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Altmetrics Definitions and Use Cases

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National Information Standards Organization*

DRAFT FOR PUBLIC COMMENT

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Contents

Section 1: Introduction	1
1.1 Purpose and Scope	1
Section 2: A Definition of Altmetrics	2
2.1 What is Altmetrics?	2
2.2 Scholarly Impact and the Role of Altmetrics in Research Evaluation	2
Section 3: Main Use Cases	3
3.1 Stakeholder-driven Use Cases	3
3.1.1 Persona #1: Librarians	3
3.1.2 Persona #2: Research Administrators	4
3.1.3 Persona #3: Member of a Hiring Committee	4
3.1.4 Persona #4: Member of a Funding Agency	5
3.1.5 Persona #5: Academics/Researchers	5
3.1.6 Persona #6: Publishing Editors	6
3.1.7 Persona #7: Media Officers / Public Information Officers	6
3.1.8 Persona #8: Content Platform Provider	7
Appendix A: Glossary	8
Appendix B: Bibliography	10

Foreword

About this Recommended Practice

Altmetrics are increasingly being used and discussed as an expansion of the tools available for measuring the scholarly impact of research in the knowledge environment. The NISO Alternative Assessment Metrics Project was begun in July 2013 with funding from the Alfred P. Sloan Foundation to address several areas of limitations and gaps that hinder the broader adoption of altmetrics. This document is one output from this project, intended to help organizations that wish to use altmetrics to effectively communicate about them with each other and with those outside the community. “Working Group A” extensively studied the altmetrics literature and other communications and discussed in depth various stakeholders' perspectives and requirements for these new evaluation measures. Additional working group outputs from this initiative in the areas of specific output types and use of persistent identifiers will be released soon for public comment. A draft Code of Conduct for data quality has been made available for public comment through March 31, 2016.

NISO Business Information Topic Committee

This recommended practice is part of the portfolio of the Business Information Topic Committee. At the time the Topic Committee approved this recommended practice for publication, the following individuals were committee members:

[to be added by NISO after approval]

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Mike Showalter, OCLC

Section 1: Introduction

1.1 Purpose and Scope

The NISO Alternative Assessment Metrics Initiative was begun in July 2013 with funding from the Alfred P. Sloan Foundation, and divided into two phases. Phase II of the Project, which began in late 2014, set out to develop standards covering particular action items identified in Phase I through the creation of three NISO working groups.

This document represents the output of the working group tasked with the following action items:

1. To come up with specific definitions for the terms commonly used in alternative assessment metrics, enabling different stakeholders to talk about the same thing; and
2. To identify the main use cases for altmetrics and the stakeholder groups to which they are most relevant, and to develop a statement about the role of alternative assessment metrics in research evaluation.

Section 2: A Definition of Altmetrics

The following terms, as used in this recommended practice, have the meanings indicated.

2.1 What is Altmetrics?

Altmetrics is a broad term that encapsulates the digital collection, creation, and use of multiple forms of assessment that are derived from activity and engagement among diverse stakeholders and scholarly outputs in the research ecosystem.

The inclusion in the definition of altmetrics of many different outputs and forms of engagement helps distinguish it from traditional citation-based scholarly metrics. At the same time, it leaves open the possibility of the complementary use of those traditional measurements for purposes of gauging scholarly impact. However, the development of altmetrics in the context of alternative assessment sets its measurements apart from traditional citation-based scholarly metrics.

2.2 Scholarly Impact and the Role of Altmetrics in Research Evaluation

Scholarly impact is a concept based largely upon the values of research stakeholders, and continues to evolve over time. It is important to clarify the concept of impact within the context of a given community in order to prevent misinterpretations of altmetrics. As such, to avoid being overly limiting, we focus on the current and potential uses for altmetrics, including its application in research evaluation.

The diversity of the stakeholders in the research ecosystem makes a narrow definition of impact impractical. For stakeholders invested in traditional methods of scholarly communication, impact may be synonymous with citation-based metrics, while for stakeholders with strong interests in societal change, such metrics may be inadequate indicators of impact. For stakeholders interested in the broad influence of scholarly outputs, altmetrics may offer insight into impact by calculating an output's reach, social relevance, and attention from a given community, which may include members of the public.

Citations, usage, and altmetrics are all potentially important and potentially imperfect indicators of the values reflected by the term *scholarly impact*. Just as with traditional citation-based assessments, it is inadvisable to use altmetrics as an uncritical proxy for scholarly impact, because the attention paid to a research output or the rate of the output's dissemination may be unclear until combined with qualitative information.

Additionally, it is important to recognize that data quality and indicator construction are key factors in the evaluation of specific altmetrics. Indicators that do not transparently conform to recommended standards are difficult to assess, and thus may be seen as less reliable for purposes of measuring influence or evaluation.

Section 3: Main Use Cases

3.1 Stakeholder-driven Use Cases

Use cases for altmetrics are driven by the different stakeholders in the research ecosystem, many of whom interact directly with one another, and some of whom overlap on an individual basis. The deployment of personas helps to highlight the different ways in which these stakeholders collect, develop, and consume altmetrics, as well as the potential commonalities between altmetrics' stakeholders' needs, goals, and usages.

The following tables present the major use cases for altmetrics by describing eight primary stakeholder personas. To further explain and contextualize the relationships between the parties, each use case has been tagged according to three overarching themes.

1. **Showcase achievement:** Indicates stakeholder interest in highlighting the positive achievements garnered by one or more scholarly outputs.
2. **Research evaluation:** Indicates stakeholder interest in assessing the impact or reach of research.
3. **Discovery:** Indicates stakeholder interest in discovering or increasing the discoverability of scholarly outputs and/or researchers.

3.1.1 Persona #1: Librarians

Persona	Use case	Theme(s)
As a librarian, I want to...	Add value to my existing institutional repositories by encouraging researchers to deposit their works.	Showcase achievements
	Showcase the performance of my institution's scholarly outputs (or the outputs of a particular author).	Showcase achievements
	Increase awareness of the scholarly and societal impacts of their scholarly outputs on the part of authors and the institution.	Showcase achievements
	Monitor usage and decide to which journals and other content my institution should subscribe.	Discovery
	Support both faculty and the university administration in their promotion and tenure exercises, by offering a range of recognized impact-report services.	Showcase achievements Research evaluation
	Advise faculty/researchers on possible ways to improve upon the attention paid toward, and reach of, their work.	Showcase achievements Discovery

3.1.2 Persona #2: Research Administrators

Persona	Use case	Theme(s)
As a research administrator, I want to...	Showcase the achievements of my organization to other stakeholders. For example, I want to demonstrate the achievements of my institution's researchers to potential hires, students, collaborators, and other researchers.	Showcase achievements
	Gauge the performance and achievements of my institution's scholarly outputs.	Research evaluation
	Predict and determine the return on investment of my institution's research.	Research evaluation
	Compare/benchmark the performance and achievements of departments and/or groups within my institution.	Research evaluation
	Identify potential collaborators at other institutions with whom to partner on grant applications and other projects.	Discovery

3.1.3 Persona #3: Member of a Hiring Committee

Persona	Use case	Theme(s)
As a member of a hiring committee, I want to...	Showcase my institution or organization in the best light to potential recruits.	Showcase achievements
	Evaluate potential employees and assess their achievements.	Research evaluation
	Identify new talent whom I may want to recruit.	Discovery

3.1.4 Persona #4: Member of a Funding Agency

Persona	Use case	Theme
As a member of a funding agency, I want to...	Evaluate the previous achievements of academics/researchers who are applying for funding.	Research evaluation
	Evaluate the broader impacts (attention drawn, engagement caused, or influence) of research that my agency funded.	Research evaluation
	Identify trends in public interest or need so that I can decide what research areas to invest in.	Discovery
	I want to showcase the returns of investment of my organization to other stakeholders, by, for example, <ul style="list-style-type: none"> • Demonstrating to the members of the general public that their donations have been used appropriately and effectively, and • Showing politicians and government bodies that their funding has been used appropriately and effectively. 	Showcase achievements

3.1.5 Persona #5: Academics/Researchers

Persona	Use case	Theme(s)
As a researcher, I want to...	Assess the reach, engagement with, and influence of my own research outputs, by, for example, incorporating altmetrics into my portfolio to complement my other accomplishments.	Showcase achievements Research evaluation
	Assess the reach, engagement with, and influence of the research outputs of my peers, by, for example, writing an external letter in support of the tenure of a researcher at another university.	Research evaluation
	Comply with reporting requests or mandates from funders, department heads, research administrators, etc.	Research evaluation Showcase achievements
	Choose to publish in a journal that will provide the maximum exposure of my work to relevant audiences.	Discovery

	Choose to contribute to a publication whose metrics or qualitative data can be tracked to help me assess the reach, engagement with, and influence of my work.	Research evaluation Showcase achievements
	Discover influential research that is important and/or interesting in my field.	Discovery
	Identify potential collaborators and connections between research.	Discovery
	Discover where research is being discussed and potentially join the conversation.	Discovery

3.1.6 Persona #6: Publishing Editors

Persona	Use case	Theme(s)
As a publishing editor, I want to...	Demonstrate the reach, engagement with, and influence of research published in my journal.	Showcase achievements
	Use insights from attention assessment and other metrics to help make editorial decisions about themes or topics upon which to focus.	Research evaluation
	Encourage authors to publish in my journal by providing them with metrics and qualitative information about their research. For example, I want to encourage authors to publish in my journal by demonstrating the promotional efforts that can be made by my publication on behalf of authors.	Showcase achievements Research evaluation
	Identify general trends that the public is interested in so that I can decide what research areas to target in future publications.	Discovery

3.1.7 Persona #7: Media Officers / Public Information Officers

Persona	Use case	Theme(s)
As a media officer, I want to...	Promote research that my institution or organization has produced, in order to maximize reach and engagement. For example, I want to encourage people to interact with a blog post about a major research study under way at my institution.	Showcase achievements

	Determine whether my press campaigns about my institution's or publication's research output have been successful.	Showcase achievements
	Discover ways to enhance the exposure of my institution or publication's research outputs.	Discovery Showcase achievements

3.1.8 Persona #8: Content Platform Provider

Persona	Use case	Theme(s)
As a content platform provider, I want to...	Help readers to find content that is interesting, useful, and/or relevant to them by showing them the conversations about that content. For example, I want to offer sorting, filtering, limiting, etc. according to the attention given to that subject by various audiences, or according to the discussion generated by it on certain media platforms.	Discovery
	Help authors to see an aggregated view and analysis of all the metrics and qualitative information about their research.	Showcase achievements

Appendix A: Glossary

The literature of altmetrics is rich with terminology that requires or implies more specific definitions. The following glossary represents a selection of these terms, based on the contents of this document and the related outputs of the NISO Altmetrics Initiative Phase II.

Activity. Viewing, reading, saving, diffusing, mentioning, citing, reusing, modifying, or otherwise interacting with scholarly outputs.

Altmetric data aggregator. Tools and platforms that aggregate and offer online events as well as derived metrics from altmetric data providers, for example, Altmetric.com, Plum Analytics, PLOS ALM, ImpactStory, and Crossref.

Altmetric data provider. Platforms that function as sources of online events used as altmetrics, for example, Twitter, Mendeley, Facebook, F1000Prime, Github, SlideShare, and Figshare.

Attention. Notice, interest, or awareness. In altmetrics, this term is frequently used to describe what is captured by the set of activities and engagements generated around a scholarly output.

Bibliometrics. A set of quantitative methods used to measure, track, and analyze traditional scholarly literature; a field of research concerning the application of mathematical and statistical analysis to print-based scholarly literature. Sometimes defined as a branch of library and information science.

Content platform provider. Any digital platform that hosts and enables discovery of scholarly/research outputs, such as library services, abstract and indexing databases, and institutional repositories.

Engagement. The level or depth of interaction between users and scholarly outputs, typically based upon the activities that can be tracked within an online environment. See also *Activity*.

Impact. The subjective range, depth, and degree of influence generated by or around a person, output, or set of outputs. Interpretations of impact vary depending on its placement in the research ecosystem.

Metrics. A method or set of methods for purposes of measurement.

Online event. A recorded entity of online activities related to scholarly output, used to calculate metrics.

Reach. The user-focused sphere of influence of a scholarly output, as defined contextually by its placement within the research ecosystem. Reach is closely related to *Impact*.

Research ecosystem. The community or communities involved in the generation, presentation, and evaluation of scholarly research. These communities may be comprised of myriad participants, technologies, and concepts.

Research output. See *Scholarly output*.

Research quality. The assessment of a scholarly output's self-contained value and potential for impact as determined by qualified subject experts. In most cases, assessment of research quality presumes the application of qualitative methods of evaluation. Research quality is not necessarily correlated with research impact.

Scholarly output. A product created or executed by scholars and investigators in the course of their academic and/or research efforts. Scholarly output may include but is not limited to journal articles, conference proceedings, books and book chapters, reports, theses and dissertations, edited volumes, working papers, scholarly editions, oral presentations, performances, artifacts, exhibitions, online events, software and multimedia, composition, designs, online publications, and other forms of intellectual property. The term *scholarly output* is sometimes used synonymously with *research outputs*.

Stakeholder. An agent or actor who creates, consumes, applies, or is otherwise invested in altmetrics or a specific altmetric indicator.

Traditional metrics. The set of metrics based upon the collection, calculation, and manipulation of scholarly citations, often at the journal level. Specific examples include raw and relative (field-normalized) citation counts and the Journal Impact Factor.

Usage. A specific subset of activity based upon user access to one or more scholarly outputs, often in an online environment. Common examples include HTML accesses and PDF downloads.

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