“ALTERNATIVE IMPACT METRICS:
UK FACULTY EVALUATION

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IMPACT?

EVIDENCE?
BIG DATA

- Students Served
- Faculty Credentials
- Assess
- SCH Generated
- Salaries
- Patents
- Rankings
- Decisions
- Student Placement
The 3 Vs of Big Data

- Volume
  - Terabytes
  - Records
  - Tables, files
- Velocity
  - Batch
  - Near-time
  - Real-time
  - Streams
- Variety
  - Structured
  - Unstructured
  - Semi-structured
  - All the above

BIG DATA IN A SINGLE DAY ONLINE

- 168 MILLION DVDS
- 294bn E-MAILS ARE SENT
- 4.7M MINUTES SPENT ON FACEBOOK
- 1,350,000,000 VIDEOS UPLOADED TO YOUTUBE
- 864,000 HRS MORE PHONES ARE SOLD THAN BABIES BORN

TUNING INTO BIG DATA AS THE BUZZ GETS LOUDER

The data on big data is...well...big. Here are some examples of the commotion you'd encounter while gathering data about big data.

- 162,000,000 Blog posts discussing big data
- 70,000 Wikipedia "big data" hits a month
- 50+ Infographics about big data
- 120+ Twitter accounts for big data
- 2 million PDFs to read from search results for "big data white paper"

CAUTION

THIS SIGN HAS

SHARP EDGES

DO NOT TOUCH THE EDGES OF THIS SIGN

ALSO, THE BRIDGE IS OUT AHEAD
ASSESSING RESEARCH IMPACT (AND USAGE)
"PEER-REVIEWED JOURNAL ARTICLE PUBLICATION IS THE PRIMARY MODE OF COMMUNICATION AND RECORD OF SCIENTIFIC RESEARCH."

EXPERT PEER REVIEW - FILTER
ASSESSING RESEARCH IMPACT @UK
ASSESSING RESEARCH IMPACT @ UK

# OF EXPERT PEER-REVIEWED PUBLICATIONS

AUTHOR ORDER

JOURNAL QUALITY* (TIER, SCOPE)

IMPACT FACTOR*

OUTSIDE EXPERT LETTERS
**IMPACT FACTORS AS PREDICTORS**

Figure 1: A journal’s impact factor is a good predictor of its five-year median of citations to primary research articles.

From

[http://www.nature.com/nmat/journal/v12/n2/full/nmat3566.html](http://www.nature.com/nmat/journal/v12/n2/full/nmat3566.html)
ALTMETRICS
IMPACT
OR
"EMPTY BUZZ"
ALTMETRICS

REPLACEMENT

OR

VALUE ADDED
ALTMETRICS

Impact

- usage
  - downloads
  - views

- peer-review
  - expert opinion

- citations

- alt-metrics
  - storage
  - links
  - bookmarks
  - conversations

http://altmetrics.org/manifesto/
MOVING BEYOND CITATION COUNTS

http://www.plumanalytics.com/index.html

http://www.altmetric.com/

http://impactstory.org/
Moving Beyond Citation Counts

Up to now this article has been mentioned 1209 times by 1050 sources.

Sources
- 8 Facebook users
- 22 science blogs
- 9 Google+ users
- 1 Q&A thread
- 2 Reddit threads
- 1007 tweeters

Saved to reference managers
- 17 CiteULike
- 36 Mendeley

http://www.altmetric.com/
MOVING BEYOND CITATION COUNTS

- Meaningful Metrics
- Holistic View of Research Output
- 20 Different Types of Artifacts

http://www.plumanalytics.com/index.html
ALTMETRICS ARTIFACTS

Overview: Plum Metrics

Plum is building the next generation of research metrics for scholarly research.

Metrics are captured and correlated at the group / collection level (e.g., lab, department, museum, journal, etc.)

We categorize metrics into 5 separate types: Usage, Captures, Mentions, Social Media, and Citations. Examples of each type are:

- **Usage** - Downloads, views, book holdings, ILL, document delivery
- **Captures** - Favorites, bookmarks, saves, readers, groups, watchers
- **Mentions** - blog posts, news stories, Wikipedia articles, comments, reviews
- **Social media** - Tweets, +1’s, likes, shares, ratings
- **Citations** - PubMed, Scopus, patents

We gather metrics around what we call artifacts. Artifacts are more than just the journal articles that a researcher authors. Artifacts are any research output that is available online. We gather metrics about:

- articles
- blog posts
- book chapters
- books
- cases
- clinical trials
- conference papers
- datasets
- figures
- grants
- interviews
- letters
- media
- patents
- posters
- presentations
- source code
- theses / dissertations
- videos
- web pages

We aggregate artifact and author level metrics into a researcher graph.

http://www.plumanalytics.com/metrics.html
# Current List of Metrics

Below is a listing of the current type of metrics that Plum supports, and samples of providers where we harvest the data from. This list is growing fast / stay tuned.

<table>
<thead>
<tr>
<th>Type</th>
<th>Metric</th>
<th>Example Source(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage</td>
<td>Abstract Views</td>
<td>dSpace, ePrints, PLoS</td>
<td>The number of times the abstract of an article has been viewed</td>
</tr>
<tr>
<td>Usage</td>
<td>Clicks</td>
<td>bit.ly, Facebook</td>
<td>The number of clicks of a URL</td>
</tr>
<tr>
<td>Usage</td>
<td>Collaborators</td>
<td>GitHub</td>
<td>The number of collaborators of an artifact</td>
</tr>
<tr>
<td>Usage</td>
<td>Downloads</td>
<td>Dryad, Figshare, Slideshare, Github</td>
<td>The number of times an artifact has been downloaded</td>
</tr>
<tr>
<td>Usage</td>
<td>Figure Views</td>
<td>Figshare, PLoS</td>
<td>The number of times the figure of an article has been viewed</td>
</tr>
<tr>
<td>Usage</td>
<td>Full Text Views</td>
<td>PLoS</td>
<td>The number of times the full text of an article has been viewed</td>
</tr>
<tr>
<td>Usage</td>
<td>Holdings</td>
<td>WorldCat</td>
<td>The number of libraries that hold the book artifact</td>
</tr>
<tr>
<td>Usage</td>
<td>HTML Views</td>
<td>PLoS</td>
<td>The number of times the html of an article has been viewed</td>
</tr>
<tr>
<td>Usage</td>
<td>PDF Views</td>
<td>dSpace, ePrints, PLoS</td>
<td>The number of times the PDF of an article has been viewed</td>
</tr>
<tr>
<td>Usage</td>
<td>Views</td>
<td>Dryad</td>
<td>The number of times the dataset has been viewed.</td>
</tr>
<tr>
<td>Usage</td>
<td>Supporting Data Views</td>
<td>PLoS</td>
<td>The number of times the supporting data of an article has been viewed</td>
</tr>
</tbody>
</table>
# Captures

<table>
<thead>
<tr>
<th>Captures</th>
<th>Bookmarks</th>
<th>CiteULike, Delicious</th>
<th>Number of times an artifact has been bookmarked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Captures</td>
<td>Favorites</td>
<td>Slideshare, YouTube</td>
<td>The number of times the artifact has been marked as a favorite</td>
</tr>
<tr>
<td>Captures</td>
<td>Followers</td>
<td>GitHub</td>
<td>The number of times a person or artifact has been followed</td>
</tr>
<tr>
<td>Captures</td>
<td>Forks</td>
<td>GitHub</td>
<td>The number of times a repository has been forked</td>
</tr>
<tr>
<td>Captures</td>
<td>Groups</td>
<td>CiteULike, Mendeley</td>
<td>Number of times an artifact has been placed in a group’s library</td>
</tr>
<tr>
<td>Captures</td>
<td>Readers</td>
<td>Mendeley</td>
<td>The number of people who have added the artifact to their library</td>
</tr>
<tr>
<td>Captures</td>
<td>Subscribers</td>
<td>Vimeo, YouTube</td>
<td>The number of people who have subscribed for an update</td>
</tr>
<tr>
<td>Captures</td>
<td>Watcher</td>
<td>Github</td>
<td>The number of people watching the artifact for updates</td>
</tr>
</tbody>
</table>

http://www.plumanalytics.com/metrics.html
# Mentions

<table>
<thead>
<tr>
<th>Mentions</th>
<th>Comment count</th>
<th>Facebook, Reddit, Slideshare, Vimeo, YouTube</th>
<th>The number of comments made about an artifact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mentions</td>
<td>Forum Topic Count</td>
<td>Vimeo</td>
<td>The number of topics in a forum discussing the artifact</td>
</tr>
<tr>
<td>Mentions</td>
<td>Gist count</td>
<td>GitHub</td>
<td>The number of gists in the source code repository</td>
</tr>
<tr>
<td>Mentions</td>
<td>Links</td>
<td>Wikipedia</td>
<td>The number of links to the artifact</td>
</tr>
<tr>
<td>Mentions</td>
<td>Review count</td>
<td>SourceForge</td>
<td>The number of user reviews of the artifact</td>
</tr>
<tr>
<td>Mentions</td>
<td>Blog count</td>
<td>Research Blogging, Science Seeker</td>
<td>The number of blog posts written about the artifact</td>
</tr>
</tbody>
</table>

http://www.plumanalytics.com/metrics.html
# Social Media

<table>
<thead>
<tr>
<th>Social Media</th>
<th>Likes</th>
<th>Facebook, Vimeo, YouTube</th>
<th>The number of times an artifact has been liked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Media</td>
<td>+1</td>
<td>Google</td>
<td>The number of times an artifact has gotten a +1</td>
</tr>
<tr>
<td>Social Media</td>
<td>Ratings</td>
<td>SourceForge</td>
<td>The average user rating of the artifact.</td>
</tr>
<tr>
<td>Social Media</td>
<td>Recommendations</td>
<td>Figshare, SourceForge</td>
<td>The number of recommendations an artifact has received</td>
</tr>
<tr>
<td>Social Media</td>
<td>Score</td>
<td>Reddit</td>
<td>The number of upvotes minus downvotes on Reddit</td>
</tr>
<tr>
<td>Social Media</td>
<td>Shares</td>
<td>Facebook</td>
<td>The number of times a link was shared on Facebook</td>
</tr>
<tr>
<td>Social Media</td>
<td>Tweets</td>
<td>Topsy</td>
<td>The number of tweets that mention the artifact</td>
</tr>
</tbody>
</table>

# Citations

<table>
<thead>
<tr>
<th>Citations</th>
<th>Cited by</th>
<th>CrossRef/Scopus</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citations</td>
<td>Cited by</td>
<td>CrossRef</td>
<td>The number of articles that cite the artifact according to CrossRef</td>
</tr>
<tr>
<td>Citations</td>
<td>Cited by</td>
<td>Microsoft Academic Search</td>
<td>The number of articles that cite the artifact according to Microsoft Academic Search</td>
</tr>
<tr>
<td>Citations</td>
<td>Cited by</td>
<td>PubMed</td>
<td>The number of PubMed Central articles that cite the artifact</td>
</tr>
<tr>
<td>Citations</td>
<td>Scopus Cited-by Count</td>
<td>Scopus</td>
<td>The number of articles that cite the artifact according to Scopus</td>
</tr>
<tr>
<td>Citations</td>
<td>Cited by</td>
<td>USPTO</td>
<td>The number of patents that reference the artifact according to the USPTO</td>
</tr>
</tbody>
</table>
POTENTIAL ADVANTAGES: “MORE”

• MORE “Nuanced Understanding”
  ✤ (read, discussed, saved, recommended, AND cited)

• MORE “Timely Data”
  ✤ (evidence of impact in days instead of years)

• MORE “Artifacts”
  ✤ (datasets, software, blog posts, videos, slide decks, etc.)

• MORE “IMPACTS”
  ✤ (diverse audiences, practitioners, clinicians, educators, general public)

THE 3 A’S OF ALTMETRICS

Question 1 (Acceptance):
Will faculty, administrators, and professional colleagues accept altmetrics to assess research impact as it relates to tenure, promotion, and merit?

Question 2 (Artifacts):
Which specific artifacts should be used to assess research impact?

Question 3 (Adoption):
When, if at all, should the “adoption” occur?