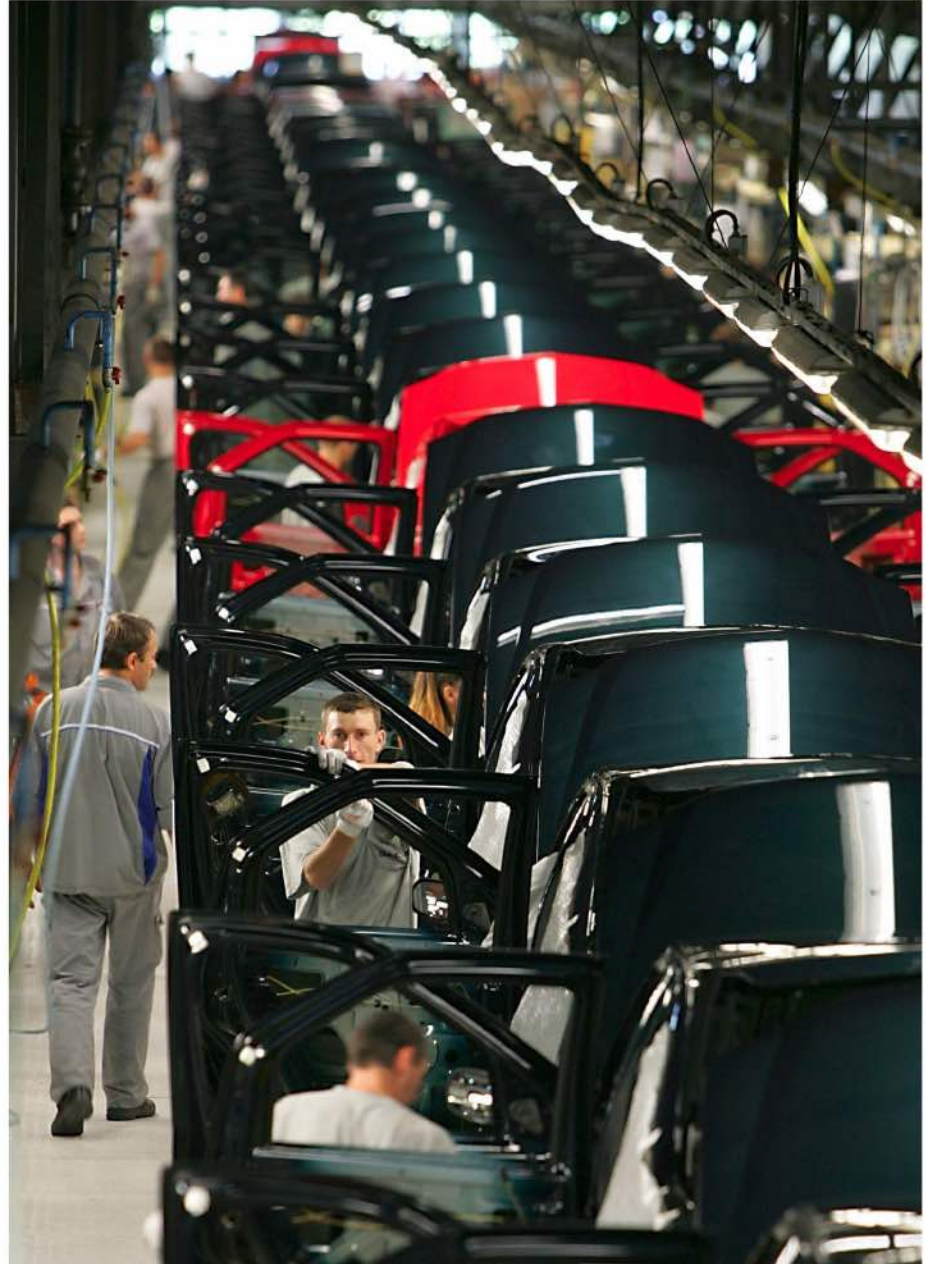


Bare Facts First

How Reuters uses Datawrapper to create, automate and disseminate hundreds of charts each week



REUTERS®

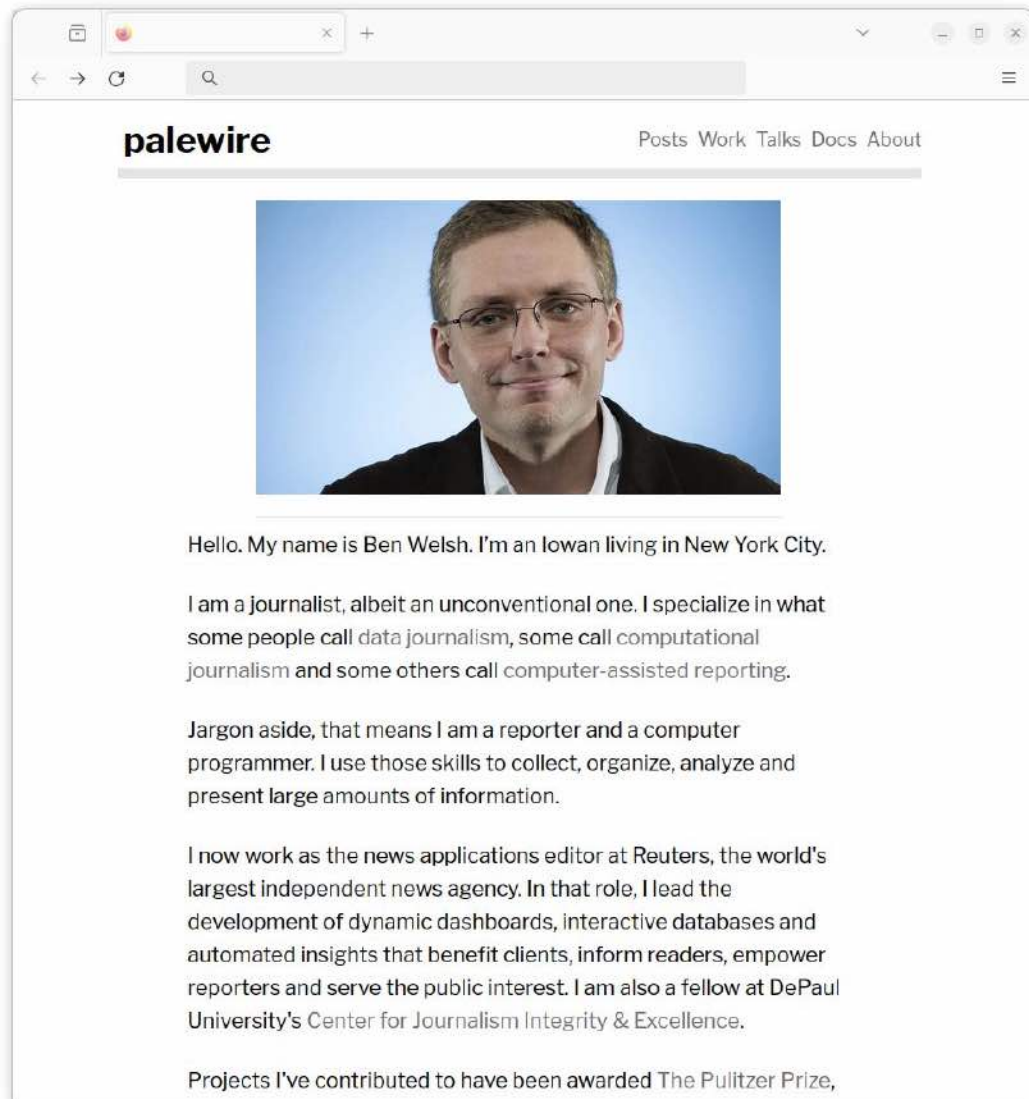




Who we are

I'm Jon McClure.

I've been the EMEA graphics editor at Reuters in London since 2020. Before that, I led "interactive news" teams at Politico and The Dallas Morning News.



Who we are

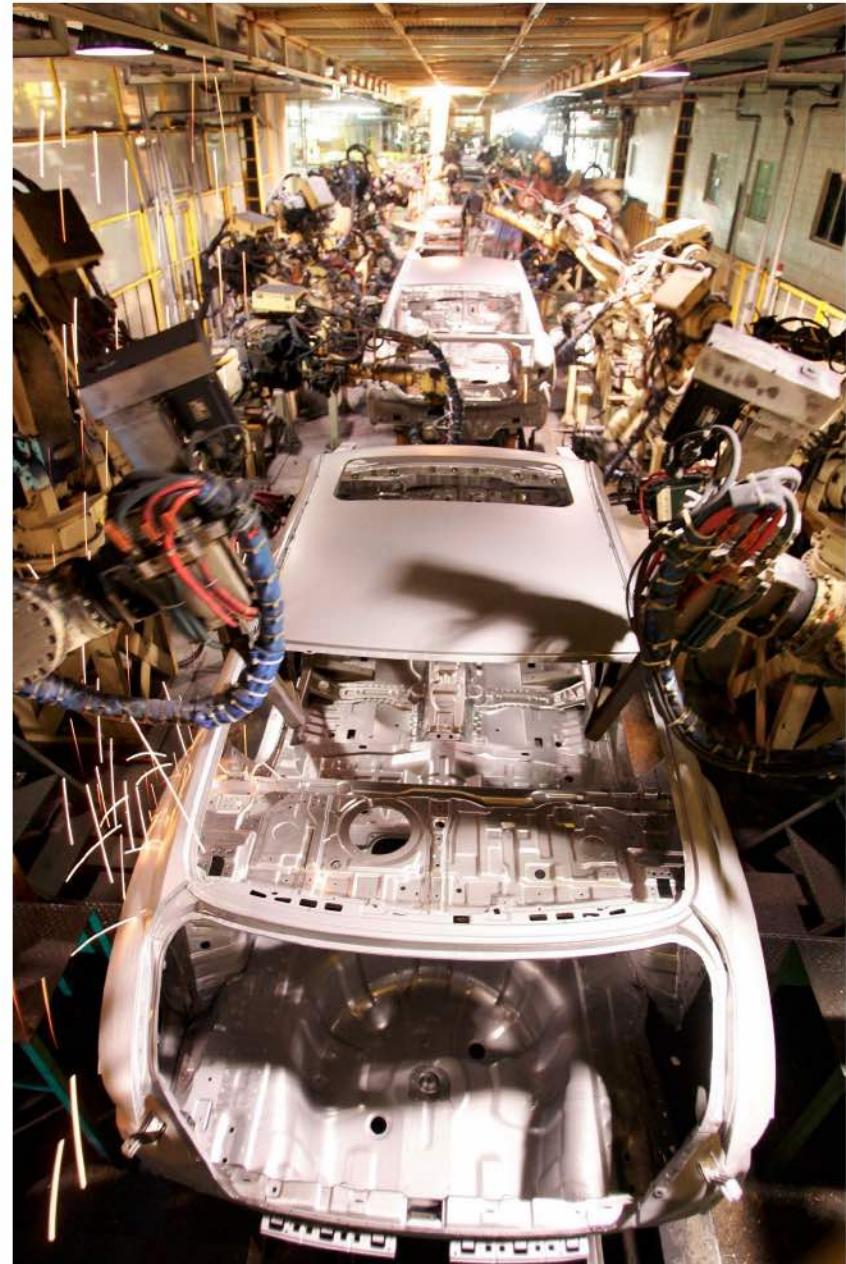
I'm Ben Welsh.

I joined Reuters last year after 15 years leading data projects at the Los Angeles Times.

I'm helping our team create more of what we call "news applications."

What is Reuters?

- ❖ Founded in 1851, Reuters is the world's largest international multimedia news provider.
- ❖ Each day 2,500 journalists in nearly 200 locations around the globe produce news in 16 languages.
- ❖ Financial professionals receive exclusive news and data from Reuters via the LSEG terminal.
- ❖ More than 2,000 newsrooms republish our work via a wire service.
- ❖ Breaking news, analysis and special reports are available for free on [reuters.com](https://www.reuters.com).
- ❖ A legally binding vow requires we uphold trust principles valuing independence, integrity and freedom from bias.



Our mission

- ❖ Breaking news has been at the core of our business from start.
- ❖ An 1883 memo spelled out the London office's expectations for correspondents.
- ❖ At that time, stories were sent by telegram.
- ❖ The editors asked "that the bare fact be first telegraphed with the utmost promptitude."

Memorandum.

REUTER'S TELEGRAM COMPANY
(LIMITED). •

TO AGENTS AND CORRESPONDENTS.

In consequence of the increased attention paid by the London and English provincial press to disasters, &c., of all kinds, agents and correspondents are requested to be good enough, in future, to notice for London all occurrences of the sort. The following are among the events which should be comprised in the service:—

Fires, explosions, floods, inundations, railway accidents, destructive storms, earthquakes, shipwrecks attended with loss of life, accidents to British and American war vessels and to mail steamers, street riots of a grave character, disturbances arising from strikes, duels between, and suicides of persons of note, social or political, and murders of a sensational or atrocious character.

It is requested that the bare fact be first telegraphed with the utmost promptitude, and as soon as possible afterwards a descriptive account, proportionate to the gravity of the incident. Care should, of course, be taken to follow the matter up.

London, November, 1883.

Memorandum.

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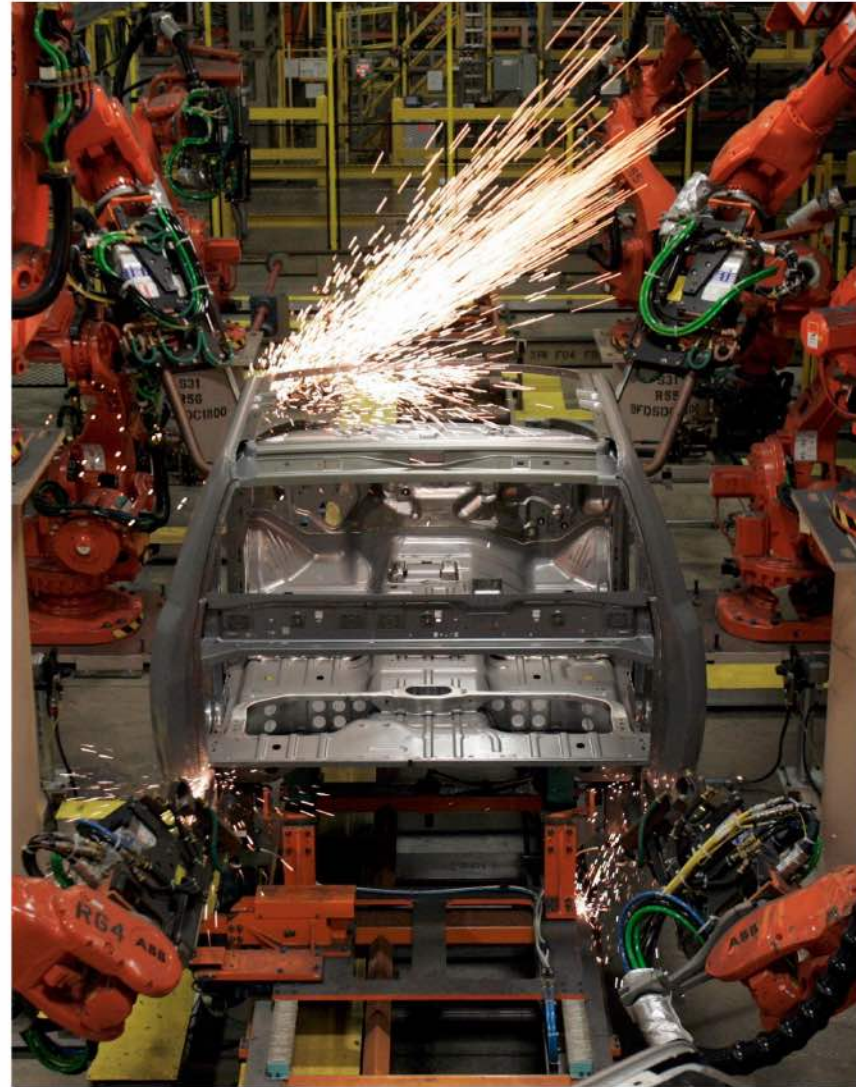
Fires, explosions, floods, inundations, railway accidents, destructive storms, earthquakes, shipwrecks attended with loss of life, accidents to British and American war vessels and to mail steamers, street riots of a grave character, disturbances arising from strikes, duels between, and suicides of persons of note, social or political, and murders of a sensational or atrocious character.

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London, November, 1883.

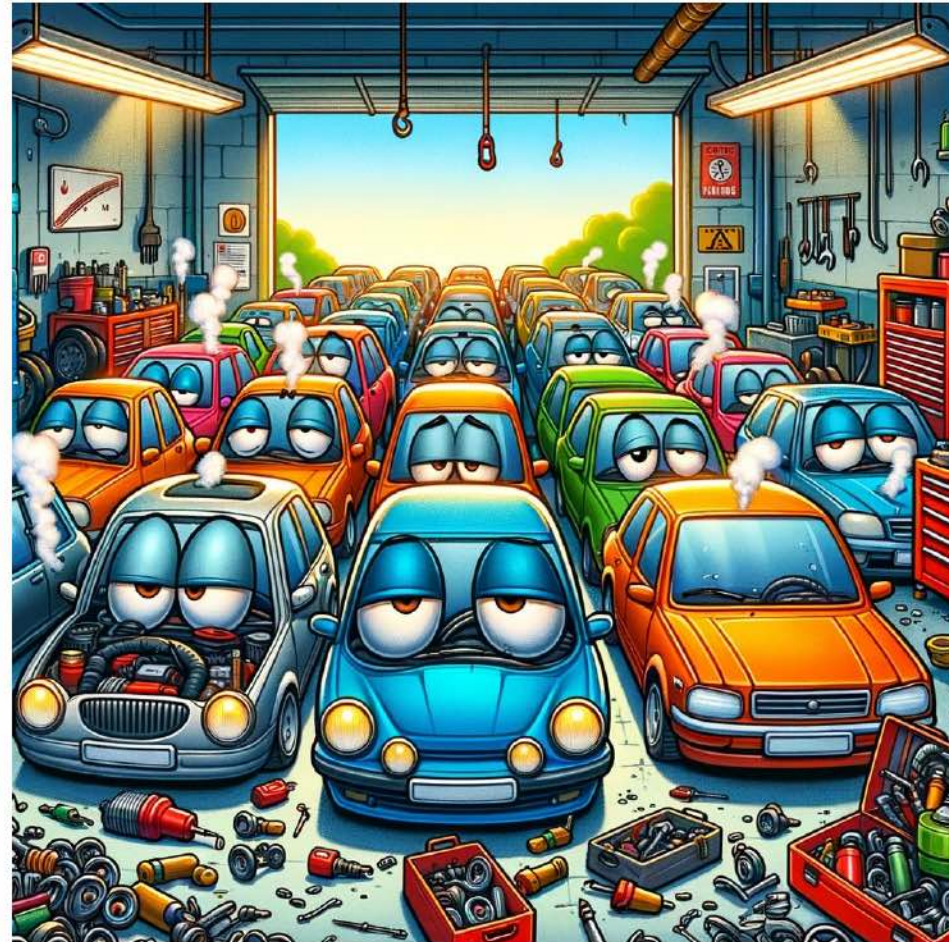
What you're in for

- ❖ Jon on how the Datawrapper charts created by Reuters staff are distributed to the world
- ❖ Ben on how we created a software system that automates routine Datawrapper charts
- ❖ Your questions



Before Datawrapper

- ❖ High-caliber graphics team spread thin doing too much low-caliber work on request from other desks
- ❖ Too many good, simple charts not getting made because of the backlog
- ❖ Zero-sum between covering breaking news and doing significant enterprise
- ❖ Frustrated reporters resorted to a dark market of increasingly terrible and inscrutable charting tools



But before we could plug in Datawrapper, we had to fit a pipeline that would serve **our wire clients** as well as **our website**:

The collage displays various Reuters content elements:

- Reuters Connect Header:** Features the Reuters logo and navigation links for Feed, Planning, Live, and Stock.
- EU unemployment rate:** A line chart showing the unemployment rate for the EU from 2000 to 2020, with a peak around 2010 and a decline thereafter.
- Portrait of the U.S. labor market:** A series of charts showing labor market participation by gender, age, education level, and race/ethnicity from 2000 to 2020. An orange 'INTERACTIVE' label is present.
- Participation in the U.S. labor market:** A line chart showing labor market participation rates from 2000 to 2020. An orange 'INTERACTIVE' label is present.
- Reuters News Article:** A headline reads "US to send \$300 million in new weapons package for Ukraine". The article includes a photo of Ukrainian servicemen in training and a video player showing a ship.
- File Pack Interface:** A sidebar titled "Files in this pack" lists various files with their status and download options. The files include:
 - Overall pack (checked)
 - public-en.zip (checked)
 - interactive (checked, Today, 13:36, EN HTML)
 - media-en.zip (checked)
 - EIKON (checked, Today, 13:36, EN IMAGE)
 - PDF (checked, Not Published, EN PDF)
 - PNG (checked, Today, 13:36, EN IMAGE)
 - media-interactive (checked, Not Published, EN TEXT)

At Reuters, we publish each chart in many different “**editions**” for other media clients to pick from:



Self-hosted and embeddable pages



Static and editable images



Editable source code



Light & dark-mode charts



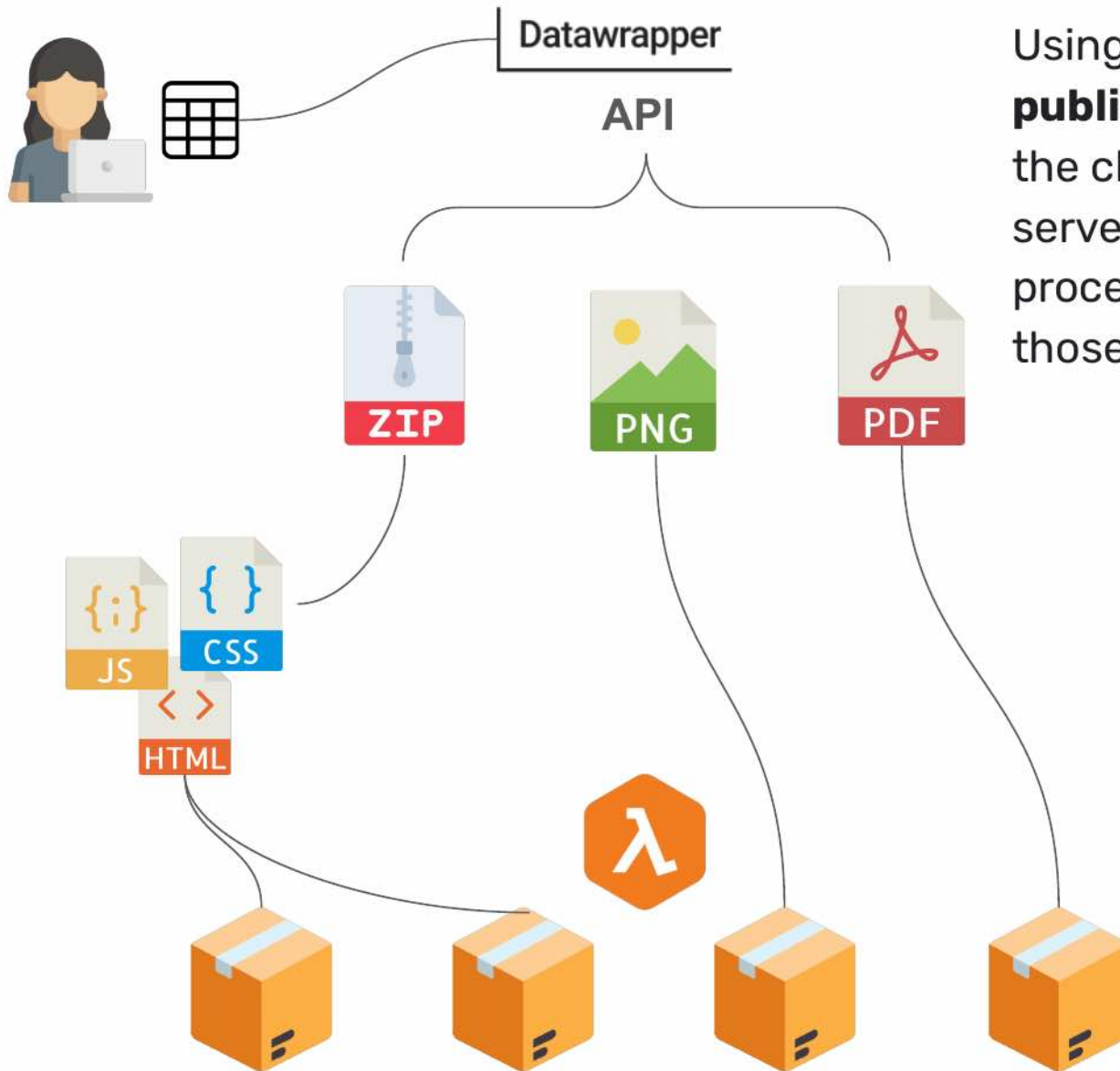
Your visualization is **not published**.



Publish now



This is not the end. It is not even the beginning of the end. But, it is perhaps the end of the beginning, innit.

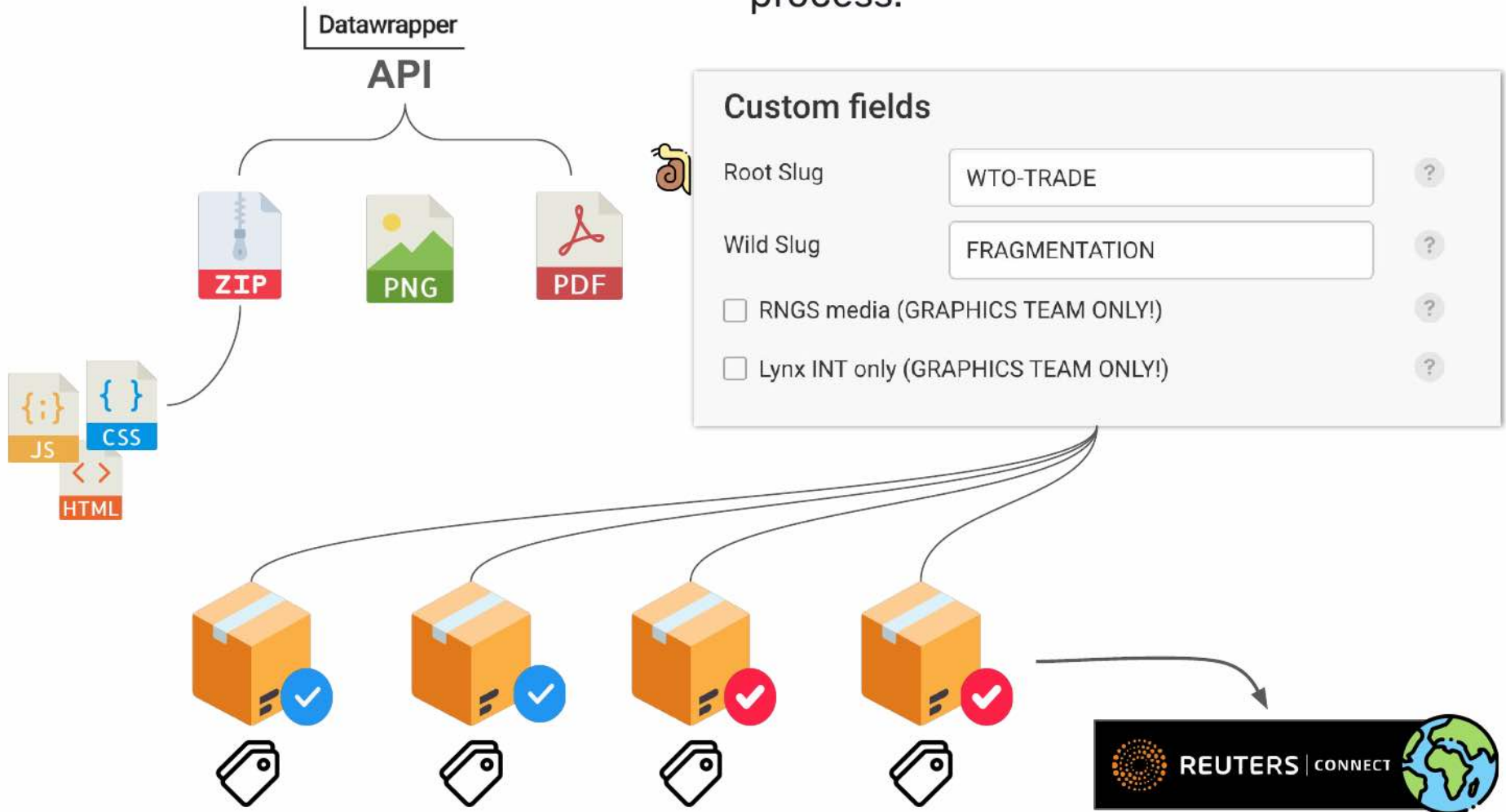


Serverless lambdas process, repack and publish our charts!

Using Datawrapper's **publishing hooks** and **API** with the cheap scalability of serverless computing, we can process, repack and publish those different charts editions.

Files in this pack		
Overall pack		✓
public-en.zip		▲
interactive	✓	
Today, 13:36		
EN HTML		
media-en.zip		▲
EIKON	✓	
Today, 13:36		
EN IMAGE		
PDF	✓	
Not Published		
EN PDF		
PNG	✓	
Today, 13:36		
EN IMAGE		
media-interactive	✓	
Not Published		
EN TEXT		

We use **custom fields** in the chart editor to include essential metadata we need to move charts through our publishing process.



✓ Published a new chart

Status	Published chart
Title	US inflation hangs out above 3%
Slugs	BRV-BRV/BRV-BRV
Author	Oliver.Taslic@thomsonreuters.com
Data source	Source: LSEG O. Taslic Breakingviews Feb. 10, 2024
Link	https://www.reuters.com/graphics/BRV-BRV/BRV-BRV/lgvdnqlavo/
Image	https://www.reuters.com/graphics/BRV-BRV/BRV-BRV/zjpqwdeelpx/chart.png

Share price performance for **larger** and **smaller** gaming groups

— EA — Take-Two — Nintendo — Ubisoft — Embracer — CD Projekt



0 = Jan. 1, 2019
Source: LSEG | O. Taslic | Breakingviews | Feb. 10, 2024

Edit this chart

Graphics Portal

RNGS

Along the way, we flag new charts in common Teams channels, which gives our graphics team ample **opportunities to coach** our newsroom.

JM

McClure, Jon (Reuters) 12/02 21:44

That's a clever use of colours in the title, [Taslic](#), [Oliver](#). Fwiw, you can use a closing `</span>` tag to wrap the specific parts in the colour you want. Like:

```
Share price performance for <span style="color:#fa6400">larger</span> and <span style="color:#CCCCCC">smaller</span> gaming groups
```

OT

Taslic, Oliver (Reuters) 12/02 21:46

thank you! will try this, looks a lot cleaner. coincidentally another colleague just pointed this out to me, only just getting to grips with `</b>` and `</span>` etc...



✨ **Bonus:** Need a Teams klaxon? Ours is free to use!
reuters-graphics.github.io/teams-klaxon/

Within the last 18 months, Reuters has onboarded **more than 800 reporters, editors and producers** across our newsroom, who publish dozens of charts each day.

That spread lets our graphics team focus on higher spec graphics for headline global news.

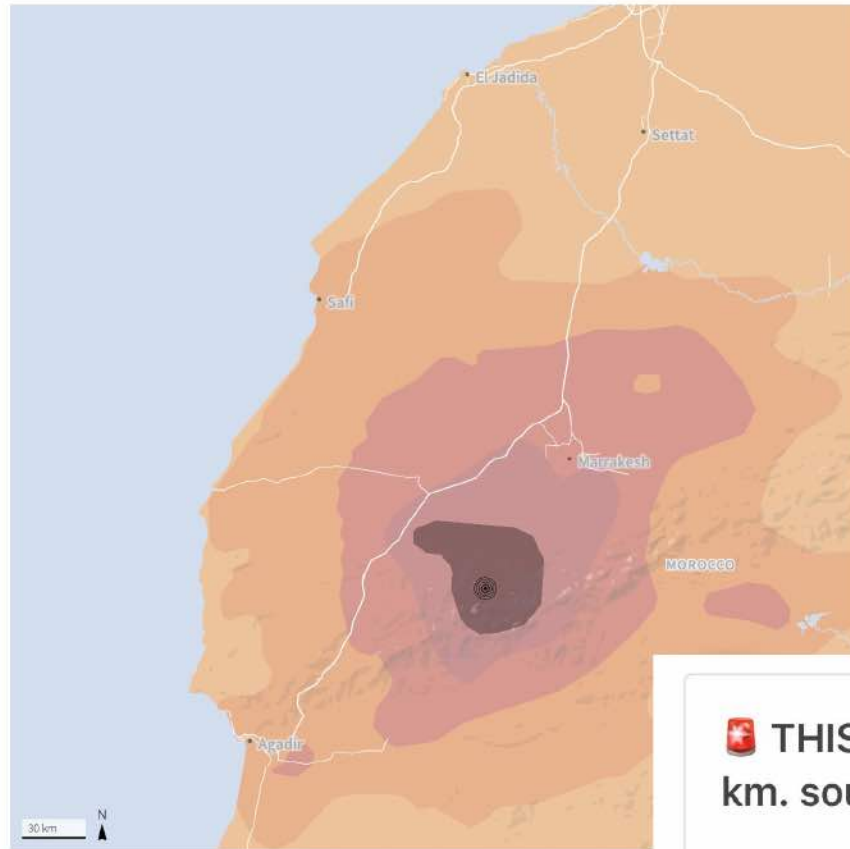
Reporters can publish more niche charts on their local beat.

Producers have become frontline chart makers for breaking news.



Earthquake hits Morocco

A magnitude 6.8 earthquake struck 74 km. southwest of Marrakech, Morocco at a reported depth of 18 km. on Friday September 8th, at 10:11 pm GMT



Shakemap intensity

3 4 5 6 7 8

With our publishing pipeline in place, graphics started developing **automated chart builders**, linking external APIs with pre-made chart templates at the speed of breaking news.

“Tremolo” our USGS-powered earthquake monitor published the first maps of the deadly 2023 Morocco quakes within minutes of USGS releasing the seismic data.

 **THIS JUST IN:** A magnitude 6.8 earthquake struck 72 km. southwest of Marrakech, Morocco at a reported...

[USGS.com](#) [Event page](#) The online repository for all data surrounding this earthquake event.

[see more](#)

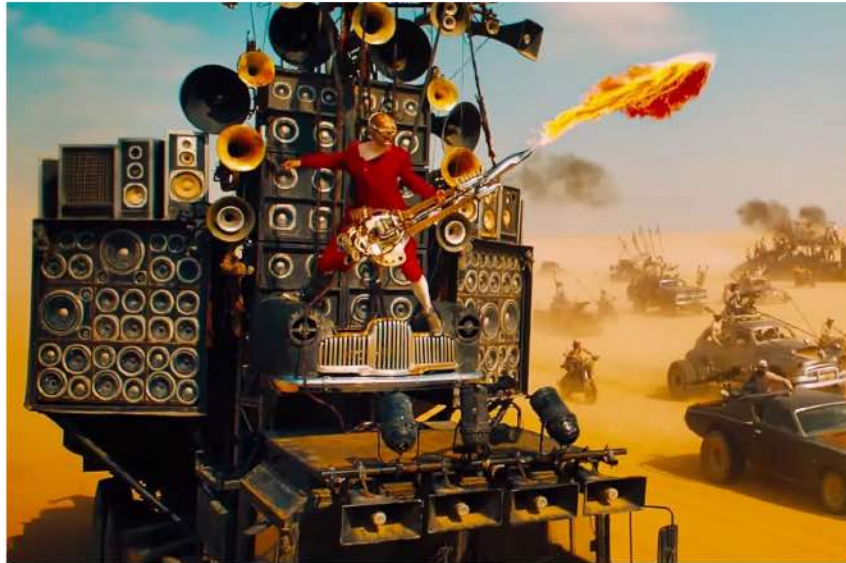
[Shapefile](#)

[KMZ](#)

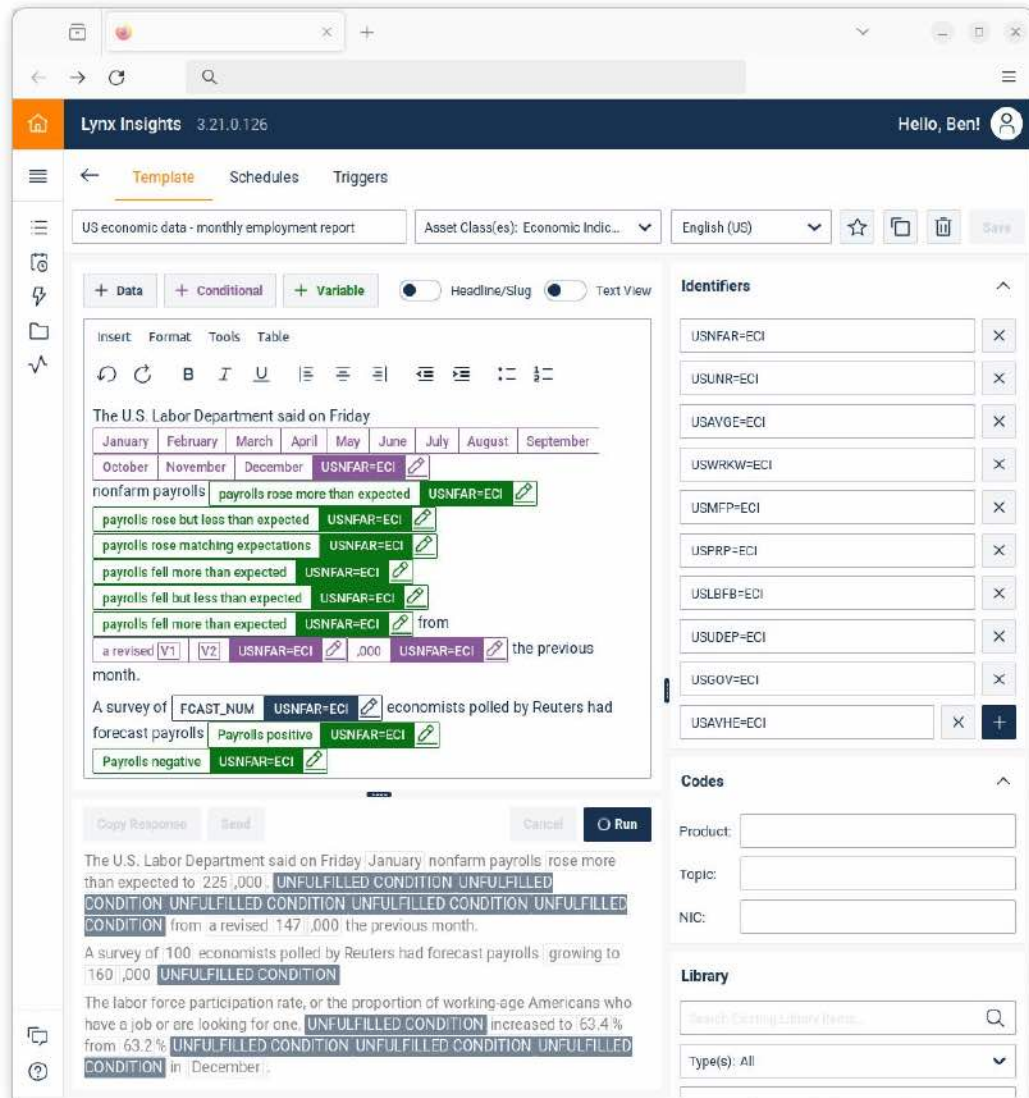
[GeoJSON](#)

[Datawrapper Map](#)





Publishing pipeline and a couple automated chart builders underbelt, we were ready to try **scaling way up**.

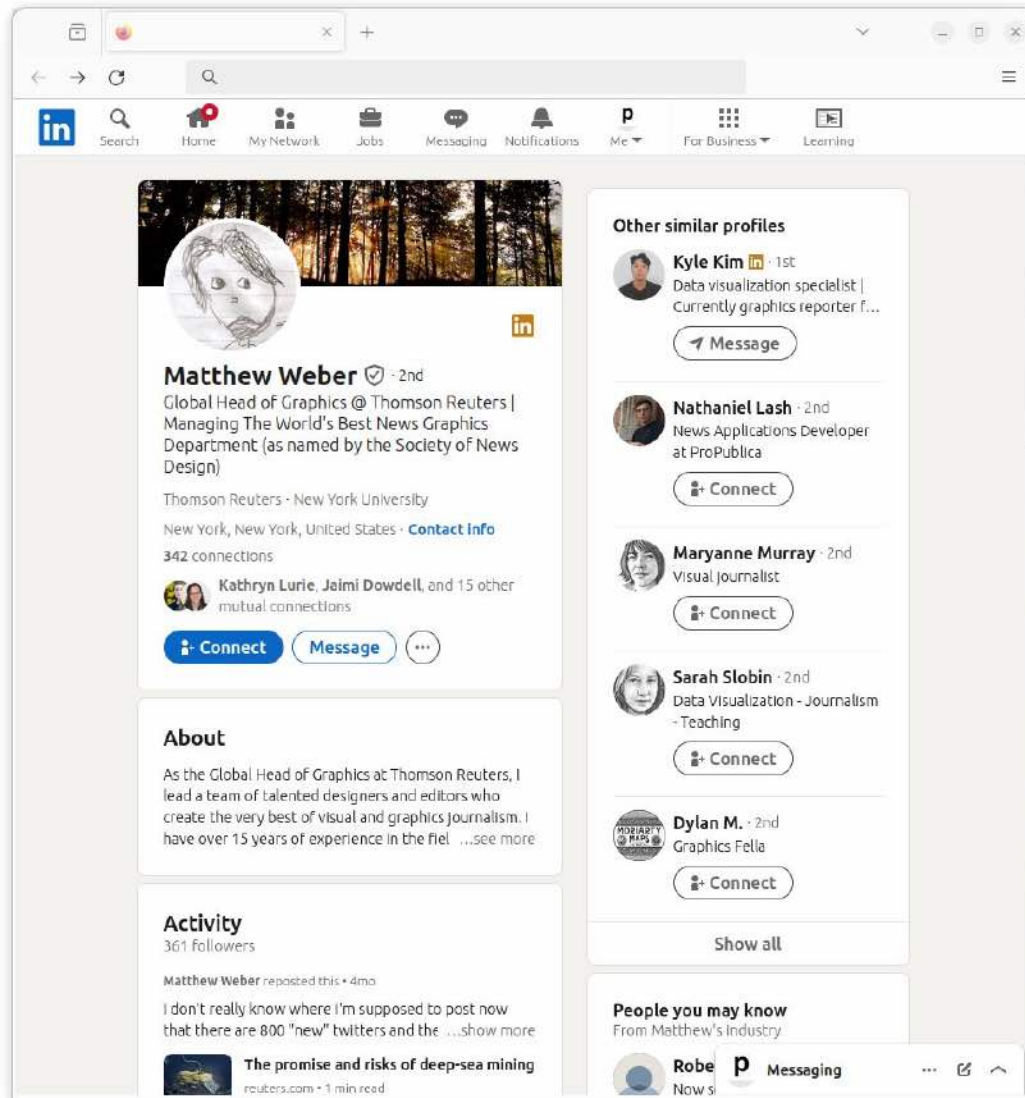


Text is automated

When Ben arrived at Reuters, he learned it already has a text automation system.

It's called Lynx Insight. It fits data to pre-defined templates using carefully tailored logic.

This story is filed immediately after new US employment numbers are released each month.



Why not graphics?

The graphics department head, Matt Weber, long wanted to automate graphics too.

As with Lynx Insight, it could boost speed, increase volume and allow highly-skilled talent to focus on higher-skill work.

So Ben set out to try.



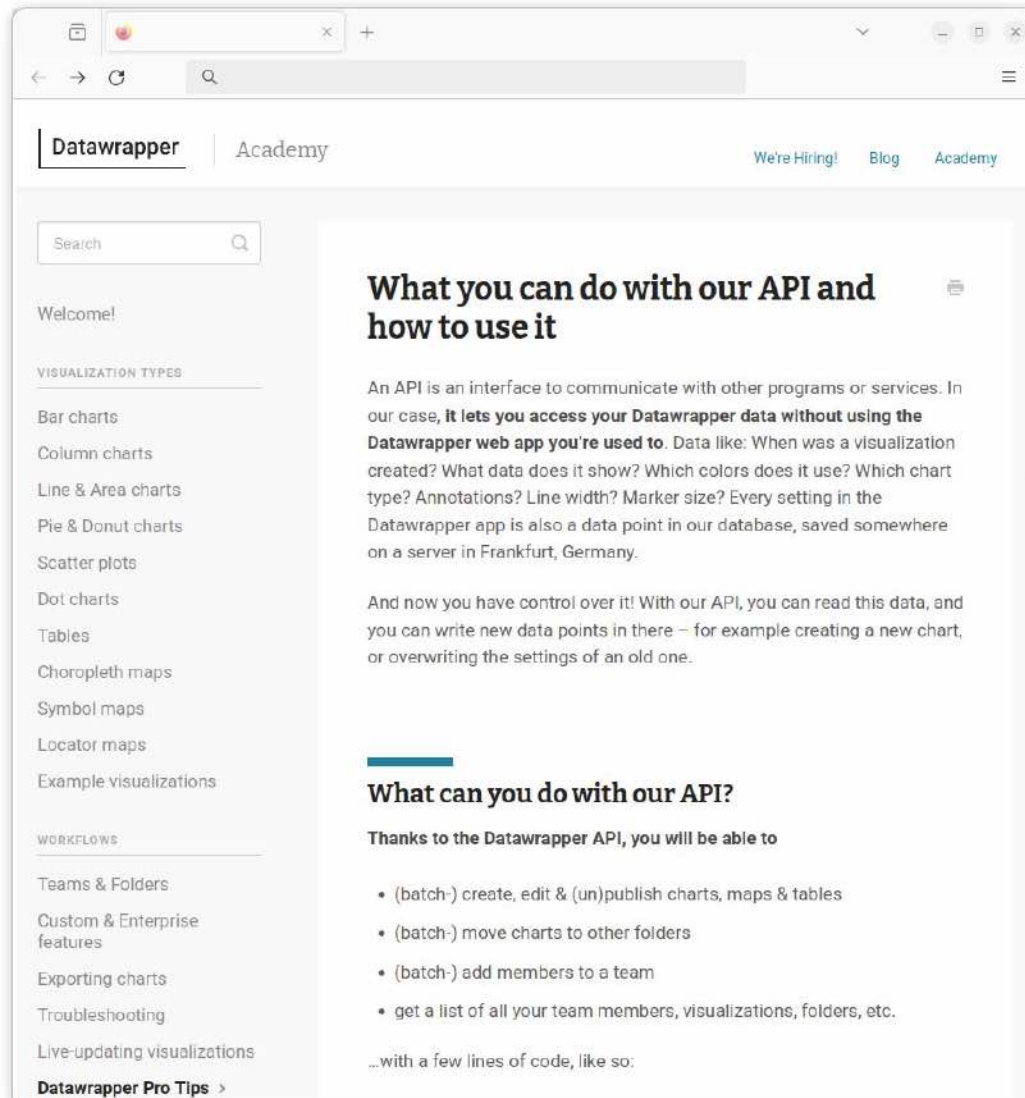
Feeding the funnel

Ben learned how Jon's distribution tools work.

His life flashed before his eyes.

Jon's ingestion system for Datawrapper was, in the metaphorical parlance of Ben's [tronic overlords](#), a funnel.

Ben just needed to figure out how to feed it.

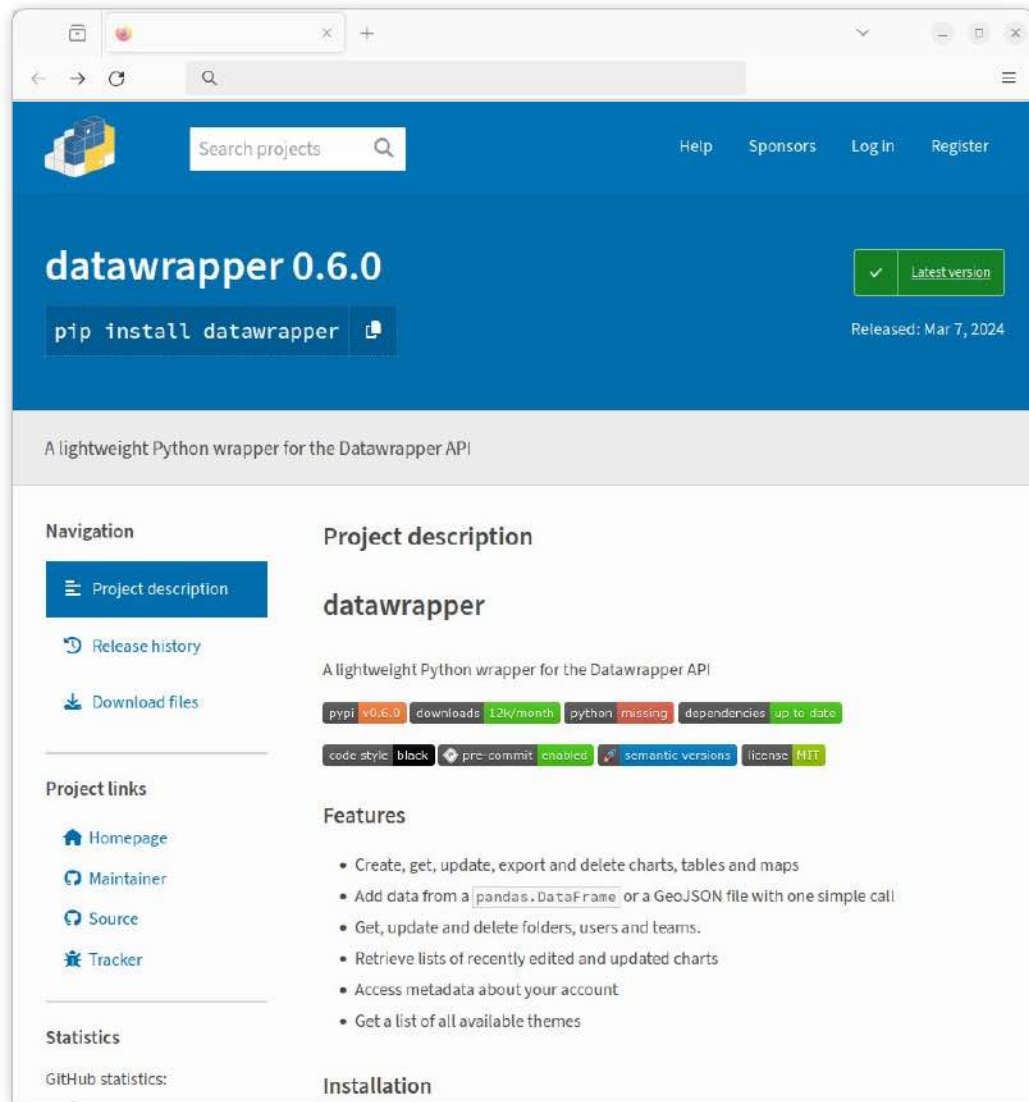


Enter the API

APIs allow programmers to access online services with code.

Datawrapper's API allows users to automatically generate charts and maps.

All Ben had to do was send instructions over the web with a special access token.

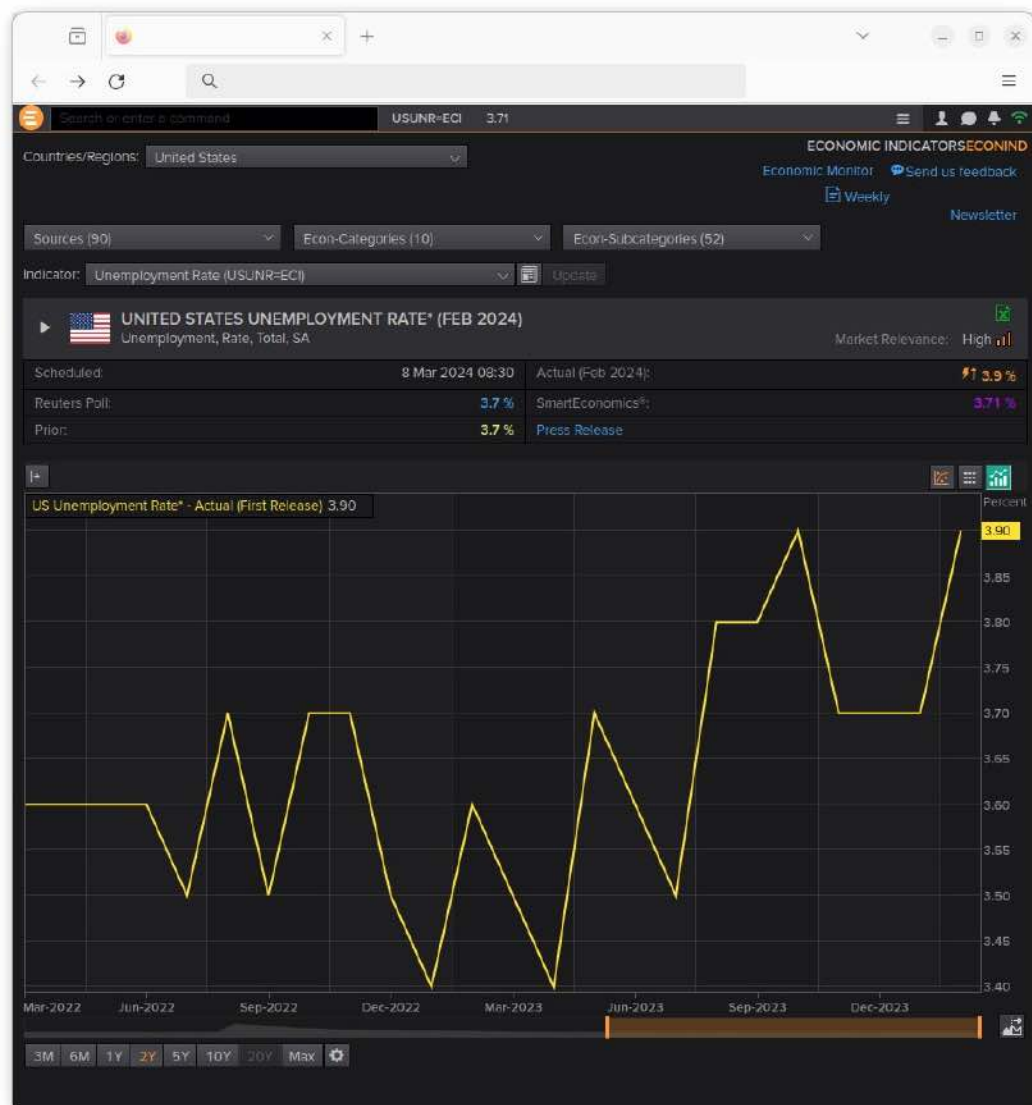


Python is cool

Sergio Sánchez Zavala created an open-source package that lets you access the API using the Python programming language.

If you know Python, it's easy to use.

Ben knew Python.



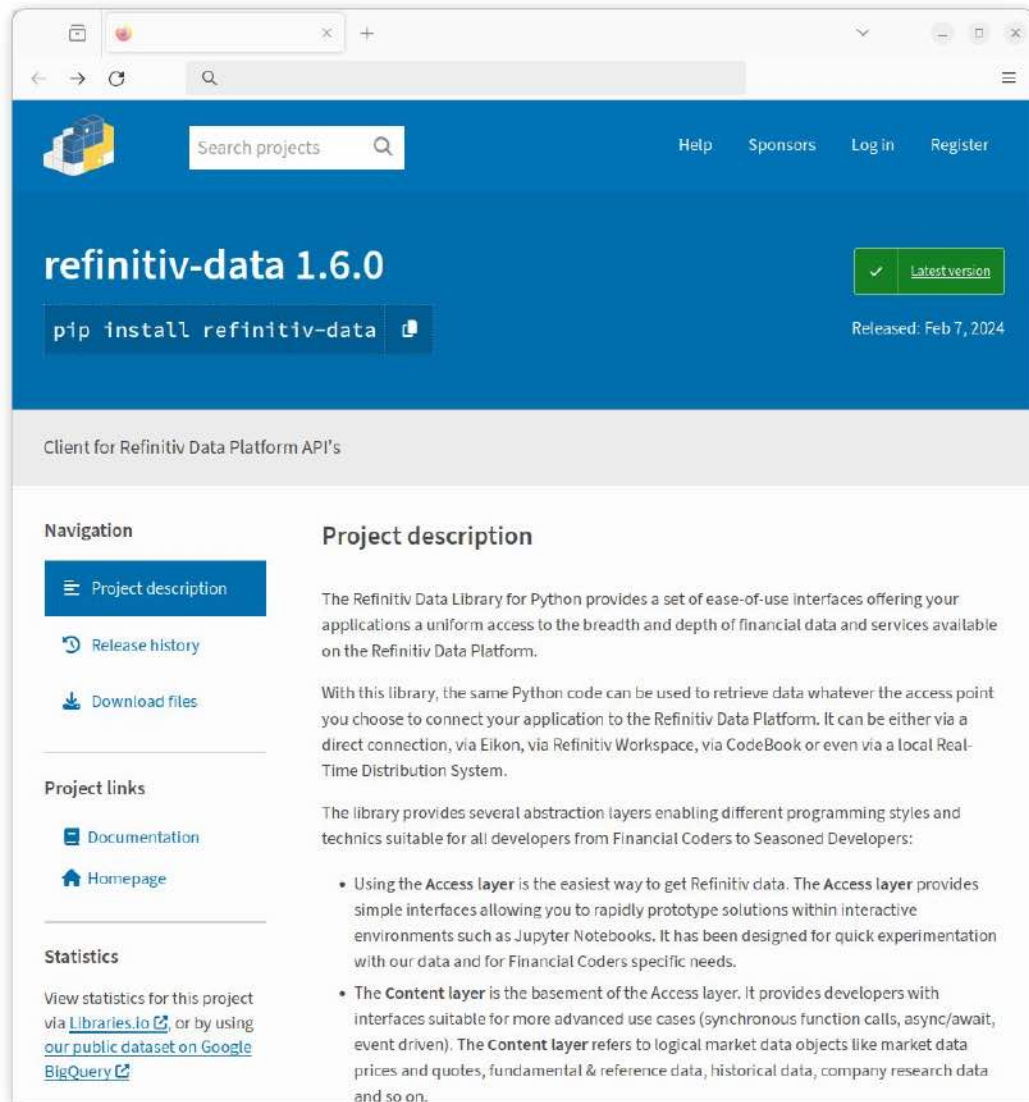
Our advantage

Reuters is the exclusive news provider for LSEG, a financial service that competes with the infamous Bloomberg Terminal.

That means we have access to a high-quality, rapidly updating feed of newsmaking numbers.

It's the top source for Reuters graphics, but reporters have to claw out data files and paste them into Datawrapper.

That's slow.

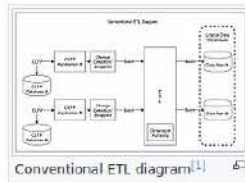
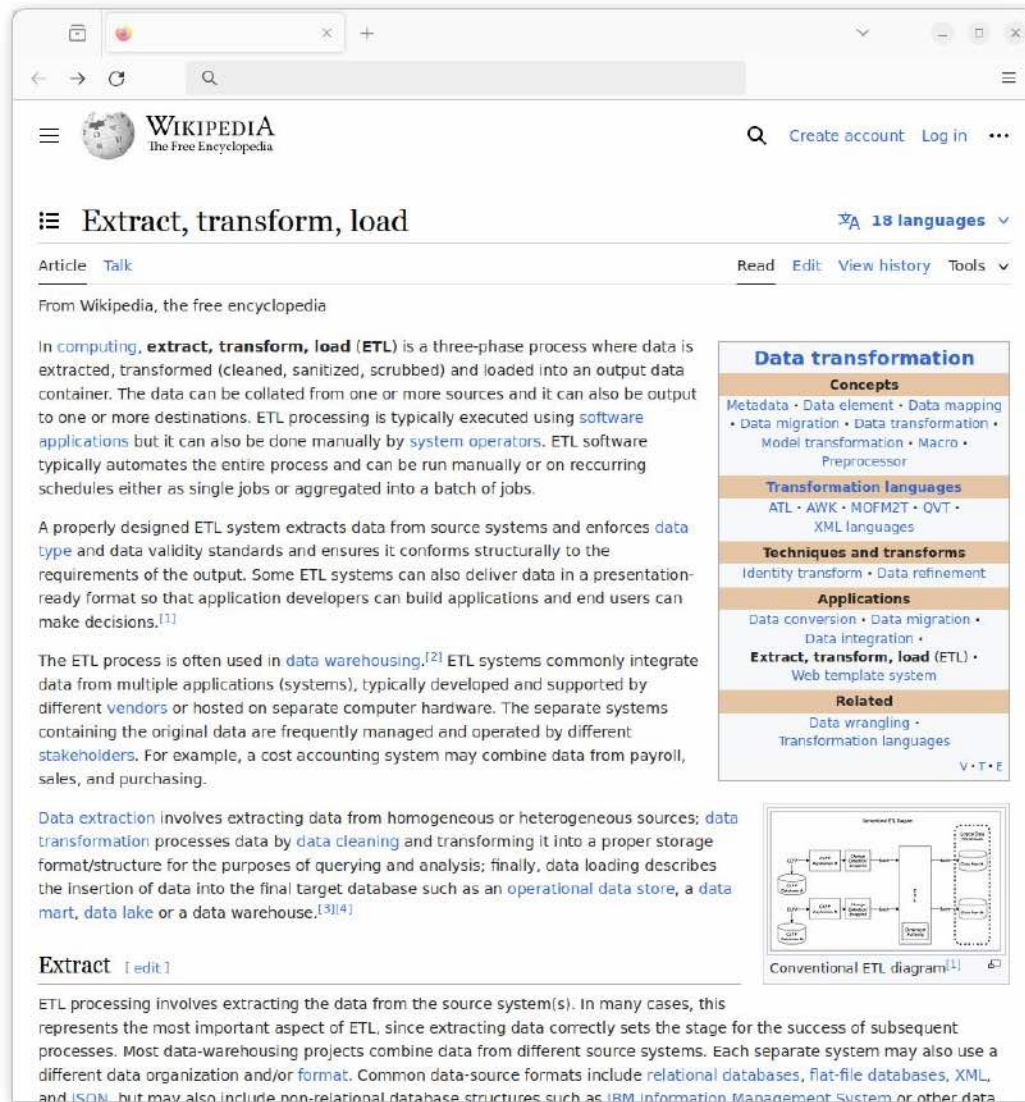


Another API

Ben learned that the LSEG system also offers an API.

He found its open-source Python package.

He got excited.

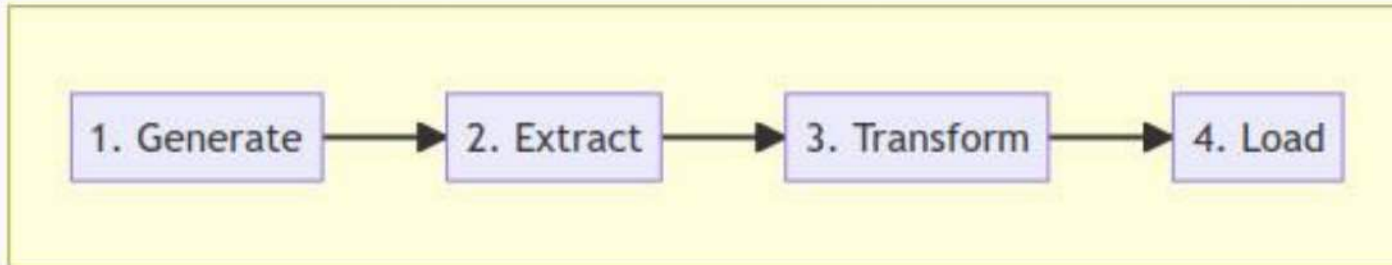


The missing link

All he needed was an “ETL” pipeline that connected the two systems.

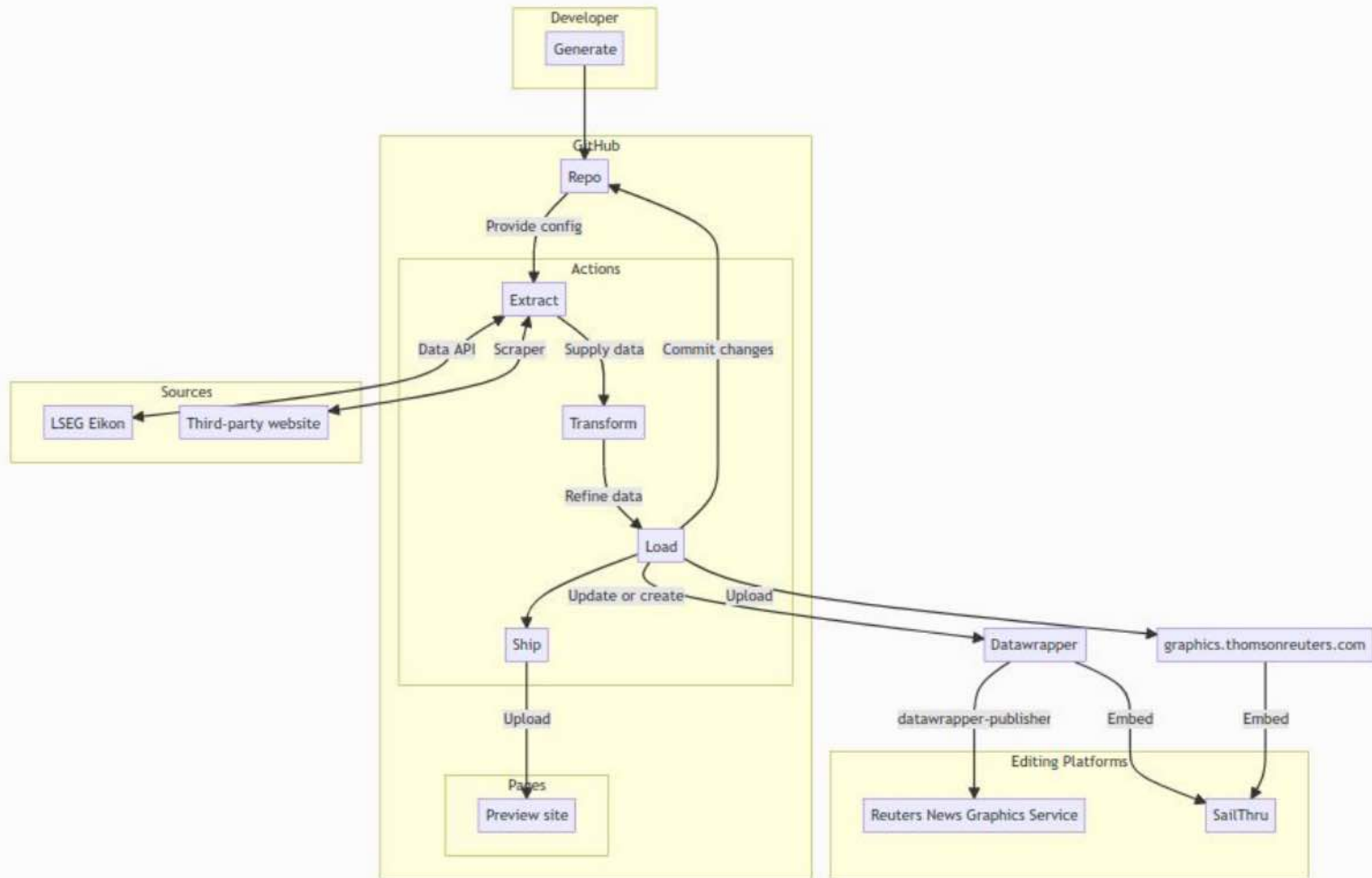
So he wrote it.

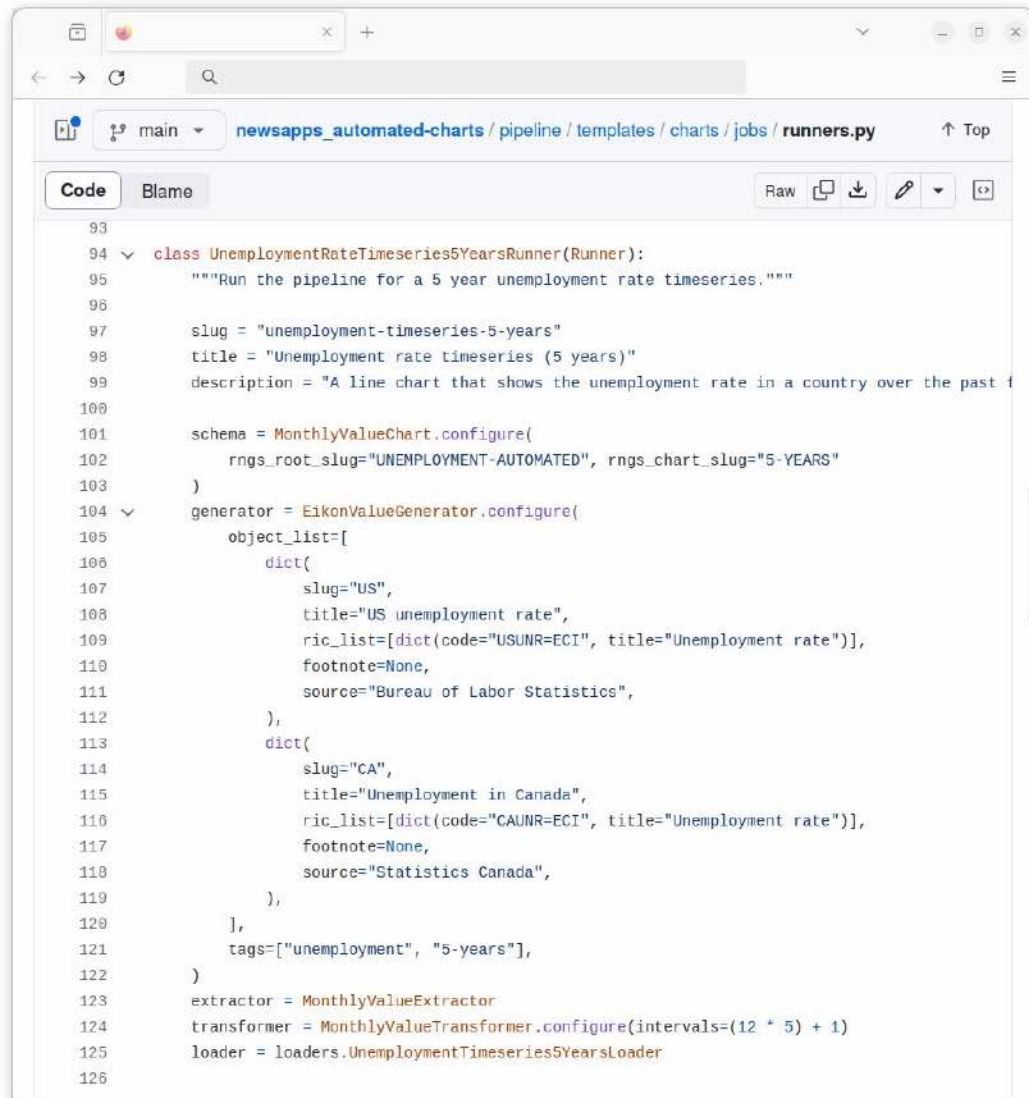
The pipeline in theory



1. Generate: Create or update configuration files that define the objects that will be rendered by the template
2. Extract: Fetch the data needed to generate each template object
3. Transform: Filter, refine and enrich the source data so that it's ready for publication
4. Load: Evaluate the transformed data and, if new information is available, publish an object

The pipeline in reality



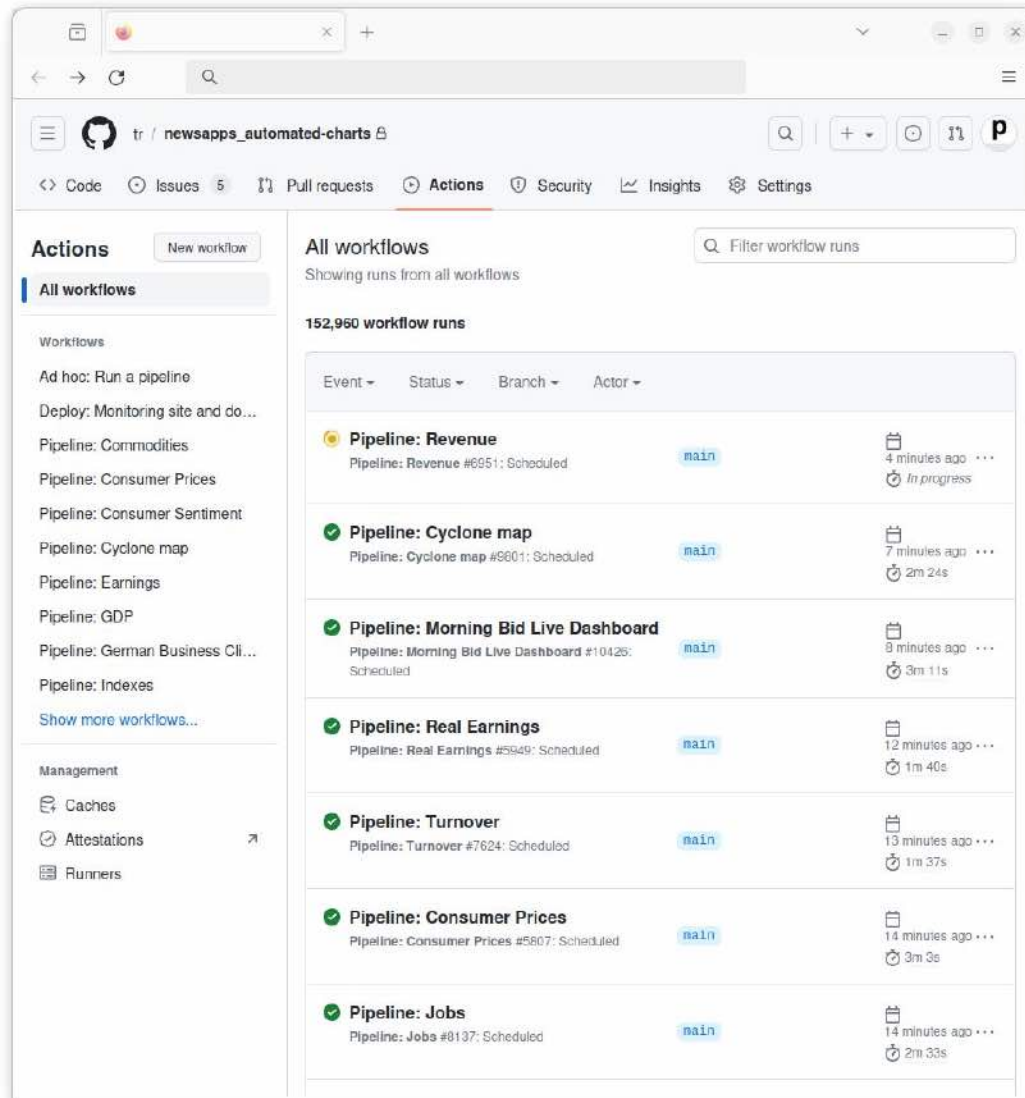


```
93
94 class UnemploymentRateTimeseries5YearsRunner(Runner):
95     """Run the pipeline for a 5 year unemployment rate timeseries."""
96
97     slug = "unemployment-timeseries-5-years"
98     title = "Unemployment rate timeseries (5 years)"
99     description = "A line chart that shows the unemployment rate in a country over the past 5 years"
100
101     schema = MonthlyValueChart.configure(
102         rns_root_slug="UNEMPLOYMENT-AUTOMATED", rns_chart_slug="5-YEARS"
103     )
104     generator = EikonValueGenerator.configure(
105         object_list=[
106             dict(
107                 slug="US",
108                 title="US unemployment rate",
109                 ric_list=[dict(code="USUNR=ECI", title="Unemployment rate")],
110                 footnote=None,
111                 source="Bureau of Labor Statistics",
112             ),
113             dict(
114                 slug="CA",
115                 title="Unemployment in Canada",
116                 ric_list=[dict(code="CAUNR=ECI", title="Unemployment rate")],
117                 footnote=None,
118                 source="Statistics Canada",
119             ),
120         ],
121         tags=["unemployment", "5-years"],
122     )
123     extractor = MonthlyValueExtractor
124     transformer = MonthlyValueTransformer.configure(intervals=(12 * 5) + 1)
125     loader = loaders.UnemploymentTimeseries5YearsLoader
126
```

For example

Here is Python code that – using a set of custom ETL helpers – creates a line chart of the unemployment rate.

It's just one small snippet within a large system, but it shows the basic bits needed for each chart template.



Actions as platform

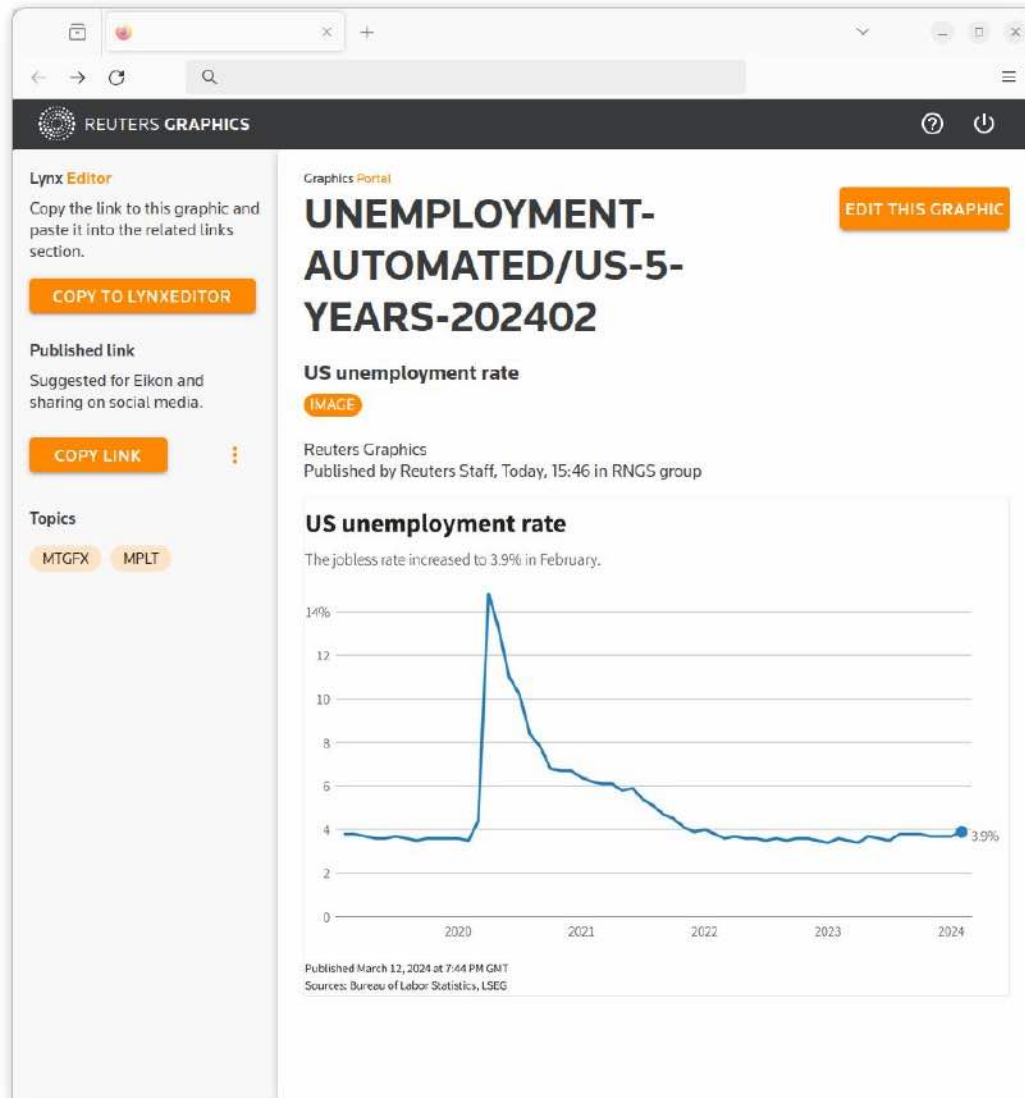
The system is run via Actions, the powerful task runner included with GitHub.

Yes, Actions is the production environment.

Yes, it works.

Yes, it's virtually free.

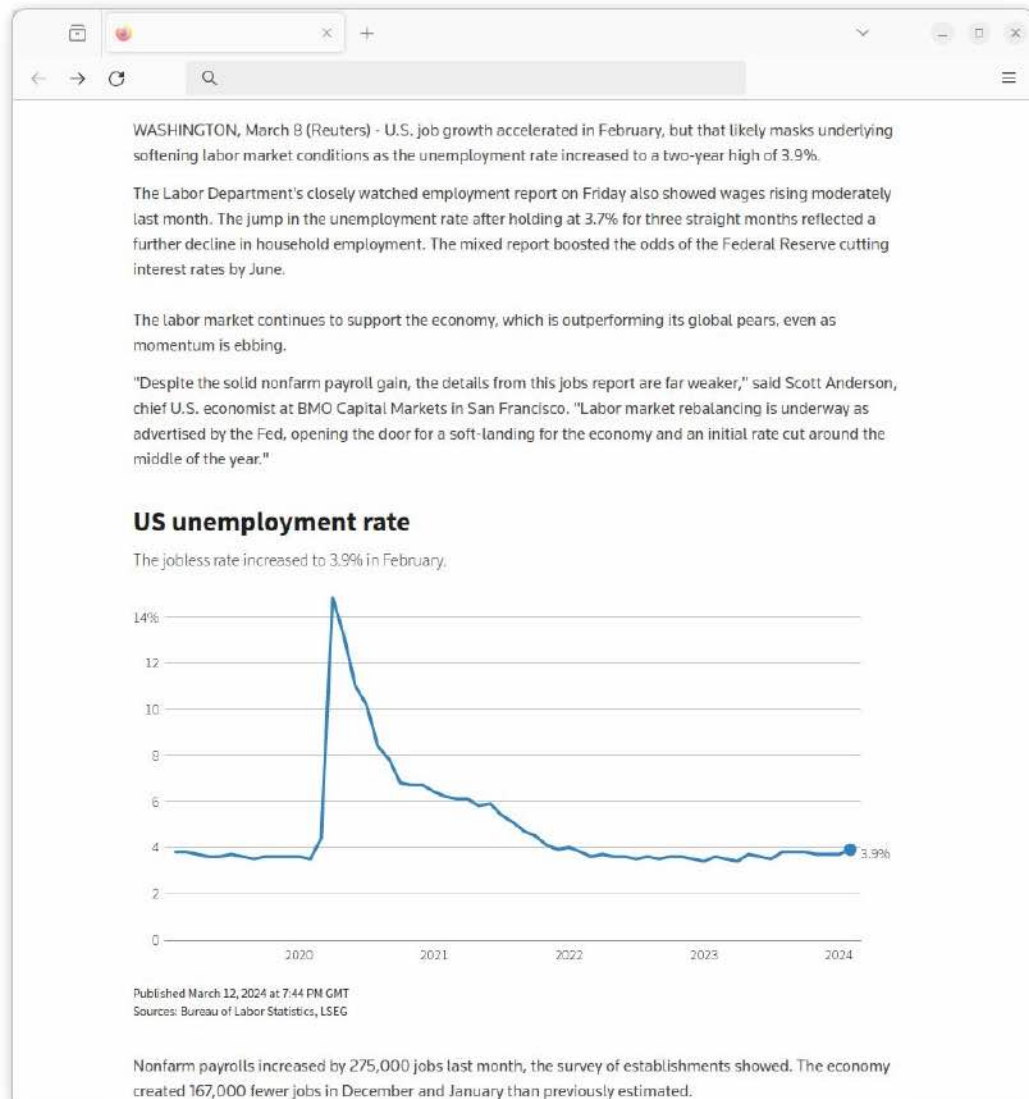
Yes, you should do this.



Down the funnel

After an Action makes a new chart via the Datawrapper API, Jon's system picks it up and does the rest.

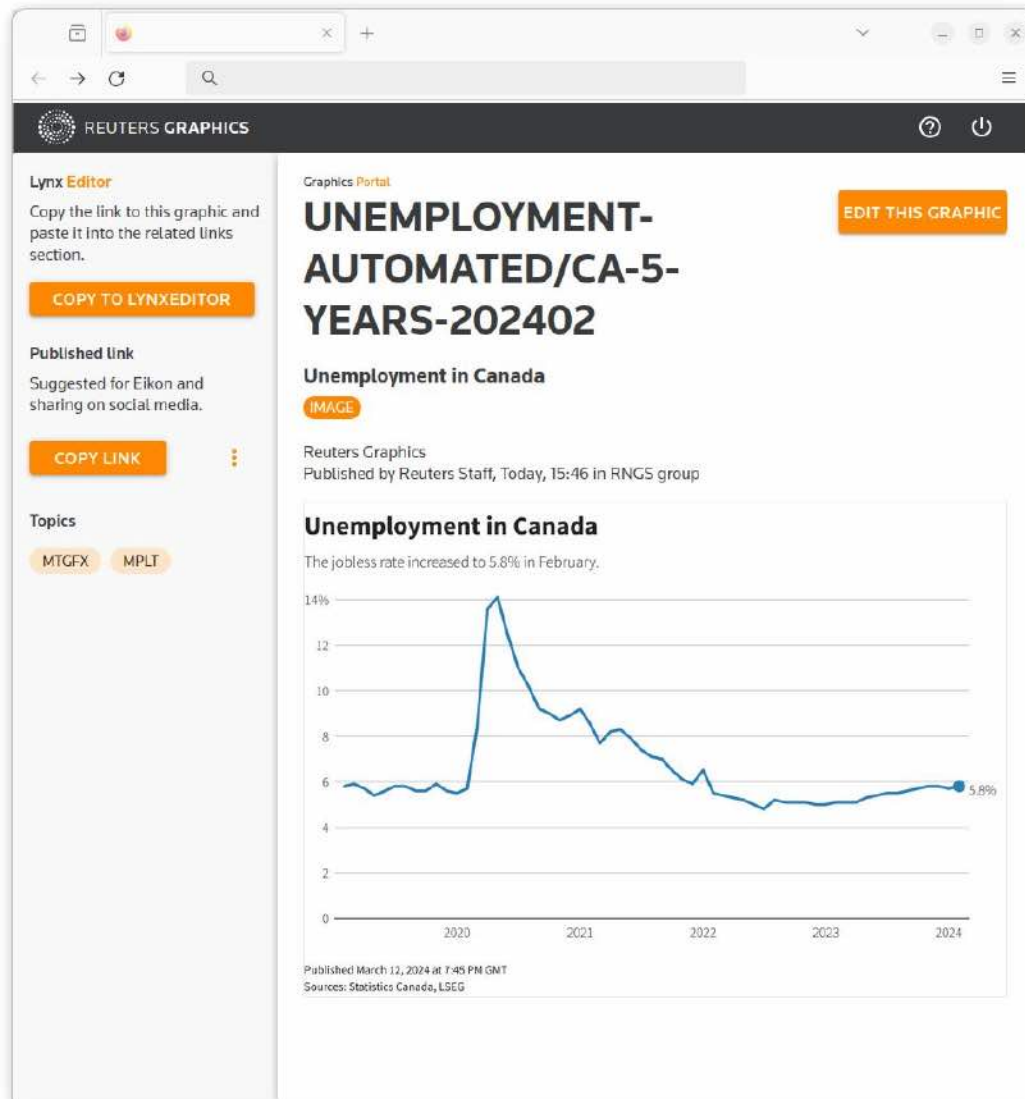
The templated charts drop into our graphics pool, just like the custom charts made by our staff.



Speed wins

The result is that when a newsmaking number hits LSEG, an automated chart can be ready in minutes.

We're seeing our charts land even faster than our text stories.



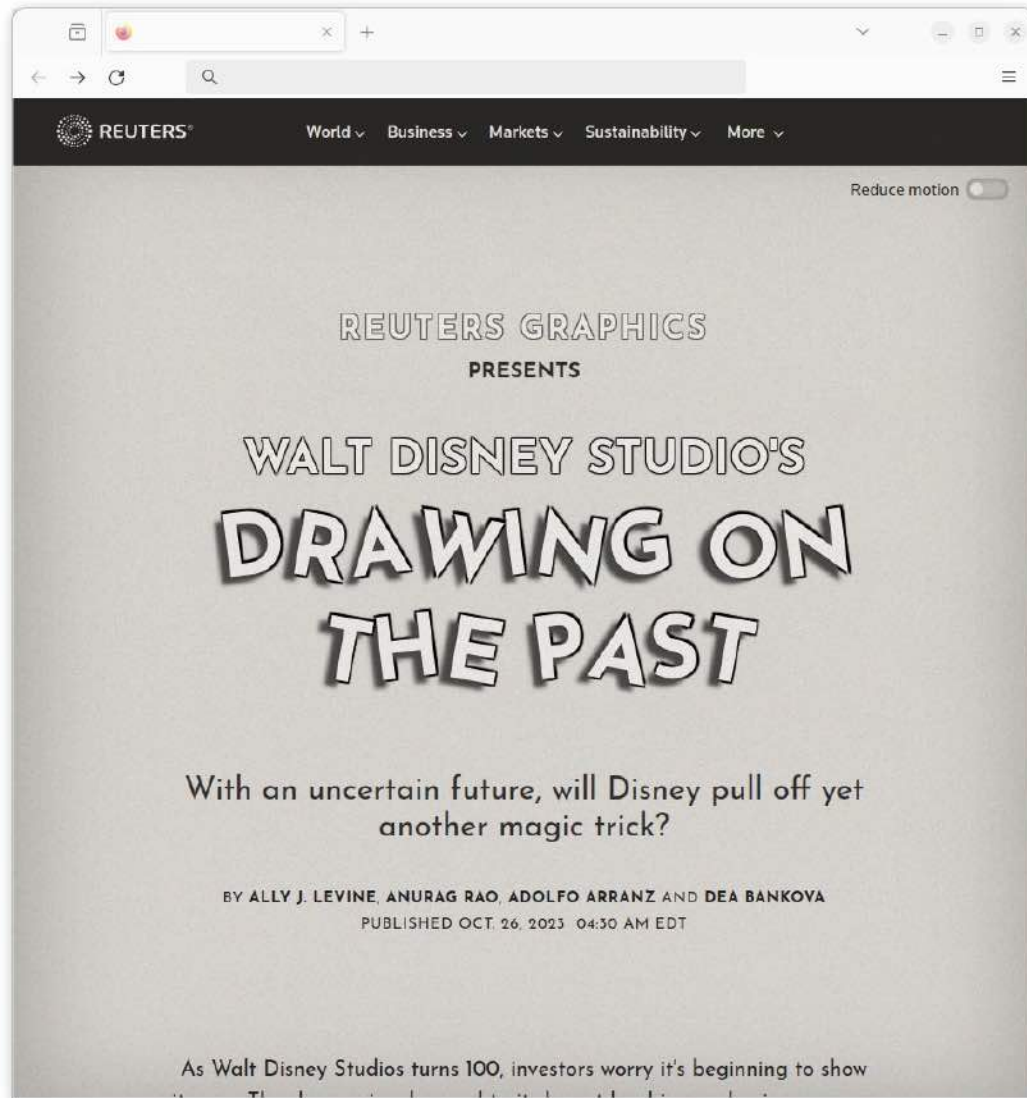
Scary scale

The templates can easily be extended to sibling data sets.

This allows our system to scale far beyond what any human could do.

A powerful example is our bar chart template for corporate earnings reports.

It can instantly make a chart for each of the thousands of stocks tracked by LSEG.

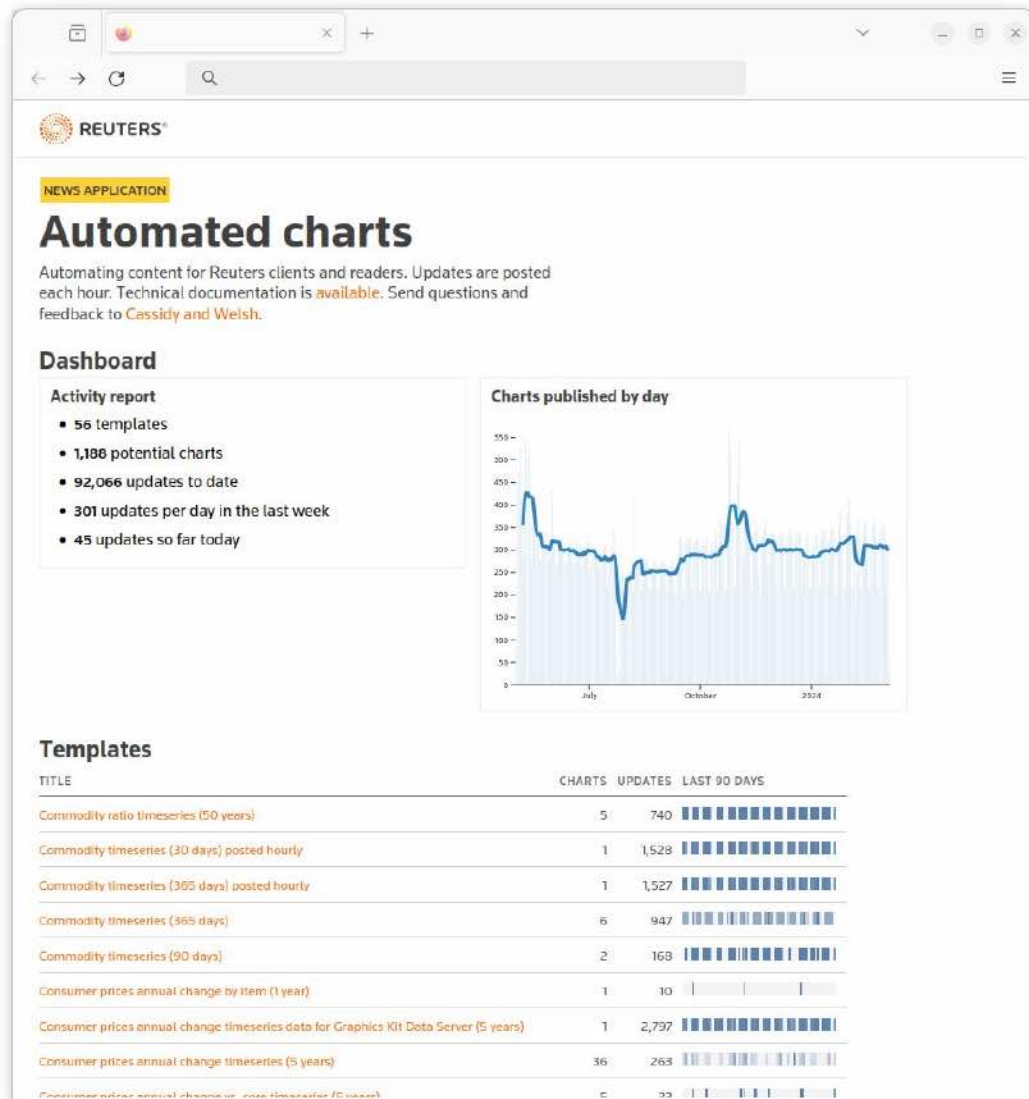


Freedom rings

Ally Levine had to log on early on Fridays to manually make that unemployment rate chart.

Now the robot does the work.

Ally gets to sleep in and do things like this instead.

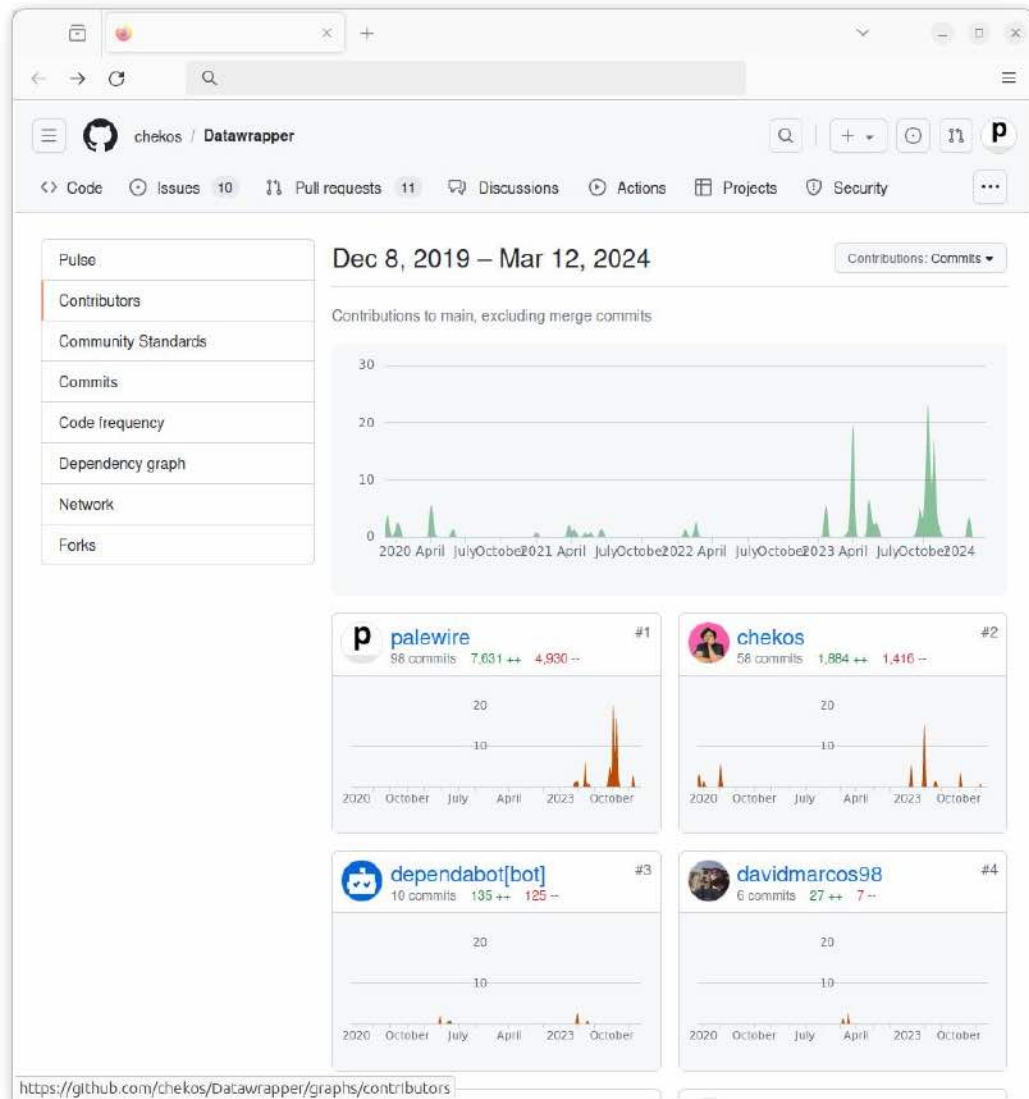


Putting up numbers

We've been up and running for a little more than six months.

Thus far, we have nearly 60 templates, including a few that branch out beyond LSEG and Datawrapper.

All told we've pushed through more than 20,000 charts.



Merging back

Ben teamed up with Sergio to expand and improve the Datawrapper package for Python.

It now covers 100% of API features.

Python API code in reality

reality.py

Raw

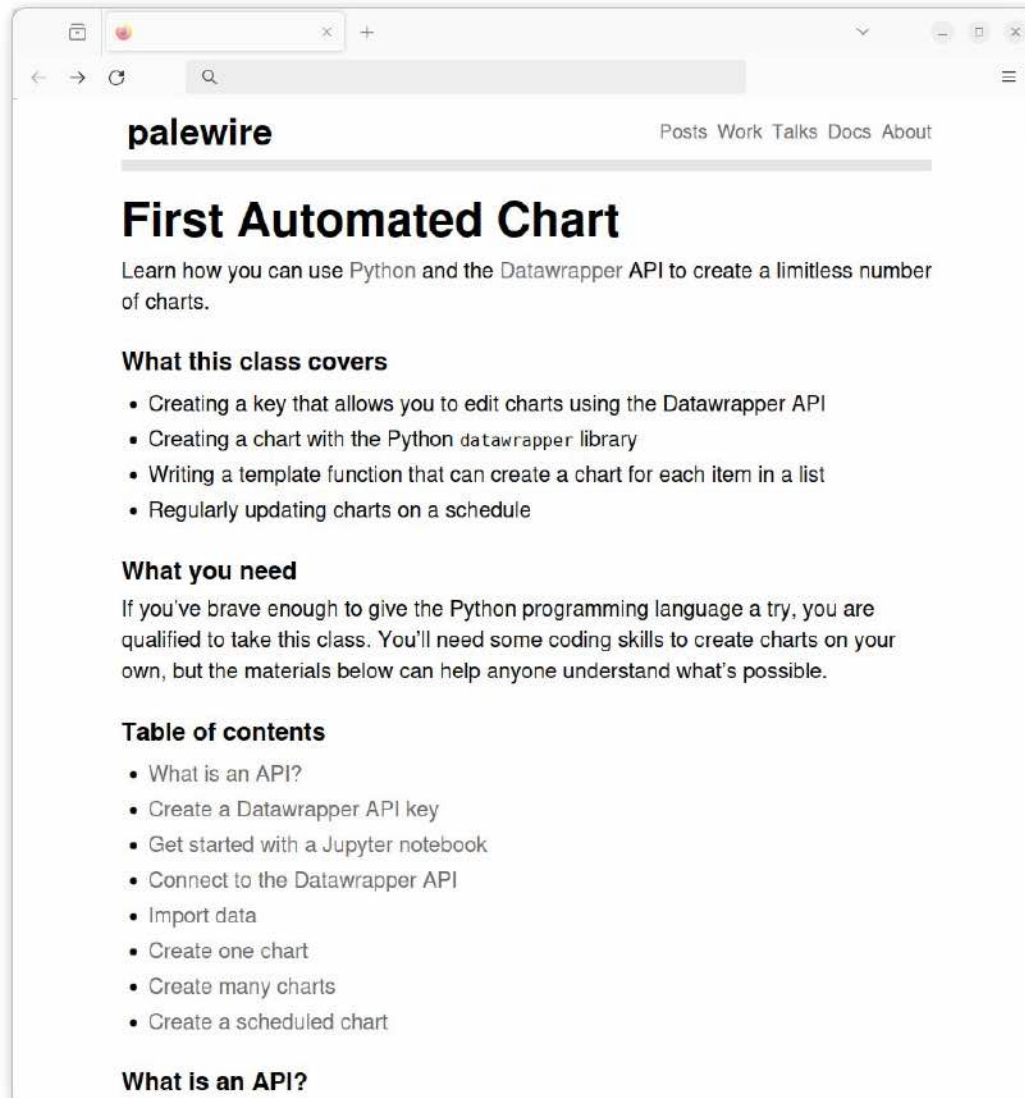
```
1 dw.create_chart(  
2     title="Arrests in Baltimore",  
3     chart_type="column-chart",  
4     data=data,  
5     metadata={  
6         "visualize": {  
7             "base-color": "#bf7836"  
8         },  
9         "describe": {  
10             "source-name": "OpenBaltimore",  
11             "source-url": "https://data.baltimorecity.gov/datasets/baltimore::bpd-arrests/about",  
12             "byline": "First Automated Chart"  
13         }  
14     }  
15 )
```

Python API code in theory

 theory.py

Raw

```
1 from datawrapper import ColumnChart
2
3 ColumnChart(
4     title="Arrests in Baltimore",
5     data=data,
6     base_color="#bf7836",
7     source_name="OpenBaltimore",
8     source_url="https://data.baltimorecity.gov/datasets/baltimore::bpd-arrests/about",
9     byline="First Automated Chart"
10 ).create()
```



You must learn

Ben and Sergio created a tutorial that shows newbies how to use the Datawrapper API with Python.

It was a standing-room only event at the recent NICAR conference in Baltimore.

It's fully scripted and free to all on Ben's website.

Thank you!

Slides available at
bit.ly/bare-facts-first

