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## eContent Quarterly - Volume 1, Issue 1

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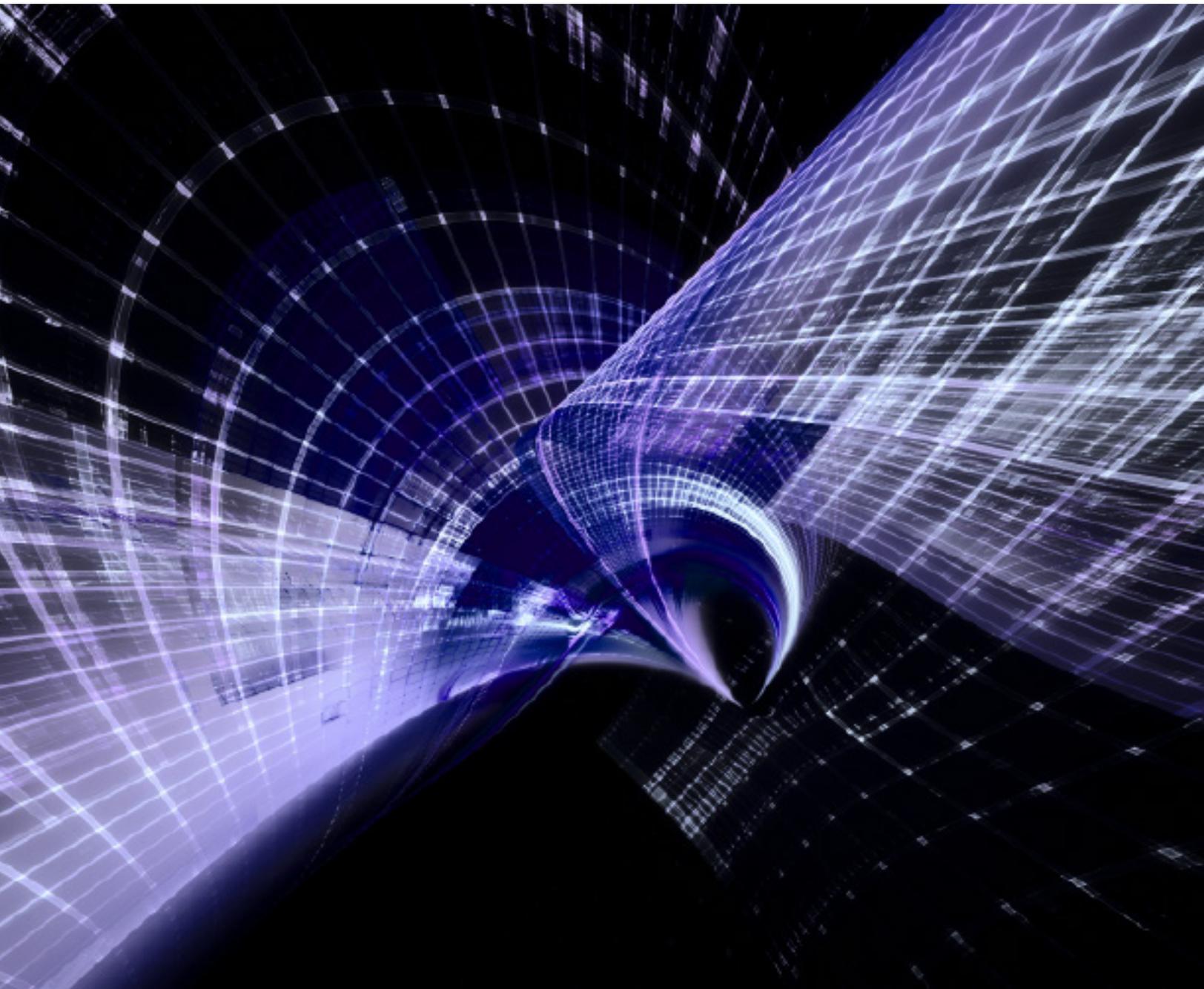
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# econtent

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- E-book Formats: An Overview for Librarians
- The Importance of Metadata for E-content
- Evaluating Children's Apps

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# From the Editors

**WELCOME TO THE FIRST,** Fall 2013 issue of *eContent Quarterly*. As we promised in the Preview issue, which launched at the ALA conference in Chicago this past summer, our goal is to tackle e-content from every conceivable angle and through the voices of a variety of information professionals shaping the e-content landscape, including public, academic, and school librarians as well as publishers, aggregators, distributors, and others catering to libraries.

As YBP's Michael Zeoli observes in the opening piece on supplying and collecting books in academic libraries, we are all guilty of "viewing the circumstances of our sectors in isolation, as though they existed separately from the others, so not always appreciating the fact that we share in the same travails and potential rewards." By bringing together the voices of those who produce content on the one end and manage it on the other, this issue of *eCQ* reminds us that no player in the e-content ecosystem—be they for-profit corporations or nonprofit institutions—can master the "digital shift" single-handedly. Drawing on his vast experience as a content developer, Zeoli gives an insider's view on the complex nature of publisher-aggregator-library relationships, calling for less isolationism and more partnerships among all parties. He also shares some eye-opening figures about the impact of E on P in relation to sales, content availability, and overall revenues.

Zeoli's sentiments about the importance of collaboration reverberate through the closing piece as well, in which librarians Carisa Kluver and Cen Campbell insist that despite technological advances, no one gets the digital shift completely: "This transition is like nothing we have experienced in recent human history, and none of us has a road map. Together, however, we can build something that can evolve over time." Kluver and Campbell, founders of [Digital Storytime](#) and [Little eLit](#), respectively,

tell the stories of how they created the two sites to help guide librarians and parents through the complex universe of children's apps, drawing our attention to the importance of unbiased reviews in the process but also pointing to the new opportunities for K-12 librarians to use their skills and guide parents and teachers to the best sources.

The two middle pieces serve as educational overviews of key topics in e-content discussions these days: formats and metadata. Dixie State University's John Burns provides a detailed overview of the most prevalent e-book formats, from the perspectives of a passionate consumer of gadgets—the badge he wears proudly—and of an informed professional with varied library experience. If you have been looking for a summary of the pros and cons of e-book formats as they relate to libraries, look no further. Burns's piece paints a clear picture of what is out there, what is here to stay, and what formats may not be around much longer.

Renée Register's piece on metadata is another introductory text on what metadata is and how it is used by publishers, aggregators, and libraries. Given the topic's complexity—particularly in digital environments—Register assumes little metadata knowledge on the part of the reader, which helps us follow her analysis of the challenges the e-book industry faces as it moves forward with two systems of metadata, ONIX and MARC. Having founded DataCurate.com, a company that supports publishers and libraries in the development of data policies, Register is exceedingly qualified to offer opinions on what is needed to eliminate duplication of metadata efforts across publishing and library operations. She, too, draws our attention to the new processes for metadata management that would allow for more collaboration between publishers and libraries.

Indeed, if there is a dominant theme echoing through all the pieces in this issue of *eCQ*, it is the importance of partnerships. Whatever aspect of e-content we may be discussing—building e-book collections in academic libraries; navigating formats; using and creating metadata, or evaluating children's apps—we are bound to reach similar conclusions about the pressing need to cooperate rather than to quarrel. The reality is, librarians and those that cater to them have a lot more in common than they may realize. Zeoli drives this point home when stating, "We each possess unique expertise designed ultimately to enhance the delivery of content." And that's the vision we have for this journal: helping information professionals understand what others in the chain are facing, so that we may all see better how to apply our expertise.



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# Supplying and Collecting Books

An Uneasy Metamorphosis **Michael Zeoli**

**THIS IS NOT** a gripping tale of love and loss, or of courage, betrayal, and triumph. Nor is it a moral tale where events unfold according to a cosmic plan. We are companions of the road sharing trials and tales of the first miles. Too often over the past several years, I have woken feeling like Kafka's Gregor Samsa, out of sorts with the world and with myself. People and places are familiar, but our relationships have become unfamiliar and can never return back again. Our world—the world of books, academic publishers, and academic libraries—has undergone a metamorphosis. This article is an attempt to come to grips with the state of this metamorphosis.

YBP Library Services occupies a privileged place in the distribution of scholarly books<sup>1</sup> to academic libraries. We estimate that YBP is responsible for 85 percent of sales of English-language scholarly books to academic libraries in the United States and Canada, and has very significant sales in many other parts of the world as well, including Australia, New Zealand, Hong Kong, and the Middle East. This perch affords us a unique view of the book supply chain and the sweeping changes from print to e-book collecting in academic libraries. YBP observes and measures the effects of the transition from print to digital formats on publishers, e-book aggregators, and a number of other service providers, including the ILS vendors. We regularly share and discuss the data we collect with partners to help shape evolving business models and strategies in publishing, library, and consortia collection development, and other areas of the supply

chain. This article is intended as part of our continuing effort to share information, observations, and perspectives.

E-books represent a tsunami in the broad academic library ecosystem. Significant new organizations, platforms, and mergers and acquisitions (many under duress) have appeared in the academic library e-book landscape in little more than a decade. Figure 1 shows a brief timeline that may be helpful to get a sense of the acceleration of the wave sweeping our world.

**FIGURE 1.**  
**Academic Library E-book Timeline**

<b>1971</b>	Michael Hart, Project Gutenberg YBP Library Services founded
<b>1997</b>	EBL and the California Digital Library founded
<b>1999</b>	ebrary and NetLibrary founded Baker & Taylor acquires YBP
<b>2001</b>	Safari and BiblioVault founded
<b>2002</b>	SpringerLink and ABC-CLIO e-book platforms appear
<b>2002–2005</b>	Google Books emerges OCLC acquires NetLibrary NetLibrary in bankruptcy
<b>2004</b>	MylLibrary founded
<b>2005</b>	OhioLINK Electronic Book Center appears
<b>2006</b>	Ingram acquires Coutts Information Services and MyLibrary
<b>2007</b>	Duke University Press offers e-books directly (ebrary Platform) Amazon Kindle appears
<b>2008</b>	HathiTrust is founded Ontario Council of University Libraries (OCUL) platform
<b>2009</b>	E-books integrated into traditional print Approval Plans
<b>2010</b>	EBSCO acquires NetLibrary YBP (Baker & Taylor) acquires Blackwell North America
<b>2011</b>	ProQuest acquires ebrary Project MUSE e-books Orbis-Cascade develops the first large-scale consortial Demand-Driven Acquisitions plan
<b>2012</b>	JSTOR e-books
<b>2013</b>	ebrary (ProQuest) acquires EBL Blackwell UK withdraws from the academic library supply market
<b>2014</b>	Project MUSE and Duke University Press move to Highwire Press

Many other significant developments could be included, such as the appearance of numerous publisher platforms and the emergence of e-book platform providers like iFactory (recently acquired by SAFARI), MetaPress, and Atypon,

but the Sisyphean task would lead us away from our discussion, and in truth, even our brief list is likely to be overtaken by new highlights before this article is published.

Academic publishing and the academic library market have seen a unique set of events unfold over the past decade, and there is a widening disequilibrium infecting our shared ecosystem. Each segment of our ecosystem is affected differently, but one is as clearly connected to the next as day is to night. E-book sales have risen to more than 15 percent of overall YBP book sales and are increasing monthly. Print sales have fallen by the same percentage. It is important to bear in mind that print still represents 85 percent of YBP business and that this holds true for most publishers as well.

In terms of business revenue, the decline in print sales far outweighs sales in digital format. While generally libraries are purchasing less book content these days thanks to leaps forward in technology and economic necessity-as-the-mother-of-cooperation, libraries are making more books available to patrons than ever before through Demand-Driven Acquisitions (DDA), Short-Term Loans (STL), large package deals, and consortial purchasing. In sum, more content is accessible to patrons, less is being purchased, and publisher and vendor margins are much thinner on e-content owing both to the costs of new digital infrastructure and more partnerships among which to share the diminishing margins. This poses critical challenges for publishers and book vendors. Innovation and investment in new technology, while necessarily continuing to support the old, presents challenges that are frequently unsustainable, as some of the mergers and acquisitions we've seen should amply demonstrate.

How are relationships between publishers, vendors/aggregators, and academic libraries shifting? To address the issues and overcome the challenges we are confronting, albeit from different positions, we first need to identify them. I'd like to discuss these in three broad categories: isolationism, content availability, and partnership.

These relationships have been important. Decisions we make in response to our challenges affect our partners. To what degree do these decisions reverberate in the ecosystem and how may they influence our future? While we don't purport to have all the answers (in fact, we admit to having few), we can point to signs posted along the way in these first few flood years.

## Isolationism

At the annual Acquisitions Institute at Timberline Lodge this year, one session began with a librarian admitting how surprised she was at the difficulty of winning publisher agreement to participate in a consortial Demand-Drive Acquisitions pilot. Her observation was important and worth sharing as it serves as a good example of the challenge we face. The difficulty in winning publisher participation in consortial DDA projects is common knowledge to vendors and e-book aggregators, and yet we encounter the demand for publisher lists, along

with anticipated title counts and pricing, in virtually every consortial RFP or RFI, as though this were an established off-the-shelf product which simply required negotiation on price and service. With much more engagement across segments of the supply chain, what is common knowledge in one part would be better known in other parts; removing some of the surprises would lead to more realistic expectations and better outcomes.

We are all guilty of viewing the circumstances of our sectors in isolation, as though they existed separately from the others, so not always appreciating the fact that we share in the same travails and potential rewards. To the extent that downward economic pressure affects libraries, that pressure reverberates all the way back through the supply chain. We each possess unique expertise designed ultimately to enhance the delivery of content. None of us have the luxury of operating in an economic bubble. The same materials and labor costs of maintaining and developing the businesses in one sector apply in other sectors. With few exceptions, none of us are earning “millions upon millions” in this industry. We need to show greater curiosity toward each other and create more opportunity to communicate often and fully with fellow travelers in related sectors of our information supply chain.

In some libraries and consortia, it is standing policy to negotiate directly with publishers for e-content packages (now expanding to include Evidence-Based collecting, an attempt to compete with aggregator Demand-Driven Acquisitions). Price is often the primary criterion. The problems—and additional costs—appear when the content must be managed by the libraries, often leading to requests to the vendor and/or aggregator, who have been by-passed in the business negotiation, to provide part of the solution to the problem (we will discuss these services below in Content Availability).

While the tendency for libraries to go direct to publishers is still strong, it seems to be declining as vendors and e-book aggregators develop the capacity to integrate and manage print and e-content. These services have provided significant value to libraries in the print world and a change in format should not necessarily nullify that value. Still, old habits die hard and opportunities can be persuasive, and publishers also have a justifiable interest in making sales directly whenever possible.

Publishers, in launching proprietary platforms, usually try to market directly to academic libraries initially. After experimenting to find the limits of doing business directly, partnerships are typically established. Publishers make significant and ongoing investments in their digital platforms and have great pressure to recoup their investment. Like libraries and aggregators, publishers fall along a spectrum of openness to partnerships. Their perspectives vary as to the best way to protect their investments and to serve their markets. Investment in content delivery platforms leads publishers away from their area of expertise, which is the curation of content for distribution. Publishers cannot provide many of the services that pertain to vendors and other service providers, yet there is often an expectation that at least some of these services will be provided when a deal is struck directly with a library. Some examples include duplication control

(especially against print, but increasingly with other digital sources as well), DDA and STL support, MARC records, and other value-added services.

Often, larger publishers lack a comprehensive view of their own content universe, owing to corporate structure and technology, and depend on the vendor to provide complete print and e-book title lists as well as purchase data for a library or consortium. The high costs of developing infrastructure and expertise make many of the services offered by vendors and aggregators prohibitive for a publisher to build. Publishers also need to maintain their print infrastructure despite all their investment in digital. Virtually every large publisher in the academic landscape, with possibly a single exception, has moved increasingly to a strategy of partnership and collaboration.

E-book aggregators have greater platform costs than the publishers and many of the service costs of traditional book vendors, which create incentives to work directly with libraries whenever possible. E-book aggregators are expected to provide enhanced tools to integrate and use e-content. They compete aggressively with each other—like the print vendors in decades past—as well as with publishers who tout DRM-free<sup>2</sup> access to their content. Competition in the e-book aggregator environment is intense as evidenced by the several major acquisitions in the past few years. E-book aggregators currently lack a comprehensive view of and ability to manage a publisher's entire content universe and are also blind in regard to a library's print purchasing. These are the primary reasons for partnership with book vendors in meeting library need for comprehensive content coverage and duplication control. Some efforts underway today are aimed at closing that lacunae and may suggest future mergers and acquisitions as well as services.

Partnership is requisite to aggregators and vendors as middlemen. Still, even here there is temptation for organizations to attempt to manage entirely on their own—to their own detriment and disservice to their potential users downstream.

Every organization is afflicted to a greater or lesser degree by tendencies to go it alone, but by overcoming bad inclinations inflamed by bad economics, tradition, ignorance, and fear we can build beneficial partnerships to coordinate resources inside and especially between our organizations.

## Content Availability

Understanding content availability (by each sector, and not just to libraries) and related issues plays a critical role in managing content effectively and efficiently across the supply chain. This understanding can only be developed through much greater communication and indeed through real partnerships. What questions should be asked? Which need to be answered? Which are misguided?

Content availability is where the rubber hits the road. In just over two years, we have seen the simultaneous availability of print and e-books move from 6 percent to nearly 40 percent.<sup>3</sup> During the same period, we have seen sales move from fewer than 500 e-books per week to nearly 10,000. An accurate picture

of availability, however, is far more nuanced and complex than simply knowing general availability.

Availability is not uniform by publisher, or by vendor, or by e-book aggregator, or by acquisition model, or by the type of library organization (e.g., small liberal arts colleges vs. large state institutions with many branches vs. consortia). Figure 2 shows two examples. The identities of the publishers presented in figure 2 have been masked, but they fall within the norm and are representative of the current state of content availability across digital and print formats. Availability shrinks further in titles available for DDA, for Short-Term Loans (STL), and for library consortia.

**FIGURE 2.**  
**Content Availability**

Pub- lisher	# New Print Titles	Simultaneous Publisher Platform	Simultaneous E-book Aggregator 1	Simultaneous E-book Aggregator 2	Simultaneous E-book Aggregator 3
X	2183	657	747	467	590
Y	3134	927	1909	1177	1073

A picture of content availability is still not equivalent to a full understanding of content availability. The meaning of content availability is different to publishers than it is to libraries, and it is different still for vendors, e-book aggregators, and other parts of the information supply chain. What a library or vendor may view as 30 percent simultaneous print and e-book availability may be viewed as 100 percent by the publisher or by an e-book aggregator. From a publisher perspective, 100 percent of the content from their division of their company may indeed be on their platform, or they may have made available 100 percent of the titles that could possibly be released in digital format.

Of the approximately 1400 publishers participating in the YBP approval plan service, just a quarter make any significant part of their content available in digital format (i.e., greater than 10 percent). Of these, just a third has a significant number of titles available simultaneously in print and digital formats—but again, usually not distributed equally across all hosting platforms or under all acquisition models. As in all things, the Pareto principle is in effect. When building a comprehensive collection development strategy, how is a library to acquire, weigh, and weave together all this information?

And for a publisher, what does this information say about their sales and strategies? Paths for publishers, vendors, and aggregators are further clouded by unaligned sales goals and strategies. All parts of the information ecosystem are poorly served by lack of information, misguided goals, and fossilized views of success.

Publishers need to evaluate the costs of maintaining various channel partnerships. Not infrequently, a publisher will begin a digital strategy by making backlist content available via just one e-book aggregator. The reason for this cautious

approach is often concern over undermining print sales (still 80–90 percent of sales for most publishers) and the effort of signing license agreements. Participation in DDA is often postponed, and STL availability may be yet another step—all owing to the same concern. Participation in consortial pilots is the furthest step in opening content availability—one rejected by many publishers currently. Being overly cautious is, at least in part, a misguided strategy for most academic publishers, even if driven by legitimate concern.

The primary concerns for publishers and libraries should, in theory, find a natural alignment: library desire is to maximize appropriate content availability for their patrons, while the publishers desire to maximize content sold. By enforcing scarcity, publishers in effect (supported by the evidence) reduce their sales. The issue for publishers is not one of making content available or not, but of doing so sustainably. In evaluating the relative success of publisher digital strategies and the effect on overall sales, let's look at this recent comparison between two presses of similar content focus and quality.

Figure 3 shows the number of new titles published in 2012 and the greatest percentage available simultaneously via any one of the e-book aggregators. The sales figures are for all available digital content sold in 2012, not just those titles published in 2012. Publisher Y was dramatically more successful in earning a portion of library budgets for digital content. I have not included print sales, but digital availability appears to have had a positive effect on print sales as well. But if simply making more content available in digital format were all that was required for a successful strategy, the problem would be solved and we could all go home and eat chocolates.

**FIGURE 3.**  
**Simultaneous Availability of Print and Digital Content**

Pub-lisher	# New Print Titles	Percentage Simultan-ous (Best case)	E-book Aggre-gator 1	E-book Aggre-gator 2	E-book Aggre-gator 3	E-book Sales
X	121	3%	\$19,503.91	\$0	\$7,746.17	\$27,250.08
Y	104	95%	\$58,085.74	\$34,960.87	\$24,303.10	\$117,349.71

For most libraries, responsible collection development is still required and is not entirely outsourced to patron demand. DDA is, however, a wildly popular tool among libraries for obvious reasons. DDA and STL models provide a fantastic service to their patrons by vastly increasing content availability. YBP delivered over 40,000,000 bibliographic notification slips to libraries worldwide last year. Traditionally, library selectors and faculty review these slips and order a very small percentage. Though many more of the titles “fit” the library profile, to acquire them is simply unaffordable. DDA and STL allow a large percentage of the unselected titles to be made available for potential patron access.

While e-books sold in integrated e-book approval plans and on DDA continue to increase, there is noticeable erosion appearing for the first time in the number of e-book orders placed by libraries. This is raising serious concerns among publishers and vendors alike with regard to the sustainability of current pricing models for DDA and particularly for STL. In recent meetings with some not-for-profit publishers, the average gross revenue on an STL was determined to be just over \$2, a sum feasted upon in felicitous convivium with other members in the supply chain. It isn't hard to imagine the fears that these figures arouse when set next to declining print and e-book orders on a spreadsheet. Reference publishers generally do not participate in DDA because they do not expect that a purchase will ever be triggered owing to how the content is used (i.e., quick reference). Some will participate in DDA but withhold their titles from STL for the same reasons. Publishers participating in DDA will frequently exclude reference works or sell them under a separate model.

Figure 4 shows an example of the typical shift in sales (and so corresponding library purchasing) of print and digital content that academic publishers are experiencing. The more recent trend of declining e-book orders is also visible as they are deferred to DDA and STL (note too that the average STL sale for this publisher was just \$6.50 in 2012).

**FIGURE 4.**  
**Typical Shift in Sales of Print and Digital Content**

Year	Print Orders	E-book Orders	DDA Sales	# STLs	STL Sales
2013	\$64,670.90	\$10,289.94	\$3,656.29	313	\$2,001.45
2012	\$72,504.50	\$13,632.02	\$2,937.00	169	\$1,197.27

As a librarian recently explained to colleagues in collection development forum, a better way to evaluate the value of DDA is to measure the number of e-book discovery records delivered to the library (and the value of that content) vs. the dollars actually spent on content via DDA and STL. The per title figure drops much further, even for content from large publishers, when measured in this way. The point is not lost on publishers. Print and e-book orders deferred to DDA and STL, pose the most significant immediate threat to sustainability for publishers and vendors. Based on these trends in library collecting, driven both by the need to provide more content more quickly as well as by downward pressure on library budgets, publishers must now reexamine their strategies and expectations. All the digital apparatus that publishers are required to support today are in addition to, not instead of, print production costs. Still, most publishers have not raised prices significantly from year to year.

We briefly touched on the value of services provided by vendors. Vendors play a central role in the content delivery system and are not immune from the benefits of technology or the economy either. In the print world libraries have always been able to go direct to publishers to garner the highest possible discount.

Decades ago, the value of vendors and aggregators was affirmed as libraries far and wide implemented approval book and slip plans, and contracted for technical services support. None of that changes now that digital content is in the mix. In fact, it isn't hard to make the case that vendors are more useful now than ever before when the global costs of making content available in the library are considered.

Content and content metadata is collected up from its various sources including publishers, bibliographic utilities, and libraries and is enriched, managed, and redistributed according to the needs of the various partners mentioned. Managing duplication and library preferences for titles that now regularly appear on four, five, or more digital platforms, in addition to paper and cloth bindings, and from US and UK sources is far from an insignificant job—and now add to this a growing array of collecting models such as print and e-book approval plans, firm and standing orders (with various pricing options including Single-User, Three-User, Unlimited-User with the possibility of upgrading from one level to the next), DDA, STL, collections, subscriptions, and most recently, publisher Evidence-Based Collecting (essentially an effort to compete with e-book aggregator DDA without having to build expensive title-by-title tracking and triggering mechanisms). Supporting these services is extremely complex and the costs are not met by current library sales models.

Unfortunately, the word *just* is often trotted out when publishers and libraries try to negotiate directly but still want to employ the services built and maintained by a vendor, at high cost, to manage duplication: “Can't you just block the titles we have acquired directly from the publisher or reseller X?” “Just” blocking titles is the essence of the vendor business model. “Just” means identifying the appropriate titles as well as those that are not part of the “deal”: library by library, publisher by publisher, platform by platform, approval plan by approval plan, and ordering account by ordering account and sometimes standing order by standing order—usually on an ongoing basis, since even the publishers find it near impossible to say in advance what titles may be on a platform in what timeframe.

In sum, each segment of the supply chain is facing significant challenges that are intimately intertwined but often go unseen or unrecognized between our partners. Current perspectives and solutions are fragmentary and yet many of the solutions are within sight and even reach if we could “just” build more cooperative structures.

## Partnership

Developing trust and a true spirit of partnership will be the only way forward in an industry beset by the costs of metamorphosis with no cash cow in sight in any pasture near or far.

Outstanding solutions are beginning to emerge to support increased content availability and efficient delivery. Uniformly and by necessity, they are the result

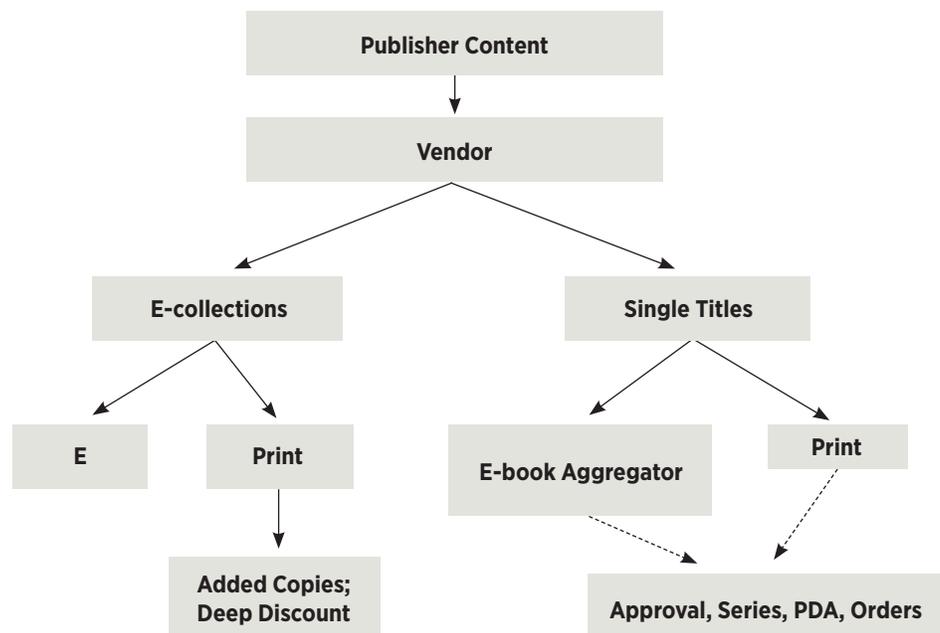
of partnerships. Library consortia with long and successful records of cooperation are flourishing anew. Publishers have followed similar paths to fulfill their missions. Project MUSE, Oxford University Press's UPSO, and Cambridge University Press's UPO are just a few examples of university presses working together to support each other and to provide greater value to libraries.

Vendors and e-book aggregators have found partnership to be a natural, if occasionally uncomfortable, fit, as have most publishers with proprietary platforms, who have discovered these relationships to be essential to success with academic libraries.

These partnerships have often existed primarily within their own market sectors or in very specific cases. Commitment and dedication to working together across sectors is still rare. Much of the partnering we see today can be characterized as frenemy partners drawn together by a specific opportunity. The best of these cross-sector relationships have yielded models that can be widely replicated. The Colby-Bates-Bowdoin Consortium, the Colorado Alliance, MaRLI, Orbis-Cascade, OhioLINK, OCUL, and the TRLN are just a few examples of highly successful partnerships in building innovative cross-sector processes for the comprehensive management of new digital and print content. More importantly, they have replaced suspicion and parochial interests with trust and synergy, the *sine qua non* of creativity and productivity.

Figure 5 depicts a model developed by MaRLI to collect content comprehensively from Oxford University Press and its partners. The model has since been extended to include content from several other major academic publishers. The model considers all Oxford University Press content, print and digital, as well as partner press content. Content is collected in various ways, including digital

**FIGURE 5.**  
**MaRLI Model for Collecting Content Comprehensively**



collections, integrated e-book and print approval plans, standing orders, and aggregator e-book platforms. Depending on the type of content and provider, some titles have unlimited user access while others are limited to single or three simultaneous users.

In models such as this, each member of the supply chain contributes its expertise and resources to help the libraries fulfill their mission to their patrons. The degree of cooperation is repaid by each organization's degree of success. In this model, the library has ensured that every title from Oxford and its partner presses has been considered by the consortium and the greatest number of titles possible made available in the appropriate formats. The libraries have also maximized the use of various vendor services for efficiency. Oxford has ensured that every one of its titles, regardless of format, has been considered by the libraries and collected as appropriate—a position many publishers envy. The vendors and aggregators have supplied their expertise and services and thereby demonstrated their value, which is essential to their long-term success and viability.

The model for pricing is evolving from print-based (how much was spent on print) to a mixed model, which includes usage data. Publishers are quick to point out that print purchasing is not an equal measure for what digital access will be. And management of these models adds another layer of complexity and cost to the old pick-pack-and-ship model of the print world. There is still much to be learned about sustainable pricing from all perspectives.

From the outset, the libraries stated their values, which included all of the points just mentioned and not simply the top-line price of the content. This was a position derived from careful deliberation and experience. The model has been launched with other publishers and in other consortia and large libraries. MaRLI has renewed the agreement for a second year.

Changes are persistent and exempt none of us. They also don't happen by accident but are the result of our decisions. Tradition has tended to keep many of us apart as we strive to remain relevant, but a globalization of sorts has come to our corner of the universe and we cannot afford to maintain parochial views. Benefits and challenges are not equally distributed as digital development spins on. Equilibrium across market sectors has been lost. It is important—and admittedly difficult in current financial circumstances—that decisions take into account effects on other services and organizations vital to our shared environment.

If the sustainability of our ecosystem is important to us, we should work far more cooperatively across the entire supply chain to establish partnerships, processes, and channels of communication. We should work together on new digital distribution and pricing models, currently still based largely on print, that support the full potential of new technology and the value that each of us contribute. The choice is to simply allow a Darwinian survival of the fittest process take its course and deal with the flotsam left in its wake, or to engage proactively in intelligent shared strategies to develop value for all parts of our chain. Perhaps we can rise from our Kafkaesque bed onto our too-skinny legs and find a better future than Gregor Samsa. ☺

## NOTES

1. The focus of this paper is *books*. Discussions of sales, acquisitions, or publishing output do not include journals, databases, or other materials.
2. Publishers are adding DRM to their platforms in order to make available more content, especially textbooks and course-adoption titles.
3. What has changed over the past two years is the rate of *simultaneous* availability. For the top one hundred scholarly publishers, if a title is going to be available in digital format it is likely to be available simultaneous with print.

## ABOUT THE AUTHOR

Michael Zeoli is Vice President for eContent Strategy and Partner Relations at YBP Library Services. YBP is the largest supplier of scholarly books to academic libraries in North America and in other parts of the world, including Hong Kong, Australia, New Zealand, and the Middle East. Michael has worked at YBP since 1996 in various roles, including Bibliographer, Sales Director for Canada, and Consortial Sales Director. From 2005–2007 Michael worked as Director of eContent Development at ebrary. He has published articles for a variety of professional journals, including *Collection Management*, *Library Collections*, *Acquisitions and Technical Services*, and *Against the Grain*, and has presented at many professional conferences. Michael has degrees from Harvard University and Middlebury College and spent five years working toward a Ph.D. in Italian Literature at the University of Chicago.

# E-book Formats

## An Overview for Librarians **John Burns**

**THIS LIBRARIAN IS** a fan of all things technology. No amount of error screens, incompatibilities, or glitches will ever sway my loyalty. My favorite function on an electronic device is the update feature, which (hopefully) will make all bugs and glitches disappear. E-books, e-readers, e-content, e-resources—the list of things I love to play with goes on. “E” and “i” are my two favorite letters in the Roman alphabet. I gobble this stuff up, and I don’t mind keeping up with the ever-changing array of options and whatever e-frustrations or iTroubles may be thrown my way.

The world of e-books and e-readers is in a constant state of flux these days. But its propensity for change is what gives users better tools and devices. And this propensity for change forges and refines ease of access and enhanced functionality, with the user poised to act as the driving force for improvement. I cannot imagine using an original Nook, Kindle, or iPad today. I look at those devices now like fine antiques. I cannot bring myself to destroy them or throw them out. Rather, they stay enshrined in my closet, ever to lament their less significant place in my life and mock, in futility, the shiny new gadget that replaced them. How can I not get the latest and the greatest? I often succumb to the temptation to throw out the old as soon as the new graces the scene. Tech companies love my weakness: the folks like me keep them in business.

I chose to become a librarian to stay close to these technologies and to help people use them. Librarians have more power today than at any point in history

to help patrons get access to the information they want through the use of these technologies, particularly via devices that bring patrons content electronically. I see librarians uniquely poised to make a difference in the ongoing transition from print to electronic. In our neverending quest to keep our communities “plugged in,” it is, in fact, our obligation to keep up with all that technology can do to help us do our own jobs better.

If you are a librarian ready to jump on the e-wagon and bring e-books to your patrons, this overview will help you understand how e-books are packaged and brought to users. The goal is to provide a basic overview of the most prevalent e-book formats on the market today from the perspective of both a consumer and an information professional. Many librarians mistakenly enter the world of e-books by focusing on the devices first, without much regard to file formats, but it’s the formats they need to focus on first, as they will ultimately determine what devices best fit their patrons’ needs and their institutions’ e-book strategy. Knowing file formats and their associated advantages and disadvantages will help librarians serve their patrons better, as many often look to their local library for unbiased instruction on e-books.

When publishing any work in digital form, authors or content creators must first choose the file format that will display the text. For example, if I type a file in Microsoft Word, I may opt to save that file and disseminate it in the native DOC or DOCX file format. If I work with imagery via Adobe Photoshop, I may choose to work with that file as a JPG or TIF. File formats are simply the form that communication takes on so that devices used for reading can store and display digital texts for readers (this, of course, depends on what format each device is compatible with). Without a file format of some kind, the device has no package or container in which to store, move, or deliver the written word. This introduction to the most popular e-book formats in use today zooms in on the advantages and disadvantages of the most prevalent e-book formats in library settings.

## Adobe PDF (.pdf)

There are a number of reasons why PDF wins in my book (or e-book as the case may be). I have worked with PDF through many facets of my career, from graphic and web design to academic librarianship. I find it to be the best file to meet the needs of an “on-the-go” mobile lifestyle, owing largely to its ability to move around and distribute anything designed, typed, or photographed. For example, I can easily e-mail or attach this document to a text message. I can share it with someone (or many) in the cloud, and I can move it around easily because of the availability of the free Adobe Reader.

PDF reigns on the e-book front because it is universally available—it used by many operating systems and interfaces, including, for example, OverDrive and EBSCO, among many others—and it is rich with features and flexible functionalities. Anyone can get the Adobe Reader (as software or as an app), so compatibility isn’t an issue. Users can access a PDF document with just about any mobile

device on the market today. A patron who downloads an e-book from ebrary, for example, is able to read it on his MAC, PC, smartphone, or tablet.

PDF is not only a robust document file format, it also handles imagery with great precision and quality for display or print. Plus, its use opens the doors to a free software offering from Adobe called Adobe Digital Editions (ADE). This software requires the setup of a free account establishing a username and password to log in. Similar to the way Apple iTunes functions as a digital music library, ADE is at once an e-book reader and a digital library for your e-content. Users are tied to their computers when reading the content they place in ADE—this is, admittedly, one of the few downsides. However, ADE can also be used to download content to specific devices (e.g., Nooks). It is a popular method for borrowing e-books in public libraries.

Most of us can attest to using PDF to transport documents around. We e-mail them to each other, read them, post them online for others to access, and scribble on them (using embedded annotation tools). No other file format allows us to do all this (and more) with as much flexibility, compatibility, and ease.

For the public library, OverDrive often serves as the dominant access tool for lending e-books to patrons (a large number of “big five” publishers’ offerings are available in PDF), while in academia, a number of lending services are available for consideration, including those by aggregators like ebrary and EBSCO, which offer titles in PDF from publishers like Oxford University Press, Springer, ABC-CLIO, and Wiley, among many others.

*Library Journal’s 2012 Survey of e-book Usage in Libraries* revealed some interesting stats about the use of PDF in libraries. It asked librarians to identify which format users generally prefer for e-books. The results showed the strongest preference for PDF from academic library patrons. In fact, preference has increased slightly since 2010, with 59 percent preferring e-books in PDF. In contrast, the preference for PDF files by public and school library patrons has dropped since 2010, to a mere 16–18 percent.

### Pros

- wide acceptance
- compatibility
- rich with features
- popular for borrowing e-books
- free Adobe Reader
- ability to move files between devices (including MACs and PCs)
- offered on many e-book platforms for libraries
- easy to download
- easy to cite due to embedded page numbers
- can be marked up by the author to increase accessibility
- images, charts, and graphs maintain formatting

### Cons

- static—does not reflow to fit small screens (best for computer or tablet screens)

- accessibility of the text depends on settings chosen by the author
- not used for e-book purchases on top devices, e.g., Kindle and Nook
- Reading PDF's with Adobe Digital Editions:
  - software can be tricky to use
  - requires an authenticated user with email account as validation
  - library patrons need to be trained to use ADE
  - not available yet as an app for mobile devices

## EPUB (.epub)

EPUB was created by the International Digital Publishing Forum (IDPF) and has had a good measure of success in the last few years. The [IDPF web site](#) defines the format as follows:

EPUB is the distribution and interchange format standard for digital publications and documents based on Web Standards. EPUB defines a means of representing, packaging and encoding structured and semantically enhanced Web content—including XHTML, CSS, SVG, images, and other resources—for distribution in a single-file format. EPUB allows publishers to produce and send a single digital publication file through distribution and offers consumers interoperability between software/hardware for unencrypted reflowable digital books and other publications.

EPUB has been widely adopted as the format for digital books (e-books), and these new specifications significantly increase the format's capabilities in order to better support a wider range of publication requirements, including complex layouts, rich media and interactivity, and global typography features. The expectation is that EPUB will be utilized for a broad range of content, including books, magazines and educational, professional, and scientific publications.

The success of EPUB can be attributed to its wide acceptance and compatibility with many devices and reading platforms. The latest version of EPUB—EPUB 3 (released in October 2011)—offers exciting prospects for publishers and could equate to a rich multimedia experience for the reader. Because EPUB 3 incorporated the DAISY (Digital Accessible Information System) format into the standard, publishers can now move accessibility to the forefront of their discussions. End users and libraries will naturally benefit from this because a potentially universal file format with multimedia enhancements has many advantages.

One of the key strengths of EPUB 3 is that it organizes all of the content related to the file in one place, including book content along with style sheets, images, media, scripts, fonts, and accessible features. On the other hand, one drawback is the incompatibility with Amazon Kindle readers and software. EPUB files cannot be consumed on an Amazon device unless they are converted

from EPUB to the Kindle compatible .mobi format or, for Kindle Fire owners, the addition of an EPUB reading app. Adding this app may require a user to change the Kindle settings to “allow installation of applications from unknown sources.”

EPUB also integrates well with ADE (Adobe’s free eReading platform discussed above). OverDrive, ebrary, 3M Cloud Library, and EBSCO all offer titles in EPUB format through various lending models and/or database subscriptions. Librarians need to check with individual publishers they want to buy from on the specifics of their EPUB files, as each will have a particular means of access for patrons. Some go through a third-party vendor like EBSCO or ebrary (e.g., Oxford University Press and Macmillan), others may have their own proprietary interface that they will help set up on the library’s institution’s web page (e.g., Salem Press), and still others may sell the EPUB file outright and leave it up to each library to host it on its own server.

According to [Library Journal studies](#), 61 percent of library patrons showed a preference for EPUB files. The survey responses also included an option, “optimized for readers,” which could include EPUB. All library types showed a steady increase in patron preference for formats optimized for readers.

### Pros

- open standard
- reflowable
- accessibility with the incorporation of the DAISY standard in EPUB 3
- supports JPEG, PNG, GIF, SVG images, and Flash, which enable audio and video
- supported by nearly every device, except Amazon Kindle
- features for interactivity, quizzes, and assessment make it a great choice for textbooks
- support for non-Roman language fonts in EPUB 3

### Cons

- Kindle users must convert EPUB files to the Kindle compatible .mobi format
- Kindle Fire users must install an EPUB reading app
- lack of page numbers (usually due to neglect, as it is technically possible)
- requires software or a browser plug-in to view on library computers
- not used heavily by academic publishers
- early versions may not have full support for images, Math ML, charts, graphs, or other nontext objects
- creation may require knowledge of XML and XHTML
- creation of a style sheet is necessary to build valid EPUB files

## Kindle Books (.azw & .kf8)

Kindle Books is Amazon's proprietary e-format. Via Amazon's proprietary technology called Whispernet, users can enjoy a rather seamless download experience, geared, of course, to the Amazon Kindle user only. The Kindle format is used on a range of other devices that can install its free app, but the format itself only displays on the Kindle. The app used by others is one of the best ones around, featuring a simple yet functional interface. It should be noted here that a number of devices still cannot read Kindle e-books via this app, including, for example, Barnes & Noble's Nook. Tablets like the iPad, which have gained in popularity in recent years, can access both Kindle and Nook e-books via their respective apps. This creates a "middle ground" for those not wanting to commit to either Amazon or Barnes & Noble as their primary source of e-books.

Perhaps one of Amazon's boldest moves was the development of the Kindle Lending Library, which allows users with an Amazon Prime account access to more than 270,000 books. These may be borrowed for free (one book per month) with no due dates, including over 100 current and former *New York Times* best sellers and all seven Harry Potter books. With the Kindle app and an Amazon account, one can manage all purchased and borrowed content and deploy that content to any device that runs the Kindle app (or the Kindle device itself).

It is obvious that with the rivalry between two of the top e-book companies (Barnes & Noble's Nook vs. Amazon's Kindle), there is bound to be some proprietary endeavors to win loyalty of users. And that is Amazon's game. In libraryland, OverDrive remains the only e-book lending service for Kindle users, owing to OverDrive's deal with Amazon.

### Pros

- fluid downloading experience that allows for quick and easy purchases
- functions well with added features like choice of display font and text-to-speech
- multimedia enhancements
- available via OverDrive, the dominant e-book lending service in public libraries
- free apps and software extend ability to read Amazon content to other devices (Amazon app available for iOS, Android, and Windows 8)

### Cons

- proprietary nature of the format
- not compatible (or completely incompatible) with other devices
- Kindle e-book cannot be read on a Nook
- library content must be downloaded from the Amazon.com site; patrons must have an Amazon account
- libraries cannot guarantee patron privacy for titles downloaded from Amazon site
- direct download of Amazon files to libraries is only available through one vendor (OverDrive) at time of this publication

## Apple iBooks (.ibooks)

Apple's proprietary file format features a clean, visually attractive interface that I find easier to navigate than others. Content is consumed via the iBooks app that is exclusive to Apple mobile products (iPad, iPhone, and iPod). The one downside to iBooks is that the platform was built for touch interaction, so there is no application making it possible to read the e-books on a MAC laptop or desktop (unless you plan to upgrade to Apple's recently announced OS X Mavericks, which will make iBooks available for the Mac OS) and certainly not on a PC. And, as is the case with Amazon, Apple products are very proprietary and designed to be consumed by Apple users.

The launch of the iBooks Author app (on a MAC running OS X 10.7.4 or later)—downloadable from the MAC App Store—has added a new layer of excitement among Apple fans, particularly those interested in self-publishing. The app allows anyone to create iBooks textbooks, cookbooks, history books, picture books, and other types of content, use widgets to enhance e-books with illustrations and multimedia, and submit them to the iBookstore by following a few steps.

### Pros

- visually appealing
- clean and pristine layout
- a number of added features, including font choice and font size options
- versatile collection, including a variety of book types, even textbooks
- everything is tied to the user's Apple ID—a good thing if you lose, upgrade, or break your device
- iBooks Author app

### Cons

- proprietary nature of the format
- no lending or purchase options for libraries
- not compatible with MACs (any MAC OS X prior to the newly announced OS X Mavericks) or PCs
- not compatible with original iPhone or early versions of the iPod touch
- iBooks textbooks can only be viewed on an iPad

## Plain Text (.txt)

It is exactly what the name implies: a “plain” file void of most bells and whistles other formats contain in abundance. You won't find the formatting options and features that you would in a more robust word processing file format, such as, for example, Microsoft's DOC or DOCX files. Text is all you get. This means no fancy graphics, colors, or interactive elements.

Many e-book readers and mobile devices support the display of plain text files, as do MACs, PCs, and virtually all word processing software. There are e-books available in this format, too, and most of those are in the public domain. The format is widely used by online repositories like Project Gutenberg, openlibrary.org, free-e-books.net, manybooks.net, and others that contain large numbers of titles in the public domain.

Plain text is used by Project Gutenberg for two primary reasons. First, it is described as the lowest common denominator and, second, it stands the test of longevity. As many have argued, file formats come and go as time passes, but Plain Text has managed to stay intact for a relatively long time.

### Pros

- very basic and widely accepted on nearly all devices
- good for personal notes or drafting
- prevalent among e-books in the public domain
- good option for patrons with limited knowledge of technology

### Cons

- lack of features make it visually unappealing
- not used for commercial e-book purchasing
- generally not available from library e-book vendors
- not equipped to evolve with the pace of technological advances

## HTML (.html or .htm)

HTML refers to the markup language used to code web sites. It has evolved to what is presently known as HTML5. Users encounter this file frequently while engaging with the open web or within article databases but rarely with actual e-books. HTML content will typically force you to view the content inside a browser or an app. Many academic databases, for example, offer full-text articles in this format. It is easy for students and researchers to use HTML files because they are reading right in the browser. The experience is exactly like reading any other text found on a web site, since the code used to display both is HTML.

HTML allows content creators options to embed additional features, including images, video, and audio (or at the very least links to such ancillary content). This is done similarly to the way a web page is coded. The dependence on a browser can be an issue with older or earlier versions of some e-reading devices, but since it is quite common to have a browser on a mobile device these days, this is becoming a less of an issue at this point.

### Pros

- integrated into the web page for easy reading in the browser of choice
- useful for libraries catering to patrons who prefer to read on the computer

- used heavily in academic databases, particularly those containing journal or reference content
- text can be copied and pasted out of a browser
- vendors who use HTML for an online reading experience offer more features for end users

### Cons

- dependence on browsers may be restrictive
- older devices may not be able to display all content
- not easy (or not possible) to download content to devices
- difficult or impossible to read without an Internet connection
- content creation requires knowledge of HTML
- formatting for printing may be unpredictable

## Other Formats

The list of file formats stretches well beyond those discussed above. A good place to gain foundational knowledge of a host of other e-reading formats is Wikipedia's [Comparison of E-book Formats](#) page. Below is a listing of several other formats librarians may encounter in their e-content pursuits.

### Broadband e-books (.lrf & .lrx)

This file format is on the decline as Sony (who owns it) has been releasing titles in EPUB since the end of 2009. You may encounter it when assisting patrons who invested in an older version of the Sony Reader. Those patrons are only able to read Broadband e-books on their Sony Reader, as they are very proprietary to Sony. However, since Sony now supports EPUB, future purchases in EPUB will be readable on all new Sony Readers as well as any other device that supports EPUB. Getting an old Sony Reader designed to display Broadband to read EPUBS may still be problematic.

### DjVU (.djvu)

This format has several features that cater to the resolution and compression of documents containing a combination of text, drawings, photos, and other images (e.g., graphic novels). Because it has admirable value in how it compresses a file (particularly from scanned sources), DjVU has been touted as an alternative to PDF. However, you may find that many devices are not compatible with it. Typically, this file format requires an app or software, making it suitable for computer or smartphone users. Librarians may need to help patrons find the right app or software to create or view these files ([djvu.org](#) is a good place to start).

### FictionBook (.fb2)

This is an open XML-based e-book format that allegedly originated in Russia. FictionBooks are almost always fiction e-books and are a small player in the

market. Open-source computer software like [Calibre](#) can open this file, but you will be hard pressed to find a library lending model that works with it or even offers it. Further, the great majority of devices do not support it. If librarians ever encounter this file—which won't be often—they will need to steer the patron to a PC to work with it.

### **Mobipocket (.prc & .mobi)**

This file has its roots in the open e-book publication format developed by the International Digital Publishing Forum (the same folks who developed EPUB). It is intended for use with the Mobipocket Reader Desktop software. Librarians may encounter this file type from time to time, but Mobipocket is on the decline as much of the content on its web site has been scrubbed. Mobipocket was bought by Amazon in 2005 and was then used to develop the current Kindle format. It has worked nicely with smartphones, but it was never adapted for use on e-reading devices.

### **Plucker (.pdb)**

This free open source format has a companion e-book reader application for desktops and PDAs. If you are helping a patron who may be from the PDA era, you may run into this file. This is unlikely, as it is practically extinct at this point and modern e-readers do not display it. Libraries do not borrow in this format either, but .pdb files may pop up if someone is looking to convert them into more compatible options like EPUB. This is possible via conversion software like [Calibre](#).

## **DRM and E-formats**

Digital Rights Management (DRM) is the effort publishers and e-content producers put into place to control the use of file formats. Every discussion of file formats, therefore, involves the discussion of DRM, which is best described as a set of technologies or software connected to content to limit its use, generally and in libraries. DRM can be managed by the manufacturers of e-reading devices, online bookstores, publishers, or library vendors.

Each file format can have some form of DRM embedded that restricts certain activity. This activity usually falls into three main categories: piracy, unlawful distribution, and unauthorized or illegal use.

The main objective of DRM—regardless of the industry—is to reduce piracy, as many lessons were learned from the rampant Napster debacle of yesteryear and other similar occurrences in the music industry. The e-book industry has learned from the past struggles of the music industry and is realizing now that easing of DRM may be in its best interest. It is premature at this point to determine whether the use of DRM is effective in preventing unauthorized use or whether it leads to consumer resentment.

There are a variety of different DRM schemes used with e-books. Amazon, Adobe, and Apple each have their own. The majority of library downloadable content will use the Adobe DRM scheme, which requires the use of the ADE software to authorize a user to download, read, and transfer the content to a reading device. PDF and EPUB files often contain the Adobe DRM, allowing EPUB users to also authorize content with the ADE software.

The DRM on library materials ensures that the book can only be used by one person at a time (other business models do allow for more users) and that it is returned at the stated time. Other DRM may limit how much of a title can be downloaded or how many pages can be printed. It may also limit some copying and pasting abilities. DRM protection use varies with library vendors and book sellers, but except for a few publishers (like O'Reilly), the vast majority use some type of DRM, which may vary from "very strict" to "loose."

Many library vendors now provide free apps for iOS and Android devices to streamline the downloading. When a user installs the app for the first time, he will be prompted to authorize his ADE account on the device. After completing this process, library books can be downloaded with ease as the DRM verification is taking place behind the scenes. Library e-books in the Kindle format are hosted and downloaded directly from the Amazon site, using the patron's existing account to manage the DRM.

Publishers willing to investigate alternatives to DRM are considering an option spearheaded by Pottermore called social DRM. A good example of this is the Harry Potter e-book store, where consumers purchase content with DRM that acts as a digital watermark attaching the owner's name and e-mail to the purchase to make that information visible in the event of unauthorized use. Social DRM is seen as a less restrictive way of managing authorized use. However, in library settings this becomes a problem, as it directly interferes with the libraries' protection of patrons' privacy.

## Looking Ahead

It is quite obvious that the propensity for change in the e-content world will continue, but as far as this librarian can see, that is a good thing. File formats get more sophisticated and easier to work with each year, devices are always improving, and wide availability of e-content causes people to read more. Looking ahead, I see PDF and EPUB dominating the e-format market and Amazon moving toward a less proprietary version of Kindle. Many of the file formats that are not as well-known and widespread will eventually disappear (if they have not already), and we will see a market that solidifies around three or four major formats. This, too, is a good thing for consumers and library patrons, as it will make the e-content experience less complicated for all involved.

**FIGURE 6.**  
**Pros and Cons of File Formats**

<b>File format</b>	<b>Pros</b>	<b>Cons</b>
<b>PDF</b>	Wide acceptance; ability to move files between devices; images, charts, and graphs maintain formatting; free Adobe Reader	Static—does not reflow to fit small screens; accessibility of the text depends on settings chosen by the author
<b>EPUB</b>	Good compatibility and support across many devices	Not compatible with Kindle devices or software; not used heavily by academic publishers
<b>Kindle</b>	Amazon's fluid downloading experience, affordable pricing	Not compatible with non-Amazon devices; proprietary nature of the format
<b>Apple</b>	Apple's superior interface; ease of purchases; iBooks Author app	Proprietary nature of the format; no MAC and PC support; no library lending model
<b>Plain Text</b>	Great for free e-books; widely accepted on nearly all devices; good for personal notes or drafting	Not ideal for purchased content; generally not available from library e-book vendors
<b>HTML</b>	HTML5 multi-media options, browser access; used heavily in academic databases	Browser dependence may be restrictive; older devices may not display all content

Libraries will continue to use lending models that support the popular PDF, Kindle, and EPUB formats and each of these will continue to evolve toward a more polished, refined, and user-friendly version of what we know today. DRM will also continue to improve, as vendors understand the ultimate business survival rests on keeping their customers happy—and their customers want less DRM. Building and maintaining customer loyalty equates to sustainability and growth. DRM currently does not promote loyalty. Could profits climb without it? Possibly, since experience shows that if users want content, they will find a way to get it, regardless of the obstacles.

Piracy and unauthorized use will also continue. But they would be better handled if lost revenues that result from illegal use could be estimated in advance and then written into the initial price of the product. Writing that loss into the price is similar to the concept of “shrink” in retail, where a company plans for the amount of lost revenue that results from theft. I would certainly be willing to pay a bit more to cover those who unscrupulously break the law and pirate if it meant that DRM would go away. The value of freely moving my content around after I

have legally purchased it and the ability to enjoy the freedoms I am granted by “fair use” would be worth a higher price.

Overall, libraries will remain an important player in the e-content arena, as our mission to deliver information to those who need and want it will motivate us to continue negotiating with publishers and vendors and to make decisions that will influence how content is consumed in the institutions we serve. This is not the last word on e-formats. But we have come a long way since only a few years ago, and the picture is getting clearer. ☺

### **ABOUT THE AUTHOR**

John Burns has worked for both public and academic libraries. Formerly the Head of Reference, IT Manager, and Adult Services Librarian at the Watertown Public Library in Watertown, Wisconsin, John is now Assistant Professor and Reference and Instruction Librarian at Dixie State University in southern Utah. Throughout his career, John has worked with and developed continuing education courses (online, on campus, and in libraries); fostered technology; taught multiple topics, including information literacy; developed programming for adults and students; coordinated efficient staff workflow, implemented best practice for cataloging materials; and implemented training resources for library patrons and staff.

# The Importance of Metadata for E-content

Renée Register

**WHETHER IN PRINT** or digital environments, inclusion of metadata that describes each published work is essential to discovery and management of content.

- Accurate bibliographic metadata—including title, author, and ISBN—ensures that users can find an item.
- Rich descriptive information—including subjects, summary and table of contents—drives content discovery and allows algorithms mining subject and keyword metadata to present the user with titles similar to those browsed.
- Evaluative metadata—including reviews, awards, and author and contributor biographies—contributes to selection decisions and helps the user make buying choices.

Inclusion of these elements is especially important for digital content. Without bookshelves to browse or a physical book to hold and examine, the only way to discover and evaluate a book in a digital environment is through the use of metadata. In fact, it is the metadata itself that drives the user to select a particular book for reading.

As part of the publisher supply chain, librarians are both users of publisher metadata as well as creators and curators of the library metadata that supports

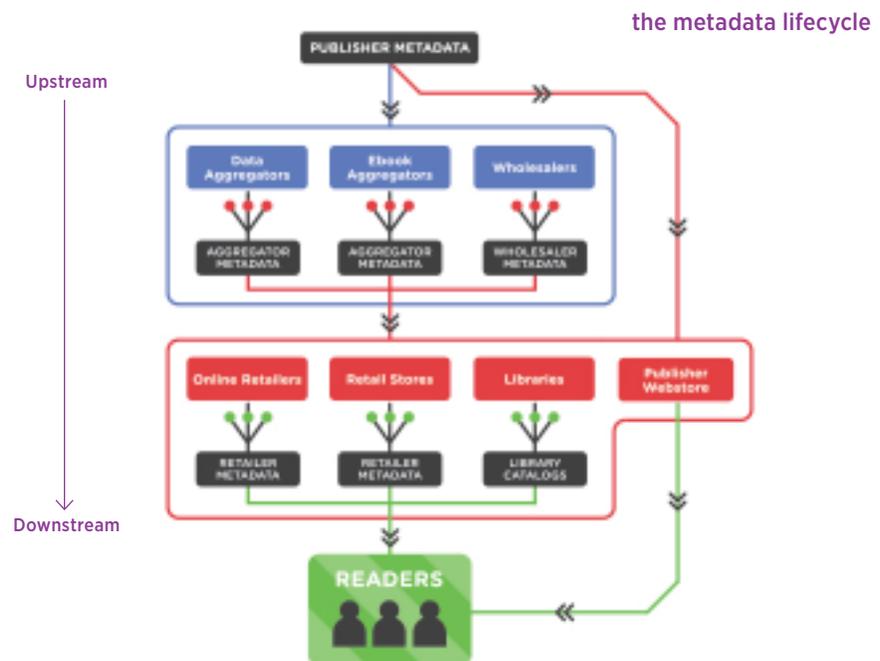
internal operations and provides patrons with access to content. Librarians use publisher and/or vendor metadata in selection and acquisition processes for both print and digital content. In general, this metadata is then transformed for use in MARC-based library systems that underlie the platforms used by patrons to select content.

Library and publisher metadata had been subject to differing metadata standards, formats, and processes before new challenges related to digital content developed. The rise of vendors providing e-content to libraries has created an additional layer of complexity. This article provides an introductory overview of how metadata flows from publishers to vendors to libraries, discusses library use of publisher metadata and its effect on library processes, and addresses new challenges brought about by e-publishing. It also explores the potential for new processes that allow for more collaboration between publishers and libraries and more efficient metadata use for all.

## THE METADATA LIFECYCLE

Figure 7 gives an overview of metadata flow from publishers through business-to-business (and business-to-library) vendors, and on to retailers and libraries providing direct-to-reader content. Libraries are both customers and providers in this flow.

**FIGURE 7.**  
**The Metadata Lifecycle**



Publisher metadata is not static but changes through the life of the title—from pre-publication onward—and is adapted and enhanced for use in vendor, retail, or library environments. The industry often refers to “upstream” and “downstream” metadata. Upstream metadata is information created near the beginning of the publishing cycle, originating with the publisher or content creator and then flowing downstream to aggregators, wholesalers, retailers, libraries, and readers.

Metadata grows and evolves throughout the stages of publication and across the life of the book. Many players create, distribute, enhance, and use book metadata, and this data may be changed many times through multiple channels. Some metadata changes and additions are integral to publisher production processes related to the growth of a publication, from rights acquisition to published work. Others result from vendor quality control processes, metadata uses, and business needs. Evaluative metadata is added as critical response and reader reaction to a published work accumulates. Libraries adapt metadata for use in the MARC databases and systems that drive library processes and provide patron access to content.

What follows are descriptions of some of the metadata uses and potential changes across the metadata lifecycle.

## Upstream Publisher Metadata

Changes are pushed from publishers to trading partners as information about the book evolves or changes. Publisher “trading partners” include metadata aggregators, wholesalers, distributors, digital content aggregators, and retailers—any partner that plays a role in moving books from publisher to reader. Many changes can occur at the publisher level prior to publication date. Prepublication title changes, addition of the cover image, and information about final pagination are examples of metadata growth during the production process. Publishers may continue to provide metadata postpublication, including book reviews and book or author awards information.

## Downstream Publisher Supply Chain Metadata

Downstream trading partners also adapt and enhance metadata for quality and usability within their internal systems and discovery platforms. These downstream partners ingest the data for use in their own systems in support of their business needs and for use in their proprietary products and services.

Large wholesalers, retailers, and aggregators collect metadata from multiple publishers and other sources, resulting in the maintenance of databases containing millions of title records. They constantly ingest and monitor metadata feeds from the sources, which may contain both new records and updates to existing

records. These vendors take metadata very seriously and maintain significant staff for metadata work.

Reseller products and services include ordering platforms and websites for customer selection and purchase, title databases and data feeds, and especially in the wholesale environment, complex profile-driven recommendation and approval services for business-to-business customers such as retailers and libraries.

Their metadata must support all of these business needs in a very competitive environment. Systems are in place to catch common metadata errors, inconsistencies, and missing elements. Some problems can be resolved through automation, but many titles are reviewed by metadata experts who may review a record with book in hand, add more specific subject headings, resolve author inconsistencies to an authority file, etc.

Because of the importance of rich evaluative metadata in online customer selection, vendors also routinely enhance bibliographic records with critical reviews, awards information, contributor biographies, and other evaluative information. They may subscribe to data sources specializing in this metadata rather than relying on publisher-provided metadata. In addition, vendors may also include library-specific metadata, such as DDC and LC Classification, in their ordering and selection tools and services.

### **Library Use of Publisher Supply Chain Metadata**

Libraries traditionally rely on large wholesalers with divisions created to meet their needs. Since they come in many types and sizes, libraries constitute a complex market with selection and buying practices that can be quite different from retailers'. The types of materials bought differ widely between public libraries, academic libraries, and special libraries. Our tradition of rigorous bibliographic description, classification, and subject analysis means that vendors must manipulate and add metadata to the information received from the publisher.

Apart from differences in descriptive metadata and library-specific metadata elements, the difference in library and publisher supply chain data formats and carriers means that metadata direct from publishers and vendors can't be ingested directly into library systems. Libraries have a long tradition of creating and sharing bibliographic records in MARC format. The publishing industry moved from brief transactional electronic metadata used from the 1960s onward for back-office functions to a rich metadata format called ONIX (Online Information Exchange), which was introduced in 2000 and is now the international standard for carrying book metadata.

Although some vendors may add library metadata elements to the (non-MARC) records supporting selection tools and services, the metadata vendors use in their own systems, does not fully meet the needs of libraries. Libraries may use vendor metadata ordering systems and services to select books and place orders, but in order to meet library demand for "shelf-ready" (circulation-ready for digital) materials, library service vendors also provide many "value-added"

services based on library expectations for metadata in MARC format that include library classification and subject schema.

Library vendors commonly maintain proprietary, parallel databases of MARC records, purchasing data feeds from the Library of Congress (LC) and other sources to populate the databases. The largest vendors also maintain a staff of library professionals to create MARC records for books without a record and to upgrade or adapt existing MARC records to the specifications of individual libraries.

OCLC's WorldCat database is a major source for MARC records, especially for academic libraries. OCLC does have a program, WorldCat Cataloging Partners, that allows vendors to match library orders against WorldCat, deliver an OCLC record to the library, and set the library's holdings in WorldCat. This process exists entirely outside of the vendor cataloging database and MARC record systems. Any record editing to library specifications is accomplished through the WorldCat Cataloging Partners profile, and the vendor has little control over the result. The vendor cannot control the quality of the OCLC record sent to the library and therefore cannot alter OCLC records. However, the vendor can add missing elements, correct mistakes, or upgrade records in their own systems.

Retrieval of a matching record is contingent on what is in WorldCat. If there isn't an LC record and no other contributing library has added a record to WorldCat, a record won't be delivered. This can be an issue for new titles that are just coming into the marketplace and haven't been cataloged by LC or libraries. E-books may be especially problematic as LC doesn't commonly create CIP records for digital materials. For this reason, many e-book vendors attempt to provide MARC records along with materials ordered.

## E-book Aggregators and Distributors

The industry of e-book aggregators and distributors is evolving quickly, with many new entrants to the field and established supply chain players' continued development of services focused on digital content. The term "e-book aggregator" is often used when discussing a category of vendors that emerged fairly early in the digital revolution to provide e-books and other electronic resources to libraries. These companies do not generally distribute into the retail market and include, among others, OverDrive, ebrary, EBSCO, and MyiLibrary.

E-book aggregators offer libraries digital resources from multiple publishers, and may also maintain platforms that provide access to library patrons. Metadata is used in the library selection process but also powers the platforms from which readers discover and select titles to borrow. Major e-book aggregators in the library space are also often expected to provide records in MARC format to populate library catalogs.

E-book aggregators affiliated with established library vendors may leverage their own MARC databases and cataloging staff to provide MARC records, but

newly digitized and “born-digital” content often doesn’t have a corresponding MARC record. Finding copy cataloging for new materials is even more challenging for new digital content than for print since, as mentioned already, the Library of Congress doesn’t routinely provide CIP for digital materials. This means many digital products require a new MARC record, resulting in major record-creation needs and more metadata to manage for both vendors and libraries. E-book providers without MARC resources may outsource MARC record creation and delivery to library organizations such as OCLC or to other third-party providers specializing in library metadata.

E-book aggregators that developed in response to the library market are generally aware of library needs, but many new entrants to digital distribution haven’t developed expertise in either publisher or library metadata. Newer entrants may not provide the selection and acquisitions metadata or support offered by traditional vendors and this may result in additional work for libraries in the acquisition process. Libraries purchasing materials not available from their established e-book aggregators directly should also expect to perform copy and original cataloging in-house.

Publishers may also silo digital workflow from print processes, resulting in upstream metadata that is inconsistent across various formats. Poor or inconsistent metadata ends up creating problems downstream in the e-book seller systems. Many metadata experts in the publishing industry are encouraging publishers to develop more integrated workflows for the creation of print and digital content and to work with e-book digitization and distribution companies on metadata issues. Product metadata isn’t necessarily a core competency for new entrants to digital publishing, and there will be a learning curve that requires collaboration with established players in the publisher supply chain.

Creation of digital content is still relatively new and not a core competency for many traditional publishers, resulting in outsourcing of digital work to experts in that area. For existing and traditional publishers, metadata creation processes should be the same for digital as for print publications, and they should be controlled by the publisher for quality and consistency across multiple formats.

## Issues Affecting Metadata for E-content

The following issues relating to publisher and library environments— past and present— have an impact on the evolving digital space. Some are challenges that existed prior to the digital explosion that have become even more visible and problematic with new content. Others represent opportunities created in the move toward digital. Leveraging these opportunities may be challenging in the short run, but it gives us all a chance to rethink metadata management and its future potential.

## 1. Rapid Increase in the Volume of Publications and Accompanying Metadata

### PUBLISHERS AND THE PUBLISHER SUPPLY CHAIN

The number of records needed to describe, sell, and track published output is growing exponentially. New records (with new ISBNs) must be created for existing titles converted to digital formats. Each title may require multiple records to reflect multiple digital formats — Kindle, Nook, EPUB, etc. These new records are pushed downstream and increase the volume of metadata for wholesalers, distributors, and retailers.

A note on ISBNs for e-books may be useful here. With the explosion of digital content in multiple formats and from multiple sources, some providers began to abandon ISBNs and create proprietary identifiers. The rules for ISBN assignment for digital materials are supported by all major publishing industry organizations and are in line with the rules for other formats. There is no such thing as an “e-ISBN,” since a new ISBN is required for any distinct format. Each specific digital format of a book (EPUB, KF8 [the Amazon format], PDF, etc.) should be assigned a separate ISBN. The rule is not tied to the seller but to the format, just as with print, paperback, audio in CD, audio in MP3, etc. Consequently, each ISBN requires a different publisher ONIX record.

Libraries may choose to use one “vendor-neutral” MARC record for multiple digital versions but this record should contain the valid ISBN of the item to be circulated.

### LIBRARIES AND LIBRARY VENDORS

US libraries and library vendors rely heavily on LC cataloging for many commonly held materials, and especially for prepublication CIP records, to provide fast patron access to materials. Readers now expect library availability to correspond to retail on-sale dates. However, LC scope for CIP record creation doesn't include cataloging of digital materials. This means that digital distributors and libraries must create original MARC records for digital content, including both new and converted backlist titles. Even if a record is available for the print equivalent, the record for the digital version must include information specific to that format. This increases the volume of metadata needed for each title. As some publications move to digital only, publishing cycles may also shorten, reducing lead-time between prepublication orders and patron access.

## 2. Duplication of Effort across Publishing and Library Operations

The expanding number of published titles and the additional records needed for multiple formats, along with the accelerating speed of publishing and information exchange, only exacerbates existing workflow problems related to duplication of efforts in metadata creation.

### **MULTIPLE METADATA CARRIERS: ONIX AND MARC**

OCLC, the Library of Congress, EDItEUR, (an international group coordinating development of the standards infrastructure for electronic commerce in the book, e-book, and serials sectors) and others have worked toward the ability to crosswalk between ONIX and MARC, allowing metadata to be more easily shared between libraries and the publisher supply chain. But the current landscape still encourages tremendous duplication of effort in metadata creation and inhibits sharing metadata for the same titles. ONIX is a robust international standard and the latest version (3.0) addresses many metadata needs related to digital content.

In October 2011, the Library of Congress announced a commitment to work toward “A Bibliographic Framework for the Digital Age.” Quoting the Library’s Working Group for the Future of Bibliographic Control, the announcement recognized that “MARC is based on forty-year-old techniques for data management and is out of step with programming styles of today.”

Librarians should stay involved in activities related to changing metadata standards and practices, support the publishing community’s increasing interest and sophistication in metadata creation, and encourage our own community to find ways to take full advantage of publisher metadata streams. Of course, this is easier said than done. Library systems and processes are built on MARC and transitioning would be complicated for library automation vendors, data providers, and libraries. But widespread library input and participation would be crucial to any effort undertaken by the Library of Congress, non-US national libraries, OCLC, or other major metadata stakeholders.

Many publisher organizations welcome library membership and participation. The Book Industry Study Group (BISG) encourages library membership and its Metadata Committee is actively involved in reviewing the ONIX standard and in setting best metadata practices for publishers. EDItEUR administers ONIX internationally and also welcomes library participation.

### **MULTIPLE METADATA STANDARDS AND BEST PRACTICES**

Both publisher and library metadata standards and best practices have stated guidelines relating to descriptive style, identifiers, defined data elements, data carriers, controlled vocabularies, and coding. Most principles are the same and are based on good bibliographic practice. But they are different.

ONIX field names and codes are not the same as their MARC equivalents. For example, figures 7 and 8 show MARC and ONIX records for *The Metadata Handbook* (Kindle digital version). Library classification and subject headings can be carried in ONIX but are not commonly applied by publishers and publishing subject schema aren’t often used by libraries; style rules for punctuation and capitalization have traditionally differed. The library community’s implementation of RDA (Resource Description and Access) guidelines for cataloging records does address some of this by allowing standard capitalization, for example, but there are still major differences in the practice of bibliographic description.

**FIGURE 7.**  
***The Metadata Handbook* MARC Record for digital formats**

```

Leader 7      m
Leader 18     i
020  ##      $ a 9780985828851 (Kindle)
020  ##      $ a 9780985828820 (EPUB)
020  ##      $ a 9780985828813 (PDF)
040  ##      $ a XXX $ c XXX
006  ##      m d
050  04      $ a Z471
082  04      $ a 070.5
100  1#      Register, Renée
245  14      $ a The Metadata Handbook : $b a publisher's guide to creating and dis-
              tributing metadata for print and ebooks / $c by Renée Register and Thad
              Mcllroy
260  ##      $ a Columbus, OH : $b DataCurate $c c2012
300  ##      $ a 1 online resource (xiii, 119 p.) : $b illustrations
504  ##      $ a Includes bibliographical references.
505  0#      Introduction -- Part 1 Book Industry Players and the Metadata Lifecycle
              -- Part 2 Book Industry Metadata Standards -- Part 3 -- Essential Metadata
              Elements -- Part 4 Metadata Best Practices and Certification Programs --
              Part 5 Metadata and the Future of Publishing -- Glossary -- Bibliography
              and References -- Industry Organizations - Vendor Directory.

650  #0      $ a Publishers and publishing
650  #0      $ a Metadata
650  #0      $ a Electronic publishing
655  #0      $ a Electronic books.
700  1#      $ a Mcllroy, Thad

```

**FIGURE 8.**  
***The Metadata Handbook* ONIX Record for KF8 (Kindle For-  
 mat) E-book**

```

<!DOCTYPE ONIXMessage SYSTEM "http://www.editeur.org/onix/2.1/reference/onix-
international.dtd"><!--Document made with ONIXEDIT v.2.6.0. Visit www.onixedit.
com--><ONIXMessage>

```

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    <FromCompany>DataCurate</FromCompany>

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Introduction
Part 1
Book Industry Players and the Metadata Lifecycle
Part 2
Book Industry Metadata Standards
Part 3
Essential Metadata Elements
Part 4
Metadata Best Practices and Certification Programs
Part 5
Metadata and the Future of Publishing
Glossary
Bibliography and References
Industry Organizations
Vendor Directory
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#### 4. The Dynamic Nature of Today's Metadata

Metadata within the publisher supply chain is increasingly dynamic. Records are not created once and “done” but are constantly changing as metadata evolves through the publication process and flows between multiple partners. A vendor or retailer record may consist of elements from many sources. For example, Amazon and other major online sellers accept data feeds from all publishers with titles listed on the site, plus multiple feeds from data aggregators such as Bowker and Ingram. One record could consist of title, subtitle, and price provided by the publisher, physical information, such as height and weight, from a wholesaler, BISAC (Book Industry Standards and Communications) subject headings and authority-controlled contributor names from Ingram, reviews and awards metadata from Bowker Syndetic Solutions, etc.

Library records are designed to reach full level upon cataloger review with book in hand and to remain fairly static upon reaching that point. Libraries

will not be able to take full advantage of available metadata resources unless we develop a more dynamic process of metadata exchange in coordination with expert review. Databases, such as WorldCat, that accept metadata for the same title from multiple libraries (and some vendors) do handle a more dynamic process but still struggle with merging records effectively and avoiding duplication of records.

Fully leveraging publisher metadata is even more challenging within library database structures. Database structures that allow for linked data as opposed to static records would go a long way toward increasing the potential for dynamic metadata. OCLC and others are exploring this potential (see more on linked data below).

## 5. Expanding Potential for Metadata Embedded in Digital Files

Publishing in digital formats also provides ways to embed metadata into the actual content files. The reader views file metadata as “title,” “author” and other information about the title they’ve downloaded. Reading devices also display file-level metadata in the information seen on their “bookshelves.”

The publishing community is actively working toward the expanded potential for metadata embedded within digital files. EPUB 3, the latest version of the free, open standard maintained by the International Digital Publishing Forum (IDPF), allows metadata to be associated not only at the file level (metadata referring to the entire content package) but also at the component or element levels of the file, down to the paragraph level.

This opens up many options for rich metadata that can be attached to the actual content. These metadata elements include descriptions, reviews, relationships to other content, rights information, subjects, and more, in addition to basic bibliographic elements such as title, contributor, and publisher. It’s also possible to include “external” product data, such as an ONIX file or a MARC record, within the EPUB 3 package, or to point to the external file through a link. There’s great potential for the library community here if EPUB 3 is broadly implemented and fully supported by both publishers and data receivers.

It’s important to note that this digital file-level metadata does not (yet) take the place of the product metadata records (usually delivered in ONIX) that are used to populate platforms for search, discovery, and selling or records in a library catalog. It can point to a MARC or ONIX record but doesn’t replace them.

## 6. Potential of Linked Data and the Semantic Web

Linked data may offer the most potential for overcoming barriers to full use of available data. It refers to a way of connecting related data on the Web through linking pieces of data across the current silos created by individual web pages and discrete databases. It is closely associated with the concept of a “semantic web” and is built on W3C Resource Data Framework (RDF) specifications.

In our current model of databases containing a stand-alone record for each “thing,” records are maintained and adapted individually and are often duplicated

within multiple databases. The LC MARC record contained in one library catalog is also contained and maintained in many other library databases. If review, award, or contributor information is added to the record in one database, the record in another database remains the same. If review information is added to the paperback version of a book, it doesn't automatically update a hardcover version with the same content. If contributor biographical or award information is added to a record, it doesn't automatically get added to the records associated with that contributor.

In a linked data model, different metadata elements referring to the same "thing" can be created and/or maintained separately and be linked together as needed to describe the "thing" rather than always staying together in one stand-alone record.

For example, a dynamic description of a new version of *Moby-Dick* would pull together the author name, original publication date, subjects, and other aspects of the content that stay the same, with new elements that now relate to the content in a new package, such as publisher, format, publication date, and price. When a new piece of information, such as a review or an award, is created, it can then be linked automatically rather than added to an existing stand-alone record.

In the broader world of metadata structures and uses, the movement toward open data, linked data, and the semantic web has huge implications for better use of publisher and library metadata.

## Conclusion

Both publisher and library communities continue to explore new ways to create, use, and maintain metadata resources, but often in parallel and with tremendous duplication of effort. The digital revolution is pushing this to a critical point for both communities. It's imperative for libraries and publishers to work together to create efficiencies in metadata workflow and to present the best possible metadata to users in the shortest amount of time.

Moving toward more open, dynamic, and shared metadata processes and structures will take time and work, but if libraries and publishers are to ride the digital wave rather than go under it, we need to move more quickly than the pace we have all been used to. Here's what needs to happen within the next few years:

- Upstream publisher metadata becomes good enough and is updated frequently enough to greatly reduce the need for downstream modification or enhancement.
- The dynamic nature of metadata is embraced, and metadata processes are an ongoing part of publishing and library workflows.
- Libraries are integrated into the downstream flow of metadata from publishers, and libraries have ways to make full use of the metadata.
- Downstream metadata enhancements (from libraries and other suppliers) can easily move back upstream to benefit publishers.

- There is significant progress toward open data in support of concepts such as linked data.
- Shared technology, tools, and databases benefit multiple players.
- Libraries and publishers widely adopt shared standards and quality measures, resulting in metadata that can be used and reused in multiple ways by multiple players.

How do we get there? Many library leaders and organizations are already moving (albeit slowly) down this path. We can help create momentum by changing our own mindset, by thinking creatively within our own daily practice of librarianship, and by reaching out to library, publisher, and vendor communities with new ideas. Here are a few dos and don'ts:

- Don't hang on to the way we've always done things without examining processes critically and asking why.
- Don't become insulated. Make connections between what libraries do and what other entities that connect readers to content do.
- Don't throw the baby out with the bathwater. Instead, think creatively about how library practices and expertise can benefit other communities and reduce duplication of effort.
- Encourage our library education programs to include classes that put library metadata and processes into the entire publishing (content) supply chain.
- Encourage professional education in technology. Learn how metadata is used to build services, analysis, etc., outside the library community.
- Communicate with your vendors to learn how they organize and use metadata. Find out their points of pain and share yours with them. Work with them to streamline processes and make best use of metadata.
- Bring your voice to the publishing community. Join publishing organizations and encourage library communication with a variety of publishers.
- Include publisher and vendor representatives on committees, solicit their input, and invite them to join library organizations. ☺

## ABOUT THE AUTHOR

Renée Register specializes in the development of metadata management practices to optimize content discovery, internal operations and business intelligence. She is the founder of [DataCurate](#), a company focused on supporting publishers and libraries in the development of twenty-first-century data policies, practices, and systems designed to connect readers to content. She holds a master's degree in library and information science and her experience includes ten years with Ingram Book Group and six years with OCLC. Renée is coauthor of [The Metadata Handbook](#) and author of [The Essential Guide to Metadata for Books](#).

# Evaluating Children's Apps

Carisa Kløver and Cen Campbell

**THE DIGITAL MARKET** for children's literature—especially in the arena of enhanced, illustrated book apps (interactive, animated, etc.)—has exploded in the last three years, growing 120 percent in 2012 alone.<sup>1</sup> Between 2011 and 2012, the percentage of e-books read (in comparison to print) by readers of all ages jumped another 5 percent (rising to 20 percent), making e-books the format of choice for one out of five books read.<sup>2</sup> With consumer adoption happening this fast at every reading level, it is imperative that librarians have a good grasp of this content.

The number of kids reading digitally has nearly doubled in barely two years' time, which is much faster than the adoption of e-books for adults. The experience of the digital shift in other industries—like music, movies, and television—has already been dramatic and far reaching, so there is no reason to think that books will be spared disruption in this global process.<sup>3</sup> While the process may be scary for some in publishing and librarianship, young readers seem more excited than nervous about the new era. Most say they would read more for “fun” if they had more access to e-books, and boys in particular report an increase in their overall reading habits (on all formats, including print) when introduced to digital content. It's no wonder that nearly three-quarters of parents surveyed in a Scholastic study said they were on the lookout for e-books for their kids.<sup>4</sup>

Librarians already have at their disposal a number of useful tools that evaluate children's apps.<sup>5</sup> This article highlights two such resources—[Digital Storytime](#) and [Little eLit](#)—focusing on their value, purpose, and use in libraries. Let us first provide an overview of the fast-paced app landscape and the challenges faced by

libraries incorporating them into their programming. Then we will delve into the specifics of each resource from our unique perspectives as the sites' creators and tell the story of what inspired their creation.

## Navigating the App Landscape

There is a spectrum along which libraries are able to offer access to advisory (reader's advisory for apps) and to the apps themselves. At the very least, they are offering recommended app lists (some free, some paid), Pinterest boards, or blog posts that suggest book-based and educational apps for various age groups. Storytimes in libraries and classrooms now often include digital media to reflect the parallel nature of the publishing industry (digital and paper). Some libraries even offer access to the devices, either mounted, for use in the library, or to be checked out and taken home.

Digital book apps are also considered low-cost resources to purchase for personal use. In many cases, the digital app version of a print picture book is likely to be about as expensive as a used print copy—from \$1 to \$5 for even the most popular ones—making the app format accessible to families across a wide geographic and income spread. This also makes book apps accessible to teachers and other professionals who often spend their own money on educational resources. Since classic Dr. Seuss titles, for example, are rarely more than \$2 a piece in app form, librarians can acquire them without much financial risk.

Each library system finds different ways to incorporate digital kids' media into their collections. Some have supportive Friends groups who provide necessary funding, while others spring for the devices and apps on their own. There is often some kind of negotiation around this process if the funding comes from the library itself. Which pot do the funds come from: the collection budget or the tech budget? If the devices are shared among departments, how do libraries manage the purchase of apps for children, teens, and adults? Some libraries assign a credit card to an iTunes account (not usually the recommended option) and use iTunes gift cards to purchase apps. There is no third-party vendor, app distribution mechanism, or DRM for apps since mobile devices and the content they contain are designed for personal, not institutional, use. The legalities of this will play out as the technology evolves, and libraries will likely have to continually reexamine their methods.

But deciding to jump into digital content is only the first step. The process of evaluating and curating apps is where the real challenges lie. Hundreds of sites come up when searching for "kids app reviews" online—and they are not created equal. To vet a "reviews" site, we recommend searching for an "about" page first and using only sites that give a clear idea of how apps are evaluated as well as who is behind the reviews. Sites without transparent reviewing policies should be avoided. As with most blogs today, a lot of independent voices permeate such sites. Some are exceptional, others are thinly veiled commercial sites, which is precisely why library patrons need the skills of trained librarians to guide their research.

The ideal “children’s reviews” resource—possibly on the horizon soon—would be a curated site populated with authoritative reviews, written by librarians from across the country (possibly the globe), that are unbiased and disconnected from commercial commitments as much as possible. Until such a resource is available, librarians need to continue their efforts to educate the public, particularly via blogs that provide app recommendations for storytime, early literacy, and creative writing. The only mistake we can make is to assume we don’t know enough to speak up and support the families that come into the library with app-related questions. It is our responsibility, in fact, to reassure them that it is normal to be confused.

At this point, it’s anyone’s guess which of the many formats available will become dominant (or if we are moving into an era where content will be splintered in hitherto unseen ways), but one thing is certain: library users are much more confused about the quality of digital content than librarians. This means our efforts to educate them are paramount. When a patron inquires about apps, every children’s librarian should have a least a few trusted sites to recommend. This may not mean giving the kind of blanket recommendation you could give for a resource like A-Zoo, but it does mean giving people the tools to find quality content for whichever device they happen to own. The reality is: no one gets the digital shift completely. This transition is like nothing we have experienced in recent human history, and none of us has a road map. Together, however, we can build something that can evolve over time.

Digital Storytime and Little eLit are two among many valuable resources available online for librarians and other professionals looking to enrich young readers with quality digital content. The industry is developing at lightning speed; most professionals are reluctant at this point to make predictions beyond six months in advance—and for good reasons. However, we are confident that the future is vibrant. And about that ideal, “librarian-approved” app reviews site—the Magic Eight Ball predicts: outlook good.

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# The View from Digital Storytime

Carisa Kluver

**WHEN CEN CAMPBELL** and I met last year over Twitter and the blogosphere, we immediately bonded. I had been working in isolation (more or less) for a couple of years, curating book apps long before I even thought of it in those terms. Back in 2010, when I began developing the plan for Digital Storytime, I had lofty goals. I was looking for a site as a resource for selecting enhanced picture books to share with my own child. I searched but found nothing comprehensive that

focused on illustrated digital books for the iPad. This surprised me because the experience I had reading iPad books with my preschooler was so remarkable. I assumed other parents must also be seeking better reviews, more literary than app-focused. So, I decided to start a site myself. This was a big leap, but my husband was an app developer and taking a database class at the time. My background in university research and data collection made me eager to take on the challenge of creating a unique resource site for parents, educators, and librarians working with children.

### see also

The companion blog to Digital Storytime, [The Digital Media Diet](#) provides a useful list of resources to get libraries started with children's apps, including these:

[Sesame Workshop](#)  
[Joan Ganz Cooney Center](#)  
[School Library Journal](#)  
[Common Sense Media](#)  
[Children's Tech Review](#)  
[KinderTown](#)  
[Kirkus Reviews](#)  
[MomsWithApps](#)

At first, my husband suggested I create a storyboard for a book app that we would publish ourselves, but this didn't sit well with me no matter how hard I tried to create something. I was determined to add something new to this young industry that it was missing (and new storybook ideas were not in short supply). In fact, what I thought about the marketplace in 2010 still stands: the children's mobile media publishing ecosystem is a digital playground, and a truly fabulous one, but it has almost no built-in adult supervision or safety standards. I couldn't imagine letting my own child play in this particular digital sandbox without parental guidance, and if no one else was willing to monitor the market, then I would do it myself. The long overdue updates in 2013 to COPPA (Children's Online Privacy Protection Act) may gradually improve some of these safety standards, but it will likely take some time for those effects to be fully understood within this new digital ecosystem.<sup>6</sup>

So where do librarians fit into this picture? When I began Digital Storytime, I asked several librarians for ideas, but their reaction was lukewarm at best. Responses varied from mild interest to dismissing me entirely for talking about things that "are not books" given that they don't have ISBNs and cannot be cataloged. One librarian rolled her eyes and suggested I get more print books for my child, since everything on the iPad was "screen time," which is supposedly "bad for kids."

Of course, in the years that followed, the response I got from pretty much everyone in the ecosystem was positive and encouraging. Librarians, in fact, have become among the biggest champions of my site, constantly suggesting ways to make it more useful. Last year, at the suggestion of a school librarian, we began adding curated reading lists for different topics that kids like to read about, something unique we can do with a large collection of reviews in a database structure.

Also, well-respected brands like Common Sense Media, Kirkus Reviews, and School Library Journal began reviewing book apps by 2011, although at a slower pace than I had set for myself at Digital Storytime. Since I was the sole owner and reviewer on my site, I was able to review an app (or more) every day, never taking a day off from reviewing and never consulting anyone. But I have still reviewed fewer than 1,000 titles from a pool of tens of thousands out there.

The need for this type of digital curation for kids content is enormous, and the audience is too precious to leave this task to the for-profit marketplace alone. So where do you start? Digital Storytime's site began with a simple creation of a series of categories, like a rubric. Initially we had six scales for measurement: audio, animation, interactivity, bedtime, rereadability, and extras. Eventually we added two more: originality and educational value. This gave our site a total of eight categories, in addition to an overall rating, all on a five-point scale with quarter-point increments.

Among my early priorities was that our site would be a database, not just a series of blog posts. This allows reviews to be sorted by each of the nine rating categories or filtered by things like language, titles based on print books, and whether an app lets the reader record their own narration.<sup>7</sup> We also recommend the "price sort" option for anyone first dipping their toe in this marketplace, since you can find nearly 100 high-quality story apps on the site that are free.<sup>8</sup> Creating a database from scratch like this is not easy (or cheap), but as the collection grows I am grateful for the option. With curation tools available now (and being developed), it may be easier for others to create curated resources in the future that are also scalable, so projects can keep up with a growing marketplace.

Deciding on each of our categories and a system of evaluation was time-consuming, but having your own rubric well thought out before sitting down to look at a digital book or app is truly helpful. Each of the rating categories gives unique insight:

**ANIMATION** We consider both technical and visual appeal of the animated elements, focusing on quality rather than quantity, although little animation will rate slightly lower on this scale (to allow proper sorting).

**AUDIO** We consider whether the music and sound effects are easy to listen to and well matched to the story. Narration, when present, should be clear and well articulated.

**BEDTIME** We consider length (under 10 minutes is ideal), enhancements and extras (ideally not too stimulating), as well as story content that is appropriate for children at night.

**EDUCATIONAL** We consider enhancements, added content (like reading comprehension questions or other suggested activities), and any unique educational value that makes the app stand out.

**EXTRAS** We consider the ways in which an app goes beyond the story to include enhancements like games, puzzles, coloring pages, etc. High ratings in this category mean the extras are well made, engaging, and have high replay value.

**INTERACTIVITY** We consider all the interactive elements of a book app. We look for interactivity that is well matched to the story and engaging but mark down for interactivity that interferes with reading comprehension.

**ORIGINALITY** We consider the story, art, concept, design, and execution. Apps based on folktales and previously published titles will score lower unless they have a unique presentation.

**RE-READABILITY** We consider the overall value the app can offer, either as a book app that can occupy the reader for hours or a story that readers will want to return to. We do not take price into consideration, since it often changes.

**OVERALL/EDITORIAL RATING** We consider our impression of the book overall. We also consider how the app compares to other apps currently available. Note: it is not a sum of the other ratings.

**USER RATING (OPTIONAL)** This refers to the average rating from users signed into the Digital-Storytime.com site (who checked the “own it” box).

Many of the resources on how to evaluate a book (in print) are useless when learning how to curate book apps. No one ever complains about the binding of a paper book in a review, for instance. But for a digital publication, the functionality of the package is important. No one ever says, “I couldn’t open the book, it was glued shut, so basically it sucked,” about a print title, but this is the dilemma with digital apps. Sometimes they are literally broken. Other times they include inappropriate links or advertising content. Sometimes they are independent publications that need significantly better editing. Or they may be dated public domain titles that contain offensive content. Or it is nearly impossible to identify the author, illustrator, or even publisher of a book app. And then, of course, there is the issue of updates. Print books often have multiple editions, but the number of regular updates for e-books as well as all the different formats and different devices can be maddening.

It may all seem like a herculean task, but this is precisely why librarians are in such a good position to tackle the dilemma of app curation, evaluation, and discovery. Kids are getting a hearty dose of screen time every day. According to a 2010 Kaiser Family Foundation study, kids 8–18 in the United States average nearly eight hours a day of screen time.<sup>9</sup> Given this fact, let’s at least acknowledge that not all screen time is created equal. Some content is significantly more nutritious than average, and librarians (along with educators and caregivers) are in the best position to advocate and steer children in the direction of that quality content.

Do I also think kids should get outside and play more often? Absolutely! Eight hours of screen time a day is too much—common sense tells us this. But the real battle at hand isn’t quantity of time spent on digital content—it’s quality. Give kids something satisfying and tied to external activities and learning, give parents more education and ideas for managing their kids’ “digital media diet” and then we can preach all we want about screen time. We just need to give parents a few options beyond being judged for having busy, twenty-first-century lives.

Ultimately, all of this has to do with researching and evaluating something new, and new can be challenging. But we need to start somewhere, anywhere. And that’s just what I did with Digital Storytime: I rolled up my sleeves and started reviewing new book apps as fast as I could. I also wrote about the process, for anyone who wanted to listen, at my blog, [\*The Digital Media Diet\*](#). At

the time, “curation” was a word I associated most closely with an art gallery and rubrics for evaluation was something I only considered for curricula, but in the time that has passed I have come to understand that curation is exactly what I do and what the digital book and app market needs most. The children's app publishing industry itself is crying out for quality curation even more in 2013 than it did in 2010.<sup>10</sup> I hope other librarians join me in the coming years.

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## The View from Little eLit

Cen Campbell

**I BEGAN** Little eLit because I wanted to use apps and e-books in my storytimes. There were a few documented pilot projects, such as those at the Darien Public Library and the Southington Library and Museum, but there was no single storytelling resource. I was looking for something that documented and described how to begin incorporating digital books into traditional early literacy programs. So I started a blog to document my own storytime plans. It was a way to keep track of survey results, remember apps that worked, and most importantly, what didn't work, since I was incorporating an entirely new format into a well-loved, time-tested library service.

Once I began documenting my programs, the response from the library field was overwhelming. Libraries all over the world began their own experimentation and were hungry for guidance. The questions I got ranged from “What cable should I use?” to “How do you deal with resistance from staff members to using technology with kids?” But the single most common question was “Can you recommend a good app or list of apps for me to start out with?”

The answer, of course, is not that simple. On most occasions I would just procure a list of apps that I had used in storytime successfully. I also included a list of reviews sites. However, as the questions and requests for “app lists” kept pouring in, I realized that librarians had missed the boat when it came to curation and recommendation for children's interactive books. Ask any children's librarian to recommend a paper book for an X-aged kid, with Y interest and Z reading level, and the librarian will draw from their own experience, zipping to a few online resources, databases, or online communities to find the right recommendations. But now that our communities are asking the same questions for apps, we are scrambling to find the best content.

And we are dealing with our own hang-ups about digital content and kids, sometimes wondering if we should be recommending anything at all. There are app review sites out there, but the content is siloed, not standardized. These resources are also not nearly as comprehensive as what we have for print books.

There are no aggregators of metadata for apps, and while some of our well-loved review sources (*Kirkus*, *The Horn Book*, and *SLJ*) are putting out great reviews, it's not enough. We need an army of reviewers to truly tackle this ever-expanding market.

But there is some good news. An army is mobilizing to take on this huge task. A group of librarians has convened through Little eLit, and they are working to guide the development of an app recommendation tool. Ideally, this tool will help curate the children's digital publishing marketplace on a scale that can begin to rival the resources we have for paper books. The development of this tool is a huge undertaking and requires a completely different mindset than the one librarians normally espouse. We're talking about the development of a librarian start-up, really. We need to build the tool itself and then we need to populate it with data. All from scratch.

Evaluating and curating apps will not be easy. Not only must we pay heed to the quality and appropriateness of the text and illustrations, we must also consider functionality, user interface, and usability. The children's digital publishing industry is moving at a lightning-fast pace, pushing the boundaries of what the word "book" means in an electronic environment. Yet many of the same skills and tools librarians use to evaluate paper books apply to the digital world as well.

When I evaluate an app, I usually consider how it will work in a storytime setting in addition to digital extension activities for afterward. Librarians will need to consider the factors that go into the overall evaluation of an app (such as those found on Digital Storytime), but we can also bring something new to the process by considering the unique factors for use in a public library setting, including: the intended use of the app, the early literacy skills/early learning practices supported by use of the app, and any customization specific to implementation of the app in a library program.

## Intended Use

There is a big push toward collaborative learning in formal and informal educational environments, especially with young children. Many of the apps produced for this audience reflect that emphasis, using multitouch functionality and content creation capabilities that allow for multiple users. Yet public libraries are looking most often for a bridge between traditional "books" (usually made of paper; codex form) and the new publishing/app development world. This is what Warren Buckleitner of Children's Technology Review refers to as "narrative-driven interactive media."

Most of the time, a librarian's first experiment is with a book-based app. Apps that are based on high-quality or popular print books are an easy place to start and especially relevant when picking something good to use in storytime. You get the best of both worlds when you use a well-produced book-based app, mirrored on a screen in storytime and then have the physical books available for checkout after the program. *Llama Llama Red Pajama* is a good example.

These first experiments also reveal things to watch out for in storytime. Apps shouldn't make too much use of the accelerometer, for instance. It can produce vertigo—*Wild about Books* is one you have to be careful with. Apps also need to have on and off switches for various types of functionality (i.e., customization). This includes things like audio, sound effects, interactive touch points and many other features that have no equivalent in the world of paper-based books.

## Early Literacy Skills

Early literacy skills (Print Motivation, Phonological Awareness, Print Awareness, Print Motivation, Vocabulary, and Narrative Skills) as well as early learning practices (singing, talking, reading, writing, playing) can all be supported with the intelligent use of mobile media. Some librarians, storytellers, and educators are blinded by the format of apps. We misuse the phrase “screen time” and have blanket policy statements that perpetuate misuse from various sources, including the American Academy of Pediatrics.

What is far more relevant to the question of age appropriateness and developmentally appropriate practice is not the format of the material, but the content. Vocabulary can be supported much more easily if an app has a dictionary function, for instance. Animated or movable text can also support print awareness. This technology is already in use by many families with very young children, so regardless of whether the longitudinal research on long-term psychological/pedagogical implications of mobile media use with young children exists or not, these families are completely unsupported by libraries in their current collective approach to interactive media.

Every Child Ready to Read (ECRR), a parent education initiative that currently exists in its second iteration, places less of an emphasis on specific literacy skills and more on early learning practices. It is a resource manual for storytellers (many of whom have little or no training in child development) that facilitates communication with parents about their young child's literacy and overall development. Some libraries implement ECRR2 quite strictly and adhere to the formulas provided therein, while others use the wealth of research, resources, tips, and tricks contained within the manual and supportive materials.

Storytelling formats like ECRR2 are beginning to incorporate digital media to meet a rising community need. Mobile technology has become pervasive and the children's publishing market is no longer solely print based. There is a need for guidance, not only in early literacy and learning, but in the consumption of different types of media for young children.

## Customization

Good apps allow us to control various factors: language, narration, highlighting, read-it-to-me, read-it-myself, etc. The presence of on/off switches, or even a

parental control panel, is often indicative of a high-quality user interface design. Word highlighting (often part of the read-to-me function) would normally be turned off in a storytelling setting if there is a human storyteller to read the story out loud. Indeed, that is the single most compelling argument for the use of book-based apps in storytime. Storytellers are now charged with the role of “media docent” for families with young children, and much of the benefit of incorporating emergent formats into traditional programs comes from (1) normalizing the use of high-quality media with young children and (2) modeling literacy-supportive techniques based around caregiver-child engagement with the content/device. Storytellers can point out or explain functionality of the apps in parent education points (parent aides, as ECRR2 refers to them). For example, the highlighting function could be explained like this:

When you read this app with your child at home, they can turn on the ‘read-to-me’ function and have the narrator read the story out loud to you and your child. The words will light up while the word is pronounced, which helps many children understand that each spoken word is associated with a written word as well.

You can also help support this literacy skill (print awareness) by running your finger along under the text as you read to your child, but some children grasp that concept better with the highlighted text. Change up how you read the book together!

You can read it out loud to your child (paper or digital version), and you can also sit with your child and enjoy being read to by the narrator, knowing that your child is benefiting from the additional visual information built into the app.

There are other issues to consider, of course, when libraries begin to incorporate technology into any of their collections, programs, or services, but one of the very basic precepts of children’s librarianship has to do with the evaluation and curation of high quality media for children. The learning curve that accompanies any adoption of new services is steep, but when it comes to understanding good content and age appropriateness, we are one step ahead of the game. All we need to do is apply those traditional librarian skills to an exploding new market. ☺

## NOTES

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## ABOUT THE AUTHORS

Carisa Kluver has a bachelor's degree in anthropology from UC Berkeley and a master's in social work from the University of Washington. She worked as a school counselor, health educator, and researcher in maternal and child health for over a decade before founding the app review site Digital Storytime and the blog *The Digital Media Diet*. She has reviewed hundreds of enhanced e-book apps as well as written about literacy and the evolving digital publishing industry.

Cen Campbell is a children's librarian in Silicon Valley and a children's digital services consultant at Little eLit. She has driven a bookmobile, managed branch libraries, developed innovative programs for babies, young children, and teens, and now helps other libraries incorporate digital media into their early literacy programming and manages Bookboard.com's digital book collection. She serves on the Association for Library Service to Children's Children and Technology committee.

## get involved

**DURING THE ALA CONFERENCE** in Chicago, Carisa and Cen met with Dr. Chip Donohue, director of the TEC Center at the Erikson Institute and senior fellow at the Fred Rogers Center for Early Learning and Children's Media at Saint Vincent College, and Starr LaTronica, ALSC President, to discuss possibilities surrounding a collaboration between ALSC, the TEC Center and the Fred Rogers Center to develop a children's digital media curation, evaluation, and aggregation tool for librarians. At the time of this publication, we are in the midst of organizing a two-day intensive planning meeting at the Erikson Institute in Chicago.

We will draft a vision for this large undertaking, which we will share with each of the participating institutions and potential funders. While there are other evaluation resources currently available for the continuously growing children's digital media marketplace, there is a need for a comprehensive resource with standardized evaluation criteria. Ideally, through this unique collaboration, we will build this critical resource with the combined expertise of these authoritative, trusted, and objective institutions and individuals. This undertaking will require the mobilization of an army of librarians to populate the tool with data. These librarians will be trained through this initiative to evaluate digital media in a standardized format to ensure interrater reliability. If you are interested in helping out with this initiative, please use the contact form at [Little eLit](http://LittleeLit.com).

# in the next issue

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## Bookless Library? I Raise You the Building

**Lura Sanborn** (Ohrstrom Library, St. Paul's School, NH)

> As libraries push further into predominantly digital content and collections, there is an opportunity—particularly for small and midsize academic libraries—to reinvent their physical paradigm. If more library-purchased content is being housed in the ether, what then of the library as space? It would appear that digital movement presents an opportunity to more precisely define and adhere to a research support/acquiring/teaching-based mission.

Just as the digital transition is underway for libraries, the concept of formal education is simultaneously undergoing great change. MOOCs, flipped classrooms, and a move from didactic to cooperative are shifting the paradigm for education, much as digital content is shifting the paradigm for academic libraries. Now is a great time to be conversing, as this massive evolution is occurring in education. Doing so would seem essential to continue ensured placement of the library firmly and more evidently within the academic ecosystem. This article will identify mass movement and advantages in libraries going ever more digital and also provide ideas and real-life examples related to deconstructing the stacks.

## The Importance of Partnerships in E-book Collecting: The NYU Experience

**Angela M. Carreno and Bill Maltarich** (NYU Libraries)

> For nearly ten years, the New York University Libraries have been designing, refining, and redesigning a multiformat Collection Development, Acquisitions, and Discovery Strategy for books. Because the ebook environment is ever changing, this strategy remains and will likely remain a work in progress. Nonetheless, the founding principles, the methods employed to meet the goals these principles imply, as well as the difficulties encountered along the way may appear either familiar or instructive to other academic libraries. NYU strives to

aggregate e-book purchases on a single platform as well as maintain access via publisher platforms.

Although this dual-hosted e-book strategy is currently idiosyncratic (not to say without success or data to support its utility), a look at NYU's efforts highlights some challenges that academic libraries and, crucially, their vendor, publisher, and aggregator partners must face. This article explores NYU's responses to these challenges in the hopes of helping others learn from the NYU experience. Because a dual-hosted, multiformat e-book strategy requires close cooperation among all players in the book/e-book world, NYU may have some unique insight into the need for cooperation among all these parties and the tools required to facilitate that cooperation and nurture those relationships.

## User-Centered Design of Online Reference Systems

**John G. Dove** (Credo Reference)

> Reference works present the designer of today's online reference systems with the challenge of understanding an ever-changing set of information-seeking behaviors against a wide variety of content types, which include, among others, encyclopedias, dictionaries, atlases, biographical dictionaries, handbooks, guides, gazetteers, and almanacs. This panoply of content types is one of the reasons why among the broader categories of content that now populate the e-content menagerie, e-reference platforms vary significantly one from another. Not surprisingly, the first approach to putting such works online was simply to mimic the design, layout, and user-experience of the printed work.

The past decade has seen some excellent work done to put the user at the center of the design of e-reference systems, resulting in a landscape filled with innovative products. This article takes a close look at how a variety of publishers and vendors have reenergized the "reference experience" in the library, including award-winning reference platforms by top academic publishers, an online reference aggregator whose platform is recognized for reinventing the reference user experience, and an online dictionary provider who is making significant innovations in embedding dictionary functionality into a wide variety of products.

## One Approach, Many Pieces: How iPads, Laptops, BYOD Programs, Computer Labs, and Libraries Create Tech-Agile Students

**Linda D. Behen** (Mother of Mercy High School, OH)

> Mother of Mercy High School, an all-girls 9–12 school in Cincinnati, was an early adopter of the Bring Your Own Device (BYOD) Program and the iPad program is in its second year of providing a device to every incoming freshman. iPad and laptop loaners and classroom carts are available for students, and

students use both our Mac and Windows desktop computer labs constantly. A professional-level broadcast studio, digital journalism, and digital art design labs are used as classrooms, individual workspaces, summer camps, and community services. The school library boasts of a mix of computers and devices, a growing collection of e-content, e-book readers, and a flexible physical space that promotes social interaction, group work, and thinking-out-loud for the purpose of idea, knowledge, and project development.

A mix of platforms, devices, levels of security, and resource options might sound like a management nightmare, but the program has proven to be seamless, transparent, and successful for students and teachers; choosing the right tool for a specific job or need is necessary and reflects life beyond school into college and career. This article explains how the school's unique approach to diverse technology tools and programs trickles down to all student programs and activities, including the school's library. ©