New Research Analytics Help Tell Stories of Research To find Funding Opportunities and more.

May 25, 2016

Andrea Michalek
President and Founder, Plum Analytics
@amichalek and @plumanalytics
TELL THE STORY.

JANUARY 2012
FOUNDED PLUM ANALYTICS

JANUARY 2014
BECAME AN EBSCO COMPANY
Our parent company: EBSCO

- Largest subscription service agency in the world
- Most used online research platform to libraries in the world
- Over $1.9B in sales
- Offices in 23 countries
- Approaching 400 research and educational databases via EBSCOhost with over 2.6 billion records
- Over 100 million searches per day at peak
- Over 150,000 Library Customers
- Relationships with more than 95,000 publishers internationally
- Journal/Magazine database of more than 350,000 individual titles
EBSCO Industries

8/10 Google Page Ranking (PRchecker.info)

Dun & Bradstreet Financial Rating 5A1

One of the 200 Largest Private Companies in the United States (Forbes)
Over 250 PlumX Customers Worldwide

Caltech
What impact has our research had in the past 12 months?
How do we help our early career researchers secure grants.
How do we increase the visibility of our research?
How do we assess and evaluate our research?
Our Approach

• **Categorize**
  – Define the unique properties to measure research output by
  – Group research outputs your way

• **Visualize**
  – See impact at a glance

• **Analyze**
  – Discover your research stories
The universe of metrics is expanding
CITATIONS

H-INDEX

BIBLIOMETRICS

HUMANITIES

ADVANCEMENT

ANALYSIS

REFERENCE

CLINICAL

TWEETS

PUBLISHERS

PRESTIGE

IMPACT

FACTORS

SCIENTIFIC COMMUNICATION

ACADEMIC

NEWS

FACEBOOK

COUNTS

MENTSIONS

ARTICLES

PATENTS

EVALUATE

SCIENCE

TRIALS

COUNT

BIOLOGY

BOOKS

TENURE

EVALUATE

PLUM ANALYTICS

EBSCO
Defining altmetrics

• Altmetrics = Alternative ways of measuring the use and impact of scholarship

• Altmetrics combine traditional impact measures (citation counts) with non-traditional measures

• Altmetrics = ALL METRICS

“Altmetrics are measures of scholarly impact mined from activity in online tools and environments” – Jason Priem, Co-Founder, ImpactStory

Using Altmetrics to Illustrate the Impact of Open Access on Graduate Student Research (Barnett, Collister, Chan 2014)
Benefits of Altmetrics

• **Broadness**
  – Measure the broader impact of research—beyond science

• **Diversity**
  – Measure the impact of scholarly products beyond just the journal article.

• **Speed**
  – Outputs can be measured immediately.

• **Openness**
  – Obtaining and viewing the data is easier.

*Wouters & Costas, 2012*
The pace of scholarly communication is speeding up
Journal citations are the traditional form of Scholarly Measure.

Journal Impact Factor 3.161
What happens in an internet minute?

- 701,389 Facebook logins
- 69,444 Hours watched
- 150 million Emails sent
- 1,389 Uber Rides
- 527,760 Photos shared
- 51,000 App downloads from Apple
- $203,596 in sales
- 120+ New LinkedIn accounts
- 38,194 Posts to Instagram
- 347,222 New Tweets
- 2.78 million Video views
- 1.04 million Vine loops
- 20.8 million+ Messages
- 972,222 Swipes
- 2.4 million Search queries
- 38,052 Hours of music

©2016 Excelacom, Inc.
Researchers have Moved Online
Examples: **Scholarly Data Exhaust**

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<thead>
<tr>
<th>delicious</th>
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<td>Dryad</td>
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</tbody>
</table>
Measuring data exhaust to tell the story…

TECHNOLOGY HAS FINALLY CAUGHT UP
Make visible what was invisible
Make measurable what was immeasurable
Metrics timeline: From Idea to Impact

It can take at least 2-5 years from idea to a published peer-reviewed journal article.

Due to the pace of scholarly publishing, it takes another 3-5 years from the time the work is published to get to critical mass of citation counts.

From idea to measurable citation counts can take 5-10 years.
#3

Compare like with like
Metrics

Categories

**USAGE**
(clicks, downloads, views, library holdings, video plays)

**CAPTURES**
(bookmarks, code forks, favorites, readers, watchers)

**MENTIONS**
(blog posts, comments, reviews, Wikipedia links)

**SOCIAL MEDIA**
(+1s, likes, shares, tweets)

**CITATIONS**
(citation indexes, patent citations, clinical citations)
Is anyone reading our work?
Did anyone watch our videos?
Usage is the #1 stat researchers want to know after Citation counts
PlumX is the only product that includes Usage
bookmarks, favorites, readers, watchers

- Captures indicate that someone wants to come back to the work
- Early indicator of future citations
This category measures people truly engaging with your research.

Automatically uncover the conversations about your research.

Discover feedback, opinions, etc.
Social media measures how well a researcher is promoting their work.

This is especially important for early career researchers to measure and understand.

Track the buzz and attention around your research output.
• Citations still a standard of long-term impact
• Including citations enables side-by-side analysis with other metrics categories
• PlumX is expanding the definition of citations
  – Patent citations, Clinical Citations, etc.
5 Categories in Action – Example Article

Why Do People Transmit Word-of-Mouth? The Effects of Recipient and Relationship Characteristics on Transmission Behaviors

**Usage**
- Bitly - Clicks: 11
- Bitly - Clicks: 1
- RePEc - Abstract Views: 430
- RePEc - Downloads: 181
- SSRN - Abstract Views: 15860
- SSRN - Downloads: 4390

**Captures**
- Delicious - Bookmarks: 1
- Mendeley - Readers: 19

**Mentions**
- Facebook - Comments: 5

**Social Media**
- Facebook - Likes: 160
- Facebook - Shares: 72
- Google+ - +1s: 91

**Citations**
- RePEc - Cited by: 1

**Ratings**
- SSRN - Rating: 918

**Article level metrics are the building blocks for PlumX**
ANALYZE

- By metrics category
- By type of output
- By person
- By grant
- By department
- By institution
PlumX: Built for Big Data

• Built for Scale – Our goal is to track all the world’s researchers, all of their output, and metrics for each.

>18 Million Researchers Worldwide

>120 Million Scholarly Articles

Map artifacts → people → groups
People not Papers
LIST OF GRANTS for the Institution

Example of Analytics Social Media by Grant
To gather the whole story, you need to cast a wide net.
It all starts with a seed
What are the seeds?
We began with the question…

• What do you consider to be research output?
• How do I get to it online?

• Note: Not being a scholarly publisher is an important factor
NEUROMUSCULAR ELECTRICAL STIMULATION AS A METHOD TO MAXIMIZE THE BENEFICIAL EFFECTS OF MUSCLE STEM CELLS TRANSPLANTED INTO DYSTROPHIC SKELETAL MUSCLE

Distefano, Giovanna and Ferrari, Ricardo Jose and Weiss, Christopher and Deasy, Bridget M. and Boninger, Michael L and Fitzgerald, G. Kelley and Huard, Johnny and Ambrosio, Fabrisia (2013) Neuromuscular Electrical Stimulation as a Method to Maximize the Beneficial Effects of Muscle Stem Cells Transplanted into Dystrophic Skeletal Muscle. PLoS ONE, 8 (3). e54922. ISSN 1932-6203

PDF - Published Version
Available under License Creative Commons Attribution.
Download (3754Kb) | Preview

Permission to view external content may be subject to publisher's access restrictions.
Official URL: http://dx.doi.org/10.1371/journal.pone.0054922
Neuromuscular electrical stimulation as a method to maximize the beneficial effects of muscle stem cells transplanted into dystrophic skeletal muscle.

Citation data: PloS one, ISSN: 1932-6203, Vol: 8, Issue: 3, Page: e54922
Publication Year: 2013
Researchers: Johnny Huard, Michael Boninger
Metrics need to be diverse and inclusive
Books/Book Chapters Matter

• Citation counts do not do books justice
  – Never have & never will
  – We need new book metrics

• Important to Social Sciences and Humanities

• Books are often the seminal work from these faculty members
PlumX Book Specific Metrics

- How many libraries hold this book?
- How many Wikipedia articles reference this book?
- What are the reviews on Amazon about this book? What is the book’s average rating?
- How many people added this book to their bookshelf? What reviews have they written? How did they rate the book?
- How many abstract views, downloads, and clicks did this eBook get?
• Graduate degrees in psychology
• Half the faculty is actively involved in research
• Books are the main output of faculty members
• Want to showcase faculty work
Books are their most common research artifact type.
Although this book may never get cited, we still can see usage, captures, and mentions.
PlumX links directly to Amazon reviews and ratings.
The subtitle is missing... A Feminist Revisioning... an aMAZing book! Very helpful in understanding the women who worked with Jung to develop what became Jungian theories and practices. Very clear and concise. Also very helpful is how Rowland explains Jungian terms and difficult concepts in simple language that is accessible to general readers as well as advanced students.

PlumX links directly to Goodreads

- See reviews and ratings
- See individuals who have read or want to read the book
Uncover the conversations the author was not even aware of.
Discover how many libraries hold a copy of the book

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<tr>
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Announcing… Clinical Citations

• Showcase your researchers and institution
• Help your researchers
  – Get credit for their work
  – Tell their stories for funding
• Understand the value of translational research
Clinical Research & Citations

“…clinical medicine draws heavily on basic science, but not vice versa. The result is that basic medicine is cited three to five times more than clinical medicine, and this is reflected in journal impact factors.”

Why the impact factor of journals should not be used for evaluating research.

P. O. Seglen
Sexual activity and cardiovascular disease: A scientific statement from the American Heart Association

This review has 43 Clinical Citations from DynaMed Plus Topics.
See Your Clinical Impact Compared to Peers

Citations

# of interactions

0 20 40 60 80 100 120 140 160 180 200 220

Johns Hopkins University
University of California, San Francisco
University of Alabama at Birmingham
Mayo Clinic Rochester
UNIV of North Carolina Chapel Hill
Massachusetts General Hospital
University of Michigan
University of Pittsburgh
Duke University
Columbia University Health Sciences
University of Yale
University of Pennsylvania
University of Washington
University of Massachusetts
University of Colorado Denver
Case Western Reserve University
University of California, San Diego
Yale University
Vanderbilt University
Different Artifacts Reveal Different Impacts

- **Example 1:** A research study used for clinical advice
- **Example 2:** A meta analysis of studies used to determine clinical practice
- **Example 3:** Researchers contributing to clinical guidelines
Example 1: Research Study

A behavioral weight-loss intervention in persons with serious mental illness

Citation date: New England Journal of Medicine, ISSN: 0028-4793, Vol: 368, Issue: 17, Page: 1594-1602
Publication Year: 2013
Grants: Implementation Research Institute for Mental Health Services (IRI-MHS), Diabetes Research and Training Center

This article has 5 Clinical Citations from DynaMed Plus Topics.

- **Bipolar disorder**
  - Sept. 21, 2015
  - Read More

- **Counseling therapies for schizophrenia**
  - July 10, 2015
  - Read More

- **Depression**
  - April 22, 2016
  - Read More

- **Obesity in adults**
  - March 8, 2016
  - Read More

- **Schizoaffective disorder**
  - June 24, 2015
  - Read More
Example 2: Meta Analysis

Risk of serious atrial fibrillation and stroke with use of bisphosphonates: Evidence from a meta-analysis

Citation data: Chest, ISSN: 0012-3692, Vol: 144, Issue: 4, Page: 1311-1322
Publication Year: 2013
Grant: Quantification and Characterization of Coronary Atherosclerotic Plaque by CT

This article has 6 Clinical Citations from DynaMed Plus Topics.
Example 3: Guideline

Early detection of prostate cancer: AUA guideline

Citation data: Journal of Urology, ISSN: 0022-5347, Vol: 190, Issue: 2, Page: 419-426
Publication Year: 2013
Grant: Protocol Review (CRC)

This article has 4 Clinical Citations from DynaMed Plus Topics.

Management of localized or locally advanced prostate cancer
Jan. 18, 2016
Read More

Prostate biopsy
March 25, 2016
Read More

Prostate cancer
April 15, 2016
Read More

Prostate cancer screening
April 22, 2016
Read More
Online users expect metrics
END-TO-END ENCRYPTION BY default is quickly becoming the new standard for any communications app that claims to care about the privacy of those who use it. But not all encryption is created equal. And default doesn’t always mean default.
Visualizing Scholarly Engagement

- Includes 5 categories of metrics
- Designed to communicate engagement without a score

Subjects: Exercise; Cancer Patients; Physical Activity; Adult: 19-44 years; Middle Aged: 45-64 years; Aged: 65+ years; Male; Female

2. Treatment of holistic suffering in cancer: A systematic literature review.

(includes abstract) Palliative Medicine, Dec 2015; 20(10): 885-898. 14p. (Article) ISSN: 0260-2163
Subjects: Holistic Care; Oncologic Care; Suffering Prevention and Control; Cancer Patients Psychosocial Factors; Psychoeducation; Spirituality; Psychological Well-Being; Psychotherapy Methods

3. Towards an optimal multidisciplinary approach to breast cancer treatment for older women.

Subjects: Breast Neoplasms Therapy; Age Specific Care; Chemotherapy; Cancer in Old Age; Oncologic Nursing; Multidisciplinary Care Team; Aged: 65+ years; Female

 sequential Treatment of Advanced Squamous Lung Cancer: First-line Gemcitabine +/- platinum
Senta K. Georgia, PhD

Title: Assistant Professor of Pediatrics
School: Keck School of Medicine of USC
Department: Pediatrics
Address: CHL Mail Stop 35

Off Campus
Los Angeles California 90089
Phone: +1 323 361 6003
Email: sgeorgia@chla.usc.edu

Overview

View in: PubMed PlumX Metrics


View in: PubMed PlumX Metrics
Autism Spectrum Disorders: Genomes to Outcomes

Researchers

Artifact Summary

- Article: 22
- Media: 1
- Other: 1
- Audio: 1

Recent Artifacts

- Whole-genome sequencing of quartet families with autism spectrum disorder
- "Autisms" a More Appropriate Term than "Autism," Geneticists Say
- LARGEST-EVER AUTISM GENOME STUDY FINDS MOST SIBLINGS HAVE DIFFERENT AUTISM-RISK GENES
- More Differences Than Similarities Are Found in Autistic Siblings
- Autistic siblings may not have same genetic mutations

see details
#7

Use Altmetrics to benchmark your institution
PlumX Benchmarks

• Gather research output associated with NIH grants
• Calculate metrics across all 5 categories
• Compare Institutions using altmetrics

2012 - 2015
PlumX Benchmarks Features

• **Select** specific institutions to benchmark
• **Filter**
  – By Spending Category
  – By Granting Institute and Center
  – By Geography
• **Rank** institutions
  – For each category of metrics
• **Analyze**
**BENCHMARKED ORGANIZATIONS:**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Organization</th>
<th>Interactions</th>
<th>Avg</th>
<th>Artifacts</th>
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<td>9493</td>
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<td>University Health Network</td>
<td>5</td>
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<td>12</td>
</tr>
</tbody>
</table>

Selected institutions for comparisons:
## Mentions Metrics

### Benchmarked Organizations:

#### BENCHMARKED ORGANIZATIONS:

- Start typing to choose
- Harvard Medical School
- Rush University Medical Center
- Icahn School of Medicine at Mount Sinai
- New York University School of Medicine

#### BENCHMARKED ORGANIZATIONS:

- Start typing to choose
- Harvard Medical School
- Rush University Medical Center
- Icahn School of Medicine at Mount Sinai
- New York University School of Medicine
- National College of Natural Medicine
- University Health Network

---

### Rank by Number of Interactions

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<th>Rank</th>
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### Rank by Average Interactions per Artifact

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</tbody>
</table>
### Captures Metrics

#### BENCHMARKED ORGANIZATIONS:
- Harvard Medical School
- Rush University Medical Center
- Icahn School of Medicine at Mount Sinai
- New York University School of Medicine
- National College of Natural Medicine
- University Health Network

#### BENCHMARKED ORGANIZATIONS:
- Harvard Medical School
- Rush University Medical Center
- Icahn School of Medicine at Mount Sinai
- New York University School of Medicine
- National College of Natural Medicine
- University Health Network

#### Benchmark Rankings:

**Rank by number of interactions**

<table>
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<tr>
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<td>12</td>
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</table>

**Rank by average interactions per artifact**

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**Additional Metrics**

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Notice the order changes depending on category.
Example: Food Safety Research

Food Safety News
Breaking news for everyone's consumption

Outbreaks Bring Downward Pressure on Chipotle Stock

BY DAN FLYNN | NOVEMBER 3, 2015

CLOSED

Due to circumstances beyond our control, we're currently closed. We hope to be back to our regular hours and get a burrito in your hand ASAP.

Sorry for any inconvenience.
12 Research Institutions with over $4M in Food Safety funding
### Benchmarked Organizations:

<table>
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**BENCHMARKED ORGANIZATIONS:**

- DARTMOUTH COLLEGE
- MASSACHUSETTS GENERAL HOSPITAL
- UNIVERSITY OF WASHINGTON
- WASHINGTON UNIVERSITY
- ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI
- UNIVERSITY OF SAN FRANCISCO
- STANFORD UNIVERSITY
- UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN
- TUFTS UNIVERSITY BOSTON
- UNIVERSITY OF MARYLAND BALTIMORE CAMPUS
- TEXAS CHILDREN'S HOSPITAL
- UNIVERSITY OF CALIFORNIA SAN DIEGO

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### BENCHMARKED GROUPS:

- **Food Safety**
- **Remove all groups**

**SPENDING CATEGORY (CLICK TO ADD)**

- Acute Respiratory Distress Syndrome
- Adolescent Sexual Activity

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<td>57</td>
<td>40.1</td>
<td>2283</td>
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</table>
Which institution is doing better? Less Artifacts but more Captures?
Looking at Social Media tells a different story.
You can use see that one grant generated two artifacts that had a lot of social media attention.
Meat intake and cause-specific mortality: A pooled analysis of Asian prospective cohort studies

Drill down to details about each artifact
Big Swings in NIH Funding

• $3 billion no longer being spent on HIV research
• $65M refocused on ending AIDS epidemic

NIH drops special 10% set-aside for AIDS research

By Jocelyn Kaiser  |  Dec. 11, 2015
State of the Union Address: January 12, 2016

“Let’s make America the country that cures cancer once and for all.”
Vice President Biden’s Memo

“Over the next year, I will lead a dedicated, combined effort by governments, private industry, researchers, physicians, patients, and philanthropies to target investment, coordinate across silos, and increase access to information for everyone in the cancer community,”
NIH: The Competition for Research $$$ in 2014

4 in 5 people do NOT get funded

51,073 Applications
9,241 Awards

18% success rate

Finding Funding Opportunities can leverage metrics
Barbara Friedland
Associate II

Researcher from:
HIV AND AIDS

Impact by Type: All

<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Captures</th>
<th>Citations</th>
<th>Social Media</th>
<th>Mentions</th>
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<td>Hormonal Contraception and the Risk of HIV Acquisition: An Individual Participant Data Meta-analysis</td>
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<td>2015</td>
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<td>Baseline Predictors of High Adherence to a Cotyline Dependent Microbicide Gel Based on an Objective Marker of Use: Findings from the Caraguard Phase 3 Trial.</td>
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### Funding Opportunities

#### Behavioral and Integrative Treatment Development Program (R34)
- **Agency:** Department of Health and Human Services
- **Applications Due:** 2019-01-07
- **Posted:** 2016-01-08
- **Award Ceiling:** $25,000,000
- **Number of Awards:** 25

#### Behavioral and Integrative Treatment Development Program (R01)
- **Agency:** Department of Health and Human Services
- **Applications Due:** 2019-01-07
- **Posted:** 2016-01-08
- **Number of Awards:** 25

#### Behavioral and Integrative Treatment Development Program (R03)
- **Agency:** Department of Health and Human Services
- **Applications Due:** 2019-01-07
- **Posted:** 2016-01-08
- **Award Ceiling:** $50,000
- **Number of Awards:** 25

#### Exploring Epigenomic or Non-Coding RNA Regulation in HIV/AIDS and Substance Abuse (R01)
- **Agency:** Department of Health and Human Services
- **Applications Due:** 2015-03-02
- **Posted:** 2015-12-14
- **Total Funding:** $3,000,000
- **Award Ceiling:** $3,000,000
- **Number of Awards:** 25

#### U.S.-China Program for Biomedical Collaborative Research (R01)
- **Agency:** Department of Health and Human Services
- **Applications Due:** 2016-03-17
- **Posted:** 2015-12-11

---

**Search for HIV Funding Opportunities in Health**
Funding Opportunity

Sustained Release of Antivirals for Treatment or Prevention of HIV (SRATP) (R01)


STATUS OPEN

KEY DETAILS

OPPORTUNITY DESCRIPTION

The purpose of this Funding Opportunity Announcement (FOA) is to encourage grant applications that address the long term goal and objective of developing sustained release strategies for HIV treatment or prevention. Applications may propose treatment or prevention products delivered using sustained release platforms (oral, injection, implant or direct delivery to HIV target mucosa) that will provide a minimum of 1 week for oral (treatment) or a minimum of once a month for all other drug delivery systems for prevention and treatment protection/efficacy.

FUNDER NAME
National Institutes of Health

FUNDING CATEGORY
Research Grant

FUNDING DISCIPLINE
Health & Medicine

FUNDER TYPE
Government - U.S. Federal

LOCAL FUNDING OPPORTUNITY IDENTIFIER
PAR-16-262

CFDA NUMBERS
93.242, 93.855, 93.856, 000000

CURRENCY
AWARD CEILING
AWARD FLOOR
TOTAL FUNDING
NUMBER OF AWARDS
USD
Not Applicable
Not Applicable
Not Applicable
25

POST DATE: 2016-05-17
APPLICATIONS DUE DATE: 2019-01-04
Funding Opps Integrates with PlumX Dashboards

Funding Opportunity In PlumX Dashboard
Where we’re heading...

### Automatically Targeting Funding Opportunities

<table>
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<th>Year</th>
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Feedback changes behavior
Metrics that update in real time provide a **Feedback Loop**

Feedback loops help change behavior.
Analyze your stars

• Established researchers
  – What are your key researchers doing well?
  – How do you measure that?

• Early career researchers
  – How are they promoting themselves

• Build archetypes by discipline
  – What types of outputs are important?
  – How should these be measured?
Alternative Metrics are no longer
The horse is here to stay, but the automobile is only a novelty—a fad.

- Henry Ford's lawyer Horace Rackham
Telling the Story of Research

#1 The universe of metrics is expanding.

#2 The pace of scholarly communication is speeding up.

#3 Compare like with like.

#4 To gather the whole story, you need to cast a wide net.

#5 Metrics need to be diverse and inclusive.

#6 Online users expect metrics.

#7 Use altmetrics to compare your institution.

#8 Online users expect metrics.

#9 Feedback changes behavior.

#10 Alternative metrics are no longer alternative.
Answer the questions and tell the stories about your research

Find out more information at:
http://www.plumanalytics.com
The PlumX Suite

PlumX Metrics
Get more value from your institutional repository.

PlumX Dashboards
Know what is going on with your research. Without waiting years.

PlumX +Grants
Gain insight about your grants.

PlumX Benchmarks
See how you compare. Now.

PlumX Funding Opportunities
Find the right funding opportunities.