Implementing an altmetrics reporting service into DSpace using Altmetric.com

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The IUScholarWorks Repository is a DSpace-based institutional repository for the dissemination and preservation of Indiana University's scholarly output. As in many institutional repositories, the statistics tracked for repository content have historically been concerned with a) the number and size of items held in our repository, and b) the page views and downloads for those item records (Wacha & Wisner, 2011). To date, these statistics have mostly been used for internal reference.

With the rise of researcher awareness of alternative metrics (commonly called "altmetrics") that track the usage and sharing of scholarly outputs on the social web (Priem, Taraborelli, Groth, & Neylon, 2010), the IUScholarWorks team has been interested in the idea of implementing altmetrics as a value-added service for depositors. We have partnered with Altmetric.com to test deployment of the service in two phases described below, with eventual roll-out to our production repository.

Background

Founded in 2006, IUScholarWorks repository is home to over 9,000 scholarly files from 3 IU campuses, hosted in 68 communities and 500 collections. Our repository contains six categories of content: academic articles and book chapters, working papers, conference proceedings, research data, dissertations and theses, and (in limited cases) student research.

Institutional repositories (IRs) have for some time now been seen as a possible solution to major challenges for university administration: tracking researcher success (MacColl, 2010; Russell & Rosseau, 2002) as well as analyzing research trends (Bollen, Luce, Sekhara Vemulapalli, & Xu, 2003). By filling this niche, IR administrators can prove their repository's value to the institution (Borgman & Larsen, 2003), as well as prove its value to researchers, in an era when researcher engagement is difficult (Zuber, 2008).

With the rise in volume of born-digital scholarly content, interest has turned to how we can measure the impact of these outputs in an increasingly networked research environment. Scholars have also been calling for supplemental measures of research impact, as journal impact factors as indicators of value have been called into question for their lack of granularity on the article level, as well as their inability to measure non-traditional research outputs (Bollen, Van de Sompel, Smith, & Luce, 2005; Neylon & Wu, 2009; Priem et al., 2010).

Enter altmetrics, an emerging field of research that combines traditional webometrics with bibliometrics. Altmetrics generally measure download counts, page views, bookmarks on academic social reference manager sites, and mentions and shares on social media. They are often combined with citation counts and web usage logs to illustrate a rich picture of impact that goes beyond "the academy" to measure popular impact of scholarship as well.

Concerns about the misuse of impact indicators of all stripes—from journal impact factors to citation counts to altmetrics—have been voiced by many researchers who are understandably wary of others using de-contextualized metrics to discern the scholarly relevance of their work (Abbott et al., 2010; Adler, Ewing, & Taylor, 2009; Kelley, 2012). They have also worried about the implications of ranking faculty and departments

against each other (MacColl, 2010; Radicchi, Fortunato, Markines, & Vespignani, 2009). It is in this sensitive climate that we are attempting to test the waters with the implementation of Altmetric, and these concerns have shaped our work plan described below.

Altmetric.com

In January 2013, Altmetric.com announced[1] that they would begin offering their services free-of-charge to Open Access institutional repositories. The Macmillan-backed startup has, to date, primarily provided altmetrics to commercial academic publishers. Via a dashboard interface, the service tracks the following metrics for journal articles: Twitter, Facebook, Google+, and Reddit mentions; academic, social network bookmarks on Mendeley, Connotea, and CiteULike; and newspaper and research blog mentions. Among the services strengths are its ability to provide robust reports and visualizations, Boolean querying and filtering, and context-based metrics. Additionally, an Altmetric "badge" can be displayed on individual articles. This badge displays the total number of altmetrics an article has received and, upon hovering over, shows a "drill-down" view of the metrics by service. The more diverse the altmetrics received, the more colorful the badge displayed.

Basic Implementation on the DSpace Platform

The first step to implementation was to generate a Handle to published DOI mapping, so that the permanent identifiers of content held in our IR (Handles) can be matched with the identifiers assigned by other platforms hosting the same content (albeit often in different forms). These other identifiers most often are Digital Object Identifiers (DOIs), PubMed IDs, and ArXiv IDs.

Next, we modified our custom DSpace XML theme to incorporate Altmetric.com integration. The primary changes were to display the Altmetric badge on individual item records and to modify the DSpace item entry pages to include a checkbox to turn the Altmetric display on or off. By setting permissions on an article-by-article basis, we can allow depositors full control over the public display of their metrics.

We then worked with Altmetric to create an IU-branded section of their reporting website, where end-users are directed upon clicking on an article's badge. There, the full altmetrics counts are displayed, along with more advanced visualizations that recount demographics, etc.

Further work

The obvious next step is to conduct extensive user testing and deploy the service on our production repository. Beyond that, we expect to experiment with displaying a list, ranked by item records' popularity on various social media platforms, on the IUScholarWorks repository home page. As our repository moves closer to providing author disambiguation (possibly using the ORCID service), we will also test author profiles for depositors. Eventually, we expect to annually purchase a bulk export of the data for our IR holdings, so that we might conduct analyses that guide future development work.

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[1] "Altmetrics in libraries and institutional repositories," Jan. 22, 2013. Retrieved from http://altmetric.com/blog/altmetrics-in-academic-libraries-and-institutional-repositories/

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