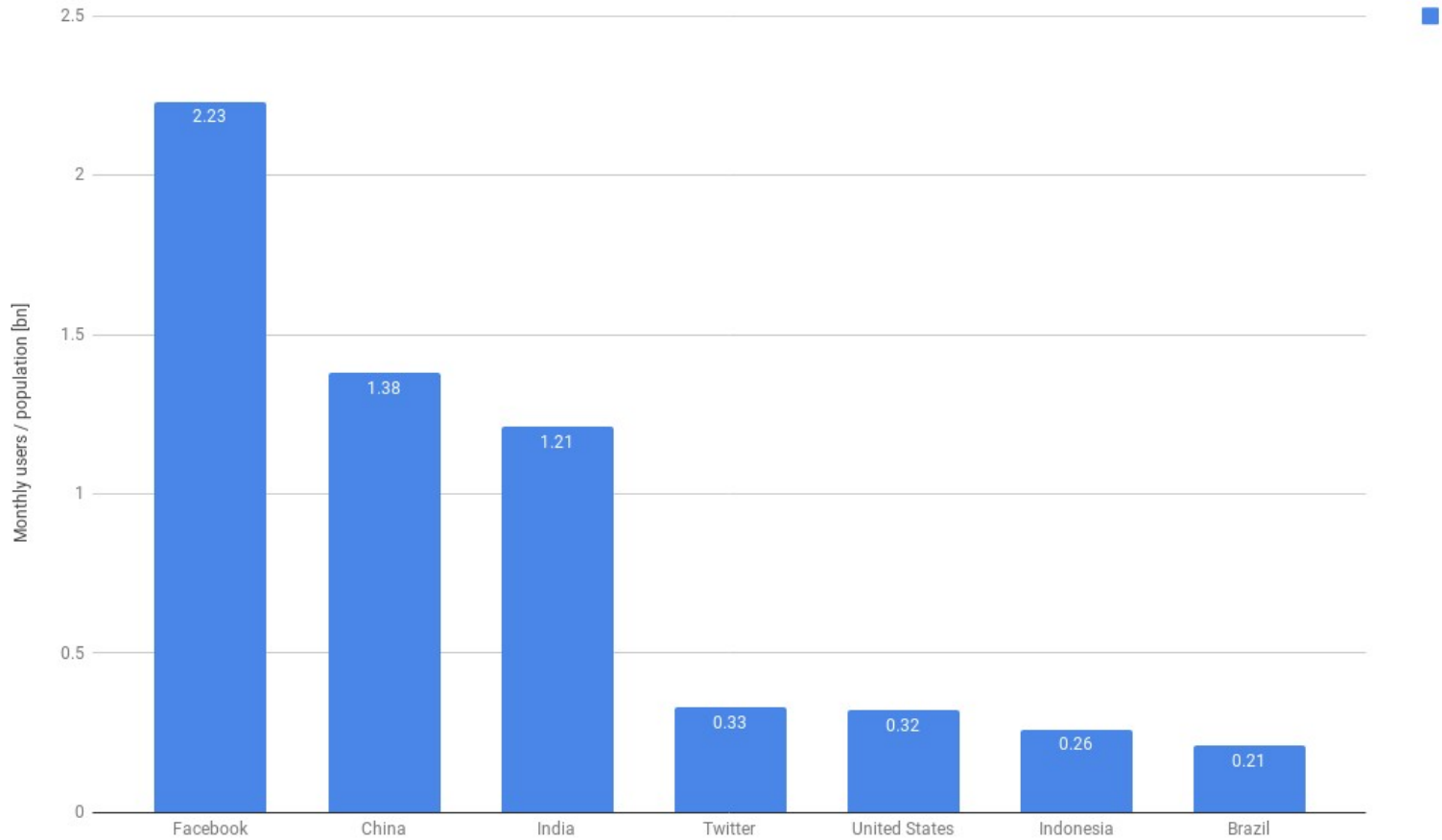# Challenges of capturing engagement on Facebook for Altmetrics

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scholcommlab

SFU FACULTY OF COMMUNICATION, ART & TECHNOLOGY | PUBLISHING PROGRAM

uOttawa

Faculté des arts
École des sciences de l'information

Faculty of Arts
School of Information Studies

PKP | PUBLIC KNOWLEDGE PROJECT

CIRST Centre interuniversitaire de recherche sur la science et la technologie

Introduction

Social Media vs Countries

Introduction

"At the same time, the higher percentage of non-English posts on Facebook overall indicates that people, including non-English speakers, perceive the two platforms differently, with Twitter as a place for discussions with a global public and Facebook a place where more targeted (potentially locally relevant) discussions take place. "

(Barata et al., 2017, p.13)

Barata, Germana and Shores, Kenneth and Alperin, Juan Pablo, Local Chatter or International Buzz? Language Differences on Posts About Zika Research on Twitter and Facebook (September 19, 2017). Available at SSRN: https://ssrn.com/abstract=3039428 or http://dx.doi.org/10.2139/ssrn.3039428

Study	Twitter coverage	Facebook Coverage
Thelwall et al., 2013	27.7%	11.3%
Hammarfelt, 2014	20%	2.9%
Zahedi and Costas (2018)*	57%	16.3%

Why?

Zahedi, Z., & Costas, R. (2018). General discussion of data quality challenges in social media metrics: Extensive comparison of four major altmetric data aggregators. PLOS ONE, 13(5), e0197326. https://doi.org/10/gdkbgc

Thelwall, M., Haustein, S., Larivière, V., & Sugimoto, C. R. (2013). Do Altmetrics Work? Twitter and Ten Other Social Web Services. PLOS ONE, 8(5), e64841.

Hammarfelt, B. (2014). Using altmetrics for assessing research impact in the humanities. Scientometrics, 101(2), 1419–1430.

Collecting Facebook Metrics

- Two Approaches:

  1. Public posts on public pages
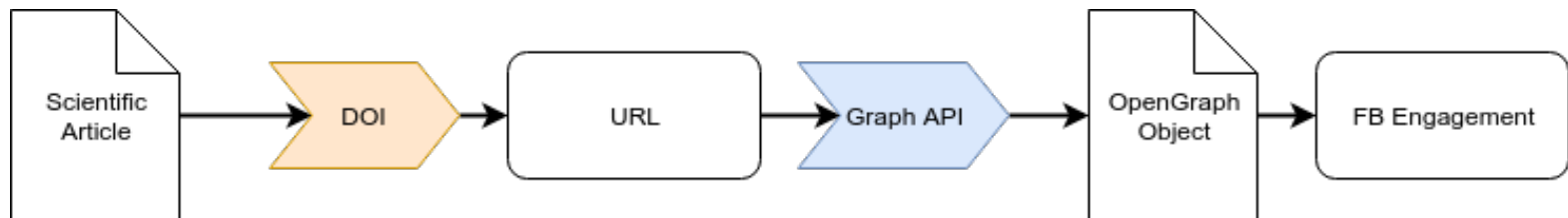 2. Private engagement through FB API

Facebook's Graph API

- FB converts URLs to Open Graph Objects (OGB)

    – <meta tags> or heuristics

- URL node to access *og_object, engagement*
- Each OGB tracks Engagement

    – Shares

    – Likes

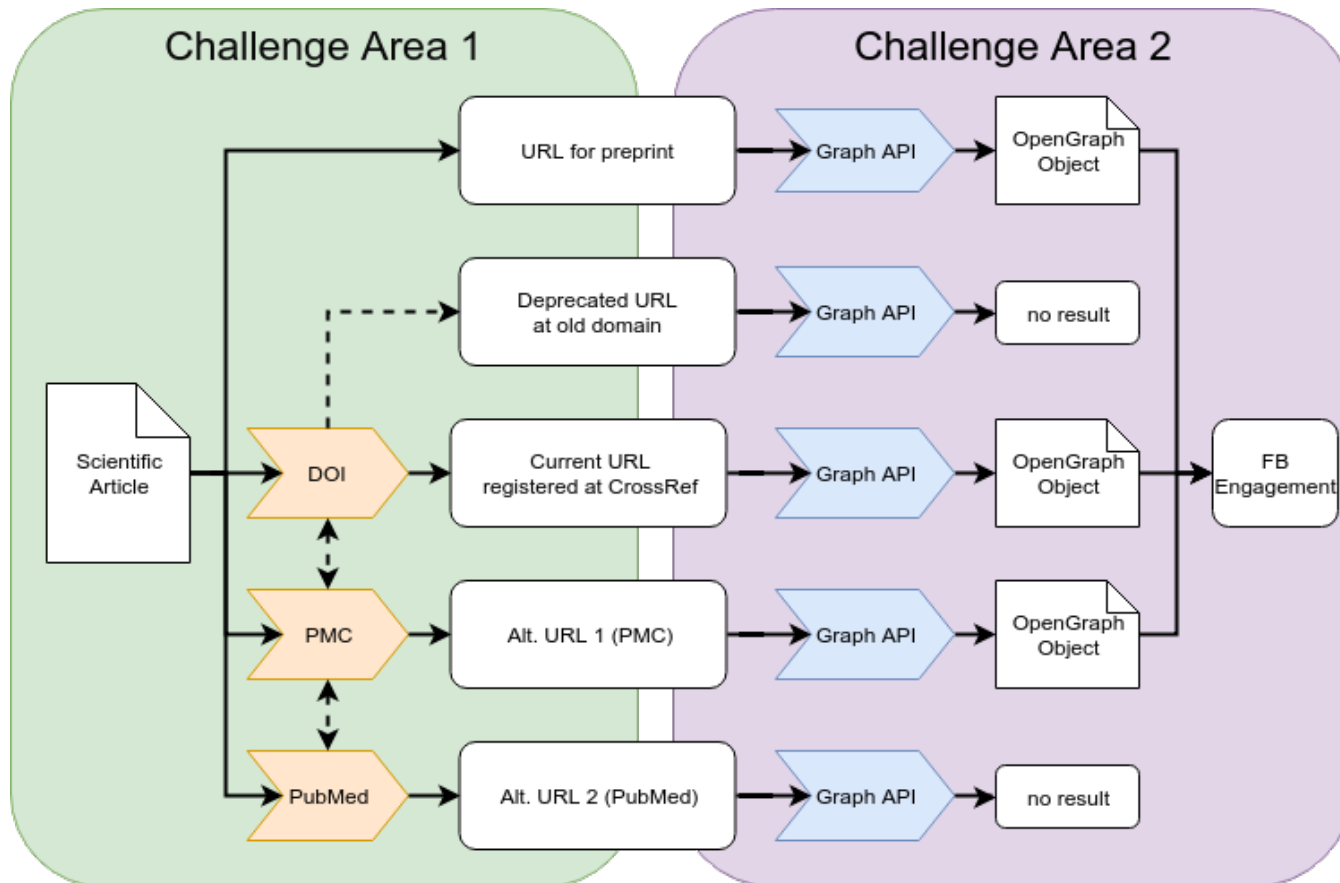   – Comments

    – Comments Plugin

If there were no challenges

1) A document would be identified by a Digital Object Identifier (DOI);
2) Crossref would provide the most recent URL associated with that DOI;
3) the Graph API would be queried with the URL;
4) Facebook would map this URL to their internal identifier system; and
5) it would simultaneously return the number of its engagements

Scientific Article → DOI → URL → Graph API → OpenGraph Object → FB Engagement

A more complete (but still idealized) scenario

Mapping articles to URLs   Mapping URLs to OG objects

- **Challenge Area 1: Mapping articles to URLs**
  - Problem Case 1: *Identifying the landing page from any given DOI*

- **Challenge Area 2: Mapping URLs to OG Objects**
  - Problem Case 2: *Equivalent URLs mapped to different OG Objects*
  - Problem Case 3: *Different articles are mapped onto the same Graph Object*

- Dataset: 103k random DOIs from the Web of Science (Piwowar et al, 2017)

Piwowar, H., Priem, J., Larivière, V., Alperin, J. P., Matthias, L., Norlander, B., Farley, A., et al. (2017). The State of OA: A large-scale analysis of the prevalence and impact of Open Access articles. PeerJ.

CA1: Mapping articles to URLs

- *Problem Case 1:* Identifying the landing page from any given DOI

Table 1. Number of successful and problematic attempts to resolve DOIs to URLs from a random set of DOIs from Web of Science

	Number of responses	
Returned URL successfully	85,515	82.6%
Returned URL, with error code[*]	5,975	5.8%
Total resolved URLs	91,490	88.36%
Failed requests[**]	12,049	11.6%
Total	103,539	100%

[*]The HTTP GET request returned an error, but still resolved to a URL
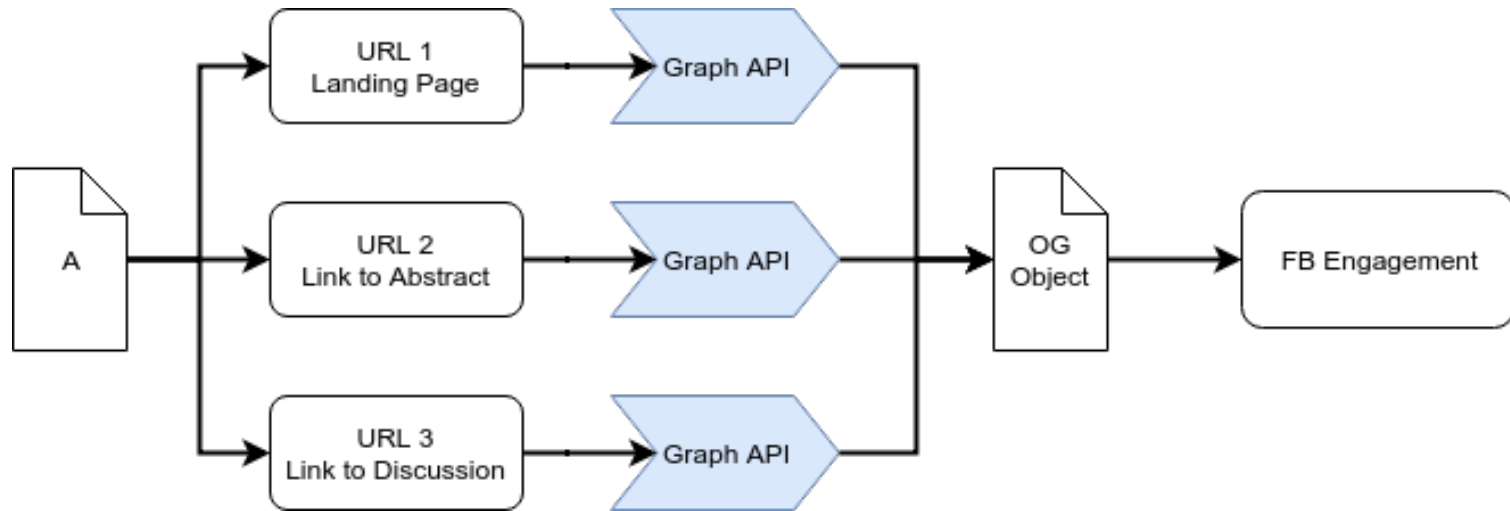[**]The HTTP GET request was either aborted from server side or timed out after 5s

Dealing with URLs and DOIs is hard (Wass, 2016)

Wass, J. (2016, November 4). URLs and DOIs: a complicated relationship. Crossref website. Retrieved March 21, 2018, from https://www.crossref.org/blog/urls-and-dois-a-complicated-relationship/

Piwowar, H., Priem, J., Larivière, V., Alperin, J. P., Matthias, L., Norlander, B., Farley, A., et al. (2017). The State of OA: A large-scale analysis of the prevalence and impact of Open Access articles. PeerJ.
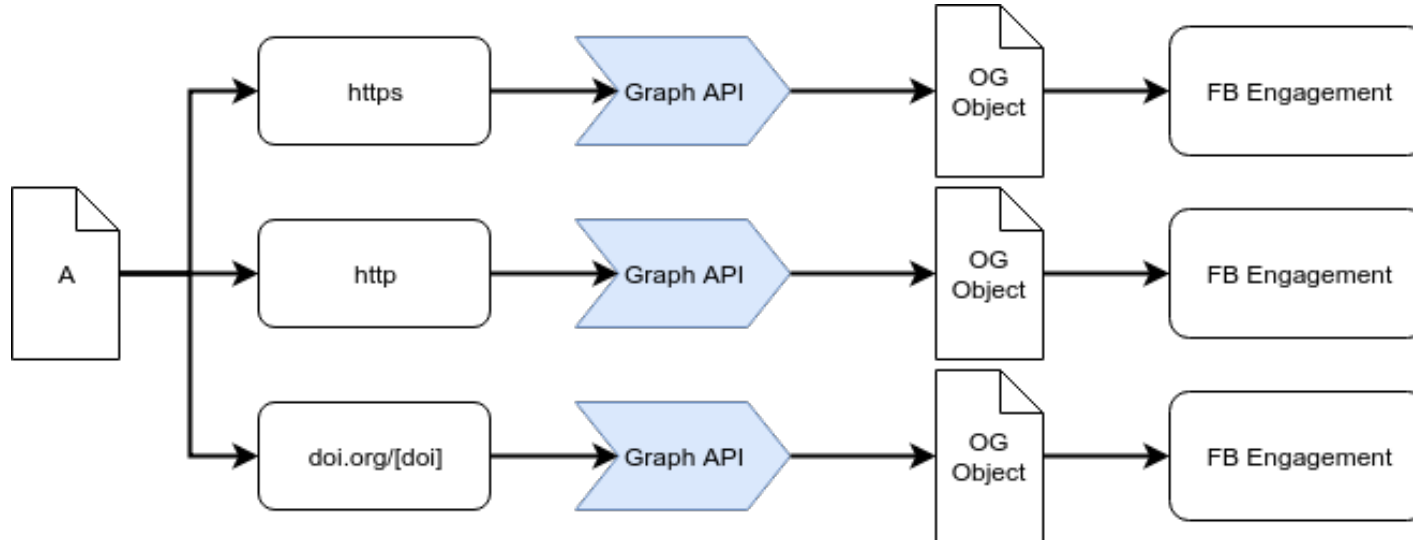
CA2: Mapping URLs to OG objects

- We assume to have determined a set of relevant URLs for each article
- Graph API returns two entities for each URL
  - Open Graph Object
  - Engagement Object
- Ideally, all URLs should correspond to a single OG object with one identifier and canonical URL

CA2: Mapping URLs to OG objects

- *Problem Case 2:* Equivalent URLs mapped to different OG Objects

- the URL where the DOI resolved,
- the "opposite" protocol URL (http vs https, and vice versa),
- the currently recommended syntax by Crossref *https://doi.org/[doi]*, and
- the older syntax *http://dx.doi.org/[doi]*.

CA2: Mapping URLs to OG objects

- *Problem Case 2:* Equivalent URLs mapped to different OG Objects

Variant	Description	Responses with at least one Ob_ID (N=91490)		Responses positive engagement (N=91490)	
1	URL where DOI resolved[*]	8,452	9.2%	1,426	1.6%
2	The "opposite" protocol URL[*]	13,305	14.5%	2,458	2.7%
3	The current recommended DOI syntax (https://doi.org/[doi])	179	0.2%	74	0.1%
4	The older DOI syntax (http://dx.doi.org/[doi])	10,124	11.1%	2,612	2.9%
All	**Any of the above variants**	**26,775**	**29.3%**	**5,498**	**6.0%**

[*]21,871 (23.9%) DOIs resolved to http and 69,619 (76.1%) resolved to https

Facebook Oddities:
- The API <u>always</u> returns an engagement object
- Some OG objects return engagement of 0

CA2: Mapping URLs to OG objects

- *Problem Case 2:* Equivalent URLs mapped to different OG Objects

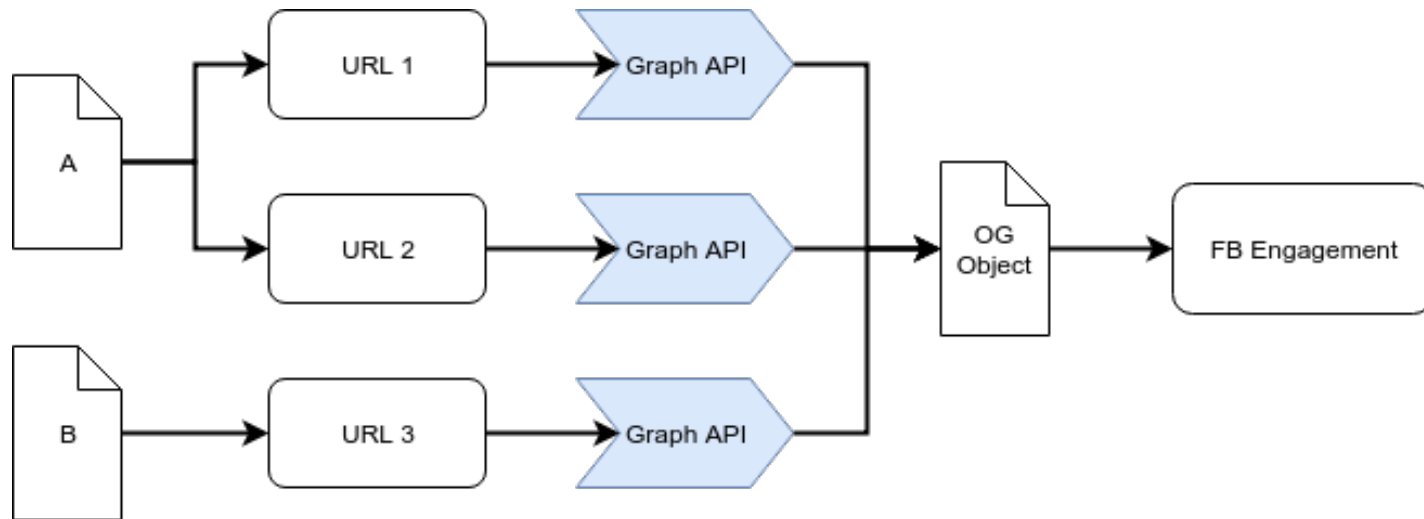Table 3. Number of cases for each scenario of how the Facebook API can respond to the four URL variants

Case description	Number	Not matching IDs	Matching ID (matching shares)	Matching IDs (not matching engagements)
No variant returned an Ob_ID[*]	106	-	-	-
One variant returns an Ob_ID	3,687	-	-	-
Two variants return an Ob_ID	1,535	769	620	146
Three variants return an Ob_ID**	161	131	99	43
Four variants return an Ob_ID**	9	8	6	3
Total	**5,498**	**908**	**725**	**192**

[*] Although it should not be possible to have engagements without having an Ob_ID, we found some instances where this was the case.
** In some cases, two or three of the Ob_IDs matched, but one or two did not; such cases are counted under all of the appropriate columns.

CA2: Mapping URLs to OG objects

- Problem Case 3: *Different articles are mapped onto the same Graph Object*

- 66 Ob_IDs (0.2% of 28711) linked to multiple DOIs
- Linked to 507 articles;
- Including 482 of the 5,498 (8.8%)

Summary

- Problem Case 1

    12,049 (11.6% of all DOIs)

- Problem Case 2+3

    648 (11.8% of those with engagements)

- **Total**

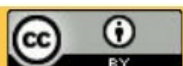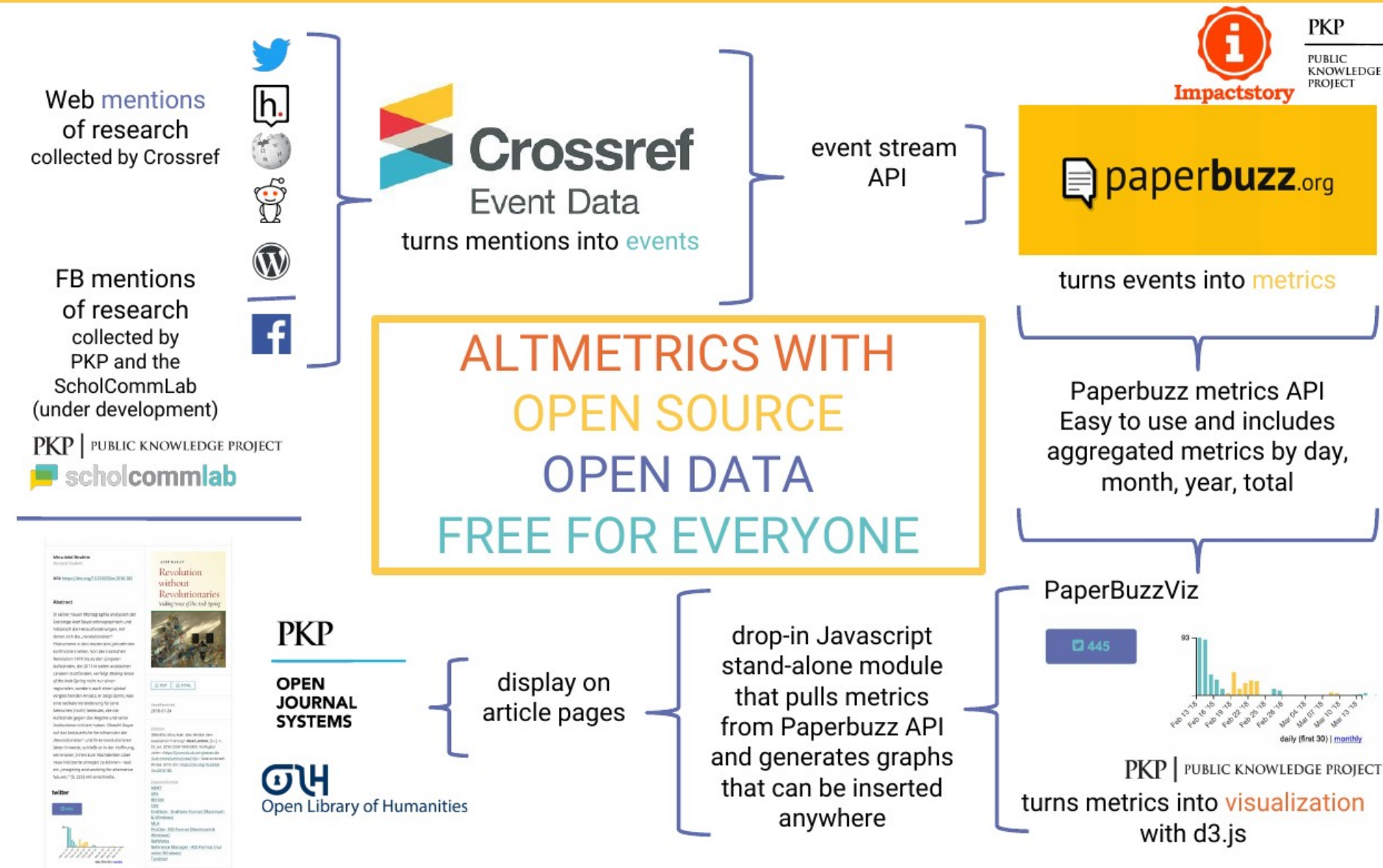   **12,722 (12.3%) of the 103,539 DOIs**

Conclusion and Outlook

- First attempt to quantify the difference between public and private engagement on FB

- Further research is needed (and underway) to explore the impact of different URL selections and datasets

- Collaboration of PKP, CrossRef, ImpactStory to build a tool that collects private engagement for

Collecting, Calculating and Displaying Altmetrics with Open Source

Juan Pablo Alperin, Asura Enkhbayar, Heather Piwowar, Jason Priem & Joe Wass

Web mentions of research
collected by Crossref

FB mentions of research
collected by PKP and the ScholCommLab
(under development)

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Crossref Event Data
turns mentions into events

event stream API

Impactstory

PKP
PUBLIC KNOWLEDGE PROJECT

paperbuzz.org

turns events into metrics

Paperbuzz metrics API
Easy to use and includes aggregated metrics by day, month, year, total

ALTMETRICS WITH
OPEN SOURCE
OPEN DATA
FREE FOR EVERYONE

PKP

OPEN JOURNAL SYSTEMS

display on article pages

drop-in Javascript stand-alone module that pulls metrics from Paperbuzz API and generates graphs that can be inserted anywhere

OLH
Open Library of Humanities

PaperBuzzViz

445

93

daily (first 30) | monthly

PKP | PUBLIC KNOWLEDGE PROJECT

turns metrics into visualization
with d3.js

Thank you!

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