

» “To build up a library is to create a life. It’s never just a random collection of books.”

—CARLOS MARÍA DOMÍNGUEZ

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Leading Change in the Age of the Cloud

» The technology is the easy part; people are much more complex.*

BY MARK DEHMLOW

In December of 2014, the University of Notre Dame’s Office of Information Technology (OIT) announced its “Cloud First” strategy. The strategic goal of the initiative is to espouse a technology implementation strategy that lays out a technology adoption strategy with the following order of preferences:

1. Use software provided and hosted by vendors in the cloud,
2. Adopt cloud-based data-centers for implementing what previously had been on-premise solutions, and
3. Reduce local implementations to just the handful of technology solutions that have special needs.

Our practical objective is to move 80 percent of the campus technology server and service infrastructure into the cloud by December of 2017. As a campus technology partner and an occupant in the OIT-managed data center, the Hesburgh Libraries’ IT organization is aligning our

own technology strategy with the OIT’s goal.

RATIONALE FOR THE CHANGE

Capacity to address escalating campus technology needs was the largest motivation for our University to consider moving to the cloud—the demand for IT services keeps increasing while funding and staff remain relatively static.¹ It was also clear to the OIT that we needed a strategy that could balance that increasing demand along with overall cost to provision IT services (infrastructure and staff) while at the same time being able to scale at the velocity demand was requiring.

The cloud was immediately attractive because it not only presented potential cost savings, but provided flexibility in implementation, scalability to meet demand, agility in speed of implementation, high availability, and robustness in implementation.² After careful consideration of cloud providers, the OIT decided to contract with Amazon and its Amazon Web Services (AWS) platform for managing servers and

IF YOU BUILD IT, WILL THEY FUND IT?

How to make research data management sustainable.

WHAT IS OPEN EBOOKS?

This initiative was announced by President Obama in April 2015.

LIBRARIANS AS FEISTY ADVOCATES FOR PRIVACY

A social media privacy campaign would follow librarians’ historical privacy advocacy efforts and promote ethical user agreement.

RETHINKING THE LIBRARY SERVICES PLATFORM

Taking a different approach, vendors and libraries can move toward greater interoperability.



systems not hosted by a third party vendor. The OIT selected Amazon because they determined Amazon was the clear leader in data center management, pace of innovation, and customer service.

THE IMPACT OF THE CLOUD

The move to the cloud promises several potential benefits. The first, and most often cited, is cost. But in considering cost, it is critical for departments to consider the broad scope of cost in provisioning IT services for the University, not just their own departmental costs.

At our University, historically there have been layers of subsidy for different parts of the organization. The University doesn't pass the cost of power or building maintenance down to the OIT, and the OIT doesn't pass the costs of networking, rack provisioning, or data center management down to departments. As a result, several of the most expensive costs to the University are hidden from many departments.³

We have taken the position of considering stewardship of resources for the whole University and not just the Libraries. In addition to the benefits of the scale, resiliency, and speed with which the cloud can provision computing, it has the significant added benefit of reducing the need for server management and allowing us to allocate high-level staff time and expertise to other emerging IT areas.

Moving to the cloud has required us to rethink the way we plan for and implement technological infrastructure. The cost model

for implementing infrastructure in the cloud is completely different. Instead of looking at 4 to 5 year cycles of equipment replacement where costs were relatively static (capex or capital expenditure model), the cloud functions on more of a fluctuating utility model (opex or operational expenditure model), where the more you use, the more you spend, but you only pay for what you use.

Deploying technology in the cloud is significantly more simplified in implementation. Many cloud providers offer dashboards to deploy previously difficult-to-implement technology architectures in minutes instead of days or weeks. At the same time, while the process for deploying has become greatly simplified, we now have to think more about how we choose to deploy technology will affect cost.

Implementing more efficiently in the cloud is considerably different than how most systems are managed in an on-premise data center, and helping people re-orient their mental models for how to do things requires training, persistence, and time.

GETTING PEOPLE TO ACCEPT CHANGE

It is a bit ironic that in technology, a field that is known for perpetual change, we would encounter resistance and fear when an initiative like moving to the cloud is introduced. In reality, the nature of the field is probably less significant than the nature of the change. Our application developers have been quicker to embrace the cloud because it provides the promise of rapid deployment—the cloud is a kind of panacea for

the challenges programmers face in getting their code from development environments to production systems.

Systems administrators, on the other hand, are required to provide stability and security for the foundational systems on which our library technology rests. The nature of their work is stability, and the emergence of the cloud not only represents a threat to their livelihood, but also the rapid and radical change also runs counter to their goals of stability and constancy. Initial reactions from our staff ranged from “I know we can do it cheaper the way we are doing it here” to “this is going to lock us into an inflexible model” to “what will this mean for our jobs?” Of course, those concerns are important to analyze and consider, but the initial reactions were largely anecdotal and gut reactions.

It was easy to see that our strategy to get the Libraries' IT infrastructure into the cloud needed to focus heavily on our staff: convincing them it was the right approach, assuring them of their value, and helping them develop new expertise so that we could move ahead proactively instead of begrudgingly. Getting to acceptance was going to require several key strategies that, in concert, have eased some of the strain caused by this radical shift.

In addition to working on budgets, inventorying services, developing cost models, and learning new technologies, we have been engaged in the following four efforts with our staff:

Focus on the People. It's easy to forget

» During this cloud-based initiative, we have spent a lot of time thinking about the people it will impact and considering what they are feeling, where might they get stuck in getting on board, and how can their concerns be redirected to productively affect how we shift our approach.

that people are way more complex than technology. As a once-programmer, I am painfully aware that technology does exactly what you tell it. People, on the other hand, have many inputs and outputs going into their thinking, many of which none of us have control over. I have watched several change initiatives struggle when change leaders didn't first consider the people it would impact. It is much easier to devise a vision than it is to convince people that the resulting vision is the right thing to do.

During this cloud-based initiative, we have spent a lot of time thinking about the people it will impact and considering what they are feeling, where might they get stuck in getting on board, and how can their concerns be redirected to productively affect how we shift our approach.

I listen to concerns and try to be thoughtful in my response. I tend towards compassionate leadership and, when implementing change, I always try to remember that people have feelings, perspectives, and fears. Taking a compassionate approach will help temper staff emotions and reactions. When explaining my reasons, I try to acknowledge how they feel while outlining my agenda.

A key piece to an empathetic approach is reassurance. Most people fear change because it comes with uncertainty, and the more we eliminate the ominous nature of that uncertainty, the easier it is for individuals to confront change productively. I stress to our staff that we will build the future together, that we will invest in their growth and development, and that our goal is to

retain our talent and bring them along into our future strategy.

While it may be difficult to answer all of the questions staff members have about a future that is yet to be written, reassuring them that they will continue to have a job and will be important to the organization can go a long way to making them feel more comfortable with uncertainty.

Invest in Staff Development and Success. I once worked with someone who had a difficult time committing to outcomes. They were almost always successful at their objectives, but they had a hard time taking responsibility for a future that they themselves could not see.

In our cloud initiative, we have wanted to help staff begin to see how they can implement this change and what the implications of the change are for everyone. We have spent a lot of time and money to provide training and exposure to the cloud, specifically AWS. We have invested in two levels of AWS training, sponsored travel for staff to go to Re:Invent, the AWS annual conference. And we are ready to sponsor travel to conferences that will train our staff in containerization—containers are a method for running multiple applications on a single operating system while maintaining adequate security and resource separation.

Providing this training has had several benefits:

- Staff members don't try (as much) to impose older mental models in approaching new technology.
- Staff members aren't asking how we expect them to meet our goals.

- We are mitigating the anxiety caused by ambiguity.
- We are demonstrating a clear commitment to the staff and their professional development.

In the end, we view this training as supporting the transition and facilitating the path instead of giving too general and opaque of a direction and expecting staff to work it out on their own.

Explain the Position and then Explain it Again (Recursively). Just because we have adopted a strategy and feel it is the right direction for our organization doesn't mean it will immediately make sense to all of those it affects. I try to encourage my staff to advocate for their perspectives and to engage in constructive and collegial discourse.

Being willing to accept constructive criticism will garner respect from staff not only because they will feel you are listening to them, but also because it may reveal problems in the strategy you may not have seen before. Being compassionately persistent is important also, especially when change is harder than normal and staff don't immediately see the benefits.

My experience is that it is much easier for people to find holes in what you have proposed instead of thinking about how to build on a new idea and move it forward. I try to shift the conversation toward the constructive. I ask, "Okay then, how could it work better?"

It is also important to separate the hype from the practical benefits. Our staff members are highly educated and frequently



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» **By no means are we in a place where everyone fully agrees with our direction; change is a continuous conversation. And even though not everyone is totally convinced, I can say that everyone has accepted that this is our strategy and are actively engaged in the change.**

respond better to more complete explanations over marketing pitches.

For those staff who are particularly recalcitrant, our HR department has coached us managers on the notion of the burning platform, a business term that uses a burning oil platform as a metaphor for a decision that needs to be made in a crisis situation. The idea is that a worker is standing on an oil rig that has caught fire. They can be burned to death in the fire or jump into the ocean and possibly be rescued. The gist is that they have no real choice but to follow the path that is available.

When faced with change that is going to happen no matter what, a direct conversation explaining to staff about why not changing isn't an option and what the result will be for them can be an effective last resort.

The Long Way Can Get You There More Quickly. In our organization, we have the typical mixture of people whose response to change ranges from being enthusiastic to dreading it. The Change Style Indicator has been a useful tool for assessing the different thresholds of change in our organization.⁴ It categorizes the way people operate when thinking about change, from Originators to Conservers with Pragmatists in between. It doesn't pass judgment on what style is best, but rather provides a rubric for how individuals prefer change to occur.

The library profession is one that is used to operating in centuries. I try to remember that many people find change challenging and to build in time, where I can, to work through discussion and influencing staff in the organiza-

tion that our vision is the right one.

By no means are we in a place where everyone fully agrees with our direction; change is a continuous conversation. And even though not everyone is totally convinced, I can say that everyone has accepted that this is our strategy and are actively engaged in the change. The proof for them ultimately will be in the performance of AWS and working in AWS will become more natural to them when it becomes a routine part of their work.

BUILDING THE FUTURE FOR STAFF

Technology has an ever-increasing velocity. It can be difficult to see the whole future while implementing change when you know that by the time you get there, the field itself will be different than it is today.

While we are clear on the strategy to move toward the cloud for our infrastructure, and we know that this move will give us the opportunity to recapture and repurpose staff time and talent, we don't yet have a finalized picture of what highly skilled staff will be doing when we get there. The good news is that the transition is going to take some time. We will continue to need the existing systems administration skill set while we continue to have some technology on premise.

We are seeing new roles already emerging based on the move to the cloud. The following roles are a few that we think will be important for us:

- Systems Architects—staff who design environments to maximize use of the cloud while ensuring that applications work in

that environment.

- DevOps Engineers-- hybrid staff members who understand both applications development and systems operations and can work as consultants for cloud deployment.
- Financial Engineers—staff who can take requirements, estimate usage, and calculate potential costs in the cloud.
- Business Analysts--staff who take technical requirements and consider the hosting models as well as existing solutions to help decide such questions as “should we build or license?” and “should we host in the cloud or on premise?”

There are sure to be more roles and positions that will emerge in the next year as we move toward the cloud. The key for us is identifying those positions and beginning to align those emerging areas with our existing staff's skills.

ORGANIZATIONAL SUPPORT

Beyond the focus on staff, there are at least three factors at Notre Dame that I believe significantly help us mitigate change. The first and perhaps most important is that in the Libraries, we are building a culture of collaboration and consistent vision that starts at the top. Our University Librarian, Associate University Librarians, and the Cabinet (our senior library leadership)—are our first team—and have a shared ownership of strategic directions and outcomes for the organization. We advocate for our departments while discussing and negotiating outcomes, but in the end we accept and

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» With each of these steps, we will continue focusing on staff concerns, including their perspectives in the planning and decision process, assuring them of their importance to the organization, and inching them towards a sense of normalcy in this new environment. Implementing change requires patience and compassion, but also a consistent vision and message.

support decisions and work collaboratively to realize them. Having that broad support from our leaders and peers builds trust and moves the organization forward more efficiently and in a manner that is clear to staff and faculty up and down the organization.

The second factor that has helped support us in recent years is our continuously deepening relationship with the OIT in which we have focused on partnering in areas with overlapping objectives. We are beginning to look collaboratively at the global needs of our students, faculty, and staff, and building towards a shared ownership of solutions that meet their needs.

In the discussion of moving to the cloud, this collaboration has made a significant difference for us in terms of looking at the problem from an organizational stewardship vantage point. While the shift is likely to save the University money globally, moving in alignment with the OIT may mean increased costs for the Libraries. The OIT has been reassuring in their partnership with us and made a commitment to work with us throughout the process. While we haven't determined specifics, the solution could mean a subsidy in the cloud for some needs, but it may also mean advocacy with the Provost for increasing our budgets.

The third game changer for us is that our HR department has invested significantly in staff and manager development. Managers are required to take a basic leadership and management training course called "Frontline Supervision." HR also provides several optional levels of leadership training as well. Individual contributors in our organization have access to many different HR programs, including leadership training, career development, and various workshops

in accountability, teamwork, effectiveness, and managing one's work.

The University of Notre Dame tends to have a high staff and faculty retention rate and our HR department is making significant strides in building leadership within and giving staff the necessary tools to be maximally productive and strong team members.

WHAT'S NEXT

We are only at the end of year one in our transition to the cloud. In this first year, we have focused our energies on planning, taking an inventory of our services, assessing services that are a good fit for cloud infrastructure or third party hosting, determining technical requirements, learning about AWS and its features, and most importantly having lots of conversations with our staff and campus partners. Our strategy going forward is to finish our initial assessments, develop process and an overall architecture for deploying our systems in AWS, and to begin moving our systems into AWS.

With each of these steps, we will continue focusing on staff concerns, including their perspectives in the planning and decision process, assuring them of their importance to the organization, and inching them towards a sense of normalcy in this new environment. Implementing change requires patience and compassion, but also a consistent vision and message.

We focus on the human part of the organization because, in many ways, the technology is the easy part. People are much more complex, and resolving their needs requires nuance, awareness, and patience. I am optimistic, with a good support system in place and a lot of talented staff, we have all of the keys in place to be successful. ■

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FOOTNOTES:

¹ University of Notre Dame Office of Information Technology Cloud First Website: <http://oit.nd.edu/cloud-first/>.

² Ibid.

³ Falsetti G., Jokl J., McCahil M., Nijim S. "Cloud Services Value Proposition." It was a presentation at the Fall 2014 meeting of the Common Solutions Group, held at Cornell University 10-12 September 2014. Here's the agenda from that meeting: <http://www.stonesoup.org/meetings/1409/agenda.html>

⁴ <https://www.discoverylearning.com/products-services/change-style-indicator-1b/>

If You Build It, Will They Fund It?

» How to make research data management sustainable.*

BY RICKY ERWAY AND AMANDA RINEHART

Data management underpins current and future research, funder mandates, open access initiatives, researchers' reputations, and institutional ranking. While it is widely recognized that it's necessary to provide data management support, recognition that it requires sustainable funding is slower in coming.

In their 2008 report, Beagrie, Chruszcz, and Lavoie estimate that the costs of data repositories are a magnitude greater than typical institutional repositories that focus on e-publications.¹ These costs primarily occur during the acquisition and ingest of datasets and take the form of staffing.²

Even as the community is beginning to understand the costs,³ it must begin to address how data management might be funded. A recent assessment of well-established and well-funded national disciplinary data centers revealed:

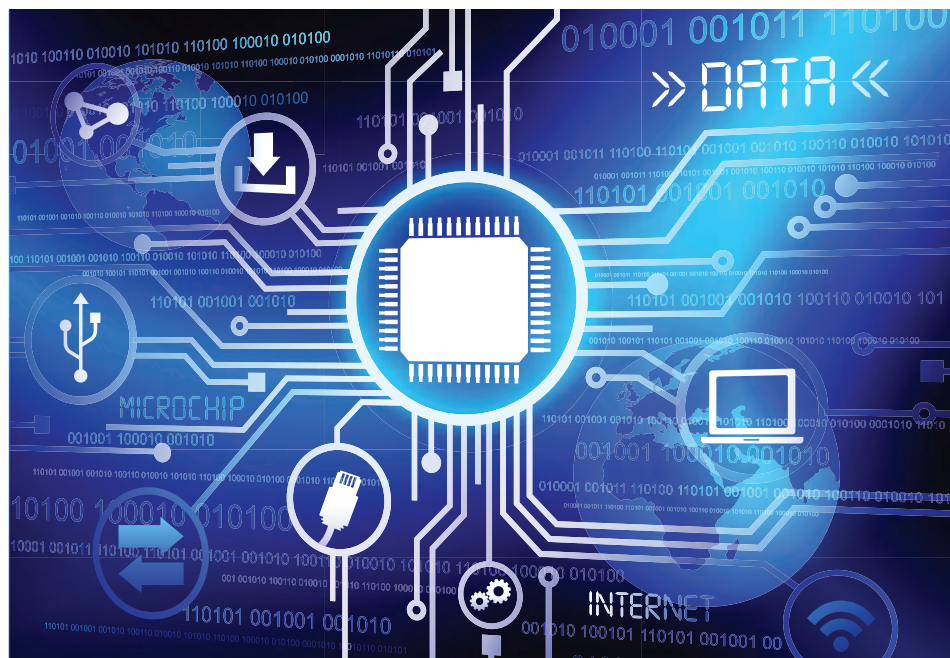
- Significant increases in research, teaching, and studying efficiently were realized by the users as a result of their use of the data centers.
- The value to users exceeds the investment made in data sharing and curtail.⁴

To explore the various possibilities, we provide an overview of several funding strategies and their standing in the United States. The arguments for and against each strategy are also presented.

GETTING INSTITUTIONAL BUDGET SUPPORT

Because research data is a valuable university asset, an institution should build ongoing funding into its base to provide resources to the units responsible for managing that asset. These units may be the library, information technology, other units charged with the tasks, or a combination of units.

Data management services are not very different than other services the university directly funds, but they are new, additional services that require new resources.



However, the U.S. economy has suffered, and subsequently higher education budgets have suffered as well.⁵ This reality makes it less likely that new funding will be made available.

It should be recognized that, while data management costs money, not providing these services could result in repeating costly data gathering for subsequent research, could compromise compliance with funders' requirements and university policy, could result in questions about the university's research integrity, and ultimately could decrease the federal research dollars the institution receives.

INCLUDING DATA CURATION COSTS IN GRANT PROPOSAL BUDGETS

For funded research, data management costs should be included in the project budget. Including these costs in the budget ensures that funding agencies that require data management are paying for it. For most funding agencies, costs for data management during the research period (including preparing the data for deposit) can be included in direct costs, but ongoing costs cannot. Even when

data management can be included in project budgets, funders vary on the acceptable costs that can be included.

Additionally, it is often difficult for the researcher to "reallocate" grant funds from research activities that they consider more important.

Ongoing costs to manage the data after the project is finished ought to be included in direct costs. This is the most rational solution, because data management is an indirect cost of research. The problem is that the indirect cost calculation is slow to change, and other parts of the university depend on the money as currently distributed. It is difficult to increase the percentage or to change the distribution so that sufficient funds could go to the units that provide data management services.

It can sometimes help a budget proposal to include data management as a matching amount the university contributes to a project, but that doesn't help the units that provide the services, unless the funds are redistributed to them.

The following funding options should be considered.

FUNDING STRATEGY	PROS	CONS
Institutional budgetary support	<ul style="list-style-type: none"> • Protects data as an institutional asset • Supports all researchers regardless of funding source • Faculty support this option 	<ul style="list-style-type: none"> • Difficulty in garnering administrative support unless additional funding is available • Requires re-allocation of institutional funds
Charging grant budgets: direct funds	<ul style="list-style-type: none"> • Current mechanism in place for most grants for some RDM activities 	<ul style="list-style-type: none"> • Only covers funded researchers • Not allowed to extend past grant expiration • Faculty resist this option
Charging grant budgets: indirect costs or overhead	<ul style="list-style-type: none"> • Most rational choice & Faculty support this option 	<ul style="list-style-type: none"> • Difficulty in garnering administrative support, because the re-negotiation of this rate is very slow and controversial
Charging depositors (faculty or departments)	<ul style="list-style-type: none"> • Costs are borne by those generating the data (and the grant funding) 	<ul style="list-style-type: none"> • May leave out unfunded researchers • Reallocates the problem, rather than resolving it
Charging data users	<ul style="list-style-type: none"> • Costs are borne by those benefitting from the university's data assets • May generate a revenue source from outside the institution 	<ul style="list-style-type: none"> • Only receive payment for high-demand or commercially-relevant data • Most funding agencies strongly encourage or require free public access
Endowment	<ul style="list-style-type: none"> • Relatively stable, ongoing support • Supports all researchers regardless of funding source 	<ul style="list-style-type: none"> • Volume of data could outpace endowment funds • Some institutions are unable to handle payment across fiscal years
Funding for data repository development	<ul style="list-style-type: none"> • Currently available • Helps to get a program started • Supports all researchers regardless of funding source 	<ul style="list-style-type: none"> • Funding is for a limited purpose and a limited-time • Doesn't support ongoing efforts
Making do: finding room in existing budgets	<ul style="list-style-type: none"> • Supports all researchers regardless of funding source 	<ul style="list-style-type: none"> • Must cut other services or programs • Outsourcing is only an option for some disciplines and many don't offer preservation

Charging Researcher. Data management units could pass on costs to the researchers or to their departments. Since grant funds typically cannot be used after the grant period is over, there are two methods to accomplish this: by charging a set maintenance fee for a particular period, after which ongoing retention is reassessed; or by adopting a pay-once model, which takes into consideration ongoing costs. However, this may not solve the problem, since it merely redistributes the costs to the researchers or their departments.

Charging Data Users. Those who use the data and are likely to benefit from it could reasonably be expected to pay for it. The current mechanism for monetizing data-

sets typically involves a technology transfer, or technology commercialization, office. However, it is difficult to predict which data will be in most demand. Furthermore, most funder mandates require free public access to the data. This makes it unlikely that charging data users could create a sufficient revenue stream for funding data management services.

Receiving an Endowment. A philanthropic gift large enough to set up an endowment to cover ongoing costs would solve the problem. However, data management is not a terribly attractive thing to endow. Institutions with a particular center of excellence may be more likely to attract such largess. In addition, some institutions are unable to set

up funding that spans fiscal years. Currently, endowments for data management services are rare and specialized. The efficacy of this option remains to be seen.

Repository Funding. Government funding or private funding is sometimes made available to establish digital preservation programs, data curation, or repository development. This money would help to establish a data management operation, but would not help to sustain the service. Many existing data repositories have begun with this type of outside funding, but sustainability requires other funding strategies.

MAKING DO

Without any, or enough, of the mentioned

» It is very possible that a combination of approaches will be necessary for a sustainable future. Initially, most institutions begin with one or two sources of funding and, as services grow, they explore other options.

sources of funding, institutions will have to make do with existing funding (see sidebar). One option is to terminate one or more other services to offer data management. Another option is to “outsource” to external data repositories. Some external repositories charge deposit fees, which can be included in grant budgets.

While external data repositories can be a good option, many provide access to data but make no effort to meet digital preservation standards. They may assume that data is preserved by the researcher’s institution or consider this service as outside their scope. Furthermore, while some disciplines are well-supported by centralized data repositories, other disciplines have few or no options, which again leaves the university to take responsibility for those datasets.

Funders are increasingly asking for “institutionally-backed solutions.”⁶ They see the permanence of a library preservation solution as preferable to the access nodes that predominate among disciplinary data “repositories.”

In one of the most comprehensive surveys of faculty, the University of North Carolina asked the following question: “In your opinion, where should the funding come from to cover the costs of data management and storage for research supported by grants, contracts, or other external sources of funding?” More than half of the 2,010 respondents answered that “it should be paid for by the University from overhead/F&A funds it receives from grants and contracts.”⁷

When asked about funding for research not supported by grants, contracts, or other external sources, 63 percent of respondents thought it should come from university funds.⁸ This finding indicates that institutional funds, whether they derive from the overhead from external grants or other revenue streams, is a preferred option for many faculty.

In our own informal survey of institutional data repositories,⁹ eighteen of the twenty respondents reported that their library’s base budget covers at least some of the expenses, with seven saying that is their only source of funding while seven receive

fees from researchers, and four get fees from departments. Five get institutional funding specifically for data management, and four get money from the IT budget. Only one institution reported getting direct funds from grant-funded projects and only one reported getting indirect funds from grant-funded projects. None reported getting fees from users, having an endowment, or having had a grant to fund development of the repository. In general, most institutional data repositories rely on their library budgets, although a few are experimenting with multiple funding sources.

It is very possible that a combination of these approaches will be necessary for a sustainable future. Initially, most institutions begin with one or two sources of funding and, as services grow, they explore other options. As data management service providers, libraries should continually be aware of our funding options and engage institution’s leadership in the conversation¹⁰ regarding the ideal funding approach for long-term sustainability.

To determine their best course of action, each institution will need to balance the costs of providing data management services with the benefits of responsible stewardship of their institutional needs. ■

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FOOTNOTES

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What Is Open eBooks?

» This initiative was announced by President Obama in April 2015.

Open eBooks is an initiative that adds to existing efforts to help kids develop a love of reading and discovery by making eBooks available via an app to children and youth from low-income families. The goal of Open eBooks is to encourage a love of reading and provide a gateway so children can read more often, whether in school, at libraries, or through other eBook reading apps without incurring any costs.

Open eBooks is part of the White House ConnectED Initiative. What makes Open eBooks different is that it will contain thousands of popular and award-winning titles that will be free for unlimited use by low-income students, without checkouts or holds. It has received support from the Institute of Museum and Library Services and the Alfred P. Sloan Foundation, along with assistance from Baker & Taylor and the generous commitments of publishers (see **Figure 1**).

WHO IS BEHIND THE INITIATIVE?

Open eBooks is a partnership between three existing nonprofits: the New York Public Library (NYPL), First Book, and the Digital Public Library of America (DPLA).

NYPL is creating an app that will enable children to read eBooks on a variety of devices, including tablets that have been donated as part of the President's ConnectED initiative and on smartphones. The Open eBooks project leverages the free and open source



Library Simplified App developed by the NYPL and ten other public library partners. Built with Radium's rendering engine, the

Open eBooks app will take advantage of its accessibility features, including video, audio, and interactivity.

Figure 1: These publishers have contributed to eBooks:

Macmillan: Providing unlimited access to all of the K-12 age-appropriate titles in their title catalog of approximately 2,500 books.

Simon & Schuster: Providing access to their entire e-catalog of books for children ages 4-14, comprised of 3,000 titles.

Penguin Random House: Committing to provide a robust offering of their popular and award-winning books.

Hachette: Offering participating students access to a robust catalog of their popular and award-winning titles.

Candlewick: Providing unlimited access to all relevant children's and young adult eBook titles in their catalog.

Bloomsbury: Providing unlimited access to more than 1,000 of its most popular titles.

Lee & Low: The leading independent publisher of multicultural books is providing unlimited access to more than 700 of its titles.

Cricket Media: Offering full digital access to all of its market-leading magazines for children and young adults, including Ladybug and Cricket.

HarperCollins: Providing a robust selection of their award-winning and popular titles.

Figure 2

These nine librarians and other information professionals comprise the founding members of DPLA's Curation Corps:

Edith Campbell promotes literacy in its many forms to teens through her blog, *Crazy-QuiteEdi*, works as an education librarian at Indiana State University, and serves as the Indiana State Ambassador for the United States Board of Books for Young People.

Daniela Guardiola is a school librarian in Austin, TX, and has been a part of public education system for eleven years. Her work experience has been on Title I campuses working with low income students with diverse backgrounds.

Marianne Fitzgerald is a high school librarian in Severna Park High School in Severna Park, MD. She has spent eighteen years working in public middle school and high schools.

Dorothy Hughes holds a Master of Library Science from the University of Arizona and has more than a dozen years of experience as a library media specialist.

Emily Kean has managed electronic resources in special and public libraries for more than ten years and is currently the digital services librarian at Boone County Public Library in Burlington, KY. In this role, she serves as the administrator for Kentucky Libraries Unbound, a statewide eBook consortium comprised of more than 100 counties.

Savannah Hitchens is the young adult librarian for the Pelham Public Library in Pelham, AL. She is a member of YALSA's Quick Picks for Reluctant Young Adult Readers book selection committee.

Lucretia Miller is a school media specialist in St. Johns Country Day School PK-12 in Orange Park, FL. Previously, she was Duval County (FL) Teacher of the Year and a semi-finalist for Florida Teacher of the Year.

Maura O'Toole works at The Mather Elementary School, a part of the Boston Public Schools, where she serves 610 students in pre-kindergarten through fifth grade as well as thirty classroom teachers.

Vandy Pacetti-Donelson is the library media specialist at Poinciana High School in Kissimmee, FL. She is a former Pro-Quest Scholar and YALSA-Serving the Underserved Trainer.

First Book, the social enterprise that already provides millions of print books to classrooms and programs serving children in need, will distribute access codes to its network of 175,000 educators and program leaders that serve children from low-income families. The codes can be used by these adults to enable children under their supervision to access Open eBooks. First Book will also identify additional programs that can take advantage of the eBooks program.

DPLA's national network of librarians and

cultural heritage organizations is helping to coordinate books for inclusion in Open eBooks. In summer 2015, DPLA issued a call for interested librarians and school media specialists to apply for the opportunity to be a part of the inaugural Curation Corps. DPLA evaluated more than 140 applications from across the country and selected nine individuals who represent a range of expertise and a commitment to serving low-income and diverse populations (see **Figure 2**).

The DPLA Curation Corp applied their

knowledge and professional skills to shape a compelling collection for Open eBooks that is diverse, exciting, and age-appropriate so that every child has a book to read and enjoy. A library does not need to be a part of DPLA to help curate the titles for Open eBooks.

HOW WILL KIDS ACCESS THE EBOOKS?

Youth can access eBooks through their school or library-loaned devices as well as their family's smartphones and tablets. For many of these families and students, smartphones and tablets are their primary Internet access method. They often plug into the Wi-Fi available at public libraries and schools where they will also be able to download the books in this program.

Initially, the app will be available on iOS and Android devices. Subsequent versions will be optimized to support as many open platforms as possible, including Nooks and Kindles.

Adults will apply to First Book on behalf of the populations of young people they serve. Personally identifiable information about users will only be captured through First Book's registration process protected by its privacy policy. Children using the app will not need to provide any personally identifiable information, such as an email address. Also, individual readers' activity will not be tracked. What the children are reading will be only be tracked anonymously and in the aggregate. The partners intend to work tirelessly to ensure that student privacy is maintained at all times.

While this initiative is not focused on teaching digital literacy skills, the application will be a useful resource for a range of libraries and schools in their efforts to teach digital literacy. To learn more about how to get involved, visit: <http://dp.la/info/get-involved/dpla-ebooks/dpla-collection-curation-corps>.

For more information, visit <http://openebooks.net/>.

» Youth can access eBooks through their school or library-loaned devices as well as their family's smartphones and tablets. For many of these families and students, smartphones and tablets are their primary Internet access method.

Librarians as Feisty Advocates for Privacy

» A social media privacy campaign would follow librarians' historical privacy advocacy efforts and promote ethical user agreement.*

BY SARAH LAMDAN

Librarians should harness their advocacy power and lead a campaign to infuse social media user agreements, of terms of services, with privacy assurances in order to fulfill their ethical obligations to patron privacy and intellectual freedom.

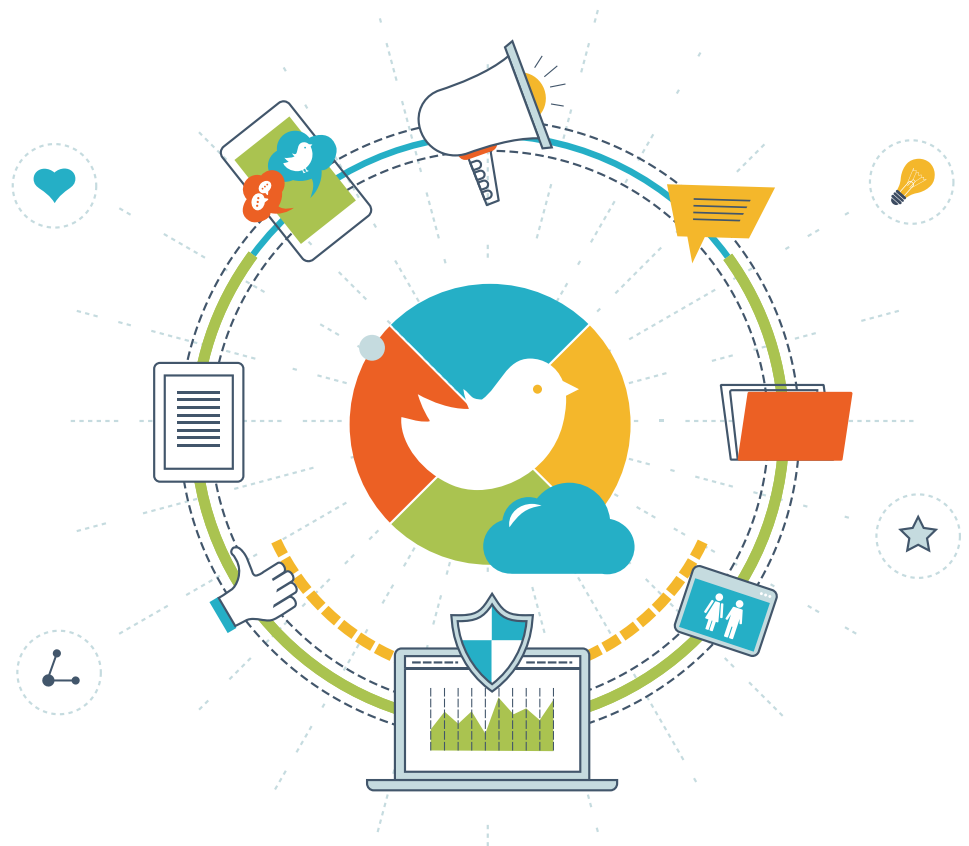
Of all the Internet's tools and distractions, social media reigns supreme as the most widely used Internet medium.¹ Social media has become a major source for news, crowdsourcing opinions, and forming and maintaining human connections. It is safe to say that social media outlets have become major gateways for information.

Librarians, as information science specialists, stand at the pinnacle of this information revolution, creating social media policies and methods of use. In some communities, librarians often provide the only Internet access available to the public, making libraries the sole access point for online social media.²

As this online social media revolution continues, librarians must also be at the forefront of creating social media privacy policies and practices. Social media provides information, but is also takes information, storing tons of personal data, from biographical information to information about personal affiliations with people, organizations, and institutions.

Social media data contains chat logs, message files, tweets, photos, videos, tags, GPS locations, "likes," check-ins, log-in timetables, pins, and even clicks. This in-depth collection of human information should not be surprising, as one of social media's primary functions is the consumption and distribution of "personal content about the self."³

Librarianship is one of the only professions that explicitly expresses privacy rights in its code of ethics. That privacy right is described in the American Library Association's (ALA) intellectual freedom manual as



tion's (ALA) intellectual freedom manual as "the right to open inquiry without having the subject of one's interest examined or scrutinized by others."⁴ Librarians must extend their traditional privacy axioms to meet the privacy challenges of the Internet age. Intellectual freedom depends on it, as librarian Deborah Caldwell-Stone explains, "The right to read freely depends upon the knowledge that what one is reading is not monitored or tracked."⁵

Librarians and the ALA are the best potential sources of intellectual freedom advocacy for social media products. The ALA has been a proven force against tyranny, censorship, and privacy breaches throughout history. Librarians were also some of the first Internet users, and "Libraries have been

technology leaders for decades—not in being first adopters, but in being early users of effective technologies."⁶

PLAN FOR ADVOCACY

Although some Internet gurus minimize privacy online, saying things like "You have zero privacy anyway. Get over it,"⁷ librarians should not resign themselves to giving up patron privacy rights in exchange for online information access. Grassroots campaigns for social media privacy have developed to increase awareness and concern for the issue.⁸ Similarly, librarians can lead their own campaign as they have when upholding intellectual freedom and privacy rights in the past.

An ideal librarian's campaign for social

Privacy by Design consists of seven principles requiring Internet companies to:

- Be proactive anticipating privacy issues, not reactive (acting after-the-fact).
- Use Privacy as the default setting, not as an opt-in.
- Embed privacy into the design and architecture of systems and practices as an essential component of the core functionality being delivered.
- Remove the pretense of false dichotomies, not declaring privacy as a tradeoff for security or other services.
- Provide end-to-end security and cradle-to-grave information management from information creation to destruction.
- Create transparent components and parts that remain visible to users and providers alike (trust but verify).
- Keep the interests of the individual at the forefront of all options and function.

media privacy would combine concepts from the People's Terms of Service Contract⁹ and Ann Cavoukian's model for Privacy by Design.¹⁰ The People's Terms of Service Contract, created by academics and activists, is a version of the traditional terms of service that you agree to when you click "I agree" on most Internet services. It replaces the boilerplate, privacy-sacrificing language of the small print that users consent to when creating social media accounts with language that focuses on consumer priorities, including security and confidentiality for social media users.

Advocating for replacing traditional social media user agreement language with the People's Terms of Service Contract is an ideal collective action to urge social media companies to respect consumer privacy rights.¹¹ The contract drafters urge the public to consider a world where social media users and consumer advocates collectively negotiate a contract that reflects common consumer priorities, such as privacy rights. They suggest that the contract "could be pressed on existing Internet companies, and also provide a model for new companies that want to compete for users who

demand respect for their freedom, choice, and privacy.¹²

A People's Terms of Service Contract, truly focused on privacy rights, would incorporate a set of fundamental privacy principles that social media companies would have to follow. Ann Cavoukian, the privacy commissioner for Ontario, Canada, has already created an ideal set of privacy principles. The U.S. Federal Trade Commission, an agency focused on protecting the nation's consumers, has adopted the seven principles in Cavoukian's Privacy by Design approach (see sidebar).¹³

Creating a sample terms of service contract that incorporates the Privacy by Design standards would help librarians protect Internet users' privacy in their libraries. By demanding things such as "do not track" settings as the default settings in social media platforms and requiring social media providers to agree to remove content upon user request as a boilerplate terms of services, librarians could turn the tides of privacy invasion by social media corporations. Contract terms are a tool that librarians can use to help transfer their steadfast resolve for

intellectual freedom from the stacks to the Internet.

Undertaking a campaign involving contracts may seem beyond the realm of librarianship. After all, librarians are not contract lawyers and may know relatively little about Internet social media enterprises. However, the People's Terms of Service drafters urge us to recall the initial pessimism surrounding Creative Commons, an effort that drew on the collective power of artists and creators to better protect copyrighted works on the Internet.

Although the Creative Commons plan initially sounded complex, involving dense legal copyright concepts and tricky Internet coding ideas, Creative Commons is now widely known to anyone searching for fair use materials online. Maybe, in the future, these terms of service contracts will be common knowledge, and a widely used tool for forwarding consumer priorities online.

NEXT STEPS

Because of librarian's ethical obligation to support patron privacy and intellectual freedom, they must work to push social media providers into ethical compliance. Library users' freedom of inquiry is undeniably chilled by social media's privacy breaches.¹⁴ The privacy given to library records should be extended to Internet search records. Internet searches are the modern way to retrieving information, Internet viewing is the new version of browsing a bookshelf or thumbing through a card catalog and "clicking" may as well be checking out a volume for personal use.

Corporate policies and user agreements do not have to be accepted at face value. As the People's Terms of Service drafters wrote:

"We're finally moving past the simplistic notion that one-sided corporate agreements are an unavoidable 'cost' of using social media—as if every company's corporate policy must be accepted as the automatic

» Advocating for replacing traditional social media user agreement language with the People's Terms of Service Contract is an ideal collective action to urge social media companies to respect consumer privacy rights. The contract drafters urge the public to consider a world where social media users and consumer advocates collectively negotiate a contract that reflects common consumer priorities, such as privacy rights.

» Using a Privacy by Design model can force social media companies to assure the privacy of their users and avoid post-hoc solutions for privacy invasion with pre-set privacy assurances. A collective campaign for contractual privacy obligations for social media providers would implement change by forcing social media platforms to make a binding promise to each and every user to improve their privacy practices, which would eventually become the default for the social media providers.

baseline. That's not how we regulate BP, why should our attitudes be more lax toward Google?"¹⁵

Using a Privacy by Design model can force social media companies to assure the privacy of their users and avoid post-hoc solutions for privacy invasion with pre-set privacy assurances.¹⁶ A collective campaign for contractual privacy obligations for social media providers would implement change by forcing social media platforms to make a binding promise to each and every user to improve their privacy practices, which would eventually become the default for the social media providers. ■

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Rethinking the Library Services Platform

» Taking a different approach, vendors and libraries can move toward greater interoperability.*

BY KEN CHAD

Surveying the library system landscape over a decade ago, Andrew Pace (at the time head, information technology, North Carolina State University Libraries and currently executive director, Networked Library Services at OCLC) wrote, “Managing library automation is now far more complex than the traditional maintenance of an integrated [library] system.” He added, “Many expect that new modules will communicate with old ones, products from different vendors will work together, and a suite of existing standards will make distributed systems seem transparently whole.”¹ However, he was disillusioned and went on to say, “Today interoperability in library automation is more myth than reality.”

The picture is only a little different in 2016. While a new generation of library services platforms (LSPs) has emerged, there remains a very significant lack of interoperability between the various components that make up the library technology “ecosystem.” As libraries struggle with the need to manage a diverse and growing range of print and digital materials, the library systems environment gets increasingly complex.

Trying to deliver those resources in a convenient and coherent way to users requires interdependent, seamless systems. LSPs have integrated print and electronic resource management but this ignores the bigger picture. For librarians, the time, effort, and cost entailed in integrating mission-critical library technology solutions is frustrating.

There are interoperability initiatives. For example, the NISO-led Open Discovery Initiative “aims at defining standards and/or best practices for the new generation



of library discovery services.”² Another standards body, BIC, has produced the Library Communications Framework, “a set of library interoperability standards which defines a framework for the communication of data between self-service and other library terminal applications to and from library management systems.”³

Technologies such as web services and service orientated architecture can certainly facilitate better interoperability, but much still remains to be done before we achieve the goal, described by Carl Grant,

president at CARE Affiliates and executive advisor to the Dean of Libraries at Virginia Tech University, to “cleanly integrate the best solutions together.”⁴

THE NATURE OF SOFTWARE PLATFORMS

So, although we talk of library service platforms, libraries and library system vendors have not yet fully realized a platform-based, interoperable library ecosystem. The classic example of a software platform is the Windows operating system. Microsoft produced some of the most widely used Windows

» Think of the transformative platform effect of the Apple and Android ecosystem of apps. Could such an approach do the same for libraries?

software applications, but most Windows software applications are not produced by Microsoft. We don't expect to buy Word and then have to integrate it ourselves with Windows or Mac OS. That's already been taken care of.

Microsoft gives developers from other, sometimes competing companies the tools and services to develop applications using the Windows platform. Indeed, using developer networks and other enticements actually encourages third party companies to use its platform. Why? The more Windows applications there are the more valuable the Windows platform becomes. So Microsoft extends these services even to competitors. Apple makes application such as QuickTime and iTunes available on Windows, and Microsoft makes applications such as Word available on the Apple OS.

The approach to a platform is more than just a question of technology. In his book *Invisible Engines*, an analysis of how software platforms drive innovation and transform industries, David Evans explains, "Such software platforms are at the heart of economies of ecosystems that consist of mutually dependent communities of businesses and consumers that have a symbiotic relationship with the platform."⁵ The platform approach is therefore transformative and potentially challenging to many long-established industries.

Think of the transformative platform effect of the Apple and Android ecosystem of apps. Could such an approach do the same for libraries? It's still early days for LSPs but, to date, they have largely continued the same route taken by their library management system/integrated library system predecessors. They offer application program interfaces for finance, student record, and self-service systems, but we don't see library system vendors developing application on competitors' platforms.

There have been some modest steps to encourage third party developments. Both the OCLC WorldShare and ExLibris Alma platforms have established developer networks,⁶ but they remain small and unattractive to third party developers, so they have gained little traction.

A FOCUS ON THE LIBRARY USER

In the wider world, the pressure to be increasingly "customer-driven" or "consumer-focused" seems almost universal and relentless. "Consumerisation" has taken on a specific meaning in the context of information technology—the growing tendency for new technology "to emerge first in the consumer market and then spread into business and government organizations."⁷

The consumer market is seen as the primary driver of information technology innovation but it wasn't always so. Information technology typically focused first on the "back end" tasks and then evolved to meet consumer needs. A good example is banking systems. Library systems also evolved in this way, with the public-facing catalogue or "OPAC" arriving relatively late as a module.

Perhaps the nearest we have come to a significant level of interoperability between systems from competing library system vendors is discovery services. It is not uncommon to see libraries using a resource discovery service from one vendor with a back-end resource management system from another. However, Marshall Breeding noted in 2012 that this trend could be starting to reverse. "As the back end modernizes, becomes more comprehensive itself, and has more hooks into the remote resources, it reintroduces the opportunity to integrate discovery and back-end automation."⁸

DEFINING THE LSP FROM THE LIBRARY USER PERSPECTIVE

Prioritizing the library customer perspective might change how we think about LSPs. If a student or researcher uses a discovery service such as Summon or EBSCO Discovery Service, they will typically be able to find print materials and electronic resources integrated into the same interface. They are not really concerned about how that is achieved. After all, libraries are a means to an end, and success ought to be measured in terms of the best possible customer experience and outcomes.

Print circulation remains for most libraries an important function. From the user perspective, that means using an RFID-based self-service circulation kiosk. These solutions are taking some of the charac-

teristics of the "stand-alone" circulation systems of the past and embody a lot of functionality that we normally think is the preserve of a LMS/ILS circulation module. The cataloging module is often seen as the heart of the LMS/ILS, but very few libraries catalog journal articles and many have outsourced the cataloging of books to providers that deliver "shelf ready books."⁹

Although this is an over-simplification, it does suggest that the LMS/ILS tail still wags the library platform dog. Print management is certainly important, but most money is spent on electronic resources. According to Carl Grant, the development of LSPs has been hampered because, "Existing ILS products, while containing limitations in service today's digital environment, represent hundreds of person-years of development, testing, and documentation. You simply can't replicate all this functionality in new software architecture in a short period of time, even with agile development techniques."

But maybe that is the wrong way to look at it. A new user-focused perspective on the LSP might help redefine and simplify the elements of print resource management (broadly the functionality of a conventional LMS/ILS) and lead to some helpful innovations. Platforms are often characterized as doing the "heavy lifting." Developers use a platform to simplify and speed up the creation of an application because the platform deals with much of the hard work.

An open library platform that meets the criterion of being "at the heart of economies or ecosystems that consist of mutually dependent communities of business and consumers"¹⁰ will do some valuable heavy lifting for vendor and other development partners. This means rethinking library system modules as platform "services," a trend that is being accelerated by the move to the cloud.

THE IMPACT OF THE CLOUD

The cloud is another of the key attributes that distinguishes an LSP from an LMS/ILS. A conventional LMS/ILS may be installed in hundreds of libraries in multiple versions, on a variety of hardware using different operating systems. Each new release must

» It may be that we need much bigger companies to realize the full potential of a library services platform. Once the platform approach has embraced the products and services owned by the vendor, the next step is, of course, to open up the platform to independent software vendors (ISVs). This has already happened in the enterprise resource planning (ERP) market.

be tested with all these variables and then implemented in each separate library system. This is time-consuming and takes up significant vendor and customer resources. It also militates against interoperability.

Brian Gammage, chief market technologist at VMware warns, “Most investment...is consumed in updating hardware and operating systems—by the need to replace end-of-life assets, rather than embracing new capabilities that deliver productivity or revenue benefits. The money is spent to stand still, not to move forward, so end-user computing is seen as a ‘cost of doing business.’”¹¹

Cloud computing could help break this paradigm. LSP customers are “tenants” on the same single system, so integration with another application needs to be done only once. Enterprise Resource Planning systems such as SAP and Oracle are seizing this opportunity, and both companies are investing heavily in their cloud platforms.

Of course, these two companies had “certified partners” before the cloud existed, but cloud computing presents new opportunities to grow partnerships more easily and offer independent software vendors tools, training, and support to develop SAP or Oracle applications. We haven’t yet seen the same kind of pace of development with library platforms. One reason may be scale—LMS/ILS businesses are small compared to giants such as SAP and Oracle.

SIZE MATTERS

It may be that we need much bigger companies to realize the full potential of a library services platform. Once the platform approach has embraced the products and services owned by the vendor, the next step is, of course, to open up the platform to independent software vendors (ISVs). This has already happened in the enterprise resource planning (ERP) market.

Gartner, an information technology market research and advisory firm, argues

that as ERP products move to the cloud, it encourages a process of deconstruction.¹² However, an ERP system doesn’t solve all problems any more than the LMS/ILS does. The monolithic ERP is losing relevancy. The existence of disillusioned users is one of the core drivers in this change to what Gartner characterizes as the “postmodern” ERP. Oracle is no longer a single product suite but sits on the cloud alongside interoperable applications from the ISVs.

In summary, Gartner’s analysis is that the ERP suite is being deconstructed and the result will be a more loosely coupled ERP environment with much of the functionality sourced as cloud services or via business process outsourcers. Will we see the same trend in library technology?

A ROLE FOR OPEN SOURCE

Open sources is generally taken to imply a more open, interoperable architecture to facilitate a diverse and loosely coupled community of developers working together. But, too often open source and proprietary systems are seen as being in conflict.

A more interoperable approach could enable open source solutions to better flourish together with proprietary solutions—and an extended library platform would be a way to do that. Up to now, integration has taken place on an ad hoc basis, library by library, rather than as part of an overarching shared platform.

Open source library systems have tended to be conservative in terms of their approach to functionality. Size matters here, too. An open source operating system such as Linux can command a far bigger community than a relatively niche library system.

Is it possible to approach the problem in a different way? Suppose an open source component were developed, maybe taking advantage of the BIC Library Communication Framework to integrate RFID self-service solutions with a re-imagined LSP. Other services could be integrated in a sim-

ilar way. For example, YBP Library Services provides book acquisitions and collection development services to academic libraries. Coutts Information Services and Dawson also provide a range of library services including the management of acquisitions and cataloging. The components of an LSP are already in place, and open source could be one way to integrate them. In this way, the notion of a single “complete” library system becomes redundant.

OPPORTUNITIES AND BARRIERS

Simple, effective interoperability standards could be achieved if libraries and vendors worked together better—and sector bodies could be playing a larger and more determined role. In 2013, Jisc LMS Change project noted, “The failure of the library community to better contribute to the development of modern web-centric library interoperability standards has hampered the evolution of an open “loosely coupled library systems environment.”¹³

Creating a technology platform to enable the diversity of vendor-owned assets to work together as part of a single shared platform is only part of the process of change. The technology barriers between applications are also reflected in organizational silos and it can take some time before these are broken down. A company may buy a competitor or a company it views as having an attractive offering. Technical synergies may already exist, but it still takes time for one organization to “digest” another and offering developer, technical, and training support to independent software vendors can be seen as a distraction. Consequently, the development of a genuine platform approach is delayed or thwarted.

A NEXT GENERATION PLATFORM

No single vendor will be able to develop all the applications necessary to meet the technology requirements of a complex library—and librarians like to see choices in

» This is the key element missing from the current library system market. Solutions are moving to the cloud, but aren't yet really platforms. It is a platform-based ecosystem model that will be the "next generation" in library automation. The promise for libraries is more flexible and cost-effective solutions and a much-improved user experience.

the market. A more open library technology ecosystem would eliminate the restrictions of a closed and monolithic suite of services from a single vendor. However, "Offering tools such as application programming interfaces and software development kits only get you halfway there. You have to create incentives for prospective partners to extend your platform and build different planks for your mutual benefit."¹⁴

This is the key element missing from the current library system market. Solutions are moving to the cloud, but aren't yet really platforms. It is a platform-based ecosystem model that will be the "next generation" in library automation. The promise for libraries is more flexible and cost-effective solution and a much-improved user experience. ■

*Based on the second Higher Education Library Technology briefing paper by the same name, which is licensed under a Creative Commons license to enable free re-use.

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