Прорывные технологии и библиотеки будущего: могут ли библиотеки формировать будущее электронных книг?

Disruptive Technologies and the Libraries of the Future: Can Libraries be the drivers in shaping future of eBooks?

Проривні технології та бібліотеки майбутнього: чи можуть бібліотеки формувати майбутнє електронних книг?

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Темпы и масштабы развития цифровых технологий нарушили традиционное функционирование таких информационных институтов, как библиотеки. В докладе освещаются некоторые из технологий, которые вносят хаос при адаптации цифровых носителей информации; рассмотрены традиционные виды обслуживания, связанные с использованием аналоговых носителей, и то, как технологически поддерживается данная среда, а также цифровые носители информации; проанализированы предполагаемые пути развития и связанные с этим возможные изменения. Большое внимание уделяется влиянию прорывных технологий на функционирование библиотек, в частности, вопросам, связанным с электронными книгами и техническими условиями их использования: платформами, Wi-Fi и сотовыми сетями, мобильными компьютерными средами, интерфейсами, семантической паутиной, социальными сетями. Проанализирован современный рынок электронной книги США, предложены новые модели, которые позволили бы академическим и публичным библиотекам оказаться в авангарде, определяющим будущее электронных книг и открывающим к ним более широкий доступ.

The pace and depth of advances in digital technology suggests key disruptions in information technology enterprises such as libraries. This paper explores the disparate technologies which currently create chaos in adapting digital media: we will highlight the traditional service grounded in analog media and how technology supports this environment as well as the service of digital media, anticipated expansion and the potential changes it will and could offer. The focus is on impact of disruptive technologies within libraries particularly on eBooks and the surrounding issues which impact them, including variables such as platforms, Wi-Fi and cell networks, mobile computing, interface technologies, the semantic web, and social networks. We will provide an overview of the current eBook landscape in the U.S. and we will propose new models for academic and public libraries to move them into the forefront of creating the future of eBooks which will lead to greater accessibility.

Темпи і масштаби розвитку цифрових технологій порушили традиційне функціонування таких інформаційних інституцій, як бібліотеки. В доповіді висвітлюються деякі з технологій, що вносять хаос при адаптації цифрових носіїв інформації; розглянуто традиційні види обслуговування, пов`язані з використанням аналогових носіїв, і те, як технологічно підтримується дане середовище, а також цифрові носії інформації; проаналізовано можливі шляхи розвитку та пов`язані з цим можливі зміни. Значна увага приділяється впливу проривних технологій на функціонування бібліотек, зокрема, питанням, пов`язаним з електронними книгами і технічними умовами їх використання: платформами, Wi-Fi і стільниковими мережами, мобільними комп`ютерними середовищами, інтерфейсами, семантичним павутинням, соціальними мережами. Проаналізовано сучасний ринок електронної книги США, запропоновано нові моделі, що можуть дозволити академічним і публічним бібліотекам опинитися в авангарді, що визначає майбутнє електронних книг та відкриває до них більш широкий доступ.

Introduction

The library's expansion into the digital realm challenges conventions firmly held for centuries. Telling the difference between the inevitable, the possible and the implausible is essential to effectively manage transitions in the service. This paper expands on the trends of the past 30 years and the immediate future; taking a hard look at how technological inventions could affect librarianship as we know it. Since the first known libraries were established, and for several millennia since then libraries held analog collections of written word and graphical representations. Then in the late 1800s, other analog media were added, followed by digital media in the late 1900s and now in the early 21st century we face a path that might depart from the historical path in many ways.

A Historical Reflection–Analog to Digital

Archaeological evidence indicates that libraries existed as far back as 1200 BC (Harris, 1995), with documents on tablets, papyri, parchment, then later on paper. Invention of the printing press in 1450 (Encyclopedia Britannica) and paper from wood-fiber pulp in the mid 1800s (See Wikipedia, online) dramatically expanded the mission of libraries. In the 20th century, new media such as film, magnetic tape and phonographic records were included in library collections.

The Digital Era emerged in the 1960s. Content was initially digitized and later creations were digitally born, often with no analog copy on the shelves. The authors propose three phases (thus far) of the Digital Era and offer each phase as a new distinct layer over the previous phase to augment, add to, and to build upon the previous phase.

Phase One of the digital era started in the 1960s and lasted till the 1990s. This was the pre-Internet era. Storage media capacity expanded and a crowning achievement of this era was the CD-Rom.

Phase Two of the digital era started in the mid 1990s with the deployment of the World Wide Web on the Internet. This era is currently in a gradual transition to the third phase. In Phase Two storage capacity expanded rapidly, especially online storage, and patrons became more reliant on the Internet for information. The concept of holdings in a collection as being separate tangible items started to change. Many digital holdings (text, images, movies, audio files or a mix of these media formats) were not issued as separate CD-Roms, but whole collections were offered from hard disk space, housed either local data centers or in the cloud. The concept of a digital library took hold. The oldest digital library project is Project Gutenberg which started in 1971 but it wasn't till mid 1990's when technology enabled the project to really take hold (image scanners and OCR) providing free access to over 42,000 volumes to "encourage the creation and distribution of eBooks". Another notable project is the partnership between UNESCO and the Library of Congress to develop the World Digital Library (WDL) with an impressive collection of manuscripts, photos, and maps. The project was launched in 2005 and opened in 2009. At that time James Billington from the Library of Congress declared, "The website is open to everyone" Billington (2009). On April 18, 2013, The Digital Public Library of America formally opened (See http://dp.la/). What is emerging is the search integration among many digital libraries, extending beyond the parameters of any specific library.

As we consider the hardware from the 1960s till today, there is a clear trend in size reduction, storage capacity, and computing power. Computers migrated from mainframes to mini frames to PCs to laptops and now to tablets, e-readers and smart phones. The same happened in the data center with an enormous

expansion in storage capacity and throughput, a significant reduction in the footprint required in the data center, and the virtualization of servers, going from one server per box to thousands of virtual servers per box.

Phase Three of the Digital Era started in the second decade of the 21st century. The landscape has yet again been altered by the combination of wireless Internet access (WiFi and cellular data plans) and mobile computing, known as Bring Your Own Device (BYOD) such as e-readers, smart phones, and tablet computers. Solid state storage, touch screen technology, and improved battery technology has hastened the migration of many computing tasks to mobile devices.

The Future – Change as An Opportunity or a Threat?

What is our role in our future? Some of the changes technology brings are desirable and others happen despite objections and reservations. These disruptions and anticipated changes to the *status quo* have to be explored to better understand and respond to the potential impact of the rapid pace of technological change. An understanding helps practitioners and thinkers in our field to help shape libraries in the most advantageous way and to take steps to craft the best result. This reflection is aimed at helping libraries to create new direction to avoid allowing current trends of the day to lead to marginalization of libraries.

The Future of Library Services – Analog and Digital

We know well what the past and current library services offer but if we were to create a vision of the future, what options are possible? In what ways will the two worlds remain blended? To sketch an optimal futuristic approach, we highlight eight key points of how the future will be shaped:

I. Digital readers will be the default and will be interoperable (platform neutral) so readers can use same protocol on any device and all e-resources will be accessible on these standardized platforms for all devices.

II. Devices (e-readers, tablets, smart phones) will be mobile with ubiquitous access.

III. Patron access to digital resources will be simplified and transparent to readers and the business models will be favorable for libraries and thus for readers.

IV. Free access will be at the heart of the mission of the library

V. For commercial resources, the vast network of libraries will offer authors an alternative to current commercial infrastructures – to patrons these works will be available at a much reduced cost compared to commercial vendors

VI. Libraries will offer authors with direct access to millions of patrons, with the possibility to crowd-source translation into many languages.

VII. The library's power to connect the author to millions of patrons will encourage authors to release or relax the copyright to enable the greatest possible readership access, allowing materials to be shared across libraries.

VIII. Access options include downloading or online access. Unlimited simultaneous access will become the norm. Storage will be extremely inexpensive therefore libraries will retain archival digital copies to preserve future access.

The core premise of the library will remain free and open access to all information. If this value does not remain dominant, commercial alternatives will threaten the future of the library. Current business models for ebooks create confusion for readers and libraries alike, as they try to manage licenses that vary from each publisher and distributor. The beginning of the Third Phase of the Digital Era is a volatile time. At present, no single business model offers the best terms for all libraries. A quick overview of current practices will show the challenges in providing greater open access to ebooks from libraries.

A. Replicate print model: one book = one user. Thus not utilizing the affordances of technology.
B. Delayed sales (embargoes) to libraries so publishers can protect direct sales to consumers.
C. Limited loans allowed and then library must buy another copy.
D. No sales to public libraries; only to consumers (Big 6 publishers: Random House, Simon & Schuster, Harper Collins, Penguin, Macmillan, and Hatchett although changes are developing as we write.)
E. Unlimited simultaneous access – mainly academic publishing; variable pricing based on enrollment.

F. In library check out – cannot be downloaded remotely. High barrier and rarely accepted.
G. Patron Driven or Demand Driven Acquisition (PDA or DDA). Certain number of checkouts allowed for free then library purchases the ebook since there is a demand for it.
H. Digital Native – Open access to ebooks through direct agreements with authors.

The future library could be engaged in a continuing conflict between powerful publishers who control the publication pipeline for big profits therefore it is vital that libraries internationally create a viable alternative for authors and so to share the platform to give authors direct access to their target audiences. The Digital Native business model is a desirable one as it expands free access for readers. However, the current barriers are daunting. Not all barriers to access of information are technological. Technology has opened up more opportunities for broader access with tools to build portals for authors to publish their works. Technology has revealed where barriers exist more clearly than before. Two areas worthy of highlighting in reference to ebooks are: under current licensing practices, publishers restrict access to those who have purchased the ebook – no option to loan, donate, or to share. Authors do not own the rights to give their works to libraries and vendors/publishers can extract any price they think the market will tolerate. Furthermore, copyright laws vary country to country depending on country of origin where published and even country from which the reader accesses the materials.

Today, most authors approach publishers. In turn, libraries purchase from publishers. If libraries of the future offer a massive global distribution network, authors could opt to release their works directly via this channel. Options would be to release the work in the public domain, or to charge a minimal fee for a season and then remove restrictions, or to follow a less expensive and less restricted model than what publishers currently offer. If not free initially, patrons would be offered the opportunity to checkout, or try (checkout) with the option to buy. Thus, the electronic bookstore functions could fold into the broader library functions. Once a work has passed its prime, the future system would not discard the item, but it would remain available, often in the public domain. Such an approach is gaining traction in the USA. Douglas County Library in Colorado built its own open access infrastructure platform, working directly with authors to provide distribution of their works. Most academic libraries support their own campus publications, providing them as open access in their institutional repository. To bypass the restrictions of the big publishers, CALIFA, with over 220 libraries in California, and the State Library of Kansas are also pilot examples of public libraries that provide access to ebooks independently to avoid excessive fee increases and guarantee access in perpetuity to many independent publishers.

As public and academic libraries transform to accomplish these new services, they will need to collaborate and link into larger systems. Small libraries will not be able to develop the infrastructure or adapt technology on their own. A large integrated linked library cooperative can create a viral dissemination of new works.

Conclusion

Are libraries willing to enter the marketplace and become publishers and possibly brokers? Is this compatible with our values of providing free access to resources? Can they do both? Will they make great enough strides in integrating and collaborating on digital models fast enough to avoid marginalization by publishers?

The options are clear. Libraries will either allow commercial vendors to control the ebook marketplace, resulting in more library money spent on fewer titles, or we “can be active and exploring, constantly trying new stuff, eagerly celebrating the earliest phases of what is clearly a revolution in publishing, and teaming up with other innovators to nurture a new generation of creators." James LaRue, Director of Douglas County in Colorado (See Libraries in Publishers Weekly blog March 29, 2013).

There are indicators that emerging streams of authors are seeking new ways of publishing. There is a rising wave of self-publishing which has been enabled by technology. These independent publishers can be partners in shaping a robust future of libraries which continue to operate with the core value of free access to information thus being the leaders in the digital information marketplace, committed to long term preservation and curation of our cultural record.

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