Deutsches Zentrum für Hochschul- und Wissenschaftsforschung

competence centre for bibliometrics

ISSI 2017, Wuhan, 17-20 September 2017

Workshop
Reproducible Scientometrics Research: Open Data, Code, and Education

Reproducibility in Scientometrics through Quality Assurance

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Motivation

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Once upon a time…

- Pre 2008:
  - Increasing interest in and demand for sciento-/bibliometrics
  - Germany – sciento-/bibliometrics in Germany rather fragmented, small units with insufficient capacities
  - Internationally - efficient organizations with in-house facilities specializing in sciento-/bibliometrics were set up
- 2008: Four organizations joint forces and – with support from the German Federal Ministry of Education and Research – and founded the CCB
- 2014: Three new members joint the CCB
- 2018: Opening up of data infrastructure to grantees of the BMBF funding initiative "Quantitatice Science Studies"

DZHW FIZ Karlsruhe Leibniz-Institut für Informationsinfrastruktur Universität Bielefeld Institute for Interdisciplinary Studies of Science (I²SoS) Fraunhofer ISI JÜLICH FORSCHUNGSZENTRUM gesis Leibniz-Institut für Sozialwissenschaften

Mission

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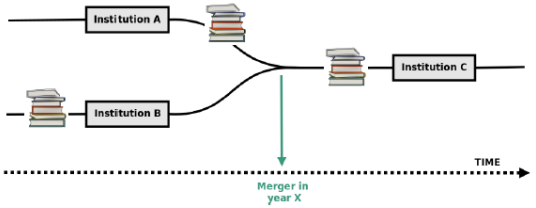
- Creation, development and curation of a quality assured data infrastructure for bibliometric applications
  - Based on WoS und Scopus data (customized)
  - Data infrastructure centrally hosted at FIZ Karlsruhe, designed and optimized for bibliometric applications
    - Consisting of raw data and “bibliometric” data
    - Standardized test and approval protocol
    - Annual “freeze”, old versions archived
  - Enrichment of the data and the infrastructure – with contribution by all partners
    - Cleaning of journal names and country names
    - German address disambiguation incl. historization
    - Matching algorithms
    - Indicator pre-calculation
    - Field classification
    - Shared procedures
    - FA disambiguation
    - Publisher disambiguation
    - Open Access ID



Source: C. Rimmert, esss 2017 Presentation

Mission

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- Research and development
  - Development of appropriate methods and indicators and contribution to the theory of bibliometrics and critical reflection of its application
    - Coverage of datasets
    - Adequacy of methods
    - Reliability of indicators
    - Interpretation of indicators
    - Influence of errors and distortions

Results feed back into further enriching the data infrastructure

Education and training

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- Master course curriculum «Science Studies» at Humboldt University Berlin
- PhD training e.g. newly set up research group on «reflexive bibliometrics»

Beyond Germany...

- European Summer School of Scientometrics (esss)
  - Annual event since 2010 in cooperation with Vienna University, the Catholic University Leuven, and, since 2017 the University of Granada (since 2017)
    - providing training on theoretical foundations, data retrieval and handling, indicator construction
    - Target groups: research management; science policy decision makers; researchers; information specialists, librarians

esss european summer school for scientometrics

Summary

- Our approach to ensure Reproducibility
  - Organizational
  - Distribution of labour
  - Collaborative approach with shared responsibilities and accountability e.g. institutionalized approval procedures
  - (Openeness)
  - Transparency
  - Standardization
  - Stability of data sources
  - Regular feedback options
  - Reflexivity
  - Knowledge sharing

Summary

- What threats to the reliability of scientific knowledge in scientometrics exist & why bother?
  - Insufficient theoretical foundation
  - Un-reflected number crunching
  - Acceptance or lack thereof as result of the above
- Should we be more concerned about exact or conceptual reproducibility? (Why?)
  - Not an either or question but, both dimensions are highly relevant
- Through what measures can these threats be addressed?
  - Organizational
  - Procedural
  - Education
  - Empirical and theoretical foundation