

ISSI 2013 Workshop: Standards for Science Mapping and Classifications

Purpose: Create an action agenda for improved standardization across the various metrics and indicators created by the scientometrics community

Organizers:

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Goal:

This workshop will build on and extend the JSMF Workshop on Standards for Science Metrics, Classifications, and Mapping held August 11-12, 2011 at Indiana University in Bloomington, IN (<http://scimaps.org/meeting/110810/>). It will bring together researchers and practitioners interested in the scientific development and proper usage of science classifications and science maps. Discussion of existing approaches, tools, and techniques will provide a point of departure for a convergence of thought on the challenges and opportunities for developing scientifically sound standards for measuring and communicating the structure and dynamics of science and technology (S&T).

* Group leadership assistance being provided by Kevin Boyack and Judit Bar-Ilan

Program:

16:15 **Overview** of 2011 Workshop results -- Börner and Larivière

16:30 **Introductions** - Participants

(Note to ALL: Please create three slides that report your own research as it relates to the workshop; state most challenging problem(s); provide bio & picture. Share slides with vincent.lariviere@umontreal.ca)

17:00 **Brainstorm Groups***

S&T classifications (Börner, Larivière);
S&T mapping standards (Boyack, Scharnhorst);
S&T stakeholders (Bar-Ilan, Wagner)

17:30 **Brainstorm Groups Report Back**

Identify challenges and opportunities, key developments, funding possibilities
Comments and discussion

18:00 **Collaborative Teaming Opportunities**

Who wants to collaborate on what with whom?
Who are potential stakeholders who are not present?
What other developments, activities are going on?

Vienna, Austria
15 July 2013
#issistandards

JSMF Workshop on Standards for Science Metrics, Classifications, and Mapping

Date

August 11-12, 2011

Meeting Place

School of Library and Information Science, Indiana University
1320 E. 10th St., Wells Library, Room 001
Bloomington, IN 47405

[Wells Library Access Information](#) »

[Indiana University Campus Map](#) »

Organizers



Katy Börner

Victor H. Yngve Professor of Information Science, School of Library and Information Science, Indiana University, Bloomington;
Director, [Cyberinfrastructure for Network Science Center](#); Curator, [Places & Spaces: Mapping Science](#) exhibit, katy@indiana.edu
[PR^2](#) | [VIVO](#) | [Slides](#)



Vincent Larivière

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JSMF Workshop on Standards for Science Metrics, Classifications, and M

Date

August 1

Meeting

School of

1320 E. 1

Bloomington

Wells Lib

Indiana U

Organiz



PR^2 | Slides

Overview of 2011 Workshop Results

Workshop on "Bibliometric Standards", River Forest, Illinois, USA (11/06/1995)

Subject	Topic
Metrics (mathematical-statistical aspects)	Macro indicators; journal impact factors; relative citation rates;
Classifications	Document type; subject classifications; years; author and institutional names
Terminology, concepts (theoretical aspects)	Quality; impact; visibility; productivity; activity index;
Research methodology	Models; normative principles; 'Good' analysis practices

Henk F. Moed on Standards in Science Metrics and Classifications

Overview of 2011 Workshop Results

The Trouble with Classification Standards

- De facto versus de jure standards
- Performance standards versus interoperability standards
- Existing methods/tools that should become standards versus standards that we have to invent
- Open, replicable standards vs. closed, non-replicable ones, e.g., JCR
- How to validate the community of adoption?

Classification systems differ along multiple dimensions

- Dynamism
- Granularity
- Method of generation
- Unit of analysis (facet)
- User purpose (search, description, budgeting)
- Cost and replicability

Overview of 2011 Workshop Results

Processes to Get Classification Standards

- Identify a body to validate the standards-development process.
- Need to define the user community/stakeholders
- Forum for gathering input & approval from community

Processes to Update/Maintain/Promote These Standards

- Professional societies via periodic review
- Discussions at annual meetings

Overview of 2011 Workshop Results

Challenges for Classification Standards

- Determining appropriate threshold level to be considered a “standard”
- How to weigh constraints of standards versus benefits
- How to open the process and share the result
 - Paper level classification vs journal-level classification
- Promote self-reflection in the community

Overview of 2011 Workshop Results

The Trouble with Science Mapping Standards

- Data quality, e.g., define evaluation criteria
- Map quality, e.g., legibility, clustering quality, proximity preservation, proper application of semiotic principles.
- How to explain dynamics of knowledge? How to visualize temporal evolution. Use maps to get intuition then go back to data to get quantitative info.
- Cannot separate data analysis and visualization, e.g., too close clusters should be spread out (accuracy decreases) to make them legible. Looks backward to the data and forward to the map usage.
- Interoperability, e.g., NCBO
- Intercomparability—compare different self-contained maps.
- Take better known entities and replicate real world for general public, e.g., MDS for city Euclidean distances to create a geo map.
- Standards of convenience are bad. Mercator is good for sea navigation but bad in Google maps, etc.

Overview of 2011 Workshop Results

Proposals for Science Mapping Standards

- Different purposes demand different projections.
- There could be a single reference system.
- Need heterarchy, different views of data.
- Compare different layouts, similarity measures.

Measure

- size and shape

Standardize

- reference system

Reduce Dimensionality

- domain-ignorant

Reproject

- domain-appropriate

Overlay

- look for patterns

Overview of 2011 Workshop Results

Challenges for Science Mapping Standards

- Purposes of standards are (1) to empower non-experts to create and read maps and (2) to continuously improve analysis workflows and maps.
- Need benchmarks for evaluation. Social network community has standard datasets. IR had TREC. Can we have one besides ISI, Scopus (everybody downloads/studies different subset/format). Journal citation dataset, paper dataset, Conference proceedings and attendance/sessions, SDB? VIVO? (Need full text) **Need open data.**
- Precision, recall, f-measure –what is our gold standard? Accuracy vs. usability. Standardized residuals of the χ^2 . MDS: specify stress factor. Factor analysis: give variance
- Tools like Pajek, Sci2 as de facto standard—.net, BC measure, etc. **Need open code.**
- Need re-runnable workflows/papers

Today's plan

Discussion items:

S&T Classifications

Strengths, weaknesses, and limitations of existing classifications

Properties of a good classification system in a science mapping context

Properties of a good classification system for metrics

Are classification properties for science mapping and metrics compatible?

Development of new classifications at the paper level

How to take account of nature/methods/objects/citation characteristics?

Dynamically evolving classifications that can capture historical data

Classification of interdisciplinary papers/journals, and what databases to use

S&T Mapping Standards

Strengths, weaknesses, and limitations of existing science maps

Properties of a good science map

Are standards emerging across academic/government/industry use?

Aligning S&T classifications/maps with other ontologies, taxonomies

S&T Stakeholders

Who are the stakeholders of a global research information system, and what influence do they have within the system? (national research policy, funding agencies, research institutions, publishers, libraries and archives, technology drivers, W3C, creative industries)

Can there be a global standard for scientometrics?

What are priorities in terms of type of standards (which databases to use, and when?); scope (output: journals, books, media; input: grants and projects, education); copyright and privacy issues (empower the researcher in the process of tracing and evaluating them); evaluation?

How do grass-roots, bottom-up dynamics influence the existing institutional landscape? Who disseminates and coordinates developed standards?

Ideally, the workshop leads to:

Consensus on action around emerging and accepted standards

Joint publications among us in major journals

Workshop web page is at <http://www.issi2013.org/work.html#Ws4> OR
<http://lariviere.ebsi.umontreal.ca/workshop.html>