

BIOME 4U – Embedding BIOME into external services

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Using BIOME functionality in intranets, VLEs, portals and external Web sites

The BIOME service <<http://biome.ac.uk>> has a long-established reputation as a gateway to high quality information in the health and life sciences. However, recent years have seen the development of a wide range of institutional, subject-based, community-based, profession-based and commercial portals, intranets, Virtual Learning Environments (VLEs), search engines and gateways in this subject area.^{1,2} For many users, these access points (together with services such as Google and Yahoo) may be their main, if not only, platform when searching for information on the Internet.

BIOME's funding body, the Joint Information Systems Committee (JISC) <www.jisc.ac.uk>, is involved in, or has funded, a number of portal-related projects including media-specific, community, institutional and subject-based portals <www.jisc.ac.uk/index.cfm?name=programme_portals>. A parallel development trend within the JISC is the concept of taking services and functionality from a portal (or similar service) and embedding it into another, recognising that users will often not want to leave their current environment (for example, their university portal) to use an external service.

Within this context, it is important that BIOME services and functionality can be accessed via other services. The aim of this article is to provide those developing or maintaining information 'gateways' in healthcare with an overview of both the BIOME service and of new and existing mechanisms developed by the BIOME team to enable their users to benefit from BIOME products.

More detailed information on how BIOME services can be

embedded into external services is available from the relevant section of the BIOME Website <<http://biome.ac.uk/about/contribute.html>> or directly from the BIOME team help@biome.ac.uk.

About BIOME

BIOME is the UK's free health and life science Internet service that provides access to high quality Internet resources to support learning, teaching, practice and research. The service is funded by the JISC via the Resource Discovery Network (RDN) <www.rdn.ac.uk>, the UK's network of subject-based 'Hubs'.

BIOME overcomes the problems of finding high-quality information quickly on the Internet by providing UK students, practitioners, teachers and researchers with a focused collection of evaluated Internet resources of direct relevance to their specific needs. BIOME's collection is maintained and developed by a core team of information specialists and subject experts based at the University of Nottingham in partnership with key organisations throughout the UK. The service's database currently contains details on over 25,000 resources.

Resources to be included in BIOME are selected and evaluated according to BIOME guidelines <<http://biome.ac.uk/guidelines/>> and are catalogued and classified to exacting standards. Each resource entry in the catalogue has a brief description to help the user determine the relevance of the resource.

Resources can be searched for via simple or advanced search options and can also be accessed via several browse structures. Links are checked and updated weekly; subject

coverage is reviewed on an on-going basis.

Access to the service is provided via the main BIOME homepage as well as through six subject-specific gateways:

- *OMNI – covering medicine, dentistry, health management and related topics.*
- *BioResearch – covering biological and biomedical research, including genetics, microbiology, biochemistry, and molecular biology.*
- *NMAP – covering resources relating to nursing, midwifery and the allied health professions.*
- *Natural Selection – covering the natural world, including plant and animal life, fossils, ecology and the environment.*
- *VetGate – covering all subjects related to animal health.*
- *AgriFor – covering agriculture, forestry and the food sciences.*

BIOME is developed collaboratively with academic support organisations, lecturers, subject specialists and librarians from UK universities, public sector bodies and professional organisations. This ensures close relations with our user communities.

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Linking to BIOME and BIOME gateways

Any Webmaster or portal, VLE or similar service developer can link to BIOME or one of the individual BIOME gateways to direct their users to high-quality and relevant health

He@lth Information on the Internet

and life science information on the Internet. Graphics and descriptions of the service and gateways are freely available from the BIOME Web site.

Providing BIOME search facilities

On a more sophisticated level, BIOME search facilities can be put in place in external services to complement the very general, non-specific and unselective commercial search engines already offered to users of Web pages, portals or VLEs. This provides users with direct access to a collection of online resources of guaranteed relevance and quality.

A BIOME gateway or generic BIOME search box can be added to pages using a small and simple piece of XHTML code. An example of a BIOME search box (for our VetGate gateway) embedded into an external Web page can be seen at the academic veterinary portal VetSchools <www.vetschools.ac.uk>.

One of the major areas of on-going activity is the development of mechanisms to make it easier for developers of complementary services to offer their users access to BIOME services and functionalities.

A more integrated search can be provided by using Z39.50 <www.loc.gov/z3950/agency/>, the common and popular protocol that supports searching and retrieving information from remote databases, to search the BIOME database or individual BIOME Gateways.

Use of BIOME in this way by HE or FE institutions within the UK for non-commercial research or educational purposes by HE and FE students and staff is permitted provided appropriate acknowledgement is made. All other use is with the prior written consent of the University of Nottingham (all applications to be submitted via the BIOME Hub). BIOME's Z39.50 parameters can be found at <<http://biome.ac.uk/z39.50/>>.

An example of BIOME gateways and other RDN Hubs' databases being used in this way can be seen within the eLibrary Gateway, MetaLib <www.exlibrisgroup.com/metalib.htm>, implementation at the University of Nottingham <<http://metalib.nottingham.ac.uk/>> (select 'log in as guest').

As a further development, BIOME is currently working on public SRW / SOAP compliant search interfaces to all of our gateways and hopes to have these in place by mid-2005. SOAP and SRW are core parts of 'Web Services' architecture.³ Web Services are a new and developing type of Web application with supporting protocols that enable distributed machine-based interaction (usually making use of XML). SRW (Search/Retrieve Webservice <www.loc.gov/z3950/agency/zing/srw/>) is a Web Services protocol to search and return results from remote databases usually via SOAP (Simple Object Access Protocol),⁴ an XML-based protocol for the exchange of information.

Developers who wish to download BIOME records directly into their existing databases or services can now do so relatively easily as BIOME is now fully compliant with the Open Archives Initiative 2 Protocol for Metadata Harvesting (OAI2-PMH)

<www.openarchives.org/OAI/openarchivesprotocol.html>. The OAI2-PMH is a protocol originally developed to support harvesting of records (or metadata) between eprint archive repositories. However, the definition of 'archive' in this context has been broadened to include any repository of stored information <www.oaforum.org/tutorial/>. All BIOME records are now available within an OAI2-PMH compliant repository for harvesting by selected external partners using this protocol.

Embedding the latest BIOME news and resources using RSS

BIOME now offers a series of news channels as RSS sources. RSS (Rich Site Summary or Really Simple Syndication) allows Webmasters and developers of VLEs or portals to embed BIOME news and headlines into their own site. To quote from an excellent overview provided by the RDN EEVL Hub: 'In a nutshell, RSS allows potential users to see *some* of your site's content without them actually having to visit it directly'.⁵

RSS feeds, giving the latest BIOME developments and additions to each of the BIOME subject gateways, are now available. These are updated on a weekly basis. Developers can use feeds to provide their users with regularly updated details of new resources that have been added to each BIOME gateway. These feeds can also be read directly by users using any of a wide range of desktop RSS feed readers.⁶ Feeds currently available include:

- *Latest BIOME developments* <<http://biome.ac.uk/whatsnew/news/BIOMEnews.xml>>.
- *Latest OMNI resources* <www.biome.ac.uk/rssFeedsOut/omni.xml>.
- *Latest NMAP resources* <www.biome.ac.uk/rssFeedsOut/nmap.xml>.
- *Latest BioResearch resources* <www.biome.ac.uk/rssFeedsOut/bioresearch.xml>.
- *Latest VetGate resources* <www.biome.ac.uk/rssFeedsOut/vetgate.xml>.
- *Latest Natural Selection resources* <www.biome.ac.uk/rssFeedsOut/natural.xml>.
- *Latest AgriFor resources* <www.biome.ac.uk/rssFeedsOut/agrifor.xml>.

For more information about BIOME newsfeeds and ways in which they can be embedded within external services (for example, making use of RSSxpress Lite <<http://rssxpress.ukoln.ac.uk/lite/include/>>) please contact the BIOME team.

BIOME training and learning materials

BIOME is responsible for the maintenance and development of nine online training packages within the RDN's Virtual Training Suite <www.vts.rdn.ac.uk/>. These are designed to help students, lecturers and researchers improve their Internet information literacy and IT skills. Guidelines <www.vts.rdn.ac.uk/teachers/guidelines.html> are available for the best means of including the VTS tutorials within VLEs. The following BIOME VTS are of

relevance to those in healthcare:

- [Internet Medic.](#)
- [Internet for Nursing, Midwifery and Health Visiting.](#)
- [Internet for Allied Health.](#)
- [Internet BioResearcher.](#)
- [Internet Pharmacist.](#)
- [Internet for Health and Social Care.](#)

In partnership with the School of Nursing Educational Technology (SONET) Group at the University of Nottingham www.nottingham.ac.uk/nursing/sonet, BIOME staff are planning to develop during 2005 a new online tutorial for our NMAP Gateway in the form of a re-usable learning object (RLO). It is planned to make this RLO freely available for incorporation into VLEs, portals and other environments and it is hoped that it will form the basis of additional tutorials covering basic Internet literacy skills.

The Subject Portals Project

In addition to developing mechanisms to enable BIOME services and functionality to be embedded within other services, the BIOME technical team have also been active participants in the Subject Portals Project (SPP), a JISC funded portal development project. The SPP was a joint project with participants from five RDN Hubs and UKOLN at the University of Bath.

The SPP produced a basic portal framework as well as a range of optional 'plug-in' modules or 'portlets'. These portlets can be used within the SPP portal framework but can also be embedded into external services such as VLEs and institutional portals. The core SPP portal framework is based upon JetSpeed <http://portals.apache.org/jetspeed-1/>, a Java- and XML-based, open-source portal package. The portlets were developed with industry standards very much in mind (for example JSR-168 specifications and standards).

The portlet functions that were developed included: two core systems – a back-end user profiling database and an access management system; a database cross-search tool; an alerting service; an aggregated newsfeed service; an e-journal cross-search

tool; an events/conference listing tool; and a newsfeed cross search tool.

More information on the SPP and its current status can be found on the project Web site www.portal.ac.uk/spp. At the time of writing, the (very basic) BIOME beta SPP portal demonstrator was available from <http://biome.ac.uk/portal> (select 'BIOME SPP Local Demonstrator').

Conclusions

UK health and life science students, teachers and practitioners can access online information from a rapidly expanding number of access points. In order to maintain its visibility amongst its core audiences and to ensure that these communities continue to have access to high quality information relevant to their learning, teaching, research and practice needs, BIOME is undertaking activities in a range of different areas.

One of the major areas of on-going activity is the development of mechanisms to make it easier for developers of complementary services to offer their users access to BIOME

services and functionalities. BIOME is still at an early stage of this development with many of the services outlined still to be fully tested or widely implemented. The BIOME team would, therefore, be happy to hear from any developers of services or sites who would be interested in working with us in this area.

References

[All accessed 03/02/05]

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Beating Bowel Cancer in primary care www.beatingbowelcancer.org/medical

A new Web site has been launched which is designed to keep GPs and other primary healthcare professionals aware of the latest information on the diagnosis and treatment of bowel cancer. Written by health professionals for health professionals, the site includes information and advice on: symptoms, early diagnosis, referrals, screening/other government initiatives, latest developments in treatments, and links to other specialist sites. Visitors are also able to register for regular updates from the charity. User registration is required to access the site. The launch of the Web site is the final stage in a 3-year charity project, Spotlight on Symptoms, funded by the Department of Health and endorsed by The Royal College of General Practitioners and the Primary Care Society of Gastroenterology. The project was an education and support campaign for GPs to reinforce the latest research-based symptoms advice and promote early diagnosis of bowel cancer patients.

Beating Bowel Cancer www.beatingbowelcancer.org/ is a UK national charity for bowel cancer patients, working to raise awareness of symptoms, promote early diagnosis and encourage open access to treatment choice for those affected by bowel cancer.