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THE MAGAZINE OF THE SPECIAL LIBRARIES ASSOCIATION

THE NEW INFORMATION ECONOMY

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The New Information Economy

Our professional lives have long been centered around information; now our personal lives are as well. Meanwhile, the information workplace is slowly becoming more diverse and inclusive.

BY STUART HALES

As the 2010s turn the corner to the 2020s, it is tempting to look back at what transpired over the past decade and speculate on what might happen during the coming one. Within the information industry, at least, the 2010s were often unsettling, and the path forward appears uncertain at best.

The 2010s saw Edward Snowden's leak of classified security information. Data breaches at Yahoo, Marriott, eBay and Equifax (to name only a few). Ransomware attacks on hospitals, transit agencies, colleges, and even entire cities, such as Baltimore in 2019. The sharing of private information by Facebook and other social media sites. The demise of hundreds of local newspapers.

The work environment within information organizations was no less unsettled. The rise of the so-called gig economy and the growing adoption of remote work schedules challenged traditional notions of employment. Diversity and inclusiveness evolved from human resources buzzwords to corporate values, while the #MeToo movement instilled a greater awareness of the prevalence of workplace harassment. Generation Z entered the workforce, joining Baby Boomers, Generation X, and Generation Y (Millennials).

This issue of *Information Outlook* looks at some of the implications of these developments for information professionals. In the "new information economy," what skills will special librarians need, what challenges and opportunities will they face, and what tools can they use to make the most of their opportunities? Read the following articles and columns to learn more.

Defending the Networks at the NATO Alliance

"On 3 July 2017, the stocks of Amazon, Apple, Microsoft and several other companies all suddenly reflected the same price: $123.47… This momentary price misrepresentation had the potential to cause chaos in financial markets. It speaks to the need for information *integrity*, which is essential in the financial sector. For other entities, such as online retail platforms, *availability* may be the key factor given the need for constant customer access.

"For security- and defense-related entities in government, *confidentiality* may be the critical element, because it is fundamental for preserving sensitive operations and missions. There are a number of actors that might benefit from accessing and exploiting such information, for a variety of motivations—for example, financial gain, political objectives, or ideological reasons. Protecting information and its confidentiality, integrity, and availability is paramount. So, how does a political-military organization like NATO confront this challenge?"

Chelsey Slack

Diversity by Design: Recruiting a Diverse Workforce

"If you are receiving too few applications from diverse candidates, understand that they will not just come to you. Your recruitment practices need to be targeted, purposeful, and by design. For instance, it is not enough to post positions on the same old job websites or solely on your organization's website. Sound recruitment practices require a plan with goals, measurable targets, and a strategy to increase the number of diverse applicants in your candidate pool.

"If your strategy is not fruitful or you find you have made mistakes, try again. Creating a workforce that truly represents the community you serve is an iterative practice, and ambiguity and discomfort are a necessary part of moving forward. You cannot afford to sit back and wait for someone else to find the right solution to this challenge. There isn't one."

Amanda Fernandez

Pairing Health Sciences Librarians with Research Data Management Training

"As interest in open science and reproducibility grows, research data management (RDM) services increasingly are being offered as core services at academic health sciences libraries. However, there are few formal opportunities to learn RDM skills in library schools, so health sciences librarians

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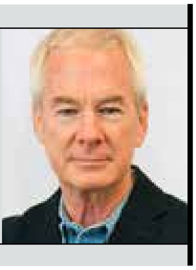


Defending the Networks at the NATO Alliance

INFORMATION CAN BE OF VALUE BOTH POLITICALLY AND MILITARILY, AND PROTECTING IT FROM CYBER THREATS HAS BECOME PART AND PARCEL OF NATO'S CORE TASK OF COLLECTIVE DEFENSE.

BY CHELSEY SLACK

As we speed through the quickened pace of our increasingly digital lives, connectivity and data abound. Once called the "oxygen of the modern age,"[1] information is ubiquitous. How do we make sense of it all? Can we trust information as it appears before us on screens, assembled and organized to convey issues and events?

With this growing connectivity, the benefits to our economies and societies are apparent as an engine of growth and progress. However, with such empowerment also come risks. Cyber tools to deny, disrupt, or destroy, along with cyber-enabled activities such as disinformation campaigns, represent the dark side of this digital age. Information can become obfuscated, inaccurate, or downright harmful.

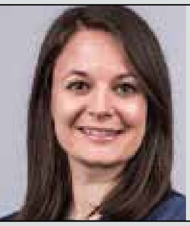
Furthermore, the confidentiality, integrity, and availability of information on our digital platforms and infrastructures are critical. This is why protecting these assets and defending the networks is a key task for governments, companies, and citizens alike.

For 70 years, the core task of the North Atlantic Treaty Organization (NATO) has been to defend its members ("Allies") from attack. That same principle now applies in cyberspace. The NATO Alliance serves as a platform for its 29 Allies to work together and defend one another. In addition to the more conventional military domains of air, land, and sea, NATO now considers cyberspace a domain of operations. In the words of a well-known technologist, "We no longer have things with computers embedded in them. We have computers with things attached to them."[2]

Cyberspace cuts across and enables the other domains; thus, cyber defense is now a priority for NATO. This article seeks to shed further light on how NATO is adapting to the evolving cyber threat landscape and pace of technological change.

The Cyber Threat Landscape

On 3 July 2017, the stocks of Amazon, Apple, Microsoft and several other companies all suddenly reflected the same price: $123.47. At this price, Amazon and Google would have lost 87% of their value. Nasdaq investigated the issue and determined it was caused by a technical glitch.[3]



CHELSEY SLACK is deputy head of the Cyber Defense Section with the international staff at North Atlantic Treaty Organization (NATO) headquarters in Brussels. In this role, she provides advice and supports the development and implementation of NATO's cyber defense policy. Previously, she worked at the Canadian Foreign Ministry as part of a Stabilization and Reconstruction Task Force specializing in conflict prevention. For this article, she is writing in a purely personal capacity. Any views expressed are solely hers and do not represent, nor should they be attributed to, any organization.

This momentary price misrepresentation had the potential to cause chaos in financial markets. It speaks to the need for information *integrity*, which is essential in the financial sector. For other entities, such as online retail platforms, *availability* may be the key factor given the need for constant customer access.

For security- and defense-related entities in government, *confidentiality* may be the critical element, because it is fundamental for preserving sensitive operations and missions. There are a number of actors that might benefit from accessing and exploiting such information, for a variety of motivations—for example, financial gain, political objectives, or ideological reasons. Protecting information and its confidentiality, integrity, and availability is paramount. So, how does a political-military organization like NATO confront this challenge?

Protecting the Networks

Over the last two decades, NATO has been on a journey as its approach to cyber defense has evolved. Cyber defense was once viewed primarily as a technical issue during the time when NATO was setting up of its computer incident response capability in the early 2000s. Events in Estonia in 2007 brought on a change in mindset. In this particular instance, cyber tools were used to knock Estonian government websites and banking services offline. Cyber defense could no longer be seen as a purely technical issue when cyber means were being deployed to achieve a political effect.

In 2010, as part of NATO's Strategic Concept, NATO Allies recognized that cyber threats to the Alliance could "reach a threshold that threatens national and Euro-Atlantic prosperity, security, and stability."[4] At the NATO Summit in Wales in 2014, Allies affirmed that cyber defense was part of NATO's core task of collective defense, meaning that a cyber attack could trigger Article 5 of the Washington Treaty—NATO's reason for being. At the same time, NATO Allies agreed that international law applies in cyberspace, thereby affirming that there are rules that govern action in cyberspace. This put cyber defense front and center on the political agenda at NATO.

Against the backdrop of these political developments, NATO's mandate in cyber defense is three-fold: (1) to protect its own networks, (2) to operate in cyberspace (including missions and operations), and (3) to enhance the level of resilience in the 29 member countries of the Alliance. In concrete terms, NATO protects its networks around the clock with a team of experts who monitor more than 60 sites, from the political headquarters in Brussels, Belgium, to a strategic command in Virginia in the United States to missions and operations (such as in Afghanistan). NATO also has rapid reaction teams at its disposal should a NATO Ally come under serious cyber attack and request support. Decisions on such matters are made on the basis of consensus among the representatives from each Ally to the North Atlantic Council, NATO's decision-making body.

Given the evolving cyber threat landscape, information sharing among Allies and with the overall NATO organization is key. NATO has developed specific arrangements with the national cyber defense authorities in each Ally to foster information sharing. Given the sensitivities of such information, building a community of trust is critical.

For example, the principle of originator's consent applies, whereby the sharing entity determines what information can be shared and with whom. Relentlessly enforcing such a principle is the only way to build confidence and enable further sharing. In addition, while cyberspace can be largely anonymous in nature, face-to-face contact between experts has proven to be an essential ingredient in fostering a community of trust. Moreover, a people-centric approach to information sharing remains crucial despite the sophisticated technology and well-defined processes at hand.

Finally, an organization can have all the tools and procedures in place to share information and operate together, but if these tools and procedures are not tested regularly, their value is limited. A network defender does not want to find itself in the middle of a crisis trying to determine the right points of contact to whom to send a sensitive piece of information. That is why exercises play an important role.

To this end, NATO conducted its flagship cyber defense exercise in Estonia in December. Bringing together more than 900 cyber defenders from across NATO Allies as well as partner countries and the European Union, this annual exercise serves to test collaboration and communication channels to ensure better information flow and timely response to cyber incidents when they arise.[5]

In all, NATO continues to develop its capacity as a collective defense organization to tackle threats emanating from cyberspace. However, the Alliance is only as strong as its weakest link, which is where the fundamental role of NATO's Allies comes into play.

Enhancing Resilience across the Alliance

At their 2016 Summit in Warsaw, Allied leaders adopted a Cyber Defense Pledge in the spirit of Article 3 of the Washington Treaty, which calls on each NATO ally to bolster its national resilience. Allies do this as part of seven key objectives of the Pledge, ranging from capability development to training and education, public awareness, and engagement with industry, to name a few examples. Every year, Allies complete a self-assessment and measure their national progress toward implementing the Pledge.

In the three years since adopting the Pledge, all NATO Allies have improved their cyber defense capabilities. Innovative recruitment programs to attract the next generation of cyber talent, organizational structures for cyber commands, and platforms to facilitate automated information sharing are a few examples of how Allies are bolstering their national cyber defenses.

Above all, the Pledge allows for sustained interest and investment in cyber defense at the political level. Competing priorities for national budgets make investing in cyber defense challenging, as the benefits of the investment are often hard to explain and difficult to quantify. In addition, the Pledge helps Allies cultivate a "whole of government" approach to cyber defense. What was once viewed largely from a security- and defense-related prism needs to be broadened as other departments become involved in national cyber defense efforts. For example, ministries and departments of education are developing curricula for teaching children from a young age how to interact safely with technology.

In the end, it is the users of technology that shape the space. Many cyber incidents could be prevented if people did simple things well, like changing their passwords frequently and keeping their systems up to date. Cyber defense is therefore a shared responsibility, one that starts with the individual users of technology. Viewing this from a "whole of government" or "whole of society" perspective is increasingly important for ensuring robust cyber defense among the 29 Allies that form the NATO Alliance.

Partnering for Cyber Defence

If cyber defense is a shared responsibility, cyber is also a shared space—among international organizations, governments, industry, civil society, and citizens. NATO works with more than 40 partner countries as part of a tailored approach to engagement based on common approaches and shared values. Just recently, Japan, Georgia, and Ukraine participated in the Cyber Coalition exercise for the first time.

NATO also works with industry and academia through a dedicated NATO Industry Cyber Partnership. Dialogue at the political level, as well as practical cooperation at the technical level through conferences, experts' workshops, and information sharing platforms, form a part of this engagement. In May, for example, experts from NATO, the European Union, and industry discussed potential threats to systems and devices ahead of the European Parliament elections. Moreover, NATO and its partners are working together to tackle common challenges in cyberspace in a spirit of cooperative security.

As information shapes the contours of modern society, the nature of how militaries and armed forces will operate in future conflicts is also evolving. For one senior official from the United States, the focus at the beginning of an operation will be to "… go out, collect data, do data reconnaissance, so that our learning system gets smarter than [the enemy's]."[6] Protecting data and information—ensuring their confidentiality, integrity, and availability—remains a critical challenge, including for NATO.

While progress has been made over the last decade, much remains to be done as the technological landscape develops. NATO and its Allies are therefore continuing to adapt to protect the nearly 1 billion citizens across the Euro-Atlantic area as the Alliance charts its way through the next digital decade. **SLA**

NOTES

1 Rule, Sheila. 1989. "Reagan Gets a Red Carpet from British." *New York Times*, June 14.

2 Schneier, Bruce. 2017. "The Internet of Things' Dangerous Future." *New York Magazine*, January 27.

3 Colquhoun, Cameron. 2017. "Was the Nasdaq 'glitch' really stock market warfare?" *Wired* Magazine, July 21.

4 North Atlantic Treaty Organization. 2010. "NATO's New Strategic Concept." Web page.

5 Supreme Headquarters Allied Powers Europe. 2019. "Exercise Cyber Coalition 2019 Concludes in Estonia." News release, December 9.

6 Tucker, Patrick. 2017. "The Next Big War Will Turn on AI, Says US Secret-Weapons Czar." Defense One, March 28.

10 Questions: Carrie Wardzinski

SHE FOUND HER CALLING AT A FORTUNE 500 FIRM, BUT CARRIE WARDZINSKI THINKS HER FUTURE LIES IN INTELLECTUAL PROPERTY RESEARCH AND COMPETITIVE INTELLIGENCE AS AN INDEPENDENT INFORMATION PROFESSIONAL.

BY STUART HALES

She lives in a 1950s ranch-style home in the Midwest. She owns a collection of vintage Pyrex dishes in primary colors. She's a librarian, and she works at a trolley museum. Oh, and she puts her son on the school bus every morning and meets him when he comes home in the afternoon.

If Carrie Wardzinski sounds like she's living the quintessential suburban life, she probably wouldn't disagree. But the sense of community she feels living in Pittsburgh is also part of what attracted her to SLA as a student and has kept her involved during her career.

"I started attending the SLA Pittsburgh Chapter meetings, and it paid off," she says. "That's certainly how I got my job at PPG—Denise Callihan and Amy Watson, who are both members of the SLA Pittsburgh Chapter, called me out of the blue and said, hey, we have somebody retiring and we're looking for a librarian. Would you apply? And I did.

"From then on, I've gotten to know more people through SLA and learned about a lot of different avenues and possibilities. Just working with people and getting encouragement—people like Tom Nielsen and Mary Talley, and people within the Pittsburgh Chapter like Eve Weider and Ryan Splenda, who's one of my best friends—that's all been really important to me. So it started out as a way for me to network, but then these people also became friends and mentors. That's something I don't want to give up at this point."

Carrie is currently drawing on the wisdom and experience of her SLA network as she helps her employer, the Pennsylvania Trolley Museum, break ground for a new museum with 27 new exhibits. Hundreds of thousands of objects, many under copyright but of unknown provenance, are in the archives, and some museum staff and members want to use these objects in the new exhibits and in books they are writing. With no legal help readily available, Carrie is looking to other SLA members for advice.

Information Outlook spoke to Carrie in early December, before the end-of-year holiday season got into full swing.

You're the research librarian at the Pennsylvania Trolley Museum. What does the job entail, and what attracted you to it?

I started this job—and by the way, the other part of my title is archives manager—in May, and a lot of what it entails is taking unmanaged archives to a managed state. For the last six months, I've been working on creating a collections management policy, trying to get collections under control and sorted. A lot of it has been highly administrative stuff. At the beginning of next year, I'll have some volunteers here, and I'll begin doing some training with them on what metadata is, why it's important, some basic archival library science, things like that.

The other part of it is that I work in conjunction with the museum educa-

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tor, and we're opening a new museum in 2021. So I've been working with her to create exhibits, along with the Carnegie Science Center. There are 23 new exhibits that we're creating from the ground up.

Last January, I interviewed for a different job here—I had left my job at PPG and was looking to get back into the field after three months. I had moved away and the commute just wasn't tenable. So I interviewed for the other job, as a volunteer coordinator, and I didn't get it. But then I got called about a week later and they said, hey, are you interested in taking a job as a research librarian here? We're planning on hiring for it. And I thought, why not? So I kinda' fell into it.

What attracted me initially was that it's a job in my field, and also the challenge of opening a new archive from the ground up and getting to work with educators. And it was a little bit of a change, too. I have a son who is in first grade and I needed some flexibility, so I dropped down to part time from being a full-time librarian at PPG. So that was also attractive—the work-life balance thing.

Carrie Wardzinski rides a trolley at the Pennsylvania Trolley Museum, where she works as research librarian and archives manager.

You mentioned your job as an information specialist for PPG Industries, a Fortune 500 company that makes paints and coatings. What was it like to go from a large business with several information professionals to a nonprofit where you are the only librarian (and the first one to work there), and what are the advantages and disadvantages of each work environment?

One of the really great things about PPG was that my supervisor there had established a really great library program within the research and development sector. So there was a lot of support and funding for it, and also a lot of respect. We were seen as part of the research team—we just had a specialty, which basically was being able to do intellectual property research, especially with patents.

Contrasting that with here, I would say that one of the upsides is that I now have the flexibility to put my son on the bus and meet him after school. And I wouldn't necessarily have had that flexibility with PPG, because I had to start work before he was in school and he'd go to day care afterwards.

One of the downsides of being in the archives here is that there isn't an established program. Also, things have been done a certain way here since, really, the 1950s, and coming in now, I'm kind of going against the grain, so to speak. There have been some struggles—some power struggles, and some differences of opinion in how things should be run, and so on. But overall, it's been largely positive in both places.

What made you want to become a librarian in the first place?

Prior to going to library school—I started in 2011, when I was 31—I had worked in other positions, primarily with large corporations doing a lot of database work. And I found that I really liked the organizing of information.

One of the jobs I had worked at prior to going to library school, and also partially during school, was at PPG. I was working in their headquarters processing payroll and benefits, things like that. But one of the things that fell under my purview was going back into the microfilm and doing research and kind of creating a whole complete picture for people who had wage garnishments or other pay or benefits issues. And then I'd be a liaison with the law department.

I found that I really, really liked doing research and getting into the weeds with it and then creating a whole picture. So I contacted Denise Kelly, the librarian for PPG, and asked her, hey, do you think this would be a good career move for me? At that point we had never met, but she was willing to talk to me about it, so I enrolled in library school while working full-time for PPG. Eventually I dropped down to part-time. My last year of library school I interned with Carnegie Mellon University and had my first real library job.

I would say it was really just the research aspect I loved. I think I'm a research librarian at heart, rather than a metadata manager or something like that. I really like research and providing the right research at the right time.

On the subject of research—while researching you, I noticed you're fairly active on Twitter in your personal life. Do you use social media professionally, and do you think social media skills are a "must have" or a "nice to have" qualification for librarians and info pros today?

I use social media in relation to my job mostly as a support network. In so many professions, people are discouraged from using social media—in fact, almost all of my friends, both from PPG and from here, really do not use it in their jobs. They're either completely absent from social media or use it kind of as a support network. In my position, there have been times where I've had questions or situations that are completely new, so I often reach out on Twitter or on Facebook, because I'm friends with a lot of librarians. I'll ask them, how do you handle this situation?

Given the fact that so many people have become social media-shy, I don't think social media skills are necessary in most positions, unless your job is to do social media. We have a person here who does that, a volunteer. But I don't think it's necessary for librarians or information professionals to use it in a position like I have.

Now, if you need to promote yourself because you're an independent information professional or social media is part of your job, then yes. But otherwise, I don't think it's necessary.

Speaking of skills, what professional skill or skills do you most want to learn or strengthen, and why?

I think, right now, my priority is learning more about formal management skills. It's not something I've done much of—I tend to work in positions where I'm a solo librarian or very close to it, so I'm used to managing myself and my time, but not others. I'd also like to learn some entrepreneurial skills as well. And this is going to sound bad, but also diplomacy skills. *(laughs)*

I think when I'm working with different groups, it's tricky for me, because I can sometimes be a bull in a china shop. That's something I'm struggling with here, the mix between diplomacy but also staying firm in what I think is the right way to go. So I would say those are the three areas I need to work on—management, entrepreneurial skills, and also diplomacy in communicating what I think is the best way to go about doing things.

Along these same lines, do you consider public speaking to be a strength of yours? I ask because you attended the SLA 2019 Annual Conference in Cleveland and co-presented on juggling roles as solos and embedded librarians. How did your presentation go?

There was initially a proposal to talk about burnout in the workplace, and that ended up not going through, but the convener of the caucus asked a bunch of us, hey, we need speakers for this other presentation about embedded librarianship. As a solo librarian, I thought, sure. I'm doing that currently, I've done that in the past, so, sure, sign me up.

Carrie (far right) joins fellow SLA Pittsburgh Chapter members and other attendees at the SLA 2019 Annual Conference in Cleveland.

I don't necessarily enjoy speaking. I get nervous about it; I was kind of a nervous wreck beforehand. I had to talk myself into it. I kept saying to myself—and this is kind of my mantra for speaking in front of groups—if I completely bomb it or I'm awful, the worst thing that can happen is that they just won't ask me back. *(laughs)*

But I'm learning to be more comfortable with it, and I do think the session at SLA 2019 went well. We had a few IT-related hiccups in the beginning, but my co-speaker and I figured it out. We got some decent feedback, and a number of people came up to us afterwards and asked questions.

I gave a presentation recently at the Trolley Museum's annual business meeting, and last week I spoke about librarianship to about 200 third, fourth, and fifth graders for three-and-a-half hours! They came through in 10-minute intervals. So, obviously, I can do it, and if someone asked me again for SLA, I wouldn't turn it down. It's just one of those things I need to feel more comfortable with.

Speaking of SLA, when did you join, and why?

I joined in either late 2011 or early 2012, when I was in library school. Part of it was that my friend and I wanted to go to the SLA Annual Conference that year, and we wanted to get the student rate. But I also knew I wanted to be a special librarian from the time I entered librarianship, either in the private sector or in academia. I knew that I either wanted to do individual, solo librarianship or work in some sort of corporate library. And being able to do those things in my career—that has been great.

Another thing is that Pittsburgh is a very tight-knit community. People don't move away from Pittsburgh. They're born here and they never leave, or they come here for school and they stay. There's a library school here, so there's kind of a glut of librarians, and I knew I'd have to network aggressively in order to get a job. So I started attending the SLA Pittsburgh Chapter meetings, and it paid off. That's certainly how I got my job at PPG—Denise Callihan and Amy Watson, who are both members of the SLA Pittsburgh Chapter, called me out of the blue and said, hey, we have somebody retiring and we're looking for a librarian. Would you apply? And I did.

From then on, I've gotten to know more people through SLA and learned about a lot of different avenues and possibilities. Just working with people and getting encouragement—people like Tom Nielsen and Mary Talley, and people within the Pittsburgh Chapter like Eve Weider and Ryan Splenda, who's one of my best friends—that's all been really important to me.

So it started out as a way for me to network, but then these people also became friends and mentors. That's something I don't want to give up at this point.

I think one of the big things that I've been able to apply is that people tend to want to volunteer, but they don't know what's available, or until you ask they're reluctant to do it. I was actually reluctant to volunteer in SLA because I didn't think I had the skills; I just didn't feel qualified enough or far enough along until somebody approached me and said, hey, why don't you be our employment chair. They called me and asked me, and I said, sure. And I was actually really tickled by that—not even tickled, but honored that they thought of me and thought I would be good at it. So I did that for a while, and I ended up becoming president of the chapter.

But I think the lessons are both asking people and giving them opportunities to volunteer that aren't necessarily big jobs. They might only have an hour, or they might only be able to do it on their summer break, so it has to be kind of a time-limited opportunity. I think knowing that and using that tactic has helped to transfer over to my current job.

Carrie's vintage Pyrex collection includes these dishes.

Within SLA, you've served in several volunteer roles, including president of the Pittsburgh Chapter. What have been the key takeaways from your volunteer experiences in SLA, and has volunteering with SLA helped you better relate to the volunteers at the Trolley Museum?

I would say that what I've gotten out of it is really a lot of support from other librarians and building relationships with people. Also, there's a sense of satisfaction in being able to look back and say, I did that, or hey, it was stressful and we didn't think we would get it off the ground at the time, but we did.

I know that one of the things I'm most proud of is that we had a longtime member who had left the Pittsburgh Chapter, and she attended one of our events that was pretty successful—I think we had something like 75 people attend from a bunch of different library areas. It was a trivia event with a local celebrity. She rejoined SLA after that, and I remember thinking, OK, we're doing something here that's good. We're getting people involved; we're getting them together. There was a lot of satisfaction in doing that.

Ideally, where do you see yourself professionally in, say, 15 or 20 years, and what will you have accomplished in the interim?

I think the direction I want to go—and the jobs that I've had are kind of shaping this, because of picking the bits that I like and knowing the things that aren't working for my personality type—I really think I probably want to be an independent information professional. I would love to, in the next five years, get back to my roots doing intellectual property. It's just something I really like; it excites me. I also like doing competitive intelligence and knowledge management. So probably doing these, but for different groups that need those skills.

I also really like change in a lot of ways, so I want to work with different groups and not be in the same position. I think I'm best when I'm able to ramp up and really dive into something. So, ideally, maybe creating my own position that involves all of those.

One of your hobbies is collecting Pyrex. Do you display it, like Hummel figurines? Is there a Pyrex museum in your future?

Pyrex is made by Corning, and there's already a Corning Glass museum up in New York. So a museum is not in the equation, because I'm in Pittsburgh—I was born here, I returned here after living in Atlanta for a bit, and I really think I'm never going to leave it again. So I think whatever I do will be located here.

The thing with Pyrex happened accidently. I ended up with a huge lot of it for, like, $10 through an auction. And I thought it was interesting. So I started reading more about it and learned they have all these patterns, and it just kind of happened organically from there.

I also think a lot of the colors are really pretty. I love the pinks and blues and yellows. I have this great 1950s ranch house that has had one owner, and it still has the original pink bubble gum tile and the black-and-white tiles on the floor. I think the Pyrex kind of reflects that sort of Midcentury Modern feel. I'd like to put it in my kitchen eventually. *(laughs)*

My significant other is very much into collecting older things that were made in America, so we both have an interest in those sorts of things. Sometimes they overlap. SLA

Diversity by Design: Recruiting a Diverse Workforce

Creating a diverse workforce must be an intentional act, requiring innovative approaches and new tools.

BY AMANDA FERNANDEZ, MI, MBA

Do you feel the staffing complement at your place of employment reflects the community you serve in all its variations and plurality? Is your workplace diverse, or do most of the people you work with share similar experiences, possibly look similar, come from similar backgrounds, share similar socio-economic privileges, etc.?

We can no longer ignore the lack of plurality in our workforce and the impact of homogeneity on Kaizen and innovation. Intent needs to be turned into action if we are to create workplaces that are not just diverse, but inclusive.

Diversity and inclusion are not the same thing; a workforce can be diverse, but the organizational culture may not foster inclusion. Conversely, you can have an inclusive culture, but that does not mean you have diversity. This article offers tactics to help you move forward, build a culture of inclusion, and change how you work by leveraging diversity, equity, belonging, and data.

Definitions

In an organizational context, diversity can be viewed as one or more of the following:

- Something to comply with;
- Something that is the right thing to do;
- An ethical imperative;
- A business priority, providing organizations with a competitive advantage; and/or
- An absolute priority that provides strategic value.

Some scholars have argued that diversity practices commonly fall short because traditionally they have focused on reducing biases or increasing the representation of minorities. Both are good places to start, but any approach to diversity that does not focus on inclusion as an outcome will fall short. Inclusion is about impact—as Verna Myers put it, “Diversity is being invited to the party; inclusion is being asked to dance” (cited in J.H. Cho 2016).

When inclusion is cultivated properly, each individual’s uniqueness is celebrated. In an inclusive workplace, each employee’s values and thoughts are accepted and integrated into the organization and its decision-making structures.

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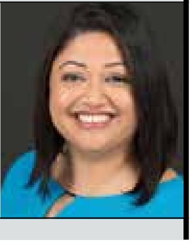

Recruitment Practices

As a first step toward building diversity in our workplaces, we should assess our recruitment practices. This requires looking at how we bring people into our workspaces and their transitions over time through promotions, lateral moves, and so on.

In 2016, Johnson, Hekman and Chan conducted controlled, real-world studies on recruitment, unconscious bias and diversity by looking at the composition of the candidate pool following a review of resumés and interviews. In one scenario, if there were two white people and one black person (for a total of three job candidates), the interviewers tended to choose a white candidate. If two out of three candidates were black, they tended to choose a black candidate.

In another study that looked at gender instead of race, Johnson, Hekman and Chan found that if a candidate pool consisted of three men and one woman, the woman did not stand a chance of being hired (2016). However, when there were two men and two women from which to choose, the likelihood of hiring a woman increased 79 times. Similarly, in a pool of four candidates, if two were minorities, the likelihood of hiring a minority was 193 times greater, an effect that held no matter the size of the pool.

Executing on Recruitment Practices

So, what does this mean for you as a hiring manager? Having only one person from a historically excluded identity group on your list of finalists for a job opening highlights that person’s difference from the norm, a difference that recruiters unconsciously confuse with risk or even incompetence. If diversity is to have a fighting chance, your final list of candidates needs to include at least two members from historically excluded groups.

If you are receiving too few applications from diverse candidates, understand that they will not just come to you. Your recruitment practices need to be targeted, purposeful, and by design. For instance, it is not enough to post positions on the same old job websites or solely on your organization's website. Sound recruitment practices require a plan with goals, measurable targets, and a strategy to increase the number of diverse applicants in your candidate pool.

If your strategy is not fruitful or you find you have made mistakes, try again. Creating a workforce that truly represents the community you serve is an iterative practice, and ambiguity and discomfort are a necessary part of moving forward. You cannot afford to sit back and wait for someone else to find the right solution to this challenge. There isn't one.

Another important part of the effort toward a more inclusive workplace is transparency. Share your successes widely, but more importantly, share your failures. Fail forward and share your experiences of prototyping through experimentation, as this is part of having a growth mindset. If you want a hard example of a recruitment trial-and-error process, look at what Yelp has done.

Solutions, Tools and Takeaways

The lack of workforce diversity is a significant issue affecting the information profession, and it will require collective effort to address. We cannot use the same old tools to solve this issue. New problems, through which we are charting new territory, require innovative approaches and new tools, such as the following:

- Hire for attitude and aptitude; train for skills.
- Hiring is not just about how a person fits the job, but how the person compliments the existing team and organization.
- You are hiring not just for today, but for tomorrow as well.
- Ask yourself: How is this person different, and how can we leverage this difference to make our team and our organization more effective?
- Take a systems approach.
- You need thoughtfulness, planning, and balance.
- Identify and eliminate systemic barriers by looking at your recruitment tools, interview guides, protocols for determining who usually sits or gets to sit on interview panels, and so forth.

In my follow-up column, I'll delve more deeply into diversity and inclusion policies and issue two calls to action, one a long-term strategy and the other a short-term approach that will lead to long-term benefits. **SLA**

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Pairing Health Sciences Librarians with Research Data Management Training

A poster presented at the SLA 2019 Annual Conference uses a decision tree format to help librarians identify research data management courses that fit their needs.

BY CANDACE NORTON, MLS, AND SARAH CLARKE, MSLS, AHIP

In early 2019, the authors, both health sciences librarians, were immersed in two different research data management (RDM) continuing education courses. During a lunchtime discussion, we shared the core elements of each course with one another and decided to begin a project to explore the scope of RDM courses available to librarians and to evaluate the merits of each one. The project would culminate in creating a tool for health sciences librarians to expedite the decision-making process when choosing an RDM course to meet their professional development needs.

As interest in open science and reproducibility grows, RDM services increasingly are being offered as core services at academic health sciences libraries. However, there are few formal opportunities to learn RDM skills in library schools, so health sciences librarians must rely on continuing education opportunities, often in online formats, to grow their RDM skillset. The process of locating online RDM training geared toward health sciences librarians and determining which training will best meet one's professional (personal and institutional) needs and goals can be daunting. There are many aspects to consider when choosing an RDM course, including time and schedule constraints, personal or institutional budgets, relevance, regular updates, and learning styles.

To identify the scope of professional development training opportunities in RDM, we performed a literature search of PubMed, Web of Science, and Scopus. The literature identified few courses. We also consulted two books on data management for librarians (Federer 2016; Henderson 2016), performed a web search in Google, and hand-searched online resources such as the National Network of Libraries of Medicine RDM resources, the Medical Library Association Education Clearinghouse, and popular massive open online course (MOOC) websites such as Coursera, edX, and FutureLearn. At the time of the initial research for this project, 22 courses had been identified; we are aware that additional training opportunities have become available since the project began.

OSF (the Open Science Framework, a project of the Center for Open Science) was used as a collaborative platform for project management and dissemination throughout this project. A data capture system was developed in Microsoft Excel to collect relevant data points on each of the 22 courses for analysis and inclusion in a decision tree. We recorded information such as the course title, sponsoring organization, time commitment, time frame, continuing education credit or other completion certificate, cost, and types of course activities. Electronic correspondence was used to contact course instructors when desired information was not readily available online.

Courses were excluded from the decision tree if (a) they were not publicly available, (b) they did not provide a general overview of RDM, (c) their target audience did not include information professionals, or (d) their content had not been updated within the preceding four years. After these exclusionary criteria were applied, seven RDM courses were determined to be in scope for inclusion in the decision tree.

The decision tree presents the course information in an interactive format that encourages users to identify a specific continuing education need at each decision point, ultimately directing them to one or two courses that best fit that need. A set of general questions was compiled for use as decision points based on factors we believe individuals may consider when choosing a training course. We used Visme (a program from Easy WebContent, Inc.) to create the decision tree poster, titled Which Online Research Data Management Course is Right for Me? (Clarke and Norton 2019).

The decision tree poster prompts health sciences librarians (or any librar-

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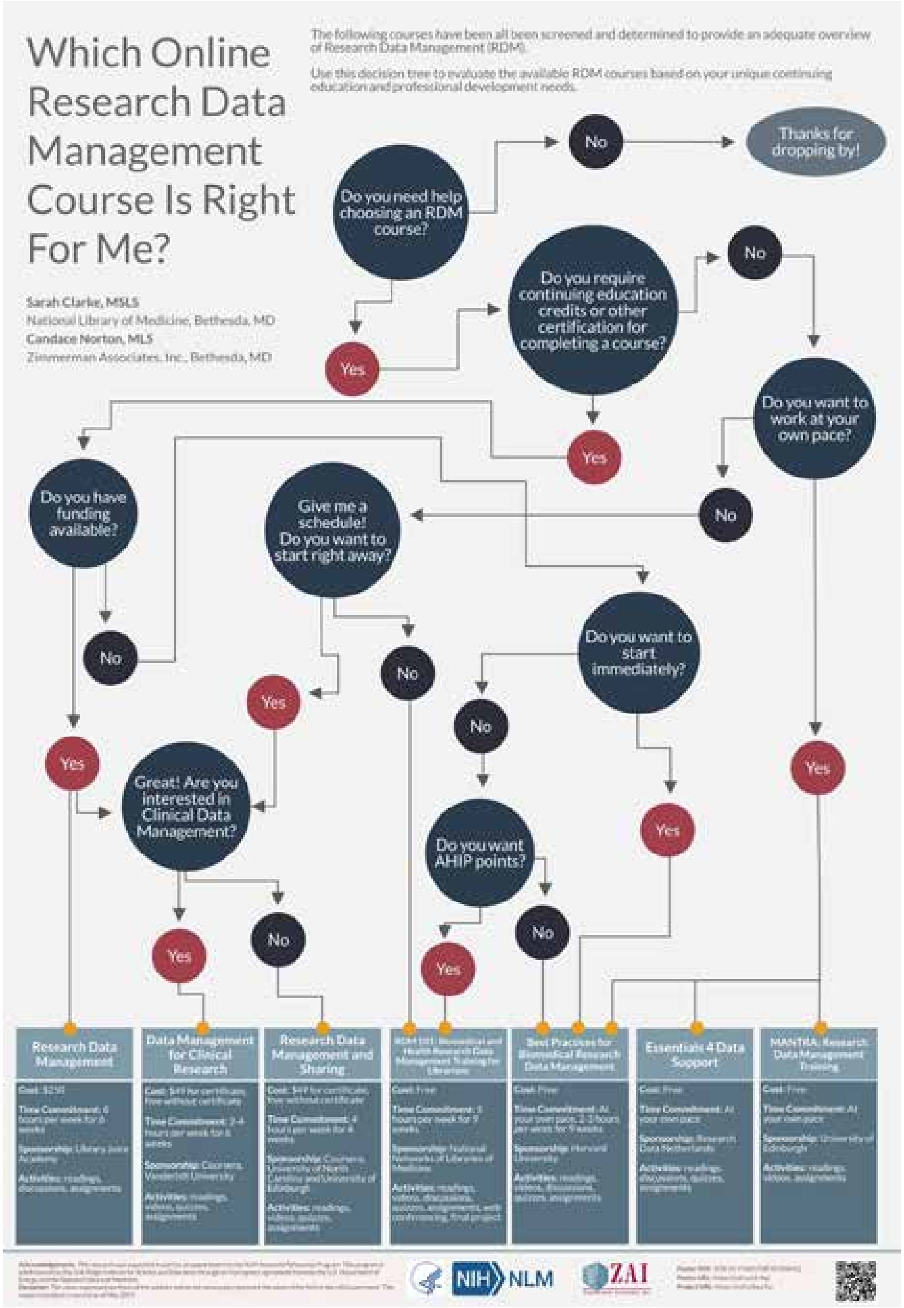

ian interested in learning about RDM) to answer a series of questions. These questions ask whether they (a) desire certifications, continuing education units or Academy of Health Information Professionals (AHIP) points, (b) favor working at their own pace, (c) prefer to begin training immediately, and (d) have funding available for training.

After answering these questions, poster users are paired with a course located at the bottom of the tree structure that matches the educational need(s) they identified as being most important. Specific course information is provided with the paired course so the user is aware of the course title, total cost, expected time commitment, institutional sponsorship, and required learning activities.

The decision support tool discussed in this article is up to date as of May 2019. We intend to provide annual updates to better support the needs of our colleagues and peers as they explore the latest RDM trainings available.

With the needs of researchers and scientists related to RDM services evolving rapidly, librarians and other information professionals providing these services need to stay current with the latest advances and best practices in RDM. Researching RDM training courses for librarians can be a time-consuming task. This project produced an easy-to-navigate, shareable, and printable decision tree poster that pairs librarians with an RDM course that best suits their professional development requirements and the data needs of their institution.

Disclaimer: The views expressed in this article are those of the authors and do not reflect the official policy of the Department of Army/Navy/Air Force, Department of Defense, or U.S. Government. **SLA**

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How to Lead by Example in Institutional KM

To thrive in the future, information professionals must evolve away from single-subject expertise, broaden their horizons, and become generalists instead of specialists.

BY JONLUC CHRISTENSEN, MLIS, DAM, AND CAMILLE MATHIEU, MLIS

Information professionals have always served as skilled intermediaries between a community of knowledge seekers and the catalog of informative resources at its disposal. However, one effect of the Information Age is that end users are transforming into "superusers" of once-inscrutable systems and processes. As the average knowledge seeker becomes indistinguishable from the superuser, how can we who are superusers by vocation spur ourselves and our profession to better serve as intermediaries in the shrinking space between knowledge workers and enterprise content management systems?

For most people, traditional library and archives settings are "read-only"; users frequently interact with informative holdings, but rarely do they contribute something they have created to the collection. The same can be said of the Internet as an information resource—outside of social media platforms, the majority of users do not create web content, they only consume it. In each of these read-only settings, however, there are superusers who both read and write to the system, curating as well as consuming the information within the system. Under this definition, info pros can be considered superusers, as can bloggers, Wikipedia editors, and web developers.

Outside of the organization, this division is clear. However, when we shift our focus to inside of the organization, the waters become murky. The intranet, after all, can be accessed, manipulated, and changed by any knowledge worker within an organization. The initial opacity of enterprise systems is rapidly diminishing for these knowledge workers, especially as more organizations move to cloud-based information management solutions. In the modern enterprise, knowledge workers are not only the primary consumers of enterprise content, but the primary creators of it as well.

What is the other major difference between information environments within the organization and those outside it? Findability. While few complain about the experience of using a library catalog or Google search engine to find information they are seeking, enterprise content findability solutions are ubiquitously disparaged. Finding information within the organization can seem impossible, even as the ease of finding information externally increases exponentially.

If we are to solve enterprise content findability issues and better serve the needs of the new class of superuser knowledge workers, those of us who work in organizations must transform ourselves and our departments into liaisons between systems and users and away from models of service that call for gatekeeping. The gatekeeping service model became a common trend within the LIS field as highly specialized professionals often become siloed into niche areas of expertise, especially within an enterprise. This primarily served to provide end users with skilled experts whose occupations required time- and labor-intensive analog functions.

These experts would have worked specifically within an enterprise library, archive, or records management group, with individuals subdivided into specific areas of expertise (e.g., vellum files experts, microfilmers, processors, etc.). These individual experts engaged in laborious job functions, without which average end users would not have had the time, skills, or general ability to manage their information. These experts served as gatekeepers between the end users and the system of record

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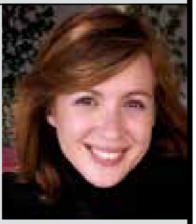

and assisted them in the creation, description, and management of their content.

Become an Early Adopter

To best facilitate change management in the organization, we info pros must be receptive to change ourselves. Digital systems have begun to eliminate the need for nuanced experts because the laborious nature of content management has been distributed. Users no longer rely on gatekeepers as they did in the past; however, this does not mean that the need for our services has diminished. Instead, particularly with respect to knowledge management and the digital age, we are called to adapt and evolve away from single-subject expertise and to broaden our horizons and become generalists instead of specialists.

While robust content management technologies have eliminated many of the traditional functions of info pros, new challenges exist for the enterprise and its workers that can only be addressed by highly informed, versatile professionals who understand the complex nature of information in both its analog and digital formats. The future-proof information professional must be ready to navigate workers through these challenges, using knowledge gained through cross training with other profession(al)s, adopting new technologies early, and applying transferable skills.

For many of us, the best place to start is by asking the question, "What don't I know?" This means branching out into conferences, professional organizations, and activities you may know nothing about. One useful strategy is to find people who are responsible for critical components of shared work tasks whose work you rely upon, but cannot replicate. Shadow them, interview them, or review their training materials to get a rudimentary understanding of their roles. In so doing, you'll discover new skills and knowledge you may be able to apply to your own job—or, at the very least, you will acquire a new appreciation for your colleagues' work.

Another good strategy is for teams of information professionals to always be "early adopters" of new enterprise systems and technologies. Early adoption is a way of recognizing the significance of an organization's investment in a new technology. Instead of becoming victims of change, early adopters become partners with the organization in integrating the new technology with existing workflows. This also allows info pros to serve more effectively as liaisons between knowledge workers and the systems that comprise an enterprise information landscape.

End users are becoming information superusers. For information professionals to have the greatest impact in the organization, we must change our own roles alongside the changing role of the knowledge worker. While knowledge workers often no longer need us to facilitate knowledge management, they do require our help to navigate its nuanced complexities and inevitable pitfalls.

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Info Insights

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