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Measuring Impact in an Open Access Environment

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in an Open Access Environment

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Research Impact

"Impact is any change resulting from an activity, project, or organization. It includes intended as well as unintended effects, negative as well as positive, and long-term as well as short-term."

From: Susan Wainwright (2002). Measuring Impact - A Guide to Resources. NCVO.

➢ Qualitative vs quantitative methods to determine impact

➢ Peer-review, voting, "endorsement"

➢ Publications are the quantifiable output of the research process

Background

➢ Metrics as a research policy issue

➢ Assessment and evaluation of research

▪ Appointment decisions

▪ Funding decisions

▪ Monitoring trends

▪ Prioritize activities and attention

Rankings are here to stay, and it is therefore worth the time and effort to get them right.
Alan Gilbert (President University of Manchester)

From: D Butler (2007) Academics strike back at spurious rankings, *Nature* 447, pp 514-515

Open Access and Metrics

➢ Possibility to collect and process quantitative data on electronic publications

- Usage
- Citations

become open access as well !

➢ Possibility to construct new indicators to measure different aspects of research impact

➢ Possibility to enhance and complement existing metrics

Citations and the Journal Impact Factor

Journal Impact Factor: mean 2-year citation rate
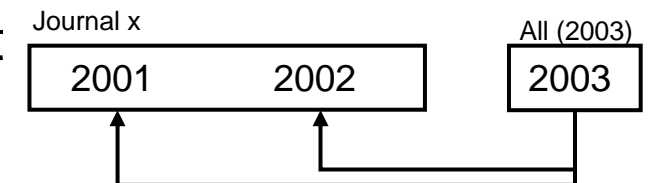
2003 citations to 2001 and 2002 articles in X

Divided by

number of articles published in X in 2001 and 2002

Widely applied in research evaluation

- Fair approximation of journal "status",…but

- Used to rank authors, departments, institutions, regions, nations, etc.

- Now common in tenure, promotion and other evaluation procedures!

Journal x

| 2001 | 2002 |

All (2003)

| 2003 |

Academic authors' views on the value and use of Journal Impact Factors

From: Peter T Shepherd (2007) Final Report on the Investigation into the Feasibility of Developing and Implementing Journal Usage Factors

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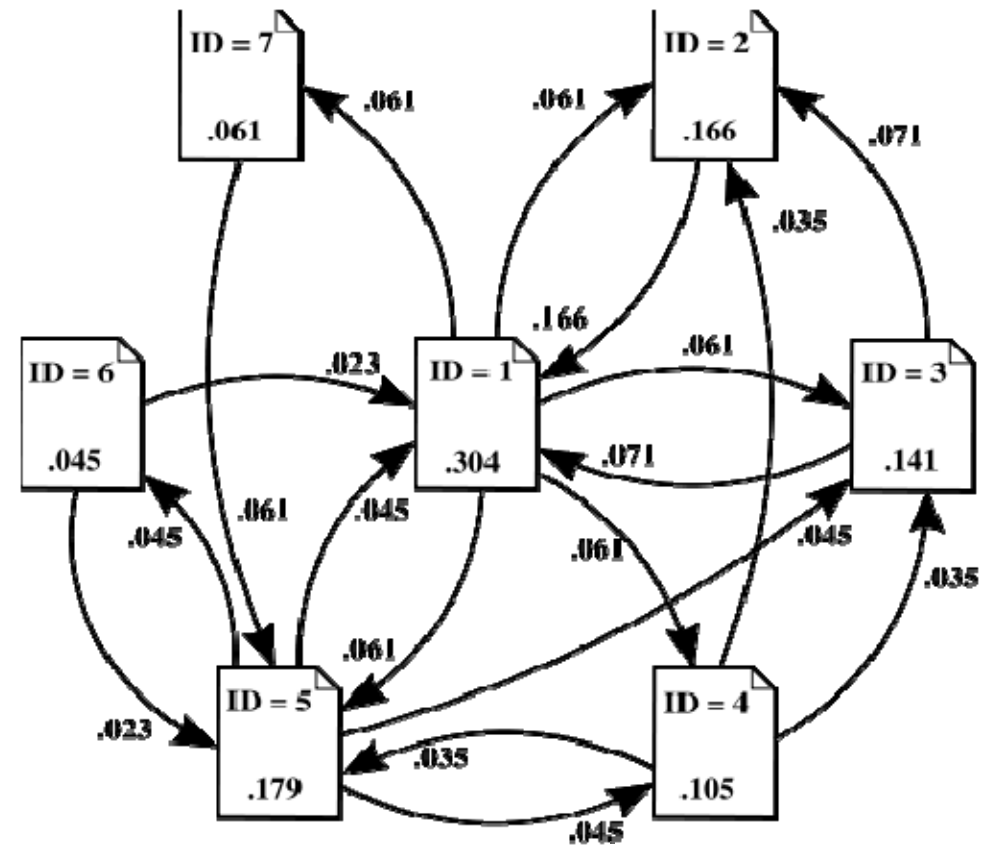Germany
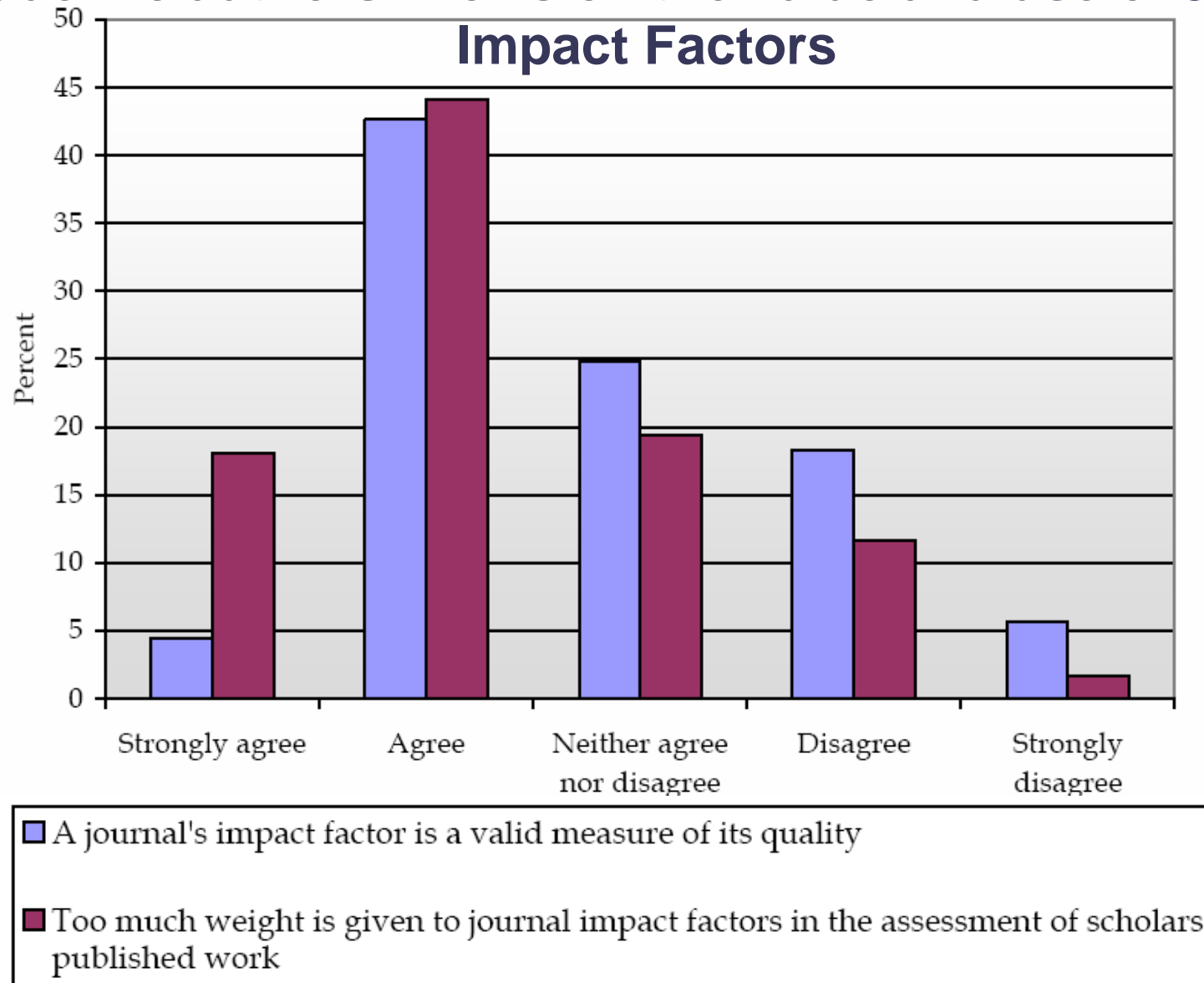
Page Rank

Reciprocal voting of nodes in a network

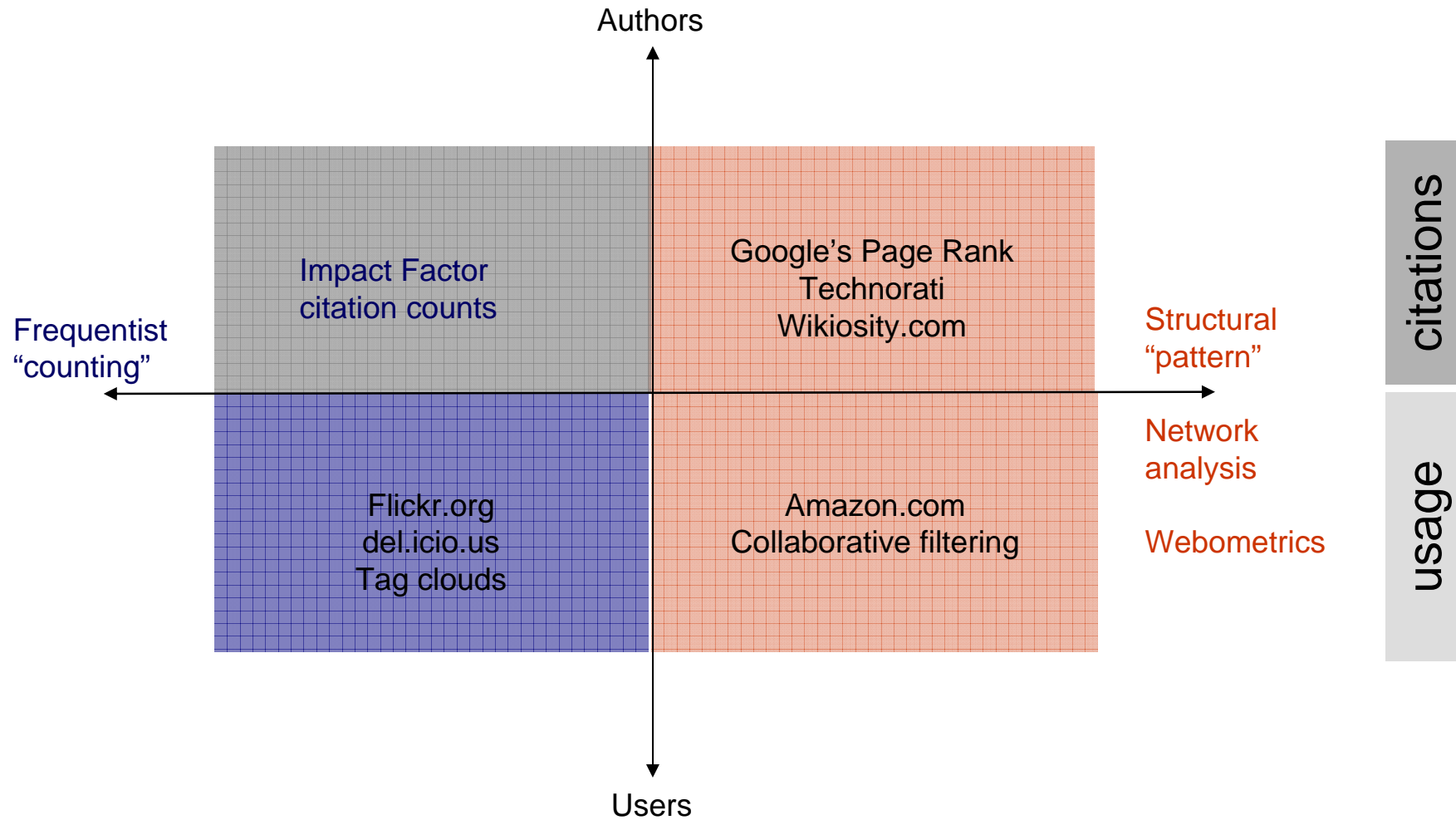Can be applied to any collection of entities with reciprocal references

Related approaches in network analysis include authority and hub values (HITS algorithm)

$$PR_i = \frac{1-d}{N} + d \sum_{\forall j \in \{(j,i)\}} \frac{PR_j}{C_j}$$

A Taxonomy of Metrics

Authors

citations

Frequentist
"counting"

Impact Factor
citation counts

Google's Page Rank
Technorati
Wikiosity.com

Structural
"pattern"

Network
analysis

Flickr.org
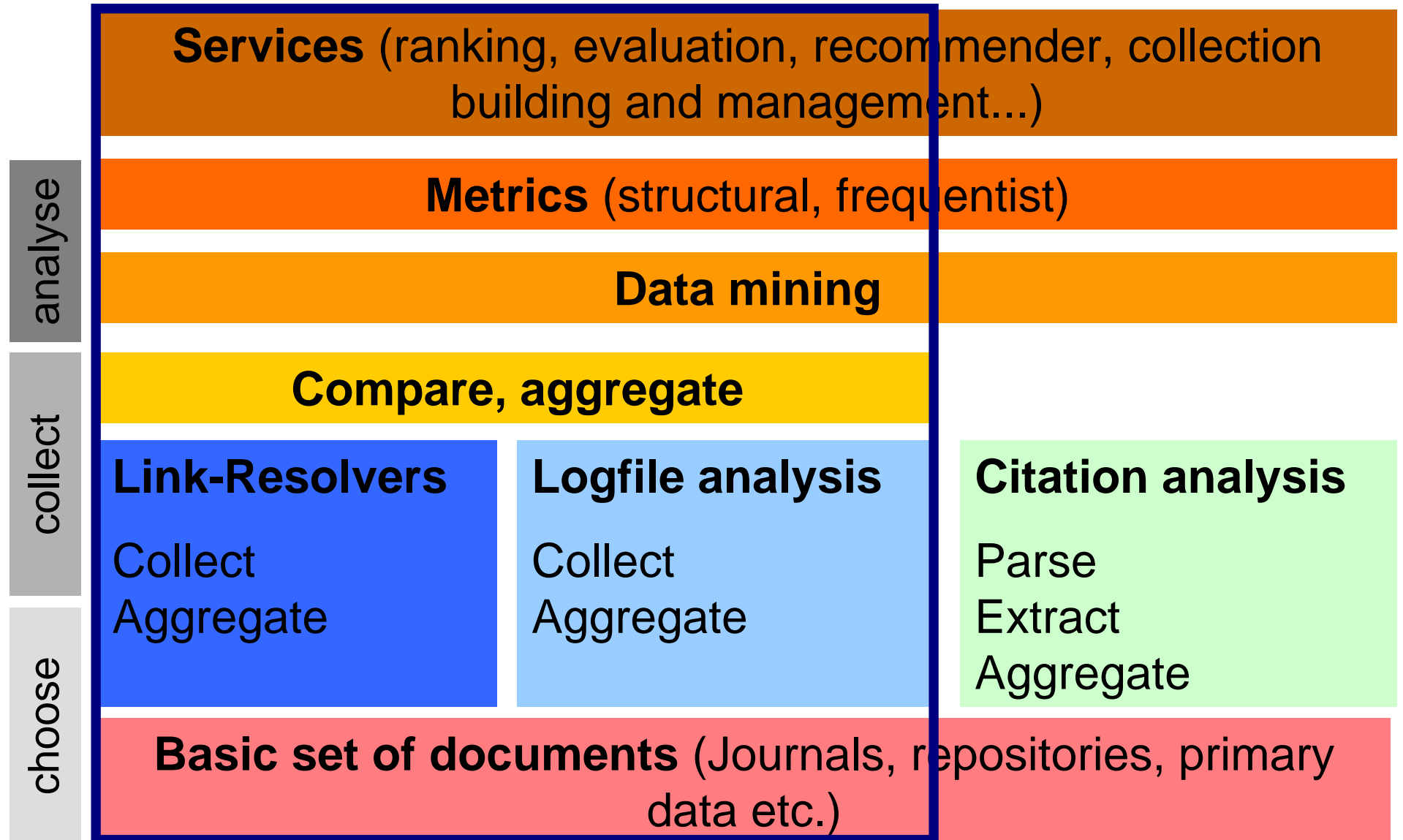del.icio.us
Tag clouds

Amazon.com
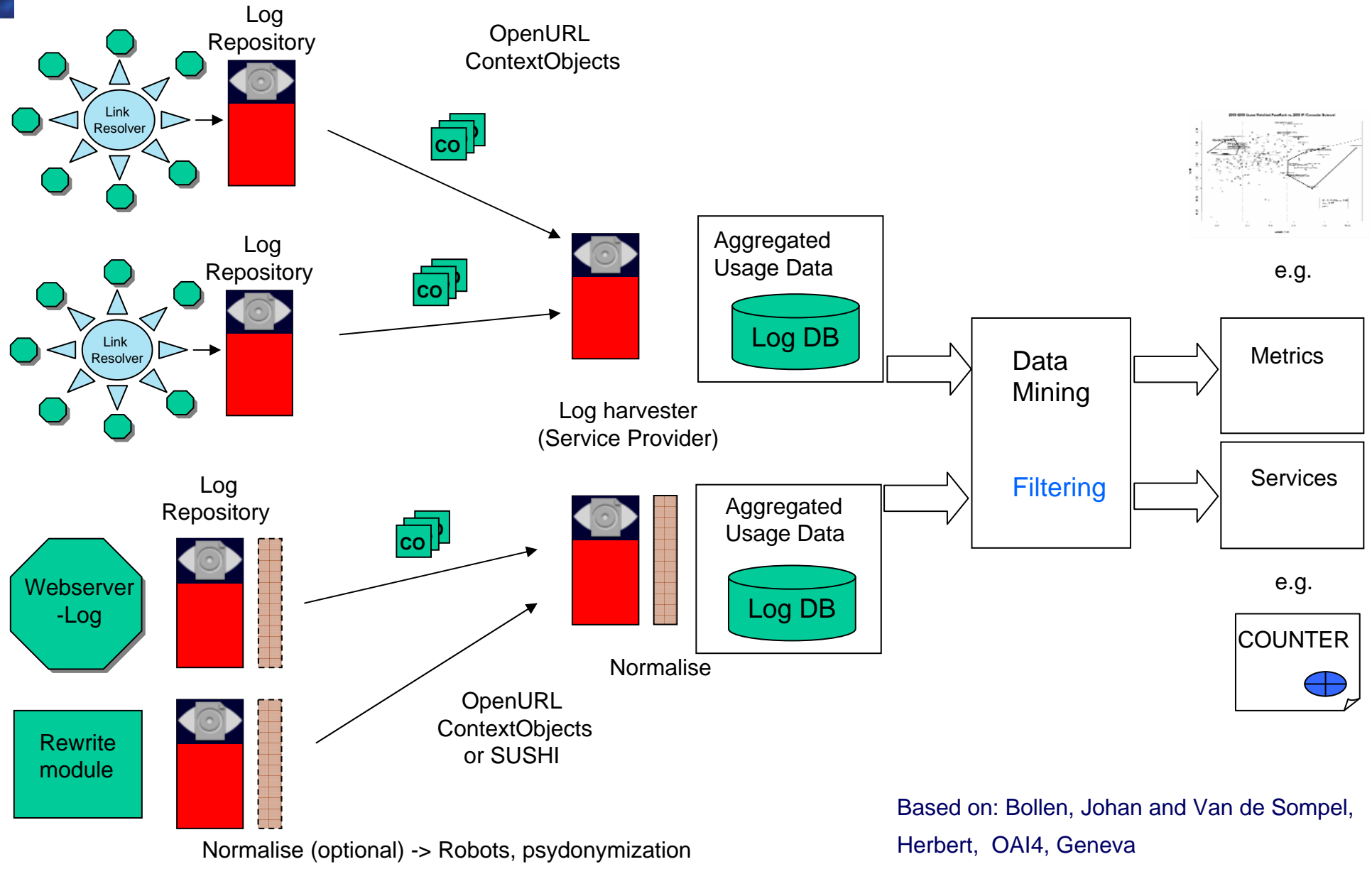Collaborative filtering

Webometrics

usage

Users

Based on: Bollen, Johan and Van de Sompel, Herbert (2005) A framework for assessing the impact of units of scholarly communication based on OAI-PMH harvesting of usage information. *OAI4*, Geneva

Measuring Publication Impact: The Elements (schematic)

analyse

collect

choose

Services (ranking, evaluation, recommender, collection building and management...)

Metrics (structural, frequentist)

Data mining

Compare, aggregate

Link-Resolvers

Collect
Aggregate

Logfile analysis

Collect
Aggregate

Citation analysis

Parse
Extract
Aggregate

Basic set of documents (Journals, repositories, primary data etc.)

Infrastructure for Collecting Usage Data

Universität Stuttgart
Germany

Log Repository

OpenURL ContextObjects

Link Resolver

co

Log Repository

Link Resolver

co

Log harvester (Service Provider)

Aggregated Usage Data

Log DB

e.g.

Webserver -Log

Log Repository

co

Normalise

Rewrite module

OpenURL ContextObjects or SUSHI

Aggregated Usage Data

Log DB

Data Mining

Filtering

Metrics

Services

e.g.

COUNTER

Normalise (optional) -> Robots, psydonymization

Based on: Bollen, Johan and Van de Sompel, Herbert, OAI4, Geneva

Ongoing Work

➤ LANL

- bX (with CalState, ExLibris)

- MESUR

- …

➤ UK
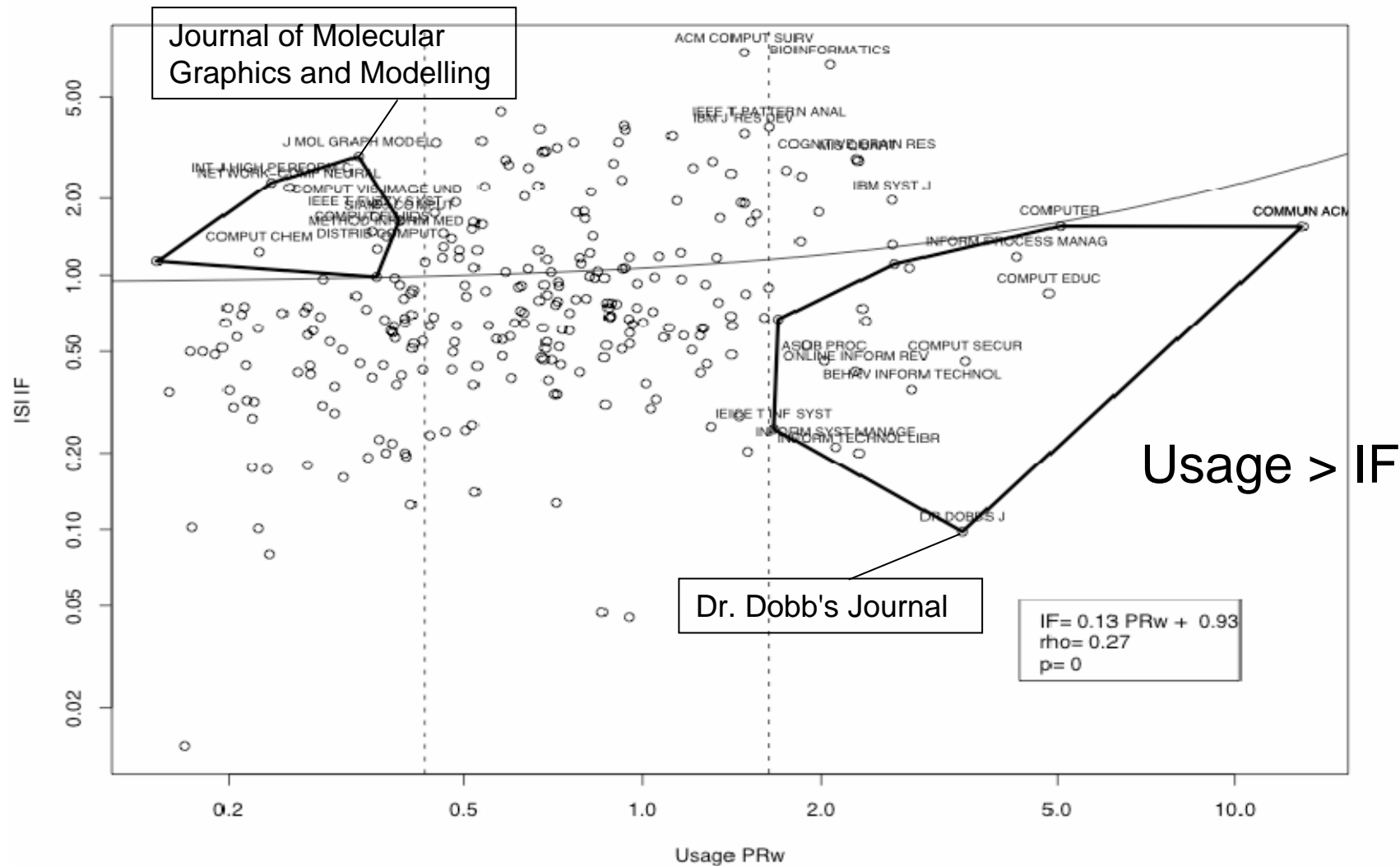
- University of Southampton (Citebase, IRS, EPStats …)

- University College London

- …

➤ Germany (DINI / DFG)

- Göttingen State and University Library

- Stuttgart University Library

- Computer and Media Service Humboldt University Berlin

- Saarbrücken State and University Library

Examples: bX - Comparison of Journal Usage PageRank and Journal Impact Factor

2003–2005 Usage Weighted PageRank vs. 2003 IF (Computer Science)

Examples: MESUR – Aspects of Impact

From: Bollen, Johan (2007) MESUR: metrics from scholarly usage of resources *OAI5*, Geneva
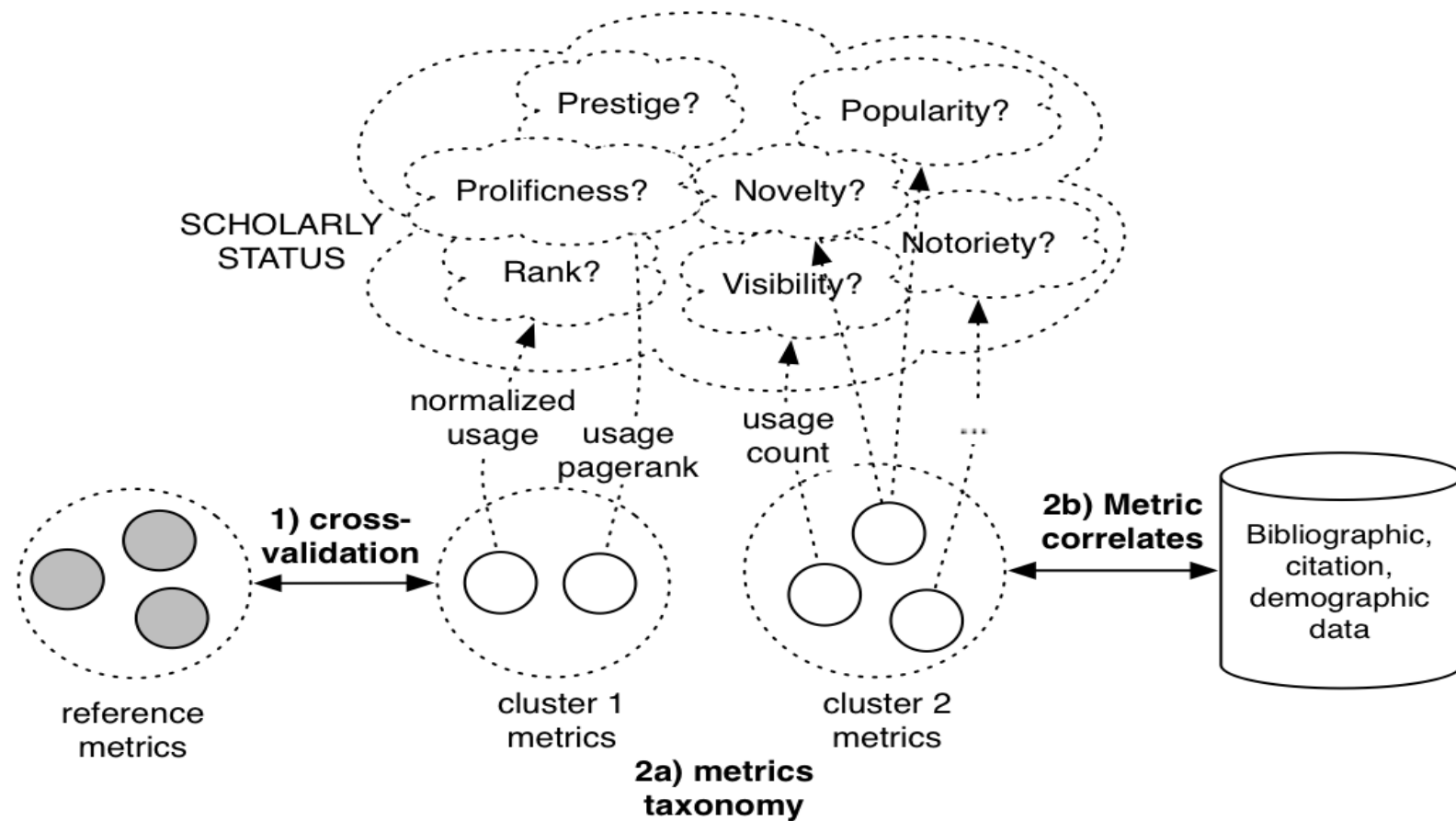
Examples: DINI - Infrastructure

- ➢ Cluster of proposals to the DFG

  - ▪ Network of certified open access repositories 2y ✓

    - – National input to EU repository infrastructure project DRIVER

  - ▪ Usage statistics demonstrator ✓

  - ▪ Distributed open access reference citation service demonstrator ✓

- ➢ Co-operation with German collecting society for copyright charges (VG Wort)

  - ▪ Statistics based payout to authors (METIS)

Conclusion

➢ Scholarly evaluation will evolve as scholarly communication does

➢ Infrastructure for collecting and aggregating usage data conceptually available, has to be deployed and implemented in practice on a large scale (DINI/DFG)

➢ Investigating metrics for different needs and purposes (MESUR)