"Open Source’ Integrated Library System Software

By Richard W. Boss

A number of public libraries have been investigating “open source” integrated library system software. Their motivations appear to be both financial and a desire to tailor a system to more closely meet their requirements than the commercial product allow.

The term “open source” refers to software that is free and that includes the original source code used to create it so that users can modify it to make it work better for them. It also includes the right of redistribution; therefore, there may be products that are based on other open source products. While the software may be free, a developer or distributor may charge for services, including special programming, installation, training, and technical support.

The perceived advantages of open source software are:

- **Ability to tailor to fit local needs**

  The availability of the source code means that a user can modify and enhance the software to more closely fit its own needs. Unlike with commercial products, the development priorities are set by the user, not a vendor.

- **No restriction on use**

  Unlike commercial software, there are no contractual restrictions on how the software is used. While some developers use the GNU General Public License that assures users that they have the right to distribution and those to whom they distribute also have the right to modify and distribute, other developers merely declare that their software is in the public domain. A
subsequent user may, therefore, decide to protect the enhancements that it makes by copyrighting them. The GNU General Public License is, therefore, preferable.

- *Low cost*

There is no charge for the software itself. The major cost is local development. If the number of users is large, and they share their efforts, each user’s cost is reduced. If a user does a lot of tailoring to fit unique local needs, the cost can escalate.

The potential disadvantages of open source software are:

- *Unanticipated costs*

Open source software tends to be less complete than commercial software. A library may find that it needs to do a great deal more work than anticipated to adapt the software to local needs.

- *Lack of coordination*

The decentralized development of open source software means that progress can be chaotic and there may be delays in addressing bugs.

- *Inadequate technical support*

Documentation tends to be limited and aimed at developers. There usually is limited technical support, especially for users of the software.
• *Scalability and speed*

Open source software may not offer the scalability and speed of commercial software because the easy-to-use and general purpose programming languages used are not very scalable and are slower than other languages. For example, the widely used Perl programming language is not very scalable because every script that is run launches separate programs on the server. This means that if one has 100 simultaneous users accessing documents, one could be running 100 to 1,000 extra programs on the server. Furthermore, time is needed to start the Perl program on every script request. Perl is also slow, running as much as 98 percent slower than various versions of C.

Commercial software usually is written in multiple languages using the FFI (foreign function interface) to combine the speed of the various versions of C for the minority of applications that need it and Java for efficiency for the rest. C and Perl can also be a suitable combination.

There are at least 12 open source integrated library system products: Avanti MicroLCS, Emilda, Evergreen, FireFly, GNUteca, Koha, Learning Access ILS, OpenBiblio, phpMyLibrary, PMB, PYTHEAS, and WEBLIS.

The following criteria are suggested for evaluating these products:

1. There is active current development under way
2. At least the cataloging, circulation, and patron access catalog modules are currently available; and acquisitions and serials control will be developed.
3. MARC is supported
4. Current source code and documentation are available for downloading, under the GNU General Public License
5. The product is currently in use in libraries
6. Scalability is not an issue
The following brief descriptions are offered to help a reader reduce the number of options it wishes to consider:

**Avanti** was begun in 1998 as an integrated library system for small and medium-size libraries of all types, but there was little current development activity until 2004. Peter Schlumpf, its developer, appears to be working on it alone. The software is written in Java and will run on any operating system. It includes its own database management system. The circulation and patron access catalog modules are in beta release. MARC is supported. The source code and documentation are not available online because the developer is not seeking the participation of others. There is no online demo available. No library is known to be using it. The use of Java makes it moderately scalable, but users who must support more than 150 concurrent users should proceed with caution.

More information is available at [www.avantilibrarysystems.com](http://www.avantilibrarysystems.com/).

**Emilda** is being developed by Realnode Ltd, a Finnish software company that has obtained grant funds to create an open source integrated library system. It is XML-based and can be run on any operating system. The circulation and patron access catalog modules were introduced in general release on June 29, 2005. It is MARC-compatible using the Zebra Server from Indexdata as a backend server. The source code and documentation are available online in English. There is also an online demo. The product is available under the GNU General Public License. It is in use at three Finish school libraries. The product is highly scalable because XML can be ported to virtually any other language. More information is available at [www.emilda.org](http://www.emilda.org/).

**Evergreen** is an integrated library system for public libraries being developed and maintained by the George Public Library Service for use by the George Library PINES Program, a consortium of 252 public libraries. The languages are C++ and Perl. The operating system is Linux and the DBMS is PostgreSQL. The cataloging demo was released in March 2005 and the circulation demo in May 2005. Alpha release occurred in August 2005. MARC is supported. The source code and documentation are available.
online to anyone under the GNU General Public License. No library is known to be using it as yet. The combination of C++ and Perl makes Evergreen highly scalable. More information is available at www.open.ils.org/

FireFly was begun in 2002 as an integrated library system for public libraries. The programming languages are Python, Perl, and XML. There appears to be little current development activity. The source code and documentation are not available online. The license is the GNU General Public License. No library is known to be using it. It is not possible to determine how scalable the product is because the balance of Perl and XML is not known. There does not appear to be a Web site, but Richard Ogin, the principal developer, can be reached through http://savannah.nongnu.org/users/gimpy/.

GNUTeca is an integrated library system developed in Brazil for academic and special libraries. Cataloging, circulation, and patron access catalog modules are in beta release. The programming languages are Perl and PHP. The operating systems include all versions of Microsoft Windows and Linux. MARC is supported. Source code and documentation are available online in Portuguese under the GNU General Public License. A Spanish version is in development. There appear to be several Brazilian libraries using the product. The product is not highly scalable, therefore, users who must support more than 100 concurrent users should proceed with caution. More information is available at www.gnuteca.org/

Koha was developed in New Zealand by Katipo Communications Ltd under contract with the Horowhenua Library Trust. It is now maintained by volunteers in New Zealand, Canada, France, Great Britain and the United States. Acquisitions, cataloging, circulation, and patron access catalog modules are in general release. MARC is supported. The programming language is Perl. Linux is the preferred operating system and the DBMS is MySQL. The source code and documentation are available online under the GNU General Public License. There is also an online demo. A number of libraries are using it. The largest user is the Nelsonville Public Library in Ohio. It has a collection of 250,000 items in its eight branches and has an annual circulation of 600,000.
The use of Perl as the sole programming language raises concerns about scalability. Users who must support more than 100 concurrent users should proceed with caution. More information is available at [www.koha.org](http://www.koha.org/)

Koha is not only available directly by download, but also through LibLime, a small US corporation founded by the systems librarian who worked with Koha at the Nelsonville Public Library. LibLime has made a number of enhancements to Koha and has contributed them to the collaborative open source project. LibLime does not charge for software, but does charge for consulting, programming, training, and the hosting services it provides. More information is available at [www.lib.lime.com](http://www.lib.lime.com/)

*Learning Access ILS* is offered by the Learning Access Institute in Seattle for small public libraries. The product, which was originally developed by the Technology Resource Foundation, was previously known as OpenBook. It is loosely based on the original work done in New Zealand by Katipo Communications Ltd. Cataloging, circulation, and patron access catalog modules are available in general release. An acquisitions module is planned. MARC is supported, as are Z39.50 and UNICODE. The programming languages are Perl and PHP. SQL is the database management system. The preferred operating system is Linux, but the software can be ported to Windows. There is an online demo, but the product is not available for download. The reliance on Perl does not make the product highly scalable. Users who must support more than 100 concurrent users should proceed with caution. More information is available at [www.learningaccess.org](http://www.learningaccess.org/)

*OpenBiblio* is being developed by Dave Stevens with very limited participation by others. Cataloging, circulation, and patron access catalog modules have been in beta release for the past two years. Stevens acknowledges that he has had to take breaks of several months from the development effort. UNIMARC is supported. The programming languages are PHP and LAMP. The operating system is Linux. There is an online demo. There is no reliable scalability information available for LAMP. More information is available at [http://obiblio.sourceforge.net/](http://obiblio.sourceforge.net/)
*phpMyLibrary* began in the Philippines in 2001 as the hobby of a single developer. The target is small academic and special libraries. While the software may be downloaded, the development is highly centralized like Avanti, with the ultimate control of the source code in the hands of the project’s founder. Documentation is minimal. There is an online demo. The cataloging, circulation, and patron access catalog modules are in general release. USMARC is supported. The operating system is Linux or Windows and any SQL database system may be used. The programming language(s) is/are not identified on the Web site. Scalability cannot, therefore, be determined. More information is available at [www.phpmylibrary.org](http://www.phpmylibrary.org/)

*PMB* is a software service company that offers a product originally developed in France as phbMyBibli in 2002. There are translations into Spanish and English. There are cataloging, circulation, and patron access catalog modules. UNIMARC is supported. The programming languages are PHP and LAMP. The operating system is Linux or Windows. The DBMS is SQL. The source code and documentation are available for downloading. It is in the public domain. There is an online demo. The software is in general release and is in use by more than 30 libraries. There is no reliable scalability information available for LAMP. More information is available at [www.phpmylibrary.org](http://www.phpmylibrary.org/)

*PYTHEAS* was originally developed in 1999 by a librarian at the University of Arizona. After he abandoned the project, a systems librarian at the University of Windsor continued the programming. Only the circulation and patron access catalog modules are available in alpha release. The programming languages are Java and XML. The source code is available for downloading and there is a demo. The product is in the public domain. Documentation is limited. The product is highly scalable. More information is available at [http://web2.uwindsor.ca/library/leddy.people/art/pytheas/](http://web2.uwindsor.ca/library/leddy.people/art/pytheas/)

*WEBLIS* is a Web-based integrated library system developed by the Institute for Computer and Information Engineering of Poland with support from UNESCO. There
are cataloging, circulation, and patron access catalog modules. The programming languages are not identified, but the DBMS is WWW-ISIS. The source code and documentation are available online in English. They are in the public domain. There is also an online demo. The product is in general release and is used by at least four special libraries. More information is available at www.icie.com.pl/WEBLIS/

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