



Technologies for Libraries

by Ruth Long and Philip Harvey

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As librarians dealing every day with the Information Technology revolution, we are in the business of discerning the useful from the useless, the valuable from the worthless, the happily incredible from the unbelievably unbelievable. This is nothing new, we have always been dealing with new library resources. And we are discerning these things on behalf of our users, the people who rely on our libraries and their resources.

Much of what we are seeing here is an outcome of and is usually dependent on the internet, the most massive e-resource at our disposal today. It is our responsibility to keep ourselves updated on new internet sites and services. We also need to develop our critical skills. To use the omnipresent information source known as Wikipedia, for example, we must ask, how much of this material is reliable? How complete? How biased? Wikipedia is still not and may never be a trusted scholarly source, and yet it is treated as fact every day. We need to be alerting our users to the possibilities of the internet, of everything that is out there, as well as its pitfalls. Every website, it can be argued, comes with its own inherent agenda, its own bias and slant on the information it presents. The internet is not objective.

The following ideas, based on new and extant technology, offer different ways to handle information and library user interaction. As users become familiar with these technologies in their everyday life, they will expect more and more interactions of this kind from their library experience.

1. Apps – moving beyond the mobile

Smartphone apps are a new way of designing and accessing data. There are apps for everything from finding your nearest, cheapest petrol station to storing your personal list of books to read. Apps are becoming ubiquitous. Apple's slogan - "There's an app for that" - is almost true. As users become more used to the app-lifestyle offered by tablets and smartphones, they may turn to the app as a first and sometimes only source of information.



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This is an evolution of the Google-it syndrome, whereby users will look something up on the internet and take the first answer provided, rather than assessing the information. Librarians can filter the information retrieved in order to find the most accurate and up-to-date for their users. Our role in information retrieval is all about quality control.

2. 3D printing

Truly science fiction in the real world, 3D printing is the process of making three dimensional solid objects from a digital file.

3D printing, or additive manufacturing, takes virtual designs from computer aided design (CAD) or animation modelling software, and transforms them into thin, virtual, horizontal cross-sections and then creates successive layers until the model is complete. It is a WYSIWYG (What you see is what you get) process where the virtual model and the physical model are almost identical.

3D printing can be used along with scanning hardware to create exact replicas of fragile objects or fossils, and to duplicate them any number of times.

You can read more starting here - http://en.wikipedia.org/wiki/3D_printing

3. Automatic check-ins

The technologies we know from airports are already in use in many libraries. Combined with smartphones this software also allows people to “check-in” to various locations, letting the wider world know where they are – at the library, at the coffee shop, at the museum. It’s a way of promoting physical locations, but there are also privacy issues which we will discuss later.


4. Mobile transactions and storage

Libraries already offer mobile transactions. We can search the catalogue from our computers or handheld devices, reserve books online and check books in and out with special hardware located in the library. The automated library is a thing of today, not the future.

Compactus shelving is increasingly automated. Fully automated storage and retrieval systems are being installed in libraries, and sometimes the building itself today is designed solely or largely for the automated system. At a time when the demand for chat room and computer study space has become a norm, the not unrelated demand for stack and storage space is being met by more sophisticated technological solutions.

5. Touchscreens at point of need

It is possible now to make catalogue information available at the point of need, right beside the shelves or on handheld devices. Background information on exhibits can be placed beside them on a touchscreen, showing audio visual displays to enhance an experience. With touchscreens this experience can be enhanced, allowing users



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to interact with the display, turning pages of a virtual copy of a book for example. Rare book exhibitions are now using this sort of technology to bring their exhibits to life.

Children interact naturally with a touchscreen, moving objects, zooming in and out intuitively. Their first contact with information is more likely to be in this format than print or even a keyboard.

6. EBook & eReader lending

The eBook is one of the fastest growing technologies in the world, with its sales skyrocketing over the last few years. EBook and eReader lending is becoming more common in public libraries. EBooks allow instant access to information, which is searchable, and the digitization of rare books also helps in the long run with their preservation, allowing access to the book’s contents without endangering its physical form. EBooks are cheap and easy to produce, although care should be taken in doing so. A poorly produced eBook is an irritation.


EBooks are not permanent. The information in an eBook can be updated instantly (especially with the Kindle). On the positive side, the information in your encyclopedia can be in your pocket, constantly up to date, but that information can also be hacked, changed to suit a political agenda, or in the case of a mis-sold edition of Orwell’s 1984, completely deleted overnight.

While it is safe to say the eBook will never replace the book, the two now live side by side in what is sometimes a kind of friendly rivalry. That said, the eBook is having a radical effect on reading habits, on reader expectations. Librarians are faced with decisions about whether or not to make eBooks available, or which ones. If required reading can be made available via eBook then that is a viable alternative. Librarians have to consider such scholarly questions as citation. How do we cite an eBook, e.g. if page numbering varies? We have to consider the benefits of hardcopy as well as eBook, where eBook use can be transitory, nebulous, and costly. Once the library has bought a hardcopy book, it doesn’t have to pay for it again. That is trade.

Many online books are available legally for free, e.g. Google books, Project Gutenberg.

7. Online periodicals and eBook chapters

Periodicals, articles and chapters of eBooks can be made available online, shared and used to promote the full thing. Audio books and podcasts are available as digital downloads. We are faced with questions. Will there be any scholarly print journals in ten years? Will there be magazines and newspapers in ten years? Will it all be online? Periodicals have shifted to digital in vast numbers, and print versions are often being left behind. Companies are taking over the management of special subject journals, e.g. theology, and putting them on databases at frequently exorbitant subscription



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rates. Complaints from libraries, library associations, universities and institutions have been met largely with indifference, because for the companies this is business. It is hard to say if costs will come down, whether the companies will price themselves out of existence, or the stalemate remain. A way around this is to secure price-saving deals by forming consortia (e.g. EBSCO, JSTOR, Oxford Online) with other libraries and sharing the costs of subscriptions.

Partly as a result of exorbitant costs, scholars are creating their own periodicals free online, thus living up to the traditional expectations of learning: periodicals deliver the latest, the newest, the best thinking, now and cheaply.

8. Transparency backlash

There are two sides to the revolution in technology – with many people expecting more access to information about everything and others closely guarding their privacy. When we can click on Google Street View and see places where we intend to visit, does this mean people might not visit them in real life? We can use an app to find out where our friends are currently, which is both wonderful and sinister. We have to cater for both sides and be aware of many security and privacy issues.


9. Digital downtime and embracing face-to-face

As many people seek time away from their digital lives, there are more meetings in libraries and discussion groups. Book groups have become increasingly popular.

We live in an information society, with information rich and information poor, all governed by access to IT and the internet. Assumptions are made about internet access, or access to technology, which can be extremely damaging socially. If the only way to pay a bill or apply for a job is online, what happens if you do not have internet access? If the information you need is on a bandwidth intensive website, what happens if you do not have access to broadband? If the entire reading list for a school child can be provided on a tablet, what happens when that tablet is, inevitably, damaged or stolen? Who pays for the replacement and who ensures it in the meantime? It cannot be stated strongly enough how vital a role libraries, especially public libraries, and librarians play in maintaining this balance between information rich and information poor, and to providing open access to reliable and accurate information for everyone, both in technological and traditional form.

10. Patron driven acquisition and online buying

Libraries can utilise collective buying groups and wishlists to add stock to libraries. By organising to buy stock in bulk, as a group, librarians can negotiate a better deal. Wishlists on book-buying websites can allow the librarian to draw up a list of books, and users to choose to purchase for the library. A thank you note, and perhaps



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a bookplate acknowledging the donation is always appreciated. This is a constructive way to get patrons invested in “their” library, to feel a part of the community that is based around it.

Most libraries are buying online, to a greater or smaller extent. But this eResource has its own issues.

It is false, for example, to assume that if a title is not online it is not available, yet it is easy to make that assumption. Online is likely to make us lazy. In fact, many of the books are still only in bookshops and we need to know our bookshops as never before. Often the shop will have the title before it goes online. We benefit from receiving trade catalogues in both print and digital form, especially from our own bookshops.

Second-hand books have been cornered online by AbeBooks and other big network agencies. While this means value buying for common titles it also means high prices for rarer titles. As more specialist dealers send email catalogues of their second-hand stock, the onus is on the librarian to find these and advise colleagues.

Reprinting of books has become a furious business now that print-on-demand is taking hold. Amazon, for example, is flooded with out-of-print and early imprint books, many of them of poor if not unusable quality. Very rare Carmelite books, irresistible to a Carmelite librarian, may be ordered online unseen, but with scanned or reprint results that are illegible and unintelligible. Much of this proliferating reprint business is unreliable.

11. Mobile productivity and social media

More people spend more time online – for work, through social media, for enjoyment. They expect libraries to do the same and to make information available there. Social media is here, there, everywhere. A lot of it is free, a lot of it is reused. It is creative sharing and group making, hence ideal in helping reach library objectives. There is so much of it, how do we make it work for us? Librarians need to find a voice, an individual way of communicating and a choice of what media to use to communicate most effectively.

Content management systems (CMS) allow publishing, editing, and modifying of content as well as site maintenance from a central page. Blogger and Wordpress make the creation and maintenance of websites and blogs very easy.

Facebook, Twitter, Tumblr etc are all fast growing, interactive social media platforms. They are mainstream. The blog, while not as active as its newer counterparts, still has a place as a repository of online thought – somewhere for consideration and for the longer term storage of information. Many libraries run their own blogs and make use of other blogs. There are lots of personal librarian blogs out there, some with invaluable advice and comment on our work. YouTube allows us to see video created all over the world, sometimes in regions where official channels have been blocked. Photo sharing sites such as Flickr & Photobucket allow us to upload, edit and share our pictures with friends or with the world.



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Online presence for any organization is fast becoming a key ingredient in their business life. However, it is well to remember that when it goes wrong it can be a PR disaster. Mistakes go viral on the Internet in a matter of hours, sometimes minutes. And what happens on the Internet stays on the Internet forever, so think before you type.

If you are under 30, which is maybe half the human race, then social media is how you communicate and receive information. A simple reality is that the handheld device (iPad, iPhone, iPod, etc) is rapidly becoming the norm. There are apps for everything and this is the way information is being sent, including information about our libraries. The concept of creative commons is a daily fact for many students.

Future consequences are unpredictable because new media are being taken up all the time, but social media are here to stay. What is the life-span of these things? Whatever, librarians work with an expectation that what we offer can be found via social media, so there is an onus to have a library Facebook page, and so on.

Another educational form of social media is the massive open online course (MOOC). Online courses are not new, but technology is available now that provides learning online, either through educational institutions, or outside them. This has implication for libraries. Where do we stand in relation to online courses? Where the reading may all be provided online then an awareness of these courses and their bibliographies becomes an imperative.

12. Tablet format and design - the fold is dead

Design of tablets and smartphones is transforming the way information is supplied to us, changing design and layout, introducing interaction through music, video, animation, hyperlinks etc. As discussed with touchscreens above, the way people, especially children, interact with information and their expectations of functionality is changing rapidly. While our generation first interact with information on paper with print or pen, our children interact with the screen, without even using the keyboard. With everything moving so fast, who knows how this will progress and how our grandchildren will handle their information needs?

13. Advances in web design

Web design is also changing. There is increased use of images, animation, and music. Image based information is more immediately accessible. Hyperlinks can be embedded to take users directly to related information. We use videoconferencing on a daily basis, can attend lectures on the other side of the world virtually, and can log in to a live author talk with our favourite author online. Authors are expected to be a part of this virtual world, to engage with their readers through websites, twitter, social media and skype like never before.



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14. Smartphone cameras

Cameras in smartphones can take pictures and instantly upload them. They can analyse the information as they do so and link it digitally. Their use is only increasing as the growth in social media continues with platforms like Twitter, Facebook, Tumblr and Pinterest. As mentioned above, video from around the world can be uploaded instantly to the internet, allowing reports on the ground from places where traditional media cannot go, by the people caught up in world-changing events. It has now become common to see footage from a camera phone used by international news media when no other, more immediate footage is available.

15. Connecting digital and physical objects

Taking pictures of Barcodes & QR (Quick Response) codes can let someone instantly access the website connected with it, or search a catalogue of books online. They can scan a book barcode and bring up the full details of the book, adding it to their wishlist or to-be-read list online.

16. Voice Activation

iPhone has pioneered this through its Siri application, where the phone can be voice-controlled to do a variety of jobs. Most new smartphones come with this functionality.

17. Web based applications and databases

Apps are not just for the phone but on the web as well. Cloud-based computing means that more of our work is being done online, in servers scattered across borders, so that if one fails, others step in and take its place. Data is stored in highly secure areas and is always accessible to the user so long as they have an internet connection. Once again we see the dilemma of a world with information rich and information poor.

And with all of this technology we still live with the question of its reliability in our workplaces. The technology can fail. We need backups. We may not be able to connect.

We are reliant on databases. Periodicals online, catalogues, union lists are all forms of database. Our task is to discern what kinds of databases we are looking at. They are not all the same. We have to be aware of how databases link to one another. When we talk about cloud technology, where is all the information in the cloud? We have to be sensitive to the potential or real built-in obsolescence of databases, e.g. outdated entries on Wikipedia, but also of the very nature of the database itself, which will have a lifespan of its own.

Within this world of online products we have to consider how we find and save them, via search engines, because search engines have mutability. Remember Alta Vista, the future of search engines? Even Google is not eternal and its very capacity to deliver exactly what we search for is open to question. Often Google does, often Google

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doesn't. If new ideas themselves have a lifespan then we need to be keeping open to possibility.

And while we touch on the subject of Google, librarians are in the business of outgoogling Google, i.e. we are ahead of the information needs, asking where materials are that are not limited to databases and sites and downloads. This has always been our job, our essential reference role.

18. Reusable data

Once collated, data is reusable. Most jobs can be rerun. This is by no means new, as I'm sure many of us have a file of Frequently Asked Questions. The new technology just takes this further.

19. Open-source software

Open source means that the software running these applications is freely available and can be adapted and improved by its users. The software, as if were, belongs to all its users, and can be shaped to fulfil their needs.

Resources:

- Horizon reports - <http://www.nmc.org/horizon-project>. This useful site gives forecasts of emerging information technologies.
- Gartner reports - <http://www.gartner.com/technology/research/predicts/>. Similar, but also gives current news and business analysis.
- 23 Things - <http://23thingsforarchivists.wordpress.com>. These sites have sprung up everywhere, inspired by the original. 23 Things for Archivists not only lists twenty-three essentials an archivist would want to know, it keeps adding to the list.
- Stephen's Lighthouse - <http://stephenslighthouse.com/>. An outstanding example of a librarian's blog, ready to bookmark and return to.
- Wayne Bivens-Tatum - <http://www.princeton.edu/~rbivens/>. Librarian at Princeton University Library who fearlessly gives his opinions on latest developments in the library world.
- Archbishop Marsh's Library - [@MarshLibrary](http://www.facebook.com/MarshLibrary) <http://www.marshlibrary.ie> Impressive use of Facebook and Twitter by Ireland's first public library, founded in 1701.
- Bletchley Park, National Codes Centre [@bletchleypark](https://twitter.com/bletchleypark). See how Bletchley Park uses twitter to promote itself as a heritage site and tourist destination, encourage visitors, link with other archives and inform the public about its history.
- Documents on Irish Foreign Policy - [@DIFP_RIA](https://twitter.com/DIFP_RIA). Documents on Irish Foreign Policy is a public resource for the study of Irish diplomatic history, tweeting links to documents and snippets of history often related to current events and the particular day.