Crossref

Advantage of registering DOIs:
The key to metadata applications

Chuck Koscher

Director of Technology

DOI Outreach (Session #2), Tokyo December 3, 2015

Where We Started

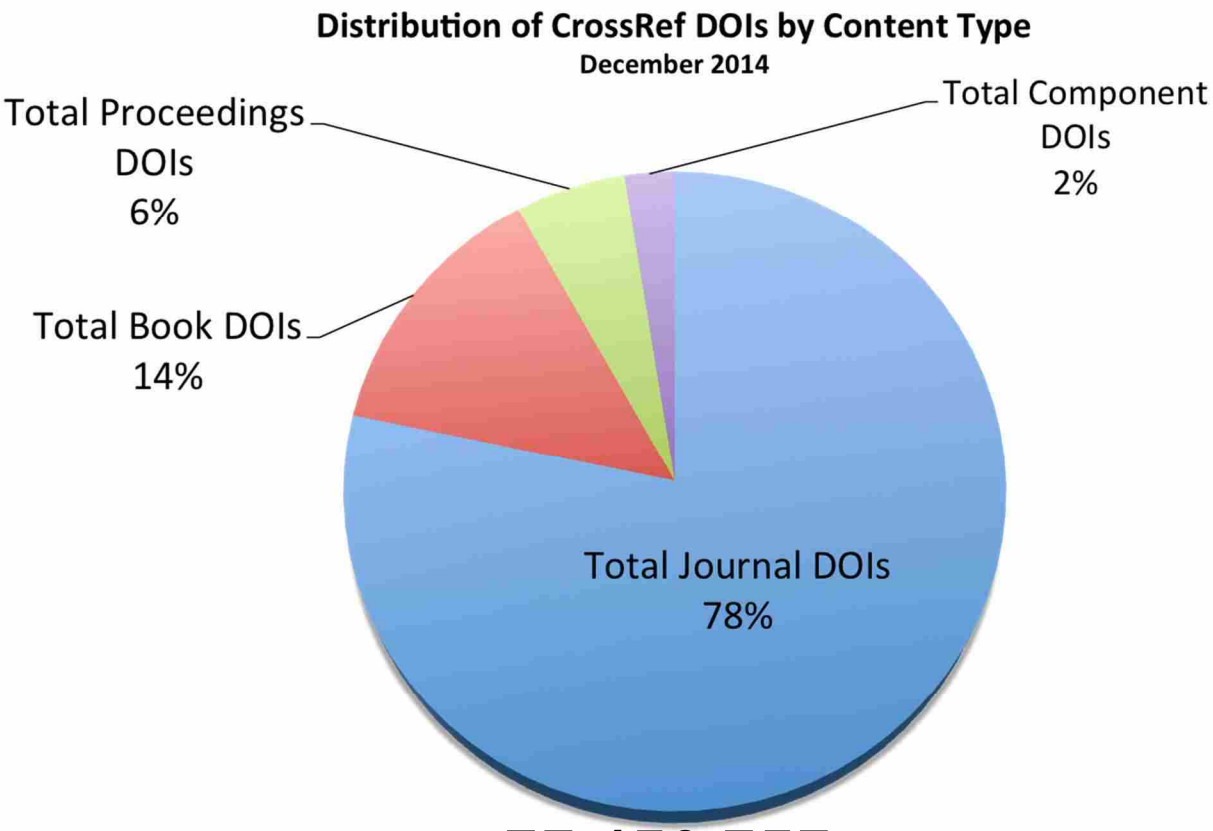
- Not-for profit: PILA in 1999 then CrossRef in 2000
- Set up by publishers to enable reliable reference linking.
- Bringing together publishers and their data for the benefit of the whole community.
- 16-member international board of directors from membership

What We Do

- Network for Scholarly Community
- Run services publishers cannot do individually
- Facilitator for industry technical innovation
- Extended to include other data and services that address the status and relationships of and between scholarly works of all kinds.
- Engage many types of organizations: Publishers and "non-publisher" publishers; Commercial and non-profits; OA & Subscription; Funders; Researchers; Libraries

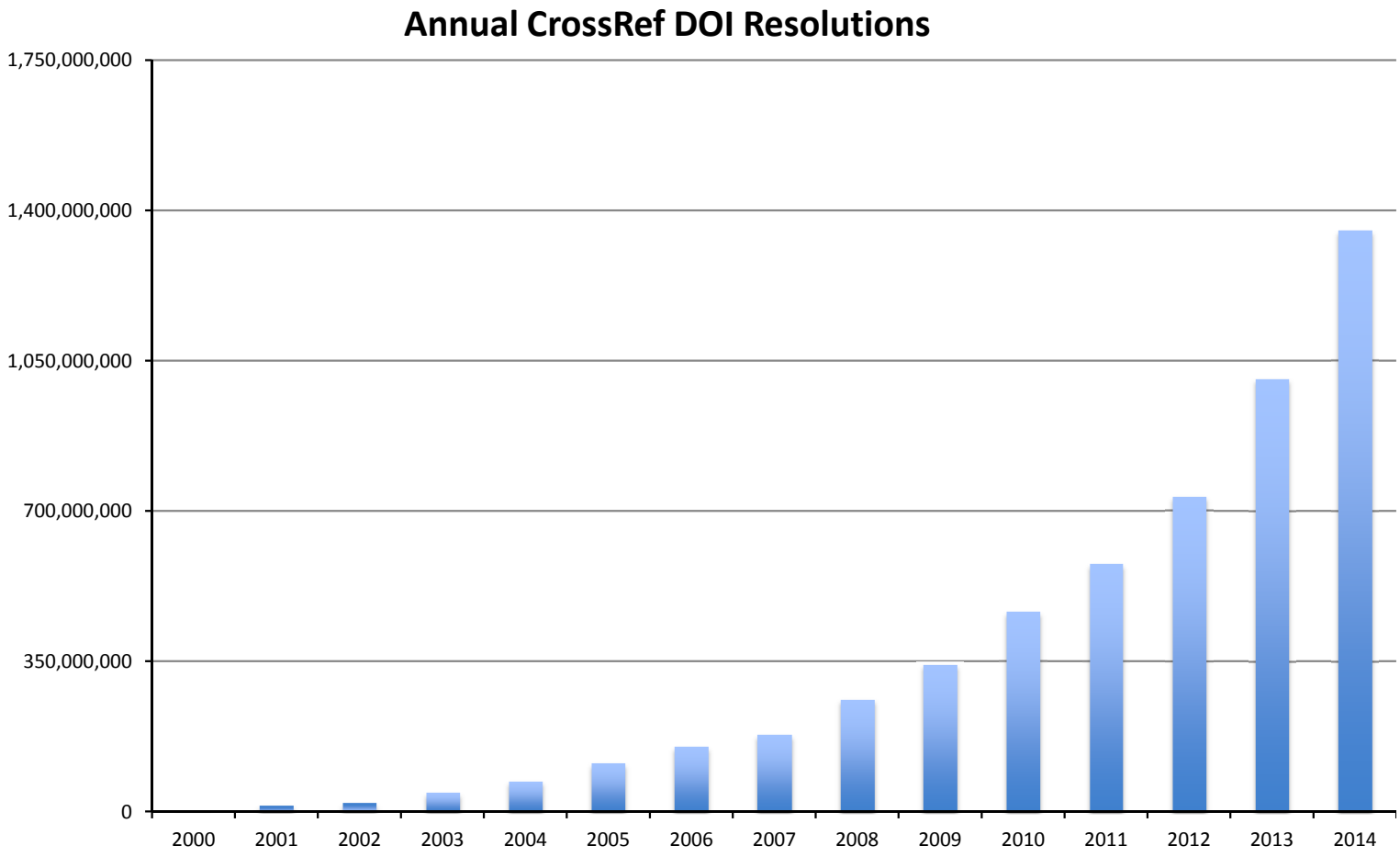
CrossRef DOIs uniquely identify content

Crossref DOIs are not just for journals



77,459,757

We generate well over a billion annual ‘clicks’ to publishers’ sites



So far in 2015 Crossref has serviced well over 5 billion requests for metadata

5,000,000,000

So how does this work?

Publishers give Crossref metadata

- Basic citation metadata:
  - author(s)
  - journal title
  - article title
  - volume
  - Issue
  - page numbers
  - publication date
  - book title
  - chapter title

- Optional metadata, e.g.
  - references
  - funder information
  - ORCIDs
  - CrossMark publication record metadata
  - Abstracts
  - License data

The DOI is the key for a metadata record

If you don't have the key you can't get the metadata

Why a DOI?

It's actionable, a person can click on a DOI link

Why Crossref?

Crossref aggregates a lot of metadata

Statistics, May 2015	
Total number participating publishers	**5,945**
Number of journals covered	**39,015**
Number of DOIs registered	**73,615,189**
Number of DOIs deposited last month	**461,984**
DOI resolutions (end-user-clicks) last month	**124,765,975**

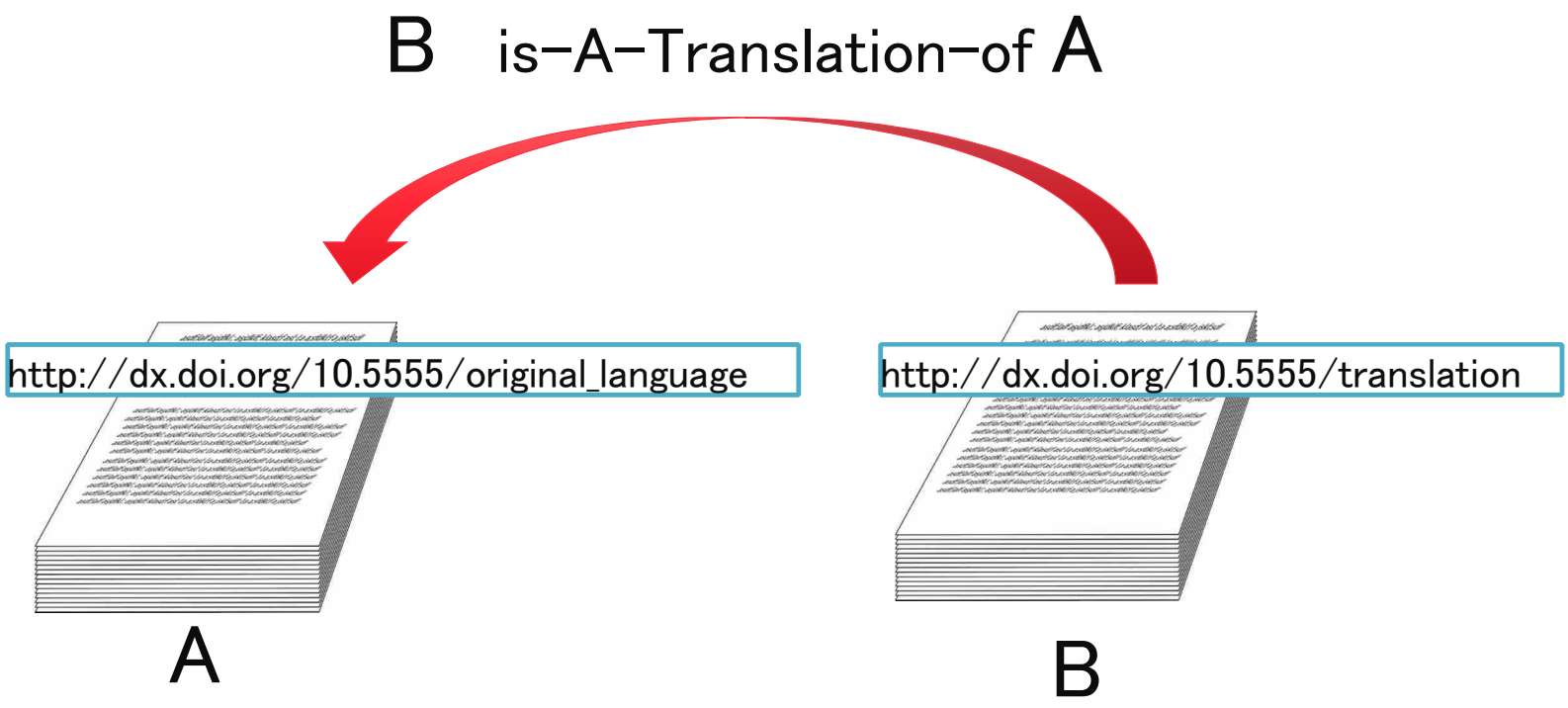
Crossref provides service built on this metadata

- Reference linking
- Cited-By linking
- Funding data (what articles result from a given award/grant)
- Inter and Intra work relationships (ex: translations)
- Important information for the reader (corrections, retractions … etc)
- License terms for Text & Data Mining
- 2016: Doi Event Tracking

But almost as important, Crossref has APIs that let others retrieve our metadata and build their own services

- Academic Analytics, LLC
- Academic Medical Center
- Airiti, Inc.
- Altmetric, LLC
- American Chemical Society (ACS)
- Cambia
- Colwiz Limited
- Copyright Clearance Center, Inc. (CCC)
- DeepDyve, Inc.
- EasyBib.com (ImagineEasy Solutions)
- Elsevier, Inc.
- EMBL-EBI
- Ex Libris Ltd.
- Global Digital Central
- Hindawi Publishing Corporation
- Instytut Bioinfobank Sp. z o.o.
- Labtiva, Inc.
- mapegy GmbH
- MESUR
- NASA ADS
- OCLC
- Ontario Council of University Libraries (OCUL)
- PhilPapers Foundation
- Plum Analytics
- ProQuest Information & Learning
- PTFS Europe
- Reprints Desk
- Research Square
- ScholarMate, Ltd.
- Science-Metrix
- Sciencescape, Inc.
- Sunmedia
- Suweco, CZ
- Symplectic, Ltd.
- Talis Education Limited
- Technical Information Center of Denmark (DTU Library)
- The Korean Federation of Science and Technology Societies
- Third Iron
- UberResearch

Example: relations



Example: relations

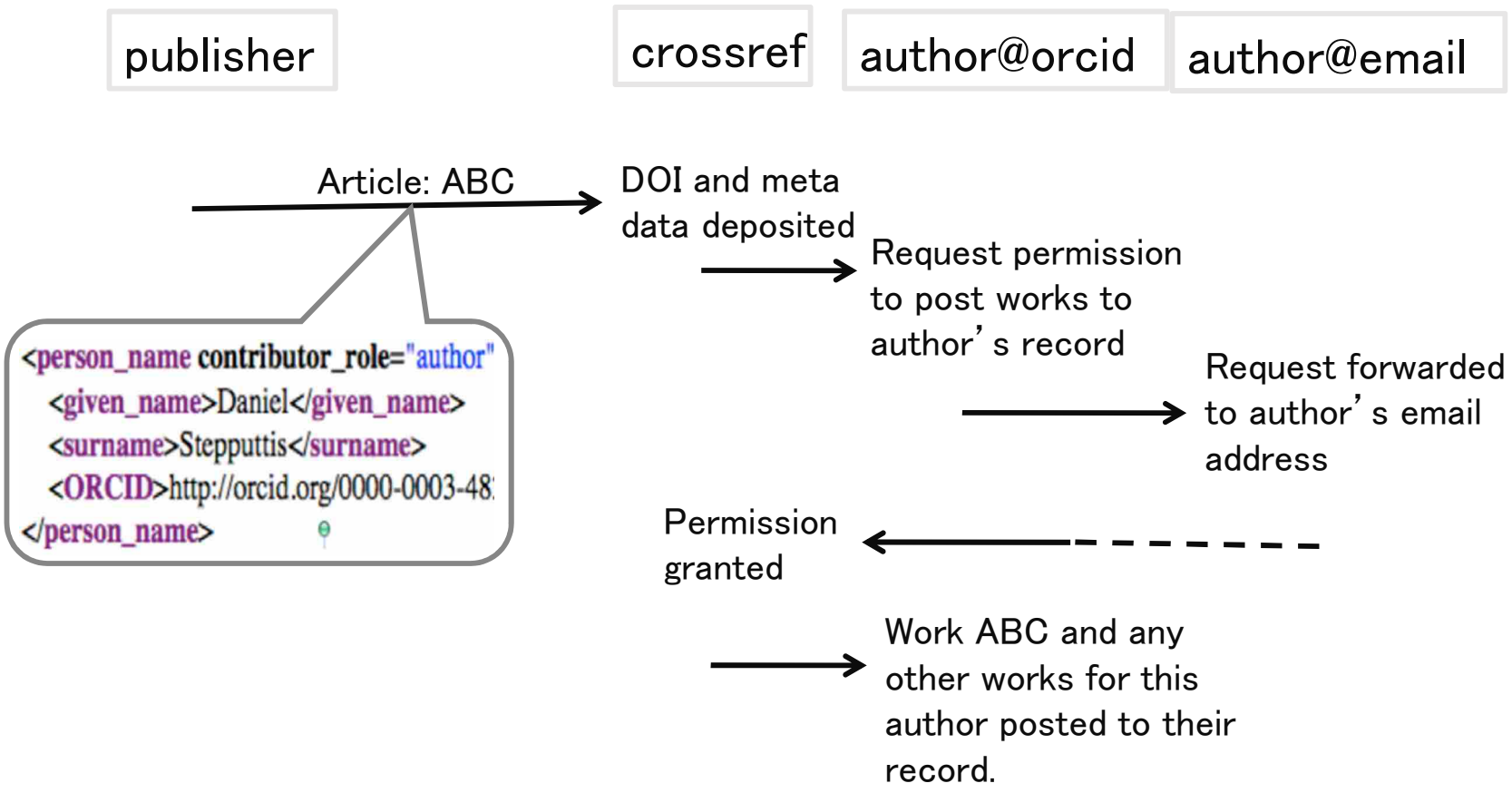
A


```
{
   doi: "10.5555/original_language",
 ▾ relations: [
    ▾ {
          asClaimant: true,
          items: [ ]
      },
    ▾ {
          asClaimant: false,
        ▾ items: [
            ▾ {
                  identifier: "10.5555/translation",
                  description: "Portugeese translati
                  record-date: "2015-11-02 12:45:01.
                  identifer-type: "doi",
                  relation-type: "isTranslationOf"
              }
          ]
      }
   ]
}
```


B


```
{
   doi: "10.5555/translation",
 ▾ relations: [
    ▾ {
          asClaimant: true,
        ▾ items: [
            ▾ {
                  identifier: "10.5555/original_language",
                  description: "Portugeese translation of an article",
                  record-date: "2015-11-02 12:45:01.0",
                  identifer-type: "doi",
                  relation-type: "isTranslationOf"
              }
          ]
      },
    ▾ {
          asClaimant: false,
          items: [ ]
      }
   ]
}
```

Example: Orcid auto-update



From	Subject	Date
› Boston University	Your ORCID Record was amended	2015-10-15
˅ Crossref Automatic-Update	Add your published work(s) to your ORCID record	2015-10-14

Hi, we're Crossref. Our member publishers send us publication information (including ORCID iDs and DOIs), and we ensure that your work can be found, linked and cited. We would like to auto-update your ORCID record with information about these published work(s), starting today with those listed below, so you don't have to search for and add them manually, now or in the future. Please click 'Grant permissions' below to set this up.

˅ Works (2)

* **Invariants from an analytic function on hyperbolic Dehn surgery space** (doi: 10.1007/s002080050036)
* **Mineral and trace element content of various vegetarian foodstuffs available in Belgium** (doi: 10.1007/s002170050394)

Crossref Automatic-Update would like your permission to interact with your ORCID Record as a trusted party.

Archive without granting permissions Grant permissions

About Crossref

We are Crossref, a not-for-profit membership organization for scholarly publishing working to make content easy to identify, cite, link, and access.

Example: funding data

This is an example of what the metadata looks like

```
<fr:program name="fundref">
  <fr:assertion name="funder_name">National Science Foundation
    <fr:assertion name="funder_identifier">http://dx.doi.org/10.13039.100000001</fr:assertion>
  </fr:assertion>
  <fr:assertion name="award_number">psychoceramics-1152342</fr:assertion>
</fr:program>
```

Example: funding data

fundref beta search

Lietuvos Mokslo Taryba

Metadata Search | Sign in with ORCID

LIETUVOS MOKSLO TARYBA

TYPE
- Journal Article (56)

YEAR
- 2015 (45)
- 2014 (11)

PUBLICATION
- Medicina (3)
- Phys. Rev. A (3)
- Physical Review A (3)
- Solid State Ionics (3)
- Applied Surface Science (2)
- Food Chemistry (2)
- J. Appl. Phys. (2)
- J. Phys. Chem. A (2)
- Journal of Applied Physics (2)
- Optical Materials (2)

CATEGORY
- Surfaces, Coatings and Films (8)
- Condensed Matter Physics (7)
- Electronic, Optical and Magnetic Materials (7)
- Atomic and Molecular Physics, and Optics (5)
- Food Science (5)
- Materials Science(all) (5)

SORT BY: **RELEVANCE** PUBLICATION YEAR | DOWNLOAD AS CSV | PAGE 1 OF 56 RESULTS

Stable carbon fractionation in size-segregated aerosol particles produced by controlled biomass burning

Journal Article published **Jan 2015** in **Journal of Aerosol Science** volume **79** on pages **86** to **96**

Research funded by "Pollution Control in Biomass Combustion: from Pollutant Formation to Human Exposure" (BioMassPoll) (ATE05/2012) | Lietuvos Mokslo Taryba

Authors: A. Garbaras, A. Masalaite, I. Garbariene, D. Ceburnis, E. Krugly, V. Remeikis, E. Puida, K. Kvietkus, D. Martuzevicius

http://dx.doi.org/10.1016/j.jaerosci.2014.10.005 Actions

Effect of the photoinitiator presence and exposure conditions on laser-induced damage threshold of ORMOSIL (SZ2080)

Journal Article published **Jan 2015** in **Optical Materials** volume **39** on pages **224** to **231**

Research funded by Lietuvos Mokslo Taryba

Authors: Albertas Žukauskas, Gintarė Batavičiūtė, Mindaugas Ščiuka, Zigmas Balevičius, Andrius Melninkaitis, Mangirdas Malinauskas

http://dx.doi.org/10.1016/j.optmat.2014.11.031 Actions

Discovery and Characterization of Novel Selective Inhibitors of Carbonic Anhydrase IX

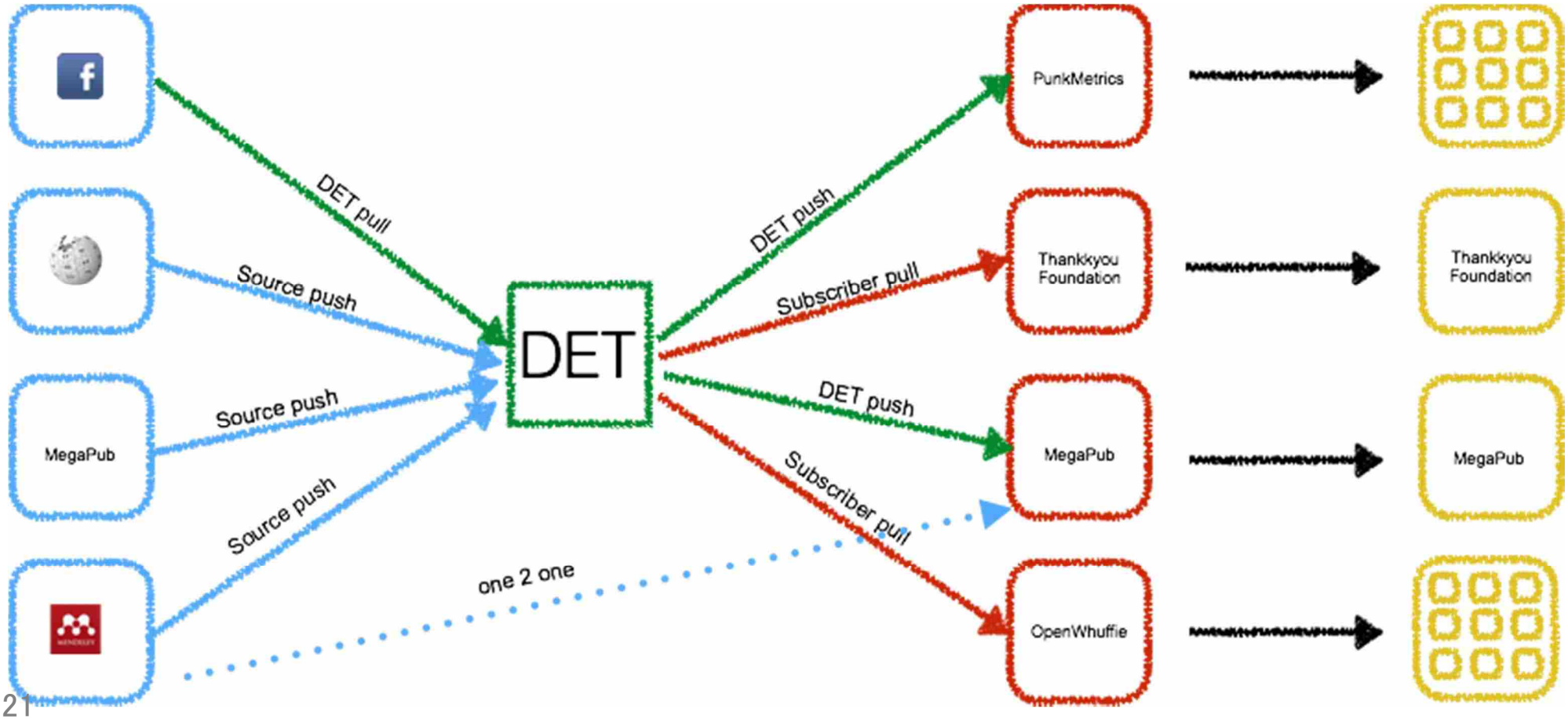
Journal Article published **26 Nov 2014** in **Journal of Medicinal Chemistry** volume **57** issue **22** on pages **9435** to **9446**

Research funded by Lietuvos Mokslo Taryba (LIG-09/2012) | European Cooperation in Science and Technology (TD0905) | European Commission (245721)

Authors: Virginija Dudutienė, Jurgita Matulienė, Alexey Smirnov, David D. Timm, Asta Zubrienė, Lina Baranauskienė, Vaida Morkūnaitė, Joana Smirnovienė, Vilma Michailovienė, Vaida Juozapaitienė, Aurelija Mickevičiūtė, Justina Kazokaitė, Sa ...

http://dx.doi.org/10.1021/jm501003k Actions

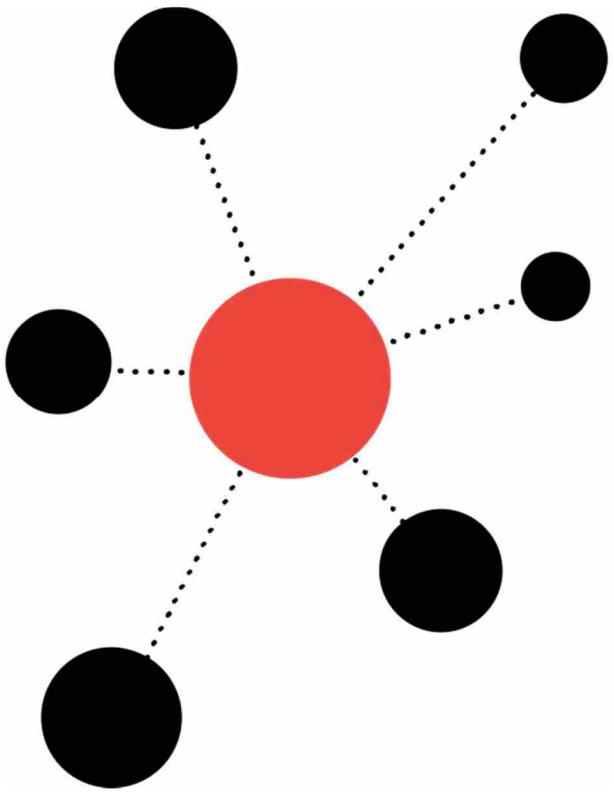
Example: DOI Event Tracking



Example: DOI Event Tracking

BLOGS & REFERENCE WORKS,
SOCIAL BOOKMARKS,
SOCIAL SHARES & DISCUSSIONS,
LINKS TO RESEARCH ENTITIES

Research Blogging
CiteULike
Facebook
ORCiD
ScienceSeeker
Mendeley
Reddit
DataCite
Wordpress.com
Europe PMC Database Citations
Wikipedia



Thank you

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crossref.org/annualmeeting
crossref.org/01company/11conferences.html