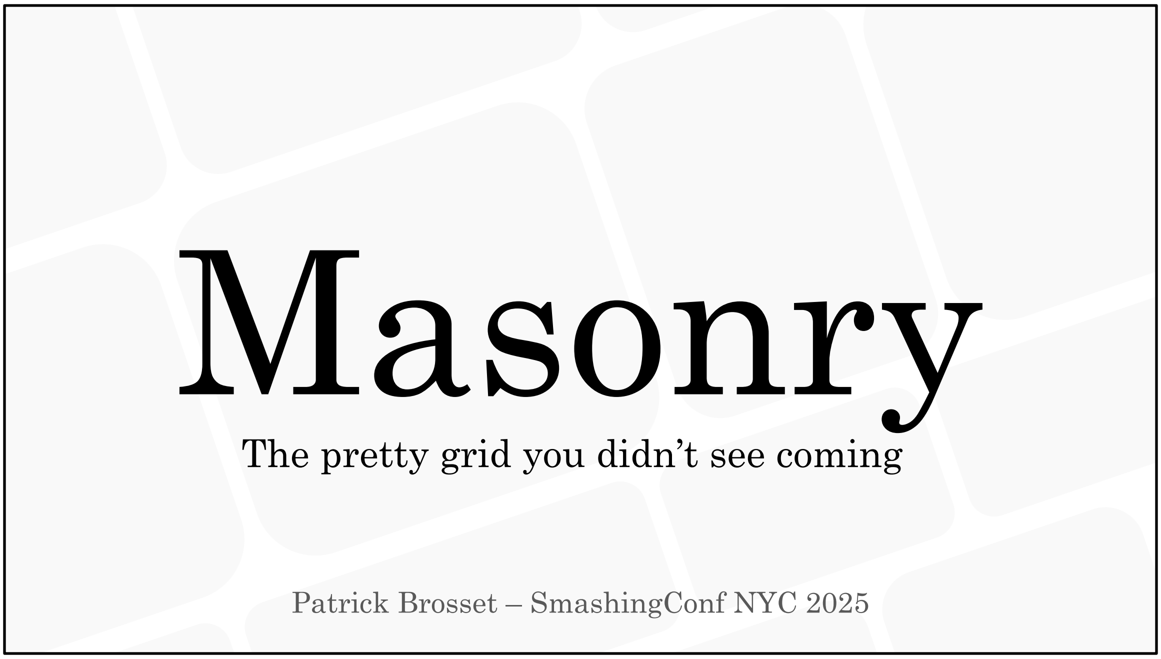


Masonry

The pretty grid you didn't see coming

Patrick Brosset – SmashingConf NYC 2025

Hey folks!
Thank you for being here today.

Patrick

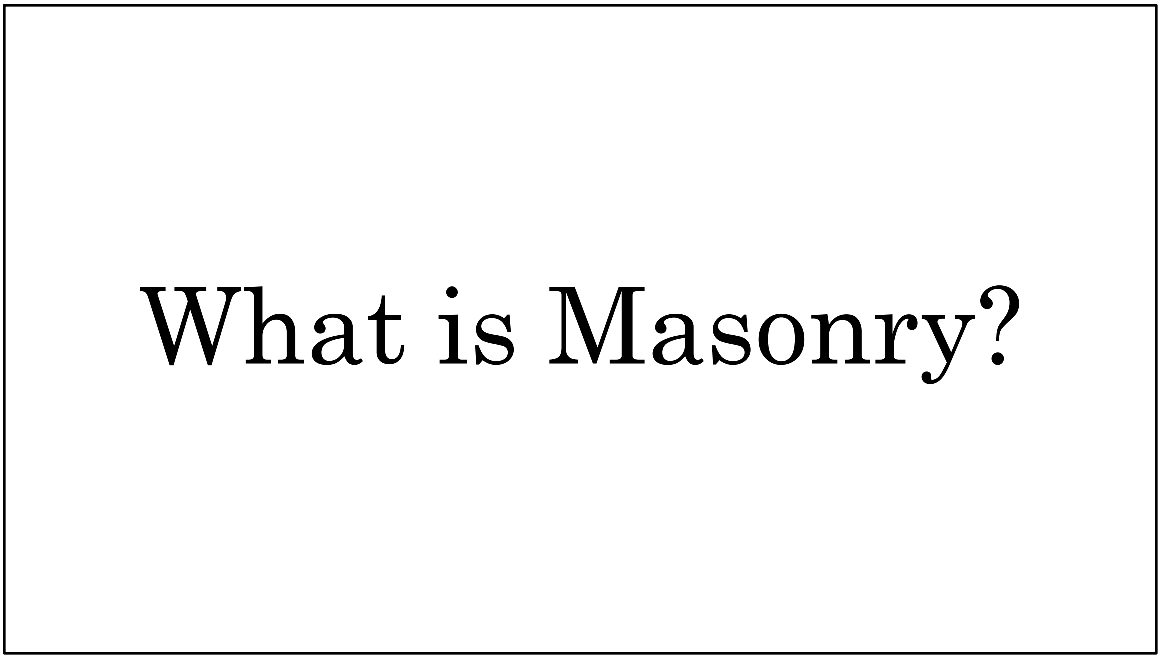
https://patrickbrosset.com

Bluesky: @patrickbrosset.com

Mastodon: @patrickbrosset@mas.to

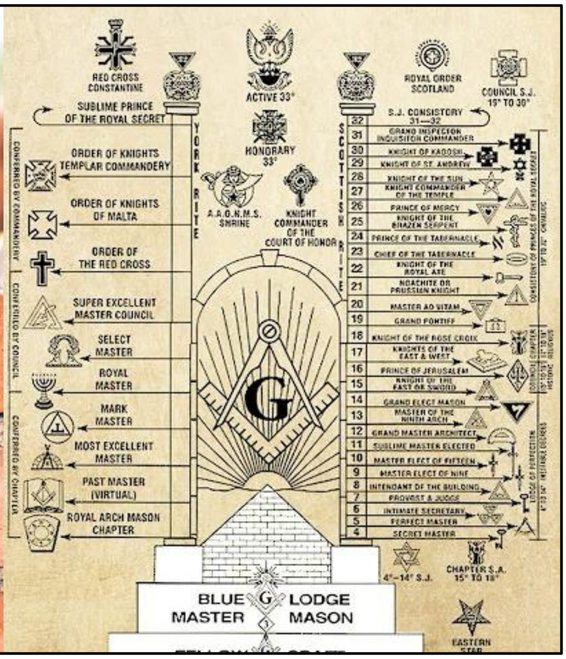
My name is Patrick, I’m a product manager at Microsoft, working on the Edge browser
Specifically on the web platform team.

And today, let’s talk about Masonry!



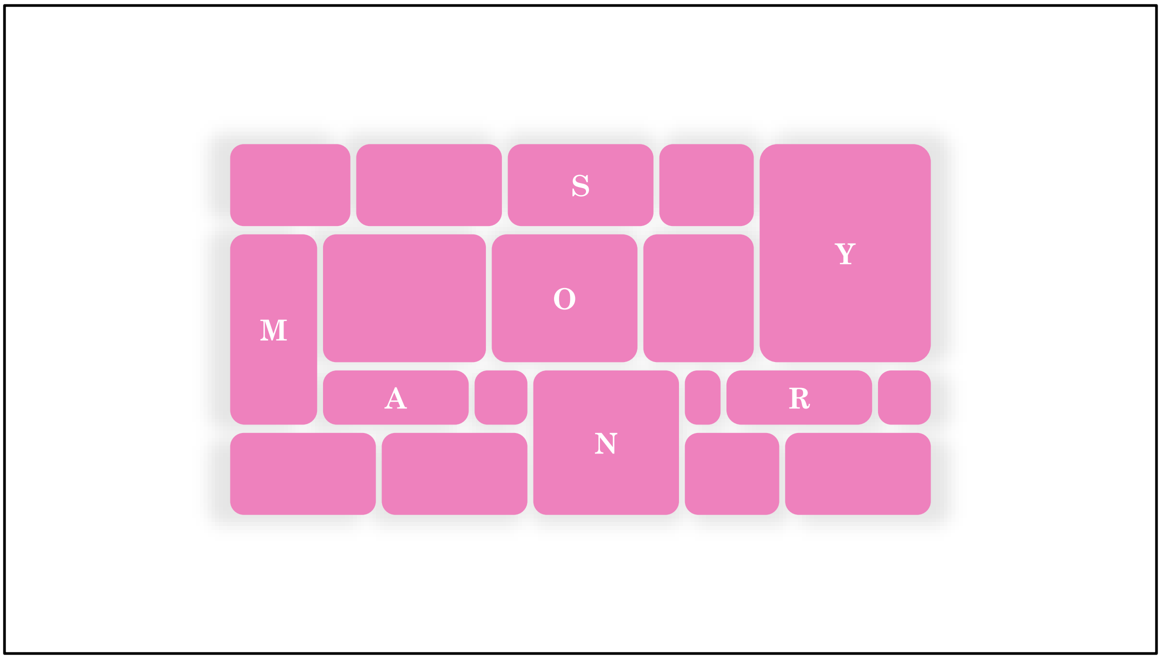
What is Masonry?

So, what's Masonry exactly?

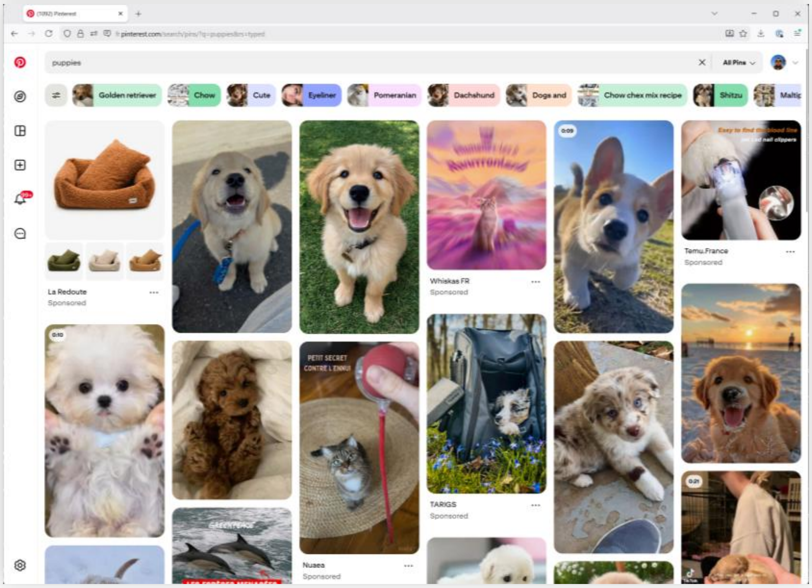


RED CROSS CONSTANTINE
ACTIVE 33°
ROYAL ORDER SCOTLAND
COUNCIL S.J. 15° TO 30°
SUBLIME PRINCE OF THE ROYAL SECRET
S.J. CONSISTORY 31—32
HONORARY 33°
YORK RITE
SCOTTISH RITE
CONFERRED BY COMMANDERY
CONFERRED BY COUNCIL
CONFERRED BY CHAPTER
ORDER OF KNIGHTS TEMPLAR COMMANDERY
ORDER OF KNIGHTS OF MALTA
ORDER OF THE RED CROSS
SUPER EXCELLENT MASTER COUNCIL
SELECT MASTER
ROYAL MASTER
MARK MASTER
MOST EXCELLENT MASTER
PAST MASTER (VIRTUAL)
ROYAL ARCH MASON CHAPTER
A.A.O.N.M.S. SHRINE
KNIGHT COMMANDER OF THE COURT OF HONOR
G
32
31 GRAND INSPECTOR INQUISITOR COMMANDER
30 KNIGHT OF KADOSH
29 KNIGHT OF ST. ANDREW
28 KNIGHT OF THE SUN
27 KNIGHT COMMANDER OF THE TEMPLE
26 PRINCE OF MERCY
25 KNIGHT OF THE BRAZEN SERPENT
24 PRINCE OF THE TABERNACLE
23 CHIEF OF THE TABERNACLE
22 KNIGHT OF THE ROYAL AXE
21 NOACHITE OR PRUSSIAN KNIGHT
20 MASTER AD VITAM
19 GRAND PONTIFF
18 KNIGHT OF THE ROSE CROIX
17 KNIGHTS OF THE EAST & WEST
16 PRINCE OF JERUSALEM
15 KNIGHT OF THE EAST OR SWORD
14 GRAND ELECT MASON
13 MASTER OF THE NINTH ARCH
12 GRAND MASTER ARCHITECT
11 SUBLIME MASTER ELECTED
10 MASTER ELECT OF FIFTEEN
9 MASTER ELECT OF NINE
8 INTENDANT OF THE BUILDING
7 PROVOST & JUDGE
6 INTIMATE SECRETARY
5 PERFECT MASTER
4 SECRET MASTER
CONSISTORY OF PRINCES OF THE ROYAL SECRET 19° TO 32° CHIVALRIC
COUNCIL CHAPTER 15° TO 16° 17° TO 18° HISTORIC RELIGIOUS
LODGE OF PERFECTION 4° TO 14° INEFFABLE DEGREES
4°–14° S.J.
CHAPTER S.A. 15° TO 18°
BLUE LODGE
MASTER MASON
EASTERN STAR

It can be either of these 2 things, but that’s not what I’m here to talk about today.

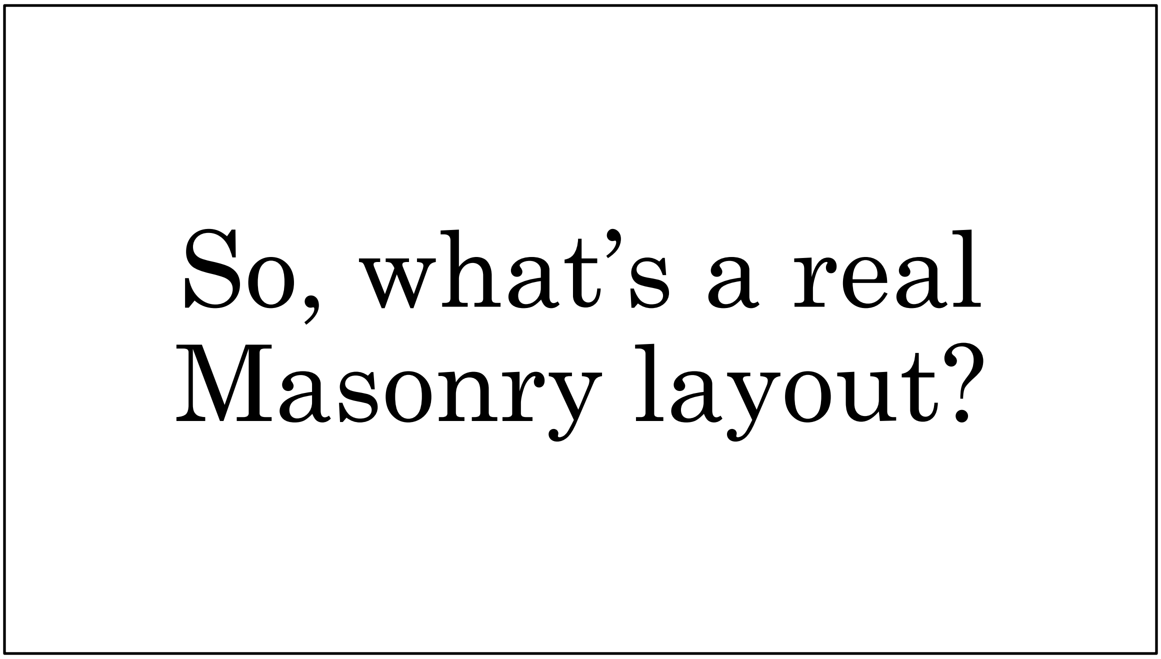


Instead, let’s talk about Masonry: the web layout.



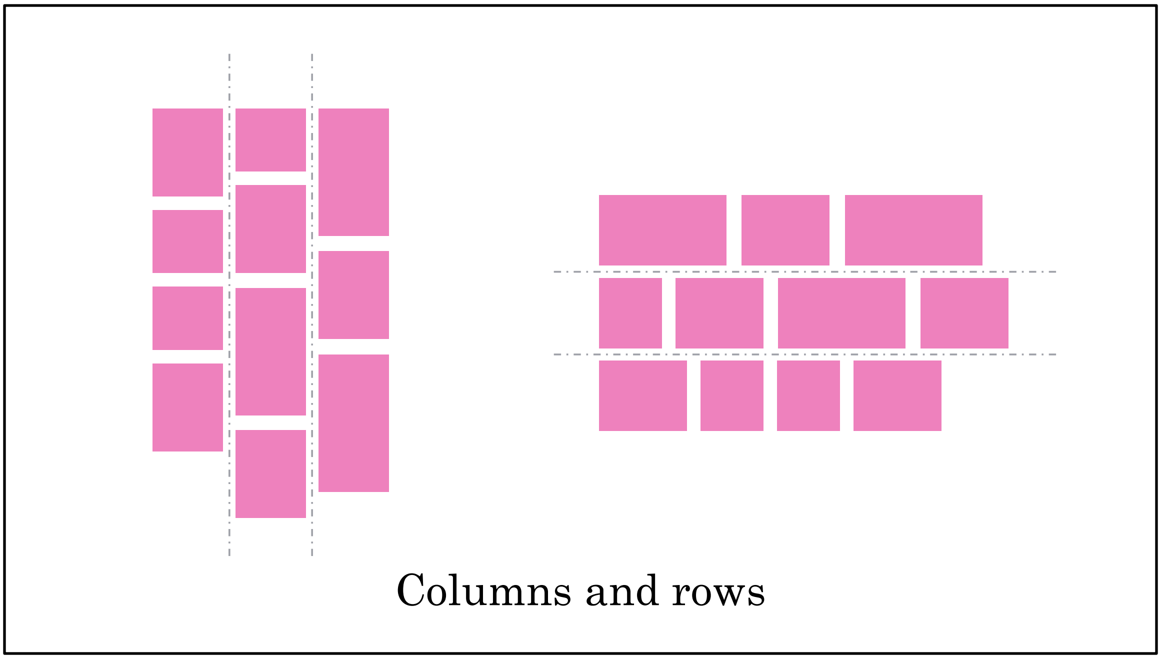
I know what some of you may be thinking:
Masonry isn’t cool anymore.
It was made popular by Pinterest, years ago, and not really useful elsewhere.

Well, that’s not quite true as we’ll see.
And we’ll also that Masonry can be more than Pinterest-style layouts.



So, what's a real Masonry layout?

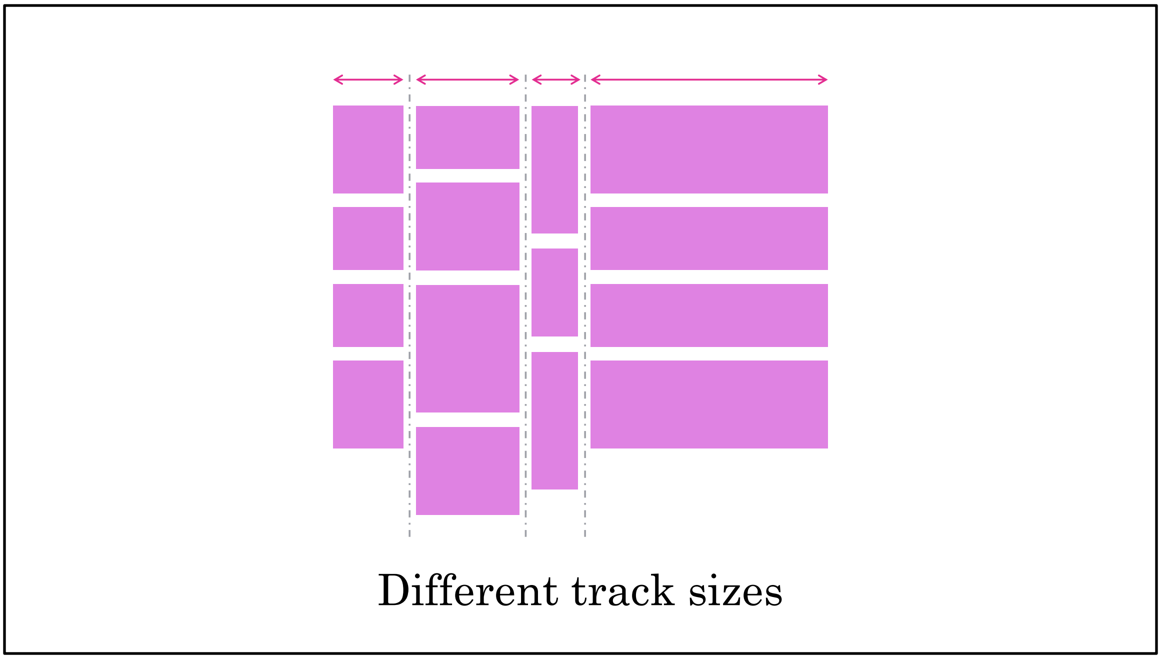
So, what's a real Masonry layout then?



Columns and rows

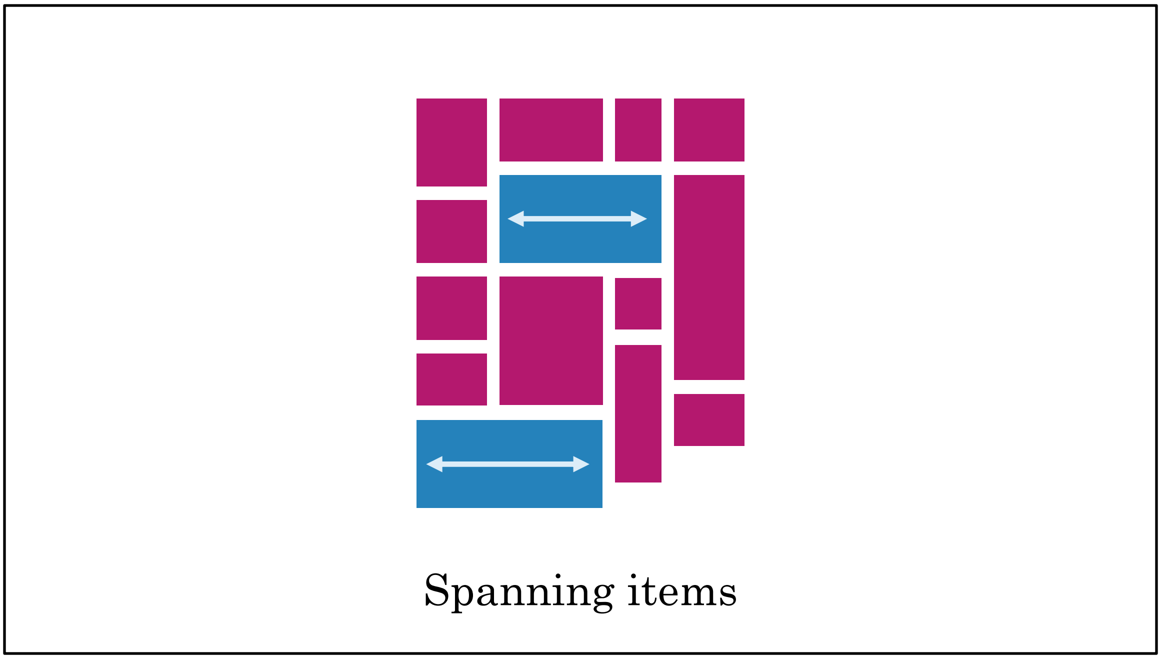
A true Masonry layout can do all these things:

- The tracks can be vertical or horizontal.



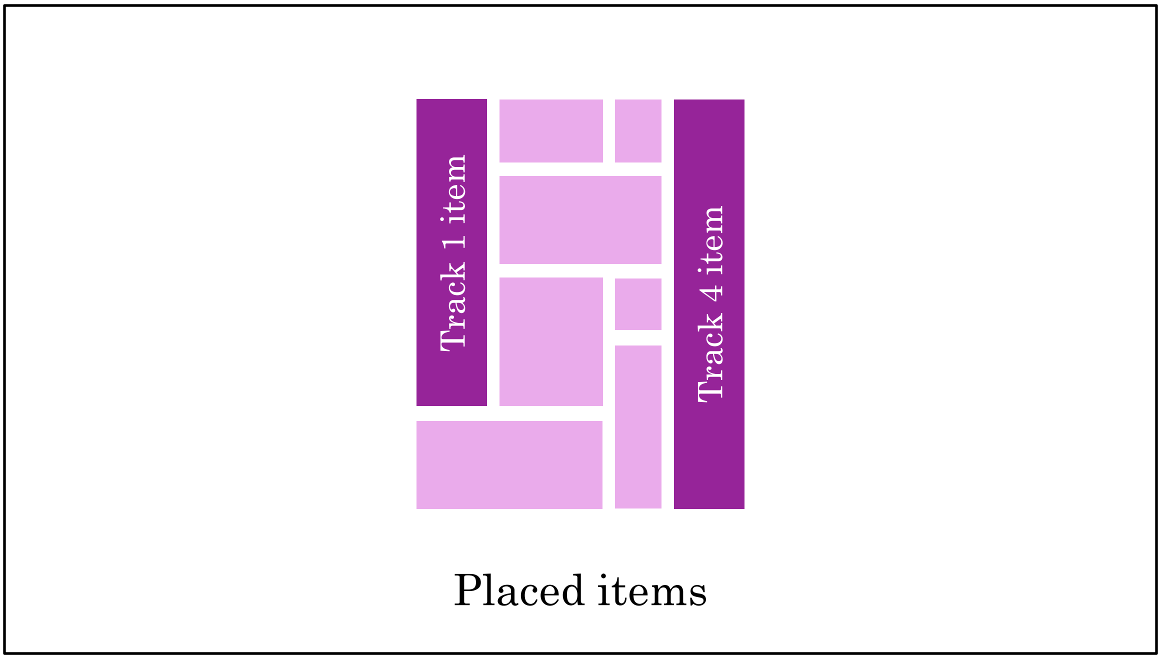
Different track sizes

- The various tracks don't have to all be the same size



Spanning items

- The items on those tracks can span multiple tracks

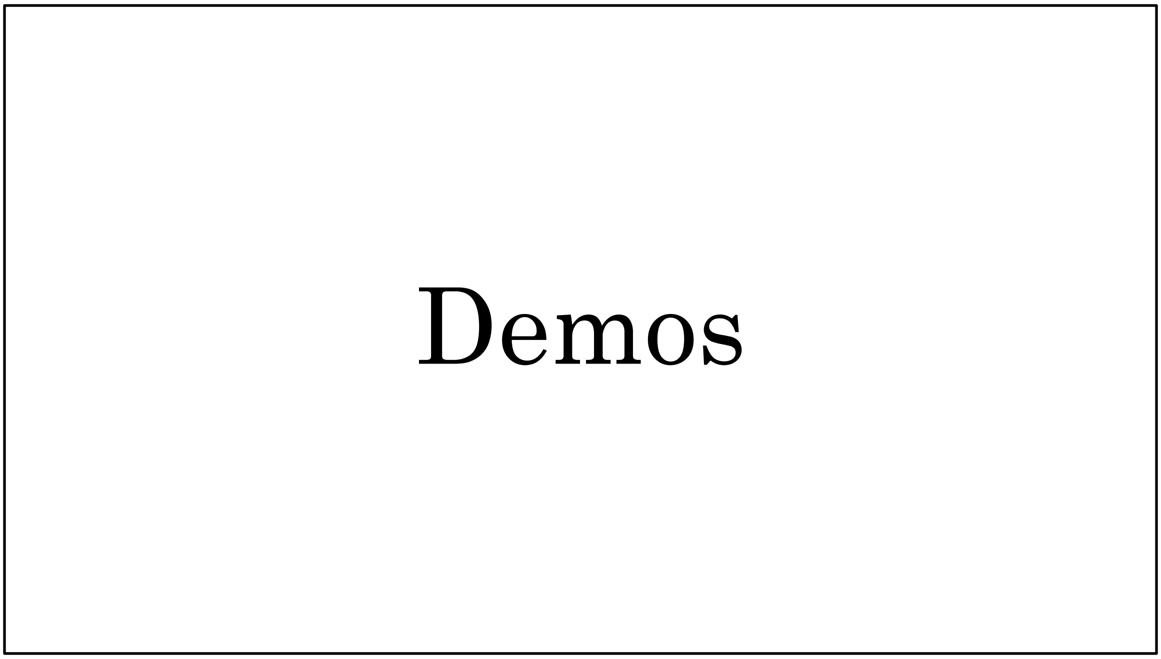


Placed items

- Finally, items can be placed onto specific tracks. They don’t have to obey the auto placement algorithm.

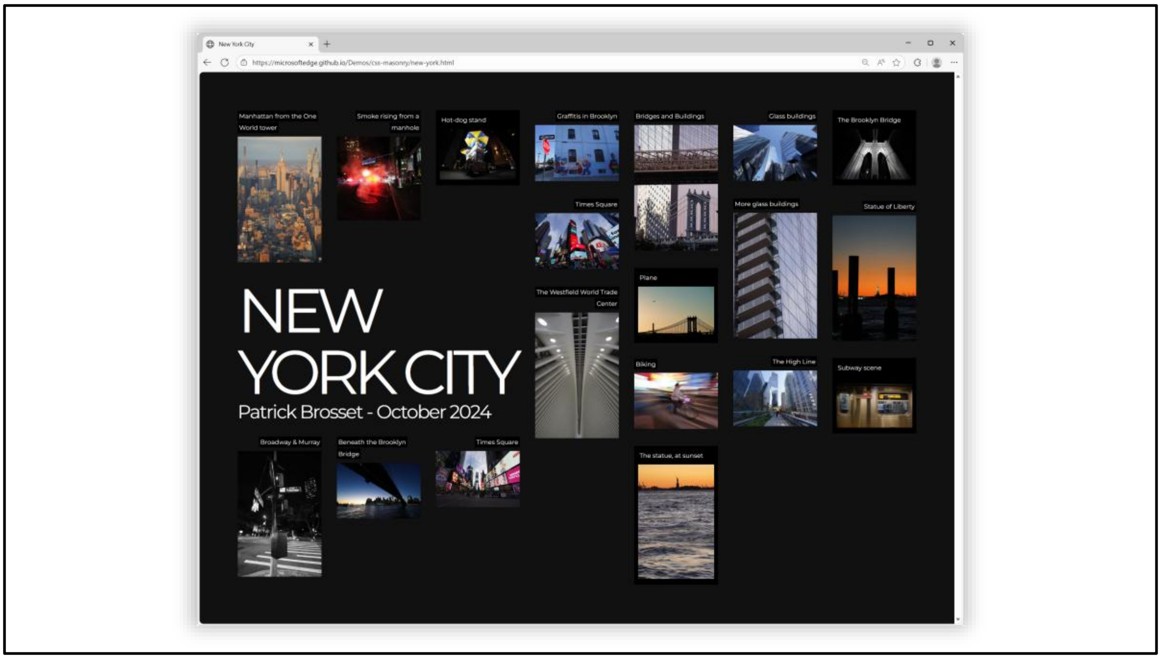
In summary, Masonry isn’t only a type of layout where you define equal-sized columns and give it random photos to put in. Kind of like on Pinterest.

It can definitely do that, but it can also do more than that.

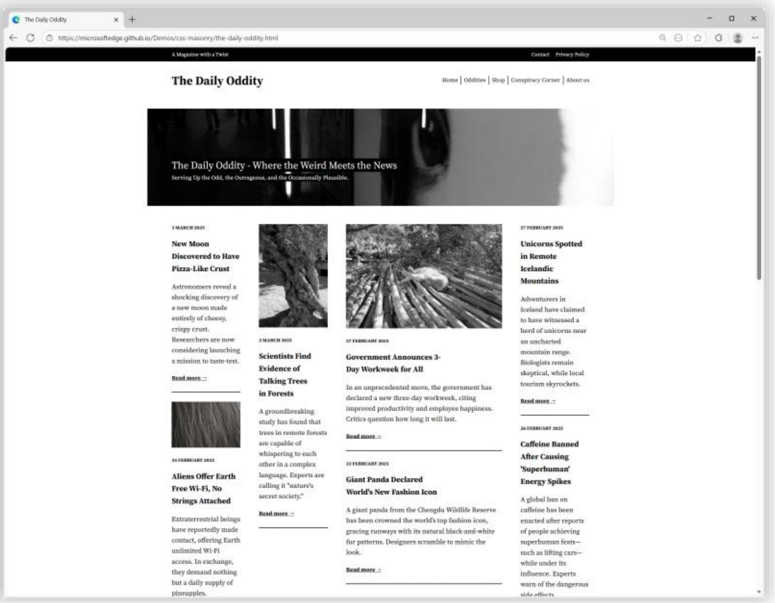


Demos

A few demos to illustrate what I mean.



This one shows shows a set of responsive columns which contain photos. The interesting thing is the title that's within the photos, and that's spanning 3 columns.


The Daily Oddity
https://microsoftedge.github.io/Demos/css-masonry/the-daily-oddity.html

A Magazine with a Twist

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The Daily Oddity - Where the Weird Meets the News

Serving Up the Odd, the Outrageous, and the Occasionally Plausible.

3 MARCH 2025

New Moon Discovered to Have Pizza-Like Crust

Astronomers reveal a shocking discovery of a new moon made entirely of cheesy, crispy crust. Researchers are now considering launching a mission to taste-test.

Read more →

24 FEBRUARY 2025

Aliens Offer Earth Free Wi-Fi, No Strings Attached

Extraterrestrial beings have reportedly made contact, offering Earth unlimited Wi-Fi access. In exchange, they demand nothing but a daily supply of pineapples.

2 MARCH 2025

Scientists Find Evidence of Talking Trees in Forests

A groundbreaking study has found that trees in remote forests are capable of whispering to each other in a complex language. Experts are calling it "nature's secret society."

Read more →

27 FEBRUARY 2025

Government Announces 3-Day Workweek for All

In an unprecedented move, the government has declared a new three-day workweek, citing improved productivity and employee happiness. Critics question how long it will last.

Read more →

23 FEBRUARY 2025

Giant Panda Declared World's New Fashion Icon

A giant panda from the Chengdu Wildlife Reserve has been crowned the world's top fashion icon, gracing runways with its natural black-and-white fur patterns. Designers scramble to mimic the look.

Read more →

27 FEBRUARY 2025

Unicorns Spotted in Remote Icelandic Mountains

Adventurers in Iceland have claimed to have witnessed a herd of unicorns near an uncharted mountain range. Biologists remain skeptical, while local tourism skyrockets.

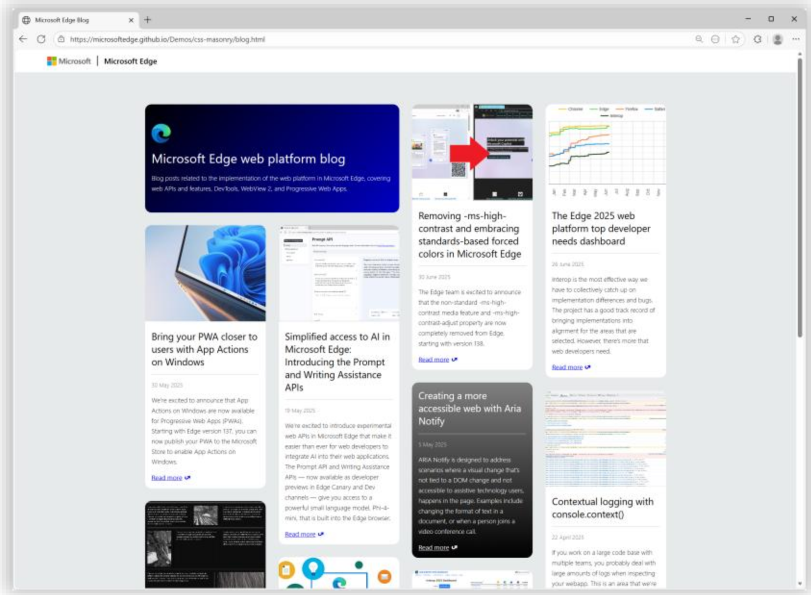
Read more →

26 FEBRUARY 2025

Caffeine Banned After Causing 'Superhuman' Energy Spikes

A global ban on caffeine has been enacted after reports of people achieving superhuman feats—such as lifting cars—while under its influence. Experts warn of the dangerous side effects

This one is a news site, with different column sizes, to emphasize some articles. And where Masonry works better than a grid because it optimizes for available space.


Microsoft Edge Blog
https://microsoftedge.github.io/Demos/css-masonry/blog.html
Microsoft | Microsoft Edge
Chrome
Edge
Firefox
Safari
Interop

Microsoft Edge web platform blog

Blog posts related to the implementation of the web platform in Microsoft Edge, covering web APIs and features, DevTools, WebView 2, and Progressive Web Apps.

Removing -ms-high-contrast and embracing standards-based forced colors in Microsoft Edge

30 June 2025

The Edge team is excited to announce that the non-standard -ms-high-contrast media feature and -ms-high-contrast-adjust property are now completely removed from Edge, starting with version 138.

Read more

The Edge 2025 web platform top developer needs dashboard

26 June 2025

Interop is the most effective way we have to collectively catch up on implementation differences and bugs. The project has a good track record of bringing implementations into alignment for the areas that are selected. However, there's more that web developers need.

Read more

Bring your PWA closer to users with App Actions on Windows

30 May 2025

We're excited to announce that App Actions on Windows are now available for Progressive Web Apps (PWAs). Starting with Edge version 137, you can now publish your PWA to the Microsoft Store to enable App Actions on Windows.

Read more

Simplified access to AI in Microsoft Edge: Introducing the Prompt and Writing Assistance APIs

19 May 2025

We're excited to introduce experimental web APIs in Microsoft Edge that make it easier than ever for web developers to integrate AI into their web applications. The Prompt API and Writing Assistance APIs — now available as developer previews in Edge Canary and Dev channels — give you access to a powerful small language model, Phi-4-mini, that is built into the Edge browser.

Read more

Creating a more accessible web with Aria Notify

5 May 2025

ARIA Notify is designed to address scenarios where a visual change that's not tied to a DOM change and not accessible to assistive technology users, happens in the page. Examples include changing the format of text in a document, or when a person joins a video conference call.

Read more

Contextual logging with console.context()

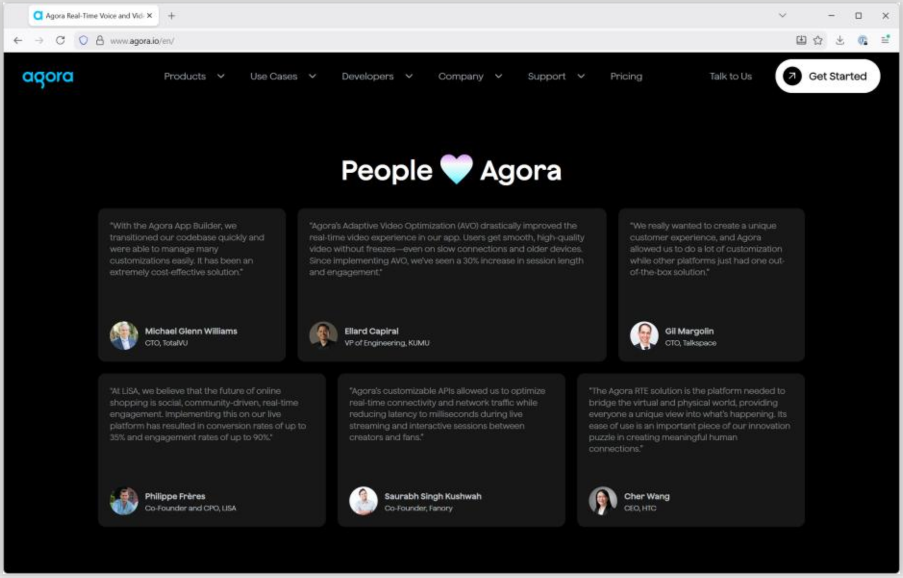
22 April 2025

If you work on a large code base with multiple teams, you probably deal with large amounts of logs when inspecting your webapp. This is an area that we're

And finally, a blog-style layout, with the header item specifically placed in the top left corner, and spanning 2 tracks.

Masonry is **everywhere**

In obvious, and more subtle ways



People ♥ Agora

"With the Agora App Builder, we transitioned our codebase quickly and were able to manage many customizations easily. It has been an extremely cost-effective solution."

Michael Glenn Williams
CTO, TotalVU

"Agora's Adaptive Video Optimization (AVO) drastically improved the real-time video experience in our app. Users get smooth, high-quality video without freezes—even on slow connections and older devices. Since implementing AVO, we've seen a 30% increase in session length and engagement."

Ellard Capiral
VP of Engineering, KUMU

"We really wanted to create a unique customer experience, and Agora allowed us to do a lot of customization while other platforms just had one out-of-the-box solution."

Gil Margolin
CTO, Talkspace

"At LISA, we believe that the future of online shopping is social, community-driven, real-time engagement. Implementing this on our live platform has resulted in conversion rates of up to 35% and engagement rates of up to 90%."

Philippe Frères
Co-Founder and CPO, LISA

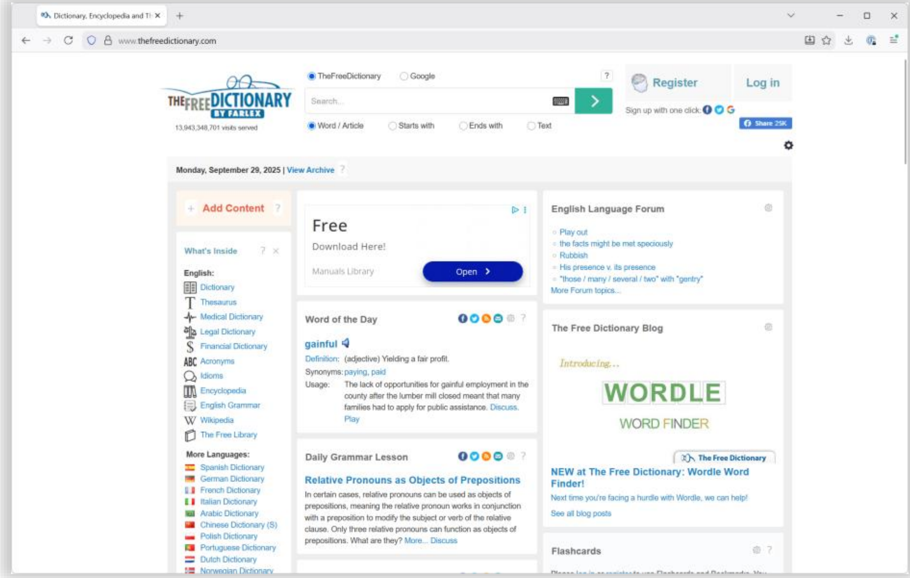
"Agora's customizable APIs allowed us to optimize real-time connectivity and network traffic while reducing latency to milliseconds during live streaming and interactive sessions between creators and fans."

Saurabh Singh Kushwah
Co-Founder, Fanory

"The Agora RTE solution is the platform needed to bridge the virtual and physical world, providing everyone a unique view into what's happening. Its ease of use is an important piece of our innovation puzzle in creating meaningful human connections."

Cher Wang
CEO, HTC

Here's a row-direction masonry layout.



Monday, September 29, 2025 | View Archive

Word of the Day

gainful

Definition: (adjective) Yielding a fair profit.

Synonyms: paying, paid

Usage: The lack of opportunities for gainful employment in the county after the lumber mill closed meant that many families had to apply for public assistance. Discuss. Play

Daily Grammar Lesson

Relative Pronouns as Objects of Prepositions

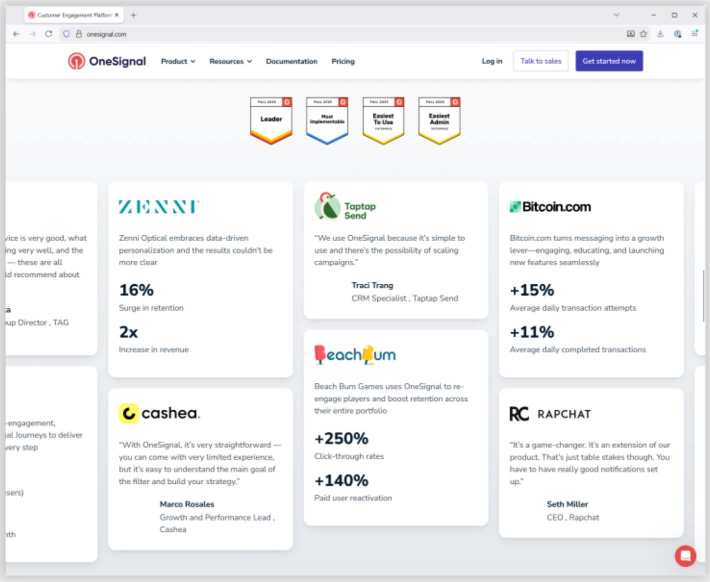
In certain cases, relative pronouns can be used as objects of prepositions, meaning the relative pronoun works in conjunction with a preposition to modify the subject or verb of the relative clause. Only three relative pronouns can function as objects of prepositions. What are they? More... Discuss

NEW at The Free Dictionary: Wordle Word Finder!

Next time you're facing a hurdle with Wordle, we can help!

See all blog posts

The 2 columns of widgets next to the sidebar. They wanted to get as much content as possible on this page, and Masonry works great here.



vice is very good, what
ing very well, and the
— these are all
ld recommend about

a
up Director , TAG

-engagement,
al Journeys to deliver
very step

sers)

nth

ZENNI

Zenni Optical embraces data-driven personalization and the results couldn't be more clear

16%
Surge in retention

2x
Increase in revenue

cashea.

"With OneSignal, it's very straightforward — you can come with very limited experience, but it's easy to understand the main goal of the filter and build your strategy."

Marco Rosales
Growth and Performance Lead , Cashea

Taptap Send

"We use OneSignal because it's simple to use and there's the possibility of scaling campaigns."

Traci Trang
CRM Specialist , Taptap Send

BeachBum

Beach Bum Games uses OneSignal to re-engage players and boost retention across their entire portfolio

+250%
Click-through rates

+140%
Paid user reactivation

Bitcoin.com

Bitcoin.com turns messaging into a growth lever—engaging, educating, and launching new features seamlessly

+15%
Average daily transaction attempts

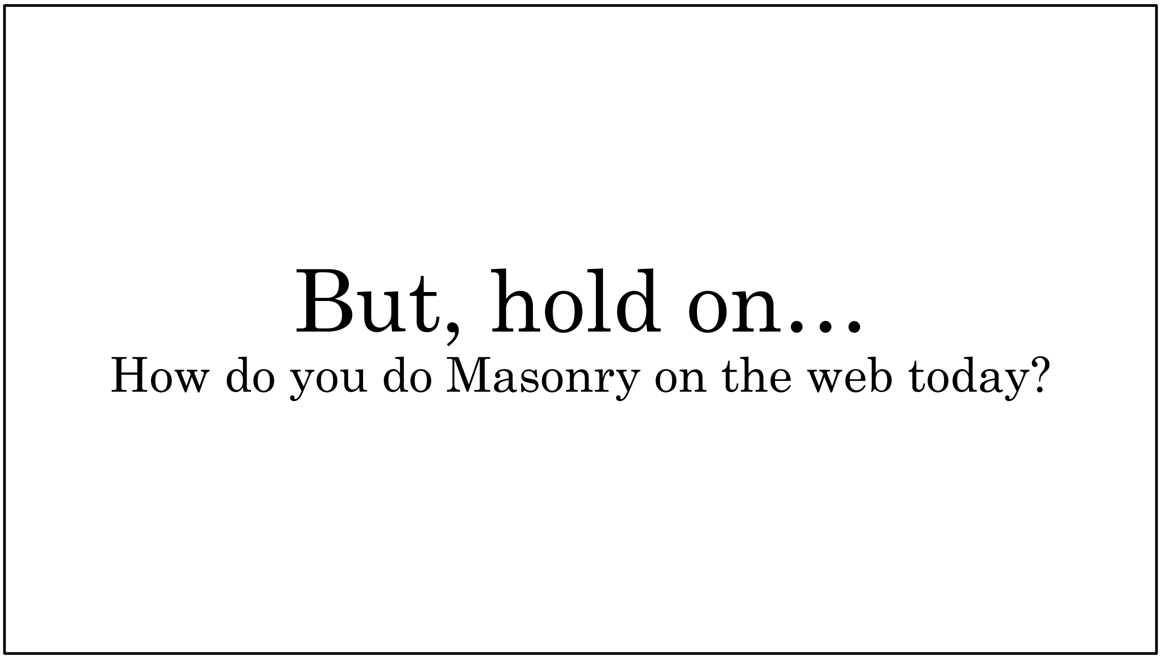
+11%
Average daily completed transactions

RC RAPCHAT

"It's a game-changer. It's an extension of our product. That's just table stakes though. You have to have really good notifications set up."

Seth Miller
CEO , Rapchat

This is a horizontal scrolling animation that shows quotes and stats from customers.
Masonry works well here to give it a more organic vibe, less like a grid of product features.

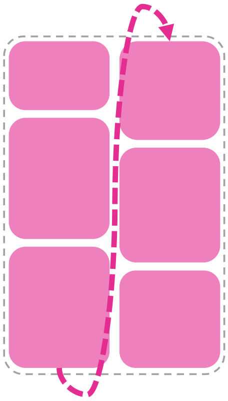


But, hold on…

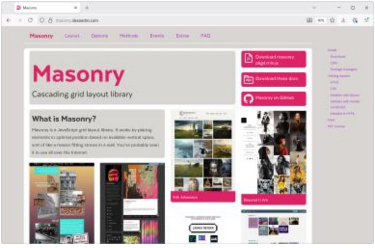
How do you do Masonry on the web today?

But wait, how do you achieve Masonry on the web today?
How were these demos and live websites implemented?
Cause it's not a built-in browser feature, right?

Clever tricks



Libraries



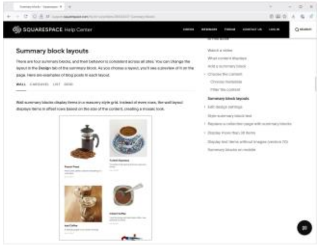
Masonry

Cascading grid layout library

What is Masonry?

Masonry is a JavaScript grid layout library. It works by placing elements in optimal position based on available vertical space, sort of like a mason fitting stones in a wall. You've probably seen it in use all over the Internet.

Templates



Summary block layouts

There are four summary blocks, and their behavior is consistent across all sites. You can change the layout in the Design tab of the summary block. As you choose a layout, you'll see a preview of it on the page. Here are examples of blog posts in each layout.

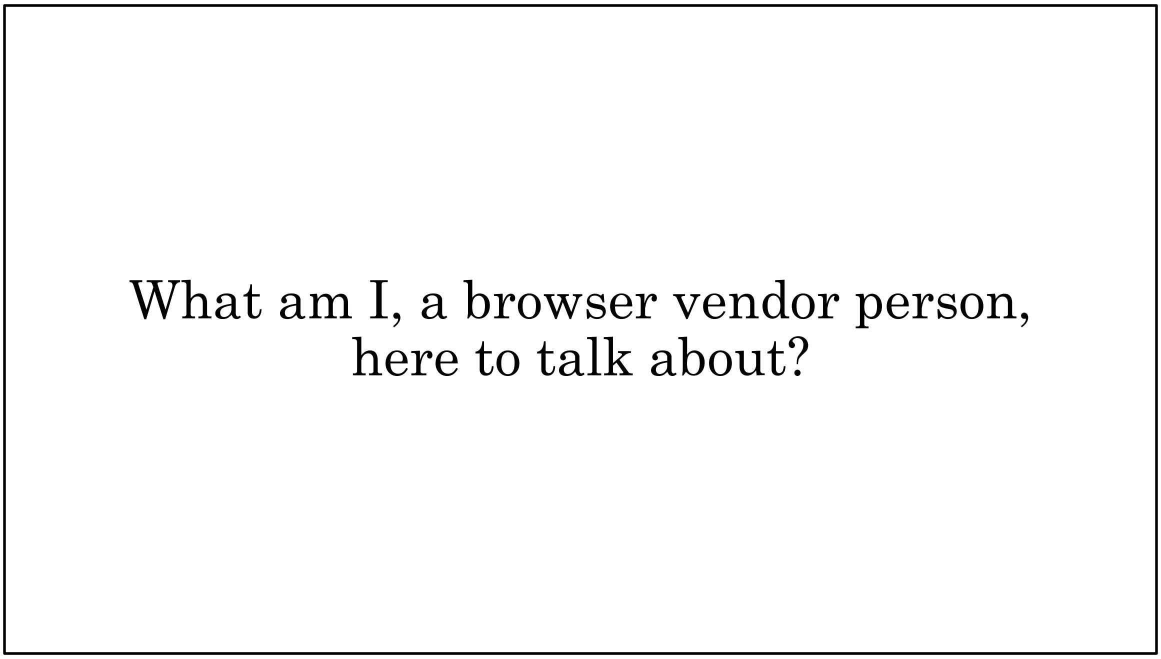
Wall summary blocks display items in a masonry-style grid. Instead of even rows, the wall layout displays items in offset rows based on the size of the content, creating a mosaic look.

There’s a few things that web developers have been using:

There’s a couple of clever tricks, such as this wrapping, column-direction, flex container.
But the order of items is different than in Masonry.
And if you do want multiple columns, you must set a height to the container, which you don’t necessarily want to do

But really, most sites use JavaScript instead.
The most popular library is: Masonry by David DeSandro.
It’s been around for a long time and has powered many sites over the years.

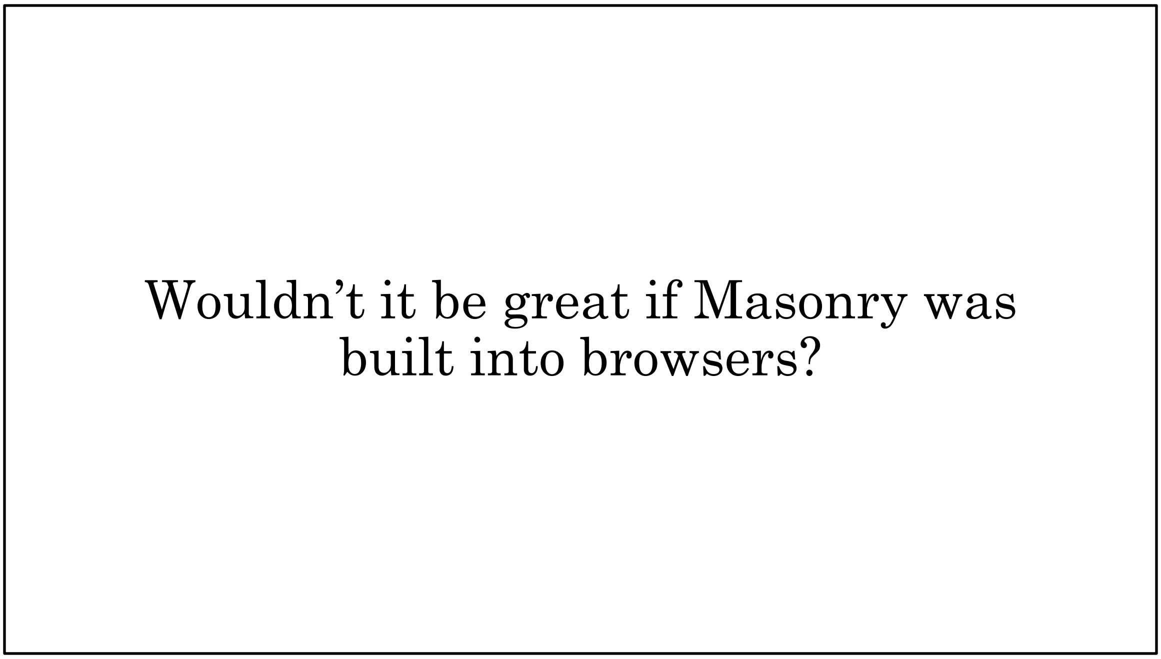
And, for no-code alternatives, the Squarespace site builder also has its own Masonry implementation, which also uses JS code.



What am I, a browser vendor person,
here to talk about?

This brings us to: what am I, a browser vendor person, doing here?

Masonry is already possible with JS, and many happy developers use it.



Wouldn’t it be great if Masonry was built into browsers?

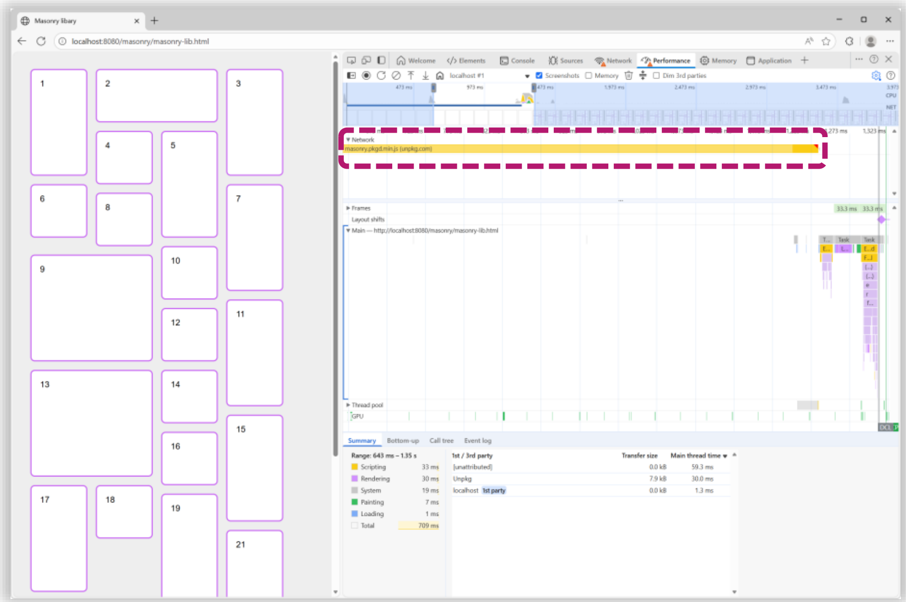
Wouldn’t be great if Masonry was built into browsers?

Yes, for

performance

and code simplicity

Why? Mostly for performance, but also code simplicity.

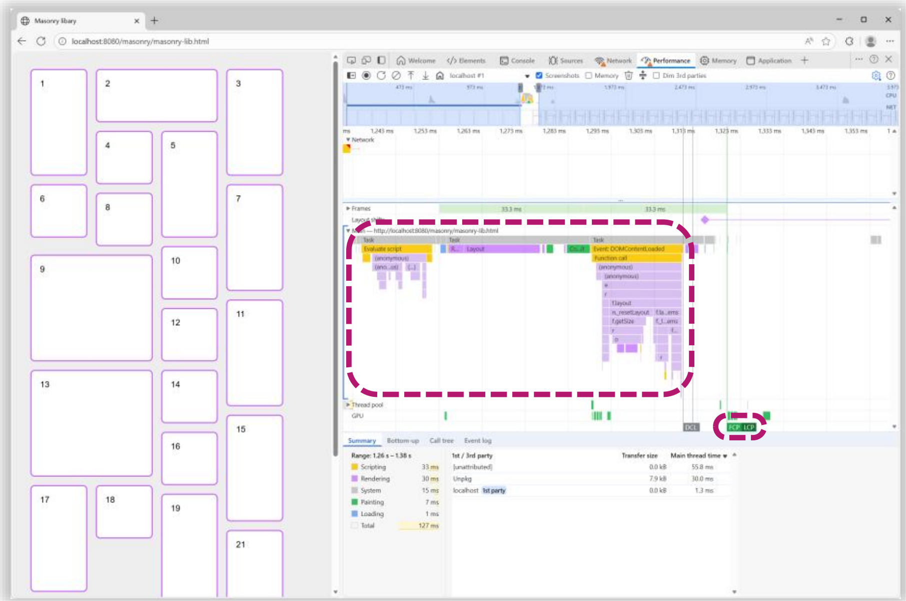


Range: 643 ms – 1.35 s

Scripting	33 ms
Rendering	30 ms
System	19 ms
Painting	7 ms
Loading	1 ms
Total	709 ms

1st / 3rd party	Transfer size	Main thread time
[unattributed]	0.0 kB	59.3 ms
Unpkg	7.9 kB	30.0 ms
localhost 1st party	0.0 kB	1.3 ms

I won't go into too many details here
but the Masonry JS lib is 24KB (7.8KB gzipped), and in my test with a slow 4G and slow CPU constraints, it takes 600ms to load.



Range: 1.26 s – 1.38 s

🟨 Scripting	33 ms
🟪 Rendering	30 ms
⬜ System	15 ms
🟩 Painting	7 ms
🟦 Loading	1 ms
Total	127 ms

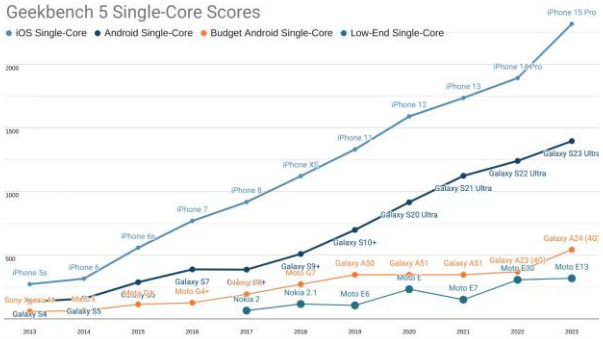
1st / 3rd party	Transfer size	Main thread time
[unattributed]	0.0 kB	55.8 ms
Unpkg	7.9 kB	30.0 ms
localhost 1st party	0.0 kB	1.3 ms

Plus, after that load time, the script needs to be parsed, compiled, and run.
This is a problem because using a JS library to create a layout means that the code needs to be render-blocking.
All this work needs to happen before any of the content in the layout can appear.

On top of this, Masonry layout is often used for the main part of a page,
Which means this render-blocking code is impacting the LCP metric as well: largest contentful paint, which is a key metric for SEO and user experience.
Users won't see anything before all this work has been done.

But it’s fast for me…

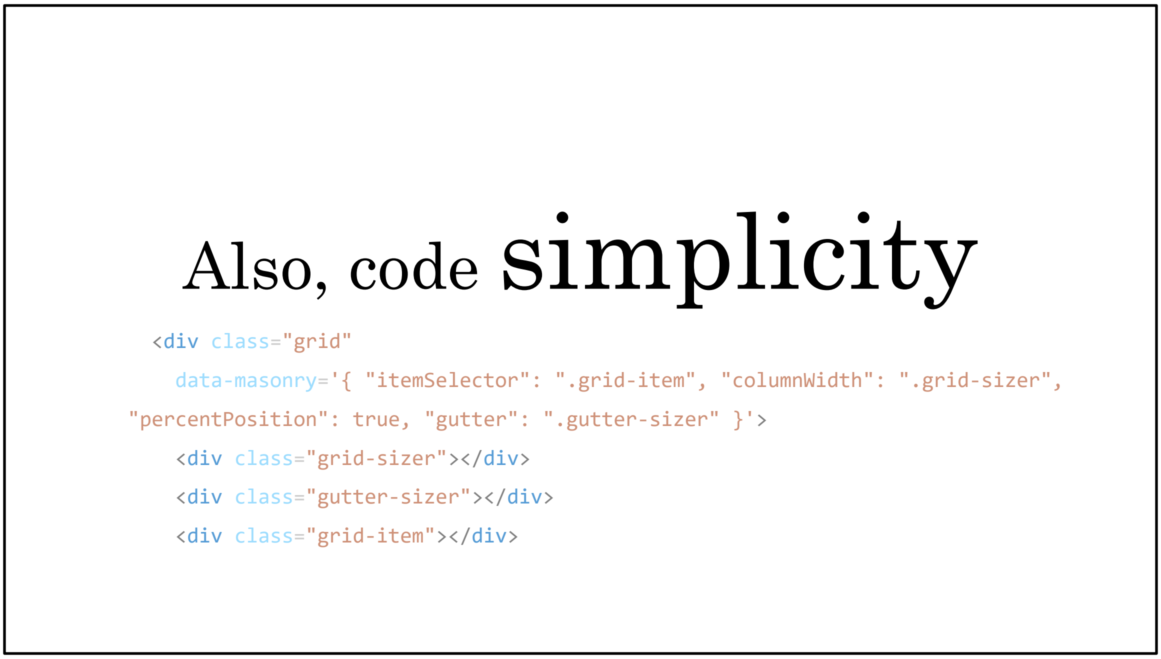
See https://infrequently.org/2024/01/performance-inequality-gap-2024/#mobile



Your internet connection speed and device are probably very fast, and you don’t see a problem.
But that's not the case for everyone.
Using 3rd-party libraries and frameworks means shipping and running more code on your customers’ devices than you might otherwise have.
This almost always means not gaining new customers.

If the company you work for is in the business of growing, which is all of them, your heavy site is not helping.
Premium devices and fast internet connections are largely absent from markets where there are billions of users, because of wealth inequality.
And this gap is only growing over time.

The Web Almanac yearly report shows another angle to this problem:
On average, a page requests 70 different resources, images, CSS, JS, etc.
Most of these are JavaScript files: 23.
And page size continues to grow too year over year. The median page weight is now at around 2MB, which 1.8MB more than 10 years ago.



Also, code simplicity

```
  <div class="grid"
    data-masonry='{ "itemSelector": ".grid-item", "columnWidth": ".grid-sizer",
"percentPosition": true, "gutter": ".gutter-sizer" }'>
    <div class="grid-sizer"></div>
    <div class="gutter-sizer"></div>
    <div class="grid-item"></div>
```

Code simplicity is another factor

Using a clever trick or workaround means your code is more complex, and harder for new people on your team to understand.

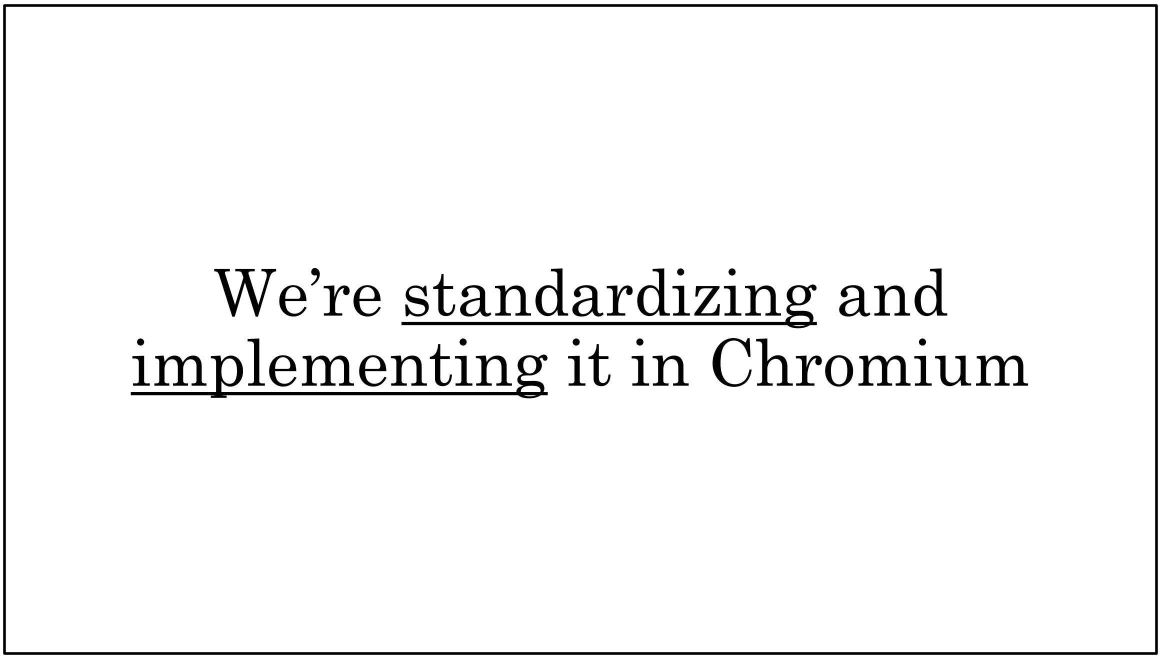
Using a JS library requires you to learn about that library and use it how it was intended to be used.
For the Masonry JS lib, initialization is a bit complex, as it requires a data attribute with a specific syntax, but also hidden HTML elements just to set the column and gap sizes.
Plus, if you want to span columns, you need to include the gap size yourself to avoid problems.

NEWS

Built-in Masonry
is coming to the web!

WOW

Built-in Masonry is coming to the web!

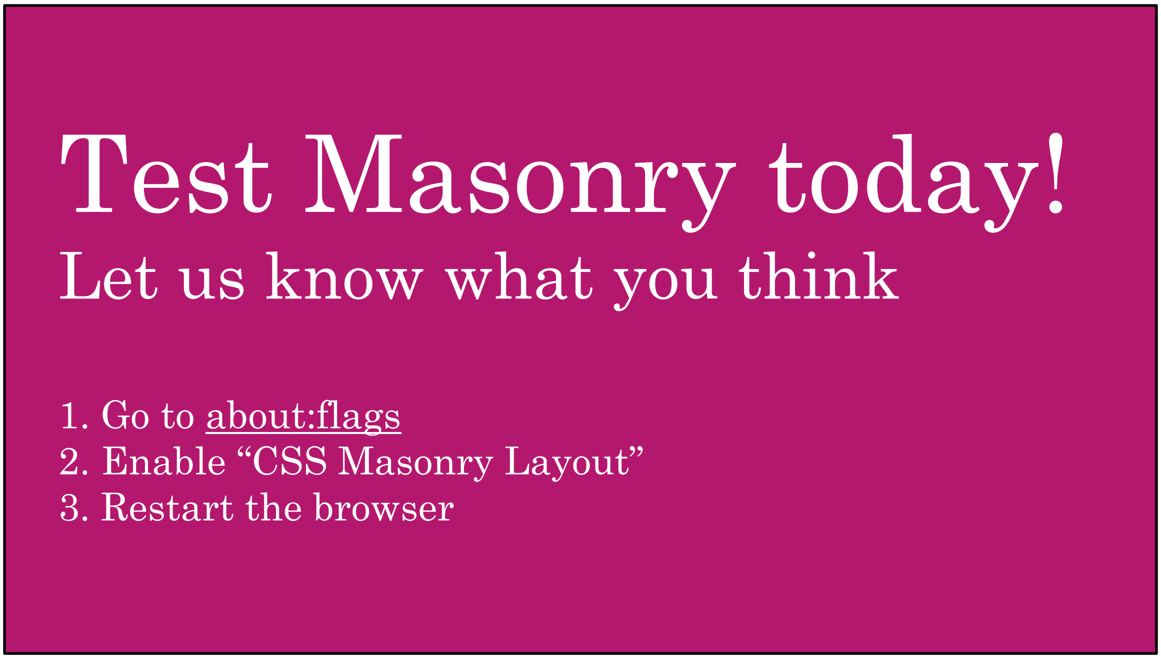


We’re standardizing and implementing it in Chromium

It had already been implemented as an experiment in Firefox years ago.

And now, my team at Microsoft is implementing it in Chromium.
That's the engine that Edge is based on, and we do everything "upstream", meaning in Chromium first.
This means that all other browsers that are also based on Chromium will get the feature too.

The team is also pushing for standardization within the CSS working group at W3C.
Which means, it’s getting designed together with all the other browser vendors.



Test Masonry today!

Let us know what you think

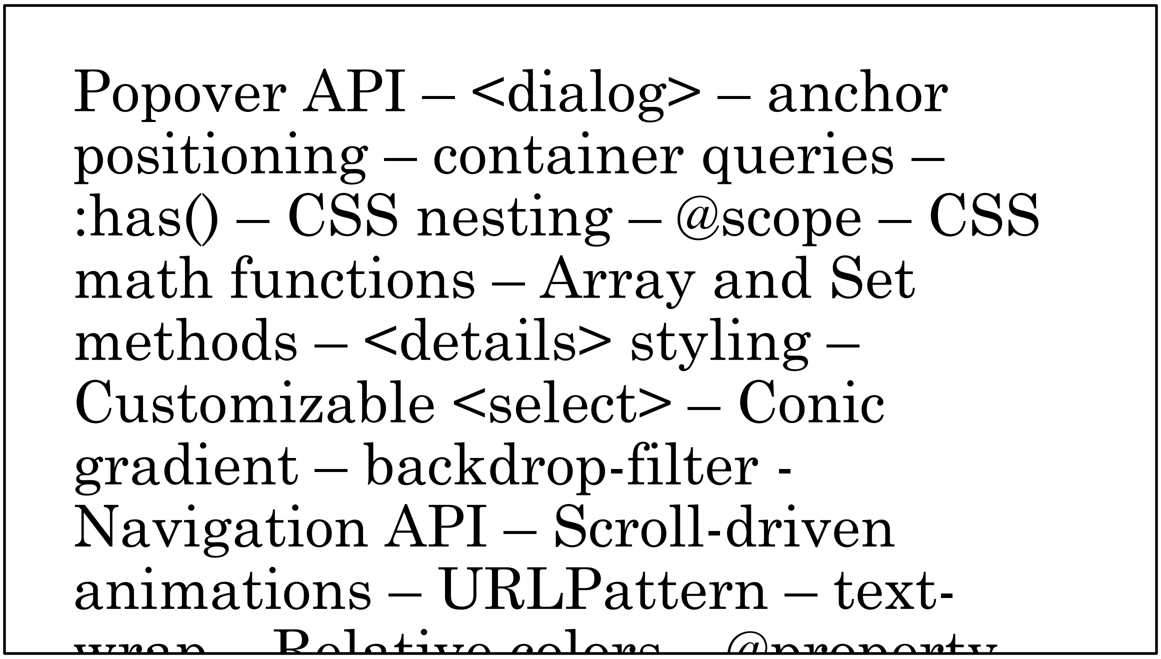
1. Go to about:flags
2. Enable “CSS Masonry Layout”
3. Restart the browser

You can test our implementation in Chromium today, and provide your feedback!

Here are the steps to enable it.
But, to make it easier, here’s a QR code that links to all the resources you will need to test it, report feedback, and track the advancement of the implementation.

https://patrickbrosset.com/lab/css-masonry-resources/

Resources → https://patrickbrosset.com/lab/css-masonry-resources/



Popover API – <dialog> – anchor positioning – container queries – :has() – CSS nesting – @scope – CSS math functions – Array and Set methods – <details> styling – Customizable <select> – Conic gradient – backdrop-filter - Navigation API – Scroll-driven animations – URLPattern – text-wrap – Relative colors – @property

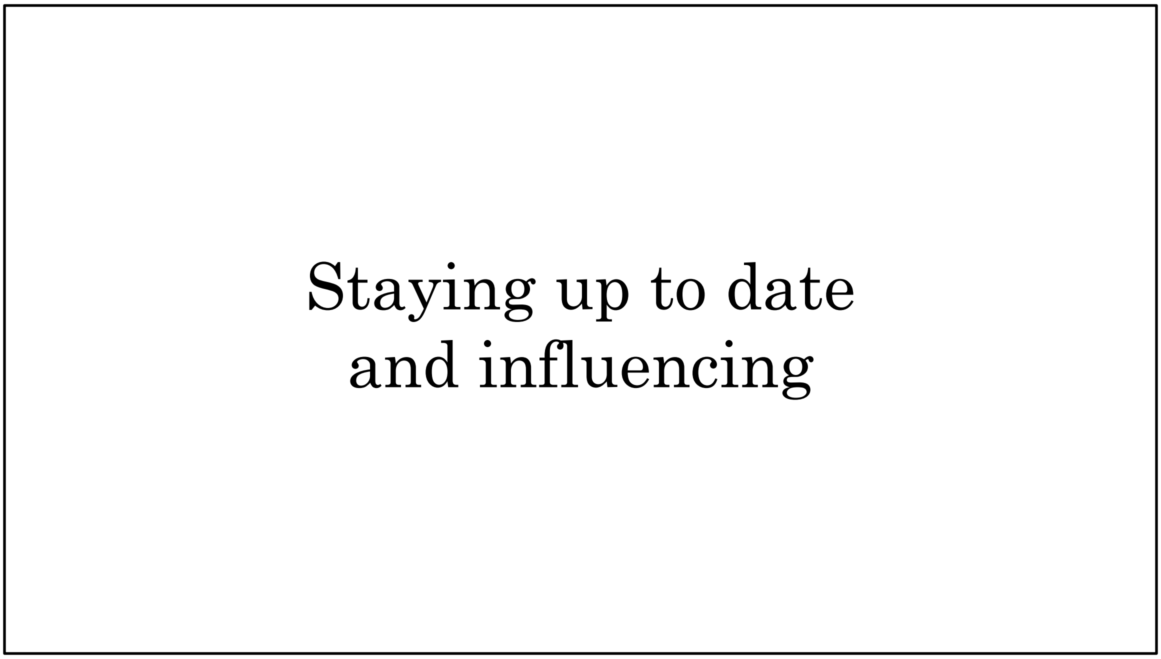
Let me leave you with this:

There are many new features being added to the web all the time, and many coming soon:

- Popover
- Dialog
- anchor positioning
- container queries
- …

Many of these features can help you replace 3rd-party libraries or frameworks you might be using today.

So, staying up to date with these new and upcoming features can be extremely beneficial for your projects.
It helps to reduce the amount and the complexity of the code you ship.



Staying up to date and influencing

But, as you will probably agree, staying up to date with this is very difficult, and tiring.
Takes a lot of time and mental energy.
Plus, even when you do make the effort to keep up, sometimes the one feature you need is taking ages to get added to browsers.

https://patrickbrosset.com/lab/navigating-the-web-platform/

So my last slide is a link to a cheatsheet I made, which you can use to:

1. Keep track of what’s happening with the web platform
2. Influence browser vendors too.

Thanks