

# The Badge Ecosystem

Emily Rimland and Victoria Raish

Like many things virtual, digital credentials came into existence with the rise in popularity of the internet.<sup>1</sup> Paper certificates for courses taken or skills learned were and are a recognized form of academic credential. Thus it wasn't a big leap to make them digital, especially with the rise in online learning that started in the 1990s. Badges also have a gamification component, as they allow learners to work toward a goal and “level up” their learning, which helps boost engagement and learning.

Early in the history of digital credentials, there was a concerted effort to make digital badges a type of open credential. An open credential is one that adheres to a technical specification in order to ensure a structure that is uniform and universal no matter where it comes from or who issues it. By agreeing to use an open standard called the Open Badge Infrastructure (OBI), creators of digital badges ensured that all digital badges are interoperable with different platforms or systems regardless of who issued them or where they were earned.<sup>2</sup> Use of the open standard also means that digital badges from different places can be collected and packaged so that learners can showcase their skills in ways that fit the needs of the situation. Earners of badges can share them in social media venues but also have the option to display them in a virtual backpack, with Mozilla's being the first and best-known container for digital badges. Mozilla (yes, the organization that also makes the Firefox browser) created open badges and the virtual backpack in 2011 with funding from the MacArthur Foundation.<sup>3</sup> Since 2017, the open badge standard has been maintained by IMS Global Learning Consortium, which is one purveyor of educational technology standards. In early 2018, the Open Badge 2.0 standard was released and added necessary updates.

The OBI also allows for a wealth of metadata to be included along with the badge. It is this aspect that makes digital credentials game changers and unique when compared to other credentials. Some examples of the metadata included in an open badge are

- who issued the badge (by name or institution)
- who earned the badge
- when the badge was earned (Badges can also be set to expire after a set period of time.)
- details about the work that was required of the learner to earn the badge
- alignment of the badge work with outcomes, standards, or frameworks
- the actual work, that is, the evidence the learner submitted to earn the badge

This last bullet point is perhaps the most important because now the work that the student has done can be vetted, verified, and assessed by others, such as an employer who is evaluating a job applicant's claims about a skill.

## Badging Platforms

The people and organizations (Mozilla, MacArthur Foundation, Gates Foundation, etc.) that created and implemented the OBI did a remarkable amount of work that focused on innovation and openness, which in turn motivated others to get involved in digital credentialing. Changes in higher education also helped to drive adoption of new education technology and credentialing systems (more on this later in the chapter). With an open standard and broader adoption came the rise of more badging platforms to take advantage

of these developments. Badging platforms are where learners go to find and earn badges and to curate any badges they've earned. Vendors of badging platforms seek to provide different features or designs to make them more user-friendly, accessible, and robust, but all are built around the OBI so that badges that are output from that system are interoperable with other systems. Badge Wiki keeps a list of platforms that are available along with some details of each. Badge platforms, like other web-based applications, are a bit of a moving target because, as with many other kinds of businesses, companies buy each other or merge. Until recently, the three major platforms were Credly, Acclaim, and Badgr; however, with Credly purchasing Acclaim (owned by Pearson) in 2018, that list is now down to two major players. Still, there are many smaller platforms, even a number of home-grown, institution-specific platforms. For example, at our institution (Penn State), a badging platform was developed in-house after a small group received seed funding for innovative projects, and we've used this system for many years with much success.

#### *Badge Wiki*

<https://badge.wiki>

#### *Credly*

<https://info.credly.com>

#### *Badgr*

<https://badgr.com>

#### *Penn State Digital Badges Platform*

<https://badgesapp.psu.edu>

## LMSs and LTI

Along with badging platforms, new ways to use and integrate digital badges continue to develop. One major area of development is tied to learning management systems (LMSs). LMSs (also known as course management systems, or CMSs) are online applications that “[provide] an instructor with a set of tools and a framework that allows the relatively easy creation of online course content and the subsequently teaching and management of that course including various interactions with students taking the course.”<sup>4</sup> Some popular LMSs at the time of publication are Canvas, Moodle, Desire2Learn, edX, and Blackboard. LMSs have changed the way courses are delivered to students in both face-to-face and online learning and in institutions from grade schools on up through postsecondary. This change is felt so much that the LMS often feels like *the* course for many students, especially in

online settings. Students use the LMS to interact with the course in many ways, including uploading assignments, having online discussions, and reading course material.

Some LMSs offer a native badging system that allows instructors to award badges from within a course. Typically, these native systems are not very robust and don't allow much customization. However, a specification within LMSs can be used to add more functionality, including a commercial badge platform. This specification is called Learning Tools Interoperability, or LTI, and it allows a creator to make a tool that operates within the LMS. Because LTI is standardized, it can work with and be integrated into any LMS. Many educational technology software companies have taken advantage of LTIs in order to integrate their products, tools, and features seamlessly into an LMS to improve the experience of students and instructors. Some examples of other products or tools that offer LTIs are LibGuides, Credo Instruct modules, and Piazza. As you may have guessed, there are now LTIs for using badges within an LMS. The advantage of an LTI is that it lets you harness the features and details of that badge platform within the LMS and does so seamlessly for the learner. It allows learners to earn the badges from inside the LMS or “course” without having to navigate to and within another system. It also allows the instructor to track students' work and automatically report their grades or, in the case of badges, their achievements within the LMS.

## Learning Pathways

In 2018, the badge platform Badgr released Badgr Pathways, a tool offering learners the ability to pull together various digital credentials, stack them, package them, and display the overall learning pathway for themselves and others. It takes the unbundling of learning a step further and allows users to gather credentials in ways that meet their needs or the demands of the company or industry to which they were applying.<sup>5</sup>

#### *Badgr Pathways*

<https://pathways.badgr.io>

## Experiential Transcripts

Another development related to micro-credentials and part of the overall ecosystem that may help to drive adoption is experiential transcripts. As discussed earlier, traditional transcripts are lacking in details and often don't include types of learning

outside traditional coursework. Job seekers may use tools like e-portfolios or social media to enhance their transcripts by showing alternative types of learning or engagement, such as service projects or independent research; however, in our experience, employers often cite the time needed to review these materials as one drawback to these tools. Additionally, activities listed on these platforms are typically not vetted or verified in any way. The experiential transcript, also called the comprehensive learning record, is one way that institutions are trying to marry the wide adoption and familiarity of transcripts along with the validation and authentication of open credentials.<sup>6</sup> Experiential transcripts are a way to pull together a student's learning that happens outside of a classroom into a more robust picture for both the student and the potential employer, evaluator, or supervisor. Types of experiences that could be included on an experiential transcript are study-abroad experiences, internships, service-learning projects, research activities or other engaged scholarship activities, and micro-credentials. Experiential transcripts share a lot of the same benefits as digital badges but offer them from a macro-credential level. They would provide a fuller picture of what learners have achieved and also would show learners how far they have come and what they have yet to do. Experiential transcripts could leverage the openness of other credentials, giving learners more ownership of their records. In addition, experiential transcripts could use open standards to make them interoperable with other systems or schools.

Additionally, experiential transcripts would shift some emphasis to other kinds of experiences and granular learning for all parties involved: students, schools, and employers. Thus, they would also allow libraries to become part of education in new and different ways. We know that employers value information literacy skills, and experiential transcripts would be another way to showcase these skills—a way that doesn't exist yet. Digital badges are already making inroads, but experiential transcripts would help to drive adoption of digital credentials and bring them into the mainstream. One of the biggest barriers facing experiential transcripts (and digital credentials too) is the paradigm shift, the biggest change being for institutions. Institutions would have to not only unbox the complexities of recording and verifying these types of activities, but also give learners a certain level of control over their own records. Moreover, there is no standard yet for experiential transcripts, but one would need to be implemented for the idea to take off.<sup>7</sup>

## How Badges Are Being Used Today

Many of the developments outlined here and elsewhere in this report are related to a seemingly widening

divide between employers and their perceptions of new graduates' skill compared to educators' perceptions of graduates' preparedness.<sup>8</sup> Closing this gap is one of the major drivers behind digital credentials and will require quite a bit of orchestration and coordination for them to see wider use. However, based on our own research, employers seem open to the idea of digital badges. We surveyed 114 employers from a variety of industries on whether they would consider digital badges as a criterion to determine a potential employee's credibility and knowledge. Of respondents, 60 percent said that they either would look at badges during the hiring process or would need more information but would consider it.<sup>9</sup> Below is a sampling of how digital badges are being used today in different spheres and what the next steps might be.

### Education

Digital badges and micro-credentials are being used in all varieties of education from elementary schools through undergraduate and graduate education and the same benefits and principles apply at all levels. Students should be encouraged to cultivate and showcase granular skills beyond their report card, and digital badges allow for this kind of expansion. Fuller described in detail a workforce readiness digital badge initiative developed at Aurora Public Schools in Colorado. This program was designed to help students get internships and on-the-job experiences during high school and included badges for information literacy.<sup>10</sup> A digital badge program was also extended to students in grade and middle school to capture their learning of twenty-first-century skills at these grade levels.

In higher education, we also see a variety of uses for digital badges. In our program at Penn State, we are using them within undergraduate general education courses to deliver instruction around information literacy skills. In the health policy administration major at Penn State, digital badges are being used as a way to track learning outcomes that are tied to the program's accreditation. Other institutions are using badging systems as well, including Massachusetts Institute of Technology and Northeastern. We are also seeing badging used in massive open online courses (MOOCs) as a way to track a learner's progress.

### Employers

Because many employers are seeing a disconnect between the actual knowledge and skills new graduates bring to the workforce and what they expect graduates to have, many employers have started issuing their own branded digital badges to fill the gap. In this scenario, workers earn digital credentials once they begin their employment as part of an onboarding

program, when they learn a few new skills, or to help them get on track for a promotion or new job at the company. One of the earliest and fullest adopters of digital badges is IBM. From our own research, we found that the information technology industry was one of the early adopters of digital badges in general, and IBM, a leader in the IT industry, has fully embraced them.<sup>11</sup> In this program, IBM employees can find and participate in targeted training classes using the platform Coursera. Once a course is completed, employees complete a corresponding assessment, which allows them to claim their badge (using the Acclaim platform). IBM's badges are designed to help employees get skills in specific areas (e.g., data science or blockchain technology) so they can better complete projects, lead teams, and advance through their career.<sup>12</sup>

Employers are also using digital credentials for their employees' continuing education. In continuing education, teachers and other professionals are encouraged or required to extend their knowledge of the field, most typically by earning credits from an institution or professional organization. An employee must earn a certain number of credits to maintain good standing at the job or to be promoted to the next level. With this activity comes a lot of paperwork and verifying of information; therefore, it's a natural fit to take it to the next level by awarding badges. Using badges, learners can have access to all their records online in one place, and they have a way to share the records with their employer. The employer has a way to vet the veracity of the work or badge and hopefully streamline the administration of the badges. Some programs even offer rewards to learners after they have reached certain levels of experience, for example, getting to attend a special event.

As you might imagine, employers can see many opportunities using digital credentials that can make their employees smarter, more agile, and more empowered. By branding their own badges, they can incentivize learning in the strategic areas they identify as areas of growth. This use of badges also indicates to job seekers what the company values and is looking for going forward. Digital badges can also serve to streamline and clarify existing continuing education pathways that are well established in certain fields.

## Libraries

Digital credentials in libraries are already being used in myriad ways from public to academic settings. In the example mentioned earlier, the Aurora Public School System used digital badges to document information literacy skills as one component of a larger system that focused on career readiness. Public

libraries have also found digital badges as a means to reward patron achievements. Existing programs, such as summer reading, writing groups, and book clubs, are using badging. Badges are even being used to certify that a patron is able to use makerspace equipment. An early and now very robust program is the Chicago City of Learning, which seeks to give children and young adults a variety of experiences outside of school. These experiences and challenges are badged to give students a way to describe their learning journey. The Chicago Public Library is just one of many partners in this program, and it mainly features ways students can gain skills related to media, such as by learning to record or edit video.

In academic libraries, digital badges are primarily being employed to document information literacy skills—valued skills that too often go unrecognized in a formal way. The California State University at Fullerton has created a suite of interactive tutorials to guide students through what is probably their first foray into library research.<sup>13</sup> The State University of New York at Albany has developed a hierarchy of four related badges around the concept of metaliteracy, which is a component of information literacy.<sup>14</sup> As in public libraries, however, digital badges can also be used as a certification system for using specialized types of equipment, such as in makerspaces or virtual reality spaces.

As a resource for libraries interested in badges, aside from this report, the Association of College and Research Libraries (a division of the American Library Association) has a Digital Badges Interest Group that is open to anyone interested in the intersection of digital badges and libraries. The interest group's goal is to provide a means to discuss and exchange ideas related to digital credentials, libraries, and information literacy. This group holds regular online discussions and maintains an email discussion list and a blog with more information.<sup>15</sup>

## Conclusion

As this chapter has demonstrated, the badging ecosystem is diverse and vast. There are new developments on the horizon and established ones that are being updated as this technology gains more adoption. The use of badges in different scenarios is also diverse and ever-changing at the moment. Hopefully after reading this chapter, you are imagining a few ways you can see digital badges fitting into your library's programs. In the remaining chapters, you will get more information about design considerations, implementation details, and ways to keep your program running smoothly.

## Notes

1. Cinthya Ippoliti, "History of Micro-credentialing," in *Teaching with Digital Badges: Best Practices for Libraries*, ed. Kelsey O'Brien and Trudi E. Jacobson (Lanham, MD: Rowman and Littlefield, 2018), 3.
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4. John Meerts, "Course Management Systems (CMS)," Educause Evolving Technologies Committee, October 20, 2003, 1, <https://www.educause.edu/ir/library/pdf/DEC0302.pdf>.
5. For an example of a Badgr Pathway, see Badger University, "Associate Degree: Biotechnology," January 28, 2019, <https://pathways.badgr.io/public/pathway/5ad8eee4c9494851f4893554>.
6. Educause Learning Institute, "The Evolution of the Transcript," *7 Things You Should Know About . . .*, January 2016, <https://er.educause.edu/~media/files/library/2016/1/eli7128-pdf.pdf?la=en>.
7. Educause Learning Institute, "Evolution of the Transcript."
8. Casilli and Hickey, "Transcending Conventional Credentialing," 119.
9. Victoria Raish and Emily Rimland, "Employer Perceptions of Critical Information Literacy Skills and Digital Badges," *College and Research Libraries* 77, no. 1 (2016): 87–113, <https://doi.org/10.5860/crl.77.1.87>.
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11. Raish and Rimland, "Employer Perceptions," 94.
12. "Badges," IBM Skills Gateway, accessed January 24, 2019, <https://www-03.ibm.com/services/learning/ites.wss/zz/en?pageType=page&c=M425350C34234U21>.
13. Lindsay O'Neill, "Pollak Library: Services and Collections," Pollak Library Spark Tutorials, *Instructional Design on a Shoestring* (blog), accessed January 29, 2019, [http://lindsay-oneill.com/sparktutorials/services/collections201819/story\\_html5.html?lms=1](http://lindsay-oneill.com/sparktutorials/services/collections201819/story_html5.html?lms=1).
14. About page, Metaliteracy Badges website, accessed January 29, 2019, <https://sites.google.com/view/meta-literacy/about>.
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