Programmatic access for Altmetrics

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Programmatic access to altmetrics

Open altmetrics data

Programmatic access

Programmatic access to altmetrics

Computers are simply better at repetitive tasks

- Makes repetitive tasks take far less time
- Facilitates tool creation by developers
- Allows research questions to be addressed more quickly
- Facilitates reproducibility

What is needed for easy programmatic access?

Modern API technology

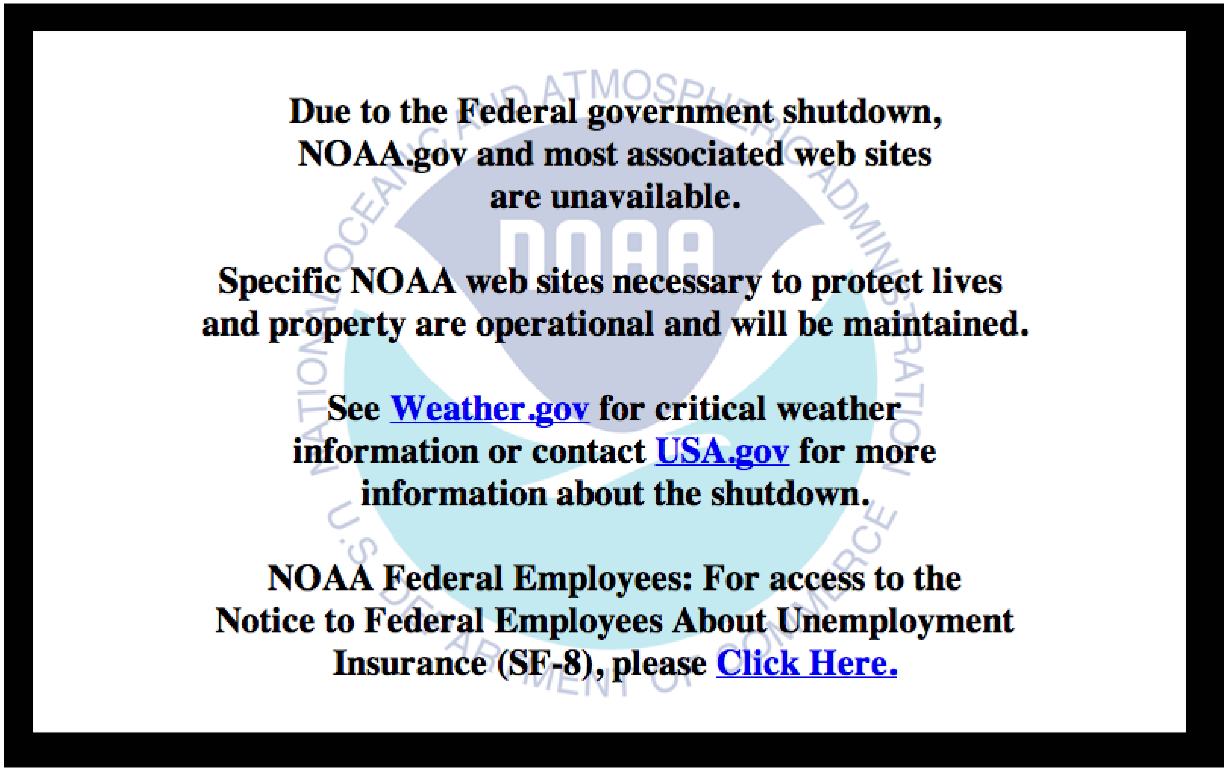
REST API

The modern way to serve data to consumers
Makes data consumption easy from any programming language

- Base URI, e.g. http://foo.com
- Media type, e.g., json, xml
- HTTP verbs, like GET, POST, PUT, PATCH, HEAD, etc...

Proper HTTP status codes

- 1xx - informational
- 2xx - success
- 3xx - redirection
- 4xx - client error
- 5xx - server error



Due to the Federal government shutdown, NOAA.gov and most associated web sites are unavailable.

Specific NOAA web sites necessary to protect lives and property are operational and will be maintained.

See Weather.gov for critical weather information or contact USA.gov for more information about the shutdown.

NOAA Federal Employees: For access to the Notice to Federal Employees About Unemployment Insurance (SF-8), please Click Here.

Good docs (for developers)

Authentication

OAuth makes sense for web workflows, but not so much for programmatic workflows.

Having both options is nice.

A spec for REST?

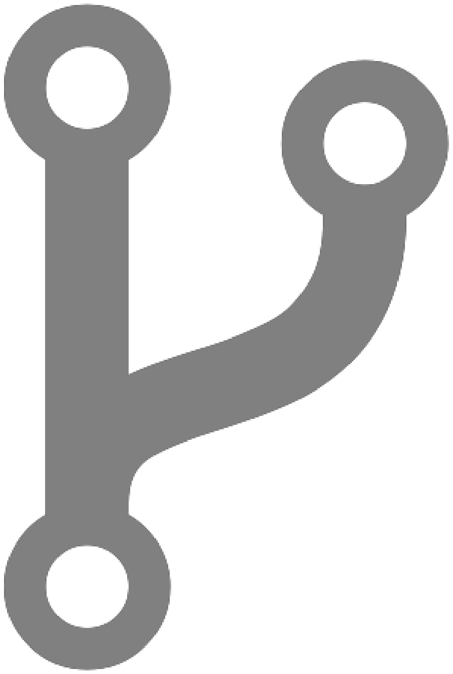
RAML - http://raml.org/

Programatically create new clients

```
#%RAML 0.8
---
title: World Music API
baseUri: http://example.api.com/{version}
version: v1
 /songs:
   get:
   post:
  ...
```

Good place to include altmetrics standards...

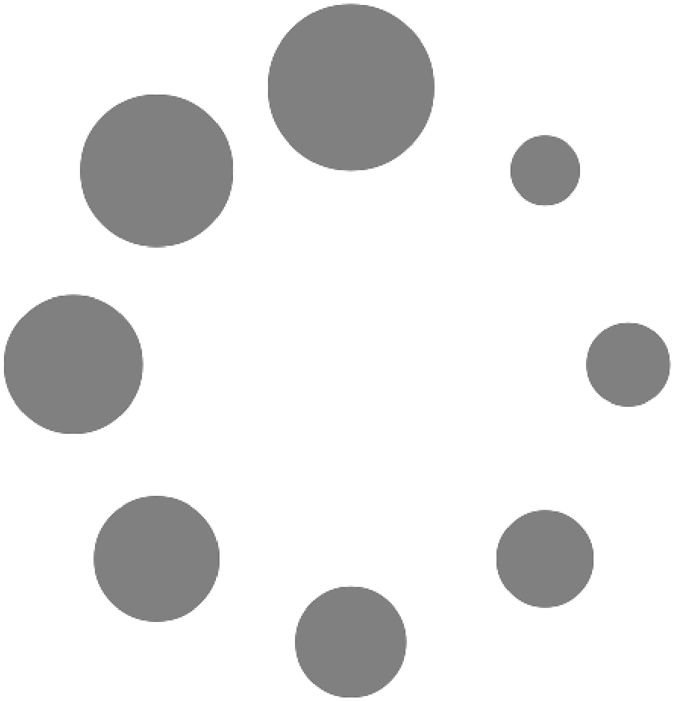
Deploying APIs is probably hard



Consuming altmetrics programmatically

We need altmetrics research

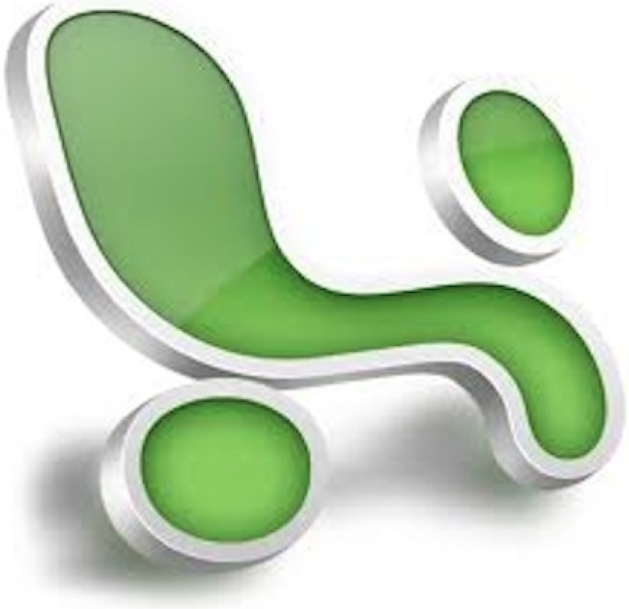
Programmatic access to altmetrics data key for reproducibility



Having a look at the literature...

- Do Altmetrics Work? Twitter and Ten Other... - via Altmetric.com
- Tweeting biomedicine: an analysis of tweets... - via Altmetric.com
- The Spread of Scientific Information... - via PLOS ALM
- Can Tweets Predict Citations? ... - via Twitter Search API
- Altmetrics in the Wild... - via PLOS ALM, various APIs, WebofSci citations
- Social Media Release Increases Dissemination... - via manual collection
- Identifying Audiences of E-Infrastructures... - via Google Analytics
- How the Scientific Community Reacts to... - via Twitter Search API, Google Scholar citations

Most popular programming language?



Obviously

ROpenSci

software carpentry

Many libraries available, but more needed

DATA SOURCE	LIBRARIES	ROPENSCI CONTRIBUTIONS IN R
PLOS ALM	R	alm ** Copernicus, etc.
ImpactStory	R, Javascript	rImpactStory
Altmetric	R, Python, Ruby, iOS	rAltmetric

Interacting with REST APIs in R

```
out <- GET("http://alm.plos.org/api/v3/articles?doi=10.1371/journal.pmed.1001361&key=<key>")
stop_for_status(out)
content(out)
```

```
{
  doi: "10.1371/journal.pmed.1001361",
  title: "Personalized Prediction of Lifetime Benefits with Statin Therapy for Asymptomatic Individuals: A Modeling Study",
  url: "http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1001361",
  mendeley: "437b07d9-bc40-4c57-b60e-1f60fefe2300",
  pmid: "23300388",
  pmcid: "3531501",
  publication_date: "2012-12-27T08:00:00Z",
  update_date: "2013-10-07T11:06:58Z",
  views: 9329,
  shares: 62,
  bookmarks: 5,
  citations: 1
}
```

Data via alm interface to PLOS ALM

```
alm(doi = "10.1371/journal.pone.0029797")
```

```
An object of class "almtot"
Slot "meta":
$doi
[1] "10.1371/journal.pone.0029797"
...<more metadata>

Slot "summary":
  views shares bookmarks citations
1 29229    237        51         7

Slot "data":
                .id  pdf  html shares groups comments likes citations total
1         bloglines   NA    NA     NA     NA       NA    NA         0     0
2         citeulike   NA    NA      1     NA       NA    NA        NA     1
3          connotea   NA    NA     NA     NA       NA    NA         0     0
4          crossref   NA    NA     NA     NA       NA    NA         7     7
5            nature   NA    NA     NA     NA       NA    NA         4     4
...
```

Combining metrics across aggregators

DATA SOURCE	PLOS	IMPACTSTORY	ALTMETRIC
WebOfScience	webofscience	--	--
Dryad	--	dryad:total_downloads	--
Figshare	figshare	figshare:views shares downloads	--
Github	--	github:forks stars	--
Google+	--	--	cited by gplus count
Mendeley readers	mendeley shares	mendeley readers	mendeley readers
Twitter	twitter	topsy:tweets	cited by tweeters count

Proposed R library

metaAlm - (   )

Combine altmetrics data across providers (ImpactStory, Altmetric, etc.) and across data sources (Twitter, Facebook, etc.)

Combining metrics

Get data from three different providers

```
plos_data <- alm(<doi>)
impactstory_data <- metrics(<doi>)
altmetric_data <- altmetric_data(altmetrics(<doi>))
```

Easily combine data with a single function, and highlight inconsistencies

```
alt_combine(plos_data, impactstory_data, altmetric_data)
```

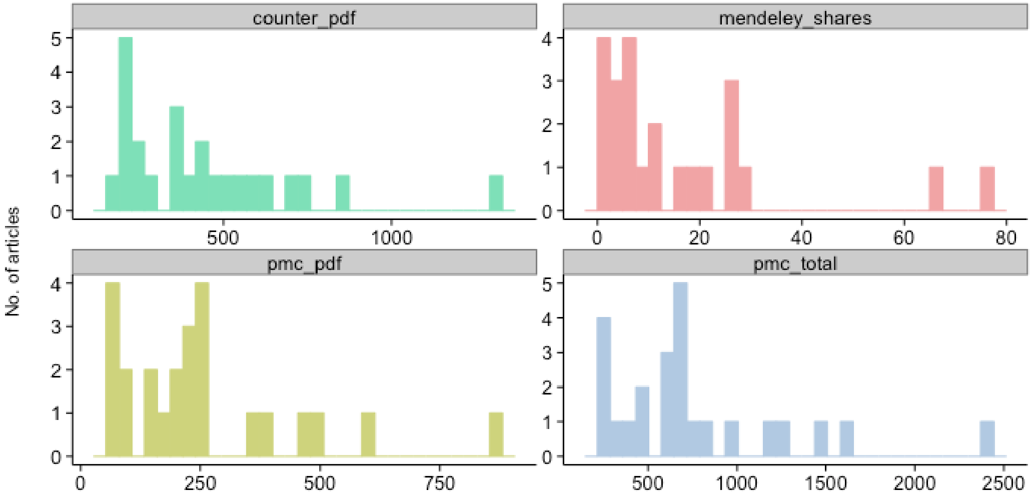
```
Warning: Inconsistency in facebookLikes, check metadata
```

```
       dataSource fromProvider values
1         twitter      PLOSALM    100
2   facebookLikes  ImpactStory     50
3   facebookLikes    Altmetric     40
4 scopusCitations    Altmetric    150
```

Example in R

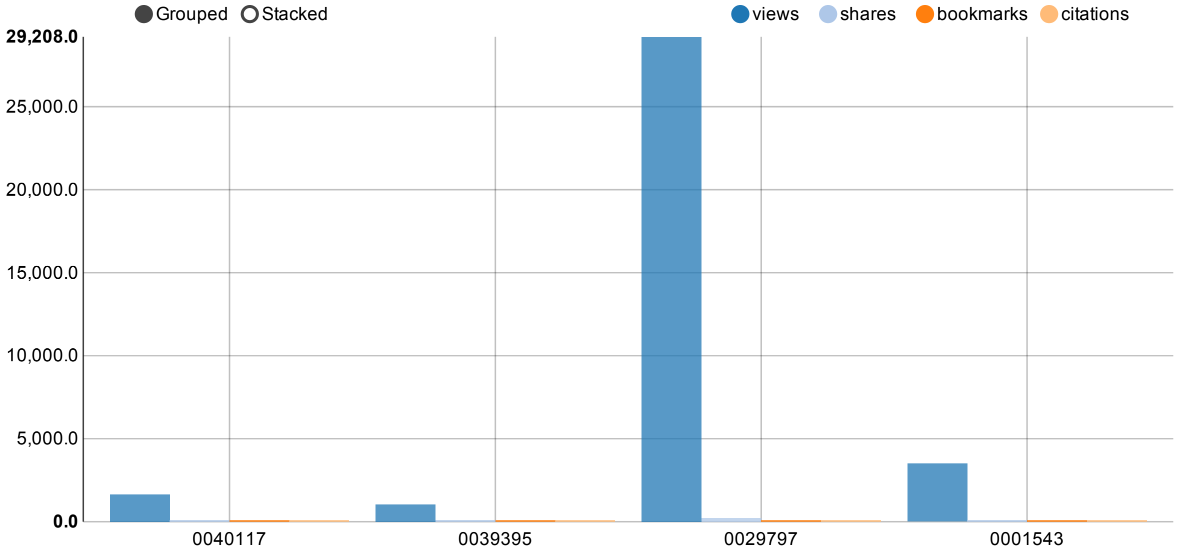
Load libraries, get 200 DOIs, get ALM data, plot

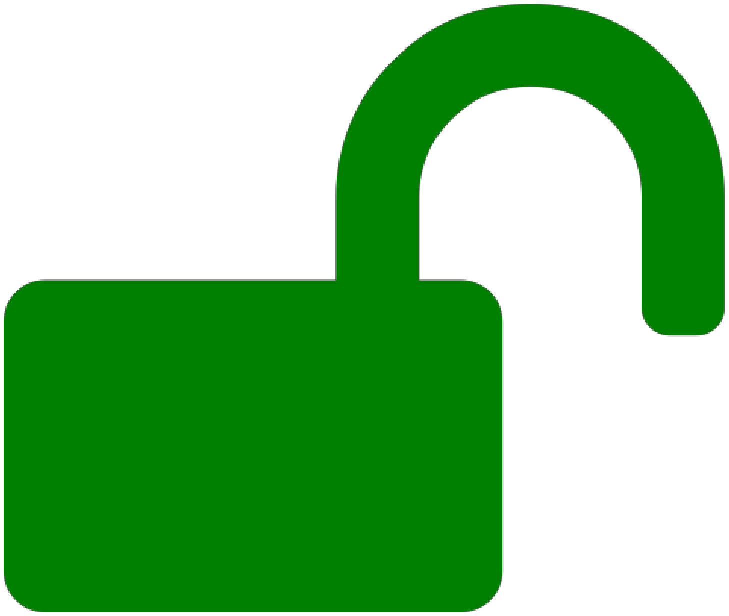
```
library(rplos); library(alm); library(plyr)
dois <- searchplos(terms='*:*', fields="id", limit=200)
alm <- ldply( alm(doi=do.call(c,dois$id), total_details=TRUE) )
plot_density(alm, c("counter_pdf","mendeley_shares","pmc_pdf","pmc_total"), c("#83DFB4","#EFA5A5","#CFD470","#B2C9E4"), plot_type="h")
```



```
library(rplos); library(alm); library(rCharts)
dois <- c('10.1371/journal.pone.0001543','10.1371/journal.pone.0040117','10.1371/journal.pone.0029797','10.1371/journal.pone.0039395')
dat <- signposts(doi=dois)

plot_signposts(input = dat, type = "multiBarChart", height = 400)
```





> “I’d argue that #opendata today is exactly where open source was some 2 decades ago”-@BenBalter http://t.co/VJ6QiLybUU #oss
>
> — Alex Howard (@digiphile) October 9, 2013

Why is openness a good thing?

Altmetrics needs checks on

- Consistency (tweets from source A and B should be =)
- Correlation (is metric A strongly corr. with B?)
- Interpretation (open source the interpretation)
- Gaming (security through obscurity doesn't work)

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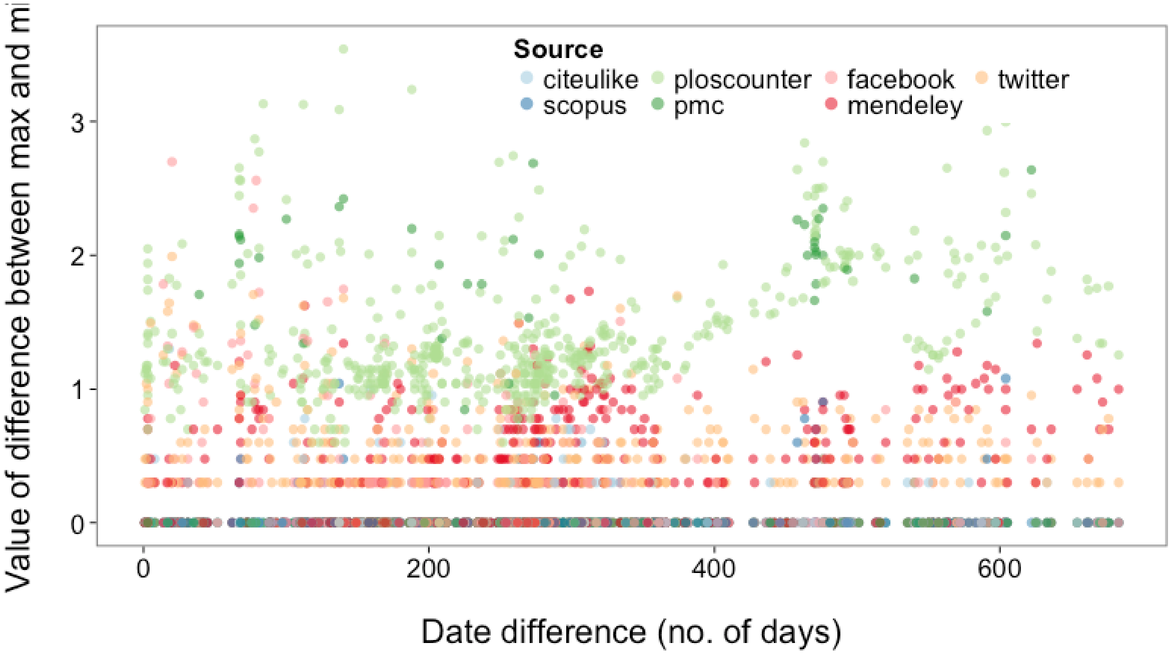
Open data makes all this easier

Additional value from openness

- Knowledge from research findings
    - Doesn't require open data I suppose :(, but helps facilitate research
    - e.g., think how hard text-mining is - we don't want that in altmetrics
- Open products
    - ReaderMeter
    - ScienceCard
- For-profit products
- Who knows? Making data open allows many experiments, some of which will stick

An open use case



10.3789/isqv25no2.2013.02

Programmatic access

Open altmetrics data

Programmatic access

♥

open data

Programmatic access to Open altmetrics data