Assessing and Increasing the Impact of Research at the National Institute of Standards and Technology

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Presentation Outline

• Overview of NIST and ISO
• Discussion of impact analyses
  – Lab-level
  – Institution as a whole
• Increasing the impact of NIST research

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

• 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
Assessing Impact

Impact Studies for the Labs

Impact Studies to Assess ISO Impact

Assessing Impact

Impact Studies for the Institution as a Whole
Impact Studies for the Labs

• Quantify impact of a report on its intended audience
• Calculate individual h-indexes for promotion packages
• Analyze division output over extended time periods for group h-index, citation counts, and more
Quantify Impact of a Report

• Technical Report published in 2004 targeted to practitioners in design, construction, and operation and maintenance

• Bibliometric analysis of scholarly publications and gray literature, full-text download analysis, and news, trade literature, and blog analysis
Quantify Impact of a Report

- Cited frequently in literature; downloaded even more frequently
- Impacted literature in subject fields and geography beyond intended audience
- News and trade literature show impact on practitioners in field
Analyze Division Outputs

- Engineering division wanted h-index values for 44 researchers
- H-index values ranged from 2 to 33
Impact Studies for the Institution as a Whole

• Identify NIST publications in “top tier” journals using Impact Factor rankings (NIST Balanced Score Card metric)

• Analyze outside NIST collaborators on NIST publications to assess NIST’s impact

• Study institutions utilizing or citing NIST patents to determine impact of patents

• Track detailed bibliometrics of NIST-published journal, *Journal of Research of the National Institute of Standards and Technology* to help guide editorial decisions
Publishing in “Top Tier” Journals

- Determined number of NIST authored papers published in high impact journals
- Used by NIST Management to assess the extent of NIST’s impact

Percentage of NIST Peer Reviewed Journal Articles Published in Top Tier Journals, 2007-2012

0.0% 5.0% 10.0% 15.0% 20.0% 25.0% 30.0% 35.0% 40.0% 45.0% 2007 2008 2009 2010 2011 2012*

Percentage of NIST Publications in top tier journals:
- 2007: 33.8%
- 2008: 36.5%
- 2009: 29.6%
- 2010: 38.4%
- 2011: 30.0%
- 2012*: 27.6%
Collaborations with Outside Organizations

- Determined number of unique non-NIST co-authors and number of unique institutions collaborating with NIST
- Used by NIST Management to assess the extent of NIST’s impact
Collaborations with Outside Organizations

- Studied top countries and organizations with whom NIST collaborates
- Used data visualization tools to convey and demonstrate impact

Locations of Authors/Institutions
Collaborating on NIST Publications, 2008-2011
Increasing the Impact of NIST Research

• Help promote NIST conference with bibliometric analysis of past conferences
• Recommend journal and conference venues for publishing
  – Individual publications
  – Proactively for group, program, or division
• Highlight NIST research through various venues such as Wikipedia and NIST Digital Archives
Increasing Impact through Wikipedia

- Adding references and links in Wikipedia to *Journal of Research of NIST* papers
- Tracking downloads and citing before and after links added to Wikipedia

![Graph showing downloads before and after linking to Wikipedia](image-url)
Increasing Impact through the NIST Digital Archives

- Presents images of NIST Museum artifacts and full-text NIST publications
- Showcases scientific instruments from the NIST Museum and photos from the NIST Archives
Increasing the Impact of NIST Research

• Conduct market analysis to help NIST determine future research directions
• Identify speakers and attendees for conferences to help increase conference attendance
• Conduct benchmark assessments or comparison analyses to assess the value of NIST and to learn from other institutions
Questions?