


# Bibliometrics and Impact Analyses at NIST

Stacy Bruss and Amanda Malanowski

*Bibliometrics and Research Assessment:  
A Workshop for Librarians and Information Professionals*  
Library of Congress  
May 21, 2015

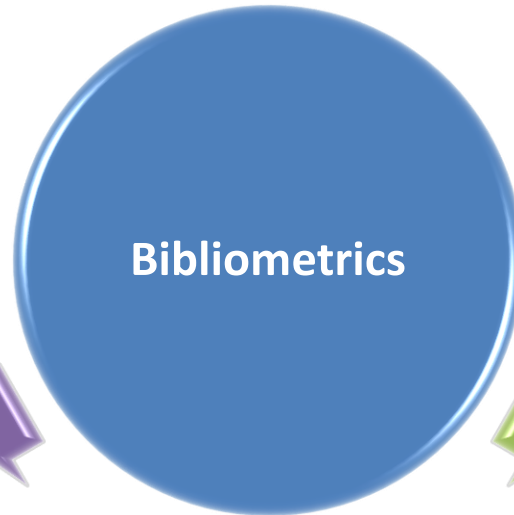
# National Institute of Standards and Technology



- Non-regulatory Federal agency made up of about 3,000 science and technology researchers
  - NIST promotes U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology
  - The Information Services Office supports and enhances research activities of the NIST scientific community through a comprehensive program of knowledge management
- 



**Institution-Level**



**Library-Level**




**Lab-Level**

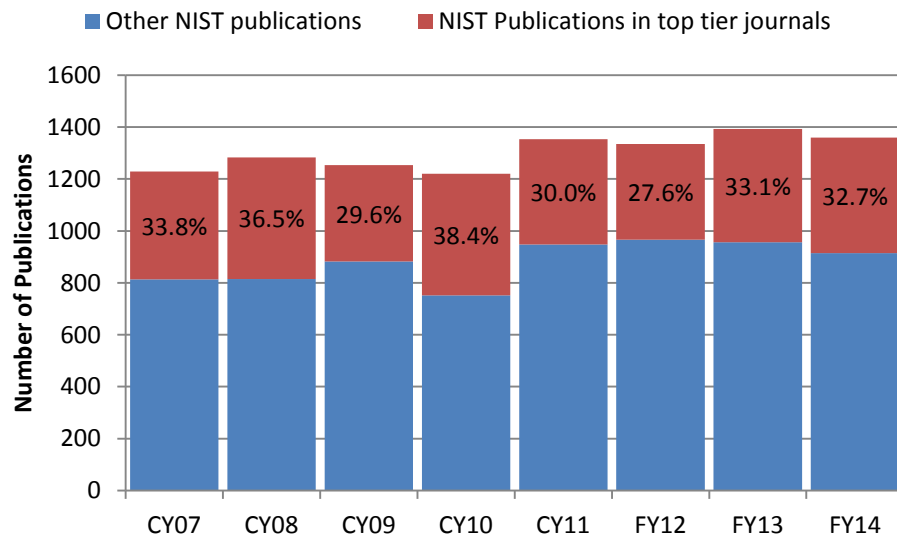




# Institution-Level

- NIST papers in “top tier” journals
  - External and internal NIST collaborations
  - Citations to NIST-published journal, *Journal of Research of the National Institute of Standards and Technology*
- 

# NIST Publications in Top Tier Journals



**Percentage of NIST Publications in Top Tier journals, 2007-2014**

- NIST authored papers in “top tier” journals
- Challenge: What is a “top tier” journal?
- Used by NIST Management to assess the extent of NIST’s impact

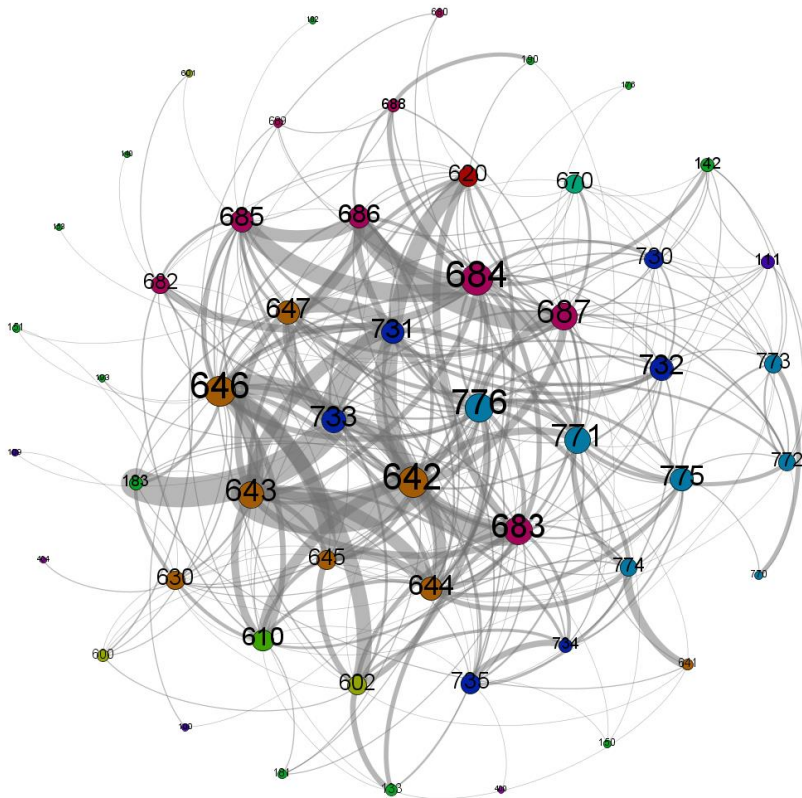
# External Collaborations



**Countries of Authors/Institutions  
Collaborating on NIST Publications,  
2008-2012**

- Determine number of non-NIST co-authors and unique institutions collaborating with NIST
- Used by NIST Management to assess the extent of NIST's impact

# Internal Collaborations




**Collaborations between NIST Divisions  
2012-2014**

- Determine collaborations within and between Labs
- Includes all publication types:
  - papers
  - presentations
  - posters
- Will inform Lab and NIST Management of silos and successful collaborations

# Lab-Level

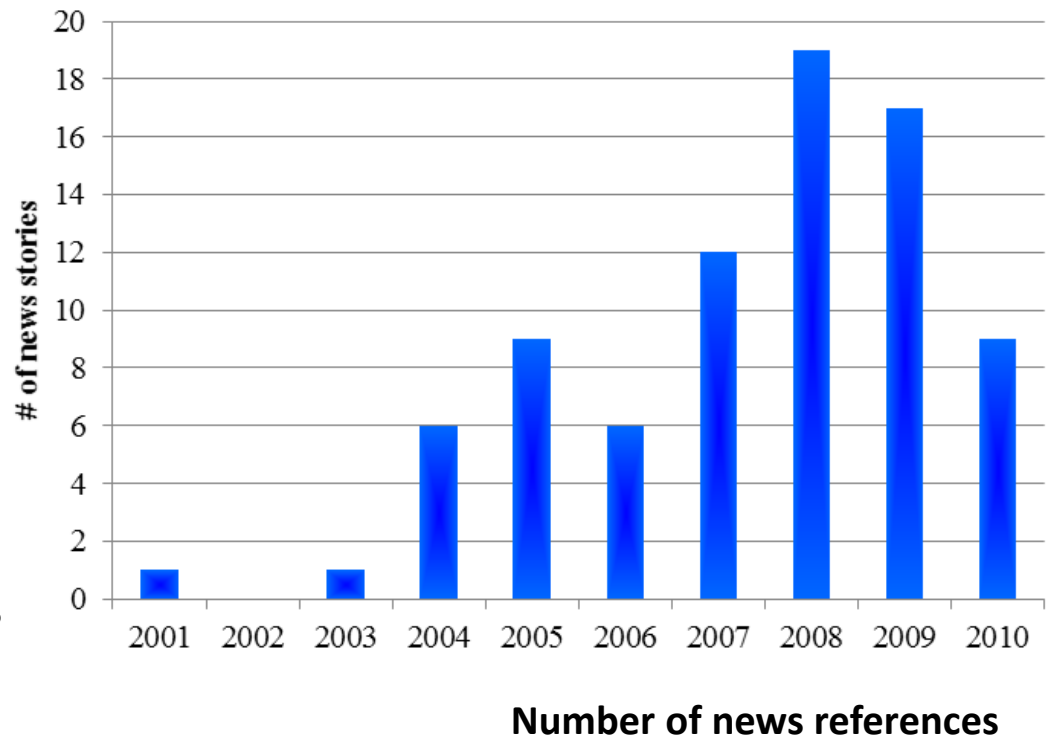


- Individual h-indexes for promotion packages
  - Impact of a report on its intended audience
  - Division/group h-index, citation counts, and more
  - Research area publication networks
  - Journal and conference venue recommendations
    - Individual publications
    - Proactively for group, program, or division
- 



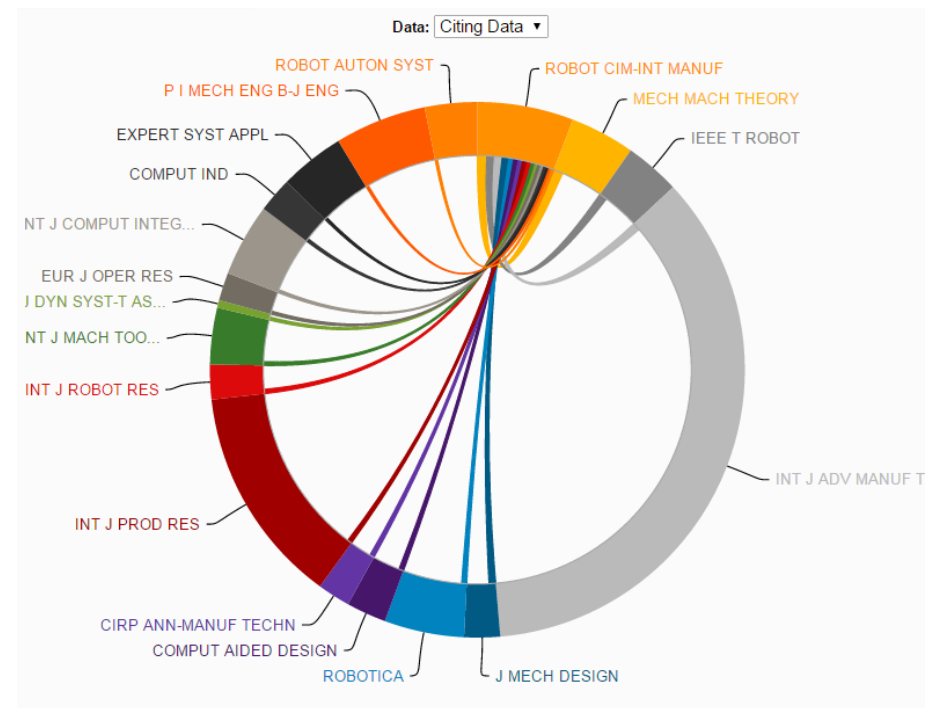
# Quantify Impact of a Report

- Analysis of:
  - scholarly publications and gray literature
  - full-text download
  - news, trade literature, and blog
- Impact of publication to different audiences



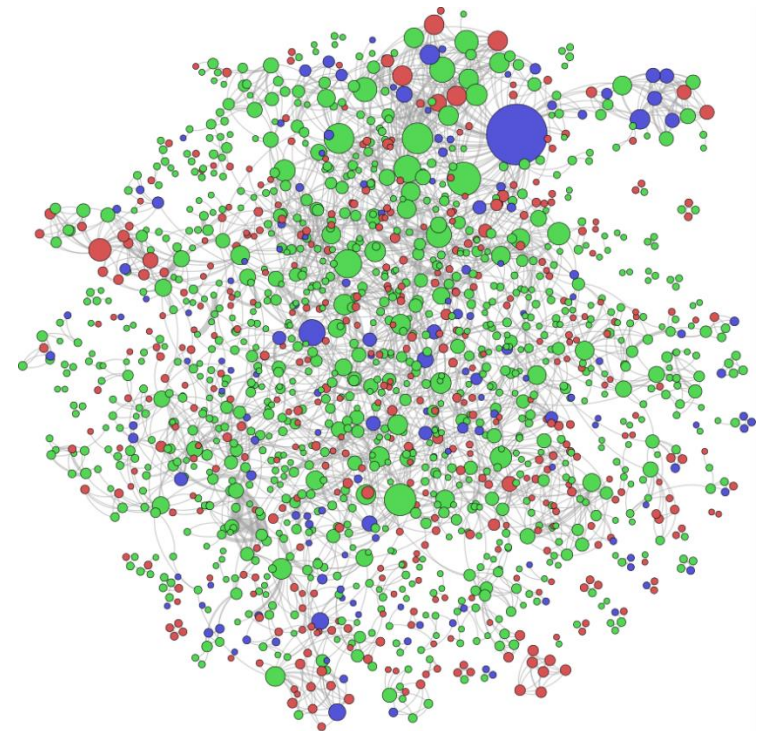
# Venue Analysis

- Recommend venues to publish in
  - Number of related articles
  - IF/SJR subject category ranking
  - Eigenfactor
- Journal, conference, trade publications








# Research Area Analysis

- Customers understand their research area
  - Authors
  - Research subjects
  - Institutions
  - Geographic
  - Trends over time
- How research fits into the field
- Research opportunities



Institution Type	
<span style="color: green;">■</span>	Academic
<span style="color: blue;">■</span>	Government
<span style="color: red;">■</span>	Private Sector

Collaborations	Degree
 1	 2
 14	 12
	 61

Source: Web of Science

**Institution network for manufacturing robotics**

# Library-Level




- Impact of journal collection
- Evidence-based collection development
- Archive journal holdings assessment



# Evidence-Based Collection Development



- NIST publication venues and citations
  - Combined with traditional collection development statistics
  - Categorized and prioritized journals for the collection and for alternative access
  - More robust method than cost-per-use or downloads
- 

# How We Conduct Analyses:

## Best Practices


- Use established internal review process through different stages of analysis
- Collaborate with Lab Liaison team members with the right expertise – program analyst, metadata librarians, etc.
- Use formalized report structure and template
- Share with Lab Liaison team
  - Lab Liaisons meet regularly to share experiences
  - Final reports posted to shared drive



# Analysis Tools

- Web of Science
- Journal Citation Reports (JCR)
- InCites
- Google Scholar
- MS Excel and Access
- OpenRefine

*Note: The identification of any commercial product or trade name does not imply endorsement or recommendation by the National Institute of Standards and Technology.*



# Data Visualization Tools



- MS Excel
- Tableau
- Sci<sup>2</sup>
- Gephi
- Wordle

*Note: The identification of any commercial product or trade name does not imply endorsement or recommendation by the National Institute of Standards and Technology.*







# Questions?

More bibliometric presentations available at:

<http://www.nist.gov/nvl>

Stacy Bruss  
stacy.bruss@nist.gov

Amanda Malanowski  
amanda.malanowski@nist.gov