Places; Religion; Science; SEN Topics; Societies; Sport; Timeline; Trade and Industry; War and Warmongers; Writers; Architecture; Art and Design; At Home; At Play; At Work; Citizenship; Design and Technology; Early Years; Entertainment; Events; Exploring the Past; Fishing; Governing the Country; Kings and Queens; Music; Nature

⁵ <http://dublincore.org/groups/collections/collection-application-profile/>

⁶ <http://www.ukoln.ac.uk/metadata/rsip/schema/>

⁷ <http://dublincore.org/documents/dcmi-terms/#Collection>

With the IESR's Service records, different properties are required, depending on the type of service being described. To be useful to an application developer, a description of a Z39.50 target needs to contain considerably more information than a description of a web page or an RSS feed, for example. IESR can be used to describe a wide range of different services; the Service Registry's record for the British Library's table of journal contents service, Zetoc, holds information on seven different technical services:

- Zetoc Alert (web page)
- Zetoc OpenURL search
- Zetoc RSS
- Zetoc SOAP service
- Zetoc Search (web page)
- Zetoc Z39.50 search
- Zetoc web cgi search

The IESR metadata schema is continuing to develop in light of new requirements by contributors to and users of the Registry. In such a new and evolving area, it is inevitable that new needs appear over time and it is important for the IESR to be able to adapt to meet those needs. The schema is now being used beyond IESR itself; in Europe and internationally. In Europe, the metadata for the MICHAEL project⁸ is based on that used for IESR. In the USA the IESR metadata is being used in two different projects, the OCKHAM service registry⁹ (funded by the National Science Digital Library) and the registry being developed by the aDORe¹⁰ repository programme at the Los Alamos National Laboratory. More recently, the Australian Partnership for Sustainable Repositories¹¹ has also adopted the IESR approach for its registry.

So what sort of resources does IESR describe?

The first resources to be described in IESR were created by JISC-funded service providers: the Arts and Humanities Data Service, Edina, Intute (then the Resource Discovery Network), MIMAS, the Mirror Service and the UK Data Archive. With the introduction of an online form for the creation of data, the Service Registry team is now encouraging the involvement of other service providers whose resources will be of interest to the UK higher and further education sector. As a result, the Registry now also describes library OPACs, institutional repositories, services provided by publishers, the National Health Service and cultural heritage organisations.

IESR has been developed with the aim of making it easier to find out about resources that are made available through machine-readable services, such as RSS, Z39.50,

⁸ <http://www.michael-culture.org/en/home>

⁹ <http://ockham.org/registry.php>

¹⁰ <http://african.lanl.gov/aDORe/>

¹¹ <http://www.apsr.edu.au/>

Web Services and the Open Access Initiative Protocol for Metadata Harvesting (OAI-PMH). However, the reality is that many online resources are only available through human-readable web pages, so it is also possible to describe 'webpage' as an access method in IESR. Many websites support searching with web-cgi key and value pairs (for instance title=The+Selfish+Gene or author=Richard+Dawkins), and these can be described in IESR using the Web Services Description Language, which is also used to describe Web Services (as the name might suggest!).

How do I register my resources?

If you would like to include your resources in the registry, please visit the page at <http://iesr.ac.uk/be-included/> to register your interest. The IESR team will create basic records for your collections, services and agents, which you will then be able to check and augment. If you prefer, you can describe your resources yourself.

IESR metadata records are exposed to search engines, as well as to other applications through IESR's own interfaces. This means that inclusion in the Registry will make it more likely that people will find out about your resources and interact with them directly. There is a JISCmail list for people interested in IESR developments at <http://www.jiscmail.ac.uk/lists/iesr-stakeholders.html>.

Information held in the IESR is licensed under a Creative Commons licence¹² which allows for the re-use of descriptions. All contributors agree to this licence when they start to include their resources: this approach was chosen on the assumption that contributors would be keen to have information about their resources widely promulgated, as well as to avoid complex licensing issues.

The Registry is most useful if the information within it is up-to-date and accurate, so contributors are asked to check their records on a regular basis and confirm that they are still current. Each record will have a 'status' property to indicate whether it has been approved or (if it has not been recently checked) is deprecated and may be out of date.

How will the information in IESR be used?

If you are developing an application which makes use of other systems and want to see whether there are any potentially useful resources in IESR, you can check the Registry online through its web search at <http://iesr.ac.uk/registry/>. For more automated use, the service has its own OAI-PMH service and Z39.50 search interface. In the current development phase these will be joined by search and retrieval through Web Services. You can always check on how well we're developing IESR's own interoperability by having a look at its own entry in the Registry (<http://iesr.ac.uk/service/iesrsrch?iesrid=1108565359-15664>), as this lists all the ways in which you can get access to the service.

¹² <http://creativecommons.org/licenses/by-nc-sa/2.0/uk/>

The Service Registry team recently published a set of use cases for the IESR.¹³ These have been developed to illustrate ways in which the Registry can be used. In these use cases we see (for example) how the informational needs of individuals such as Mary, a physicist researching the Higgs-Boson particle or Paul, who is investigating tuberculosis transmission, may be met through the interactions of their local portal with the IESR. Other scenarios in each of the use cases document the ways in which the Registry's stakeholders, such as portals, metasearch applications, union catalogues and resource providers, can make use of the IESR and thereby benefit their intended audiences.

For the most part, the service is envisaged as part of the 'middleware' of the Information Environment: end users are unlikely to be aware of the Registry itself, but providers of portals, metasearch applications and the kinds of services now labelled 'Web 2.0' will be able to use the Service Registry to advertise and identify sources of information and functionality which can then be re-presented and re-used in their particular community.

The IESR has been developing since 2002 and has recently moved into a three-year 'Service-in-Development' phase. This will allow the Registry to build up its content and to help developers to build services that will make use of the IESR. If you can envisage a possible use for the information within the Registry within your environment, please contact the IESR team to discuss your particular needs.

Conclusion

As online resources evolve from human-orientated web interfaces to encompass interfaces that can be used by other applications we will need new tools to record the existence of these new services. IESR allows providers to describe their electronic resources in a standardised, easily shared way. All types of interface to the resources can be described, from simple web pages, through well-established protocols such as Z39.50 to RSS news feeds and Web Services. The information within the Registry is carefully checked and maintained by the IESR team, working in partnership with the contributors of the records. This helps to ensure that the Service Registry is a reliable source of up-to-date information on the wide range of electronic resources available in the Information Environment.

¹³ <http://iesr.ac.uk/use/use-cases/>