Integrated Library System Platforms on Open Source

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Bringing Knowledge to Life.

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Introduction: *caveat emptor*

On February 18, 1815, Hector M. Organ purchased 111 hogsheads (111,000 pounds) of tobacco from Peter Laidlaw and Company. It was the same day that the news broke of the signing of the Treaty of Ghent between the United States and Britain, which ended the War of 1812 and lifted the naval embargo that had drastically depressed the price of American tobacco by 30 to 50 percent.

Organ, who had spoken of the news of the treaty with his brother, speculated that the price of tobacco would rise within the next two days. But Laidlaw was unaware of the news at the time of the sale. During the discussion of the contract, Laidlaw asked Organ if he was aware of any reason for the price to be higher. But Organ remained silent over the news of the embargo lifting, and kept his price low.

The next day, when prices rose, Laidlaw incurred a large loss on the sale relative to the previous day's price, and repossessed the tobacco by force.

A lawsuit ensued, which eventually reached the Supreme Court and a unanimous ruling from the John Marshall court establishing *caveat emptor*, or "let the buyer beware" doctrine in the United States. Under this ruling, "the buyer cannot recover from the seller for defects on the property that rendered the property unfit for ordinary purposes." While this ruling happened almost two centuries ago, some buyers ignore some of the most critical facts of their purchases.

Today, we see that happening when libraries get into talks about moving their Integrated Library Systems to open source platforms systems. What we have found is that they often are not aware of the heavy drawbacks of what open source systems cannot offer at this point in time.

Therefore, to help buyers become aware of the limitations of open source, we set out to clarify what open source is, how it is different from proprietary software platforms, and why Integrated Library Systems (ILS) are not ready for open source at this point.

So what is open source?

The concept of open source is fairly misunderstood and quite vague. Most organizations courting the idea of open source development do so because they feel they can project their dreams and desires onto a blank slate and have the features they want sitting at their fingertips quickly and easily.

This is a misunderstanding of how open source software development works. By definition, "Open source is an approach to the design, development, and distribution of software, offering practical accessibility to a software's source code."

A more technically correct term to define what open source is would be "peer production development," meaning that the open source model allows concurrent input of differing agendas and ideas to the development of software. Essentially, anyone can join the collaboration effort with the goal of making it stronger and more feature-rich.

Some of the most successful open source developments include the Linux operating system, Apache HTTP Servers, the Internet address system Internet Protocol, and Mozilla's Firefox Internet Browser.

The open source community repeatedly points to these efforts as the poster children of how successful open source can be. However, each of these developments has a major issue in common: they were developed because the public demanded it—they each had a critical mass.

Nevertheless, it should be noted that it is rare for completely open source projects to be successful. Rather than focusing on best-in-class software choice decision-making, these projects often end up being archipelagos of systems driven by a philosophical principle that is anti-proprietary.

How are open source developments and proprietary platforms different?

There are a number of assertions that proponents of open source claim as the strengths of open source, including:

- Total cost of ownership (TCO)
- Opportunity costs
- Software as a Service (SaaS)
- Features and Functions
- Customization
- Security
- Networking
- Open Formats
- Necessary expertise
- Testing
- Integration
- Community-driven
- Scalability
- Speed
- Reliability

There are many more arguments on behalf of the open source community, but we will focus our attention on these subjects due to the importance of these assertions.

Total Cost of Ownership (TCO): The Real Price

The open source proponents state that it has a much lower price and a much lower total cost of ownership (TCO). What they tend to leave out, however, are the entry costs of switching systems. Especially in the library market, the two main open source players haven't been around long enough nor do they have enough clients to provide evidence for this argument.

There is a difference between price and TCO. Open source proponents tend to focus on the 'free' license that commits them to the software. And if it is free, they are not committed to keeping it, since no costs are out of pocket. They can even switch freely if it does not work out for them.

However, all software has a true TCO, which includes the sales price, initial implementation time and costs, any hardware and software upgrades, hosting costs, maintenance and technical support, upgrades, and training (or re-training). It is important to determine the overall costs of adopting a new mode.

It is very unlikely that an open source solution is any less expensive than a proprietary solution. In fact, in all of the data SirsiDynix has collected, we are not seeing quotes that conflict with this assertion. **Indeed there are very few green fields in the ILS marketplace.** Most libraries already have an ILS and receive upgrades as part of their maintenance contract from us or other proprietary vendors. These maintenance contracts are a small percentage of the initial price.
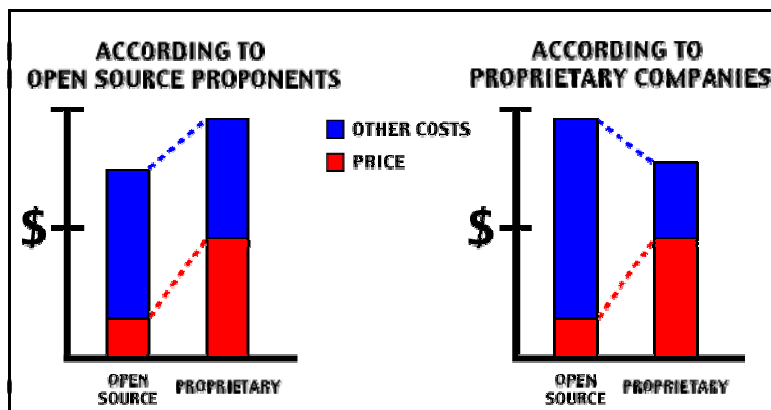
To convert to an open source option like Evergreen or Koha using vendors like Equinox or LibLime the library must start over with conversions and implementations, usually paying another vendor or consultant to accomplish these. As open source companies assert, it is [free like kittens, not free like beer](#).

Generally there will be significant limitations to the hardware and operating system options. This limits the ability to cooperate consortially or share resources with host cities or institutions that may use a different standard. The library is at risk of being an island in the community.

SirsiDynix offers—and has offered for many decades—a wide variety of options for servers, operating systems and plug-ins. Open source ILS offerings do not offer the diversity of choices that SirsiDynix offers.

Open source proponents and proprietary companies disagree on the total cost of ownership.

Proponents claim that even if open source requires more expertise, the TCO is ultimately lower. Companies claim that the required expertise is daunting and the other costs of proprietary solutions are exaggerated. (These charts illustrate concepts, not actual numbers.)"

Opportunity Costs

Some software isn't compatible with open source. Choosing any solution may foreclose on other software. This opportunity cost may not be apparent for years when the need for the other software emerges.

In many markets, there are major systems in accounting, intranets, e-learning, and so on that must tie in to the ILS. In many cases, open source is still the minority solution because, for example, the number of Linux desktops is meager compared to Microsoft Windows desktops. By choosing a Linux desktop, a user closes the door on some software because it may never be created for or ported to Linux. Add to this the major changes in allied systems that require an adaptation for the ILS and the issue grows exponentially.

So for libraries that choose an open source system, the opportunity to integrate different systems into the solution is limited, at best.

SaaS

Real cost savings in the ILS come from improving the architecture of the whole system. This can be done through Software as a Solution (SaaS), where a proprietary software developer like SirsiDynix hosts a library's ILS and takes over responsibility for upgrades to hardware, updating, backup, and hosting activities.

The emergence of SaaS is growing very fast across all types of technology-dependent industries. It is cost effective, more flexible, and delivers significant benefits than traditional software installations, with few downsides.

This can result in total cost of ownership savings of nearly 50 percent. With the best professional hosting facilities available, SirsiDynix operates on a global basis. From the point of view of the end user, the ILS workflows and the Online Public Access Catalogue (OPAC) are invisible and are truly adaptable to the Internet.

While some open source ILS companies are offering hosted solutions, these solutions are not at the scale or professionalism of a proprietary SaaS solution, nor do they provide the service level agreements or service expectations that SirsiDynix commits to. Some open source SaaS services are hosted on servers in a small vendor's office, which are not professional hosting solutions and come with extremely high risk to the library.

Features and Functions

When one is evaluating the differences between open source ILS and proprietary ILS, the theories need to be overridden by practical applications.

It is one thing to subscribe to a belief system when one is talking philosophy. It is quite another when the discussion turns to provable issues like specific ILS programs features, reliability, security, power, speed, and ease of customizing the software for specific needs. The use of agreed international standards is essential to using the wide range of third-party products used in libraries as well as any that may be considered in the future.

Generally, the available open source ILS platforms have less than half of the features and functions of any SirsiDynix ILS. Some of these features and functions may not be essential to some clients, some will be. However on this order of scale, and with that potential number of needed features, SirsiDynix has the ability to offer libraries the most robust feature set on the market. It becomes incumbent

on the library's decision-making process to clearly outline what they are giving up or planning to develop on their own if they choose to go open source.

When we compare where we are today with proprietary platforms versus where we are with open source systems the development priorities for Evergreen and Koha are the same priorities that SirsiDynix had in the 1980s. How many years will it take for them to achieve a full feature set, if ever?

Proprietary software has more features. Period. Proprietary software is much more user-friendly. SirsiDynix has been building this ILS for more than 30 years. It has a feature set second to none. It is important to note that a SirsiDynix ILS has two main user groups – the library workers who process the resources for the library as acquisitions, cataloguing, circulation, ILL, etc. and the end-users who use the OPAC features and other add-ons like self-check. Open source software developers are spending the majority of their time and resources on getting the back room operations right, 30 years after we already completed the process.

Customization

Probably the most attractive claim by the open source community is its ability to be customized by anyone, for anyone. This claim is technically true. Much of the desire for customization comes from Innovative Interfaces Inc. (III) clients. However, III has a long history and tradition of not allowing its clients to write APIs to the underlying data and fields in the ILS.

Meanwhile, SirsiDynix consultants have written custom API programs since the company introduced the Application Programming Interface (API) nearly 20 years ago. Other proprietary software companies like LibLime and Equinox have always offered customization to their clients.

However, it should be stated that customization is not without risk. Extensive customization, especially with potentially little or no documentation can make upgrades and changes increasingly difficult. SirsiDynix mitigates this with our API training as well as the option to have our consultants to review APIs for errors and bugs.

In the open source world anyone can make significant changes to open source code. This is often presented as a great option to management who don't completely understand the consequences of too much customization. Too much source code change can result in completely new versions that are neither forward nor backwards compatible with the innovations of the overall open source community. Rogue programming teams may decide to create a better version, while exclaiming "Damn the torpedoes." The result is that the relationship to the core kernel of the software can be broken or made 'odd'. In some of the big open source communities, there is an individual or group who gives permission to make change in the software. For example, Linus Torvalds, the genius behind the Linux platform, is materially involved in every Linux code addition to protect the kernel.

Customization can be a risky undertaking. Again, customization comes with the *caveat emptor* warning.

Libraries considering an open source ILS should seriously review how they handle version control and customization, as well as who handles the responsibilities and contracts for customization. If they don't, they may end up being an outlier or be forced into a proprietary environment like Red Hat.

Security

Open source is often represented as more secure. This, too, is debatable. Some of the most security-conscious entities, like the United States Department of Defense, restrict the use of open source software for fear that it could pose a terrorist opportunity.

It is not an accident that SirsiDynix ILS systems and SaaS operations are the choice of the U.S. military – possibly the most security-conscious environment in the entire world.

In open source, anyone can release code. But extensive testing is needed to ensure those codes are secure. The three big open source applications—Firefox, Apache, and Linux—have communities large enough to do this to find and isolate threats. It would be naive for the library market to think that the ILS community of open source programmers is large enough to create this assurance—it isn't even close.

To date the ILS has not been a target for security threats, although associated systems for servers and communication have. This may change if a large installed base of open source ILS platforms emerges.

Networking

Some open source vendors claim that open source is more network-friendly and relies on the Internet and other networks for its performance. Unfortunately for the ILS community, this is a grossly over-stated exaggeration.

The proprietary ILS market currently utilizes large-scale networks that work at speeds and performance measurements that far exceed any open source ILS installation anywhere. In fact, SirsiDynix SaaS solutions are world class, and our references in consortia and large complex accounts demonstrate the ability of a SirsiDynix ILS to perform on a network scale at excellent performance.

Open Formats

An open format is a published specification for storing digital data, which basically can be used and implemented by anyone. For example, the format is interoperable among diverse internal and external platforms and applications.

The argument by the open source community is simply that open formats are better. SirsiDynix agrees. We try to use open formats and international standards as much as possible. Ideally, this would be all the time. But the reality is that open formats are not always the most "open" to formats that a host city or institution uses. It is our opinion that the ILS works with the formats that are needed by their clients rather than engaging in missionary work for greater openness.

Data management and migration highlight a number of these issues. Open formats are helpful in this area but even accepted standards like MARC have many legacy issues, data quality repair issues, and a company like SirsiDynix has infinitely more experience in migration and implementation issues than any new vendor, open source or not. If you wanted to argue that LibLime or Equinox do not respect the skills and depth at SirsiDynix, just ask why they have hired so many alumni from SirsiDynix.

Necessary Expertise

Is open source harder to deploy? All software solutions require some expertise to deploy, secure, and maintain. Some open source software is technically challenging and requires considerable expertise. This is a particularly important point in the library market where there is rarely a large systems department with a variety of programming levels and skills quickly available internally.

Libraries considering open source should clearly evaluate the skills required. This might involve hiring an expensive consultant. Libraries would be well advised that they have a long tradition of working with application software and that the management of a proprietary ILS involves a different skill set than managing an ILS that must be extensively customized to assure performance. Application programming is different than development programming.

The employment market for development programmers is different than application programmers. It also requires a different type and level of project manager and software leadership. These people are extremely rare and cost more. And most libraries cannot cover the salaries required to retain the talent they need. Moreover, these programmers won't necessarily be in the library programming space, meaning that libraries will have to compete with a larger development market than the limited library programming space.

Indeed it is an interesting strategy for some library programmers to upgrade their skills in the library open source environment and leave as their worth increases.

Testing

SirsiDynix has rigorous testing procedures. These are brought about through large investments in automated professional testing programs and procedures, regression testing, a mature beta testing process, managed protocols, and testing with partners. We certify some third parties using actual tests to ensure that the customer experience is as seamless as possible. We test for scalability and for the stress of large numbers of users. We test for all major browsers. We test on all supported servers and operating systems. We test aggressively and well. We test at every step of the development process. We do all of this before we have actual clients partner with us to beta test the pre-release candidates. Over the past few years our product has arrived in new releases with a higher standard of performance and more features than ever before. We have released 20 major releases and upgrades in the past two years on time.

This is not the pattern that open source initiatives follow. Testing is the responsibility of the original programmer and their buddies. Then the philosophy is *caveat emptor*, or "Installer beware!" And the testing heavily falls on the early adopters.

Yet, when reviewing the list of bugs in the open source ILS software as compared to the same bugs for the proprietary software, investigators have to go back decades in the list to find the same bugs open source platforms are fixing today.

This is evidence of a very young development program and the lack of real management in the process. The open source process is too organic and lacks tight priorities and strong management oversight.

Integration

Some argue that it's difficult to integrate open source with proprietary solutions. It's always a professional task to make software work well.

The truth is that the software world will always be one of hybrid solutions. SirsiDynix has a long tradition of using open source in our solutions, properly tested and integrated, as well as ensuring that our APIs and portal solutions allow for integration of any desired solution. We also ensure that these work with all of our ILS solutions, multiple platforms, operating systems, servers and browsers.

Community-driven

"Open source exists because a large community of motivated, generous programmers work together. Some are corporate employees, but open source development thrives on volunteers. Even users without programming or other technical skills find ways to help by filing bug reports, writing documentation, or answering questions on email lists."

There is no difference between this assertion about open source and the SirsiDynix approach. Indeed we have many decades of experience in tracking development suggestions and requests and testing, reviewing and replicating bug reports from programmers and users alike. SirsiDynix also has a history of participation in the care and feeding of a community of users and programmers that share and collaborate with us and with each other for the common good.

Scalability

Some open source system vendors describe their software as "consortially aware" or having been built for consortia from the ground up. This is fairly weaselly language. Yes, this software can be 'consortially aware' without any of the attendant performance (One didn't even support the Z39.50 international ISO standard until recently!) Having been designed for a single consortium such as PINES, does not guarantee that the software will work for another consortia's needs, particularly with the diversity of needs and variety of system architectures that exist in a fully dimensional marketplace.

If clients are concerned about their ability to scale they should check the actual performance of the ILS in actual complex and consortia environments. The PINES system is actually a very poor performer at its current scale of small public libraries. For example, all large library systems in Georgia have generally decided to stick with SirsiDynix. In fact, several library systems in Georgia have declined the use of the Evergreen system specifically due to scalability and response times. One tester of that system wrote, "Slow response time in Evergreen Staff Client. This includes unexpected "crashes" and "frozen" screens which may or may not be due to response time lag. This problem causes extreme delay and long lines at Circ Desk and results in both major staff and patron frustration."

SirsiDynix encourages libraries to visit our large-scale clients and see the sub-second search performance on 10's of thousands of users. Such SirsiDynix Symphony clients as the Toronto Public Library, Alliance Library System, Los Angeles County Public Library, and more enjoy very strong and stable performance. This is not the case with the small libraries of Georgia who are captive to sub-optimal open source systems. Indeed, despite stating that they were built for consortia, simple consortia features are not available or supported. Add to this the even better performance and TCO improvements of the SirsiDynix SaaS solutions and we offer a much better solution with significantly superior performance.

Speed

End-users are not satisfied with sub-Google performance. The expectation has been set outside of the ILS market and the ILS market doesn't get by without meeting it. Therefore, SirsiDynix is focused on speed.

Our stress testing is done on the professional stress testing facilities at Sun Microsystems, Microsoft and UNIX servers. We test at 50,000 users per configuration for over a week. We use advanced automated testing procedures that cost money but deliver a definite positive result and tell us where to invest time in improving the performance of our software.

In addition we also test for all major browsers and try to ensure compliance with all standards and browsers evident in our market. This includes PC and Macintosh.

This has not been the case in the open source ILS systems. If anything, one of the major complaints by users and clients is that it is so slow. Simple searches in PINES can hang for minutes, resulting in the 'searching…" bar popping onto the screen to encourage user patience. This is unacceptable in ILS software, which is why we test our system so rigorously.

Reliability

Finally, one of the biggest claims of open source proponents is that it is more reliable. They argue that since any programmer can find and fix bugs, the software will be repaired and improved more quickly. There is, however, no guarantee that the bug you want fixed will engage a member of the community to fix it. A bug fix can work in one environment and not others and the testing is up to each individual organization in open source.

With open source, the advantage depends on the participation of enough competent programmers who are deeply committed to the entire development process. Without enduring, sufficient, talented interest, an open source project is doomed to fail, and many do.

Unfortunately for the open source proponents in the ILS community, there currently isn't a critical mass that is demanding the development of open source software. At this point in time, the open source community for ILS software is tiny.

Therefore, the reliability of ILS software developed on an open source platform is questionable. Just like proprietary software, the reliability of an open source program depends on clear feedback after rigorous use in a variety of environments. But that simply cannot be the case at this point in time because the variety of environments is small, and the critical mass needed has not been reached.

Open Source and Libraries

Although many in the ILS industry are taking an in-depth look at the viability of open source development over the long run, we believe the movement is premature. Moreover, we are joined in our opinion by none other than Cliff Lynch, the head of the Coalition for Networked Information and a leading thinker in the library space.

Cliff called the development of the open source ILS by OLE, Pines, etc. one of the "stupidest strategies ever undertaken" in the library world. At a time when libraries should be investing in systems to improve the priority issues in the end-user's research, discovery and learning experience, here we have a cadre of libraries investing in the reinvention or at least, recreation, of something they already have and have at a cheaper cost than the redevelopment effort.

In addition, these projects do not have a compelling vision of what the end result will be and appear to be driven by library workers' desires rather than institutional strategies or end-user needs. As such, they are tying up resources in an open source ILS effort at a time when budgets are constricted and other priorities are much more important and strategic.

SirsiDynix on Open Source

SirsiDynix is not de facto against open source. We use open source software a great deal in our development efforts, in our software and in our company. We easily support clients using the poster children of open source software – Linux, Apache, and Firefox. We have done so for many decades. Simply put, it's a good solution when it matches the needs of our clients.

SirsiDynix has been an early leader in building more open library management systems and indeed, being more open to even greater integration. This is especially true in the user experience end of our products where clients have added hundreds of applications onto our OPAC easily using our API strategy. We also have a very long track record in being open to our customers with beta tests, discussion forums, user groups, feedback mechanisms, and more.

However, SirsiDynix has also been in the ILS industry since 1979 and has developed the best-in-class solutions year-in and year-out. We've led the development of some of the most advanced features and capabilities of ILS platforms. So we know a thing or two about what it takes for library systems to be successful.

While we encourage the development of open formats, we must discourage libraries from jumping headlong into an open source platform to operate their ILS system on. At the current production cycle, jumping into open source would be dangerous, at best.

Caveat emptor!

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