

## The Open Source Parade

College and university administrators everywhere are struggling with the challenges of trying to “do more with less” in terms of balancing mandates and resources. The Internet has enabled new approaches for teaching and learning, vast interinstitutional collaborations in humanities and scientific research, and a renewed focus on the college/university as an engine of economic growth for a state or region. These opportunities, however, have been accompanied by an enormous appetite for the resources needed to create and sustain the information technology (IT) infrastructure on which the opportunities are based. The challenge is to leverage IT for the reliable services and innovation that are at the core of the educational enterprise without robbing the academic treasury to do so.

One component of these IT costs is annual licensing fees paid to companies for the right to use their software. Administrators have watched with great interest as open source projects for operating systems (e.g., Linux) and Web serving (e.g., Apache) have delivered outstanding software that requires no licensing fee. Might this model of collaborative software development help higher education institutions advance their IT capabilities while still keeping costs under control?

Application software for higher education appears to be the next arena for open source efforts. Investments by foundations, government, companies, and higher education institutions are producing new options for open source application software. Since space does not permit a complete inventory of all open source projects, this article will

focus on three projects that have attracted broad interest in higher education: the uPortal project, the Sakai Project, and the Open Source Portfolio Initiative (OSPI). These three projects are designed to pre-integrate with each other, which will further reduce local implementation costs for higher education. All three received substantial grant funding from the Andrew W. Mellon Foundation.

### uPortal Project

The uPortal project (<http://www.uportal.org>) began in 2000 as a \$3.2 million open source project of JA-SIG to create portal software for education. Three years later, it earned the #4 spot in the “2003 *InfoWorld* 100 Awards.” Portals provide a way to consolidate an institution’s information and service offerings (e.g., find a book, add a class, locate a ride) in a personalized way for individual users. Portals can enable single sign-on across a range of services and can free content/service providers from redundant work in developing a user interface and navigation. Over 175 colleges and universities use uPortal, and five companies provide for-fee support for the software.

The fall 2004 release of uPortal incorporates a new industry standard for content and service providers to deliver their information through “portlets.” The JSR-168 specification means that a service (e.g., search the Library of Congress, receive calendar updates from the NSF, join a course discussion group) can be delivered in a standard way to any JSR-168-based portal. The summer and fall 2004 releases also included a number of tools to simplify institution-wide administration of the software. In addition, the

uPortal project partnered with the Sakai Project to pre-integrate the software from these two open source initiatives.

The uPortal project provides one of the more mature examples in higher education of how open source software can eliminate licensing fees, provide world-class software, and continue to innovate through the contributions of software and tools from many colleges, universities, companies, and individuals.

### Sakai Project

The Sakai Project (<http://www.sakai-project.org>) was previewed at EDUCAUSE 2003 and became a \$6.8 million open source project in January 2004. The two-year project promises to develop a next-generation course management system (CMS) by integrating the software and experiences at the University of Michigan, Indiana University, MIT, and Stanford University, as well as the Open Knowledge Initiative (O.K.I.) and uPortal projects. It also proffered to create a Technology Portability Profile (TPP) that would make it easier for software written at one institution to be implemented elsewhere.

The project released version 1.0 of its Collaboration and Learning Environment (CLE) software in July and is working on version 1.5, which is scheduled for December 2004. Although “CLE” is a new term, Sakai chose it to convey that Sakai is not a conventional CMS. The system includes an improved version of the former CHEF Project CourseTools (a CMS), collaboration tools to support cross-institutional faculty research projects or committee work, new quizzing/testing/assessment tools, implementations of the O.K.I. specifications, and integration

with uPortal 2.3/3.0. As a CLE, it contains the tools and services needed to support the broad set of daily activities of faculty and students.

The new Sakai Assessment Manager (SAMigo) provides a rich set of tools for authoring, administering, and analyzing both formative and summative assessments. It is based on the IMS Global Learning Consortium's Question and Test Interoperability specification, which means that instructors can more easily import and export their questions and tests from textbook publishers and other instructors. The Sakai Assessment Manager integrates with the Sakai CLE or can be used as a complement to another CMS.

The Sakai Project software is now in full production use at Michigan and in pilot deployment at Indiana, MIT, Stanford, and a number of partner institutions. Release 2.0 will be implemented at the other institutions during 2005–6.

Even though the Sakai Project software is free and has no licensing fees, more than forty-five institutions have joined the Sakai Educational Partners Program (SEPP) at \$10,000 per year; the SEPP is a self-sustaining community for the evolving Sakai software. The June 2004 SEPP Conference announced that two SEPP members—Foothill–De Anza Community College District and University of California–Berkeley—would join the Sakai Project Board. Foothill received a \$600,000 grant from the William and Flora Hewlett Foundation to migrate their CMS (ETUDES), used by fifty community colleges, to Sakai.

## OSPI

The use of student electronic portfolios (“ePortfolios”) for evidence-based assessment has received growing attention among many higher education organizations, including the EDUCAUSE Na-

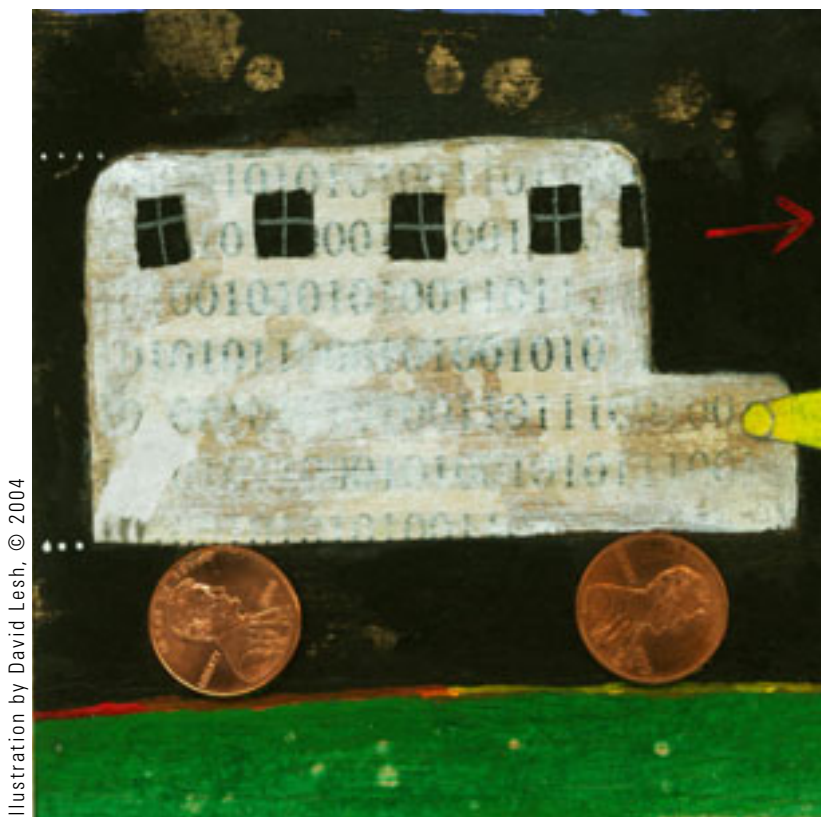


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tional Learning Infrastructure Initiative (NLII). The philosophy of learner-owned portfolio content for lifelong learning—from “K-through-gray”—engages the vision of educational reformers while presenting many implementation challenges for today’s approaches to primary, secondary, and higher education. Higher education is a good place to start on the effective use of ePortfolios, and software is needed that allows portfolios to integrate with other campus infrastructure.

The Open Source Portfolio Initiative (OSPI) (<http://www.theospi.org>) was formed in January 2003 to address the software need for ePortfolios. It released the Open Source Portfolio (OSP) version 1.0 in July 2003, based on the successful University of Minnesota ePortfolio. An enhanced interface was released in version 1.5 in July 2004 at the OSPI User Conference. With almost 2,000 downloads, worldwide interest in the free, open source software has grown with the accelerating interest in ePortfolios.

In 2004, Indiana University began leading a \$1 million project with the r-smart group and OSPI to develop a new, clean-sheet design for OSP version 2.0. The 2.0 software builds on the insights of

1.x deployments and is based on the Sakai TPP, making it pre-integrated to work with Sakai and uPortal. It also uses new ePortfolio data specifications from IMS to enhance interoperability among ePortfolio software and CMS software. The OSPI is now posting incremental software updates for the beta release of the new 2.0 ePortfolio software, with the first full release of 2.0 set for May 2005.

## Conclusion

These three open source projects, along with many others (e.g., VUE, PKI, LionShare), affirm that colleges and universities

should carefully consider the value of their software licensing expenditures as they seek to do more with less. Open source software projects that are developed of, by, and for higher education are providing favorable economics and are harnessing the industry’s vast innovation capability. Good partnering and pre-integration among open source projects will greatly reduce local implementation costs.

For some institutions, open source projects are providing replacements for aging homegrown systems or commercial options, whereas other institutions are blending these projects with their existing systems. Either way, administrators in higher education should be tracking how open source software may meet some of their requirements and how they can participate in shaping the development of this critical software. Starting small pilot projects and engaging with the open source community are essential first steps.



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