




HOW POPOVERS ARE ABOUT TO BECOME A WHOLE LOT EASIER TO BUILD

Hidde de Vries

20 October 2023

React Advanced, London



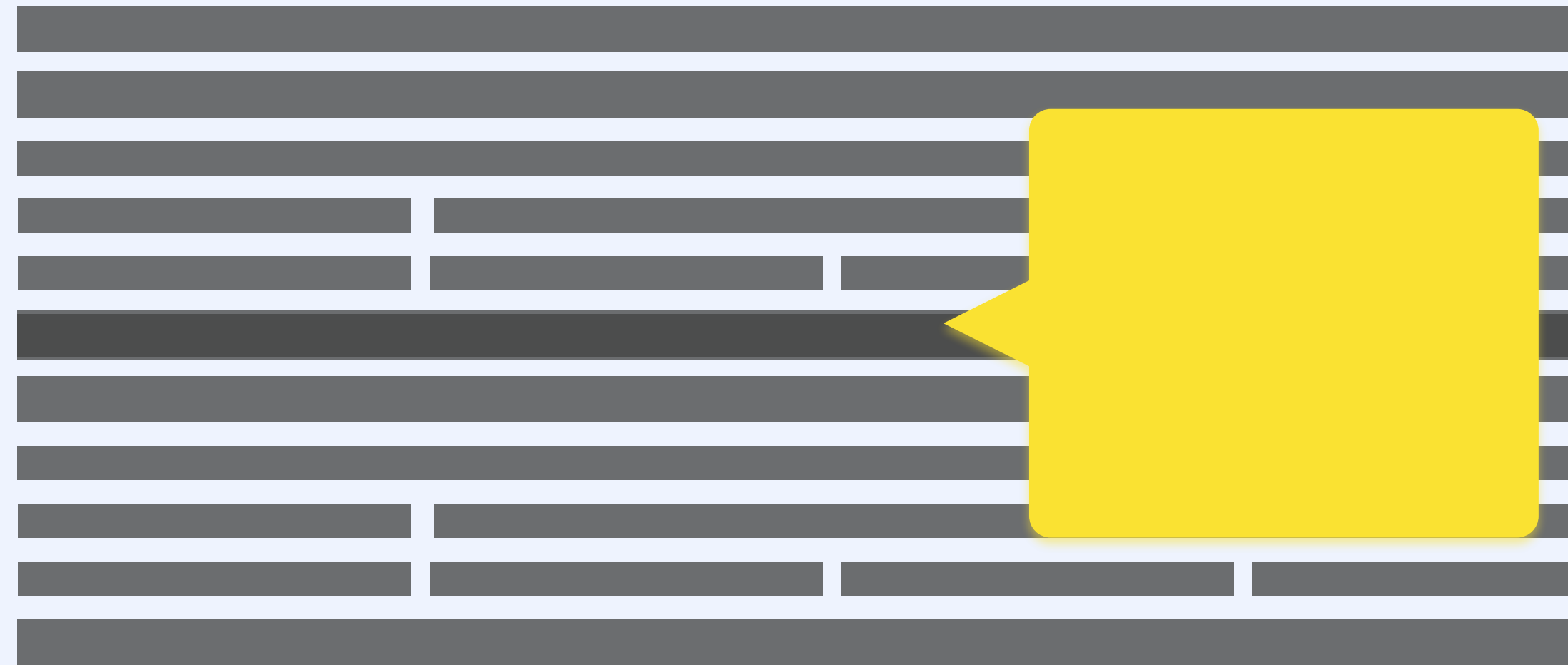
A woman with blonde hair, wearing a dark blue button-down shirt and gold hoop earrings, stands in a modern kitchen. She is smiling slightly and looking towards the camera. The kitchen features stainless steel appliances, including a double oven and a sink with a high-arc faucet. A red stand mixer is visible on the counter behind her. The background is slightly blurred, focusing attention on the woman.

- Popovers can be real tricky



- Oh, that custardy inside.

This talk is about content
that overlaps other content



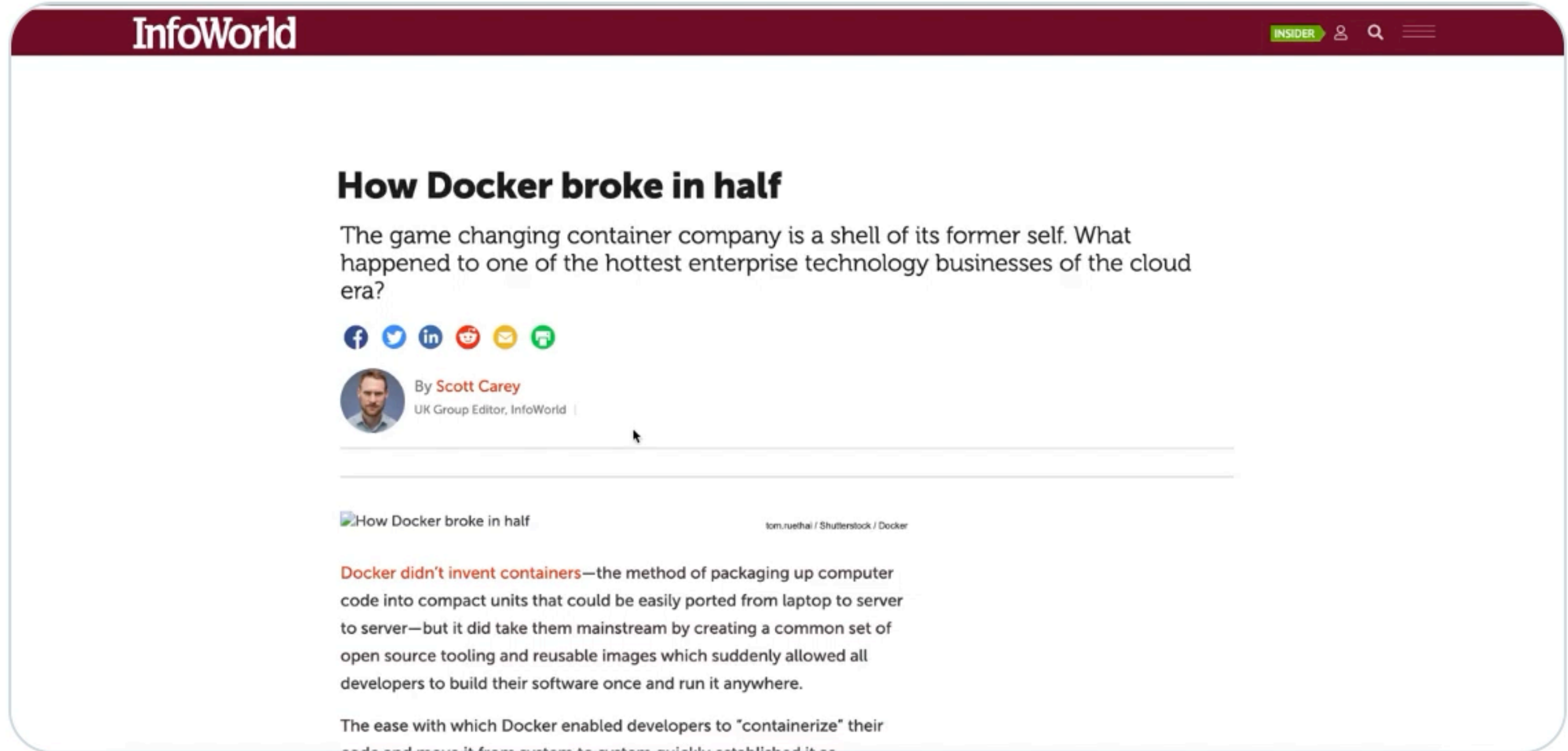


Andrej Karpathy 

@karpathy



Browsing the web, 2021



The screenshot shows a Twitter post from Andrej Karpathy (@karpathy) featuring a screenshot of an InfoWorld article. The article is titled "How Docker broke in half" and is written by Scott Carey, UK Group Editor at InfoWorld. The article's text is partially visible, starting with "The game changing container company is a shell of its former self. What happened to one of the hottest enterprise technology businesses of the cloud era?". Below the text, there are social media sharing icons for Facebook, Twitter, LinkedIn, Reddit, Email, and Print. A horizontal line separates the article content from the rest of the tweet. The article's title "How Docker broke in half" is displayed above a small image placeholder. The author's name "By Scott Carey" and title "UK Group Editor, InfoWorld" are listed below the author's profile picture. The main text of the article begins with "Docker didn't invent containers—the method of packaging up computer code into compact units that could be easily ported from laptop to server to server—but it did take them mainstream by creating a common set of open source tooling and reusable images which suddenly allowed all developers to build their software once and run it anywhere." The tweet itself is timestamped "6:47 AM · Sep 9, 2021 · Twitter Web App".

6:47 AM · Sep 9, 2021 · Twitter Web App

WE USE TOO
MANY DAMN
MODALS.

LET'S JUST NOT.

HELP



THE BAD NEWS

MODALS ARE THE CRUTCH OF THE INARTICULATE DE-
SIGNER AND DEVELOPER.

<dialog>

HTML element · wide browser support · (as of recently) good accessibility support

popover

New attribute / API in HTML · supported in Chrome+Edge >118 / Safari >17 / Firefox (🚩)

<dialog>

HTML element with wide browser support and (as of 1.0) accessibility support

UI considerations

Semantics

popover

New attribute / API in HTML, v1 supported in Chrome stable, coming to other browsers too

HI, I'M HIDDE

developer relations + accessibility
at NL Design System

participant at Open UI CG

hidde.blog

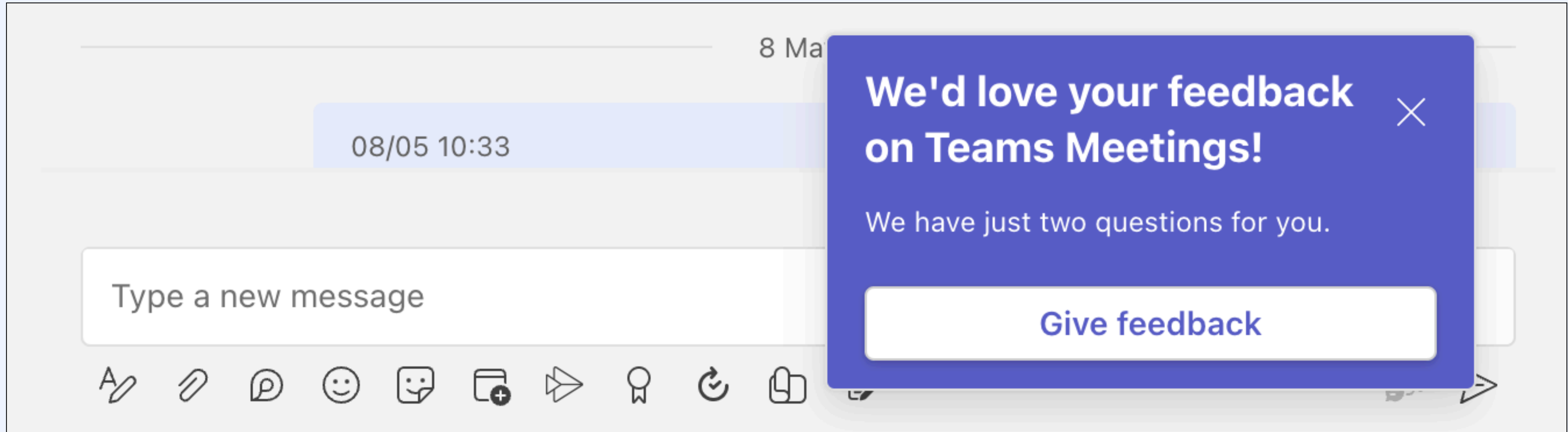
LIKE &
SUBSCRIBE

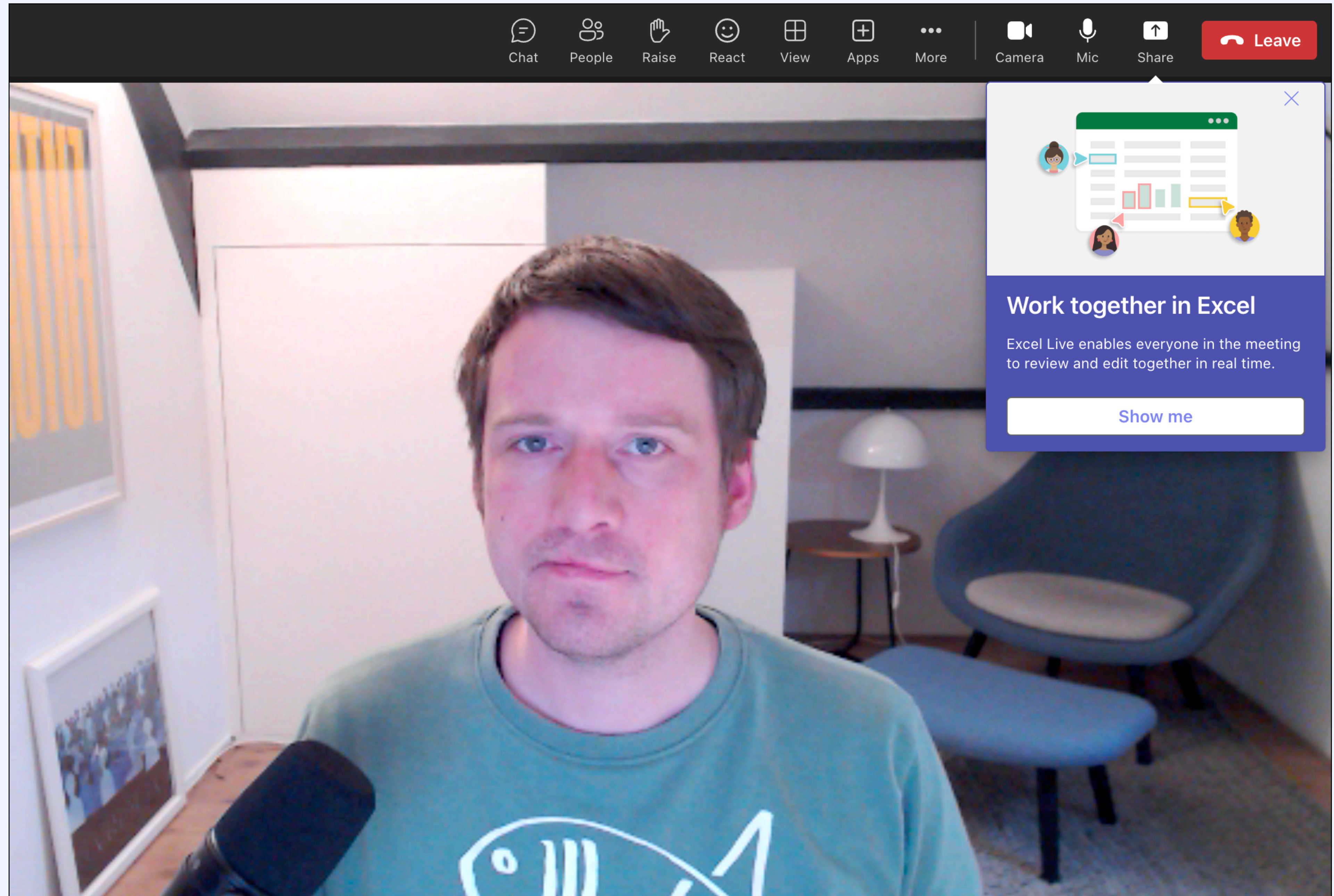


The image shows a Slack workspace interface. On the left is a sidebar with navigation options: Home, DMs, Activity, Later, and More. The main area displays a channel named '# algemeen' with a search bar at the top. A message from 'Eva van Sloten' is visible, discussing the '#woo-platform' and mentioning 'open source Document Management Systemen'. A popover notification is overlaid on the right side of the screen, containing the text: 'Check out these changes later in Help and share your feedback. Go to Help anytime to share your feedback about these changes or see a summary of what's new.' Below the text is a green 'Got it' button. The notification also shows '5 of 5' in the bottom right corner.

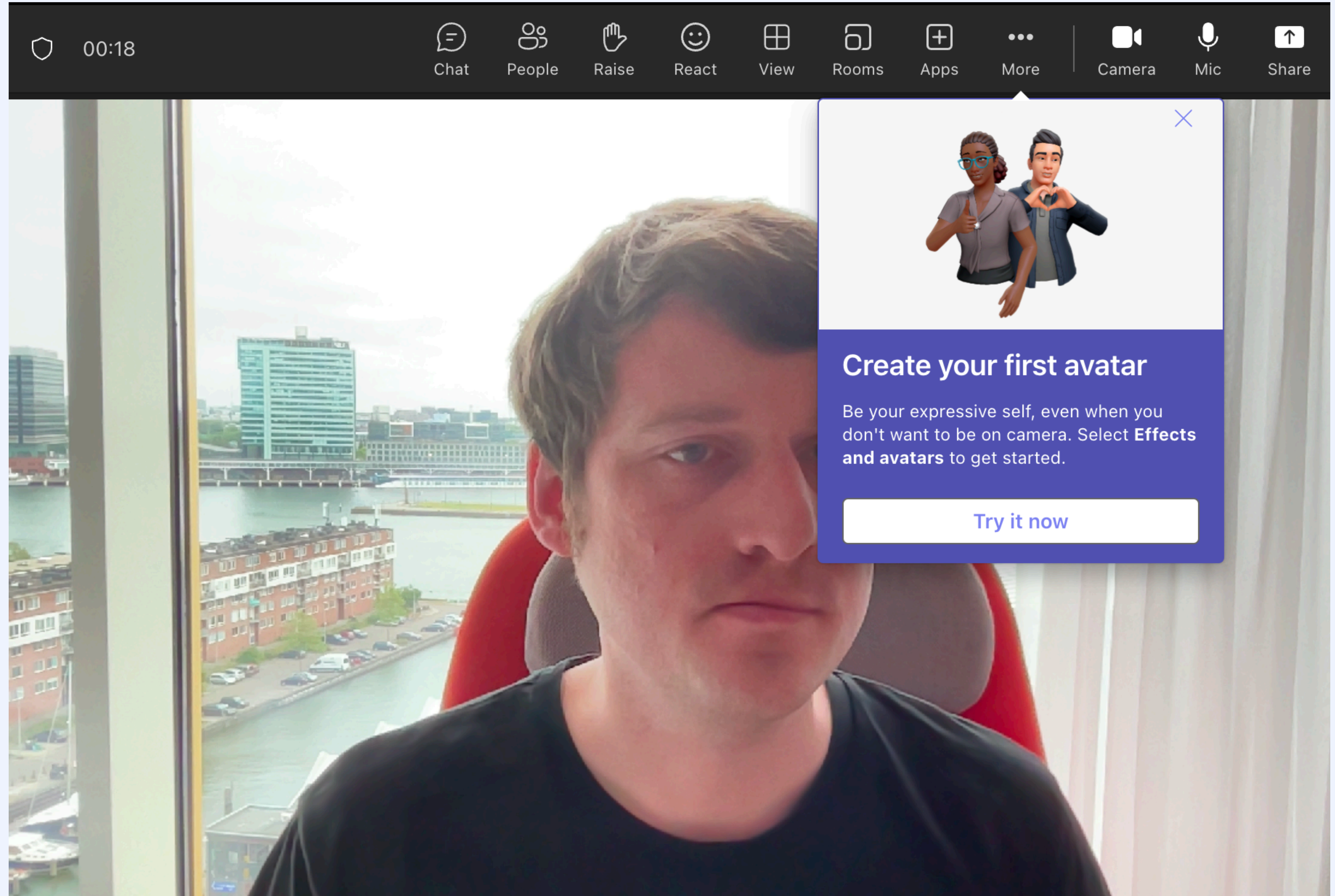
Teams: a timed popover to ask for feedback

@hdv@front-end.social



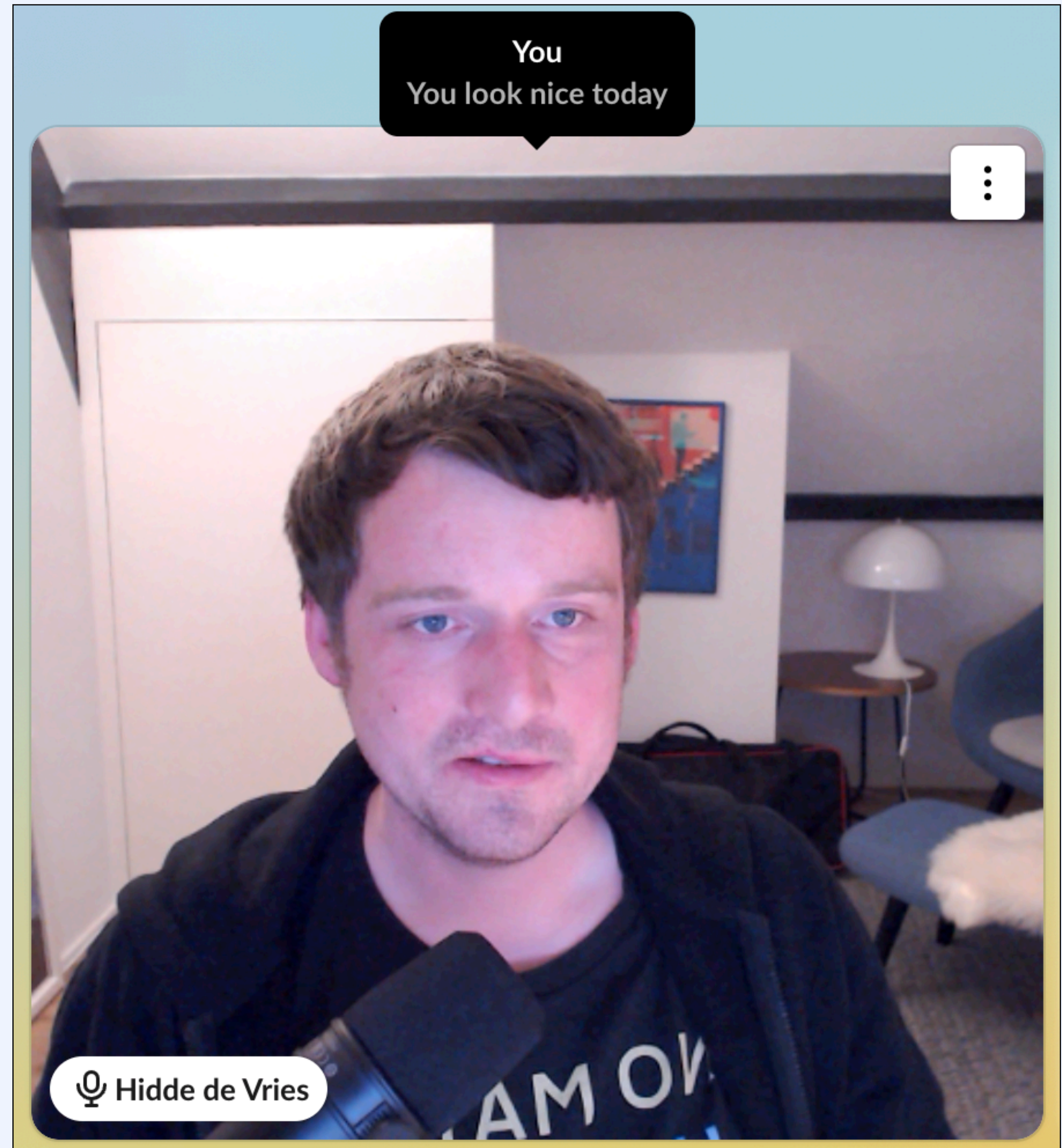


Teams: a popover to teach about an Excel integration



Teams: a popover to urge me to be my expressive self

Slack Huddles: a popover to tell the user they look nice today



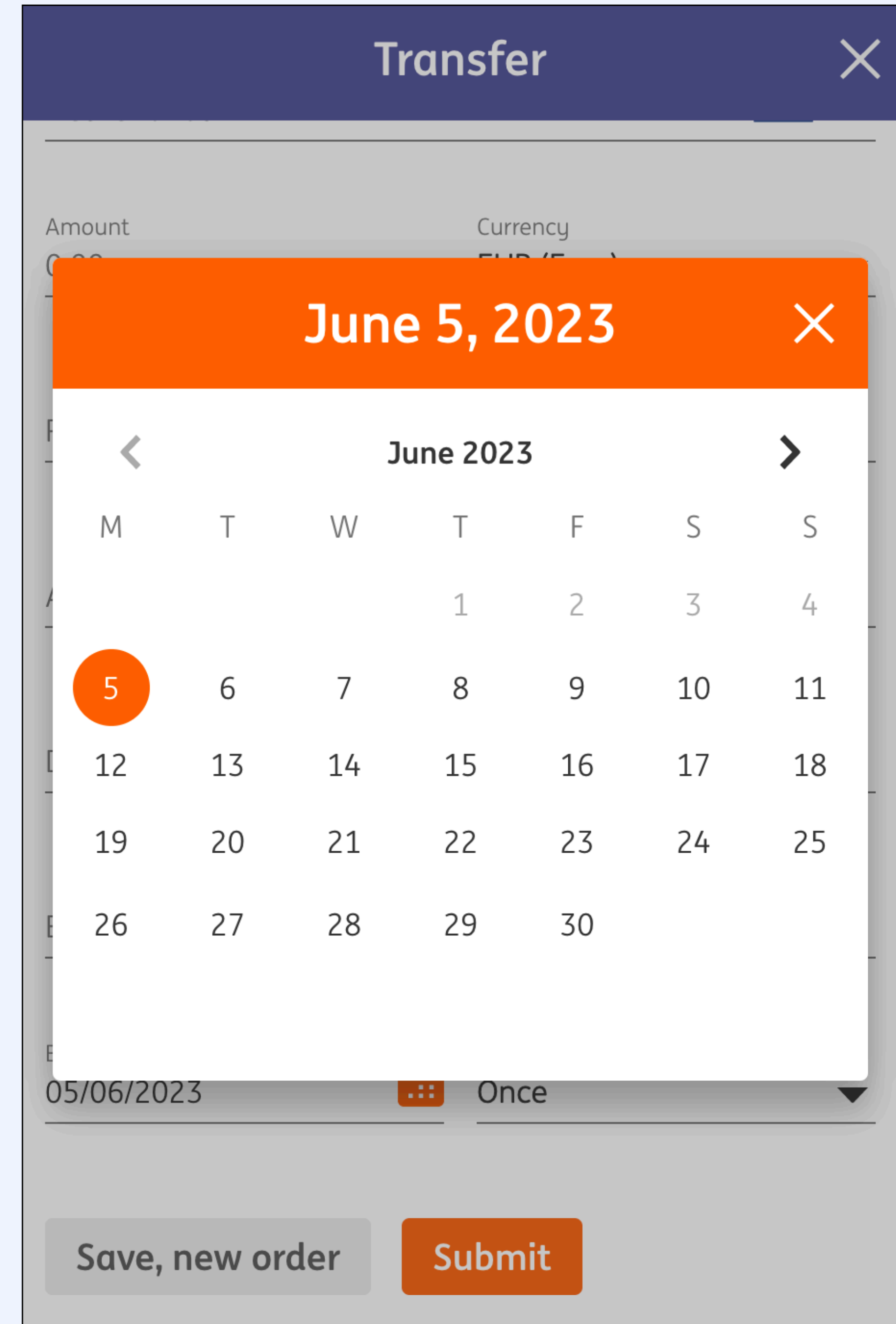
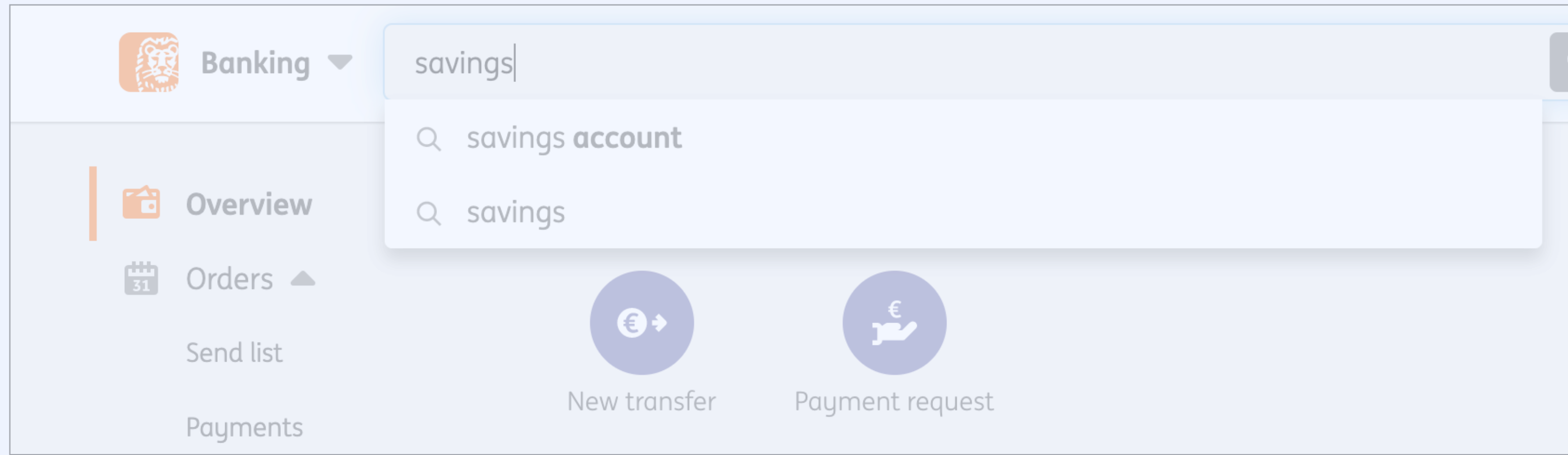
Online banking: a popover to autocomplete search query

@hdv@front-end.social

The image shows a screenshot of an online banking application interface. At the top left, there is a logo of a lion's head next to the word "Banking" with a dropdown arrow. Below this is a sidebar menu with items: "Overview" (with a house icon), "Orders" (with a calendar icon showing "31"), "Send list", and "Payments". In the center, there are two circular buttons: "New transfer" (with a Euro symbol and arrow icon) and "Payment request" (with a Euro symbol and hand icon). At the top right, there is a search bar containing the text "savings" with a magnifying glass icon and the word "Search". To the right of the search bar are links for "Help" (with a question mark icon), "Hr H de Vries" (with a person icon and a dropdown arrow), and a "Log out" button. Below the search bar, a white popover menu is displayed, listing search results: "savings account" and "savings". On the far right, there is a "Change view" link with an eye icon.

Online banking: a popover to autocomplete search query

@hdv@front-end.social



Online banking: a popover to select a transfer date

DIALOG

What is it

Additional window to
your main window.

a.k.a. “descendant window” or
“subwindow”

DIALOG

What is it

Usually contains an **action** or **task** for the user, sometimes has **critical information**

DIALOG

What is it

‘a “conversation”
between the system
and the user’

DIALOG

*What is it
(typically)*

- Do you want to continue, *yes or no*
- If you want to open a new file, what shall we do with your current file?
- How do you want to crop this image, where is the hot spot?

<DIALOG>

What is it

HTML element to
build dialogs

```
<dialog>... </dialog>
```

<DIALOG>

*Open/close
with script*

```
// show as modal  
element.showModal();
```

```
// show as non-modal  
element.show();
```

```
// dialog element  
<dialog>...</dialog>
```

comes with role,
modal setting, close-
on-Esc etc


```
// dialog element  
<dialog>...</dialog>
```

just the
semantics, no
behaviour

```
// an element with  
// dialog semantics  
<div role="dialog">... </div>
```

```
// dialog element  
<dialog>...</dialog>
```

```
// an element with  
// dialog semantics  
<div role="dialog">... </div>
```

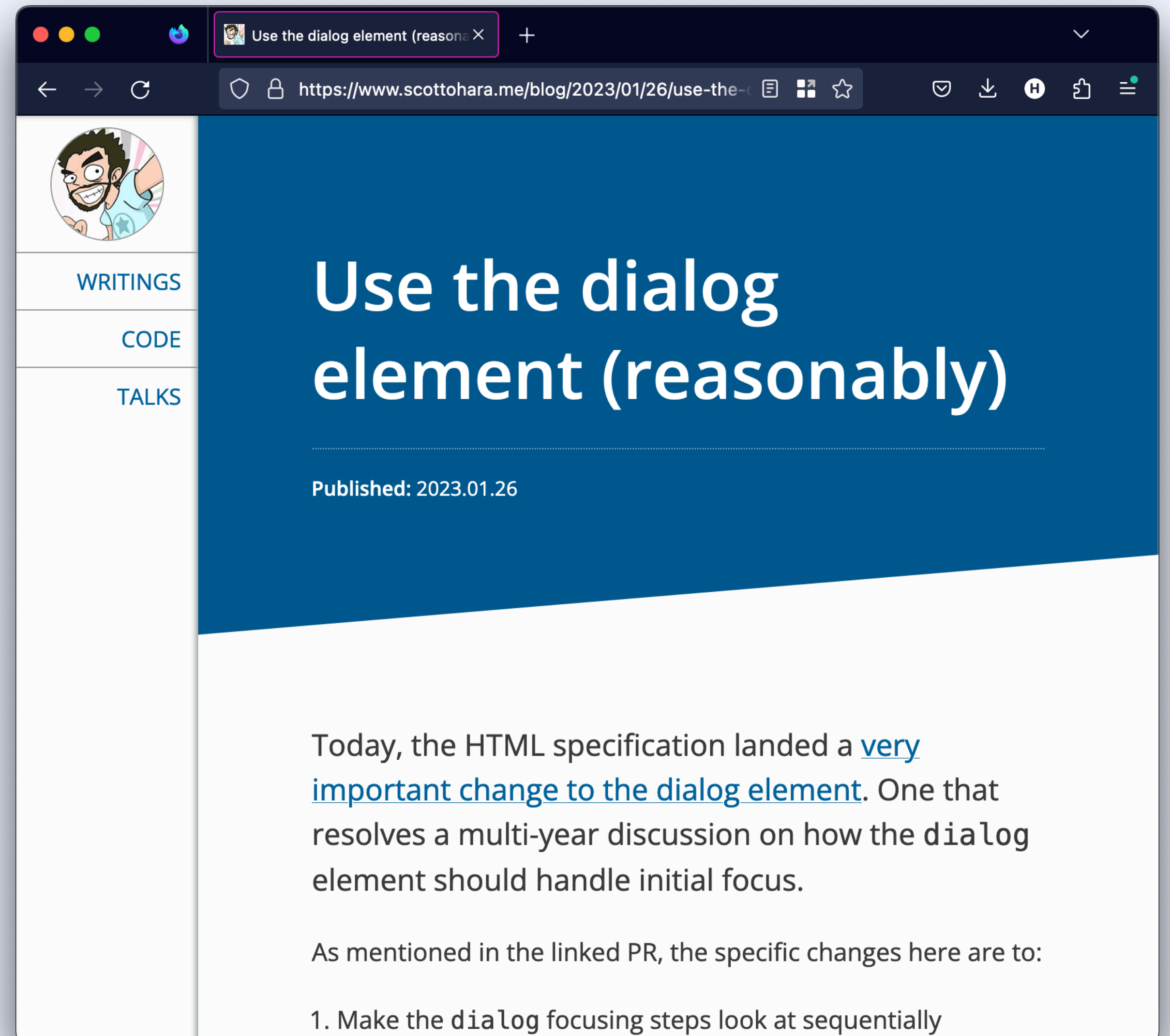
“dialog” just the word

CURRENT STATUS: <DIALOG>



scottohara.me/blog/2023/01/26/use-the-dialog-element.html

MORE ON USING <DIALOG> ACCESSIBLY



POPOVER

What is it

a floating piece of UI
with **supplemental** or
contextual content

“non-modal dialog”

“transient content”

[POPOVER]

What is it

an attribute that adds
a set of behaviours to
any element

```
<div popover>... </div>
```

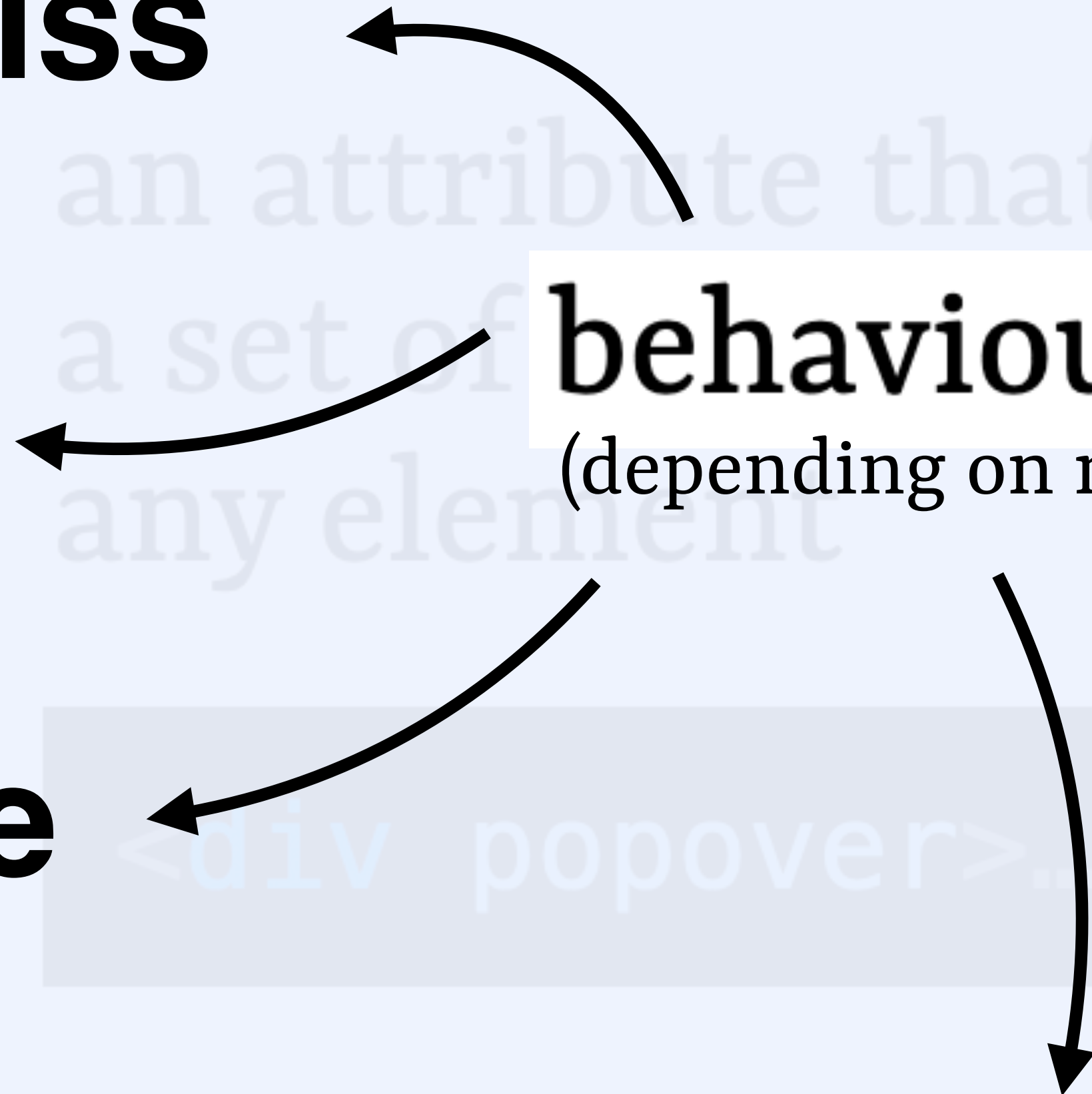
light dismiss

keyboard

top layer presence

auto-closure of other popovers

behaviours
(depending on mode)

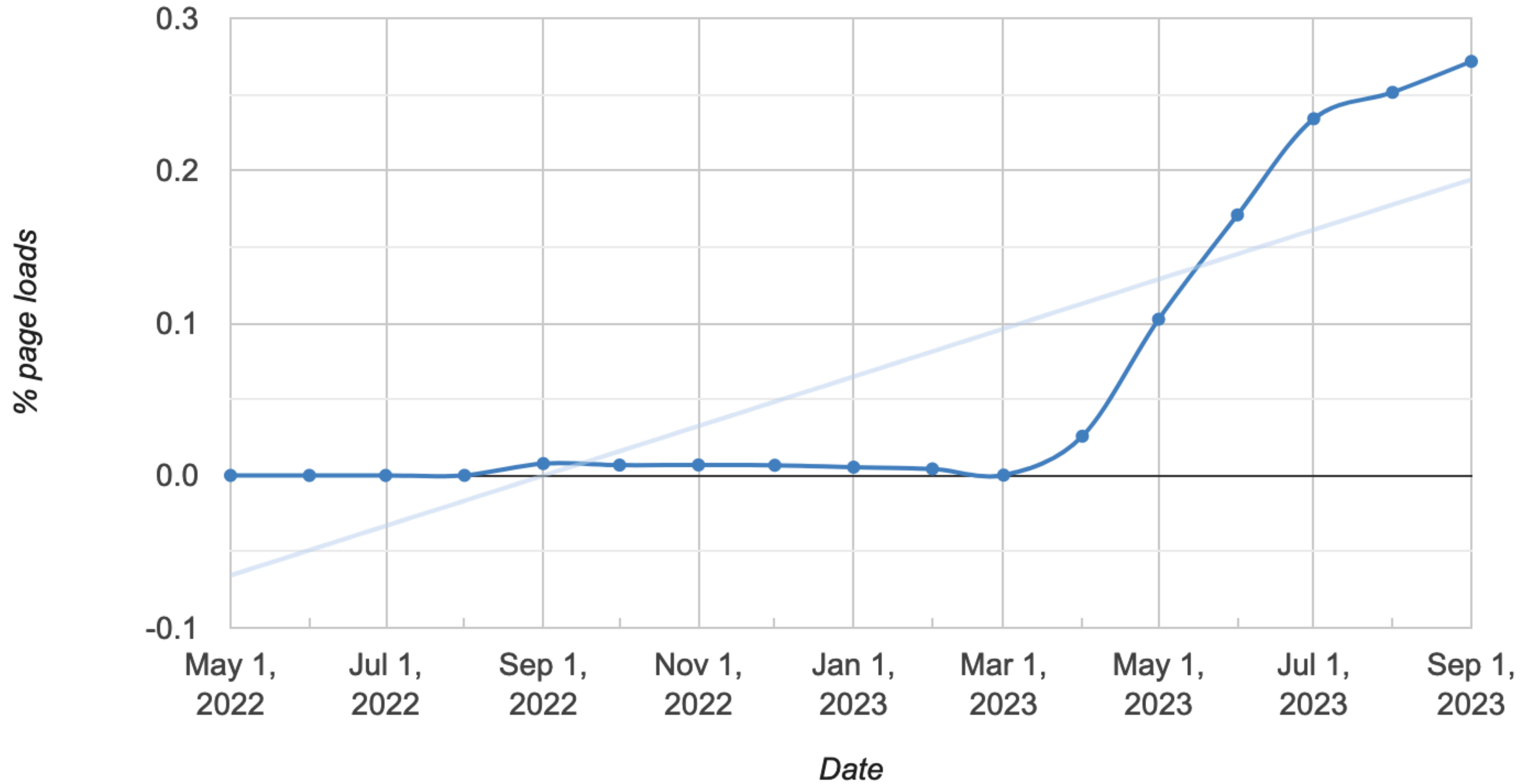


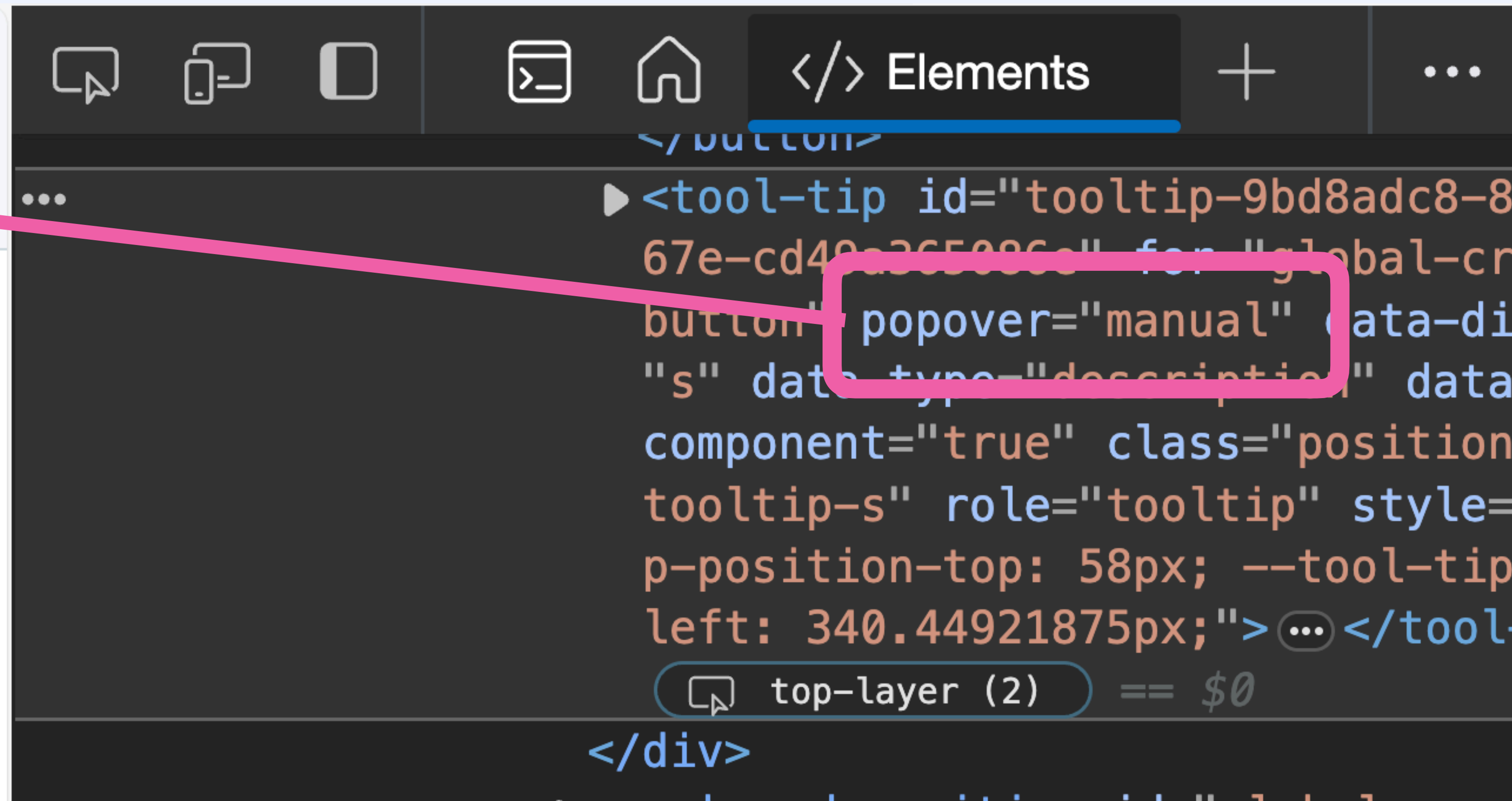
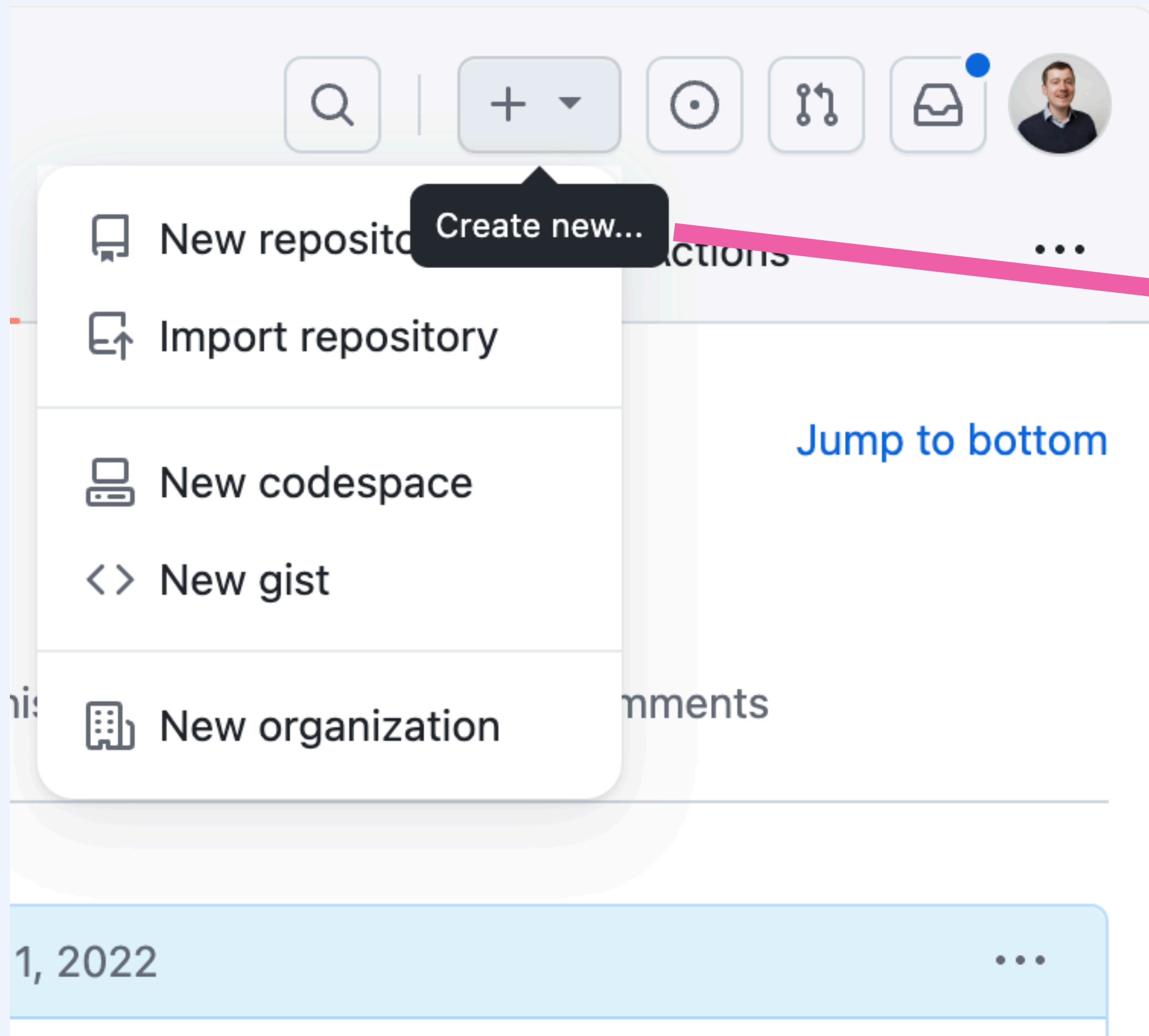
[POPOVER]

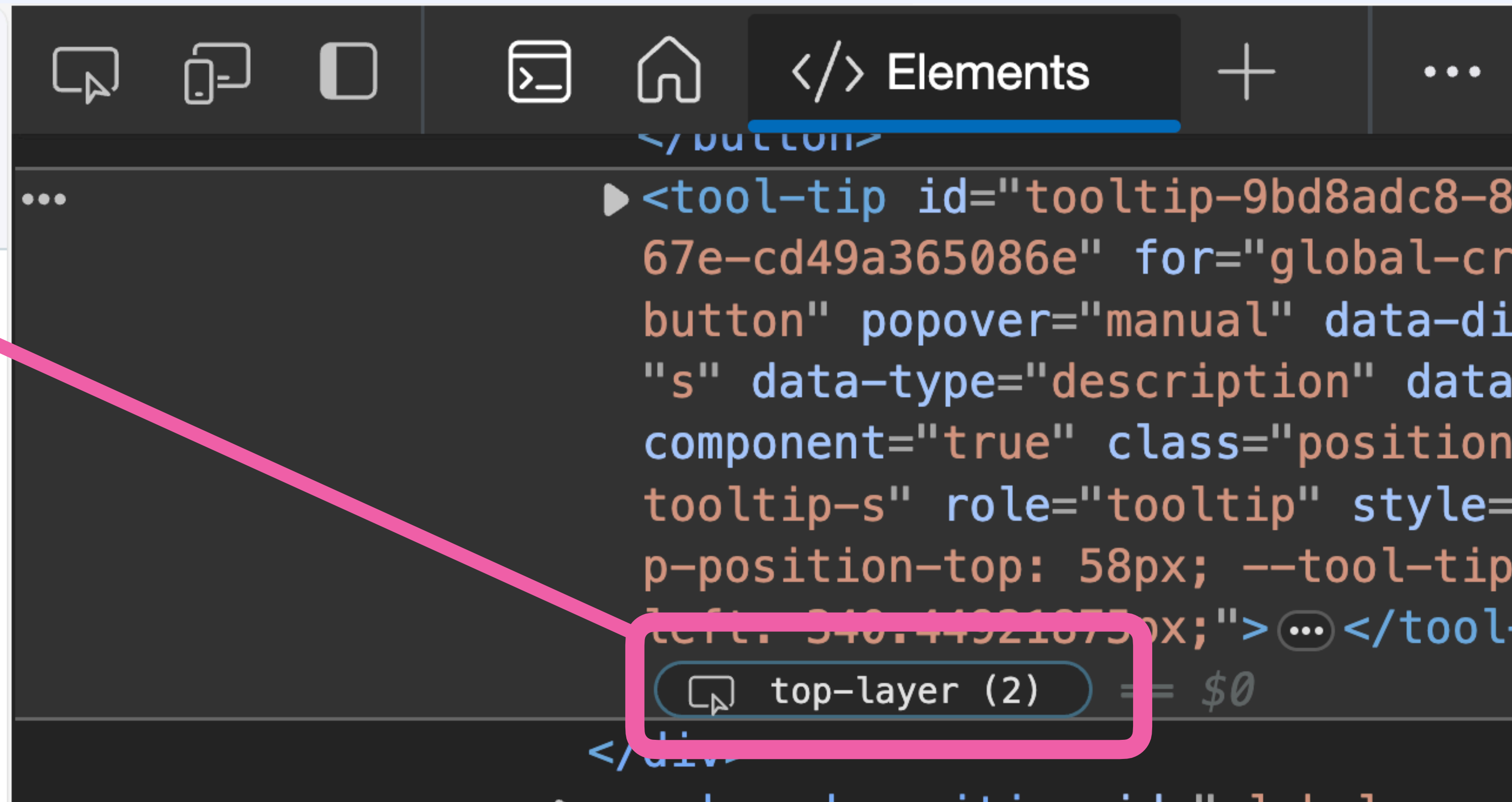
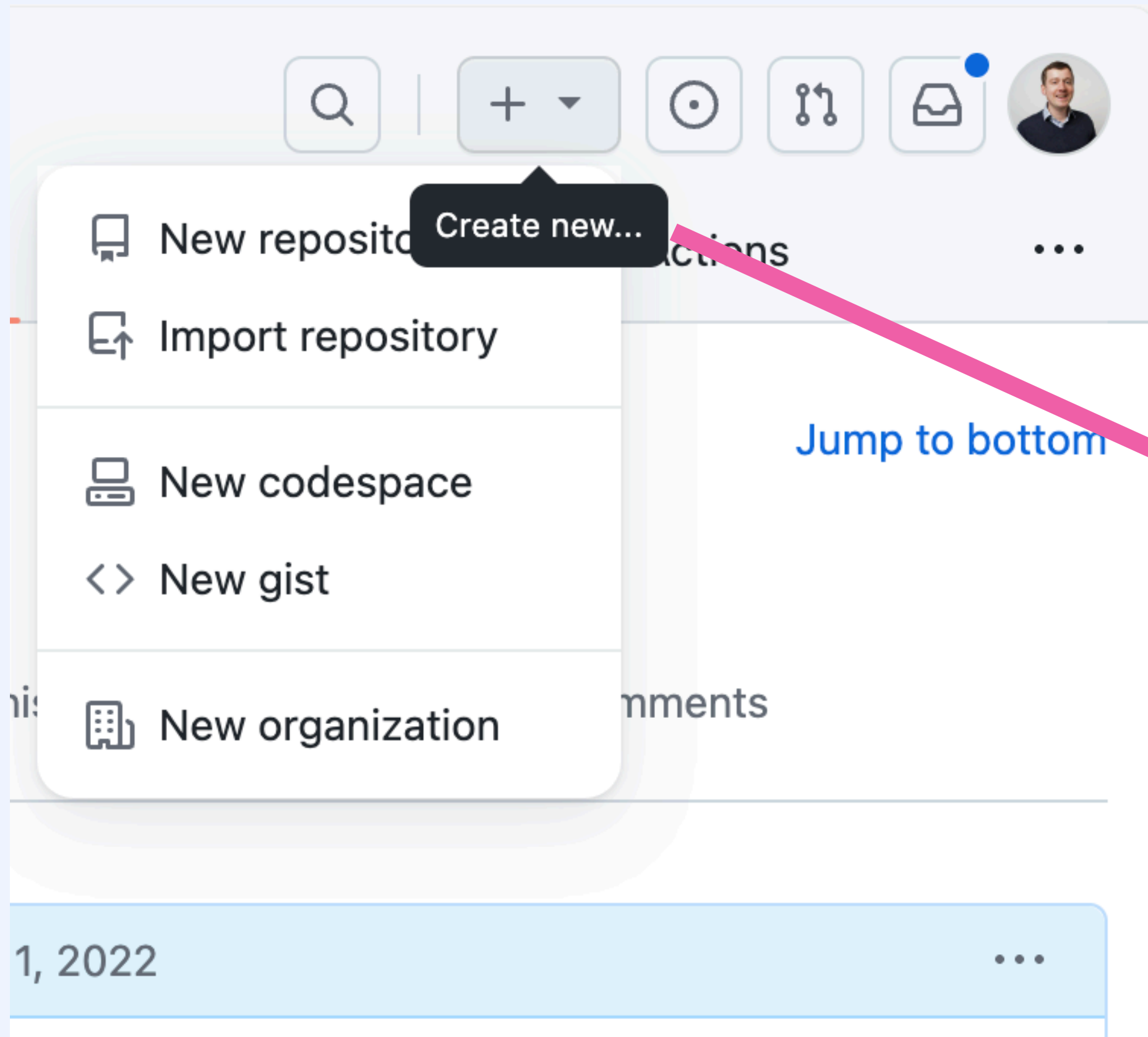
What is it

For elements that are:

- on top of other page content
- not always visible (ephemeral, short-lived)
- usually displayed one at a time









westbrook

@westbrook@mastodon.social



We're in the final throws of landing usage in Photoshop here, soon!

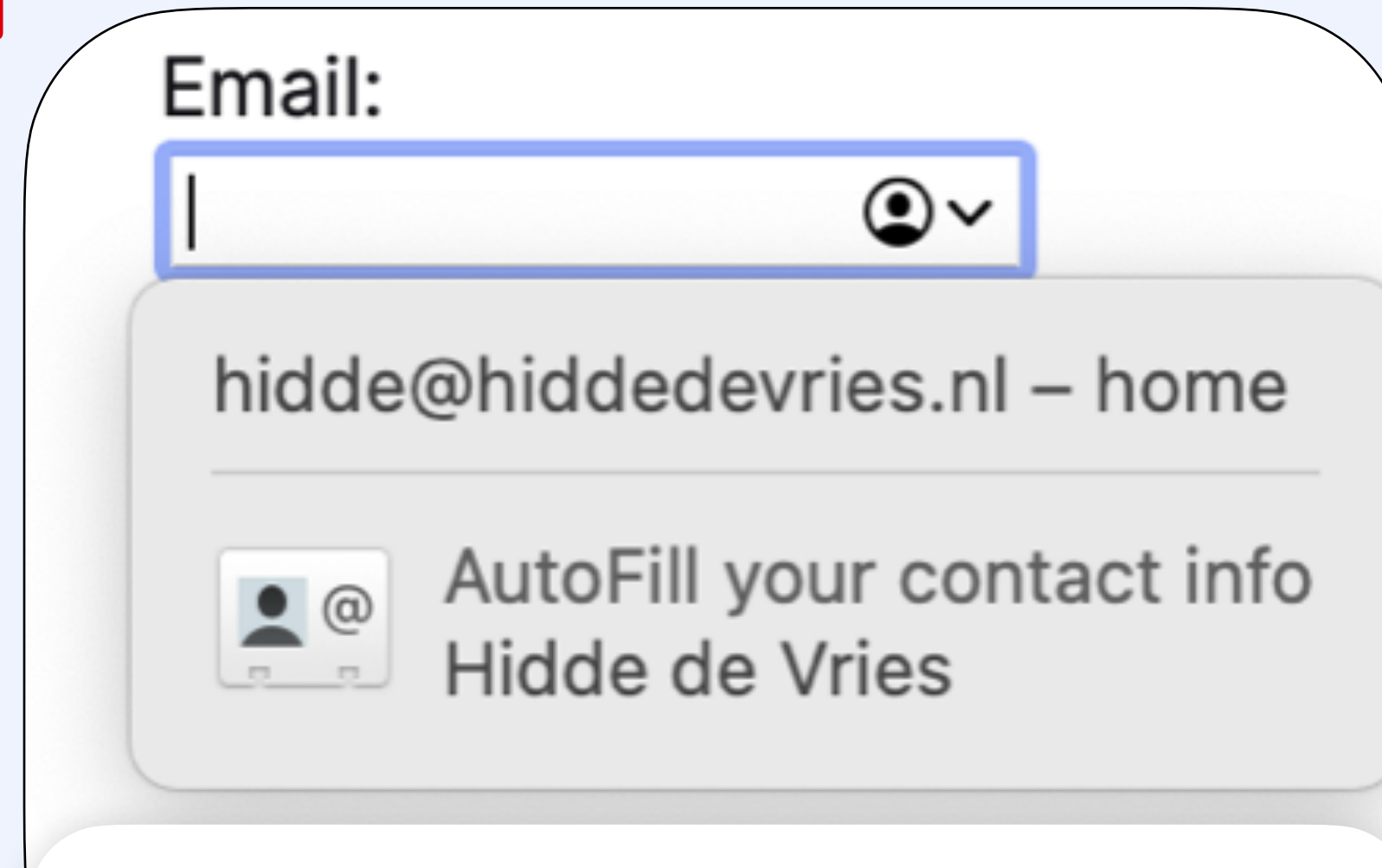
15 September 2023 at 23:07:03 · 

[POPOVER]

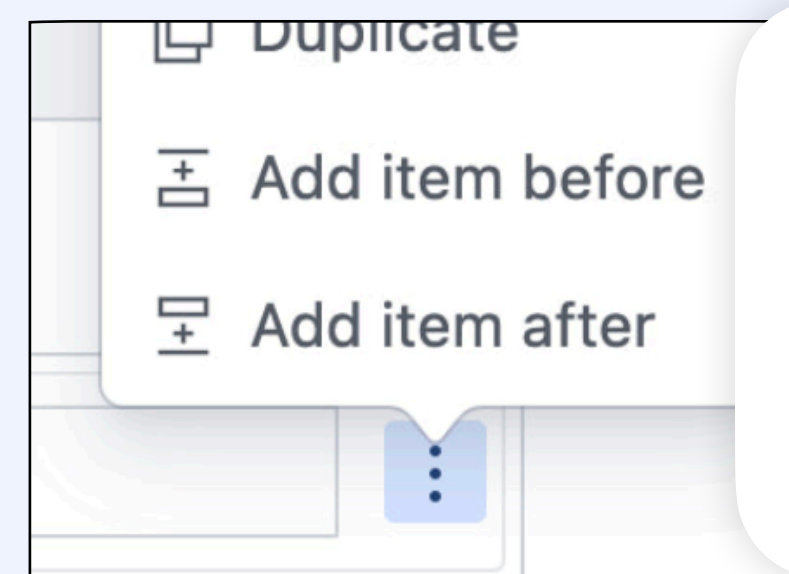
Use cases



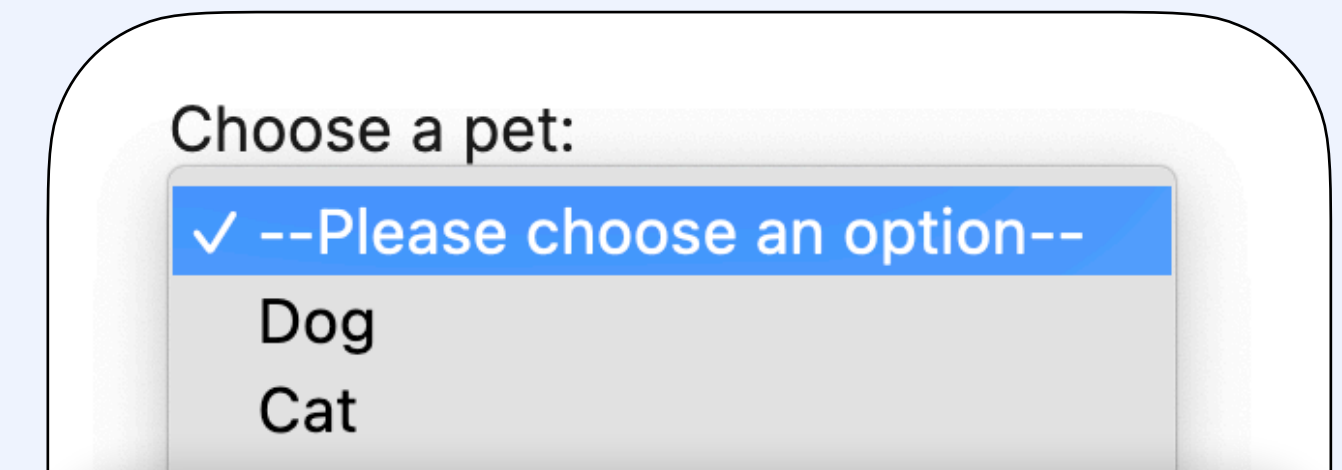
content
pickers



form element
suggestions

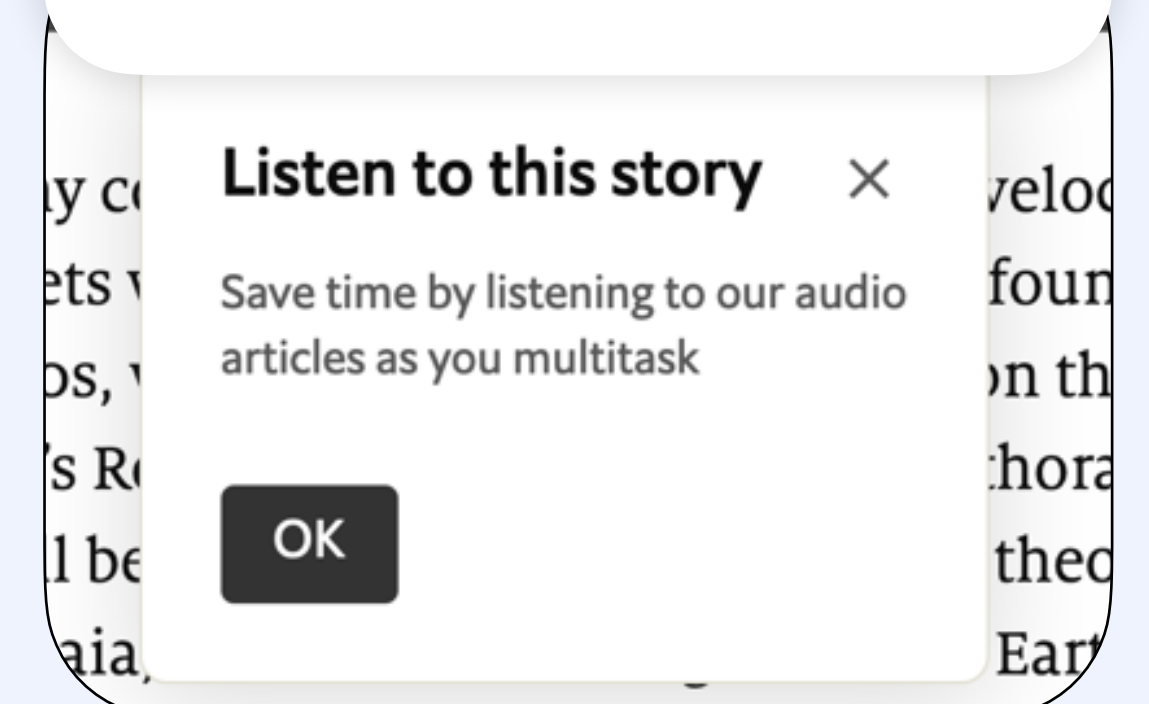


action
menus



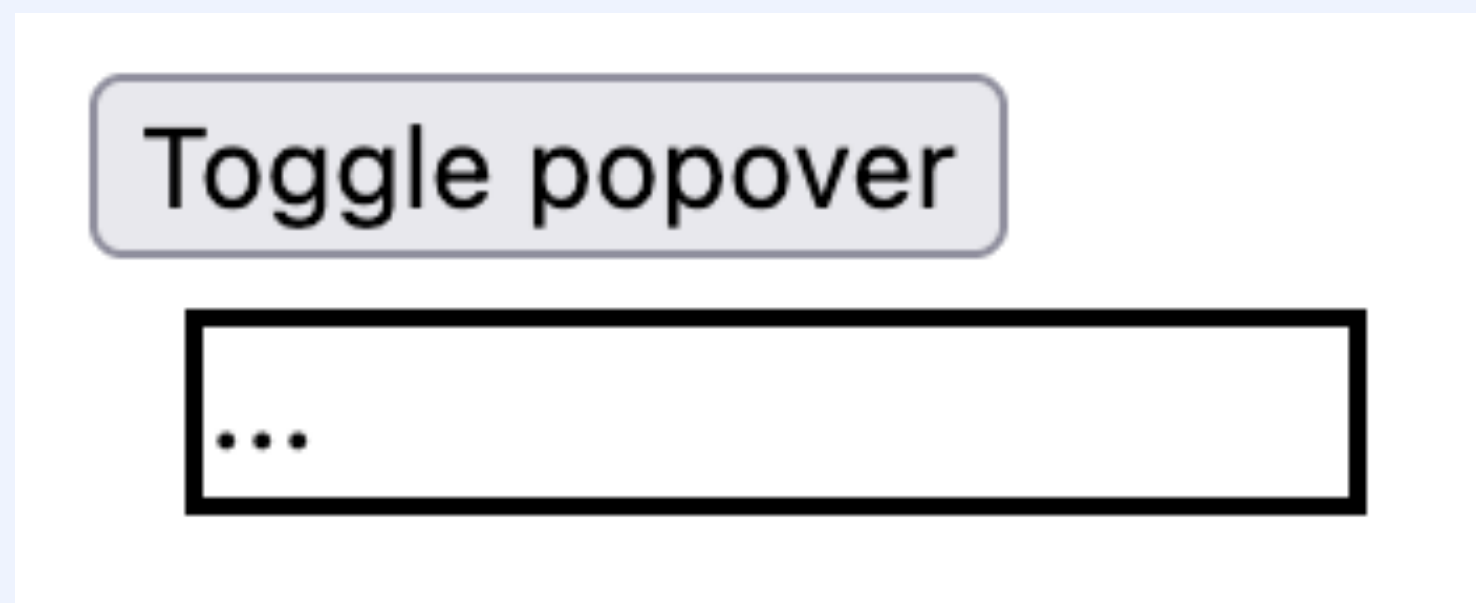
<select>'s
listbox

teaching
UI



[POPOVER]

*No JavaScript
required*

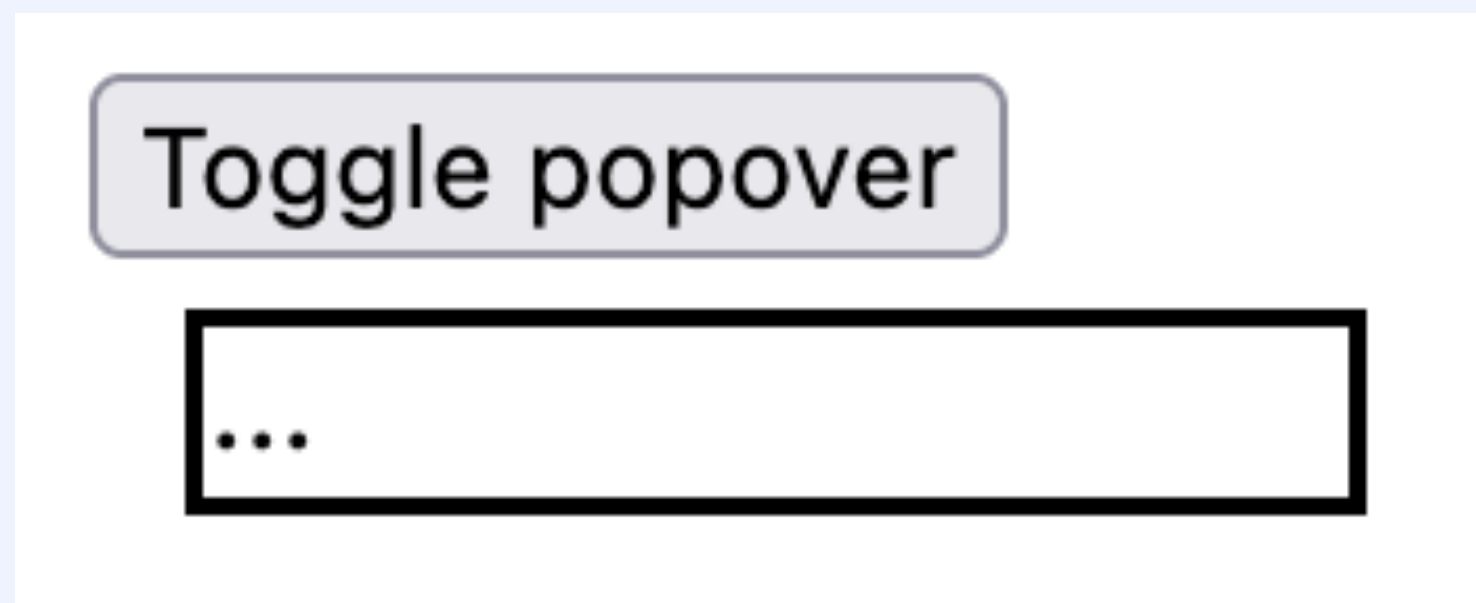


```
<button>  
  Toggle popover  
</button>
```

```
<div>  
  ...  
</div>
```

[POPOVER]

*No JavaScript
required*



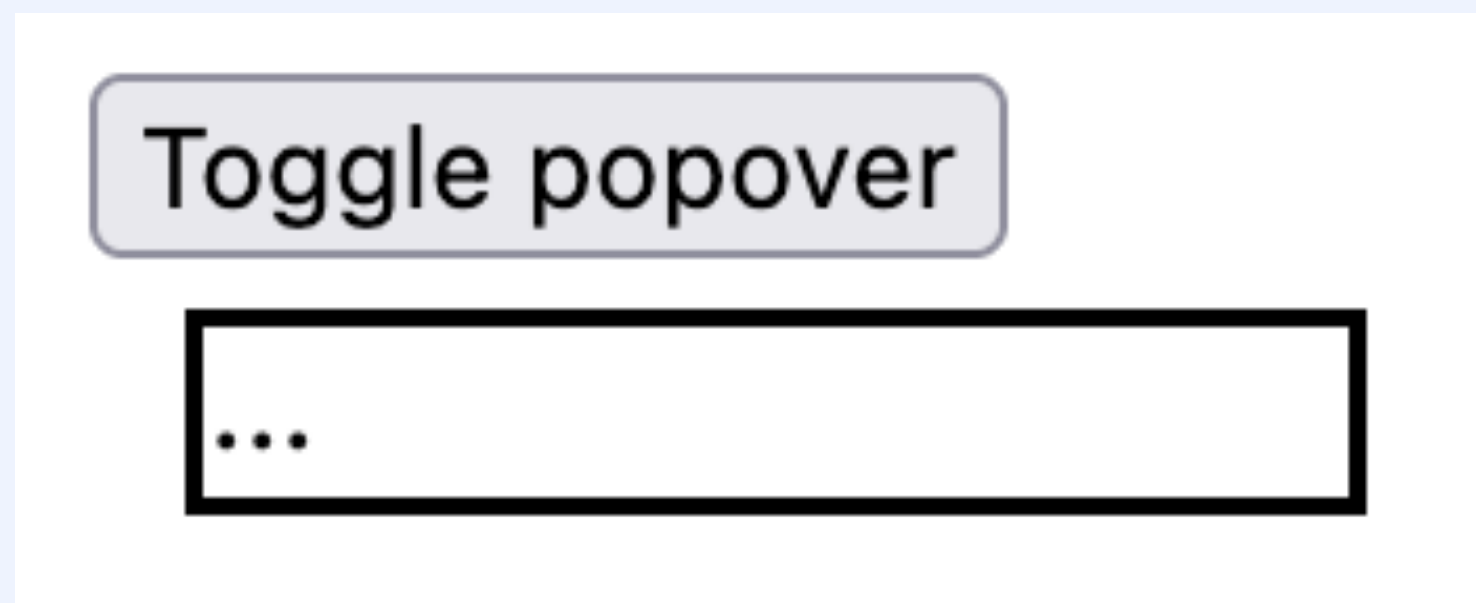
```
<button>  
  Toggle popover  
</button>
```

```
<div popover>  
  ...  
</div>
```

make it a
popover

[POPOVER]

*No JavaScript
required*



```
<button>  
  Toggle popover  
</button>
```

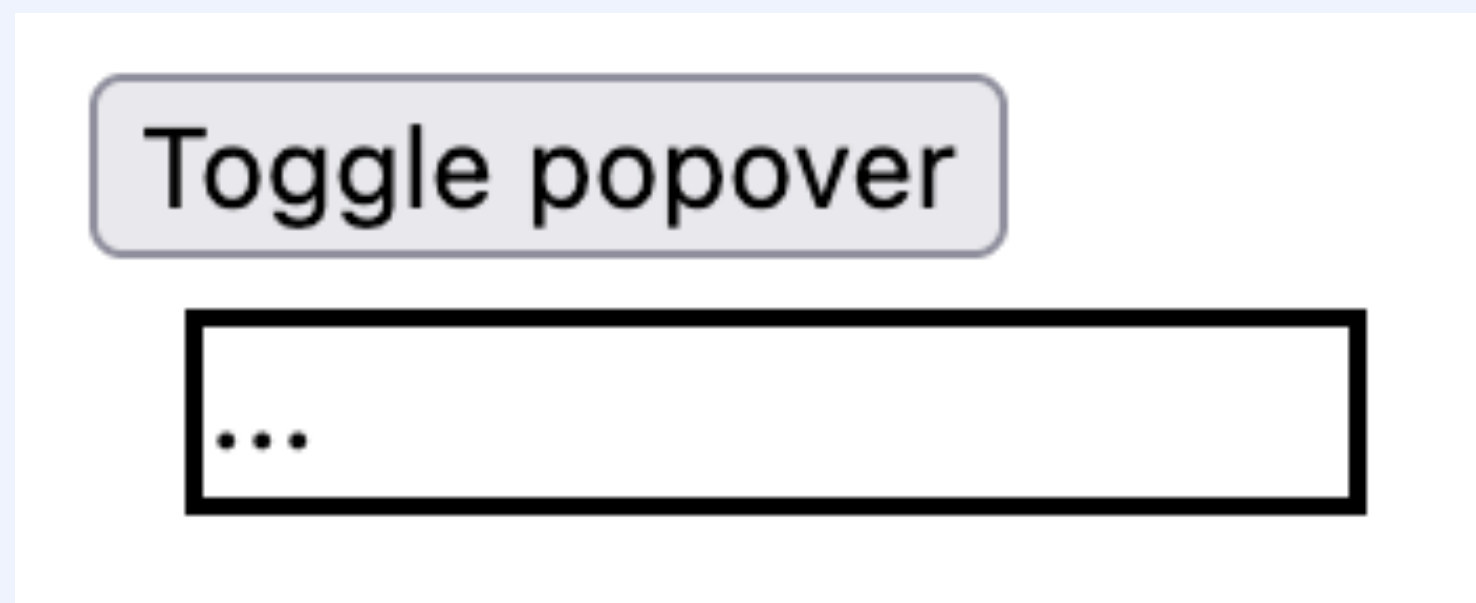
```
<div popover id="p">
```

```
  ...  
</div>
```

add a
unique ID

[POPOVER]

*No JavaScript
required*



point button to ID

```
<button popovertarget="p">  
  Toggle popover  
</button>
```

```
<div popover id="p">  
  ...  
</div>
```

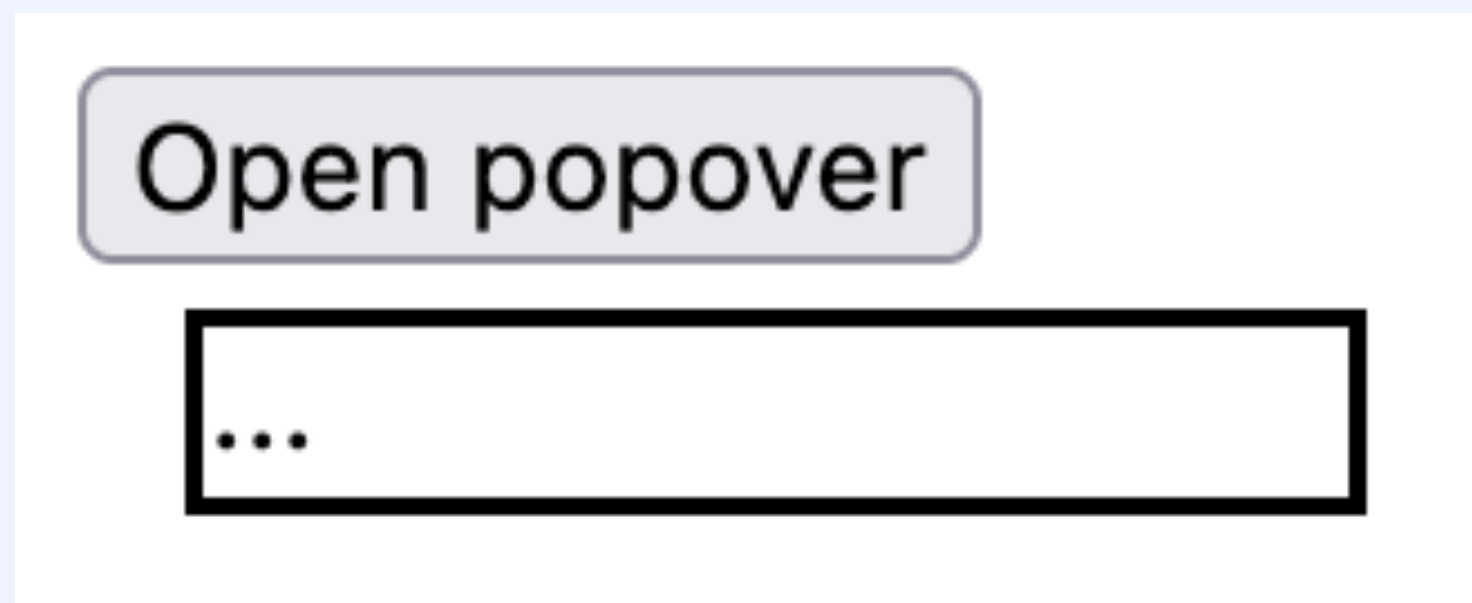
OPENING DIALOGS (AND MORE) WITHOUT JS

github.com/whatwg/html/issues/9625

The screenshot shows a web browser window displaying a GitHub issue page. The browser's address bar shows the URL `https://github.com/whatwg/html/issues/9625`. The page header includes the repository name 'whatwg / html' and a search bar. Below the header, there are navigation tabs for 'Code', 'Issues' (with a '1.7k' badge), 'Pull requests' (with a '156' badge), 'Actions', 'Wiki', 'Security', and 'Insights'. The main content area features the issue title '[Proposal] Invoker Buttons - allowing popover/dialog and more to be invoked without JS #9625' and a 'New issue' button. Below the title, it indicates the issue is 'Open' and was opened by 'keithamus' last week with 14 comments. A comment from 'keithamus' is visible, discussing the proposal for new attributes to open dialogs and popovers without JavaScript. The comment text includes: 'Following on from #3567 and #9456 where we tried to specify a way to open dialogs without JavaScript, @nt1m and @smaug---- raised concerns that the attribute was not extensible. I've taken the feedback, and instead I'm proposing a new set of attributes that allow for opening dialogs and popovers, and also allow for extensibility for other interactions. I'll quote the summary: Adding `invokertarget` and `invokeraction` attributes to `<button>` and `<input type="button">` / `<input type="reset">` elements would allow'. On the right side of the page, there are sections for 'Assignees' (No one assigned) and 'Labels' (accessibility, addition/proposal, needs implementer interest, topic: dialog, topic: events, topic: forms, topic: popover).

[POPOVER]

*Can open, close
or toggle*



```
<button popovertarget="p"  
  popovertargetaction="show">  
  Open popover  
</button>
```

```
<div popover id="p">  
  ...  
</div>
```

[POPOVER]

*Has auto and
manual modes*

```
// Closes other popovers  
// when opened; has  
// light dismiss.  
<div popover="auto">  
  ...  
</div>
```

[POPOVER]

Has auto and manual modes

```
// Closes other popovers  
// when opened; has  
// light dismiss.
```

```
<div popover="auto">  
  ...  
</div>
```

```
// No closing of others,  
// no light dismiss
```

```
<div popover="manual">  
  ...  
</div>
```

[POPOVER]

*Open/close
with script*

```
// show as popover  
element.showPopover();
```

CURRENT STATUS: POPOVER ATTRIBUTE/API



in Chrome/Edge >114

Safari > 17

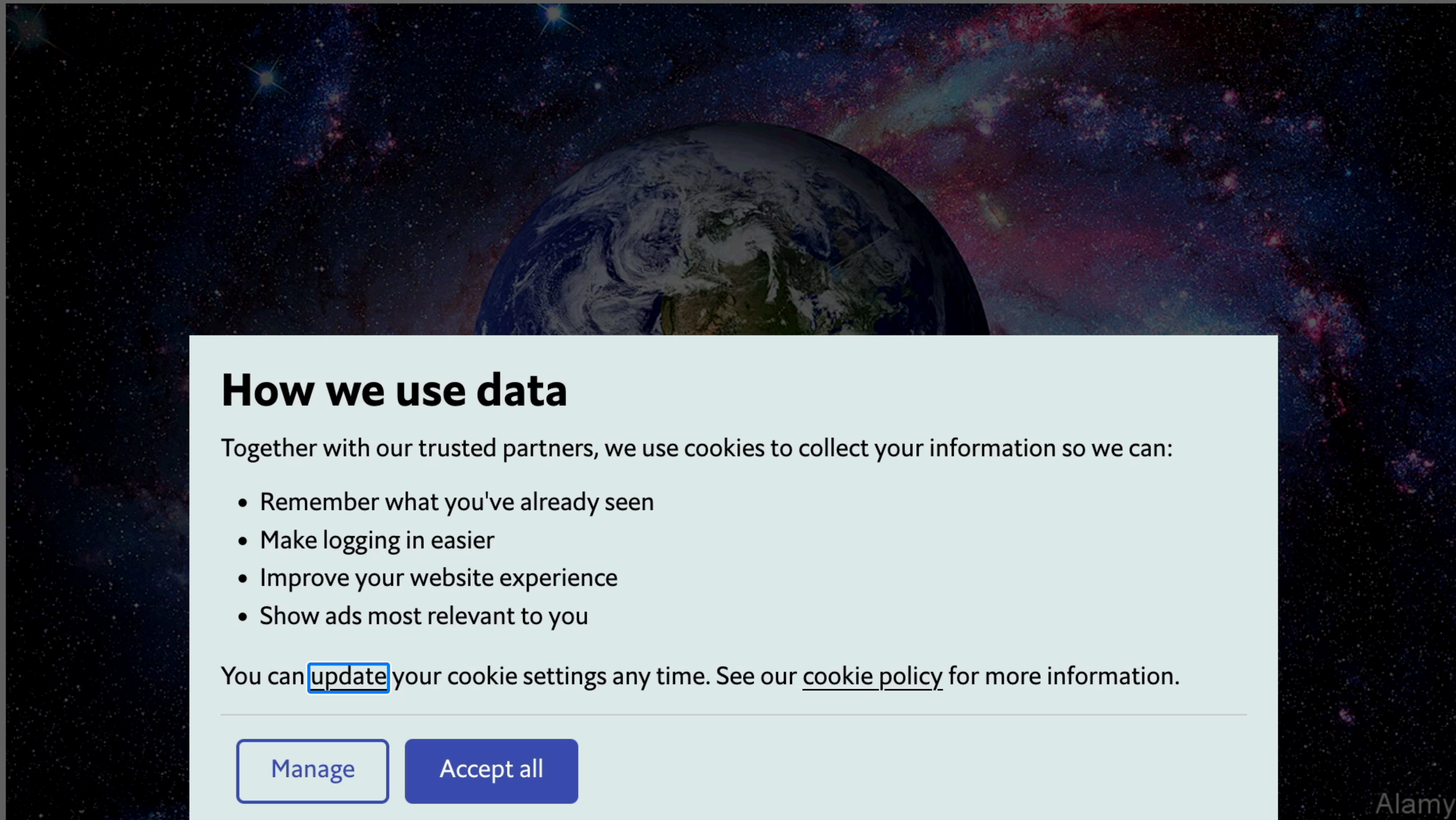
Firefox > 114

`dom.element.popover.enabled`



**HOW ARE
THESE PATTERNS
DIFFERENT?**

MODAL VS **NON-MODAL**



How we use data

Together with our trusted partners, we use cookies to collect your information so we can:

- Remember what you've already seen
- Make logging in easier
- Improve your website experience
- Show ads most relevant to you

You can [update](#) your cookie settings any time. See our [cookie policy](#) for more information.

Manage

Accept all

Jul 25th 2019

Share

Novacene: The Coming Age of Hyperintelligence. By James Lovelock with Bryan Appleyard. *The MIT Press*; 160 pages; \$22.95. Allen Lane; £14.99.



MijnOverheid

- Home
- Berichtenbox
- Lopende zaken
- Identiteit
- Financiën
- Werk
- Gezondheid**
- Wonen
- Vervoer

H.A. de Vries

[Uitloggen](#)

Wilt u uw sessie verlengen?

Uw sessie is mogelijk verlopen. Als u te lang niks hebt gedaan, wordt u uit veiligheidsoverwegingen uitgelogd.

Kies "Ja" om uw sessie te verlengen, mogelijk moet u dan opnieuw inloggen.

[Uitloggen](#)

[Ja, verlengen](#)

n na uw overlijden wel of niet

[Ga naar Donorregister](#)


Mijn PGB

A “game over” screen

@hdv@front-end.social



GAME OVER

Press 
to try again

ARDS “flexible schedule” have an attract
pandemic workplace full of motivated v
uctive and family-friendly way, and of
alented employees. But flexibility is in
ding on the type of job someone is in,

story. Enjoy more audio and podcasts on [iOS](#) or

a blue-collar worker in an industry that operates in shifts, for example,

Save

Share


Give


Share



 Copy link

 Share on Facebook

 Share on Twitter

 Share on WhatsApp


 Share on LinkedIn



Image description

Pieter pot website with various Fritz kola beverages on sale

Dismiss

ALT

pie
tor

Nog gemakkelijker
verpakkingsvrij winkelen?

Main image



REPLACE

 Upload

 Browse

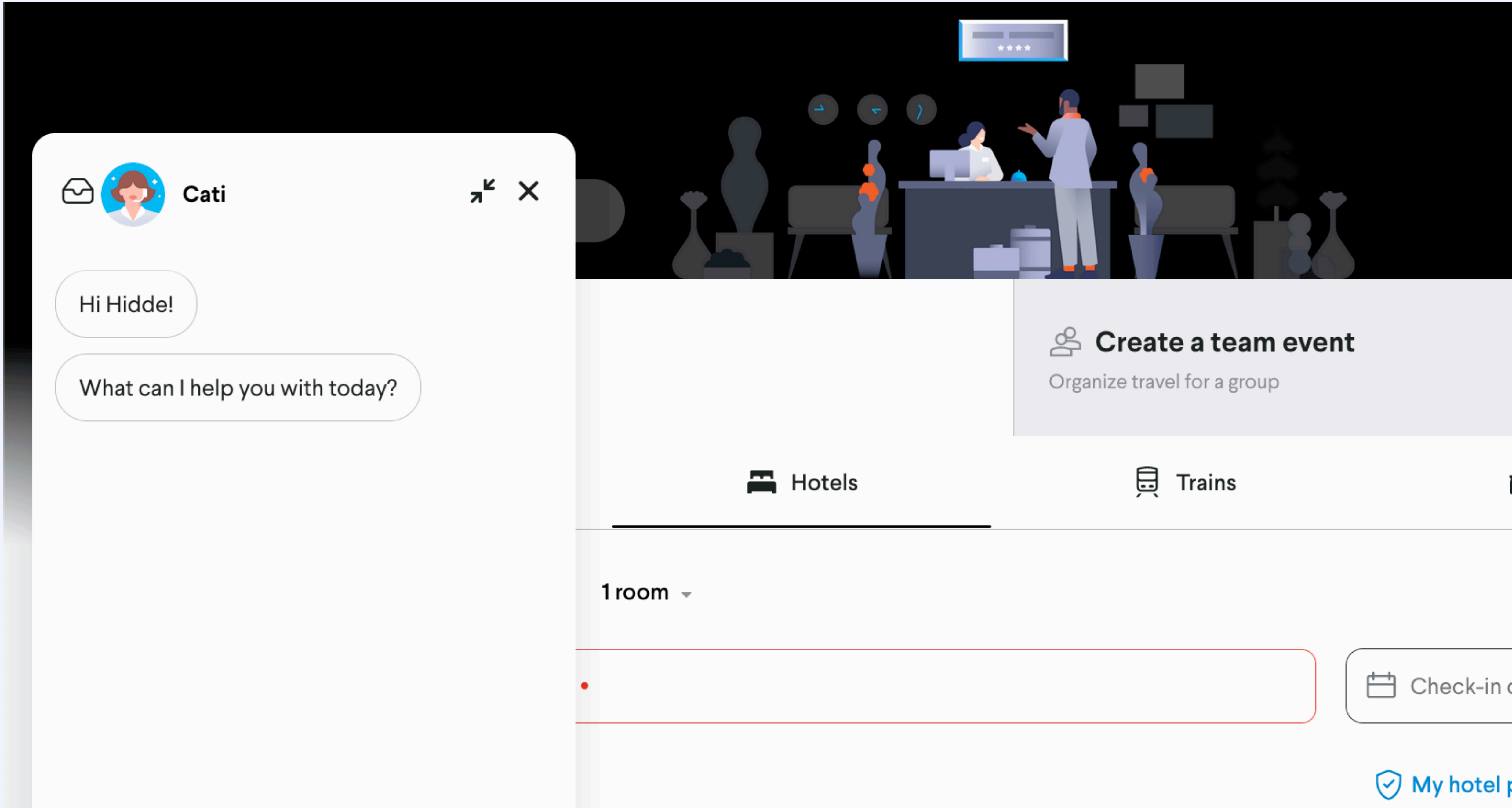
 Download original file

 Copy URL

 Clear field

Alternative text

What's on this picture?



Making an element *modal* is a drastic measure, the user can do nothing else. Use it sparingly!

MODAL VS **NON-MODAL**

LIGHT DISMISS VS **EXPLICIT DISMISS**

Latest Tweets

Retweets



Everyone ▾

Explicit dismiss example

 Everyone can reply



Tweet

Font chooser: light dismiss

@hdv@front-end.social



Light dismiss example



File Edit View Insert Format Tools Extensions Help



Share



Navigation and formatting toolbar with icons for undo, redo, print, read aloud, zoom (100%), title, font (Arial), font size (26), bold, italic, underline, text color, link, insert, image, list, indent, and a pencil icon.



Main editing area with a vertical ruler on the left (1-4), a hamburger menu icon in the top-left corner, and the text "Light dismiss" centered in the document. A cursor is positioned at the end of the text.

MODAL VS **NON-MODAL**

LIGHT DISMISS VS **EXPLICIT DISMISS**

Z-INDEX VS **TOP LAYER**

With z-index, you can stack elements on top of each other.

The element that is first in the DOM is painted first, each subsequent element on top of the previous and

With z-index, you can stack elements on top of each other.

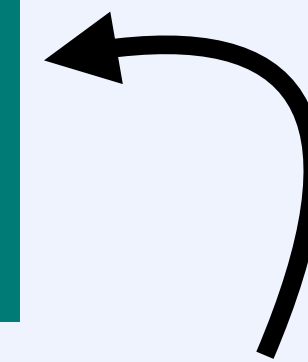
The element that is first in the DOM is painted first, each subsequent element on top of the previous and

```
z-index: 1;
```

With z-index, you can stack elements on top of each other.

The element that is first in the DOM is painted first, each subsequent element on top of the previous and

The element that is first in the DOM is painted first, each subsequent element on top of the previous and



```
z-index: 2;
```


The *top layer* is above everything else, its own layer above the main document

drafts.csswg.org/css-position-4/#top-layer

The element that is first in the DOM is painted first, each subsequent element on top of the previous and

The element that is first in the DOM is painted first, each subsequent element on top of the previous and

The *top layer* is above everything else, its own layer above the main document

drafts.csswg.org/css-position-4/#top-layer



Layered based on order of top layer addition, not z-index

drafts.csswg.org/css-position-4/#top-layer

The element that
is first in the DOM
is painted first,
each subsequent
element on top of
the previous and

The element that
is first in the DOM
is painted first,
each subsequent
element on top of
the previous and

top layer, top
layer, top layer,
top layer, top
layer, top layer

Layered based on order of top layer addition, not z-index

drafts.csswg.org/css-position-4/#top-layer

The element that
is first in the DOM
is painted first,
each subsequent
element on top
of the previous

The element that
is first in the DOM
is painted first,
each subsequent
element on top
of the previous

top layer, top
layer, top layer,
top layer, top
layer

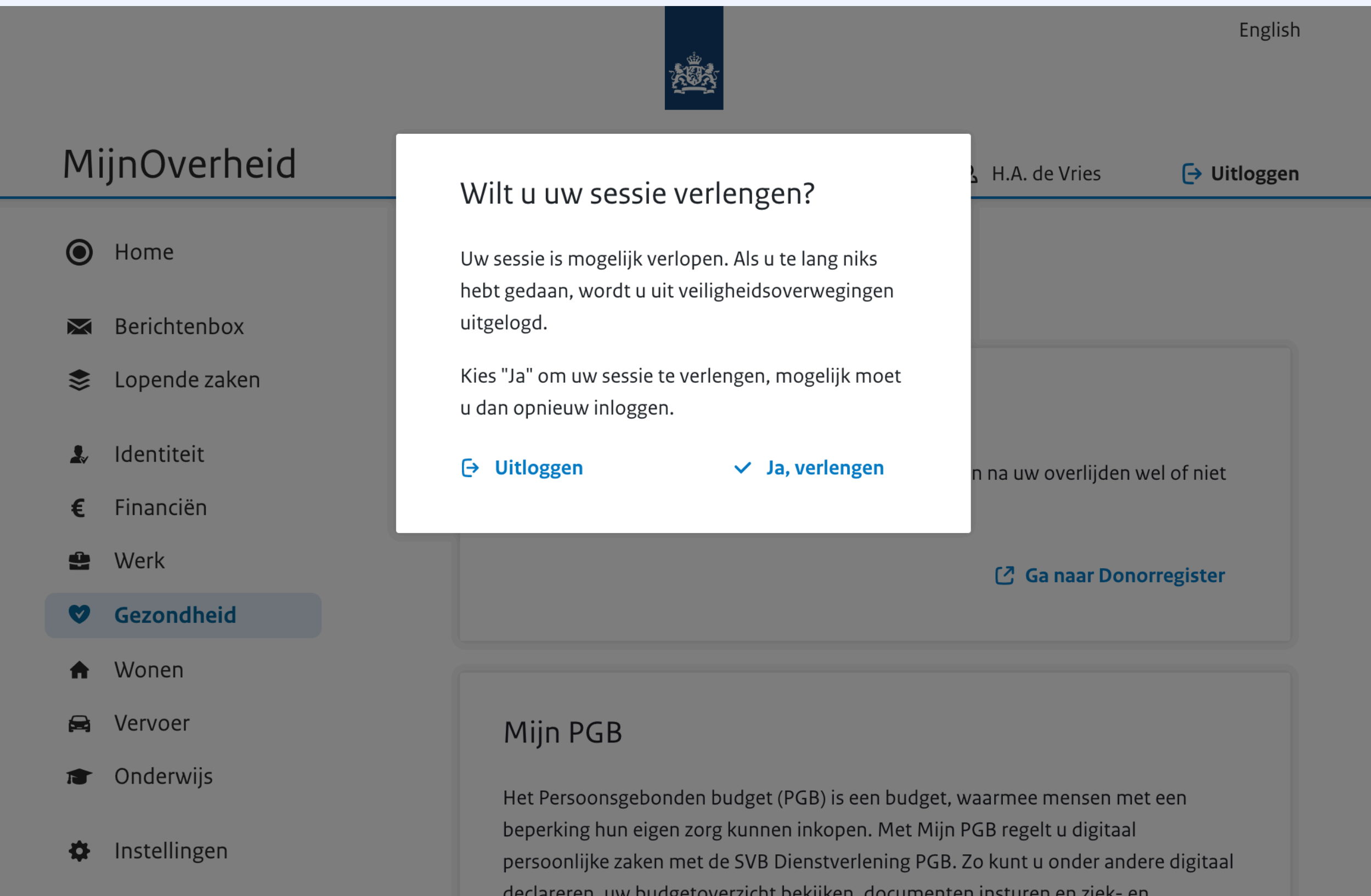
also top layer,
also top layer,
also top layer,
also top layer,

MODAL VS **NON-MODAL**

LIGHT DISMISS VS **EXPLICIT DISMISS**

Z-INDEX VS **TOP LAYER**

BACKDROP



Sometimes elements
have a backdrop.

Top layer elements
have a built-in
styleable backdrop
(`::backdrop`)

MODAL VS **NON-MODAL**

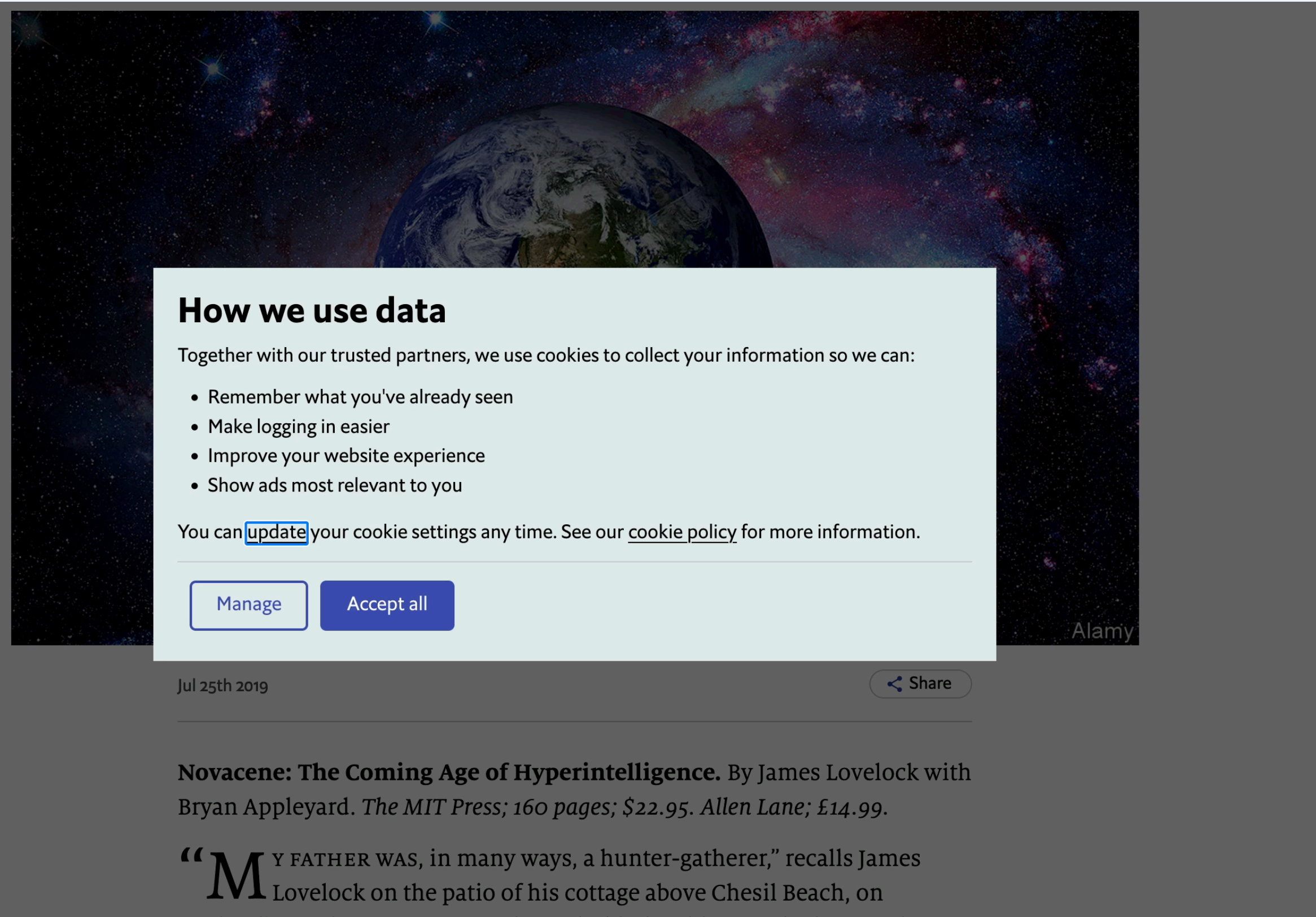
LIGHT DISMISS VS **EXPLICIT DISMISS**

Z-INDEX VS **TOP LAYER**

BACKDROP

KEYBOARD FOCUS TRAP

KEYBOARD FOCUS TRAP



Sometimes you want to prevent users from exiting a component with their Tab key.

This is *always* temporary.

MODAL VS **NON-MODAL**

LIGHT DISMISS VS **EXPLICIT DISMISS**

Z-INDEX VS **TOP LAYER**

BACKDROP

KEYBOARD FOCUS TRAP

MODAL VS NON-MODAL

`<dialog>` with
`showModal()`

VS

`<dialog>`
with `show()`

popover

BACKDROP

KEYBOARD FOCUS TRAP

MODAL VS NON-MODAL

LIGHT DISMISS VS EXPLICIT DISMISS

popover="auto"

popover="manual"

any <dialog>

BACKDROP

KEYBOARD FOCUS TRAP

MODAL VS NON-MODAL

popover

<dialog>
with show()

VS

<dialog> with
showModal()

DISMISS

Z-INDEX VS TOP LAYER

BACKDROP

KEYBOARD FOCUS TRAP

MODAL VS NO

browser provided
w/ `::backdrop`

LIGHT DISMISS VS EX

popover

consider if modal
<dialog> not better

Z-INDEX VS TO

<dialog> with
`showModal()`

BACKDROP

KEYBOARD FOCUS TRAP

MODAL VS NO

browser provided
w/ `::backdrop`

LIGHT DISMISS VS EX

popover

consider if modal
<dialog> not better

Z-INDEX VS TO

<dialog> with
`showModal()`

BACKDROP

KEYBOARD FOCUS TRAP

MODAL VS NON-MODAL

LIGHT DISMISS VS EXPLICIT DISMISS

Z-INDEX VS TOP

browser provided

BACKGROUND

`<dialog>` with
`showModal()`

KEYBOARD FOCUS TRAP

SEMANTICS

“What is this thing?”

— philosophers



“What is this thing in
this page/app?”

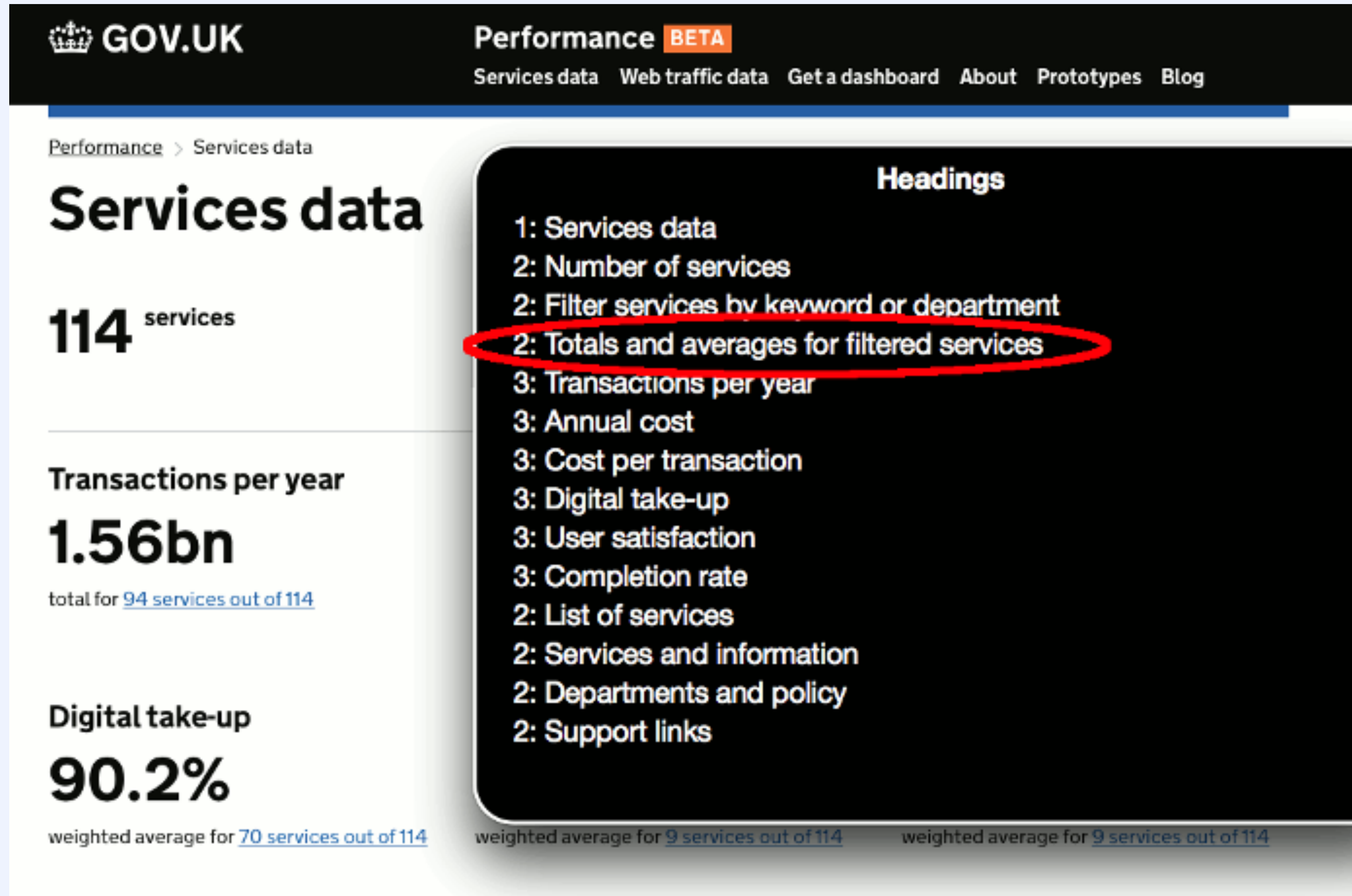
—web developers

```
<h1>
```

heading

<h1>

heading



GOV.UK Performance **BETA**
Services data Web traffic data Get a dashboard About Prototypes Blog

Performance > Services data

Services data

114 services

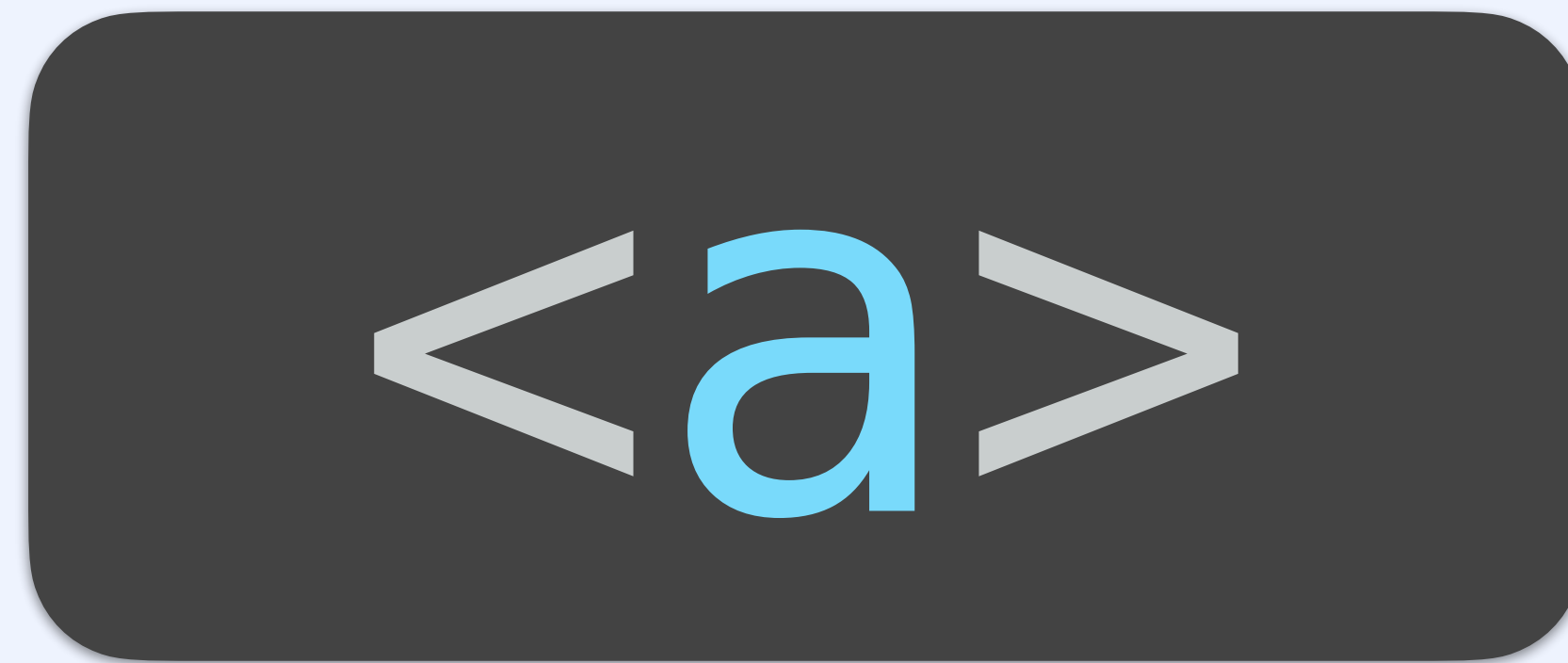
Transactions per year
1.56bn
total for [94 services out of 114](#)

Digital take-up
90.2%
weighted average for [70 services out of 114](#)

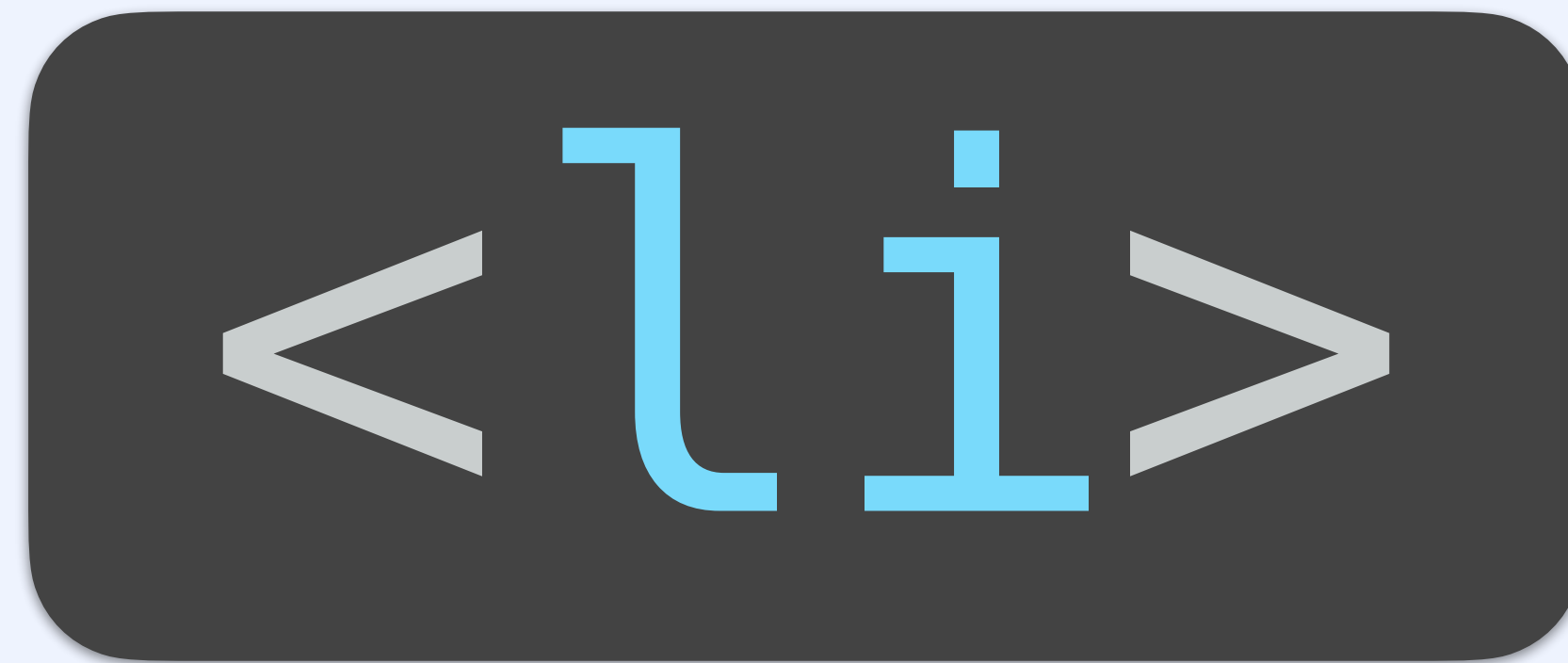
Headings

- 1: Services data
- 2: Number of services
- 2: Filter services by keyword or department
- 2: Totals and averages for filtered services**
- 3: Transactions per year
- 3: Annual cost
- 3: Cost per transaction
- 3: Digital take-up
- 3: User satisfaction
- 3: Completion rate
- 2: List of services
- 2: Services and information
- 2: Departments and policy
- 2: Support links

weighted average for [9 services out of 114](#) weighted average for [9 services out of 114](#)



link



list item

```
<dialog>
```

dialog

```
<div>
```

[no role]


```
<div role="link">
```

link

```
<div popover>
```

[no role]

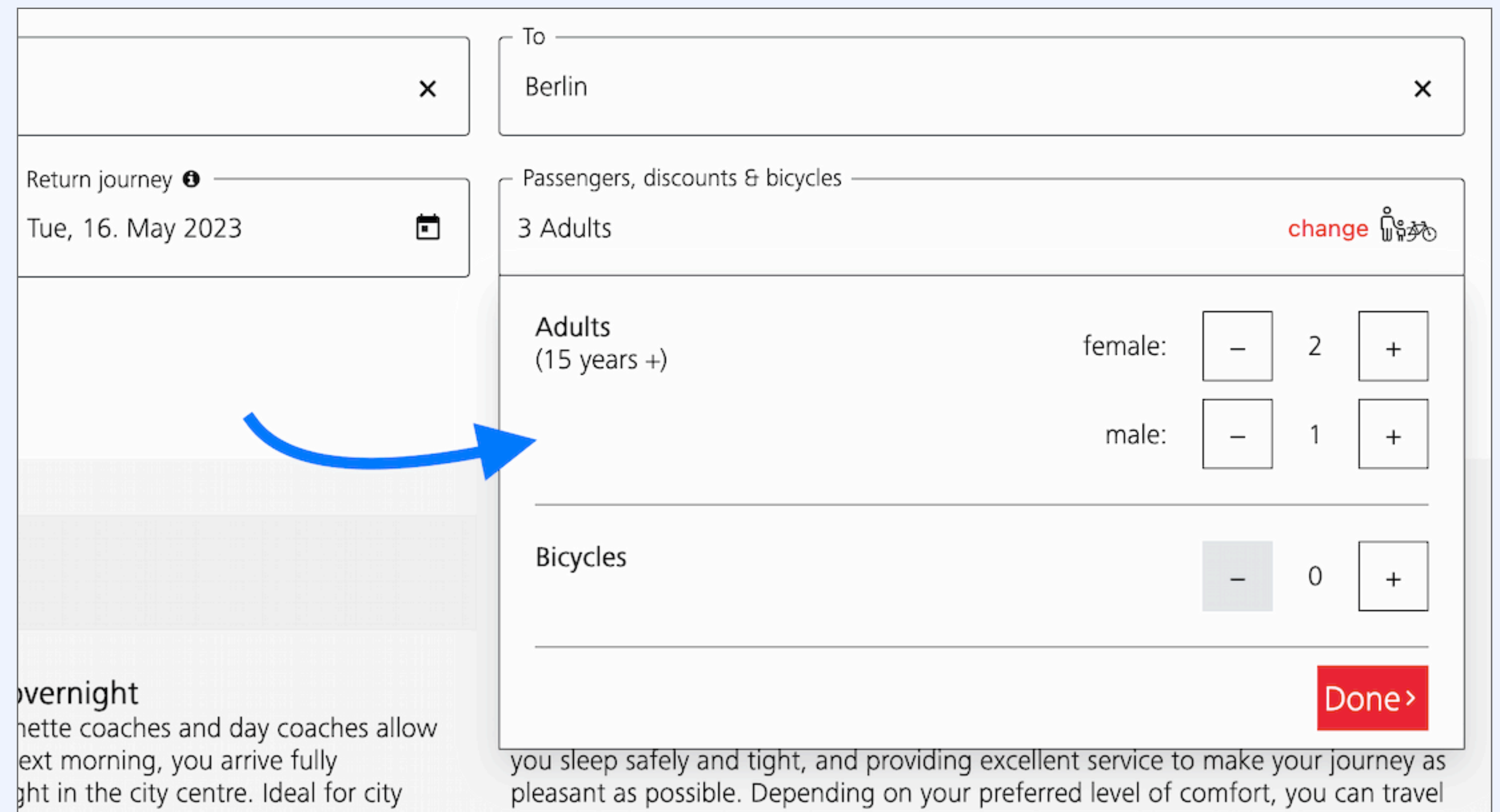
The popover attribute adds
behaviour, not semantics

(you choose a role based on the situation)

For components that are like a smaller window / subwindow on top of the main page

DIALOGS

`<dialog>` or
`role="dialog"`



The image shows a screenshot of a travel booking interface. A dialog box is open, displaying various options for a journey. The dialog has a title bar with a close button (x). The main content area is divided into several sections:

- To:** Berlin (with a close button x)
- Return journey:** Tue, 16. May 2023 (with a calendar icon)
- Passengers, discounts & bicycles:** 3 Adults (with a "change" link and icons for passengers and bicycles)
- Adults (15 years +):** female: 2 (with - and + buttons), male: 1 (with - and + buttons)
- Bicycles:** 0 (with - and + buttons)
- Done >** (a red button)

A blue arrow points from the left side of the dialog to the "Adults" section. The background of the main page is partially visible, showing text about "overnight" travel options.

For components that are like a smaller window / subwindow on top of the main page

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That is just one of his many contributions to the search for life on other planets. In 1970, he analyzed the atmosphere in the 1970s, and his nomination to Britain's Royal Society for chemistry and physics—all because he is best known (it is named after Gaia,

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OK

Delock honed a method to find and quantify CFCs in the harmful chemicals. After a decade of work in biology, he is best known for his theory for which he is best known (it is named after Gaia,



Discover

Travel information

Customer service

Business Agents site In het Nederlands

Search

Log in

Disruptions and maintenance (9)



✓ **Number 1 in the Netherlands**
Compare European train journeys

✓ **Great deals**
No hidden costs

✓ **24/7 NS service**
Reliable and personal

This summer to France?

Book Thalys and TGV

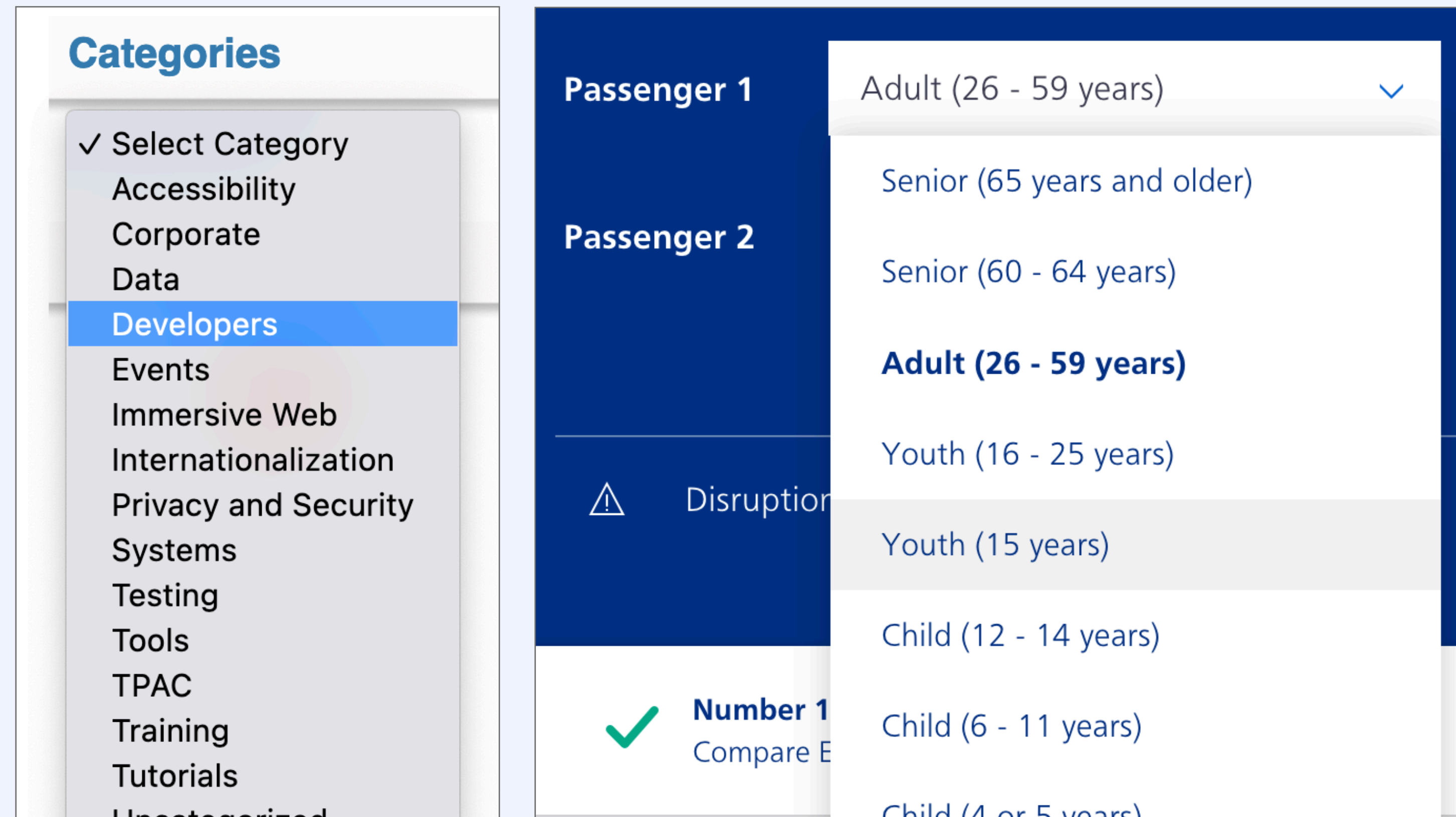
Our holiday tips

Top destinations

For components that let the user choose from a list, the listbox wraps the choices

LISTBOX

`role="listbox"`



Transfer



Country of the bank of the recipient

Netherlands



Amount

1,337.00

Currency

EUR (Euro)

USD (United States dollar)

PLN (Polish zloty)

CHF (Swiss franc)

SEK (Swedish krona)

Recipient's name



LISTBOX

role="listbox"

LISTBOX

role="listbox"

Hyde's concerts & books

Manage contents

- Book
- Concert

listbox

Search: je|

Artist + Add filter Clear filters

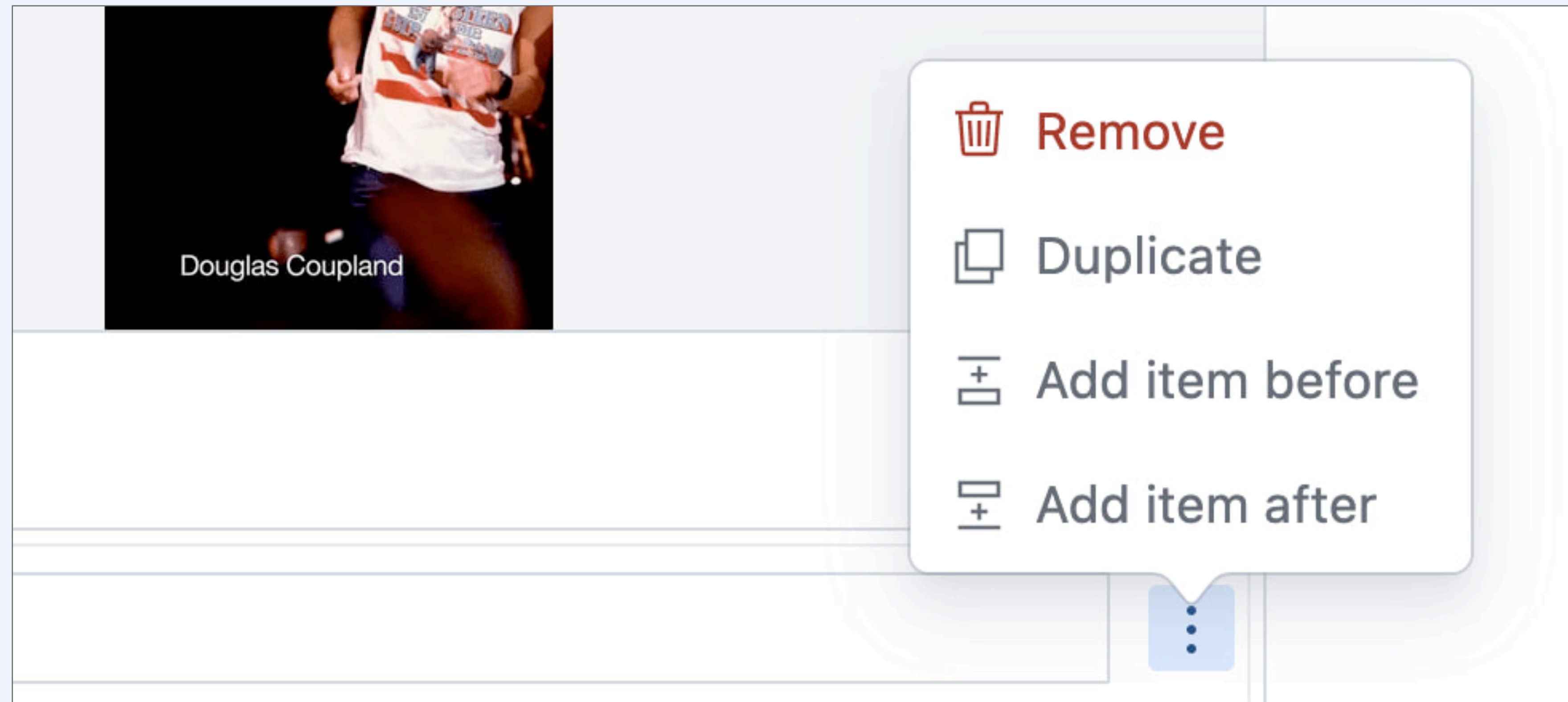
Best match

Jeff Mills	ARTIST
Jeff Neve	ARTIST
De Jeugd van Tegenwoordig	ARTIST
Oscar Jerome	ARTIST

For components that offer the user a list of choices that are actions (like in an application).

MENUS

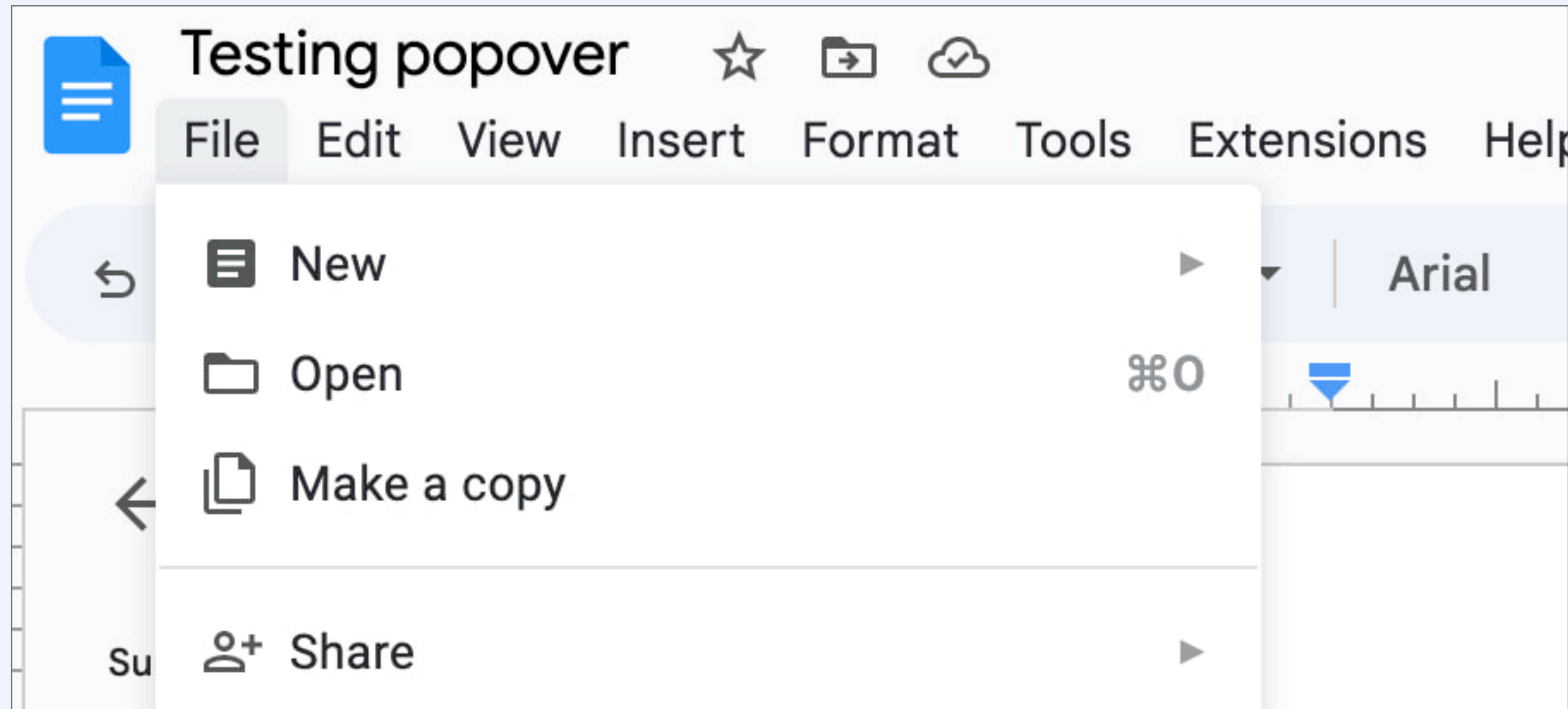
`role="menu"`



For components that offer the user a list of choices that are actions (like in an *application*).

MENUS

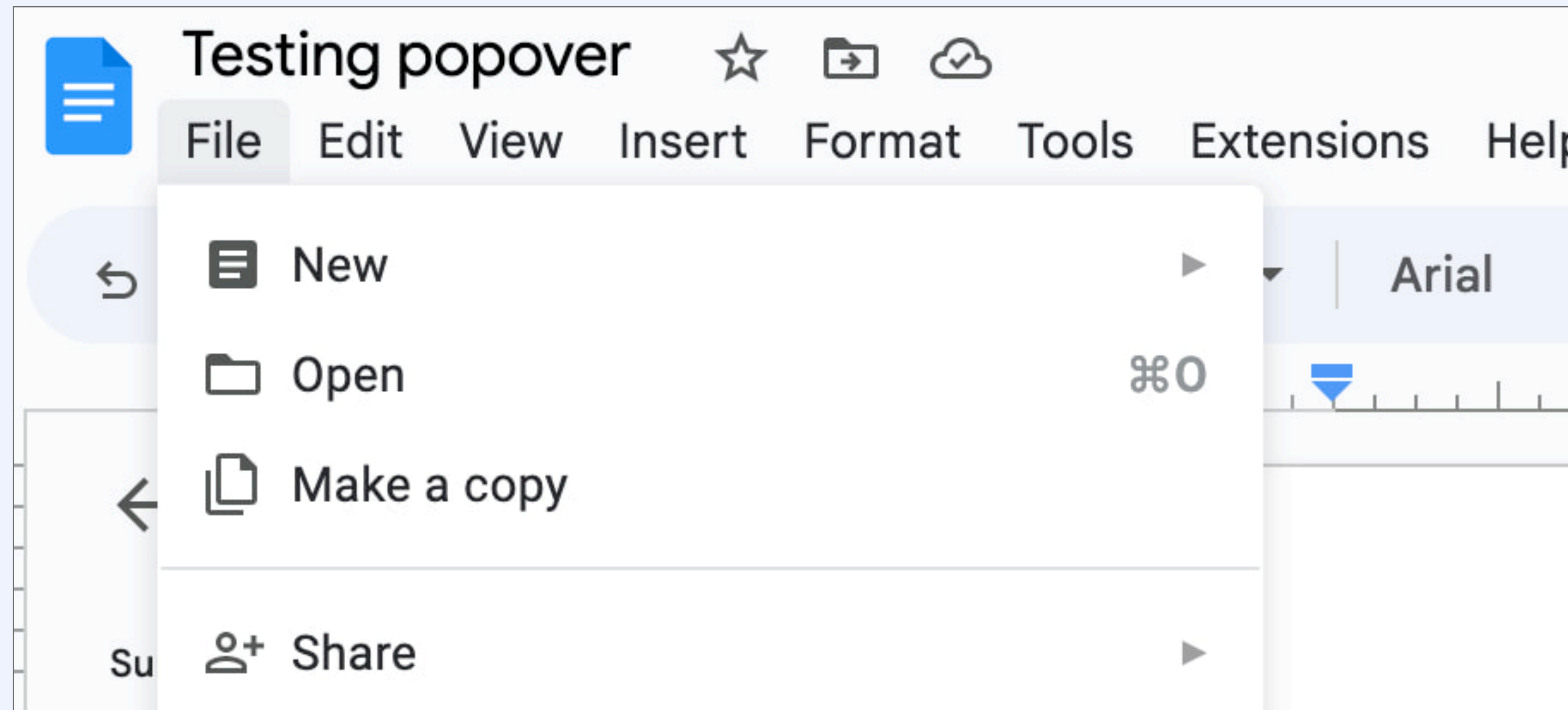
`role="menu"`



For components that offer the user a list of choices that are actions (like in an *application*).

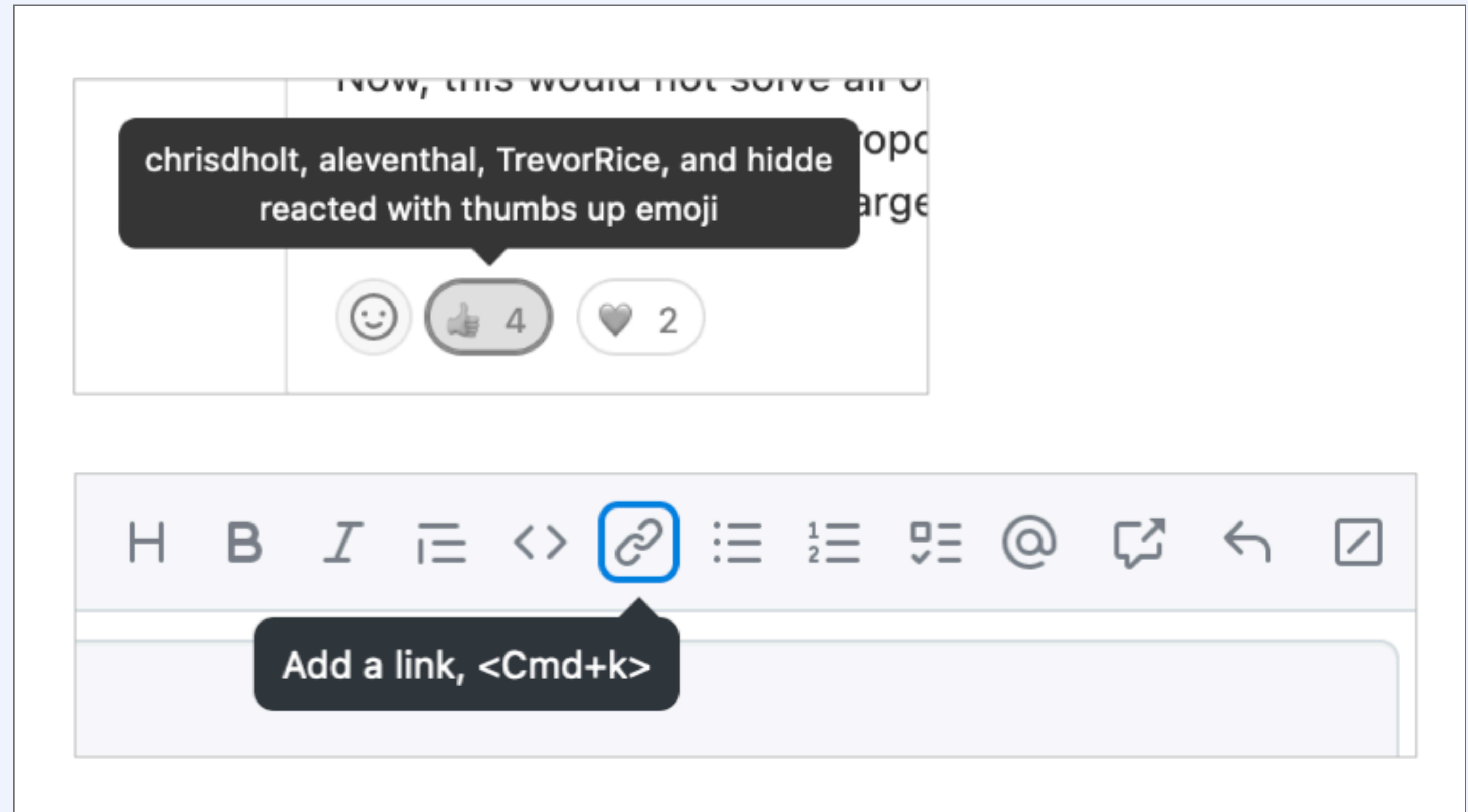
MENUS

`role="menu"`



Plain text suggestions

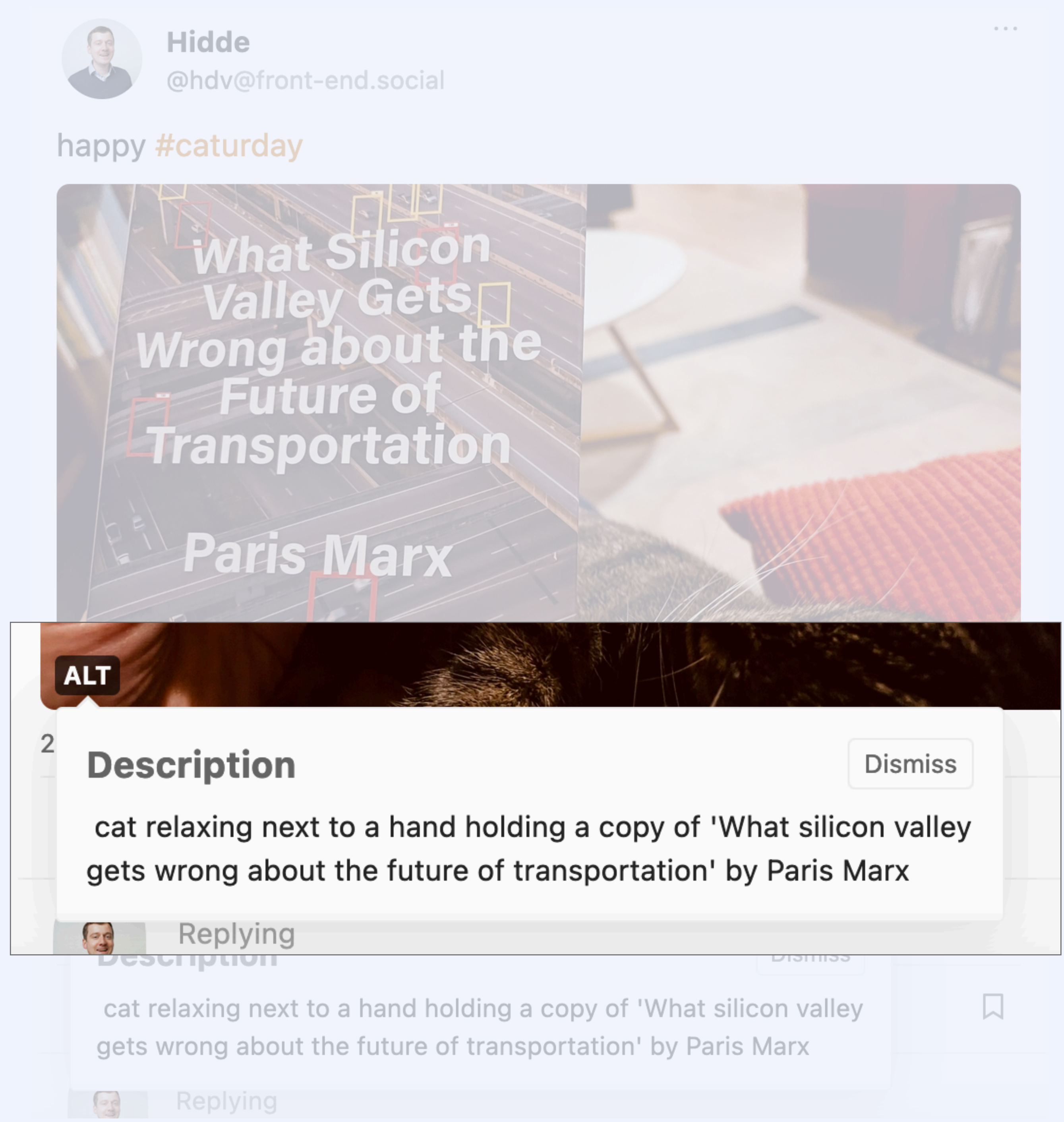
TOOLTIPS
role="tooltip"



TOOLTIPS

`role="dialog"`

More than plain text, maybe better as toggletips



DIALOGS

`<dialog>` or
`role="dialog"`

MENUS

`role="menu"`

TOOLTIPS

`role="tooltip"`
`role="dialog"`

SEMANTICS

`<dialog>`

dialog (implicit)

`popover`

it depends. You choose an apt role,
could be **dialog**, **listbox**, **menu** or **tooltip**

POSITIONING

`<dialog>` `popover`
with `showModal()`

Both are *centered*
by default

popover

You may want to anchor
popover to its invoker, but only
one of them is in the top layer

POPOVER POSITIONING

Option 1: calculate (yourself or with a library)

```
// book-list.njk
...
<script type="module">
  import { computePosition } from 'https://cdn.jsdelivr.net/npm/@floating-ui/dom@1.2.9/+esm';

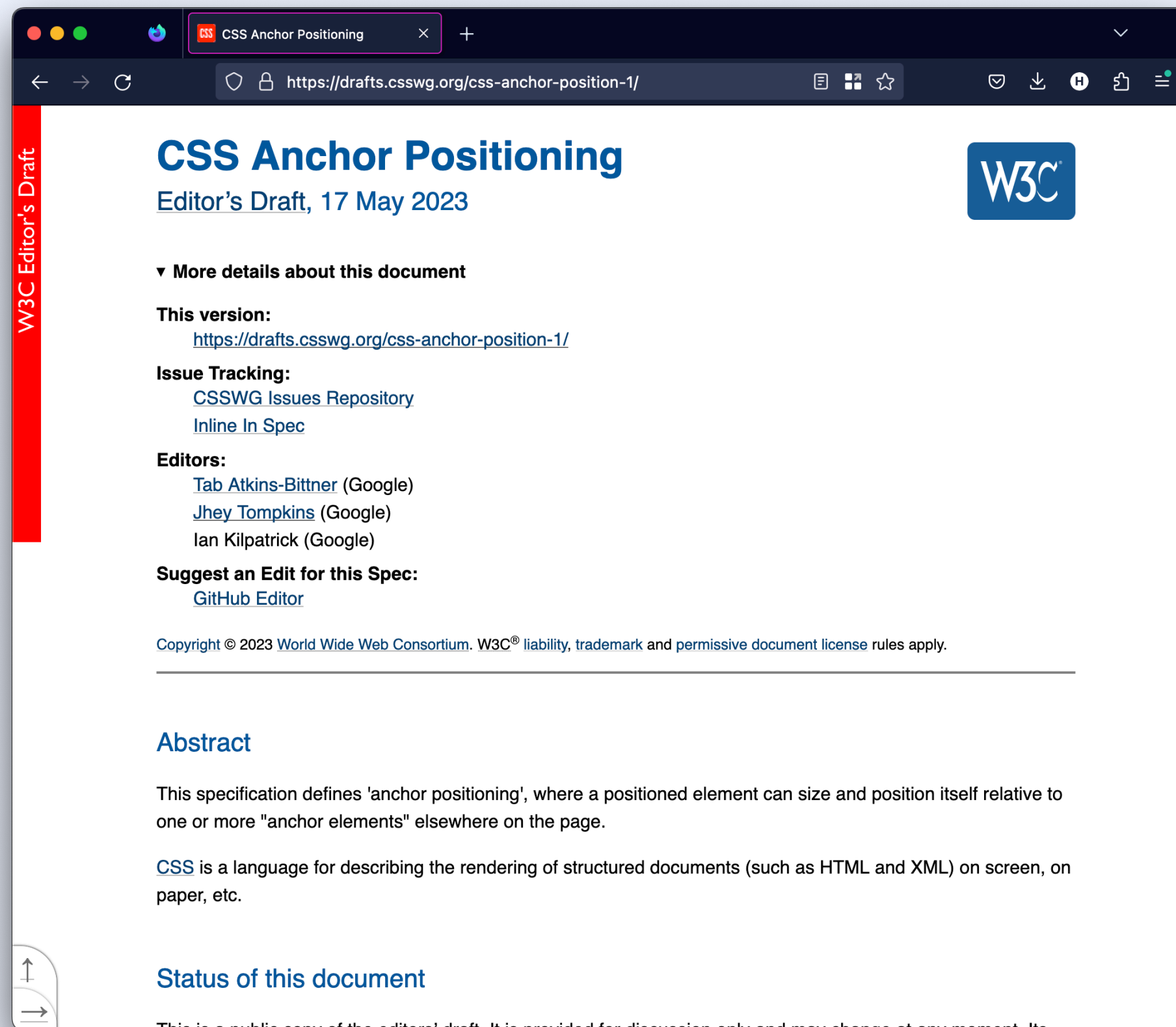
  const popover = document.querySelector('[popover]');

  popover.addEventListener('toggle', function(e) {
    const invoker = document.querySelector(`[popovertarget="${popover.getAttribute('id')}"]`);

    if (e.newState === 'open') {
      computePosition(invoker, popover).then(({x, y}) => {
        Object.assign(popover.style, {
          left: `${x}px`,
          top: `${y}px`,
        });
      });
    }
  });
</script>
```

POPOVER POSITIONING

Option 2: anchor positioning



drafts.csswg.org/css-anchor-position-1



kizu.dev/anchor-positioning-experiments/



Published 4 MONTHS AGO in [web platform](#)

Positioning anchored popovers

Popovers are commonly positioned relative to their invoker (if they have one). When we use [the popover attribute](#), anchoring is tricky, as these popovers are in the top layer, away from the context of their invoker. What options do we have?

Basically, there are two ways to position popovers: one you can use today and one that will be available in the future. I'll detail them below, but first, let's look at why we can't use absolute positioning relative to a container

WRAPPING UP

<dialog>

HTML element with wide browser support and (as of 1.0) accessibility support

UI considerations

Semantics

popover

New attribute / API in HTML, v1 supported in Chrome stable, coming to other browsers too

@hdv@front-end.social

`<dialog>` and popover can reduce
your JS bundle

<dialog> and popover can reduce
your JS bundle

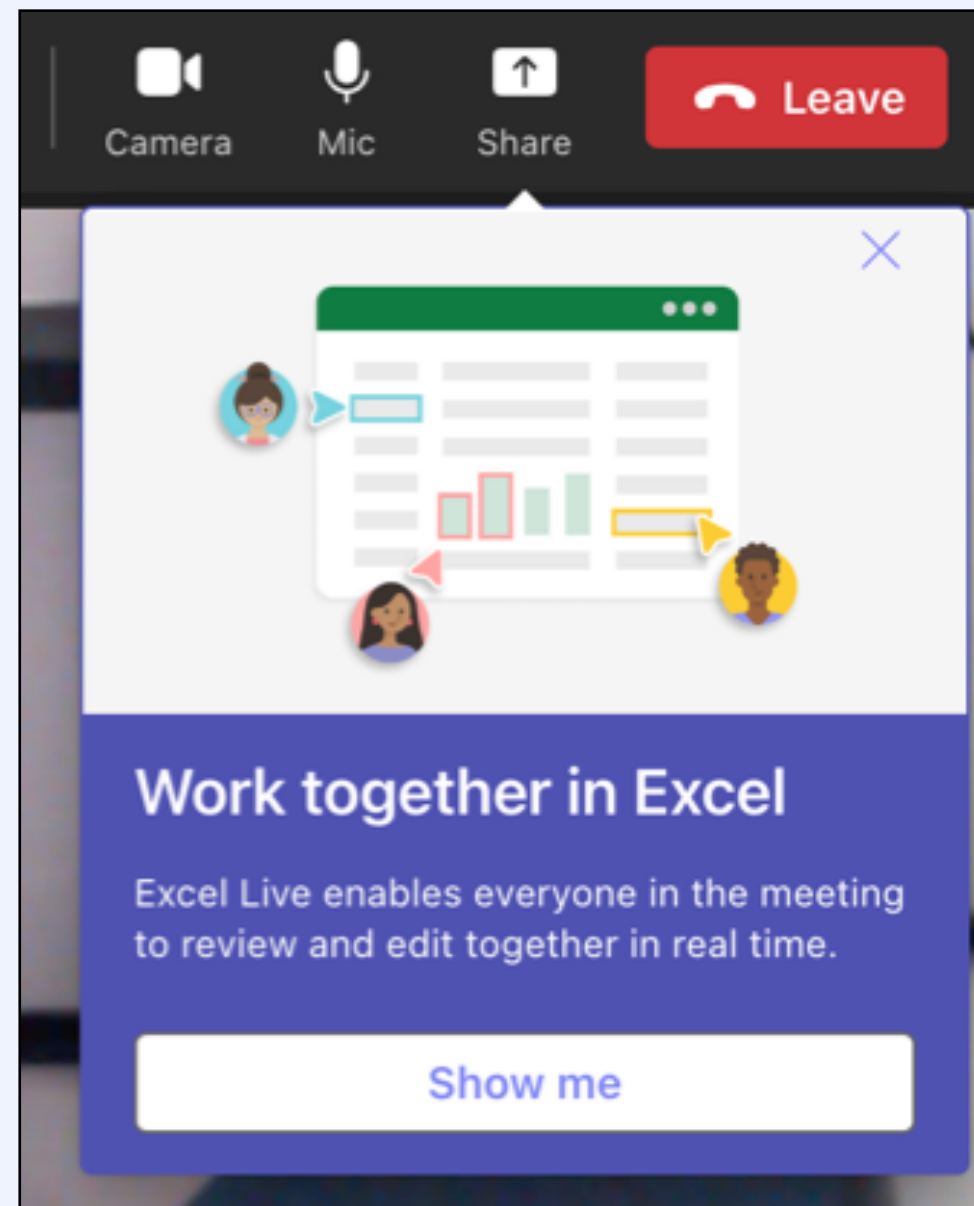
The popover attribute adds
behaviour, not semantics

<dialog> and popover can reduce
your JS bundle

The popover attribute adds
behaviour, not semantics

Popover and dialog w/ showModal()
uniquely show in the **top layer**

<dialog> and popover can reduce
your JS bundle



the popover attribute adds
behaviour, not semantics

er and dialog w/ showModal()
quely show in the **top layer**

Don't use popovers to cross sell
your products :-)

**THANK
YOU!**

Questions

@hdv on most platforms

Slides/resources

talks.hiddedevries.nl

Thanks

Scott O'Hara, Adrian Roselli, Jhey Tompkins