Cobaltmetrics

Better a URL Today Than a PID Tomorrow

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A partial landscape of citation aggregators

- Journal to journal: Web of Science, Scopus
- DOI to DOI: OpenCitations
- URL to DOI: ALM/Lagotto, Crossref Event data
- URL to URL: Altmetric, Plum, **Cobaltmetrics**

Common issues with citation aggregators

- Imbalanced datasets
  - Predefined lists of supported research outputs
  - Predefined lists of supported languages
  - **Predefined lists of supported PIDs/URLs**
- Irreproducible indicators
  - Dependency on 3rd party servers (short URLs, APIs)

Why should we care?

Metrics are a sampling game.

It is not up to citation aggregators to decide what is citable, our role is to **observe all citation patterns on the web**.

The web is not FAIR (and will most likely never be) and **that is just fine**.

Cobaltmetrics

Cobaltmetrics crawls the web to index **hyperlinks and PIDs as first-class citations**.

The web is our corpus, and our URI transmutation API collates citations to all known versions of a document.

Cobaltmetrics: design rationale

Cobaltmetrics tracks all URIs, URLs, and typed PIDs.

Cobaltmetrics can only be queried by URIs.

Cobaltmetrics will never create new identifiers.

Cobaltmetrics will never create new metrics.

Cobaltmetrics: design rationale

- ✔ http://dx.doi.org/10.1109/2.901164
- ✔ doi:10.1109/2.901164
- ✔ https://ieeexplore.ieee.org/document/901164/
- ✔ https://bit.ly/2kEavO1
- ✘ Lawrence et al., 2001

Better a URL today than a PID tomorrow

The ideal identifier should be **persistent**,
findable, accessible, interoperable, and reusable...

...we all **copy-paste from the address bar** of our browser.

PIDs are not silver bullets

There are **billions of documents**
that will never get DOIs or any other fancy PID:
old documents, grey literature, and **the rest of the web**.

There are tons of documents with PIDs that are cited
with no mention of their PIDs.

Compact IDs vs. good old URLs

Cobaltmetrics' citation index (February 2019):

- HTTP+HTTPS+FTP: 256 million URLs (98%)
- Every other scheme: 4 million IDs

Non-canonical URIs

Non-canonical URI ≈ any ID that is not 100% FAIR, including but not limited to:

- Short URLs
- Proxy URLs
- Sci-Hub URLs

URI transmutation

Transmutation = normalization + conversion

- Equivalencies we can compute (e.g. ORCID⇄ISNI)
- Equivalencies we must learn (e.g. short URL⇄URL)

Our transmutation API is open and free, try it out!

URI transmutation example

We remix 4M cliques of IDs from ORCID's Public Data File.

Example:

- orcid:0000-0003-0557-1155 → {scopus:55148973700}
- scopus:55148973700 → {orcid:0000-0003-0557-1155}
- mailto:luc@thunken.com → {orcid:0000-0003-0557-1155, scopus:55148973700}

Web-scale citation tracking

- Wikimedia (all projects, all languages)
- StackExchange/StackOverflow (all projects, all languages)
- US legal opinions (via CourtListener)
- Hypothes.is annotations
- Usenet posts (via the Internet Archive)
- **CommonCrawl (3.1 billion webpages)**

https://cobaltmetrics.com/docs/page/data-sources

Web-scale citation tracking: transmutation

- **Crossref**
- ORCID
- PMC
- **Terror of Tiny Town**
- Unpaywall
- Wikidata
- ...

https://cobaltmetrics.com/docs/page/data-sources

A note on reproducibility

We aggregate data from different sources,
so there are **many moving parts**.

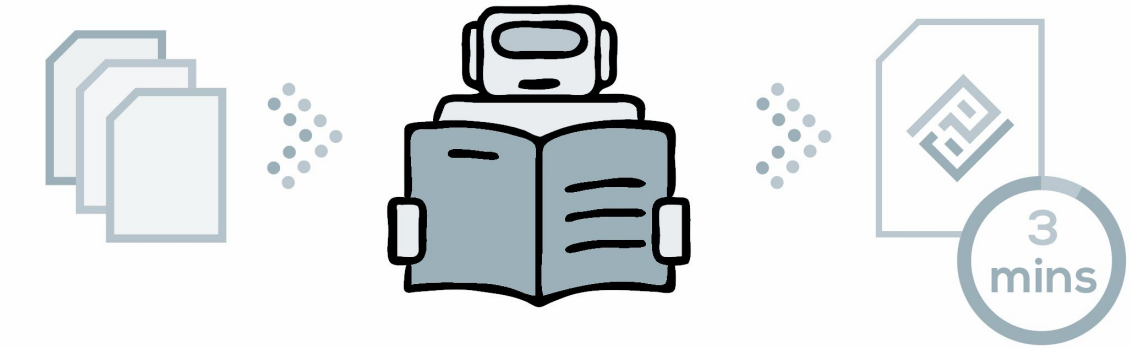
Our default strategy is to **ingest the entire datasets**,
so that we control when and how data is updated.

Our API can return a **fingerprint** of the whole database,
as well as the **log of all the web resources** we remix.

Cobaltmetrics × FREYA

- FREYA: **PID graph**
  - Focus on scholarly entities
  - Many relations between entities
- Cobaltmetrics: **URI graph**
  - Scholarly entities, but not only
  - Only one relation between entities ≈ owl:sameAs

Cobaltmetrics × Paper Digest



- AI-powered summaries
- Uses our transmutation API for inputs other than DOIs

Towards an open business model

- Currently mostly closed-source, but...
- Everything on the website (data/docs) is now **CC BY 4.0**
- Coming soon:
  - No more third party trackers
  - Pricing transparency

http://gph.is/2JCxAbw

Bonus: PIDs for RIs!

- MERIL-2 (EU Horizon 2020 grant, ESF/EKT/APRE)
  - DB of EU research infrastructures: http://meril.eu/
- MERIL-3 (RDA EU adoption grant, ESF/Thunken)
  - Customized DSpace + Handles
  - Blog post: https://t.co/gNxgkDam7v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