

Framework Review

Deliverable: F1

January 2007

Virginia Knight, Institute for Learning and Research Technology, University of Bristol
virginia.knight@bristol.ac.uk

Table of Contents

1. Why portlets?.....	2
2. Portlets in SPP phase II.....	2
3. Portlet standards.....	3
3.1 JSR 168/WSRP.....	3
3.2 Future developments of these standards.....	3
3.3 Alternatives: iChannel, iFrames, IBM.....	4
4. Some examples of portal software.....	4
4.1 uPortal.....	4
4.2 Moodle.....	5
4.3 Blackboard.....	5
4.5 WebCT.....	6
4.6 The Sakai Framework.....	6
5. Some services using portlets and portlet registries.....	7
5.1 EVIE - Embedding a VRE in an Institutional Environment.....	7
5.2 IBVRE - Integrative Biology Virtual Research Environment (IBVRE)	8
5.4 GetRef.....	9
5.5 Portlet registries.....	9
6. Conclusions.....	9
References.....	10

1. Why portlets?

Portlets played no part in SPP phase I, which was largely devoted to considering how five RDN hubs might be turned into subject portals. During the course of phase I it became clear that many potential users of these portals might prefer to access content from within their local institutional portal or a virtual learning environment (VLE). The CREE project has also investigated this question and recommended portlets as a way of bringing the functionality of RDN subject portals to users who wished to work within another portal of their choice.¹ By the end of phase I portlets were recognised as a valuable extension of portal software.

The SPP project adapted accordingly by developing portlets in phase II. The SPP portlets are intended to bring some of the functionality of subject portals into other environments such as institutional portals and VLEs.² The choice of functionality for these portlets was in part determined by the results of user testing.³

2. Portlets in SPP phase II

During the lifetime of SPP phase II, the portlet requirements changed. Six portlets were originally proposed as deliverables;⁴ these were reduced to four in the final project report.⁵

For the continuation plan for SPP phase II, development has been concentrated on three portlets which seemed especially desirable at present:

¹ Chris Awre, Matthew J. Dovey, Jon Hunter, William Kilbride, Ian Dolphin, Developing Portal Services and Evaluating How Users Want to Use Them: The CREE Project, *Ariadne* 41 (October 2004) <<http://www.ariadne.ac.uk/issue41/awre-cree/>>

An introduction to portlets, with a simple example:

<<http://web.princeton.edu/sites/isapps/jasig/2002summerVancouver/Presentations/What%20are%20Portlets/img0.html>>

² Ruth Martin, Turning Gateways into Portals, CILIP Library + Information Update, June 2003

<<http://www.cilip.org.uk/publications/updatemagazine/archive/archive2003/june/Update0306d.htm>>

Francisco Pinto, Michael Fraser, Portal Framework + Standards = Functionality Freedom, presentation at Portals and Portlets conference, July 2003 <http://www.nesc.ac.uk/talks/261/Monday/1_8.pdf> (see also other papers at this conference)

Marieke Guy, Lessons and outcomes from the Subject Portals Project, *VINE*, Vol. 35, No.1/2, (2005) 58-63

<<http://hermia.emeraldinsight.com/Insight/viewContentItem.do?contentType=Article&contentId=1465112>>

³ <<http://www.portal.ac.uk/spp/documents/testing/phase1/usertestingreportv3.doc>>

⁴ <<http://www.portal.ac.uk/spp/deliverables/>>, see under Work Packages 4 and 5. See also the plan for maintenance and technical development at

<<http://www.portal.ac.uk/documents/phase2/projectplan/phase2pp.doc>>

⁵ <<http://www.portal.ac.uk/documents/phase1/finalreport/finalreport.doc>>

- T1a/T8: Cross-searching portlet
- T1b/T12: Alerting portlet
- T1c/T13: Newsfeed portlet.

There are other examples of newsfeed portlets, but nothing very similar to the cross-searching or the alerting portlets exists. These are potentially original and useful outcomes of the SPP project. None of the portlets is specific to any framework.

3. Portlet standards

3.1 JSR 168/WSRP

There are two widely acknowledged standards in this area: JSR (Java Specification Request) 168 and WSRP (Web Services for Remote Portlets). These do rather different things. JSR 168 ‘specifies the interfaces for local portlets’, to ensure interoperability and to handle personalisation and security. WSRP ‘specifies the interfaces for exchanging remote portlets across portal frameworks’.⁶ WSRP is not Java-specific, unlike JSR 168 which applies to Java-based portals. The CREE project has produced a presentation and technical report which contain a useful comparison of the two standards.⁷

A JSR 168 portlet will not in itself conform to WSRP, but can be adapted so that it will do so. The WSRP4J toolkit has been developed to enable this.

3.2 Future developments of these standards

The current WSRP standard is 1.0, but version 2.0 exists in draft form (as of June 7 2006).⁸

The successor to JSR 168 is JSR 286. This is intended to be compatible with WSRP v2.0 and went through the Early Draft Review stage in mid-2006.⁹ Some JSR 168-compliant portlets can be made to work with AJAX (Asynchronous JavaScript and XML) but as yet this is not easy; the problems are principally with server-side processing.¹⁰

⁶ Pinto/Fraser, n. 2 above.

⁷ Chris Awre, CREE and Portlet Standards (presentation)

<<http://www.hull.ac.uk/esig/cree/downloads/JPM05portlets.pdf>>

Chris Awre, Jonathan Hunter, Tony Austin, Justin Tilton and Jim Farmer, Investigation of JSR 168 and WSRP standards (CREE Deliverable S2D1A)

<www.hull.ac.uk/esig/cree/downloads/CREEtechnicalreportA.pdf>

⁸ <<http://www.oasis-open.org/committees/download.php/18617/wsrp-2.0-spec-pr-01.html>>

⁹ <<http://jcp.org/en/jsr/detail?id=286>>

¹⁰ <http://www.subbu.org/weblogs/main/2006/02/portlets_and_aj.html>

The SPP portlets conform to JSR 168 standard rather than WSRP. However, as stated above, this is not an insuperable obstacle as they could be converted using a tool such as the WSRP4J toolkit.

3.3 Alternatives: iChannel, iFrames, IBM

An alternative to JSR 168 was the iChannel interface, which was developed by uPortal. However, this is now being superseded by JSR 168 even within uPortal. From version 3.0 of uPortal, portlets will become its native content module, with a channel-to-portlet adapter to maintain compatibility.

Another approach, used for example in Sakai, is to use the <iframe> tag to enclose content from another site, but this is limited and inflexible. Another alternative specification is IBM's Portlet API, though this is gradually being supplanted by JSR 168.¹¹

4. Some examples of portal software

4.1 uPortal

uPortal is an open-standards portal under development by institutions of higher education and in use for institutional portals at many universities, including Bristol. It has been sufficiently successful that other learning environment and content management software systems regard integration with uPortal as a high priority. Moodle, Sakai, IBVRE and indirectly EVIE (see below) have been working towards this end. uPortal was used for the CREE project's demonstrator portal.

WSRP has been supported in uPortal since version 2.2 (the current version at the time of writing is 2.5.3). Since version 2.3, uPortal has supported JSR 168 through a Portlet-to-Channel adapter. As stated above, portlets will become uPortal's native content module from version 3.0 onwards. Version 3.0 RC1 was released at the end of November 2006,¹² and will be followed by Version 3.0 GA.

Because uPortal supports JSR 168, it will in principle support SPP portlets.¹³ uPortal is not a VLE as such, but its close links with VLEs mean that if SPP portlets can be

¹¹ The drawbacks of <iframe> are explained at <<http://www.portletbridge.org/faq.html#iframe-vs-portlet>>. A comparison of the two may be found at <http://www-128.ibm.com/developerworks/websphere/library/techarticles/0312_hepper/hepper.html>

¹² <<http://www.uportal.org/release/allReleases.html>>

¹³ A further, incomplete, list of some portlets which could be used in uPortal appears at <<http://www.ja-sig.org/wiki/display/PLT/Portlets+from+other+Portals>>.

included within uPortal, it will be much easier to promote them among the user community. Several instances of collaboration with uPortal are mentioned below.

4.2 Moodle

Moodle is an open-source course management system written in PHP. During the last couple of years the question has arisen of how to incorporate Moodle into other portals, or vice versa.¹⁴

Recently, Moodle has been made available as an iChannel for uPortal.¹⁵ It has also been proposed that Moodle could be integrated with uPortal as a WSRP portlet.¹⁶ However at the time of writing this has not yet been done.

Furthermore, there has been some work towards incorporating one of the SPP portlets into Moodle; the xSearch cross-searching portlet was embedded in Moodle by Santiago Chumbe. This was done by linking xSearch (or rather a customised version of the SPP portal consisting only of xSearch) within a framed page in Moodle, using the “Moodle Resource” module, rather than by embedding xSearch as a portlet. But ‘Because SPP portal does not comply with the WSRP spec, we could not decouple the portlet from the SPP portal framework and run it as a remote portlet via web service.’¹⁷ For the SPP portlets to work properly within Moodle, they would need to adhere to the WSRP standard.

4.3 Blackboard

Blackboard itself is closed-source commercial course management software, but it provides an open architecture initiative, Building Blocks, which allows users to extend the functionality of the software and share developments with others.¹⁸

Information from Blackboard can be accessed via a portlet, but Blackboard does not support other portlets. However, information from Blackboard has been integrated into uPortal channels/portlets.¹⁹

¹⁴ See for example a summary (16 August 2005) by Jim Farmer of Georgetown University of how Moodle could be embedded into a portal (requires free registration):

<<http://moodle.org/mod/forum/discuss.php?d=15627#136785>>.

The following forum post discusses various initiatives to make Moodle available as a portlet:

<<http://moodle.org/mod/forum/discuss.php?d=15627#136785>>

¹⁵ <<http://sourcesup.cru.fr/projects/cmoodle/>>

¹⁶ <<http://www.immagic.com/eLibrary/GENERAL/IMM/I060118T.pdf>>

¹⁷ <<http://www.icbl.hw.ac.uk/~santiago/elf/moodle.html>>

¹⁸ <<http://www.blackboard.com/extend/b2/>>

¹⁹ <<http://www.ja-sig.org/wiki/display/UPC/Blackboard>>

<<http://www.blackboard.com/company/press/release.aspx?id=510480>>

Blackboard is moving towards using WSRP and JSR 168, so that some of its Community System modules may be integrated with Microsoft SharePoint. At present this appears to be at an early stage.²⁰ Once Blackboard has adopted these standards, it may be possible to use SPP portlets within a Blackboard environment.

4.5 WebCT

This has now merged with Blackboard but retains its own product lines. WebCT Vista (now Blackboard Vista) is available as a portlet compatible with uPortal but does not support portlets itself. Similarly, a WebCT Campus Edition (now Blackboard CE) portlet to enable single sign-on has been available for Oracle since February 2005.²¹

4.6 The Sakai Framework

The Sakai Project is creating open-source educational software, including portal software. It has been looking at portlet support, with a view mainly to integrating with uPortal, but also to rendering Sakai tools through JSR 168 (and also iChannel).

A technical report has been produced on the portability profile, with a view to including Sakai tools within uPortal (30 March 2004).²² In August 2005, Charles Severance produced a JSR 168 portlet which enables all Sakai tools to be used within another portal.²³

Sakai developers are also being encouraged to make Sakai tools compatible with WSRP.²⁴ However, major progress in this area awaits the release of WSRP 2.0. In fact, the Sakai community has been encouraged to influence WSRP 2.0 so that it will be better able to support Sakai.²⁵

²⁰ <http://www.blackboard.com/company/events/AsiaPac06/Detailed_Schedule.htm> (presentation given in September 2006)

²¹ <<http://www2.blackboard.com/service/srtemplates?assetid=0871ABB38EF66934E0440003BA4FDBBD>>

²² <http://www.sakaiproject.org/tech/sakai_TPP.pdf>. See also the discussion in March-April 2005 (<<http://bugs.sakaiproject.org/confluence/display/ARCHIVE/CAI+03+-+Portlet+requirements>>) and these reflections on working with uPortal (Sep 2005):

<<http://bugs.sakaiproject.org/confluence/display/REQ/2005/09/01/uPortal+Requirements+Process>>

²³ <www.ja-sig.org/wiki/display/PLT/SakaiRenderPortlet>

²⁴ <<http://bugs.sakaiproject.org/confluence/download/attachments/9675/WSRP+in+Sakai+-+Austin+-+Winter+05.pdf>>

²⁵ Charles Severance, Sakai Project Report: The Evolution of the Sakai Architecture (draft – January 2006) <http://elearning.surf.nl/docs/sakai_nl/2006_07_arch_history_v01.doc>, (esp. p. 20). This article gives a history of the development of Sakai, including thoughts on portlet development, past and future.

Sakai in its entirety has been used as a portlet, firstly at UC Merced, in a portal build with uPortal using iFrames.²⁶ It was also made available in a similar way at the University of Virginia (until the end of November 2006), again using uPortal iFrames but also JSR 168.²⁷

Another area of development is to get a portlet from outside to work within Sakai. As present this still appears to be work in progress.²⁸ According to Charles Severance, Sakai's chief architect, development of portlets has been held back by the current state of standards (JSR and WSRP) and software (WSRP4J).²⁹

5. Some services using portlets and portlet registries

5.1 EVIE - Embedding a VRE in an Institutional Environment

The EVIE project was a two-year JISC-funded project which started in November 2004; partners were the University of Leeds Library, the British Library, Virtual Knowledge Park, and Bodington.org. It aimed to make it easy to undertake research-associated tasks online by 'embedding a VRE in an institutional environment' and 'testing the integration and deployment of key software components within a portal framework'. These software components include portlets.

The Luminis portal framework was used. Version 3 of Luminis did not support JSR 168 standards, but version 4 is based on uPortal 2.5 and does support them. EVIE uses open standards and recognises its 'responsibility to share its results with other contributing institutions' by producing JSR 168-compliant portlets (as opposed to iChannel channels).

Suggestions for specific portlets were set out in a schedule of requirements based on a user survey and in EVIE's software development plan.³⁰ As with SPP, the details of the portlets required changed over the course of the project. A proposed portlet to

²⁶ <http://it.ucmerced.edu/support/guides/web_services/index.jsp#Portal>. The portal itself is not accessible outside the University.

²⁷ This portlet is described at: <<http://www.jasig.org/wiki/display/UPC/uPortal+Sakai+Integration+at+the+University+of+Virginia#uPortalSakaiIntegrationattheUniversityofVirginia-IntegrationStrategy>> though unfortunately technical details are not filled in.

²⁸ 'Sakai is working towards portlet support', Mark Norton, 25/10/2005: <<http://bugs.sakaiproject.org/confluence/display/ENC/JSR-168>>. Some more recent (October 2006) thoughts on the practicalities of this may be found at: <<http://bugs.sakaiproject.org/confluence/display/REQ/UI+and+Portal+Requirements>>. See also the following Powerpoint presentation which gives the state of play at July 2006: <<http://www.nesc.ac.uk/action/esi/download.cfm?index=3234>>, and a presentation about a (proposed?) portlet at: <http://bugs.sakaiproject.org/jira/secure/attachment/11605/sakai_portlet_v03.ppt>

²⁹ See n. 25 above.

give alerts for new resources was dropped. Another, for packaging an email folder containing email alerts from subscription services as an RSS feed required further funding. EVIE intended to use CREE's portlet to access the ZETOC site and to produce some portlets of its own: a portlet to display a list of SRU resources and another to display search results.³¹

EVIE's WorkPackage 3 (Systems integration requirements analysis) identified a need for 'alerts for new resources' which 'could be delivered via RSS feed, in an amalgamated alert portlet'. Should the work of EVIE be continued, the SPP alerting portlet might be useful here.

5.2 IBVRE - Integrative Biology Virtual Research Environment (IBVRE)

This is part of a subject-based portal for researchers in integrative biology. This two-year project (which began in April 2005) has devoted much effort to identifying and meeting the needs of prospective portal users. These differ from those of users of some of the other portals considered in this report. It is intended that the portal should be used to support direct collaboration between researchers in the whole research process of a large international and interdisciplinary project, even to the conducting of *in silico* experiments.³²

IBVRE identified several tools which it would be desirable to incorporate in the portal, including a tool to provide notification of biological journal papers. In connexion with this the project proposes to evaluate the SPP alerting portlet.³³

IBVRE uses uPortal 2.5 as the portal framework. This is JSR 168-compatible, using OGCE to deliver Grid portlets, and it complies with WSRP.

5.3 The JISC VRE Programme

One relevant project funded under this programme is the Sakai VRE Portal Demonstrator. This is a distributed project with information and demonstrators spread between several sites: Lancaster, Daresbury, Portsmouth (hosted at Reading) and Oxford.³⁴ Oxford's demonstrator includes a newsfeed from the Intute arts and

³⁰ <http://www.leeds.ac.uk/evie/workpackages/wp3/EVIEWP3_SysRequirements_v0_4dms.pdf>

<http://www.leeds.ac.uk/evie/workpackages/wp3/EVIEWP3_chanDevPlan_v6.pdf> (esp. section 1.1)

³¹ Alerting portlet: A (g) in the development plan. Packaging email folder: B(f). CREE's portlet for ZETOC: A(b). EVIE's own portlets: A(c).

³² Overviews of the project:

<<http://www.vre.ox.ac.uk/ibvre/OeRC%20Seminar%20-%20IBVRE.pdf>> (October 2006)

<http://www.jisc.ac.uk/whatwedo/programmes/programme_vre/vre_solutions/vre_solutions_ibvre.aspx>

³³ <<http://www.vre.ox.ac.uk/ibvre/index.xml.ID=literaturealerting>>

³⁴ <<http://e-science.lancs.ac.uk/vre-demonstrator/index.html>>

humanities blog and news from OSS Watch. These portlets are created using iFrames. Lancaster promises to ‘seek widespread community input to expose existing tools and services as Java portlets ...’, presenting a possible opportunity for SPP portlets.

Another project funded under this JISC programme is the evaluation of Sakai as a VRE by CARET in Cambridge.³⁵ This is at an early stage at present.

5.4 *GetRef*

This is the result of the Xgrain project and is a cross-searching tool for querying multiple services. There are two interfaces: a Web interface and a machine-to-machine interface. As part of the CREE project, a portlet version of GetRef was developed. This conformed to JSR 168 but could also be converted to WSRP using WSRP4J.³⁶

5.5 *Portlet registries*

There are two registries currently in use. One is the JA-SIG clearing house available to members of higher education institutions, with free registration. This is at an early stage at the time of writing.³⁷ The other is the Portlet Open Source Trading site.³⁸ Both could be useful for making SPP portlets more widely available.

6. Conclusions

JSR 168 (to be succeeded by JSR 286) and WSRP 1.0 (to be succeeded by 2.0) are now the acknowledged standards in this area, displacing alternatives in recent years, and it will be essential to comply with them if the SPP portlets are to be widely taken up. Their usefulness will also depend on compatibility with widely used portal software, in particular uPortal, Moodle and the Sakai framework. Of these, uPortal is the most promising at present as it already complies with JSR 168. uPortal software is sufficiently widely used that a portlet which can be integrated with it will have a large ready-made user community. Therefore, creating versions of the portlets which can be used within uPortal should be a high priority. Moodle will require a WSRP version of the portlets. Sakai has until recently been holding back from JSR/WSRP

<http://e-social-science.lancs.ac.uk/vre.html>

<http://tyne.dl.ac.uk/Sakai/>

<http://portals.acet.rdg.ac.uk/projects/sakai-vre-demonstrator>

<http://www.vre.ox.ac.uk/>

³⁵ <http://www.caret.cam.ac.uk/workingwith/index.html>

³⁶ This portlet is described in the following article (available to subscribers):

<http://www.emeraldinsight.com/Insight/ViewContentServlet?Filename=Published/EmeraldFullTextArticle/Articles/2390221006.html>

³⁷ <https://clearinghouse.ja-sig.org/>

³⁸ <http://portlet-opensource.sourceforge.net/>

standards but is now working towards them (with some reservations). Commercial packages such as Blackboard are moving more slowly in this direction.

One step which has been taken towards including an SPP portlet in an active application is the evaluation of a portlet by IBVRE. Should a successor project to EVIE arise, this would be another possible opportunity to use SPP's alerting portlet. A third possibility is to work with the projects set up under the JISC VRE programme.

References

Blackboard

<<http://www.blackboard.com>>

CARET

<<http://www.caret.cam.ac.uk/jiscvre/index.html>>

EVIE

<<http://www.leeds.ac.uk/evie/>>

GetRef

<<http://edina.ac.uk/getref/>>

IBVRE

<<http://www.vre.ox.ac.uk/ibvre/>>

JISC Virtual Research Environments Programme

<http://www.jisc.ac.uk/whatwedo/programmes/programme_vre.aspx>

JSR 168

<<http://www.jcp.org/en/jsr/detail?id=168>>

Luminis

<<http://www.sungardhe.com/default.aspx?id=102>>

Moodle

<<http://moodle.org>>

OGCE

<<http://www.collab-ogce.org/ogce2/>>

Sakai

<<http://www.sakaiproject.org/>>

uPortal

<<http://www.uportal.org/>>

WSRP

<<http://www.oasis-open.org/committees/download.php/10539/wsrp-primer-1.0.html>>

WSRP4J

<<http://portals.apache.org/wsrp4j/>>