



Sun Microsystems and Education Communities

Sun Global Education and Research
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Abstract

This white paper describes the Education Communities that Sun Microsystems Global Education and Research industry group participates in, sponsors, or stewards.

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Introduction

"The success of the free and open source software (FOSS) movement and the demand for increased technological skills worldwide have created new project-based learning opportunities that prepare students for emerging models of software development in the IT industry."

– Todd Korth, Director
Sun Education and Research

Web 2.0 technologies are rapidly changing the landscape of today's higher education environment; new modes of teaching, learning and research are thriving in an era that is being termed Education 2.0. At Sun Microsystems, we define Education 2.0 as the tools and technologies that allow students, faculty and researchers to access resources and content at any time from anywhere, with a high degree of sharing, collaboration and participation.

Since its inception in 1982, Sun Microsystems has helped educational institutions advance learning and research through the use of innovative network computing solutions. Our technologies continue to empower student learning and create innovative research environments unlike any other company with open, interoperable and integrated solutions.

Sun values competition in the marketplace, but welcomes collaboration in the community, as it will only benefit the education of students and teachers worldwide and help bridge the Digital Divide. Accordingly, Sun was an early supporter and participant in the open source and open community movements. "If there were ever a philosophy that guided our decision making at Sun, it's that...an Internet connected by freely available standards is more valuable, to Sun and our customers, than one defined by dependencies on proprietary technologies," notes Sun President and CEO, Jonathan Schwartz.

The OpenSolaris community is one example of Sun Microsystems' commitment to open source. The group includes developers, system administrators, and users who seek access to cutting-edge operating system technology that runs on multiple hardware platforms. As of December 2007, OpenSolaris.org had more than 80,000 community members, 57 registered user groups, nearly 190 projects and more than 40 communities worldwide.

In addition, a report prepared for the European Commission measured Sun's activity within the Linux community and found it to be greater than any other organization; Sun's overall contribution was three times that of IBM and more than five times that of Red Hat.

Against this backdrop of dedication to the community movement, Sun supports Education and Research by creating and participating in a number of education communities dedicated to a range of collaborative effort designed to make the most of today's technologies for academic and research environments. This publication highlights some of the open communities that Sun either participates in, sponsors, or stewards.

Chapter 1: Sun Technology-based Education Communities

“Curriki is an open, free Web resource where educators can easily add, edit, and change curriculum. And because it's based on sharing and open-source, all users need is access to a browser.”

– Scott McNealy, Chairman
Sun Microsystems, Inc.

Curriki

Sun Microsystems believes that an open source curriculum repository is a key element in improving the quality and reach of education throughout the world. Sun began to act on this vision when, in 2004, it founded the Global Education Learning Community, Curriki's predecessor. The goal of Curriki is to provide a forum where educators, parents and students can work together to develop interesting, creative and effective educational materials that the global education community can use for free. The initial focus is on K-12 curricula in the areas of mathematics, science, technology, reading and language arts, and languages.

<http://www.curriki.org>

Java Architectures - Special Interest Group (JA-SIG)

JA-SIG is an independent organization, started by Sun Microsystems over 10 years ago, designed to increase the flow of information between institutions and companies involved in administrative applications development using Java technology. The JA-SIG sponsors a twice-yearly conference, facilitates the sharing of Java components, and leads development of uPortal (a free open-source, open-standards portal for higher education). Sun is a Commercial Affiliate of JA-SIG.

<http://www.ja-sig.org/>

NetBeans in Education

The goal of the NetBeans in Education Community is to bring together people dealing with teaching Java, Computer Science or just interested in new ways of using the Internet in the classroom. Resources are available for teachers who use NetBeans in the classroom.

<http://edu.netbeans.org/>

Sun Academic Developer Program

The Sun Developer Network (SDN) Academic Developer Program has the goal of empowering Academic Developers through sharing, collaboration and open innovation. Whether you're a student and new to Java or Solaris, an educator looking to incorporate the latest innovations in your curricula, a researcher building high performance applications or a hard-core game developer, the SDN Academic Developer Program offers ready access to the tools, resources and communities in which to participate and share.

<http://developers.sun.com/learning/academic/>

Sun HPC Consortium

HPC Consortium meetings are held biannually in conjunction with the U.S. and European supercomputing conferences. While the Consortium is primarily a technical computing user group meeting for Sun's academic and research customers, all customers and interested parties from industry and government are welcome. Subscribe to the Consortium mail list run by the Sun Center of Excellence at RWTH Aachen University.

<http://mailman.rwth-aachen.de/mailman/listinfo/sunhpc/>

Sun Identity Special Interest Group (Sun-IDSIG)

The Sun Identity Special Interest Group (Sun ID-SIG) is a Sun Microsystems-sponsored community focused on sharing identity management implementation approaches and best practices. It is open to higher education customers of Sun's Identity solutions, as well as companies providing Sun identity management services to higher education. It is a customer-driven forum providing an opportunity to exchange practical and technical knowledge and experiences with other Sun identity customers.

<http://sun-idsig.org>

Sun Immersion Special Interest Group (Sun-ISIG)

The Sun Immersion Special Interest Group (SIG) is a Sun Microsystems-sponsored open community dedicated to the research, development and application of Project Wonderland for virtual Immersive Education projects. The community is free and open with no central control or authority. All code is available under open source license. All content, curriculum and worlds art path is open and generally released under Creative Commons.

<http://sun-isig.org>

Today's virtual worlds represent the first phase of 3D Web. Dedicated servers running their own virtual worlds are to 3D Web what MySpace is to today's Web. In the future, 3D Web will be a network of virtual worlds that are owned by various entities. The success of virtual worlds will depend on factors such as openness, enterprise-strength platforms, vibrant communities, and a portfolio of services.

– Sun Microsystems White Paper
“Open Virtual Worlds”

www.sun.com/service/applicationserversubscriptions/OpenVirtualWorld.pdf

"Libraries and universities around the world face a common problem: how to best capture and archive valuable knowledge. Global discussion is the first step towards finding solutions that meet institutions' individualized preservation needs. With the formation of Sun PASIG, we are looking forward to working with our peers to discover and create the best digital preservation options available, from infrastructure to interfaces."

– Michael Keller, Stanford University Librarian and Director of Academic Information Resources

Sun Knowledge Enterprise Special Interest Group (Sun-KESIG)

The Knowledge Enterprise Special Interest Group aims to keep higher education and primary and secondary (K12) Sun customers up-to-date with relevant Sun technology and open standards initiatives, to provide support for the user community, and to provide a forum to discuss recent developments.

<http://www.sun.com/secure/products-n-solutions/edu/contact.jsp?ref=5>

Sun Preservation and Archiving Special Interest Group (Sun-PASIG)

Sun PASIG is open to institutions and commercial organizations interested in working with Sun Microsystems in learning and sharing practical experiences in the following:

- Comparison of high-level OAIS architectures, services-oriented architecture work, and use cases.
- Sharing of best practices and software code.
- Cooperation on standard, open, 'in-a-box' solutions around repository technologies.
- Review of storage architectures and trends and their relation to preservation and archiving architectures and eResearch data set management.
- Discussion of the uses of commercial third party and community-developed solutions.

The organization is focused on sharing open computing solutions and best practices. But while sharing information about the state-of-the-art developments in standards and open source is important, this is not a standards-setting organization. It is a place to share practical experiences, successes, pain points, and potential topics for more collaboration.

<http://sun-pasig.org>

Chapter 2: Other Open Source Education Communities

DSpace

DSpace is an open-source digital repository system that captures, stores, indexes, preserves, and redistributes an organization's research data. Data can be captured in any format – text, video, audio, and data – for distribution over the Web. It provides indexing and preservation services. DSpace is freely available as open source software.

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

EPrints

EPrints is a flexible, open source platform for building high quality, high value repositories for research literature, scientific data, student theses, project reports, multimedia artefacts, teaching materials, scholarly collections, digitized records, exhibitions, and performances. Over 250 known archives are running on EPrints worldwide.

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

Fedora

Jointly developed by Cornell University and the University of Virginia Library, Fedora is open-source software that gives organizations flexible tools for managing and delivering digital content. Some examples of applications built upon Fedora include library collections management, multimedia authoring systems, archival repositories, institutional repositories, and digital libraries for education.

<http://www.fedora.info/>

Core Principles of Fedora:

- *Fedora is about the rapid progress of Free, Open Source software and content.*
- *Fedora believes in the statement "once free, always free".*

– *Fedora Project Wiki*

Kuali

The Kuali Foundation is a non-profit organization responsible for sustaining and evolving a comprehensive suite of administrative software that meets the needs of all Carnegie-class institutions. Its members are colleges, universities,

commercial firms and interested organizations that share a common vision of open, modular, and distributed systems for their software requirements. The goal of Kualii is to bring the proven functionality of legacy applications to the ease and universality of online services. Glassfish and MySQL are being incorporated into the Kualii community. Sun is a Commercial Affiliate of Kualii.

<http://kuali.org/>

Moodle has a large and diverse user community with over 330,000 registered users, speaking over 70 languages in 196 countries. Over 40,000 registered sites offer more than 18 million courses delivered with Moodle.

– Moodle website

Moodle

Moodle a free, open-source course management system designed to help educators create effective online learning communities. It offers students easy access to course content and online resources such as the library, digital reading rooms, and forums for online discussions between instructors and students.

<http://moodle.org/>

Oficina de Cooperación Universitaria (OCU)

OCU is a non-profit organization created and funded by six prestigious Spanish universities to provide a forum which would allow the member universities to cooperatively design, develop and implement information systems. The goal of OCU is to use software solutions to improve the overall management of key areas of educational institutions, including human resources, finance, data warehousing, and student information systems.

<http://www.ocu.es/>

University Fernando Pessoa (UFP) started a pilot with Sakai 1.0 in October 2004, opening it to all instructors and students. One year later, 25% of UFP (around 1300 users) had logged in at least 5 times, and 150 sites were active.

UFP deployed Sakai 2.1 in February 2006, fully integrated with the Student Information System and the Course Roster, granting access to 5457 users (instructors, students and staff), and to 2088 sites. Acceptance has been great, by students and instructors alike.

– Feliz Ribeiro Gouveia,
Universidade Fernando Pessoa

Pachyderm

Pachyderm is a partnership led by The New Media Consortium (NMC) and the San Francisco Museum of Modern Art, and funded by the Institute for Museum and Library Services (IMLS). The project has brought software development teams and digital library experts from six NMC universities together with counterparts from six major museums to create a new, open source authoring environment for creators of web-based and multimedia learning experiences.

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

Sakai Project

Sakai Project is a community source software development effort to design, build, and deploy a new Collaboration and Learning Environment (CLE) for higher education. The Sakai Project's primary goal is to deliver the Sakai application framework for course management and research collaboration. The

The most common usage of the SRB software infrastructure is as a Distributed Logical File System that provides a powerful solution to manage multi-organizational file system namespaces. SRB presents the user with a single file hierarchy for data distributed across multiple storage systems. It has features to support the management, collaboration, controlled sharing, publication, replication, transfer, and preservation of distributed data.

– SRB website

tools are being built by designers, software architects and developers at different institutions, using an experimental variation of an open-source development model called the community source model. Sun Microsystems is supporting the promotion and implementation of the Sakai Collaborative and Learning Environment.

<http://sakaiproject.org/>

Storage Resource Broker (SRB)

SRB is a data grid middleware software system developed by the San Diego Supercomputer Center (SDSC) and commercialized by Nirvana that is operating in many national and international computational science research projects. SRB supports shared collections that can be distributed across multiple organizations and heterogeneous storage systems. SRB provides a uniform interface to heterogeneous data storage resources over a network.

http://www.sdsc.edu/srb/index.php/Main_Page

Chapter 3: Open Standards and Professional Communities

Coalition for Networked Information (CNI)

CNI is an organization dedicated to supporting the transformative promise of networked information technology for the advancement of scholarly communication and the enrichment of intellectual productivity. Some 200 institutions representing higher education, publishing, network and telecommunications, information technology, and libraries and library organizations make up CNI's members. Semi-annual task force meetings bring together representatives of these constituencies; CNI also hosts a variety of networked information projects.

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

European University Information Systems (EUNIS)

EUNIS is a membership association of more than 100 universities, educational organizations and research institutions from over twenty European countries. EUNIS was formed in 1993 to encourage communication, collaboration and cooperation between those responsible for information systems in the education and research community, to facilitate liaison with major suppliers in the field, and to assist in setting the strategic agenda at the national and European levels.

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

IT Architects in Academia (ITANA)

ITANA is a peer group of information technology architects in higher education or in industries serving higher education. The objectives of ITANA include sharing insights and success stories on effectively working in the field, comparing notes on various software packages, developing common models, and facilitating the creation of new IT architecture groups on educational campuses throughout the academic community.

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

CNI's projects seek to:

- *share knowledge about architectures and standards for networked information*
- *improve scholarly communication*
- *study the economics of networked information*
- *advance Internet technology and infrastructure*
- *enhance teaching and learning*
- *understand institutional and professional implications of the networked environment*
- *expand government information on the Internet*

– CNI website

JISC's activities support education and research by promoting innovation in new technologies and by the central support of ICT services. JISC provides:

- *A world-class network – JANET*
- *Access to electronic resources*
- *New environments for learning, teaching, and research*
- *Guidance on institutional change*
- *Advisory and consultancy services*
- *Regional support for FE colleges - RSCs*

– *JISC website*

Joint Information Systems Committee (JISC)

JISC is a publicly-funded UK-wide body supporting the use of information and communications technologies for learning, teaching, research and administration in further and higher education. Alongside support and advisory functions, and the allocation of some targeted funding, JISC supports the JANET broadband internet backbone and associated local network structures via UKERNA (the United Kingdom Education and Research Networking Association).

<http://www.jisc.ac.uk/>

Open Repositories

An annual conference focused on repository platforms for scholarly purposes, Open Repositories creates an opportunity to explore the challenges faced by user communities and others in addressing the lifecycle of information – from supporting the creation and management of digital content, to enabling use, re-use, and interconnection, and ultimately ensuring long-term preservation and archiving.

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

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