Chapter 2

Defining Technological Innovation

Abstract

Chapter 2 of Library Technology Reports *(vol. 49, no. 7) "Technological Innovation: Perceptions and Definitions" seeks to refine the broad and perhaps amorphous concept of innovation. It shares some definitions of innovation from the academic literature, as well as some insights from the corporate environment. The chapter then utilizes some alternate, indirect methods to offer additional glimpses into what libraries may mean when referencing innovation. Such indirect methods include a look at library job advertisements, awards, identified technology trends, conference topics, and annual forecasting reports anticipating the higher education environment of tomorrow.*

It's been an incredible year of innovation.
—Apple CEO Tim Cook, February 24, 2013[1]

The most important objective for Apple is developing innovative products.
—Tim Cook, April 23, 2013[2]

You may say that Apple only does a very, very small number of things, and that's working pretty well for them. But I find that unsatisfying. I feel like there are all these opportunities in the world to use technology to make people's lives better.
—Google CEO Larry Page, January 17, 2013[3]

Our competitors are not responding with innovation, they're responding with lawsuits.
—Google Executive Chairman Eric Schmidt, July 7, 2011[4]

Mama, don't take my Kodachrome away.
—Paul Simon, 1973[5]

If a random sample of individuals were asked to name companies that quickly come to mind and that epitomize "innovation," Apple and Google might be the most frequently mentioned. Coincidentally or not, both of these companies are also known as technology companies. Apple, of course, is known for Steve Jobs, but also for things such as the first graphical user interface (for the consumer computer market), Mac hardware, the Mac OS and iOS operating systems, iTunes, iPhone, iPad, and iCloud. Google is known as the company behind the most popular Web search engine, other Web applications (e.g., Google Maps, Google Earth), the Android operating system, Google X, Google Glasses, self-driving cars, and any number of other things (see the *Wikipedia* page entitled "List of Google Products").[6] As judged by financial performance, both companies are incredibly successful and true tech giants (regardless of recent stock market performance). Other examples of companies epitomizing innovation could include Microsoft, IBM, GE, Xerox, etc. There are any number of articles tackling the question "Which company is more innovative?" From the introductory quotes above, there are even different opinions, or at least shades of gray, among those at the top about what, precisely, innovation is. The Boston Consulting Group, mentioned in the last chapter, in its most recent innovation survey ranked Apple as the most innovative company in 2012 and Google as the second most innovative (same as the rankings found in the 2010 survey).[7] As the report notes, "Innovation has many faces, from incremental changes in existing products to entirely new offerings for customers. . . . The list has its share of well-known technology innovators that have long dominated the top ten."[8] A recent *Forbes* magazine article briefly looked at three well-known tech companies and ranked them in terms

of who had the best innovation model; the article's author selected Samsung as having the best innovation model, followed by Apple, and then Google.[9]

So what, then, is innovation? At its heart, an idea or concept; fulfilled, it's the idea realized, the end result, an effected change meant to make something—or introduce something—better. *Better* could mean more efficient, more enjoyable, more appealing, more useful, more . . . "wow." It is not the intent here (necessarily) to present *technological innovation* as synonymous with either *technology* broadly or *new technology* more specifically. But things are quite interwoven, and perspectives vary based on whose thoughts are being consulted. In terms of the current crop of end users and their thoughts on technology, one researcher noted, "The views expressed by the Net Generation students interviewed and surveyed . . . suggest that the Net Generation defines technology broadly. It is not just computers and the Internet, but whatever digital devices or applications . . . help a student meet his or her needs. A key component of the Net Generation's definition of technology is customization, or the ability to adapt technology to meet individual needs, rather than vice versa."[10] This chapter seeks to narrow the question *What do we mean by innovation?* by sharing insights from the literature and taking a few less direct approaches to better grasp what's meant by technological innovation in libraries.

To begin, what are some definitions for *innovation*? It's challenging to try to explicitly define. As noted by Rowley:

> This is not an easy process, because . . . innovation comes in many guises. . . . For example, innovations can be small scale and local, or they may involve whole organizations in complete shifts in their strategic direction. The notion of "newness" is often at the core of definitions of innovation, as is the idea that innovation will in some way make things better or improve things. . . . So what is the difference between an innovation and a change? The shift from a focus on change, to a focus on innovation can be regarded as a matter of emphasis and perspective.[11]

Regardless of what specific type of innovation is being considered, general definitions of innovation can often be applied. Sourced from both the business and library literature, here are several definitions of *innovation*:

- "A process that includes the generation, development, and implementation of new ideas or behaviors. Further, innovation is conceived as a means of changing an organization, either as a response to changes in the external environment or as a preemptive action to influence the environment. Hence innovation is here broadly defined to encompass a range of types, including new products or services, new process technologies, new organizational structures or administrative systems, or new plans or programs pertaining to organizational members."[12]
- "The embodiment, combination, and/or synthesis of knowledge in novel, relevant, valued new products, processes, or services."[13]
- "Things that change the way we can do what we want to do; [things that] have added value to our daily lives . . . new, desired, or needed services that add value for university faculty, students, and other scholars. . . . Innovation is more significantly about what our target audience can do—about the increased capacity of library users to do what they want and need to do in the way that most benefits their productivity, pleasure, and excellence . . . facilitating the work of our primary constituents in ways that are new and useful to them."[14]
- "Innovation is the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace."[15]
- "An innovation is a change, in a product, service, process or, more widely, an organization."[16]
- "A wise person once told me that innovation isn't just about doing things that are new or different; it's about doing things that in the eye of the beholder (the user, patron, or customer) meet a need that may not have been appreciated before. Innovations are the things that truly alter and improve how we do things; they may even shift our proverbial paradigms."[17]

Let's look at the corporate environment a moment. Why bother with this environment and its thoughts on innovation? For one thing, there's certainly been talk in various library and higher education venues about how libraries and academia could look outward to the corporate world and steal a few moves from the playbook—to assist, model, or inform how libraries could adapt to an increasingly dynamic environment, compete for budget allocations, recruit customers (students), etc. The recent recession has emphasized this all the more, as organizations—for-profit and nonprofit alike—seek ever-greater efficiencies. It's acknowledged up front that corporate giants and nonprofit academic libraries are two different beasts—clearly, the financial and labor resources of the former often

Definitions	Top Choice	Total Mentions
The implementation of new processes, products, organizational changes or marketing changes	35%	47%
An environment/culture that embraces positive change, creativity and continuous improvement	27%	42%
Research and development, new intellectual property (IP), and inventions	17%	41%
Staying ahead in the market and being a market leader	12%	32%
Solutions that benefit society and societal outcomes (including environmental outcomes)	9%	29%
None of the aspects above is close to my personal definition of innovation	1%	10%

Figure 2.1
How business defines innovation. From *GE Global Innovation Barometer: Global Research Report* (General Electric, January 2012), 30, http://files.gecompany.com/gecom/innovationbarometer/GE_Global_Innovation_Barometer_Report_January_2012.pdf

allow them to exemplify innovation at a level unattainable by libraries, and certainly on a vastly larger scale. Nonprofits could also be considered to focus more on the broad public good without distractions such as profits and shareholders. The corporate world is also interesting in that it's somewhat easy to gauge which corporations are successful—whether from a financial standpoint, a "most admired" standpoint, a longevity standpoint, a growth standpoint (employees, customers), etc. There are also examples of former corporate giants that have fallen on hard times. The most notable recent example may be Kodak. "The firm did not act when it should have, which is decades ago. Kodak faced the technological discontinuities challenge. . . . Kodak did not take decisive action to combat the inevitable challenges. . . . The organization overflowed with complacency . . . [despite the fact that] historically, Kodak was built on a culture of innovation and change."[18] Clearly, some companies are doing some things right, and one of these "right things" could be associated with—and include investment in—innovation.

Complementary to the fact that businesses are often drivers of innovation (and that innovation can help effect positive bottom lines), businesses have contributed to research on innovation and what innovation means. Beginning in 2011, General Electric commissioned surveys of senior business executives in countries across the world. The 2011 survey involved 1,000 participants; the number rose to 3,100 for the 2013 survey.[19] This *GE Global Innovation Barometer* "explores how business leaders around the world view innovation and how those perceptions are influencing business strategies in an increasingly complex and globalized environment."[20] While innovation is the underlying theme, some variation exists in questions from year to year. Of interest is the fact that one focus area of the 2012 *GE Global Innovation Barometer* survey was "innovation definitions." One question asked, "Which two aspects below most closely correspond to your personal definition of innovation?"[21] The six possible responses, and the survey results, are shown in figure 2.1.

The top response, both in terms of the top choice as well as total mentions, was "the implementation of new processes, products, organizational changes or marketing changes." This seems to be the broadest definition of those offered. Looking forward to a survey question discussed in chapter 3, two key words in the definition are *new* and *changes*. As pointed out by Jeffrey Phillips, of concern was the fact that "no definition above was selected more than 35% of the time. . . . The first [definition] is a COMPONENT of innovation, but only if those changes add significant value, are truly new and unique and important and relevant to a customer."[22] His thoughts on the other responses are available at his *Innovate on Purpose* blog.[23] Another GE survey question asked, "In a few words, what would be your definition of business innovation?" Some of the nearly two dozen possible responses included these:

- "New products/those not seen before/invention/creativity"
- "Evolving/adapting current products"
- "Brand new technologies/working with technology/technology improving"
- "New ways of solving problems"
- "Continuous improvement/developing processes/products"
- "Specifically high-tech, eg IT/machinery"
- "Change/harnessing change"
- "New thinking/new philosophies/harnessing IP/idea creation"
- "Reducing costs/becoming more profitable/bettering what has been done before/creating value/improving processes"
- "Responding to customer needs/meeting market demand"
- "Activities/products that benefit society"
- "Combination—products, processes, thinking"

- "Improving/increasing efficiency"
- "Making life better for people"[24]

Thirty additional definitions of *innovation* are provided in an entry on the Fresh Consulting blog.[25] One of the challenges of defining *innovation*—or perceptions about how innovative a product or service may be—is how quickly something new becomes standard. New products or services that upon introduction may be perceived as innovative over time become common or routine. As noted by one prominent Google employee:

> The greatest innovations are the ones we take for granted, like light bulbs, refrigeration and penicillin. But in a world where the miraculous very quickly becomes common-place, how can a company, especially one as big as Google, maintain a spirit of innovation year after year? . . .
>
> Even as we dream up what's next, we face the classic innovator's dilemma: should we invest in brand new products, or should we improve existing ones? We believe in doing both, and learning while we do it.[26]

Alex Ross, in looking at past winners of the *Wall Street Journal*'s Technology Innovation Award, noted:

> What is Innovation? Is innovation a concept, a process, an outcome, or something else entirely? . . .
>
> I noticed an interesting mix of both new products and repurposed technologies. In my own opinion, some of the winning products and services seem innovative, yet others do not. Does this imply that the only difference between an innovative product and a noninnovative product is perception? I propose that to truly assess innovation, we need to look beyond the concept and initial offering, and focus on the impact of a product or service after its introduction.[27]

While innovations can be categorized or labeled by type, they can also be addressed by looking at attributes. In his work *Diffusion of Innovations*, Rogers mentions five characteristics of an innovation that influence that innovation's adoption rate. While the study in this issue of *Library Technology Reports* did not look at rates of adoption of a perceived innovation, the characteristics are interesting to reflect upon:

- Relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes.
- Compatibility is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters. An idea that is incompatible with the values and norms of a social system will not be adopted as rapidly as an innovation that is compatible.
- Complexity is the degree to which an innovation is perceived as difficult to understand and use.
- Trialability is the degree to which an innovation may be experimented with on a limited basis. New ideas that can be tried on the installment plan will generally be adopted more quickly than innovations that are not divisible.
- Observability is the degree to which the results of an innovation are visible to others. The easier it is for individuals to see the results of an innovation, the more likely they are to adopt.[28]

Rogers notes, "Innovations that are perceived by individuals as having greater relative advantage, compatibility, trialability, and observability and less complexity will be adopted more rapidly than other innovations."[29] If a new item or service does not meet any of these criteria whatsoever, then perhaps it isn't perceived as an innovation. Technology adoption rates are skyrocketing. As noted by Lewis (in the year 2000):

> Technology adoption rates are an order of magnitude faster than several decades ago, which means that technologies and products are penetrating global markets faster and faster. For example, the common household telephone took over 60 years to achieve 50-percent penetration in U.S. homes. Today, the World Wide Web achieved 50-percent penetration of U.S. homes in a mere five years, and it is expected to reach similar levels in modern industrialized nations across the globe in roughly 10 years. Technology diffusion is occurring approximately 10 times faster today than 50–100 years ago.[30]

Continuing with the earlier example of Google, one of its original employees, Susan Wojcicki, stated eight principles of innovation—at least in her assessment—at Google:

1. "Have a mission that matters. . . . When we start work in a new area, it's often because we see an important issue that hasn't been solved, and we're confident that technology can make a difference."
2. "Think big but start small."
3. "Strive for continual innovation, not instant perfection."

4. "Look for ideas everywhere."
5. "Share everything."
6. "Spark with imagination, fuel with data. . . . What begins with intuition is fueled by insights. If you're lucky, these reinforce one another."
7. "Be a platform. . . . We believe . . . strongly in the power of open technologies."
8. "Never fail to fail. . . . Knowing it's okay to fail can free you up to take risks. And the tech industry is so dynamic that the moment you stop taking risks is the moment you get left behind."[31]

One of the quotes that started this chapter was from a Wired magazine interview of Larry Page, Google CEO, published in January 2013. The whole interview is fascinating; here are just a few quotes, focused on technological innovation, pulled from that interview:

- "It's natural for people to want to work on things that they know aren't going to fail. But incremental improvement is guaranteed to be obsolete over time. Especially in technology, where you know there's going to be non-incremental change."
- "But periodically, every n years, you should work on something new that you think is really amazing. The trick is coming up with those products. I could probably give you a list of 10 major things that are wrong with email. I try to maintain lists like that in my head."
- "If you're not doing some things that are crazy, then you're doing the wrong things."[32]

Moving toward a closer library focus, what does the library community perceive as innovation, and specifically technological innovation? First, a few quotes regarding the importance of technology in libraries. As noted by Riggs, "Technology has been one of the primary, if not the primary, factor(s) enabling the library to move forward in quantum leaps. Time cycles have been dramatically reduced . . . and numerous examples of added value are witnessed daily by library users all because of advancements in technology. Unquestionably, the revolution in library services has been driven by the evolving technology."[33] Echoing this, working with leaders of its member libraries, the Association of Research Libraries (ARL) published a scenario set anticipating the research environment in 2030 and how libraries might fit into this environment. As noted in the report, "Technology is considered the driver of much of the transformative change impacting research libraries," with a participant noting, "Technology is a critical driver impacting how academics communicate, do research, collaborate, and how libraries create access, archives, and living content."[34] Within libraries, innovation can be seen from many perspectives, some more direct than others. Chapter 3, focused on the original survey and analysis, will interweave references from the library literature on innovation. Prior to this, a few indirect methods looking to better understand innovation are offered. Indirect approaches such as these include looking at the use of the word *innovation* in library job advertisements, in awards, within strategic plans, and in conferences or conference programs.

To begin, the word *innovation* appears very often in library position advertisements, whether for positions at the top of the organization or hierarchically lower down. In early April 2013, a scan of the listings retrieved from the ALA Joblist website retrieved 252 job listings.[35] The word *innovation* appeared in the descriptions of dozens of these jobs, perhaps even the majority of listings (the author didn't count). In several instances, the word *innovation* appeared in the very first sentence of the job ad, and with several ads, one sentence with the word *innovation* is immediately followed by another sentence with the word *innovation*. Figure 2.2 provides several representative, not exhaustive, examples showing the use of the word in job ads. The representative examples are meant to show the word being used in a diversity of positions—whether at the dean/director level, lower-level management, or for positions with no staff management responsibilities—as well as to illustrate use of the word for positions representing the diversity of activities for which librarians are responsible (e.g., information technology, collection development, technical services). The figure also culls from the job ads some other words that are often associated with the word *innovation*, such as *vision*, *improvement*, *fresh ideas*, and *transformation*. While some instances of these observed words in the ads seemed to be associated with technology, other instances weren't.

A second indirect method to further some sense of what's meant by the term *innovation* can be gained by looking at awards, regardless of whether said award is specifically focused on *innovation* or not. Figures 2.3–2.5 attempt to provide insights. Figure 2.3 illustrates several awards focused on innovation; many appear directly related to technology-focused innovation; others reference or could include technology-based innovations (as well as innovations without a strong technological underpinning). The figure includes awards focused on libraries (such as several given by the American Library Association with corporate sponsorship), as well as awards outside the library (such as the *Wall Street Journal* Technology Innovation Award). In the criteria for the awards, some words and phrases seemed to resonate with the author in concert with the word *innovation*; such words appear in bold in the chart. Figures 2.4 and 2.5 focus on one award in particular—the ACRL Excellence in Academic Libraries award. The award is given annually to academic libraries at three different levels—university, college,

and community college—"to recognize the accomplishments of librarians and other library staff as they come together as members of a team to support the mission of their institution."[36] This award isn't specifically geared toward recognizing or judging innovation, let alone technological innovation. However, from a logistical standpoint, the list of winners was readily and publicly available, as well as the original applications, and it is an award focused on academic libraries. It was interesting to see whether the applicants for an award not specifically focused on innovation still used the word or made references to products or services that could be considered innovative. They did, and often. All this aside, the ACRL award is highly regarded and is given to libraries that clearly appear to be *doing something right*. In looking at winning applications from 2004 to 2013 (ten years), the author determined that the word *innovation* shows up frequently (as well as synonyms for the word). Figure 2.4 shows the number of instances of the related words *innovation*, *innovator*, and *innovate*. Figure 2.5 culls some award application verbiage, presenting representative examples of things that at least *appear* to relate to technology (or otherwise caught the author's attention when thinking about technological innovation) and that appear near the use of the word *innovate* within the applications. Note: the author did not analyze the applications so closely or spend so much time as to try to make value judgments in terms of whether the application authors were explicitly linking the *innovation* reference to the technology item appearing nearby in the application narrative: only the application authors know.

As noted by Dysart, "Organizations have to have a big detailed picture of where they are going before the strategies to get there can be put in place. And that's way before technology, people, and other structures are put in place."[37] In addition to awards, *innovation* also appears frequently in library strategic plans, mission statements, or similar documents or vision statements. Figure 2.6 provides some representative instances of the word *innovation* in library strategic plans. Solely for continuity purposes, libraries appearing in figure 2.6 were also libraries that have won the ACRL award. In some, but not all, of the occurrences, technology can be construed as an element of the innovation, and in some instances, the word appears in a list of other words that represent key values without alluding to anything in particular, but rather used to help describe core beliefs held at the library.

Award winners and library strategic plan and vision documents provide some insights into what's meant by *innovation*. Focusing even more closely on technology, another method to grasp what's meant by *innovation* is this publication—*Library Technology Reports*—a resource helping to maintain awareness of new technologies and their applications, often authored by those in the field. Beginning in 2008, *Library Technology Reports* was published eight times a year; prior to this, six times a year. The technologies—the described items and services—appearing in *Library Technology Reports* could often be considered innovative.

Additional insights into innovation come from ALA's Library and Information Technology Association—in addition to work within other ALA divisions, which have increasingly included technology issues in their programming and focus. Collectively, there are many committees, task forces, and interest groups within LITA and other ALA divisions that heavily focus on technology. For example, the charge for the LITA Next Generation Catalog Interest Group states:

> This group gives LITA a discussion space devoted to developments in the library catalog, its nature and scope, and its interfaces. It provides a forum for presentations and sharing of innovation in catalogs and discussion of future directions. Collaborations with other LITA interest groups, such as in the areas of emerging technologies and open source software, will provide opportunities for programming.[38]

Other interest groups within LITA include Cloud Computing and Virtualization, Emerging Technologies, Imagineering, Linked Library Data, and Mobile Computing. Each of these touches lightly if not heavily upon topics related to technology and innovation. Programs are regularly presented on topics related to innovation; for example, at ALA Annual 2007, one program was titled "The Ultimate Debate: Do Libraries Innovate?" featuring Joseph Janes, Stephen Abrams, and Karen Schneider as panelists.[39] In terms of regular programming on technology topics, LITA annually hosts a national forum, which promotes itself as "a 3-day educational event featuring preconferences, keynote, concurrent, and poster sessions that explore leading-edge technologies and their applications in all types of libraries."[40] Another example of regular programming touching on the related worlds of technology and innovation would be trends identified by the expert panelists associated with the LITA Top Technology Trends Committee. Indeed, one word often associated with innovation is *trendspotting*—trendspotting is one acknowledged method of staying abreast of innovation. The LITA Top Technology Trends Committee "hosts a group of LITA members, acknowledged for their expertise in library and information technology, to discuss top technology trends librarians should be watching."[41] In the LITA National Forum description appears the term *leading-edge*, and in the description of the LITA Top Tech Trends Committee, the statement "top technology

trends librarians should be watching." This sounds like innovation.

Another input helping to define and recognize innovation is the annual *Horizon Report*, a collaborative project of the New Media Consortium (NMC) and EDUCAUSE. The annual report, first issued in 2004:

> describes annual findings from the NMC Horizon Project, a decade-long research project designed to identify and describe emerging technologies likely to have an impact on learning, teaching, and creative inquiry in higher education. Six emerging technologies are identified across three adoption horizons over the next one to five years, as well as key trends and challenges expected to continue over the same period, giving campus leaders and practitioners a valuable guide for strategic technology planning.[42]

Emerging technologies, *impact*, *key trends*, and *strategic technology planning*: these words and phrases sound related to technological innovation or the perception of innovation; indeed, NMC's tagline is "sparking innovation, learning and creativity."[43] The organization's About page says, "The role of the NMC is to help our hundreds of member universities, colleges, museums, and organizations drive innovation across their campuses. We do that by performing research that catalyzes discussion, by convening people around new ideas, and by building communities that encourage exploration and experimentation."[44]

Figure 2.7 tries to synthesize the four additional streams listed above into a single chart spanning ten years, from 2004 to 2013. The chart is not exhaustive of all topics presented in the venues above, but it is meant to provide some insights. The range of material covered by these outlets is extensive, and there have certainly been other items mentioned by the Top Technology Trends panelists, additional topics presented at the LITA National Forum, etc. That aside, it's hoped the chart helps shed some additional light on the topic of technological innovation in libraries, related research and developments, and consumer technologies libraries should watch.

Looking at the chart, it's easy to pick out some major items across all venues. Clearly the shift to mobile environments has been a big trend, along with the myriad associated topics of interface design, services accessible to mobile devices, geolocation capabilities, app development, etc. Another big trend was social media, virtual worlds, and the library's presence and services extending into such environments. Blogs, wikis, and RSS appear frequently. Open source software, the development of new discovery systems and services, and gaming were frequently mentioned or presented on. Are all these items examples of technological innovation? The jury—in the form of technology experts and library practitioners presenting on these topics—seems to hint yes.

As noted, trendspotting and technology aren't the purview of just the venues presented in the chart, or the purview solely of LITA. For example, the ACRL Research Planning and Review Committee "is responsible for creating and updating a continuous and dynamic environmental scan for the association that encompasses trends in academic librarianship, higher education, and the broader environment."[45] Associated with this responsibility, the group releases a list of top ten trends every two years (including, but not limited to, technology), most recently in June 2012, where it was noted, "Technology continues to drive much of the futuristic thinking within libraries."[46] For the 2012 top ten trends release, some technologies, or items with a strong technological component, mentioned included cloud computing, data curation, digital preservation, online learning environments, social media, new publishing realities, the burgeoning mobile environment and associated apps, and patron-driven e-book acquisition.[47] The most recent environmental scan, released in April 2013, mentions several items with a technological component (and many of which have additional—and sometimes more significant—components and implications above and beyond the technology component). Examples include massive open online courses, digital humanities, data curation and preservation, librarians producing or assisting in the production of content, virtual collaborative spaces, next-generation technical services, collaborative collection building (e.g., HathiTrust; patron-driven acquisition), mobile technologies, cloud computing, and learning analytics.[48]

Some additional regular surveys, reports, and assessments worth noting include

- various Ithaka S + R surveys and other reports)[49]
- various OCLC research reports[50]
- various publications, resources, and presentation materials from CNI[51]
- various Pew Internet and American Life Project research and reports[52]
- various EDUCAUSE research and reports, such as the *ECAR Study of Undergraduate Students and Information Technology* and *7 Things You Should Know About*[53]

This chapter has focused the discussion at hand more sharply on the intersection of technology, innovation, and libraries. Combining a few thoughts from the corporate world with additional insights from the library world, it's hoped the stage is set for the next chapter, which shares results of original research intended to gather and better understand thoughts and perceptions of technological innovation within academic libraries.

Notes

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Figure 2.2
Examples of use of *innovation* and related words in job descriptions retrieved from the ALA Joblist in April 2013

Position (Posting Date)	Reference to Innovation	Words and Phrases in Full Job Ad Related to Innovation
Director/Dean Level		
Dean of University Libraries, University of Arizona (March 2013)	The University Libraries are nationally recognized for their innovative leadership. In the last five years, faculty, staff, and administrators have garnered national awards and recognition for advances in instructional technology, professional development, strategic planning, diversity and equity, initiatives in archival and curatorial work, service to disciplines and the public, and community engagement. . . . With a national reputation as an innovative institution, the University Libraries are well poised to meet the challenges of serving the evolving research, outreach, and teaching needs.	dynamic; visionary; advances
Dean of Libraries, Florida Institute of Technology (April 2013)	The library is . . . using innovative technologies for library instruction.	vision; evolving technological era; transforming its spaces and services to meet the needs of 21st century researchers and learners; rapidly changing world of higher education
Library Director, Marymount Manhattan College (March 2013)	Marymount Manhattan College, an urban, independent undergraduate liberal arts college located on Manhattan's Upper East Side with a student body of approximately 2,000 students, seeks an innovative and collaborative leader to serve as Library Director.	vision; move our library into the future; improving library services and resources; knowledge of library-related technological developments
University Librarian, McMaster University (March 2013)	The McMaster model . . . has been adopted by universities around the globe and is aligned to its vision of achieving international distinction for creativity, innovation and excellence. . . . Over the last five years, the Library has been transformed into an innovative, technologically advanced service provider.	vision; continued evolution; visionary and strategic thinker who can conceptualize the future of academic libraries
Director, Law Library, Northwestern University School of Law (March 2013)	We seek a dynamic and innovative Director with proven leadership and communication skills and fresh ideas. . . . Northwestern School of Law has long been one of the most innovative law schools in the country.	dynamic; fresh ideas; reshape; strategic planning; new curricular approaches; first to embrace; emerging information technology
Dean of Libraries, Stony Brook University (February 2013)	The Dean of Libraries is responsible for providing a strategic vision and leading the planning and advancement of the SBU Libraries; leading innovation in the Libraries' collection and technologies; ensuring sound management; representing the SBU Libraries locally and nationally; and leading philanthropic efforts.	strategic vision; advancement; development of new service and collection models to adapt to the shift in information formats and access technologies; a new type of 21st century information center
Dean and University Librarian, University of Utah (February 2013)	The J. Willard Marriott Library inspires the creation, discovery, and use of knowledge for Utah and the world. As the centerpiece of the campus community, the Marriott Library is committed to innovative implementation and use of cutting-edge technology for purposes of instruction, scholarly communication, collaboration, outreach, and accessibility. . . . We have also maintained a focus on collaboration with campus entities to ensure students, staff, and faculty have access to the resources they need to accomplish their academic goals including an innovative patron driven acquisition program. The ideal candidate will have experience in identifying and promoting trends in the academic library community that impact the way that patrons interact with library collections, resources, and spaces.	inspires; cutting-edge; technology-rich; fast-paced changes; identifying and promoting trends
Executive Director of the Library, Worcester State University (February 2013)	Worcester State University invites applications for a visionary academic library leader with a track record of inspiring others and fostering innovation.	re-vision; visionary; inspiring; continuing improvement; transform the library to meet the current and future demands of legal education

Figure 2.2 (continued)
Examples of use of *innovation* and related words in job descriptions retrieved from the ALA Joblist in April 2013

Position (Posting Date)	Reference to Innovation	Words and Phrases in Full Job Ad Related to Innovation
Other Upper Management Level (Division Director, AUL, Associate Dean); Department Head Level		
Head, Digital Scholarship, Clemson University (February 2013)*	Clemson University Libraries seeks an innovative and motivated professional to work with a vibrant library faculty and staff to envision and implement a digital scholarship initiative that creatively engages all members of the campus community.	envision; emerging trends in scholarly communications; advocate for new practices; remains current with advances in information technology scholarly communications, and rights management and the impact of those advances
Metadata Resource Management and Discovery, Head, University of Maryland College Park (February 2013)	Successful candidates will be knowledgeable, innovative, result-oriented, and strategically focused. They will possess excellent communication, interpersonal, and team skills. Working both independently and collegially, they will assist in leading the Libraries to create innovative services for today's students and faculty and those of tomorrow. [Requirements include] a minimum of two years supervisory experience with evidence of successful and innovative management and results-oriented operations.	flexible; development and enhancement of the Libraries' online resource discovery tools; strategically focused; dynamic, production-oriented environment; ability to adapt quickly
Manager/Librarian, Electronic Resources Management, University of Minnesota Libraries (February 2013)	The successful candidate will be an innovative manager who monitors trends and technologies in the e-resource management arena, develops operational strategy, and leads collaborative initiatives with other departments in the Libraries and beyond to enhance discovery and delivery of electronic resources to Libraries' users. . . . The Libraries provide a highly collaborative environment, distinguished by new models for teaching/learning, research support and scholarly communication; innovative web development, significant collaborative digital library development, programs of process improvement and organizational development, and a record of innovative partnerships.	monitors trends and technologies; strategy; enhance discovery and delivery; new models for teaching / learning, research support and scholarly communication
Division Director of Logistics, Resources, and Distribution Services, University of Nevada, Las Vegas (February 2013)	The future is now at UNLV Libraries. Traditional technical services functions of cataloging and acquisitions have evolved into new modes of information discovery, access, and delivery enabled by a robust underpinning in staff and technology innovation that can ensure success.	future; evolved into new modes of information discovery, access and delivery; visionary; process improvement practices; continuously improve existing and newly developed processes and services; a new 'technical services' and 'collections' paradigm
Associate University Librarian for Information & Research Services, Oregon Health & Science University Library (March 2013)	The Oregon Health & Science University (OHSU) Library in Portland seeks a creative, dynamic, and innovative Associate University Librarian (AUL) for Information & Research Services.	creative; dynamic; vision; strategic planning; familiarity with emerging topics; evidence of initiative and flexibility; change management
Circulation Services Director, Princeton University Library (March 2013)	Princeton University Library seeks an innovative service-oriented manager to lead its Circulation Services.	dynamic, rapidly changing work environment focused on continual improvement; takes the lead in maximizing circulation functionality and fulfillment performance of the Library's automated systems
Head of Library Technology, Radford University (February 2013)	[Required qualifications include] demonstrated success in collaborative project management in applying innovative technologies to enhance library services. . . . The university is well known for its strong faculty/student bonds and innovative use of technology in the learning environment.	vision; enhance; deep understanding or the role and possibilities of technology in teaching, learning, and research pursuits

Figure 2.2 (continued)
Examples of use of *innovation* and related words in job descriptions retrieved from the ALA Joblist in April 2013

Position (Posting Date)	Reference to Innovation	Words and Phrases in Full Job Ad Related to Innovation
Director of Discovery & Access, Smith College (February 2013)	Smith College seeks a dynamic and innovative Director to lead its newly formed Discovery & Access Group. Serving on the Library Leadership Team, the Director will collaborate with colleagues to realize the mission and vision of the Libraries. . . . Skills [should include] demonstrated abilities to think strategically at both a systems level and a group level; to successfully manage projects, prioritize work, and solve problems; to apply critical, analytical and innovative thinking to work.	dynamic; vision; strategic planning; experience in successfully leading and implementing change; strong understanding of current issues, trends and technologies; abilities to think strategically
Associate Dean of Libraries, University of South Carolina (February 2013)	The University of South Carolina Libraries invites applications from and nominations of innovative information professionals with strong communication and interpersonal skills to play a critical role in continuing the evolution of a research library on the cusp of transformational change. . . . Candidates must have demonstrated success in leading and fostering innovation as well as excellent analytic and problem-solving skills.	continuing the evolution of a research library on the cusp of transformational change; transform the libraries; optimizing; keep current with trends in the library and information management professions; apply these trends as appropriate; professional initiative; lead and implement the activities necessary to fulfill a long-term change; integration of emerging technologies
Associate Dean for Collections, University of Southern California (March 2013)	This position requires a firm grounding in the world of academic libraries and excellent communication skills, along with a professional reputation for strategic innovation in improving collection development.	dynamic; forward thinking; creative; rapidly evolving environment of higher education; up-to-date on emerging library and scholarly information trends and practices; knowledge and understanding of evolving and national and international trends
Division Head, Bibliographic Control Services, Memorial University, St. John's, Newfoundland (March 2013)	The person will have strong analytical and problem-solving skills and be versatile in using technology to find innovative solutions.	creative; clear vision for the future of resource discovery; flexibility; strong understanding of current and emerging models; good conceptual understanding of next generation discovery tools; versatile in using technology; transition to future cataloguing and metadata standards and models
Liaison Team Leader for Literature, Theater & Modern Languages, Villanova University (March 2013)	Opportunity for an innovative librarian to provide a full array of services—research support, consulting, instruction, and collection development—to Literature & Language disciplines in an energetic, award-winning environment open to experimentation and the development of new approaches to librarianship.	emerging digital humanities; initiatives
Head of Instructional Support Services, Washington University in St. Louis (March 2013)	Washington University Libraries seek a service-oriented and innovative librarian to serve as the Head of Instructional Support Services providing service to the Washington University community.	adoption and evaluation of new instructional models, including the use of online learning platforms; initiatives; emerging learning platforms; formulating new project ideas

Figure 2.2 (continued)
Examples of use of *innovation* and related words in job descriptions retrieved from the ALA Joblist in April 2013

Position (Posting Date)	Reference to Innovation	Words and Phrases in Full Job Ad Related to Innovation
Associate Dean for Libraries Information Technology Services, Western Michigan University (March 2013)	Western Michigan University (WMU) Libraries seeks an innovative and collaborative leader to serve as Associate Dean for the Libraries Information Technology Services. The successful candidate will have the opportunity to lead strategic and sustained technological innovations, and to coordinate their operations and assessment. . . . [Responsibilities include to] direct information technology strategic planning, budgeting, and goal-setting initiatives to enhance the Libraries effectiveness as an innovative learning and discovery center consistent with the teaching, technological, and scholarly demands of a dynamic research institution.	strategic; continuous evaluation; evolving; responsive; dynamic; intellectual curiosity; emerging information technologies; vision for the future of library resources and services
Nonmanagement Level		
Life Sciences Librarian & Instruction Coordinator, Cornell University Library (February 2013)	Albert R. Mann Library, part of the Cornell University Library (CUL), is looking for a service oriented, creative, technically skilled professional who thrives in an innovative work environment and is energized by the opportunity to lead the library's information literacy program. . . . [Responsibilities include to] develop and provide innovative information services for the undergraduate life sciences community. . . . Albert R. Mann Library has a long commitment to providing innovative information services.	creative; initiative and flexibility
Outreach and Scholarly Services Librarian, Cornell University Law Library (March 2013)	Develop, coordinate, and implement new and innovative library programs and services for faculty, students, and other groups in the law school and university community.	new technologies; creative; knowledge of and interest in new and emerging technologies
Electronic Resources Acquisitions Librarian, John Hopkins University (March 2013)	The successful candidate will be an innovative, collaborative, service oriented librarian having experience with the eresources life cycle including acquisitions, licensing, eresources management (ERM), and problem resolution.	commitment to using new technology to advance work goals and enhance service
Integrated Technologies Librarian, Lafayette College (March 2013)	[Qualifications include] ability to develop creative and innovative approaches to improving the user experience. . . . Candidates with experience administering Drupal and/or institutional repository software, a history of user interface development, additional programming knowledge, or with keen interest in and strong potential for innovative digital library development work will receive special consideration.	creative; investigate and implement technologies to improve discovery, access, and delivery of digital resources; knowledge of current and emerging technologies in academic librarianship
Reference & Instructional Technology Librarian, Long Island University, Brooklyn Campus (February 2013)	The successful candidate will promote innovative methods of course delivery, instructional design, appropriate applications of technology, and progressive pedagogical methods within a Library setting and against the backdrop of the University's blended and online environments. . . . Additionally, the successful candidate will have had experience investigating, planning and implementing innovative uses of current and emerging technologies in the provision of information services and resources to meet the needs of users.	investigating, planning, implementing; experience with emerging technologies
Instruction and Digital Initiatives Librarian, Morgan State University (March 2013)*	Creates, implements, and interweaves innovative digital applications and links their success with University and Library overall goals.	implements new library technologies, and leading digital tools; initiatives
Librarian for Business and Economics, New York University (March 2013)	The librarian [is responsible for] delivering responsive and innovative information services.	initiatives; creative; high degree of facility with technologies and systems germane to the 21st century library

Figure 2.2 (continued)
Examples of use of *innovation* and related words in job descriptions retrieved from the ALA Joblist in April 2013

Position (Posting Date)	Reference to Innovation	Words and Phrases in Full Job Ad Related to Innovation
Reference and Research Librarian for the Sciences, New York University, Abu Dhabi, United Arab Emirates (March 2013)	The NYU Library in Abu Dhabi invites applications for a Reference and Research Services Librarian for the Sciences to work in an innovative, dynamic, and forward-looking setting. . . . This position plays a key role in . . . providing and developing innovative services in support of research, teaching, and learning . . . and developing responsive and innovative outreach and other information services across the Library.	dynamic; forward-looking; cutting-edge projects; implement and enhance programs and services to delivery physical and virtual research and reference services; initiatives; high degree of facility with technologies and systems germane to the 21st century library; flexibility; creativity
Metadata Librarian for Western Languages, Princeton University (March 2013)	Princeton University Library seeks a flexible and innovative Metadata Librarian for Western Languages with a specialization in Spanish/Portuguese languages, history, and culture.	flexible; initiative; emerging media; imagination to envision alternate methods for achieving the Library's goals; increasing use of technology whenever appropriate to achieve quicker, more efficient processing, control and discovery promotion of print and digital receipts and holdings
Librarian, Tallahassee Community College (February 2013)	Tallahassee Community College, a dynamic and growing comprehensive community college located in beautiful Tallahassee, Florida, invites applications for a public services librarian with a passion for learner centered and innovative library services who would embrace an opportunity to build a transformational information literacy program with a team of talented and committed library faculty. . . . [Responsibilities include] use of technology and innovative approaches to enhance teaching and learning, including distance learning and alternative delivery systems.	dynamic; transformational information literacy program; knowledge of issues and trends in academic libraries; creativity, flexibility, and initiative; strong technology skills
Instructional and Research Librarian, Whitman College (March 2013)	Penrose Library seeks an innovative librarian to provide instructional and research assistance to the students, faculty, and staff of Whitman College.	ability to exploit digital learning technologies in order to further instructional programs and initiatives

*It was hard to precisely determine from the job ad if this position had staff management responsibilities.

Figure 2.3
Text excerpted from descriptions of selected awards that relate to innovation

Library/Higher Ed Community–Sourced Awards	
ALA Presidential Citation for Innovative International Library Projects www.ala.org/awardsgrants/ala-presidential-citation-innovative-international-library-projects	The award is given to recognize innovative contributions to international librarianship. The ALA Presidential Citation for Innovative International Library Projects began as an ALA Presidential initiative of Dr. Loriene Roy, ALA President in 2007–2008 and Notable IRRT Member.
www.ala.org/awardsgrants/awards/373/apply	**The following criteria will be used in selecting recipients.** 1. the recipient will have designed and implemented a highly visible innovative library service(s) in a country outside of the United States within the last three years; 2. the innovative service(s) must be **unique, original, and greatly improve existing library services for users**; 3. the service(s) should draw attention to the potential of library service/s to **creating positive change**; 4. the service(s) must demonstrate **a strong likelihood of sustainability and have potential to serve as a model for other libraries**; 5. the service(s) must be current, that is, it must be in operation during the year that the Citation is awarded.
Coutts Award for Innovation in Electronic Resource Management www.ala.org/awardsgrants/awards/199/apply	The award will be given to recognize the contribution of an individual who has demonstrated innovation and excellence in the practice of electronic collection management and development. **Selection Criteria** Criteria for selection of the winner will be determined by the person's achievements including but not limited to: • Building and managing **new types of electronic collections and materials** • Addressing selection issues and processes for electronic resources • Creating **effective** organizational structures for the workflow management and development of electronic resource collections • **Increasing visibility, discovery and user access** to electronic library resources
EDUCAUSE Rising Star Award www.educause.edu/careers/awards-program/educause-rising-star-award	The EDUCAUSE Rising Star award is intended to recognize an information technology professional who, while early in his or her career, demonstrates **exceptional achievement** in the area of information technology in higher education. . . . In addition, the committee will also look for evidence that supports: significant innovation, given the campus context; **uniqueness and impact** of the candidate's contributions.
Highsmith Library Innovation Award www.ala.org/awardsgrants/highsmith-library-innovation-award	The Highsmith Library Innovation Award recognizes a public library's innovative and creative service program to the community. Any innovative, **cutting-edge program, activity or service** will be considered. Has your library developed a **dynamic solution** to a problem? Have you been able to reach a special population through a **unique** program? Has your special marketing campaign brought **dramatic, measurable results**? If so, you're eligible to apply. The winner of this award will receive a check in the amount of $2,000 and a plaque from Highsmith, Inc.
www.ala.org/awardsgrants/awards/37/apply	**Selection Criteria** Candidates must submit the attached application form, describing the public library's innovative achievement in creative programs for the library community, intended to increase the use of or improve awareness of public libraries. Programs should be **unique and cutting-edge** and must have had **measurable impact** on the library's clientele. Proposals will be judged on the following: • Collaborative efforts of the staff and community in the planning and implementation process. • Measurements of success in the community based on usage, program attendance, or greater community awareness. • Sustainability of the program over time. • Program can be replicated by other public libraries. • Quality and appropriateness of submitted materials (supporting documents may be included).

Figure 2.3 (continued)
Text excerpted from descriptions of selected awards that relate to innovation

Hugh C. Atkinson Memorial Award www.ala.org/acrl/awards/achievementawards/atkinsonmemorial	This award honors the life and accomplishments of Hugh C. Atkinson by soliciting nominations and recognizing the **outstanding accomplishments** of an academic librarian who has worked in the areas of library automation or library management and has made **contributions (including risk taking) toward the improvement of library services or to library development** or research.
Innovation in College Librarianship Award www.ala.org/awardsgrants/proquest-innovation-college-librarianship-award	To recognize innovation in college librarianship.
www.ala.org/awardsgrants/awards/338/apply	**Application Instructions** 2. Letter supporting the nomination including (no more than 1,000 words): 1. Written description of the project explaining what made it innovative; 2. Written description of its impact; 3. What could other librarians learn from your experience? 3. Provide supplemental materials for the committee to understand the purpose, content, impact and innovation (limit of three items). **Selection Criteria** As nominee(s), the librarian(s) must have demonstrated a capacity for innovation in working with or serving undergraduates or instructors in the areas of programs, services, and operations; or creating innovations for library colleagues that **facilitate their ability to better serve the library's community**. Any member of ALA is eligible for this award.
Library of Congress NDSA Innovation Award http://blogs.loc.gov/digitalpreservation/2013/04/nominations-now-open-for-the-2013-ndsa-innovation-awards	The NDSA understands the importance of innovation and **risk-taking** in developing and supporting a broad range of **successful** digital preservation activities. These awards are an example of the NDSA's commitment to encourage and recognize innovation in the digital stewardship community. These awards will focus on recognizing excellence in one or more of the following areas: • Individuals making a **significant**, innovative contribution to the digital preservation community . . . • Organizations taking an innovative approach to providing support and guidance to the digital preservation community . . .
LITA/Brett Butler Entrepreneurship Award www.ala.org/lita/awards/butler	The Brett Butler Entrepreneurship Award was discontinued after the 2009 award. The LITA/Brett Butler Entrepreneurship Award sponsored by Thomson Gale is awarded annually to recognize a librarian or library who demonstrates **exemplary entrepreneurship** by providing an innovative product(s) or service, designed to **meet the needs of the library world through the skillful and practical application of information technology**. The award will be given out for the first time in 2004. Deadline for nominations is December 1. Candidates for the award will be selected based on the following criteria: clarity, effectiveness and adequate detail in the written application/nomination, including **relevance and usefulness of the product/service to libraries**, appropriate and **creative use of information technology in** its development, and **significance of its contribution to the functioning of libraries and/or librarians**. Applications should evidence timeliness in product/service development, **originality of ideas**, persuasiveness of arguments, quality of writing, and clarity of presentation. Applications will include references with knowledge of the product/service who may be consulted by the Committee and potential sites which may be visited or queried.

Figure 2.3 (continued)
Text excerpted from descriptions of selected awards that relate to innovation

LITA/Library Hi Tech Award For Outstanding Communication for Continuing Education in Library and Information Science www.ala.org/lita/awards/hitech	The Library and Information Technology Association and Emerald Group Publishing Limited sponsor an annual LITA/Library Hi Tech Award for Outstanding Communication for Continuing Education in Library and Information Science. The award, a citation of merit, was offered for the first time in 1993. Emerald Press provides a stipend of $1,000.00 to the award winner each year. The award many be given to an individual or institution for a single **seminal work**, or a body of work, taking place within (or continuing into) the five years preceding the award. The purpose of the award is to recognize **outstanding achievement** in educating the profession about **cutting edge technology** through communication in continuing education within the field of library and information technology.
Paul Evan Peters Award www.educause.edu/careers/awards-program/paul-evan-peters-award	The Paul Evan Peters Award recognizes the **most notable and lasting** international achievements related to high performance networks and the creation and use of information resources and services that **advance scholarship and intellectual productivity**. This award is offered jointly by the Association of Research Libraries, the Coalition for Networked Information, and EDUCAUSE. . . . Awards will be made to individuals who have met at least one of the following four criteria. . . . 2. **Addressed a specific problem fundamental to scholarship, research, and intellectual productivity** and provided an innovative solution using high performance network technology.
Polaris Innovation in Technology John Iliff Award www.ala.org/awardsgrants/polaris-innovation-technology-john-iliff-award	The PLA Polaris Innovation in Technology John Iliff Award recognizes the contributions of a library worker, librarian, or library that has used technology and innovative thinking as a **tool to improve services to public library users**. The purpose is to encourage innovative user-oriented thinking and **practical solutions using technologies old and new**.
www.ala.org/awardsgrants/awards/186/apply	This award will be presented to a library worker, librarian, or library that has used technology and innovative thinking to **improve library services**.
Stanford Prize for Innovation in Research Libraries http://library.stanford.edu/projects/stanford-prize-innovation-research-libraries-spirl	Stanford University Libraries offers a prize to recognize and celebrate innovation through programs, projects, and/or **new or improved services that directly or indirectly benefit readers and users**. The goal of this prize is to single out for community attention and to celebrate **functionally significant results** of the innovative impulses in libraries anywhere in the world that support research. Awards will be based on a single programmatic or project undertaking and/or a sustained culture and profile of encouraging effective and sustainable innovation; the effect of such efforts must have **measurable impact on the library's own clientele as well as the potential for influencing the practices and/or standards of research librarianship generally**. The notion of "innovation" need not be inherently about information technology, though it might be assumed that such technology will be employed as appropriate to achieve the programmatic ends of the institution. Nominations will be judged on the following: • Evidence of the effects of the program(s) on the readers/users or staff of the nominated library; • Nature of the innovation; • Potential contribution(s) of the program to research and/or service practices in other domains outside of research librarianship; • Sustainability of the program; • **Potential for replication or adaptation by other research libraries**.

Figure 2.3 (continued)
Text excerpted from descriptions of selected awards that relate to innovation

STS Innovation in Science and Technology Librarianship Award www.ala.org/awardsgrants/sts-innovation-science-and-technology-librarianship-award	The purpose of the award is to recognize creative, innovative approaches to **solving problems or improving products and services in science and technology librarianship**. The award recognizes and promotes **leadership and initiative** that demonstrate **impact** on the academic and research community.
www.ala.org/awardsgrants/awards/411/apply	Projects nominated for the award should inspire information professionals to **overcome obstacles in the profession, and should demonstrate creativity, quality** and innovation within the context of national **trends** in science and technology librarianship. Projects should meet at least three of the following criteria: • projects may demonstrate strong librarian involvement • projects may be **unique and cutting-edge** • projects may demonstrate **impact on a library's customer groups and/or the profession** • projects may serve as a **model to influence other activities** • projects may demonstrate **effectiveness in overcoming barriers, or skill and persistence in causing change**. Preference may be given to recent projects; however, historical projects that have demonstrated **impact** are also eligible for consideration. Preference may be given to library projects in partnership with academic college or research libraries; however, any projects that demonstrate **impact** on the science and technology academic community are also eligible for consideration.
Industry-Sourced Awards	
Apple Design Awards https://developer.apple.com/wwdc/awards	Every year, Apple Design Award winners set new standards that **inspire** us all. See how this year's winners **stood out** from the rest.
http://en.wikipedia.org/wiki/Apple_Design_Awards	The Apple Design Awards is a special event hosted by Apple Inc. at its annual Worldwide Developers Conference. The event is meant to recognize the **best** and most innovative Macintosh and iOS software and hardware produced by independent developers, as well as the best and most **creative uses** of Apple's products. The ADAs, as they are commonly known, are awarded in a variety of categories which vary from year to year. The Apple Design Awards have been presented each year since 1996, though for the first two years of their existence they were known as the Human Interface Design Excellence (HIDE) Awards.
CES Innovations Awards http://www.cesweb.org/Awards/CES-Innovations-Awards.aspx	The CES Innovations Design and Engineering Awards is an annual competition which honors consumer technology manufacturers' and developers' **outstanding design and engineering** in consumer electronics (CE) products. Entry categories represent current market trends and are judged by a preeminent panel of independent industrial designers, independent engineers and members of the trade media.
http://www.cesweb.org/Awards/CES-Innovations-Awards/How-We-Judge.aspx	The three-member judging team gives a numerical value to each of the [below] criteria. **General Entries** 1. Engineering qualities, based on technical specs and materials used 2. Aesthetic and design qualities, using photos provided 3. The product's intended use/function and **user value** 4. Why the product deserves the Innovations award, including specifics regarding its **unique/novel features** and **features that consumers would find attractive** 5. How the design and innovation of this product directly **compare to other products** in the market place **Software & Mobile Apps Entries** 1. Intended use, function, and **user value** 2. Aesthetic and visual qualities, using screenshots or photos provided **3. Perceived ease of use/user-friendliness** 4. Why the software deserves the Innovations award, including specifics regarding its **unique/novel** features and **features that consumers would find attractive** 5. How the design and innovation of this software directly **compare to other products** in the market place

Figure 2.3 (continued)
Text excerpted from descriptions of selected awards that relate to innovation

Google Global Impact Award www.google.com/giving/impact-awards.html	Global Impact Awards support organizations using technology and innovative approaches to **tackle some of the world's toughest human challenges**. We look for organizations that meet three key criteria: 1. Innovative approach or technology that can deliver **transformational impact** 2. Specific project that tests a **big game-changing idea** 3. Brilliant team with successful track record and a **healthy disregard for the impossible** Organizations receive a one-time grant to bring their big idea to life. Global Impact Awards are not confined to a specific issue. We look for projects that help drive data-based decision making, transparency of results and accountability across the sector. We source ideas proactively through Googlers, and we do not accept unsolicited proposals at this time.
Technology Innovation Award www.nab.org/events/awards/overview.asp?id=2023	First presented at the 2009 NAB Show, NAB presents the award to organizations that bring **advanced technology** exhibits and demonstrations of **significant merit** to the NAB Show. The nominated exhibit should present advanced research and development projects in communications **technologies that have not yet been commercialized**.
Wall Street Journal Technology Innovation Award http://online.wsj.com/public/resources/documents/WSJ2012InnovationAwardsapplication.pdf	The Wall Street Journal invites individuals, companies, organizations and government agencies world-wide to apply for the Technology Innovation Awards. We're looking for **technological breakthroughs** in such areas as medicine, software, wireless and consumer electronics. Innovations should go **far beyond marginal improvements in existing products and services**. Judges will assess the applications primarily on three criteria: • Does the innovation **break with conventional ideas or processes** in its field? • Does it go **beyond marginal improvements on something that already exists**? • Will it have a **wide impact in its field or on future technology**?

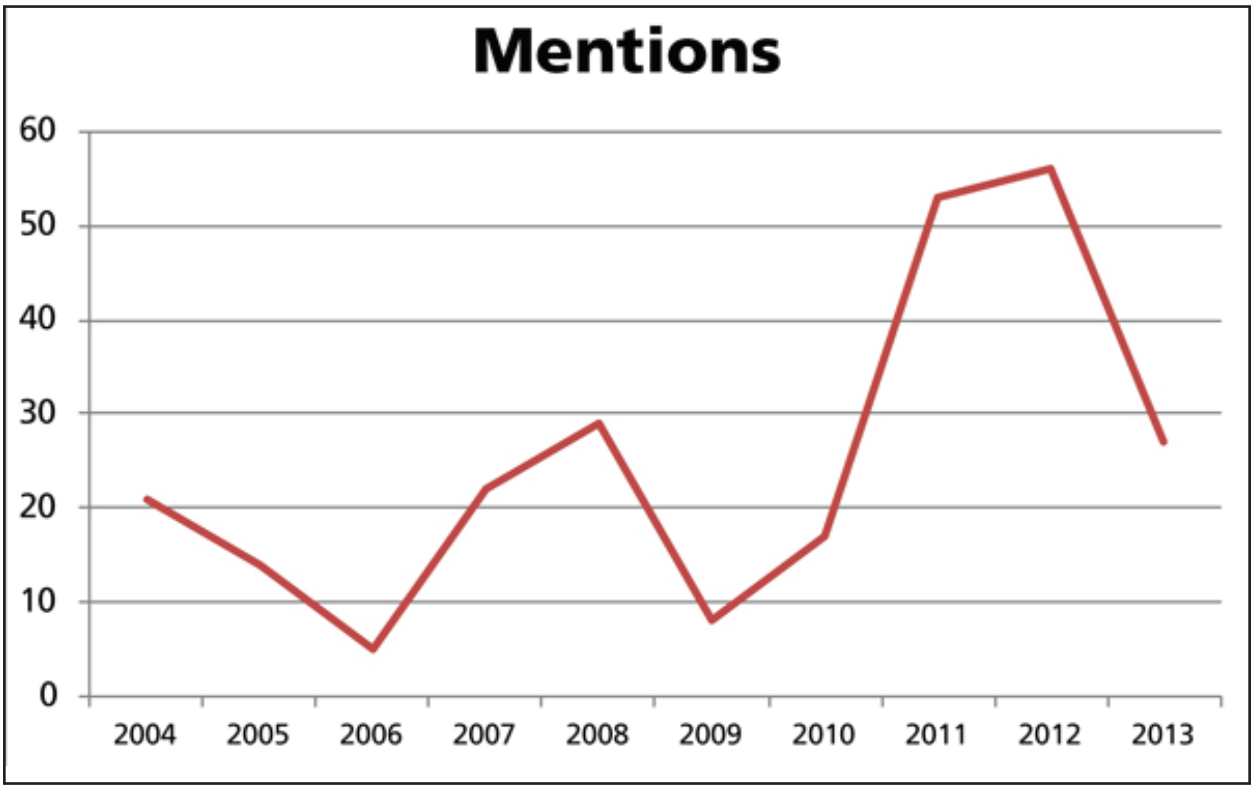

Figure 2.4
Number of instances of *innovation*, *innovator*, and *innovate* in winning applications for the ACRL Excellence in Academic Libraries award from 2004 to 2013

Figure 2.5
Selected references to *innovation* from winning applications for the ACRL Excellence in Academic Libraries award, 2004—2013

Institution	Selected References
Rollins College (2013) www.ala.org/acrl/sites/ala.org.acrl/files/content/awards/achievementawards/excellenceaward/Rollins%20College%20Application.pdf	The twice-monthly teach-ins have been an outstanding way for us to learn **new tools** and teaching techniques. Following the sessions, the librarians often engage in pedagogical discussions, such as "When does innovative software (such as **Prezi**) enhance or intrude on the content of the session?" or "How can we bump up the academic value of a tool like **Ancestry.com**?" These impromptu discussions highlight the value we place on excellent teaching at Rollins.
Villanova University (2013) www.ala.org/acrl/sites/ala.org.acrl/files/content/awards/achievementawards/excellenceaward/Villanova%20University%20Application.pdf	"In **VuFind**, Villanova has achieved something truly remarkable. Firstly, the implementation of **high-quality, extensible, robust software** has attracted a vibrant developer base. Secondly, Villanova's exceptional commitment to user engagement and support has made Vufind a viable option for organisations of all sizes and technological expertise. The result is not only **a product which rivals any commercial offering** but also a community which drives innovation in resource discovery." We are medium-sized (with a staff of 56), but we have established a **culture of invention and risk-taking** that has an **impact** well beyond our scale, perhaps best exemplified by the continually growing international embrace of the VuFind open source library discovery software developed and supported by Villanova University. The Villanova Library is above all else an aspirational organization, with an explicitly stated goal of becoming a model of digital age innovation across the enterprise. We are engaged in **developing and exploring new frameworks for service delivery**, for the allocation and use of library physical space, for **the integration of library expertise into the learning and research environment**, for the enrichment of community intellectual life, for **exploration of new modes of scholarly communication**, and for the development and dissemination of new technology—tools and infrastructure—that **foster and reinforce the unique role of libraries as facilitators of open access, open source and open knowledge culture**.
Champlain College (2013; inc. past apps) www.ala.org/acrl/sites/ala.org.acrl/files/content/awards/Champlain%20College%20-%20Final.pdf	One innovative way in which we use social media is by **creating searches on Twitter** for library and academic related words such as "citation," "paper," and "library" near our location. This allows us to find questions in the Twitter-sphere that we otherwise might not see, and sometimes help students who might not even be thinking of the library. We also wanted a lesson that used technology to engage students and capture their attention. One technology we discussed is prevalent in higher education: **clickers**. But this technology was an impractical one for us because of logistical and financial constraints. We found a replacement however, that turned out to be even more effective in engaging our students: **mobile phone polling** . . . With mobile phone polling, the Teaching Librarians recognized an opportunity to **meet students where they are** and to engage this generation of learners. By using a **web-based tool called Poll Everywhere**, we were able to tap into devices that virtually all students already carry, to meet our teaching goals. Sometimes innovation occurs through the **lucky juxtaposition of a tool and a need**. One of our most recent technology-based initiatives involves using a mobile-friendly web-based polling tool to foster student participation in information literacy classes. Sometimes, innovation is quick. In August of 2007, a brief blog posting changed our approach to reference tracking, when a technologist at another college mentioned a freely-available **web-based database (Zoho Creator)** and questioned whether anyone would try to use it for help-desk problem tracking. It was the week before classes began, one of the busiest times of the year at any college, and we had just decided that a reference question tracking system was out of the question due to initial cost and ongoing support issues. But we needed better records to confirm that reference was increasing and to help track reference question trends.

Figure 2.5 (continued)
Selected references to *innovation* from winning applications for the ACRL Excellence in Academic Libraries award, 2004—2013

Institution	Selected References
Grand Valley State University (2012) www.ala.org/acrl/sites/ala.org.acrl/files/content/awards/Grand%20Valley%20State%20University%20-%20Final.pdf	Last year we included profiles of innovative faculty who are testing **new models of publishing** and as a result of this annual event we have a growing network of faculty who promote the Libraries and who are active partners in advocating for our central role in the University. We have consistently been on the leading edge of innovation over the last five years, **pioneering ideas** such as rules-based de-selection of resources, **demand-driven acquisitions**, reference staffing models, **tools like the ILCC and RGR**, and **discovery tools like 360 Search and, later, Summon** . . . by reporting on these innovative experiences, we have become well-known in professional library venues. We feel sharing best practices is essential to professional development and to a profession in the midst of profound change.
Wake Forest University (2011) www.ala.org/acrl/files/awards/achievementawards/excellenceaward/Wake%20Forest%20Universi.pdf	The process, from idea to full implementation, spanned several months, beginning with learning and experimentation and concluding with implementation and migration. This innovative project shows that **running IT infrastructure in the cloud** is not only realistic, it offers libraries the opportunity to benefit from economies of scale. Adopting cloud platforms allows libraries to run complex IT services and support without the same level of overhead required in traditional IT environments. It can position libraries to save costs as they transition to cloud environments, and also enable them to offer **faster and more effective, agile services**. This year, his work was recognized with a LYRASIS 2010 Excellence and NextGen Librarian Award. Specifically this award recognized Gilbertson's innovative approach to the Library's website, **VuFind** (the discovery layer for the online catalog), and his **custom online study room reservation program**. On a campus with a decentralized approach to technology support, the Z Smith Reynolds Library is often the source of innovative and useful approaches to adapt technology to enhance the teaching-learning process. From the award-winning use of **social networking tools in an experiential sociology class**, to the most **recent bold departure of web-based platforms and services to the cloud**, the library has been **fearless in its quest to enhance the learning experience**.
Santa Barbara City College (2011) www.ala.org/acrl/files/awards/achievementawards/excellenceaward/Santa%20Barbara%20City%20C.pdf	We were recently commended by the accrediting agency for our "extensive use of innovative communication technology (**wikis, blogs, web pages, instant messaging**) by library faculty to reach out and provide services to students. . . ." Communication and support is provided to students using many of the **latest tools and software**. The online innovations have provided an environment where students, faculty, and staff can easily communicate with library personnel from a distance and at most times of the day or night. . . . In addition to in-person (walk-up) assistance and telephone services, users can communicate with library faculty through **instant messaging or text messaging**. The Luria Library was an early adopter of instant messaging for **virtual reference** and we have created a way that the chat feature can be embedded in any class. The incorporation of Get Satisfaction, a **user generated support service**, provides easy access to support when the library is closed. Many startup companies and large corporations use this innovative tool to manage their customer support services because it allows for customers to work together and to have the employees interact in the same environment. We regularly experiment with **cutting-edge technology** to find innovative solutions for our students' needs. The complete redesign of the library website in the 2006–2007 school year incorporated **new ideas** and software innovations. Our philosophy is to **embrace a willingness to make mistakes as we try to improve our services to students**. The Luria Library took the radical step of creating a **blog as the primary website**, virtually unheard of at the time, which allowed us to provide immediate updates about the library (as well as information on campus and world events) and hold two-way communication with all users. We added a microblog component, in the form of **Twitter feeds**, in the 2007–2008 school year and our use of this innovation was featured in the Chronicle of Higher Education (http://bit.ly/forget-email).

Figure 2.5 (continued)
Selected references to *innovation* from winning applications for the ACRL Excellence in Academic Libraries award, 2004—2013

Institution	Selected References
Indiana University Bloomington (2010) www.ala.org/acrl/files/awards/achievementawards/excellenceaward/Combined%20IU%20Blooming.pdf	We can stretch to meet the challenges of this new era not only because of our **creativity**, but also because we are able to engage information technology beyond institutional boundaries. With the strong support of University Information Technology Services, we can concentrate on content rather than infrastructure, and as a result, lead **projects of national and international scope**. The **HathiTrust digital library**, for example, will benefit libraries and researchers worldwide by archiving and preserving the shared published content of the nation's leading research libraries. Similarly, **Kuali OLE** will develop community-source innovations for the **far-reaching library community**. Its greatest benefit, perhaps, is putting libraries in charge of their own destinies by allowing them to participate in the development of library management systems.
Elmhurst College (2010) www.ala.org/acrl/files/awards/achievementawards/excellenceaward/Elmhurst%20College%20App.pdf	Leadership for the use of technology by faculty has been centered in the library at Elmhurst. The library introduced and continues to manage **Blackboard online course software** as well as other innovative uses of classroom technology. The library provides regular faculty technology workshops throughout the year that introduce **new information technology**, report on the application of technology in the classroom and provide basic software training. Librarians consistently take the initiative to discover new technologies, to learn about them, and then to teach their faculty colleagues how to use them.
Bucks Community College (2010) www.ala.org/acrl/files/awards/achievementawards/excellenceaward/Combined%20Bucks%20Count.pdf	Nearly adjoining the Learning Studio is the recently-created MInDSpace, designed to bring 21st-century learning skills to 21st-century students and their instructors, in order to foster awareness and understanding of **new media literacies and skills. MInDSpace provides a learning environment that offers a collaborative workspace, along with tools and resources (both tangible and virtual)** for students and faculty. It draws on expertise and innovation from students, librarians, instructional designers and Learning Technologies staff.
University of Minnesota Twin Cities (2009) www.ala.org/acrl/files/awards/achievementawards/excellenceaward/UofMinnesotaLibrarie.pdf	Although high user satisfaction numbers are important, we look beyond these measures to what ACRL's Task Force on Academic Library Outcomes Assessment Report calls "**the ways in which library users are changed** as a result of their contact with the library's resources and programs." Such changes in our users can be demonstrated by their new behaviors and innovations, by their adoption of new methods and technologies as well as the **creation of new models for our community and other libraries**.
McMaster University (2008) www.ala.org/acrl/files/awards/2008_McMaster.pdf	Mission: The University Library advances teaching, learning and research at McMaster by: teaching students to be successful, ethical information seekers, facilitating access to information resources, providing welcoming spaces for intellectual discovery, promoting the innovative adoption of **emerging learning technologies**. Based on the success of the student-centred Mills Learning Commons, the new **Learning Commons** at Thode will enhance student learning and promote innovative teaching in science, technology, engineering and mathematics. Features of this **"high tech," "high touch" environment will include state-of-the-art facilities and advanced technologies such as computer workstations, powered tables with wireless access, electronic classrooms, video conferencing and streaming, interactive touch screens and studio space that will make learning more interactive and experiential**. The Learning Commons at Thode will be designed and equipped to support **new teaching/learning programs and strategies** developed through the Innovative Learning Initiative.
Pasadena City College (2008) www.ala.org/acrl/files/awards/2008_Pasadena.pdf	Innovations include **digitization projects (i.e., electronic reserves, college archives), social networking sites (such as wikis, blogs and Facebook), improved access capability (EzProxy) and incorporating additional campus learning resources in to a central database (Voyager).**
Georgia Institute of Technology (2007) www.ala.org/acrl/files/awards/achievementawards/excellenceaward/georgiatech.pdf	The Library has expanded the Faculty Senate's mandate to include **delivery of as much of the Library's collections to the desktop upon demand as possible**. This focus led to needed growth in Systems, Archives and Records Management and the development of a new Digital Initiatives Department. Our digital focus is **fast-paced** and innovative to **meet the needs of our community**.

Figure 2.5 (continued)
Selected references to *innovation* from winning applications for the ACRL Excellence in Academic Libraries award, 2004—2013

Institution	Selected References
University of Virginia (2005) www.ala.org/acrl/awards/achievementawards/excellenceaward/uvap	The **Tibetan and Himalayan Digital Library** (http://www.thdl.org) is a collaborative project that lets scholars from around the world access deep collections of texts, images, and maps, use innovative **tools for exploring those collections**, and share ideas for projects and new resources. It builds on the University's strong programs in Tibetan studies, and lets the Library explore how we can best support faculty members' interest in teaching and research using technology.
University of Washington (2004) www.ala.org/acrl/awards/achievementawards/excellenceaward/washingtonap	Through a partnership with the Office of Undergraduate Education and Computing & Communications, the University Libraries created UWired to develop and support effective uses of technology in teaching and learning. **UWired is not an operating unit, but rather a forum for promoting broad-based discussions**, experimentation and analysis about innovation in teaching and learning with technology, fluency in information technology, and **new ways for students and faculty to access technology tools and resources**. To accomplish this ambitious goal, UWired created and operated facilities for students and faculty, developed new curricula, and worked with faculty and students to foster instructional innovations: • Two **hands-on computer classrooms or "collaboratories"** were built in the Odegaard Library. • The Center for Teaching, Learning and Technology (CTLT), a **research, development and demonstration space for faculty** opened in the Odegaard Library. • Odegaard **Library Commons, with 356 work stations**, is the largest general access computing lab on campus. • The Program for Educational Transformation through Technology (PETTT) makes it easier for educators to use **technology to transform the ways in which teachers teach and learners learn, and to disseminate this knowledge locally and nationally**. • **Catalyst course tools integrate meaningful uses of technology into pedagogy.** • Thousands of students, staff and faculty take advantage of walk-in workshops. • **Digital Audio Workstations** provide high-quality audio recording and editing in the library. • **MyUW, a customizable Web page**, provides students, staff and faculty access to UW information and resources. • ONTECHNews, a monthly online newsletter, informs faculty, staff and students about new and interesting technology to use in teaching, learning and work.

Figure 2.6
Selected references to *innovation* in library strategic plans, mission and vision statements, and similar documents

Institution	References
Grand Valley State University www.gvsu.edu/cms3/assets/741ECAAE-BD54-A816-71DAF591D1D7955C/ulstrategicplan201015.pdf	Libraries Mission . . . By providing innovative, effective, and accessible resources, spaces and services, the University Libraries will contribute to the University's efforts to become nationally known for academic excellence and positive community impacts. Libraries' Values . . . We nurture employee excellence through a culture of civility, mutual respect, teamwork, inclusiveness, innovation, flexibility, risk-taking, and professional growth. Information Technology . . . The Internet and mobile networking continue to be the preferred conduits through which students find and access the wide variety of resources acquired by libraries in support of their scholarly endeavors. As such, the demands placed on innovation have been unrelenting. Going forward, the need for seamless delivery of personalized research information utilizing multiple platforms will drive innovation. Academic libraries will focus on developing discovery platforms that unify library content in meaningful and relevant ways for users. They will continue to emphasize the usability of digital library resources, ensuring a consistent brand identity with appealing and intuitive design. In addition, the trend toward academic libraries actively leading the collection and dissemination of scholarly outputs for their institutions will intensify.

Figure 2.6 (continued)
Selected references to *innovation* in library strategic plans, mission and vision statements, and similar documents

Institution	References
Wake Forest University http://zsr.wfu.edu/documents/ZSR-Strategic-Plan-2007-update-2012.pdf	Establish a Center for Scholarly Communications for the entire Wake Forest campus, including Health Sciences, Law, and Babcock. Due to the unsustainable cost of former models, modern scholarship is being created and disseminated using creative methods on innovative platforms across the disciplines. Lead the campus in emerging technology applications. ZSR has a national reputation among academic libraries for the innovative use of emerging technologies such as wikis, blogs, gaming, image sharing sites such as Flickr, and other kinds of social software. Pilot programs are currently being conducted in Lib 100 on the use of wikis, and in the Sociology course, Social Stratification in the American Deep South, with a variety of multimedia tools. Staffing has already been internally reallocated to create an Instructional Design Librarian position to enhance the Library's own instructional efforts with these new technologies. ZSR will go further by expanding its wiki and blog hosting to the entire campus. Replace all furnishings (tables, chairs, carrels) with comfortable, student-friendly furniture and study spaces. Today's libraries have an emphasis on flexible, open, movable furnishings that can be arranged and rearranged by students to meet the need of the moment. Additional group study spaces need to be created with innovative furniture such as booths and wing tables with room partitions.
Indiana University Bloomington www.libraries.iub.edu/secure/defiles/IUL_Strategic_Plan_FINAL_May2013.pdf	The IU Bloomington Libraries remain committed to a culture of innovation and experimentation in support of research, scholarship, teaching and learning. Strategic partnerships and collaboration are critical to the IU Bloomington Libraries' future. Working collaboratively enables bold and innovative action, leverages limited resources, and inspires new working models Technology continues to play an integral role in the enhanced accessibility and delivery of the IU Bloomington Libraries' core services. The IU Bloomington Libraries promote innovation in the creation and use of leading edge resources to shape the Libraries' future plans and organizational goals. Seek out and pilot new forms of scholarly communication strategies that enable the transmission and advancement of knowledge, such as digital scholarly editions, open access initiatives, and scholarly publishing innovations. Technological advancements continue to be key factors in the ongoing evolution of research, scholarship, teaching and learning. To capitalize on these innovations, the IU Bloomington Libraries remain leaders in developing and supporting new models for publication and scholarship, access to digital collections, and enhancement of online teaching and learning. Develop services that support robust and innovative use of technology in research and scholarship.
University of Minnesota https://www.lib.umn.edu/pdf/ULibraries_strategic_planning.pdf	Goal: The Libraries will play an instrumental role in sparking discovery, creativity, and innovation by advancing research and scholarship processes that allow for the unfettered flow of knowledge creation and sharing. Goal: Invest in staff and organizational capacity for innovation, collaboration, risk taking, and assessment to meet emerging priorities and demands.
McMaster University http://library.mcmaster.ca/sites/default/files/final-strat-plan-brochure-2011.pdf	Vision: McMaster University Library will be recognized as Canada's most innovative, user-centred, academic library. Mission: The University Library advances teaching, learning and research at McMaster by . . . promoting the innovative adoption of emerging learning technologies. Values: . . . collaboration, innovation, creativity and risk taking Focus on library staff learning and growth: . . . Grow an evidence-based culture that encourages innovation and risk taking

Figure 2.6 (continued)
Selected references to *innovation* in library strategic plans, mission and vision statements, and similar documents

Institution	References
Georgia Institute of Technology https://smartech.gatech.edu/bitstream/handle/1853/14251/LibraryStrategicPlanExecutiveSummaryfinal.pdf	Provide opportunities for Library staff to develop and share their expertise in instructional techniques and innovative instructional technologies. Innovative delivery methods are utilized for information competency instruction. Vendors collaborate with the Library to develop innovative approaches to information access and/or enhancement of Library space. Industry partners collaborate with the Library to sponsor events, programs, competitions, and/or awards which highlight innovative student research projects. The Library should seek to foster a culture which rewards risk taking and creativity; one that supports innovative projects and initiatives. Promote leadership, innovation and entrepreneurship. The Georgia Tech Library will advocate and even lead in this change by increasing the options for affordable and open access to scholarly content, including providing innovative alternative avenues for publication of scholarship. A comprehensive renovation of the Library buildings in conjunction with the construction of the Innovative Learning Resource Center (ILRC) is preferred (however this decision will not be made by the Institute administration until late 2007). The Library should seek to foster a culture which rewards risk-taking and creativity; one that supports innovative projects and initiatives.
Rochester Institute of Technology Libraries http://library.rit.edu/print/node/225	Vision: RIT Libraries will be seen as an acknowledged resource on applying innovation in developing cultural collections and customer connections. Mission: delivering innovative instruction and responsive help services.
University of Washington (http://www.lib.washington.edu/about/strategicplan/strategic-directions/strategy-map)	Values: Collaboration; Diversity; Excellence; Innovation ; Integrity ; Responsiveness
Loyola University http://libraries.luc.edu/sites/all/attachments/LibrariesStrategicPlan.pdf	Our Mission: The Loyola University Libraries facilitate the pursuit of knowledge and creativity through user-focused services and collections in an inviting, collaborative, and innovative learning environment. Promote innovation in information literacy curriculum, delivery methods, and programs, by establishing a Library Instruction Coordinator position responsible for leading the librarians in this work.
Champlain College www.champlain.edu/academics/library/about-the-library/mission-and-vision	Mission: We are entrepreneurial, securing and deploying exemplary resources and services in innovative ways. We are thoughtful in our application of new technologies, selecting and implementing the best available tools to support students and faculty in their information needs. We capitalize on the innovative design and purpose of Miller Information Commons. Vision: By 2015, Champlain College Library will be widely recognized as—and will be—one of the most innovative, effective, and supportive libraries in higher education.
Elmhurst College http://library.elmhurst.edu/library-information/missio-statement	We value . . . Collaboration, innovation, creativity, and risk taking.
Carleton College http://apps.carleton.edu/campus/library/about/mission	Over the next 10 years, the library will . . . develop relationships with other departments, libraries and cultural institutions that aid us in providing cost-effective access to a broader range of information resources and developing innovative services.
Baruch College www.baruch.cuny.edu/library/about/mission.html	Mission Statement: The library faculty advance their profession through innovative practice, publication in scholarly journals, participation in academic conferences, and leadership in professional organizations.

Figure 2.6 (continued)
Selected references to *innovation* in library strategic plans, mission and vision statements, and similar documents

Institution	References
Moraine Valley Community College http://lib.morainevalley.edu/LibraryMission.aspx	Mission: The library fulfills its mission through . . . Collaborating with faculty and others to develop innovative services and programs
Hostos Community College/ CUNY www.hostos.cuny.edu/library/hcc/mission.asp	Strategic Objectives, Technology Development, Goal: To establish the library as the place for innovation and new technology by being proactive in defining technology within the library landscape and all of its components. We aim to inform and educate the Hostos community as to our expertise and experience in technology and increase our involvement in technology decision-making on campus. Strategic Objectives, Faculty Development, Goal: To establish innovative, proactive faculty partnerships, promote better communication between Library and other disciplinary faculty and foster a better understanding of Library faculty's professional contributions to the life of the College.

Figure 2.7
Technology Trend Streams, 2004–2013

As noted in the text, historically there have been some additional trends or topics for which technology is more of an ancillary component, such as the trends of open access to scholarly content, net neutrality, etc. These are doubtless important topics and are related to technology, but they focus more on policy and practice and less on "technological innovation" to the degree of some items listed in the chart. In cases such as these, the author used discretion and left some items out of the chart. In general, there was no significant normalization applied to the data across the chart (e.g., the same general item could be titled "mobile devices" in one category—which may include the associated interfaces of mobile devices—and titled "mobile interfaces" in another category). With these caveats in mind, the chart perhaps provides a useful snapshot, by year, of technologies that have been mentioned in various venues and that could be considered "innovative."

Venue	Technology Mentioned
2013	
Library Technology Reports	• resource sharing in libraries (e.g., OCLC WorldCat) • resource sharing; document delivery software (Ariel, Odyssey, OCLC's Article Exchange) • e-book platforms • electronic resource management
Horizon Report	• massively open online courses • tablet computing • games and gamification • learning analytics • 3-D printing • wearable technology
LITA National Forum Topics	**Forum theme—Creation, Collaboration, Community** At press time, the LITA 2013 National Forum had not occurred. LITA Members were asked to vote on these potential presentation topics: accessibility, APIs, assessment, coding (high level), collaboration, crowdsourcing, data management, digital projects, discovery, Drupal, electronic resources management, games and gamification, instructional technology, IT management, IT security, library spaces, makerspaces/maker movement, metadata/Linked Data, mobile, online repositories, outreach/student engagement, project management, scholarly communications, usability and user experience, Web services
LITA Top Technology Trends	• data in cloud environments

Figure 2.7 (continued)
Technology Trend Streams, 2004–2013

Venue	Technology Mentioned
2012	
Library Technology Reports	• tablets; e-readers; iPads; smartphones • 3-D printers • assistive technologies (e.g., technologies such as screen readers and accessibility features of e-books and e-readers) and web/interface design principles fostering accessibility • RFID • Linked Data tools • technologies supporting participatory learning experiences in libraries
Horizon Report	• mobile apps • tablet computing • game-based learning • learning analytics • gesture-based computing • Internet of things
LITA National Forum Topics	**Forum theme—New World of Data: Discover. Connect. Remix** *Presentation topics* • web analytics • digital publishing • collection maps • mobile computing/websites/augmented reality apps • discovery tools/interfaces (design, usability, etc.) • data integration • data visualization • digital projects • federated search tools • institutional repositories; research data repositories • system integration • gaming • crowdsourcing • Linked Data • digital signage/content • e-books searching • LibX 2.0 • content-based recommendation service for WorldCat • read/write web services; APIs • responsive web design • Twitter API
LITA Top Technology Trends	• mobile (devices—alternate inputs such as camera, GPS; responsive website design) • Linked Data; data interoperability • refinement of instructional tools; smartboards; touchscreens and effect on instruction • assessment management systems • interface design; user expectations • structured, computable biographical information for authors/researchers • computer security; highly sophisticated viruses; need for authentication beyond passwords • integrated library systems (changing landscape of ILSs and discovery services) • web analytics • systems integration; also, fragmentation of software platforms (e.g., iOS, Android) • "frictionless" payment methods using smartphones • creating physical objects from electronic data (e.g., Espresso Book Machine) • self-service technologies (e.g., e-book lending machines) • library presence in other places where users discover content • personal institutional curation services

Figure 2.7 (continued)
Technology Trend Streams, 2004–2013

Venue	Technology Mentioned
2011	
Library Technology Reports	• e-books • next-generation catalogs • broadband services • wireless networking • web analytic tools • integrated library systems • WordPress as a content management system • mobile Web • Web-scale discovery services
Horizon Report	• electronic books • mobiles • augmented reality • game-based learning • gesture-based computing • learning analytics
LITA National Forum Topics	**Forum theme—Rivers of Data, Currents of Change** *Presentation topics* • cloud-based IT services/cloud computing • mobile Web • data visualization • data management • data preservation • single sign-on • Drupal • open web analytics • smartphones and QR codes • student data (for website personalization, linking to information) • OCLC WorldShare Management System • eXtensible Catalog • Linked Data • federated search/APIs • library publishing • Google apps • online tutorials • AI conversational agents for library services • digital humanities
LITA Top Technology Trends	• mobile apps; e-readers/mobile devices • social networking services; social reading trends (e.g., Goodreads, LibraryThing) • personal digital archiving/social networking sites (e.g., Flickr) • personal data curation to serve community needs (e.g., Pinterest, Blekko) • Drupal • disabled patron accessibility to electronic resources • death of the mouse as input device; using cameras as input devices (for apps and other things) • systems and services to facilitate scaling down print collections (incl. Western Regional Storage Trust, HathiTrust). • unification of various academic course resources for patrons (LibGuides; Library Course Tools) • computational photography (data sets used to produce broad array of images; preservation aspects) • 3-D printing • digital collections management/data storage needs • Web-scale discovery platforms/full text indexing • cloud-based technology models • data analytics (patron data used to inform library its clientele wants/needs) • digital press services; self-publishing and library publishing collaborations w/ faculty

Figure 2.7 (continued)
Technology Trend Streams, 2004–2013

Venue	Technology Mentioned
2010	
Library Technology Reports	• OpenURL/extending the functionality of library link resolvers • VoIP • Skype videoconferencing • OAI-ORE/interoperable digital information • personal capture devices (video/audio/text capture) • Linked Data
Horizon Report	• mobile computing • open content • electronic books • simple augmented reality • gesture-based computing • visual data analysis
LITA National Forum Topics	**Forum theme—The Cloud and the Crowd** *Presentation topics* • digital community archives • descriptive catalog tagging • website click analytics • cloud computing • digital learning/development environment—interactive environments for faculty and students to create learning objects • Web-scale discovery services • virtualizing IT • Shibboleth federated identity management • mobile apps • usability/website redesign • Drupal • agile software development • WorldCat Local • bX crowdsourcing (Ex Libris recommender system for scholarly content) • video recording services • institutional repositories • data visualization • usability testing • LibX 2.0 • open source software (e.g., Omeka digital archives/exhibit software, etc.) • alternate realities within social sites (Facebook, YouTube, story-driven gaming)
LITA Top Technology Trends	• mobile (interface design; surge of mobile device usage; mobile/location-based gaming) • apps; augmented reality apps; blending virtual data with the real world; Layar (location-linked content displayed via camera output of mobile devices); NCSU WolfWalk (mobile app using location-based technologies) • 3-D printing; management and retrieval of e-versions of things (e.g., that can be used with 3-D printers); collaborative, technological library spaces to help creative individuals do their work • handheld book scanners • using same social media tools and devices for work and play (e.g., Twitter, iPhone) • open source library systems (danger of support, money running out, etc.) • obsolescence of DVDs • QR codes • ranking/recommendation of library items; leveraging user data for ranking and recommending materials (e.g., like Amazon) • e-readers; e-books • high-res displays (e.g., retina display iPhone) • 4G mobile devices and bandwidth; bandwidth scarcity • iPads; touchscreens as new interface standard • collecting patron data to enrich experiences • patron-driven acquisitions • Facebook; data preservation • convergent media • Google Scholar/Books • search engine optimization • Twitter-based services • SMS-based reference • discovery services (Web-scale discovery services; next-generation federated search) • cloud computing • user experience in designing services • HTML 5/CSS 3

Figure 2.7 (continued)
Technology Trend Streams, 2004–2013

Venue	Technology Mentioned
2009	
Library Technology Reports	• Web services/APIs/software-oriented architecture • digital storytelling (use of digital technologies and multimedia) • the digital library branch ("a branch library, delivered digitally, on the web"), which includes extensive library services, content, and community interaction via the Web • library gaming program and gaming initiatives • social networking tools (e.g., blogs, wikis, Google Docs) • cloud computing • open source operating systems and associated software (e.g., operating systems; session management tools; desktop applications) • social virtual worlds (e.g., Second Life)
Horizon Report	• mobiles • cloud computing • geo-everything • the personal Web • semantic aware applications • smart objects
LITA National Forum Topics	**Forum theme—Open and Mobile** *Presentation topics* • mobile subject guides/LibGuides • mobile users/content and services • linking systems using the NCIP standard; interoperability • APIs (OCLC, Flickr, others) • Linux security • institutional repositories • federated searching • next-generation catalogs; eXtensible catalog • green IT • content management systems; Drupal • cloud computing • collaboration using social networking sites/ social groupware sites (Facebook, etc.); building online communities • VuFind • open source software • Adobe-based library tutorials • subversion version control software • OAI harvesting • digital collections/interface design • LibX 2.0 (community platform for library services)
LITA Top Technology Trends	• mobile computing; geolocation/mobile devices; iOS apps • cloud computing/storage • Twitter trending; microblogging • BiblioCommons; social discovery experience • open access to data, code, content • SaaS (Software as a service) • Web-scale discovery services • QR codes • green computing • digital humanities • experience design • cultural heritage digitization; Flickr Commons/collective description • P2P downloading • Linked Data • demise of single library ILS • web services; SOA (service-oriented architecture) • HathiTrust • extended library Web presences (Facebook, YouTube, etc.) • RFID • website plug-ins, widgets, APIs, hacks • online training • Solr/Lucene indexing and search engine; SRU search and retrieve via URL (web services–based protocol for searching databases/indexes) • blogs • word/tag clouds

Figure 2.7 (continued)
Technology Trend Streams, 2004–2013

Venue	Technology Mentioned
2008	
Library Technology Reports	• open source integrated library systems • multiuser virtual environments (librarianship in virtual worlds) • Web-scale discovery services (WorldCat Local) • mobile Web/mobile technologies (forums, blogs, initiatives, etc.) • Drupal website content management system • gaming in libraries • preservation of digital materials (incl. global initiatives and applications such as DAITSS, LOCKSS, etc.) • technology-enhanced work / tools for communication and collaboration over the internet • LibraryFind (federated search tool from Oregon State Univ) • PINES/Evergreen open source ILS project
Horizon Report	• grassroots video • collaboration webs • mobile broadband • data mashups • collective intelligence • social operating systems
LITA National Forum Topics	**Forum theme—Building the Techno Community Library** *Presentation topics* • next-generation library management systems • open source software • user-centered design; video game design lessons • LibX • distributed digital preservation networks • podcasting • library content within course management systems • institutional repositories • distance learning • iPod-based library tours • IT security • content management systems • digital displays • social software for info literacy instruction • faceted browsing • online interactive maps • Web-based laboratories for users • WorldCat Local • digital collections; digital preservation; crowdsourcing digitization; social cataloging • digital humanities
LITA Top Technology Trends	• mobile devices; iPhones; mobile computing • social software/networking. Facebook, Myspace, LinkedIn, LibraryThing, Wikipedia, Flickr, etc. • cloud storage • open source software • next-generation library catalogs • open data • bandwidth scarcity • Google Books digitization project • web services/APIs • blog archiving • creative technology labs—tools and software to allow patrons to work on projects • portable media devices • green IT • distribution and description of data sets used in research • institutional repositories • virtual reference (Skype, SMS, etc.) • e-books • interoperability (NCIP, etc.) • SOA (service-oriented architecture) • open data • blogs • Linux as desktop platform

Figure 2.7 (continued)
Technology Trend Streams, 2004–2013

Venue	Technology Mentioned
2007	
Library Technology Reports	• social media software (blogging, messaging, social bookmarking, Facebook, etc.) • next-generation library catalogs • open source software • digital audiobook services
Horizon Report	• user-created content • social networking • mobile phones • virtual worlds • new scholarship and emerging forms of publication • massively multiplayer educational gaming
LITA National Forum Topics	**Forum theme—Technology with Altitude** *Presentation topics* • library games for information literacy • large open source repositories; institutional repositories • WorldCat Local • e-books • library catalog tagging • social networking sites; social tools • LibX • digitization/digital libraries • library media production services • faceted browsing • online tutorials • Internet 2 access grid • topic maps
LITA Top Technology Trends	• mobile (converged mobile devices—can do lots of activities on a single device); iPhones; network is the computer—does not matter what device you use to get work done • social software/virtual worlds (Myspace, Facebook, YouTube, Twitter, Second Life, World of Warcraft) • open source software; alternatives to traditional OPAC; open source ILS • uncoupling the catalog from the rest of the ILS (more modular ILS) • eXtensible Catalog • RFID (privacy, etc.) • archiving user-/community-contributed content (Flickr, etc.); users authoring/publishing content online • SaaS (software as a service) • data mashups • e-books, future e-readers • Google Apps • WorldCat Local • LibraryFind • Zotero • interface design (iPhone, Wii); multitouch • e-ink/e-paper • LibX • streaming services • mass digitization (Google Books, Open Content Alliance, etc.) • data management • RFID • gaming • wikis • full text indexing of data • ubiquitous networking (100% all-the-time access to the Internet) • AJAX • RSS • iTunes podcasts • next-generation library catalogs; faceted browse; user catalog tagging/reviews

Figure 2.7 (continued)
Technology Trend Streams, 2004–2013

Venue	Technology Mentioned
2006	
Library Technology Reports	• gaming and libraries • social software tools (blogs, podcasts, RSS feeds, IM, wikis, Flickr) • Web services/SOAs • OpenURL • scholarly search engines
Horizon Report	• social computing • personal broadcasting • the phones in their pockets • educational gaming • augmented reality and enhanced visualization • context-aware environments and devices
LITA National Forum Topics	**Forum theme—Web Services as Library Services** *Presentation topics* • open source software • digital preservation/repositories • faceted catalog searching • topic maps • web services; library services using AJAX and RSS • federated search • e-commerce • delivery of DRM-protected digital media • distributed GIS • NCIP applications • online library instruction; interactive library quizzes and guides; multimedia tutorials • RFID • portable media players • course management systems • content management systems • proxy servers • digital publishing • thin clients • database-driven web applications • Web 2.0; blogs; wikis
LITA Top Technology Trends	• data aggregation • OPACs; user-centered design; adding items other than books to OPACs • next-generation discovery tools; faceted navigation • federated searching; metasearch • self-publishing • distributed storage • fast network connectivity • data curation • institutional repositories • open source software (management) • social networking sites (rise of micro communities; Flickr, Myspace, Facebook; privacy issues) • e-books • VoIP • blogs, wikis • mass digitization • web services • e-commerce • blogs

Figure 2.7 (continued)
Technology Trend Streams, 2004–2013

Venue	Technology Mentioned
2005	
Library Technology Reports	• folksonomies/community tagging • wireless networking • "innovative digital projects in the humanities" • course management systems (commercial and open source; e.g., WebCT, Moodle, Sakai) • 2-D and 3-D information visualization resources
Horizon Report	• extended learning • ubiquitous wireless • intelligent searching • educational gaming • social networks and knowledge webs • context-aware computing/augmented reality
LITA National Forum Topics	**Forum theme—The Ubiquitous Web: Personalization, Portability, and On-line Collaboration** *Presentation topics* • digitization; Google digitization project; JPEG2000 • open source communication/collaboration tools • NCIP • open source software • multimedia streaming • harvesting • electronic resource management systems • instruction tutorials; web-based tutorials • digital library tools • blogs • 3-D information visualization • federated search • RSS • APIs • institutional repositories • print on demand • downloadable books • RFID
LITA Top Technology Trends	• integrated library systems • blogs • broadband • e-books • folksonomies • Google • big data (storage and organization) • wireless

Figure 2.7 (continued)
Technology Trend Streams, 2004–2013

Venue	Technology Mentioned
2004	
Library Technology Reports	• e-publishing • institutional repositories • computer technologies for special audiences (e.g., disabled, elderly, English as a second language patrons) • Internet content filtering • integrated library systems
Horizon Report	• learning objects • scalable vector graphics • rapid prototyping • multimodal interfaces • context-aware computing • knowledge webs
LITA National Forum Topics	**Forum theme—Libraries, the World Wide Web, and the Next Decade** *Presentation topics* • content management systems • campus/library portals • streaming media • digitization • open source software; open source applications for communication and collaboration • e-commerce • remote access of library resources • VoIP for web-based library services (for print impaired users) • OAI-PMH harvesting • federated search • wireless-ready library websites • GIS/library statistical data combination for map-based library service and location planning • online learning • Linux/public workstations • wikis • database management for e-mail reference service • distance learning software • topic maps • library intranets
LITA Top Technology Trends	• integrated library systems • metasearching/new search interfaces • biometrics • electronic resource management systems • institutional repositories • JPEG2000 • personal search software • RFID • RSS • user-centered design • web services

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