Collaboration in the cloud: Untethered technologies for scholarly pursuits

April 2011 was an especially tough month for cloud computing—Amazon's cloud went down, the Sony PlayStation network was hacked, and Verizon's LTE network was unavailable for more than a day. However, if loving the cloud is wrong, we don't want to be right. Our story of life in the cloud begins in the fall of 2009, when we produced a book manuscript relying almost exclusively on Web-based applications and services. Although using these mobile-friendly tools while writing a book about building mobile-optimized Web sites wasn't a conscious or purposeful decision, integrating a suite of portable technologies, like Google Docs and Dropbox, transformed our workflow, sparked our creativity, and improved our eventual product.

Despite the fact that we were geographically co-located at the time of the book project—we worked at the same institution and even had offices along the same hallway—our schedules were anything but compatible. As we kept trying to fit the pieces together to find a way for the three of us to collaborate on a book manuscript, we realized the answer was in the cloud.
realized the answer was in the cloud.
Each of us brought her favorite application or tool to the table, and before we knew it, we had created a new working structure for our publication process from start to finish, integrating the tools and leveraging the strengths of their various features. The ease of creating—and deleting—content, and the ability to comment freely on the ideas of collaborators, promoted freewheeling ideation at the brainstorming stage. In later stages, the ability to incorporate real-time updates and edits without the requirement of physical proximity supported independent work schedules, which in turn increased efficiency and helped us stay on task. Built-in versioning simplified the proofreading and editing process, and Zotero’s shared libraries feature streamlined the collection and formatting of citations.

Using our experience writing a book using various applications as a case study, we’ve focused on practical tips and best practices for maximizing the possibilities of emerging technologies for academic pursuits. We will also consider the implications of choosing to rely on the cloud for the production, storage, and dissemination of your research.

**Brainstorming**

We used Delicious, a social bookmarking service, to gather ideas—sort of like an inspiration board. The ease of quickly noting promising materials for ourselves and our collaborators promoted rapid idea generation. Since the service simply holds links referred to you by other users in an inbox, we avoided a lot of disruptive e-mail and could both share and review items on our own schedules. Later, it was really easy to retrieve the items for reading and then for citing.

Delicious is just one of many social bookmarking services; you might prefer another. You should know that after acquiring Delicious in 2005, Yahoo! announced in December 2010 that they were shutting the service down. It has since been purchased by two founders of YouTube who plan to continue and enhance the service.2 Some other options to consider include Digg, Diigo,
options to consider include Digg, Diigo, Pinboard, Reddit, StumbleUpon, and Google Bookmarks.

Whatever social bookmarking service you choose, some ideas to consider

Create a separate shared account for the group. This reduces clutter and makes it easier to keep track of project links. Also, it creates an ongoing resource for you, your collaborators, and for anyone interested in your work. We were able to use the shared account as an additional resource in presentations on our book topic, and we have continued to add items and update it.

In the “project” account, tag items by chapter or section. It'll save time later on when you come to citations.

Writing

As far as we can tell, Google Docs does nearly everything but the actual writing for you. Integrated group chat makes it easy to get feedback from collaborators near or far, you can edit synchronously (useful and magical), and it's accessible anywhere...so you can work wherever you like (well, wherever you like that has Wi-Fi). Plus, with the new features they've released since we completed our work, now it's even more robust. You can organize documents into collections and work with a much larger array of file formats than was previously possible. With the ability to work with text documents, spread-sheets, presentations, drawings, and forms, Google Docs is quite flexible. One possibly unexpected, but definitely fun use from our project: when we couldn't decide between several options for a title, we created a form and did a quick straw poll of our friends.

Handy tips and some questions to consider
questions to consider when using Google Docs

It's easy to share your Google Docs files with anyone; even better, you can assign different levels of permission. Just want someone to be able to read and not edit? No problem.

Version control means that you can see the first...or fortieth...draft of that sentence. If you like the old one better, just roll back.

Here's where we get to the tough stuff: Are you going to leave your backup to the Goog? Yes, the uptime on their services is good, but assuming you don't consider whatever you're working on to be disposable, we're going to recommend you avoid simply crossing your fingers and muttering "In Google We Trust." (In fact, if you've experienced a tragic file loss before, we're willing to bet you're probably still wincing from the painful memory.)

Best practice for backups? Multiple and distributed. At significant points, pull a copy down to a flash drive, and save one to another location (the network drive on your work computer, or a service like Dropbox, discussed below). If you're working with a group, you may want to agree on who's going to take primary responsibility for this, so you don't end up in a pinch.

**Citing**

Phew, the writing's over. Thought the hard part was done when we finished the content? Wrong. Now we had to cross our t's and dot our i's as we reviewed and formatted all our citations...and with six chapters and three authors, there were plenty of citations flying around. Happily, we live in a time where that wondrous invention called citation-management software is now Web-based, so it's even more flexible. We used Zotero 2.0 and its group libraries feature to more easily collect all of our references in one place.
Zotero began its life as a Firefox browser extension. It cleverly recognizes when the user is viewing an article or library catalog record, and makes it very simple to save the item's citation information to a library where it can later be organized, tagged, and output in numerous citation styles to a variety of formats. Users can sync citation libraries across multiple devices, and enabling the creation of groups streamlines the process of sharing references on topics of mutual interest. A new release, Zotero Everywhere, is slated to be coming soon and includes browser extensions for Chrome, Safari, and Internet Explorer, as well as a stand-alone application and other enhancements.

Again, you might have another favorite Web-based citation management option: CiteULike, EndNote Web, RefWorks, or Reference Manager, to name just a few. Had we been aware of it when we were writing our book, we might have been tempted by Mendeley, a desktop/Web-based application that integrates citation management with social-networking features geared to making it easy for the academic community to collaborate and share information.

**Lessons we learned about managing citations**

At the time of our writing, citations weren’t a strength of Google Docs. For any project involving numerous references, we recommend that you consider exporting formatted citations to Word or OpenOffice and manage them as a separate document.

If you use Zotero for works with lots of citations, create folders within your group library by chapter or section so that it’s easier to process, double check accuracy, or quickly find a specific item by browsing later.

**Editing**

One common question we hear is “Why do I need Dropbox when I’ve got Google Docs?” Though at first glance their purpose appears to be similar—easy...
purpose appears to be similar—easy document sharing and storage—Dropbox gave us the flexibility we needed to share not only documents but charts and images as well, and in a very streamlined way. We found Dropbox to be essential during the editing stage of our book, when we went from working with discrete sections to pulling together a finished manuscript.

As a project in process, Google Docs more than met our needs, but as we drew closer to completion, we hit two roadblocks. One was the previously mentioned citation problems, something Google docs has since improved upon. The second was the requirement that we deliver our manuscript in .doc format to our editor.

These two issues prompted us to export our book, chapter by chapter, into Word, after which our individual contributions began to take shape as a finished product. However, we didn't want to fall into the vicious cycle of continuously e-mailing multiple versions of Word docs, constantly checking if we had the most current version open, and hoping we didn't cancel out someone else's edits.

Another reason Dropbox quickly became a fan favorite is not just its platform independence—it doesn't care whether you use it on PC or a Mac—but its extreme mobile-friendliness. It made sharing files easy, as we were in almost constant communication at a time of intense editing, even though one of the authors was crossing the country on Amtrak. Dropbox let us share changes in real time, and we were then able to discuss the changes using e-mail, IM, and SMS (and even occasionally a phone call). Given this, you won't be surprised to hear that we're intrigued by the possibilities of a new (free) application for Mac OSX, called Chatbox, which supports collaboration by allowing discussion, annotation, and chat around Dropbox files.5

**Dropbox features we love**

Dropbox lets you upload multiple files at the same time. Plus, it keeps track of
file history, so you always know you're working from the latest version.

The Dropbox client on your desktop computer will alert you when collaborators change or update files. You can share whole folders, as well as individual files, which means you don't have to worry about setting permission levels for every file you want to share.

Where next?

Whatever your feelings about the impact technology might have on the character of writing, it's hard to dispute that the mechanics of planning and executing a scholarly publication have been made more efficient by these, and other, new tools. There are pitfalls to this new crop of technologies, of course; in addition to the failures we mentioned previously, the unexpected and unexpectedly swift decommissioning of Google Wave is just one more example of the risks associated with cloud computing. Controversy swirls around issues of privacy, ownership, access, and archiving, but there remain exciting opportunities despite the many valid concerns.

These tools are still in many ways in their infancy, and necessary improvements to security, stability, and accessibility can and should continue to be addressed. For brevity, we'll give just two specific examples, both involving Dropbox. A complaint was filed with the FTC in early May 2011, claiming Dropbox misled users into believing that their files were encrypted and that employees had no access to view them; they responded by saying that it was a misunderstanding. In June 2011, a flaw in security resulted in a short window during which passwords were optional—and about 100 accounts were breached. Both incidents are cause for concern. Our take-away from these examples: as always, be mindful about how, and where, you store sensitive information (e.g., passwords and financial information).

As these and other emerging technologies transform our workflows and habits in both our professional and personal lives, and our collective comfort level increases, so does the
potential for revisiting, revitalizing, and revamping processes in writing, publishing, and other collaborative pursuits. Scholarly output is critical to our profession. For many academic librarians, in addition to being an important part of continuing professional development, it is also a crucial part of promotion and tenure.

What we learn individually and collectively through the process of inquiry benefits our community of practice; in turn, the results improve the experience of our end-users. To our minds, there’s no better testimony to the utility of a service or application than being able to share a great, concrete personal example: our fellow coauthor reports that simply being able to demonstrate the group library for our book project to faculty and research assistants at her current institution has resulted in quick, enthusiastic adoption of Zotero.

Libraries have long been masters of doing more with less, and while our resources are stretched in the current economic environment, the opportunities afforded by technologies like these not only provide the chance to integrate efficiencies where possible (reduced travel funding, working remotely), but also are exciting in their own right and can lead us to new ways to collaborate and create knowledge.

Notes


3. Not sure why you might use a social bookmarking service, or need to explain it to colleagues? Common Craft has a great video at www.commoncraft.com/bookmarking-plain-english.

4. For example, we stored our links here: www.delicious.com/mobilelibraries.

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Article Views (Last 12 Months)

Contact ACRL for article usage statistics
from 2010-April 2017.

Article Views (By Year/Month)

2020
January: 6
February: 11
March: 6
April: 4
May: 5
June: 5
July: 3
August: 4
September: 5
October: 4
November: 1

2019
January: 11
February: 16
Cloud technologies – for large companies. A regular Internet user believes that the clouds are created exclusively for business. In fact, any of us already use these services, without even thinking. For examples, you do not have to go far: Microsoft Office 365 or Dropbox, and who was not on the fancy Facebook and VKontakte? Cloud technologies do not make sense at all. You can always select the system that will work within the specified limits and norms. At the same time, management will be simplified, but moving to the cloud will not entail structural changes in the business. It is just necessary to outline your needs at the very beginning of the process. Then there will be a system within the cloud that will work correctly and maintain the necessary balance. Cloud-based collaboration technology allows companies to access data from any location to make sure people collaborate on a common platform. Teams can share files simultaneously, communicate in real-time, and have an interactive collaboration, bringing out more creativity. Pro Tip: Interested in collaborating on projects from the start to an end? Emerging Technologies. AI. Internet of Things. We propose a novel cloud-enabled system that enables such immersive audio-visual scenarios on untethered mixed reality devices for the first time. Talk and Demo can be viewed here. We propose a novel system architecture where an "acoustic map" in the cloud stores acoustic simulation data that are bound to various locations in the world (such as via Azure Spatial Anchors). Download PDF. Groups. Cloud collaboration is a way of sharing and co-authoring computer files through the use of cloud computing, whereby documents are uploaded to a central “cloud” for storage, where they can then be accessed by others. Cloud collaboration technologies allow users to upload, comment and collaborate on documents and even amend the document itself, evolving the document. Businesses in the last
few years have increasingly been switching to use of cloud collaboration. Nowadays, Cloud computing has become essential support for online education. Growth and interest in the massive open online courses (MOOCs) hosted on cloud, as well as the large number of students with own device (BYOD) set a favorable scenario for a new model of cooperation and interaction for online education. In this paper we present the results of collaborative work in the cloud, using Google Apps services and MOOCs, in conducting laboratory reports for the subjects of chemistry, and based on this experience we propose an architecture for platforms e-learning and mechanisms for collaborative work in cloud applied to the laboratories.