

**Proposal to  
Study, Propose, and Develop  
Community-based Standards or Recommended Practices in  
the Field of  
Alternative Metrics**

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## **1. What is the main issue, problem or subject and why is it important?**

Assessment of scholarship is a critical component of the research process, impacting most elements of the process from which projects get funded to who gains promotion and tenure, and which publications gain prominence in fields of inquiry. Since Eugene Garfield's pioneering work in the 1960s, much of the research assessment work has been based upon citations. As a metric, citation reference counts have been an exceptionally rich source of accessible data upon which to draw conclusions about the quality of scholarship and will remain an important component of research assessment. "Unfortunately, scholarship's three main filters – based on citation counting, references in other peer reviewed journals, and the JIF (Journal Impact Factor, which measures journals' average citations per article – are failing"<sup>1</sup> to keep pace with the expanded scope of forms and usage that are presently available. Online reader behavior, network interactions with content, social media references, and online content management, —all important indicators of scholars' interaction with research outputs—are not reflected in today's measures. In addition, newer forms of network and researcher behavior analysis can provide a means to assess non-traditional scholarly outputs.

New forms of scholarly outputs, such as datasets posted in repositories, software tools shared in GitHub, algorithms or molecular structures, are now commonplace but they are not easily—or if at all—assessed by traditional citation metrics. For most of these outputs, there isn't yet a culture of citation around them, despite efforts to foster their development, such as the ICSTI/CODATA

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<sup>1</sup> CH Yeong and BJJ Abdullah. Altmetrics: the right step forward. *Biomedical Imaging and Intervention Journal*, July-September 2012, 8(3):1-2. <http://www.bijj.org/2012/3/e15/e15.pdf>

<sup>2</sup> William Gunn. *Social metrics for research: Quantity and Quality*. Presented at: altmetrics 12: An ACM Web Science

work on citation best practices for data sets. Citation analysis also lacks ways to measure the newer and more prevalent ways that articles generate impact such as through social networking tools (Twitter, Facebook, blogs, etc.). These are among two of the many concerns the growing movement around alternative metrics, sometimes called “altmetrics,” is trying to address.

William Gunn, Head of Academic Output at Mendeley, asked the question at the Altmetrics 2012 Conference “Why are almetrics important?” and replied that they can: “Get better data on what’s working; Get it faster; [and] Provide qualitative descriptions, not just quantitative measures.”<sup>2</sup>

Almetrics have been prototyped by the Sloan Foundation-funded work ImpactStory ([impactstory.org/](http://impactstory.org/)) and are increasingly being used and discussed as an expansion of the tools available for measuring the scholarly impact of research in the knowledge environment. “In growing numbers, scholars are integrating social media tools like blogs, Twitter, and Mendeley into their professional communications.... Consequently, tracking mentions of scholarly articles across this expanding online landscape could inform new, broader, faster measures of impact, complementing traditional citation metrics”<sup>3</sup>.

Of course, as with any new concept or methodology, there are limitations and gaps that need to be addressed in order to facilitate their adoption. This can best be done through the development of community consensus standards and/or best practices that look to address the following

issues:

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<sup>2</sup> William Gunn. *Social metrics for research: Quantity and Quality*. Presented at: altmetrics 12: An ACM Web Science Conference 2012 Workshop, Evanston, IL, 21 June 2012. Slides available at: <https://speakerdeck.com/williamgunn/altmetrics12-williamgunn>

<sup>3</sup> Jason Priem, Heather A. Piwowar, and Bradley M. Hemminger. *Altmetrics in the Wild: Using Social Media to Explore Scholarly Impact*. Presented at: altmetrics12: An ACM Web Science Conference 2012 Workshop, Evanston, IL, 21 June 2012. Available at: <http://altmetrics.org/altmetrics12/priem/>

1. *What exactly gets measured?* When describing impact, importance, or influence, what is it in the world of social networking that results in those things being moved in a positive and significant manner? How do alternative metrics apply to non-traditional content forms and what constitutes “use” of things like datasets or software? Since altmetrics is seen as an extension or a new measurement of impact that hasn’t previously been captured, what are those measurements?
2. *How do we decide what the criteria are for assessing the quality of the measures?* Does a link from social networks counts as “scholarly” or “non-scholarly” or does it matter? If there is a weighting factor needed, what are the criteria behind that weighting?
3. *At what granularity should these metrics be compiled and analyzed?* Traditional assessment metrics have been applied at the journal title level, but metrics can exist at any level. What is the value of metrics at a more granular level, e.g., the article, compared with their potential costs?
4. *How long a period should altmetrics cover?* While altmetrics methodologies can compile data much sooner after publication for a quicker measure, what are the windows of time that need to be allocated for measuring the impact/importance/influence before doing comparisons of research?
5. *What is the role of social media in altmetrics?* When using social network data, does the size of the network or the quality of its participants matter most when measuring impact—or is there some other factor that matters?
6. *What is the technical infrastructure necessary to exchange these data?* In order to rapidly report the criteria measured, it is a safe assumption the data will need to be collected via APIs. In order to do that, API structures and data elements will need to be standardized to be

able to collect data across publishers, platforms, and networks; aggregate the data; and quickly report the results.

7. *Which metrics will prove most valuable and how do we decide?* What types of assessment criteria could and should be applied to these new metrics to best assess the value of the analysis? How do we ensure consistent quality across providers?

This is only a starting list of potential issues for discussion and underscores why it is important to convene a panel of experts, and conduct a follow up series of webinars for other interested parties, to develop a comprehensive list of the issues and concerns.

It is our belief that in order for almetrics to move out of its current pilot and proof-of-concept phase, it must begin coalescing around a suite of commonly understood definitions, calculations, and data sharing practices, as well as having an auditing capacity so that organizations wanting to apply these metrics can adequately understand them and ensure their consistent application and meaning across the community. The creation of standards and best practices will facilitate the community trust in these altmetrics and their calculation, which will be a requirement of broad-based acceptance.

## **2. *What is the state of the research on this question?***

As noted, bibliometric assessment traces back to Eugene Garfield in the 1960s, with the development of the Journal Impact Factor. This has been the benchmark by which most scholarly publishing and assessment has been measured in the intervening decades. In recent years, variations of citation metrics such as the *h*-index and the Eigenfactor score, have been developed, but these metrics are mainly more granular versions of traditional citation metrics. Over the past year, several commercial entities have begun incorporating different elements of alternative

metrics in the services they provide. Thomson-Reuters just launched a data metrics service; Elsevier has been including usage-based metrics, such as Source-Normalized Impact per Paper (SNIP) and SCImago Journal Rank (SJR) among others in their SCOPUS product; and Digital Science funded the creation of Altmetric.com. Some publishers, such as PLOS, have been including both citation and alternative metrics on their articles' pages. The National Institute of Standards and Technology is exploring assessment metrics for software and tools. NISO has been involved in a Mellon-funded project on developing a sustainable model for large-scale usage data analysis (MESUR) since 2009. The UK's Joint Information Systems Committee (JISC) has funded PIRUS (Publisher and Institutional Repository Usage Statistics Project) to develop a COUNTER-compliant standard for usage statistics at the individual article level. Other critical elements to a more robust alternative metrics system, including the ORCID project on author disambiguation, have also made progress in the past year. A list of references of existing literature on almetrics and methodologies described is in [Appendix A](#).

### **3. Why is the proposer(s) qualified to address the issue or subject for which funds are being sought?**

The Principal Investigator for this grant will be Todd Carpenter, Executive Director of the National Information Standards Organization (NISO). NISO's Associate Director for Programs, Nettie Lagace will be Co-PI and assist in conducting the initiative. Together, they form an excellent team with significant experience bringing together consensus development groups and leading their work to successful completion. Directly related to alternative metrics, Todd is Co-PI with Johan Bollen at Indiana University on a \$350,000 Mellon Foundation grant, *Developing a Generalized and Sustainable Framework for a Public, Open, Scholarly Assessment Service*

Based on *Aggregated Large-scale Usage Data* (<http://mesur.lanl.gov/MESUR.html>). Webpages providing a detailed summary of the background of the two PIs for this grant are available at:

- Todd Carpenter, Executive Director of NISO: <http://www.linkedin.com/in/toddacarpenter>
- Nettie Lagace, Associate Director of Programs at NISO: <http://www.linkedin.com/in/nettielagace/>

In addition, a large group of experts have agreed to participate as contributors on this project. They also contributed to the formulation of the initial draft of this proposal. Most of this group have been leading the field in Altmetrics research and were participants at the almetrics12 workshop (<http://altmetrics.org/altmetrics12/#keynote>) held in Chicago. .

#### ***4. What is the approach being taken?***

The initial stage of the project will comprise the convening of two face-to-face meetings and several virtual gatherings to identify and prioritize the needs for community consensus on altmetrics. A mid-term report from those meetings will provide an opportunity for more community discussion, but will importantly be the foundation of the second phase of the project. This will focus on convening a working group to execute the creation of consensus standards and/or best practices for altmetrics.

Phase One will begin with two in-person meetings that will be led by consultants, the Principal Investigators, and the Contributors. Other industry thought leaders in the space of assessment and metrics development, social media assessment, software-use monitoring, and network behavior analysis will be invited. A list of invited participants is included in [Appendix B](#) and a draft agenda can be found in [Appendix C](#). These meetings will be used to solicit input from these experts to define a high-level list of issues surrounding the definition, methodology,

infrastructure, and use of altmetrics and identify which of them could be best solved via recommended practices and/or standards. This list will then be used as the basis for two public webinars or sessions, open to all interested parties, where the PIs and Contributors will gather additional input that will be used to finalize and prioritize the list. We will also seek community input through an array of additional, but coordinated mechanisms, such as wikis and e-mail lists. If possible, the events might be held in conjunction with a future Altmetrics meeting, American Library Association Conference, or Coalition for Networked Information (CNI) meeting. In parallel to these activities, a consultant will be hired to write a paper at the conclusion of all these meetings that will document the inputs and findings. This paper is intended to specifically identify areas where NISO can begin the Phase Two work to produce recommended practices and/or standards that will facilitate the adoption and use of altmetrics. Note that any potential standards development within NISO would be developed in accordance with NISO's ANSI-accredited Operating Procedures

([http://www.niso.org/apps/group\\_public/document.php?document\\_id=3246&wg\\_abbrev=staff](http://www.niso.org/apps/group_public/document.php?document_id=3246&wg_abbrev=staff))

and would be subject to the adoption and approval of NISO's Voting Members.

Phase Two will include the formation of a working group to explore more deeply the details of the required best practices or standards recommended in the white paper. Members of the group will be selected from the community based on NISO selection criteria and approved by NISO's leadership committee overseeing the work. They will meet virtually at least monthly and in-person a few times as necessary to develop whatever specifications are required. They will then present a draft recommended practice or standard for public comment and/or trial use, after which the specifications will be revised based on community feedback. Those final

recommendations will be approved by NISO's oversight committee and, if a standard, a NISO voting pool and ANSI prior to final publication. There will also be additional outreach, presentations, and training to provide the community information about what is being developed while development is underway and following publication, in how to implement the standard and/or recommended practices.

A high-level, tentative timeline for project activities that will be accomplished by the date shown is as follows, presuming a June 2013 grant approval:

- July 2013: Negotiate contract with identified consultants. Make arrangements concerning first meeting, date, location, etc., and issue invitations to contributors.
- August 2013: Set up wiki, online workspace, and e-mail lists. Announcement of project. Hire consultant to moderate Phase One work and to write mid-term whitepaper.
- November/December 2013: Hold first face-to-face meeting, possibly to coincide with CNI. Build initial list of issues and concerns. Schedule and announce two webinars.
- January 2014: Hold the second in-person meeting in conjunction with ALA-Midwinter meeting in Philadelphia. Consultant begins drafting paper based on in-person sessions.
- February/March 2014: Public webinars to discuss meetings and engage larger community.
- April/May 2014: Consultant finalizes draft of white paper and first draft is released. Presentation of results and discussion at Altmetrics14 (TBD), CNI, and elsewhere.
- June 2014: Presentations at ALA Annual Conference in Las Vegas (June 27-July 1) And session held at Joint Conference on Digital Libray JCDL, or similar venues, where the initial draft of the paper is presented, along with an outline of areas where

recommended practices and standards are needed. Gather public feedback.

- July 2014: Consultant finalizes the whitepaper, including draft new work item proposal for standards/best practices based on the study. Paper released. Proposal vetted by NISO leadership and members. WG members identified.
- August/September 2014: Proposal approved and working group formed.\*
- September 2014 - August 2015: Working group develops recommended practices/standards. Public draft for comment or draft standard for trial use released. Discussion/input at webinars to report project outputs.
- Fall/Winter 2015: NISO publishes standards/recommended practices and related training materials.
- November 2015: NISO submits report to the Sloan Foundation.

## **5. What will be the output from the project?**

We anticipate several outputs of this project. The first major output from this project will be a white paper describing the outcomes, recommendations, and action items identified during Phase One. This paper will be developed from the in-person meetings, circulated and vetted publicly by the research community and experts and will identify the recommended Practices and/or standards that need to be developed by NISO (possibly in conjunction with others) in order to speed the adoption of altmetrics. The white paper will be used as the basis for a draft New Work Item Proposal within NISO for the Phase Two work. With the draft and community input in-hand, NISO will be positioned to leverage the community used in developing the paper to create the working groups needed to develop those practices and standards. Presuming the approval of

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\* Approval of the second phase standards/recommended practices project is subject to NISO Voting member approval. Approval is not guaranteed. If the project is not approved by members, NISO will refund to Sloan Foundation any unspent funds. Similarly, final publication of the resulting document is subject to approval.

the NISO membership and leadership committees, the final output of this initiative will be a published standard(s) or recommended practice(s) regarding altmetrics. There will also be training and resources produced about how to implement and adopt the recommended practice(s)/standard(s).

## **6. What is the justification for the amount of money requested?**

The project is expected to run for 28 months, with a tentative start date of July 1, 2013 and a completion date of November 30, 2015. We are requesting \$205,741 (including overhead) in funding. The detailed budget is included in a separate, attached excel spreadsheet. It includes:

- \$XX,XXX for NISO staff time in coordinating and conducting the meetings, organizing the working group, procedural compliance, training development, and project promotion.
- \$XX,XXX for a consultant to facilitate the meetings and to write a paper documenting the outcomes, the identification of recommended practices and standards needed, and draft the new work item proposal.
- \$XX,XXX for expenses related to the two face-to-face meetings for 70+/- people
- \$X,XXX for expenses to host to six free, public webinars on this topic for 100 sites.
- \$X,XXX for three face-to-face working group meeting (AV, catering, etc.)
- \$XX,XXX for travel costs to bring people together. Travel subsidies would be available for the Contributors as well as ten (10) additional experts from US-based non-profit or academic institutions (upon request) for the first two meetings. The balance of participants will cover their own costs to participate. The costs reflect three international Contributors. There is also a travel funds pool for working group members to defray some of their travel costs to participate during three in-person WG meetings.
- \$XX,XXX for contribution to NISO overhead at 12% of the project per Sloan's

Guidelines.

**7. What other sources of support does the proposer have in hand or has he/she applied for to support the project?**

We envision the need for no other sources of support for this project. NISO will provide administrative overhead support for working group activities not covered by the grant, such as provision of online collaboration tools, formal accreditation activities, if necessary, etc. Other members of the extended team working in this field may have funding related to this work but that is outside the scope of this grant project.

**8. What is the status and output of current and/or previous Sloan grants?**

NISO has a current Sloan grant (number: 2011-10-27). That grant is for a joint NISO/OAI effort to *Create a Specification for Resource Synchronization*. Currently, the grant is on schedule and a beta specification was released for public comment in February. Further training and promotional webinars are planned for 2013. The expected completion date remains, as originally proposed, September 1, 2013, although formal standardization approval of the specification probably will not be completed by that time. Several presentations and a recent paper in D-Lib magazine are interim outputs. More information is at

<http://www.niso.org/workrooms/ResourceSync>

## Appendix A – Related Works

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Cronin, Blaise. **The Hand of Science: Academic Writing and Its Rewards.** Lanham, MD: Scarecrow Press, 2005. ISBN 0810852829

**Digital Science Announces Support for Altmetric, a Project that Tracks the Online Conversations about Research.** Digital Science Press Release, June 21, 2012. Available at: <http://www.digital-science.com/pages/press-releases#altmetric>

**Elsevier Announces Enhanced Journal Metrics SNIP and SJR Now Available in Scopus®.** Elsevier Press Release, November 22, 2012. Available at: <http://www.elsevier.com/about/press-releases/science-and-technology/elsevier-announces-enhanced-journal-metrics-snip-and-sjr-now-available-in-scopus>

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National Institute of Standards and Technology. **Software Testing Metrics Portal** [website]. Available at: <http://www.nist.gov/software-testing-metrics-portal.cfm>

**ORCID: Connecting Research and Researchers** [website]. Available at: <http://orcid.org/>

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***Appendix B: Potential Meeting invitees***

## **Appendix C: Draft Agenda Two In-person Meetings**

### Day 1

- 9:30 Welcome  
***Round the Room Introductions***
- 9:45 Background and what we hope to achieve  
***Todd Carpenter***
- 10:00 Short opening keynote on topic of assessment  
***TBD***
- 10:30 First Round of Lightning Talks on related projects  
**Speakers invited, but also in-advance signup & impromptu**  
*6+/- projects of 5-10 minutes each*
- 11:30 Discussion of Lightning talk activities, implications
- 12:00 Lunch
- 13:00 Brainstorming: Identification of topics for discussion  
***Participation of all attendees including virtual attendees***  
*Exercise to include noting topics of interest from attendees and posting problems/issues/gaps/challenges/themes on post-it notes followed by collective grouping and prioritizing of themes. Initial themes will be surfaced in the discussion paper shared with the group prior to the event.*
- 13:45 Creation of first round of discussion groups based on prioritized brainstorming themes
- 14:00 Breakout of first round of discussion groups  
*The groups will have an open discussion of their selected topic and how it plays into a future ecosystem. Depending on the topic, this could include identification of related projects, potential solutions, ongoing pilot projects and gaps in community activity related to the theme. Each group will come up with 3-6 action items related to the topic for prioritization later.*
- 15:00 Reporting out of first round of discussion groups & all-attendee discussion of reports  
*Each group will report on its discussions, highlighting necessary actions, gaps or areas where more information is needed.*
- 15:30 Break

- 15:45 Second round of brainstorming to add new themes, discuss potential outcomes, action items and suggestions.
- 16:15 Gathering of and description of community engagement points/action items from Day 1 & 2 breakout discussions.
- 16:30 Group prioritization exercise  
*Discussion of prioritization results*
- 17:15 Brainstorming: Identification of potential next steps and who should be engaged
- 17:45 Wrap up & reporting next steps.
- 18:00 Meeting adjourns
- 19:00 Group dinners (Dutch)  
*NISO staff will assist in arranging these in advance.*