# arachelandrew abrkngbrdrs

# START USING CSS GRID LAYOUT







**March 2017** 



March 2017



**March 2017** 



March 2017



Sooooon!

- CSS Working Group Invited Expert
- Google Developer Expert
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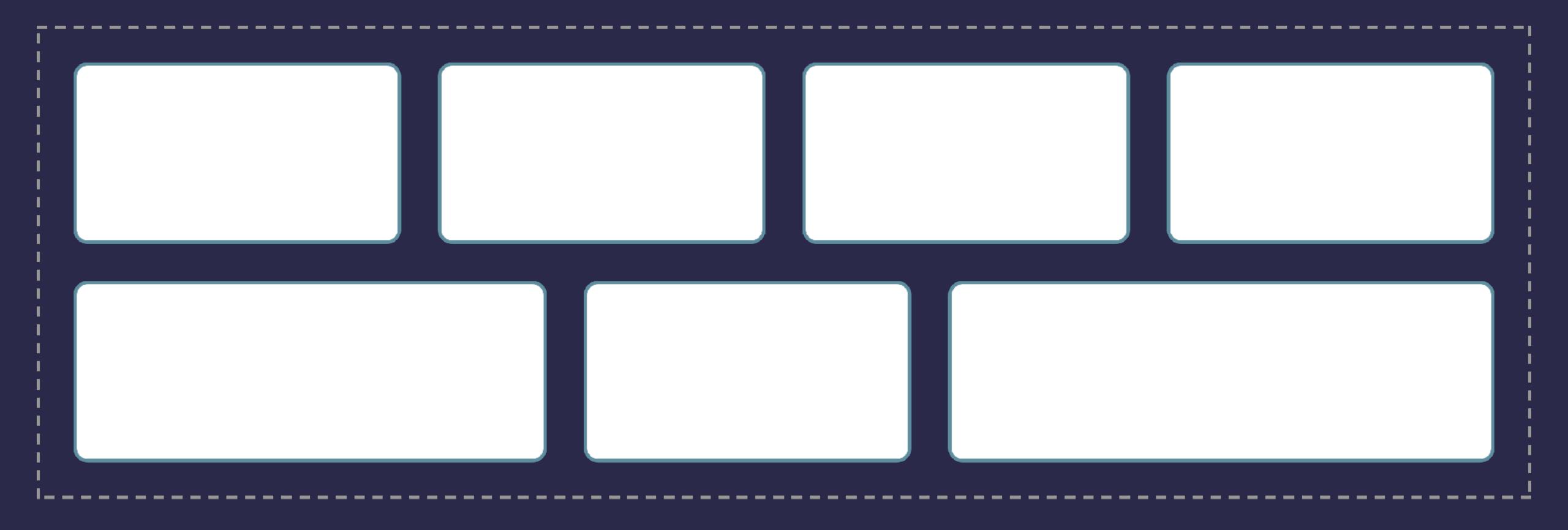
# Start using CSS Grid Layout Today

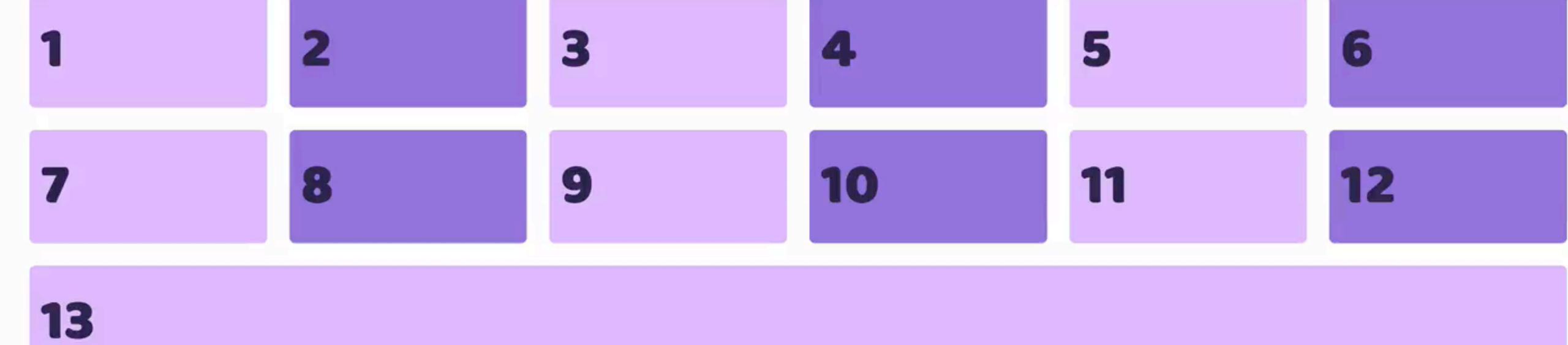
- What is grid & why is it different to flexbox?
- How do I get started using grid in production?
- What about old browsers?
- How can we help encourage browsers to give us cool new stuff?

# CSS Grid Layout

# Why not use flexbox?

# Flexbox is for one-dimensional layout





# Grid is for two-dimensional layout



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 4
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 10
 11
 12

13

.

# Grid minmax() and auto-fill

Creating a flexible number of flexible tracks, with a little bit of grid spec magic.

http://codepen.io/rachelandrew/pen/evjdLM

```
.grid {
   display: grid;
   grid-gap: 20px;
   grid-template-columns: repeat(auto-fill, minmax(200px, 1fr));
}
```

# If you are adding widths to all your flex items, you probably need grid.

# Flexbox

Using space-between

http://codepen.io/rachelandrew/pen/MpBbwX

```
.example1 {
  display: flex;
  justify-content: space-between;
  flex-wrap: wrap;
  margin: 30px;
}
```

Buffalo Mozzarella

Lettuce I

Tomatoes

Basil

Spinach

# Flexbox

Some things grow larger than other things.

This is defined using flex properties on the **item**.

http://codepen.io/rachelandrew/pen/MpBbwX

```
.example2 {
 display: flex;
 flex-wrap: wrap;
.example2 > div {
 flex: 1 1 0;
.example2 > div.bigger {
 flex: 4 1 0;
```

Buffalo Mozzarella Lettuce Tomatoes Basil Spinach

# Grid works from the container in

# Grid

Define column tracks. Items are constrained by those tracks.

http://codepen.io/rachelandrew/pen/JWBbJP

```
.example1 {
  display: grid;
  grid-gap: 20px;
  grid-template-columns: 1fr 1fr 1fr;
  margin: 20px;
}
```

Buffalo Mozzarella Lettuce Tomatoes

Basil Spinach

# Grid

To make some tracks larger than others, we do that when defining the tracks on the **container** not on the item itself.

http://codepen.io/rachelandrew/pen/JWBbJP

```
.example2 {
  display: grid;
  grid-gap: 20px;
  grid-template-columns: 2fr 1fr 2fr;
  margin: 20px;
}
```

Buffalo Mozzarella	Lettuce	Tomatoes
Basil	Spinach	

# Other layout methods start with the item.

# A float grid

The float property and widths are added to the items.

```
.box {
   float: left;
   width: 33.333%;
}
```

# inline-block grid

The display property is set to inlineblock and width is added to the item.

```
.box {
   display: inline-block;
   width: 33.333%;
}
```

# Flex grid

We add display: flex to the container however to make a grid out of flex items we need to use the flex properties in the items.

```
.container {
   display: flex;
}
.box {
   flex: 0 0 33.3333%;
}
```

# **Grid Layout**

With CSS Grid Layout we create the grid on the parent element. We don't need to add properties to the items.

```
.container {
   display: grid;
   grid-template-columns: 1fr 1fr 1fr;
}
```

# Grid is all about the container

# ... and that's just the start

- Grid allows you to layer items, or for two items to occupy the same space
- Grid allows full control of negative space in your designs
- Grid has methods such as the dense packing mode to backfill gaps in a tight-packed grid

# Flexbox or Grid?

# Use Flexbox when ...

- Your content is a row OR a column
- You want the size of items to dictate their layout
- You want to distribute space

# Consider grid when ...

- You need to control rows and columns
- You are adding widths to a flex item in order to make it line up with rows above.
- You want control of the layout from the parent
- Items need to occupy the same space or overlap

# CSS Grid Layout

# Using grid in production

# This is a title

This is the introductory text for this section of the site.

# Featured Item

The first, therefore usually the latest but could be flagged as a feature, item is the feature. This item gets a big spot up next to the title of this section.

**New Item** 

**New Item** 

The newer items or next in priority after the

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It might have an image too. It's special like that.

### **New Item**

The newer items or next in priority after the feature are displayed in a larger box. We can show additional content for these items.

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# Feature box

The feature has an image with a heading and body text overlaid.

```
<div class="box-feature">
    <img class="box-image" src="http://placehold.it/
900x450" alt="placeholder">
    <h2 class="box-feature-title">Featured Item</h2>
    <div class="box-content">...</div>
</div>
```

# Feature box

display: grid turns on grid layout

grid-gap defines gutters between grid items

grid-template-columns creates column tracks. In this case creating a grid with 6 equal columns.

```
.box-feature {
  display: grid;
  grid-gap: 20px;
  grid-template-columns: repeat(6, 1fr);
}
```

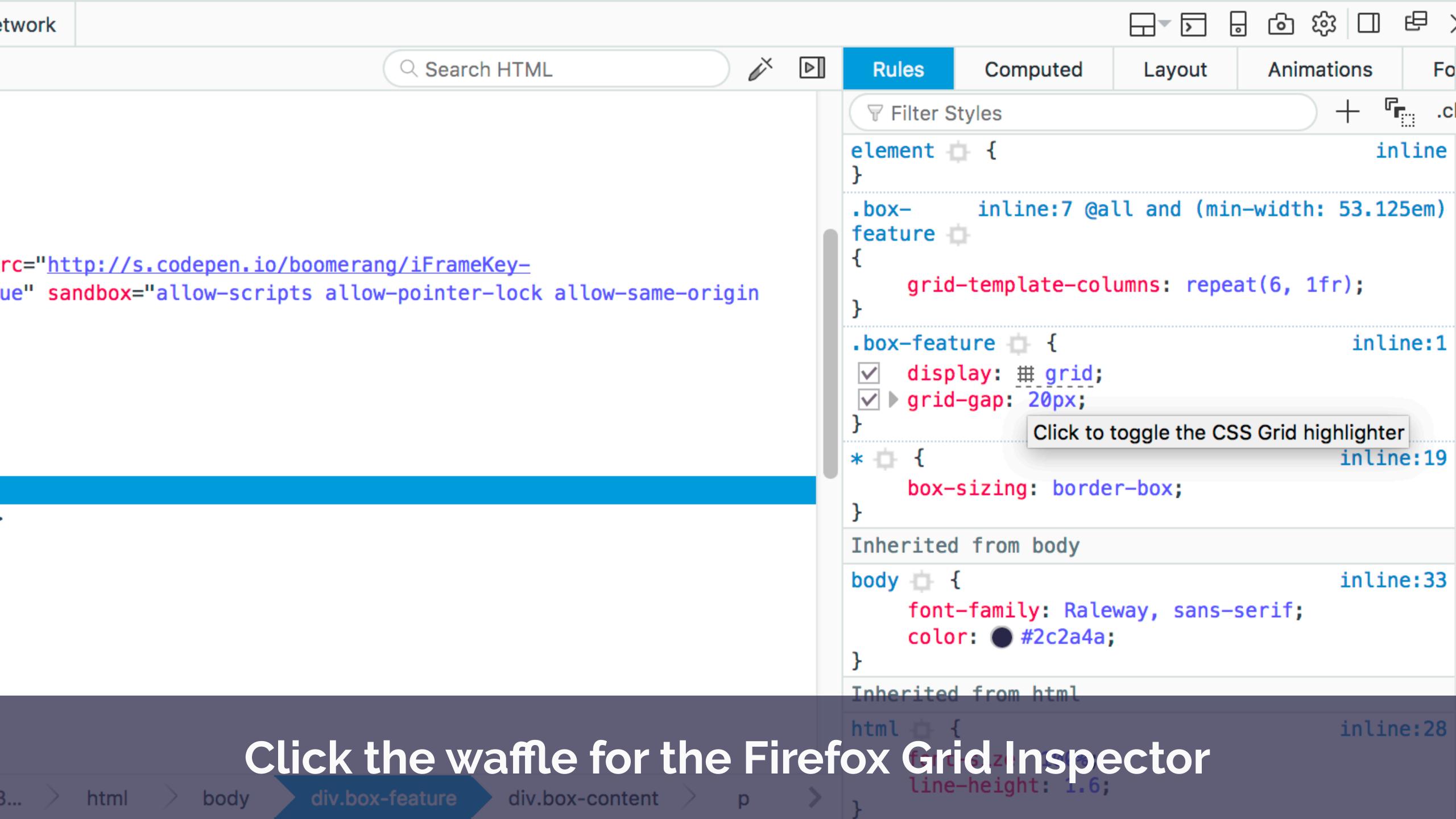
# The fr unit defines a fraction of the available space in the grid container

900×450

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## Feature box

The image starts at **grid column line 1** and ends at **-1**, which is the end line.

It starts at **grid row 1**, ending at **grid row 4**.

Using **box alignment** properties to stretch the image over that area.

```
.box-feature .box-image {
   align-self: stretch;
   justify-self: stretch;
   grid-column: 1 / -1;
   grid-row: 1 / 4;
}
```

# Grid lines respect writing mode. Column line 1 is on the left and -1 on the right in a LTR language.

- The Explicit Grid is created when you define tracks with grid-templatecolumns and grid-template-rows
- If you place an item outside of that grid, or auto-placed content requires further row or column tracks these are added by grid as the **Implicit Grid**.

# Featured The first, therefore

## Feature box

Positioning the content inside the area that the image is stretched over.

```
.box-feature .box-feature-title {
 grid-column: 3 / -1;
 grid-row: 1;
 background-color: rgba(0,0,0,0.7);
 color: #fff;
 align-self: start;
 padding: 20px;
.box-feature .box-content {
 grid-column: 2 / -1;
 grid-row: 2;
 background-color: rgba(0,0,0,0.7);
 color: #fff;
 padding: 20px;
```

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## Layering items on the grid

- You can position items into the same grid cells
- Items further down in the source appear on top of earlier items
- Control the stack using z-index

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500×350

## The listing

The container for our boxes has 12 equal columns.

```
.listing {
  display: grid;
  grid-template-columns: repeat(12,1fr);
  grid-gap: 20px;
}
```

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## The listing

Positioning the title top left and the feature top right

```
.box-title {
   grid-column: 1 / 4;
   grid-row: 1 / 2;
}

.box-feature {
   grid-column: 4 / -1;
   grid-row: 1 / 2;
}
```

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## Larger boxes

Newer items span 4 column tracks. If they also have a class of box-media they span 2 row tracks.

```
.box-newer {
   grid-column: auto / span 4;
}
.box-newer.box-media {
   grid-row-end: span 2;
}
```

## Smaller boxes

The boxes for older items span 3 tracks.

```
.box-older {
  grid-column: auto / span 3;
}
```

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# CSS Grid

# Going responsive

## Going responsive

Inside media queries we can redefine where items sit on the grid.

```
.box-title {
  grid-column: 1 / -1;
  grid-row: 1;
@media all and (min-width: 53.125em) {
  .box-title {
    grid-column: 1 / 6;
    grid-row: 1 / 3;
@media all and (min-width: 75em) {
  .box-title {
    grid-column: 1 / 4;
    grid-row: 1 / 2;
```

## Going responsive

Or redefine how many columns they span.

```
.box-newer {
  grid-column: 1 / -1;
@media all and (min-width: 28.125em) {
  .box-newer {
    grid-column: auto / span 6;
@media all and (min-width: 53.125em) {
  .box-newer {
    grid-column: auto / span 4;
```

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http://codepen.io/rachelandrew/pen/gmQdgz

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New Item



CSS Grid Layout

# What about old browsers?

## If using display: grid on a container, child items:

- Using float, lose their float behaviour
- The vertical-align property has no effect
- Flex items become grid items
- Items set to display: block or inline-block become grid items
- Items set to display: table-cell stop creating anonymous boxes

# You do not need to build "two layouts"

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900×450

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## Adding a flex fallback

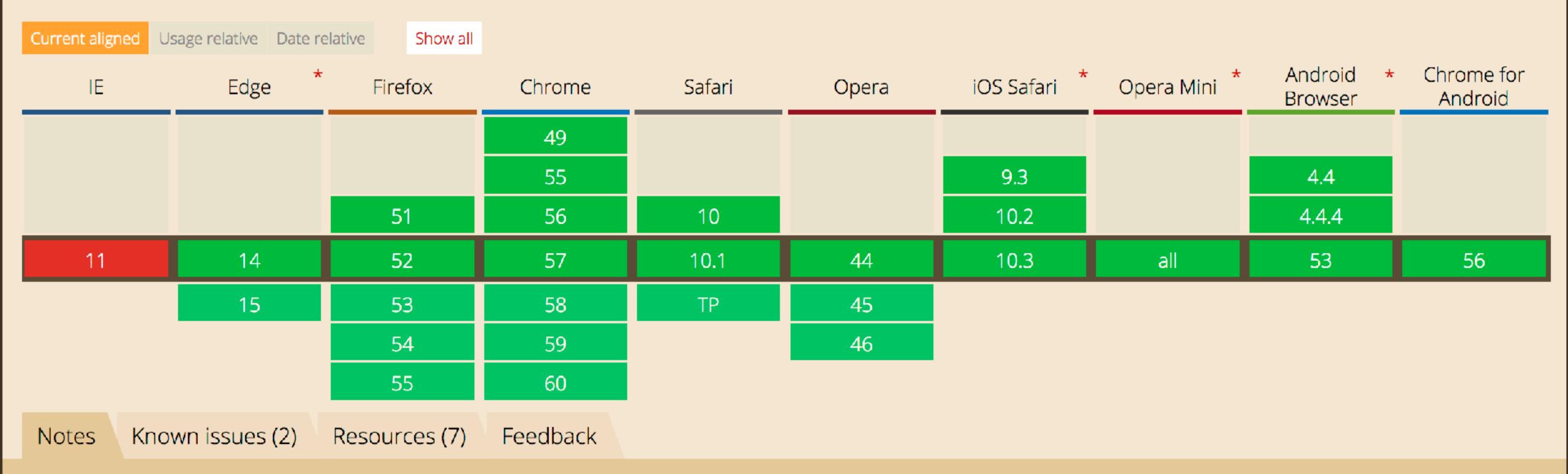
Browsers that support display: flex and not grid will turn the children into flex, not grid, items.

The flex properties applied to those items will be ignored by grid layout.

```
.listing {
 display: flex;
 flex-wrap: wrap;
 margin: 0 20px;
 display: grid;
 grid-template-columns: repeat(12,1fr);
 grid-gap: 20px;
.listing > * {
 flex: 1 1 30%;
 margin: 0 20px 20px 20px;
```

# Feature Queries are your new best friend

CSS Feature Queries allow authors to condition rules based on whether particular property declarations are supported in CSS using the @supports at rule.



See also the CSS.supports() DOM API

## Using feature queries

Add a margin for flex layout, remove it if we are using grid layout.

```
.listing > * {
   flex: 1 1 30%;
   margin: 0 20px 20px 20px;
}

@supports(display: grid) {
   .listing > * {
      margin: 0;
   }
}
```

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## **New Item**

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## Flex layout

Give the feature box a larger flexbasis percentage.

```
.listing .box-feature {
  flex: 1 1 60%;
}
```

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## http://codepen.io/rachelandrew/pen/jBQpXv

## Float and Clear

The float and clear properties have no effect on a grid item.

https://codepen.io/rachelandrew/pen/YZeqZv

```
.grid > div {
  float: left;
}
.grid {
  display: grid;
  grid-gap: 10px;
  grid-template-columns: repeat(3, auto);
  width: 500px;
}
```

## display: inline-block

The properties associated with something being inline-block cease to apply.

https://codepen.io/rachelandrew/pen/vxdGjQ

```
.grid > div {
   display: inline-block;
}

.grid {
   display: grid;
   grid-gap: 10px;
   grid-template-columns: repeat(3, auto);
   width: 500px;
}
```

## display: table

Anonymous boxes will not be generated and the item will become a grid item.

https://codepen.io/rachelandrew/pen/bqLpQN

```
.grid > div {
 display: table-cell;
 vertical-align: top;
.grid {
 border-spacing: 10px;
.grid {
 display: grid;
 grid-gap: 10px;
 grid-template-columns: repeat(3, auto);
 width: 500px;
```

## The vertical-align property

Can be used as a fallback for box alignment and ceases to apply on grid items.

https://codepen.io/rachelandrew/pen/vxdGaQ

```
.grid > div {
   display: inline-block;
   vertical-align: top;
}
.grid {
   display: grid;
   grid-gap: 10px;
   grid-template-columns: repeat(3, auto);
   width: 500px;
}
```

## Multiple-column layout

Multiple-column layout properties cease to apply in grid layout.

https://codepen.io/rachelandrew/pen/JWpXxv

```
.grid {
  column-count: 3;
  width: 500px;
}

.grid {
  display: grid;
   grid-gap: 10px;
  grid-template-columns: repeat(3, auto);
}
```

### Flex layout

Grid will override flex layout and shares box alignment properties.

https://codepen.io/rachelandrew/pen/YZeqMB

```
.grid {
 display: flex;
 align-items: center;
 width: 500px;
 height: 200px;
 border: 1px dotted #694486;
.grid > div {
 flex: 1;
.grid {
 display: grid;
 grid-gap: 10px;
 grid-template-columns: repeat(3, auto);
```

# Overrides inside @supports are mostly widths & margins

## Override widths in feature queries

Watch out for widths in your fallback layouts.

https://codepen.io/rachelandrew/pen/JWpXNr

```
* { box-sizing: border-box; }
.grid > div {
 float: left;
 width: 33.333%;
@supports (display: grid) {
  .grid > div {
   width: auto;
.grid {
 display: grid;
  grid-gap: 10px;
  grid-template-columns: repeat(3, 1fr);
  width: 500px;
```

### Grid "fallbacks" and overrides

<u>Defined in the CSS Grid Specification</u> are the ways in which grid interacts with other layout methods. These definitions mean that as soon as an item becomes a grid item, other behaviour that you may have used for older browsers is overwritten. This means that you do not have to completely fork your code and build two versions. Where you do need to overwrite CSS used for older browsers, you can do so inside a CSS Feature Query. This enables safe encapsulation of any CSS you only want a grid supporting browser to apply.

Here is a quick reference to the defined overrides with simple examples. See the resources at the end of this cheatsheet for more advice and examples.

Floated items

Float and clear have no effect on a grid item

If you float an item, in your CSS for non-grid browsers, when that item becomes a grid item float ceases to have any effect. The clear property applied to an item that becomes a grid item also no longer takes effect.

#### Example

```
<div class="grid">
  <div>0ne</div>
  <div>Two</div>
  <div>Three</div>
  </div>
```

```
.grid > div {
   float: left
```

- Currently tied to the IE10 implementation
- Prefixed with -ms
- No auto-placement or grid-template-areas layout
- For simple line-based positioning it works
- More at <a href="https://rachelandrew.co.uk/archives/2017/04/04/edge-starts-work-on-their-grid-implementation-update/">https://rachelandrew.co.uk/archives/2017/04/04/edge-starts-work-on-their-grid-implementation-update/</a>

## Beware autoprefixer!







**March 2017** 



March 2017



**March 2017** 



**March 2017** 



Sooooon!

## Let browser vendors know which features you want.

Posting Guidelines

FAQ

Release Notes

Support

dev.windows.com

Q

### How can we improve the Microsoft Edge developer experience?

← Microsoft Edge Developer



#### **Update CSS Grid**

Update the IE implementation of Grid Layout to match the current spec. The current implementation from the IE 10 days is outdated.



mnsth shared this idea · October 02, 2014 · Flag idea as inappropriate..



WORKING ON IT Microsoft Edge Developer UserVoice (Admin, Windows Developer) responded April 03, 2017

Since proposing Grid Layout to the CSS Working Group and shipping an experimental implementation in IE10, we have been heavily invested in advancing it through the standard process.

Today we're pleased to announce that work has begun on updating our implementation to the latest Candidate Recommendation spec. We're excited about the level of developer and implementor interest in Grid Layout, and look forward to see how it will be used on the Web.

or sign in with

To track our progress with updating CSS Grid go to <a href="https://developer.microsoft.com/en-us/microsoft-edge/platform/status/gridupdate/?q=grid">https://developer.microsoft.com/en-us/microsoft-edge/platform/status/gridupdate/?q=grid</a>

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https://wpdev.uservoice.com/forums/257854-microsoft-edge-developer/

Tools ~

Demos

Feedback & support

Home \ Platform \ Data \ CSS Usage

## CSS usage on the web platform

Where is the data from?

### 352 properties

#### Filter properties

property-name

font-size
98.3%

color

width 97.2%

margin-top 97.1%

margin-left 97%

background-color

https://developer.microsoft.com/en-us/microsoft-edge/platform/usage/

margin-right

margin-bottom

nodding loft

00.0

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam posuere quam non enim commodo, ac pellentesque tortor lacinia. Aenean iaculis interdum tempor. Nullam porttitor lectus eget mollis egestas. Cras posuere velit id vehicula tempor. Mauris id ex id nisi sagittis ornare vitae a erat. Aliquam nisi risus, gravida sit amet augue id, feugiat tempor dui. Vestibulum tincidunt iaculis tellus, eget finibus odio.

Quisque ac dapibus massa. Donec sagittis turpis lobortis ac. Praesent velit, id placerat enim imperdiet sit consequat ligula tellus, quis lacinia Praesent sit amet faucibus purus. augue.

Aliquam tempor interdum volutpat.

Nunc nibh elit, sagittis nec libero a,
sapien. Aliquam eu risus eu dui



placerat nisi velit, quis ornare malesuada amet. Vestibulum mauris porta in. Integer vel sagittis

Suspendisse potenti.

pretium fermentum

varius elementum.

Curabitur ut ex luctus, egestas dui sit amet, malesuada lectus. Cras a nibh in velit mattis feugiat at at eros. Etiam et leo arcu. Maecenas egestas enim purus, at ornare velit laoreet a. Etiam egestas pharetra

diam, non accumsan sapien posuere omare. Ut sed velit portitor dolor tincidunt tincidunt. Pellentesque sit amet pulvinar diam. Cras et purus vulputate, consequat dui vel, http://codepen.io/rachelandrew/pen/YqpRdq/

convallis tempor. Lorem insum dolor sit amet, consectetur adiniscing elit.

## Exclusions

Defines the wrap-flow property, which enables wrapping content round all sides of an element.

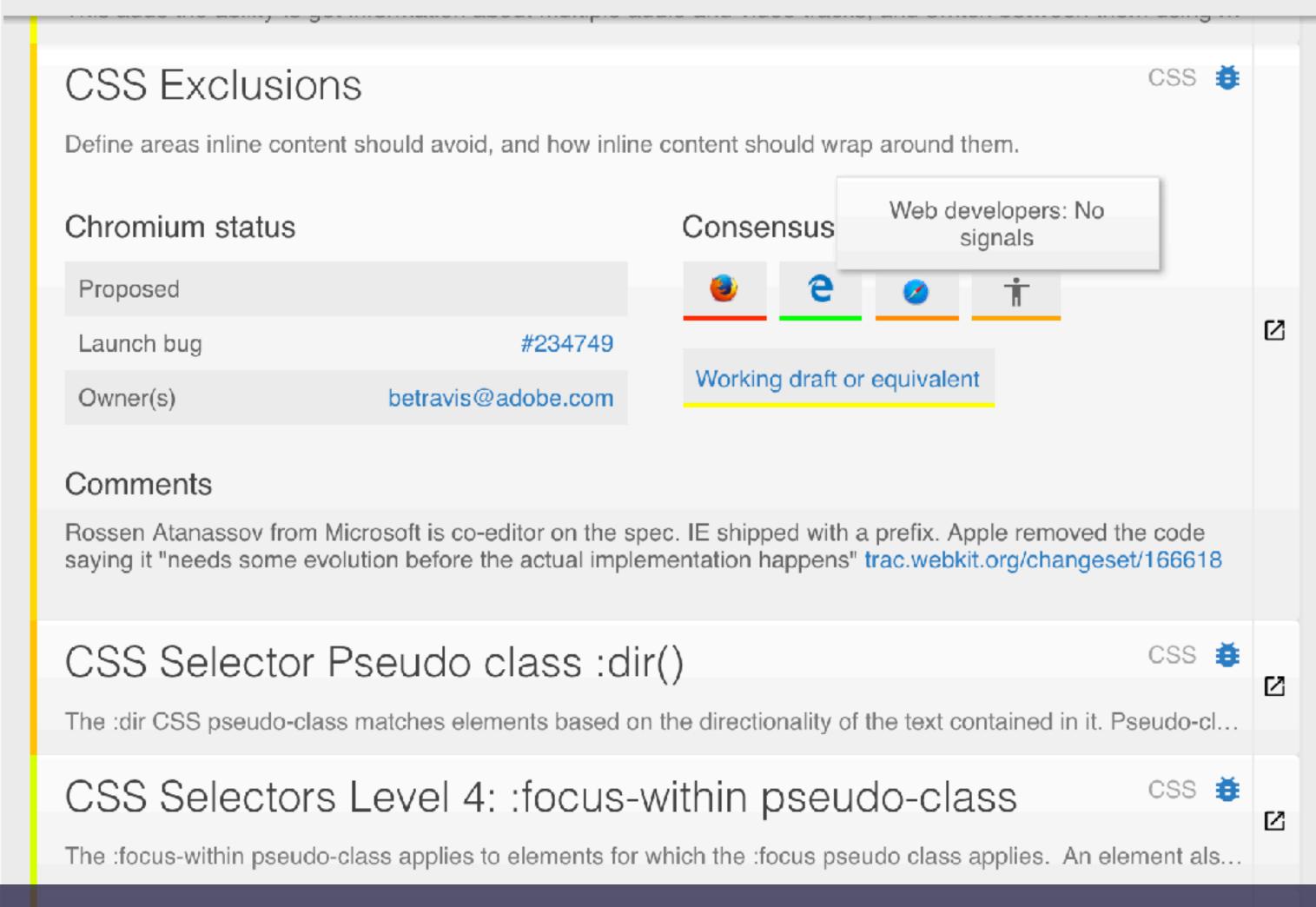
```
.exclusion {
  -ms-wrap-flow: both;
  wrap-flow: both;
}
```



Features Samples Usage Metrics

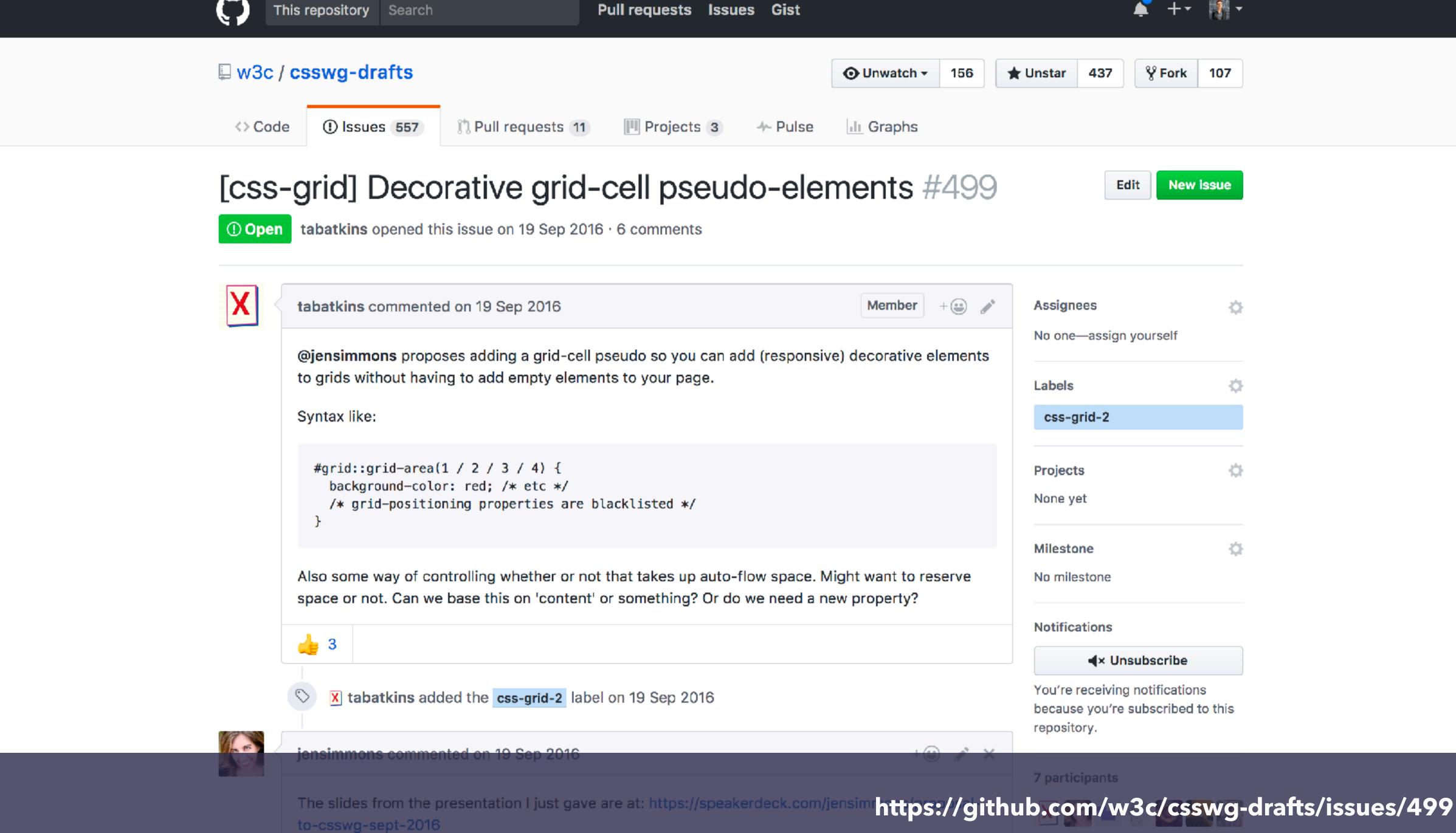
Features: 862





## You can get involved in the future of CSS.

① [css-grid] grammar of grid-row-start and friends is ugly and harms value space for line https://github.com/w3c/csswg-drafts/issues



- Comment on or raise new issues against CSS specifications
- Raise bugs against browsers
- Vote on features where browsers have a platform to do so
- Write about new features it demonstrates we want them
- **Be nice** while doing it. Browser engineers and spec editors work within constraints just as you do in your projects.

## CSS Grid

## is here!

## I made you some resources

Visit Grid by Example for worked examples, and a free video tutorial:

http://gridbyexample.com

I created a huge set of guides for MDN: https://developer.mozilla.org/en-US/docs/Web/CSS/ CSS\_Grid\_Layout

Over 4 years of grid thoughts on my site at: https://rachelandrew.co.uk/archives/tag/cssgrid

## @rachelandrew

Talk resources & code: https://rachelandrew.co.uk/speaking/event/breaking-borders-2017

## THANK YOU!