CSS CONF

The path of bringing `:focus-visible` to WebKit

Manuel Rego

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About Me

- **Igalia** Web Platform Team
- **Web engines hacker** working on Chromium/Blink and Safari/WebKit
- **CSS Working Group** member since 2017

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Introduction

The Problem

Click me!

```
:focus {
  outline: none;
}
```

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The Problem

Click me!

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The Solution

```
:focus-visible
```

Spec

The ***`:focus-visible`*** *pseudo-class applies while an element* ***matches the*** ***`:focus`*** ***pseudo-class*** *and the* ***user agent determines*** *via heuristics* ***that the focus should be made evident*** *on the element.*

”

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While the `:focus` pseudo-class always matches the currently-focused element, ***UAs only sometimes visibly indicate focus*** *(such as by drawing a "focus ring"), instead using a variety of heuristics to visibly indicate the focus only when it would be most helpful to the user. The `:focus-visible` pseudo-class matches a focused element in these situations only,* ***allowing authors to change the appearance of the focus indicator without changing when a focus indicator appears****.*

”

Heuristics

*If the element which **supports keyboard input**, indicate focus.*

”

Basically any `<input>`, `<textarea>` or `contenteditable` element.

This is a text area.

What happens with

`<select>` or

`<input type="date">`

on **mobile**?

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*If the user **interacts with the page via keyboard**, indicate focus.*

”

Everyone agrees here,

keyboard navigation should always show a focus ring.

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*If the user **interacts with the page via a pointing device**, do **not** indicate focus.*

”

This is the key part.

When you click on a `<button>` or `<div tabindex=0>` you do **not want to see a focus ring**, only when you tab navigate.

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Default UA Stylesheet

*User agents should also use `:focus-visible` to specify the **default focus style**, so that authors using `:focus-visible` will not also need to disable the default `:focus` style.*

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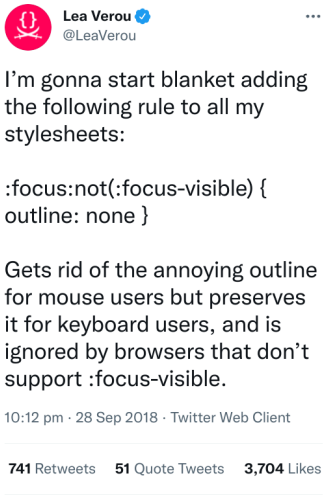

https://twitter.com/LeaVerou/status/1045768279753666560

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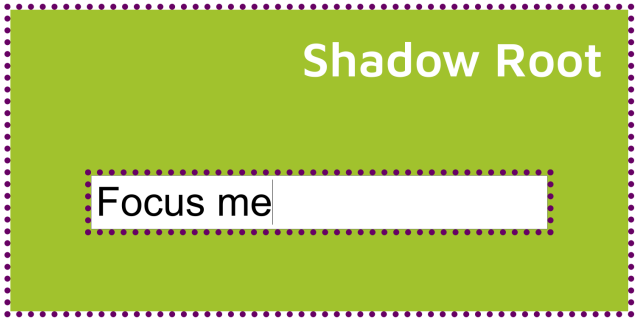
:-internal-direct-focus

WebKit uses `:-internal-direct-focus` in the default UA stylesheet (**not web exposed**).

It uses this to **avoid showing a double focus ring**, when you focus something in a Shadow DOM tree.



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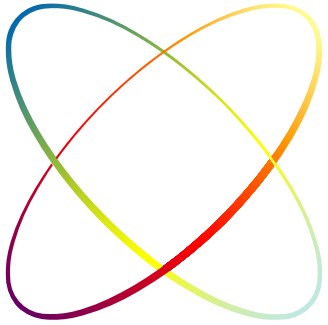
Open Prioritization



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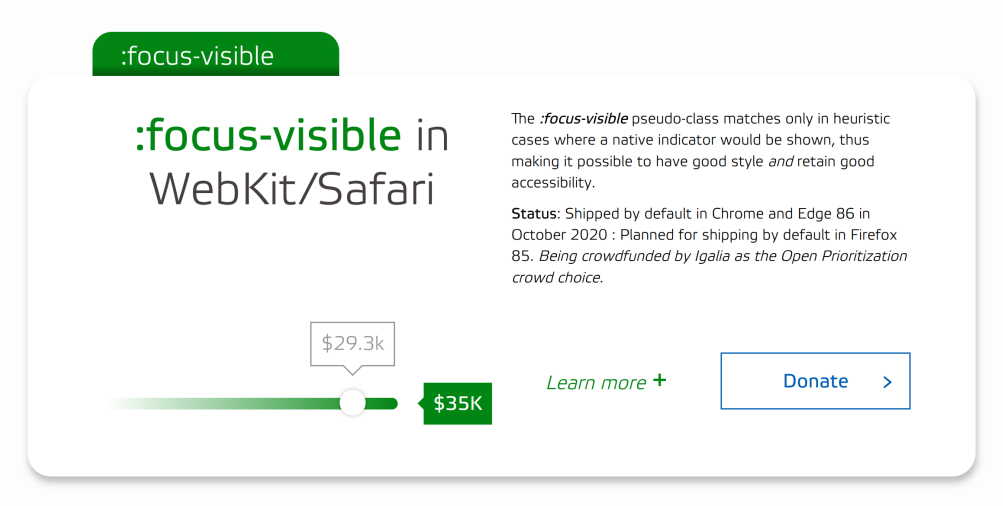
An experiment in crowd-funding prioritization of new feature implementations for web browsers.

”

https://www.igalia.com/open-prioritization/



https://opencollective.com/focus-visible-in-webkit

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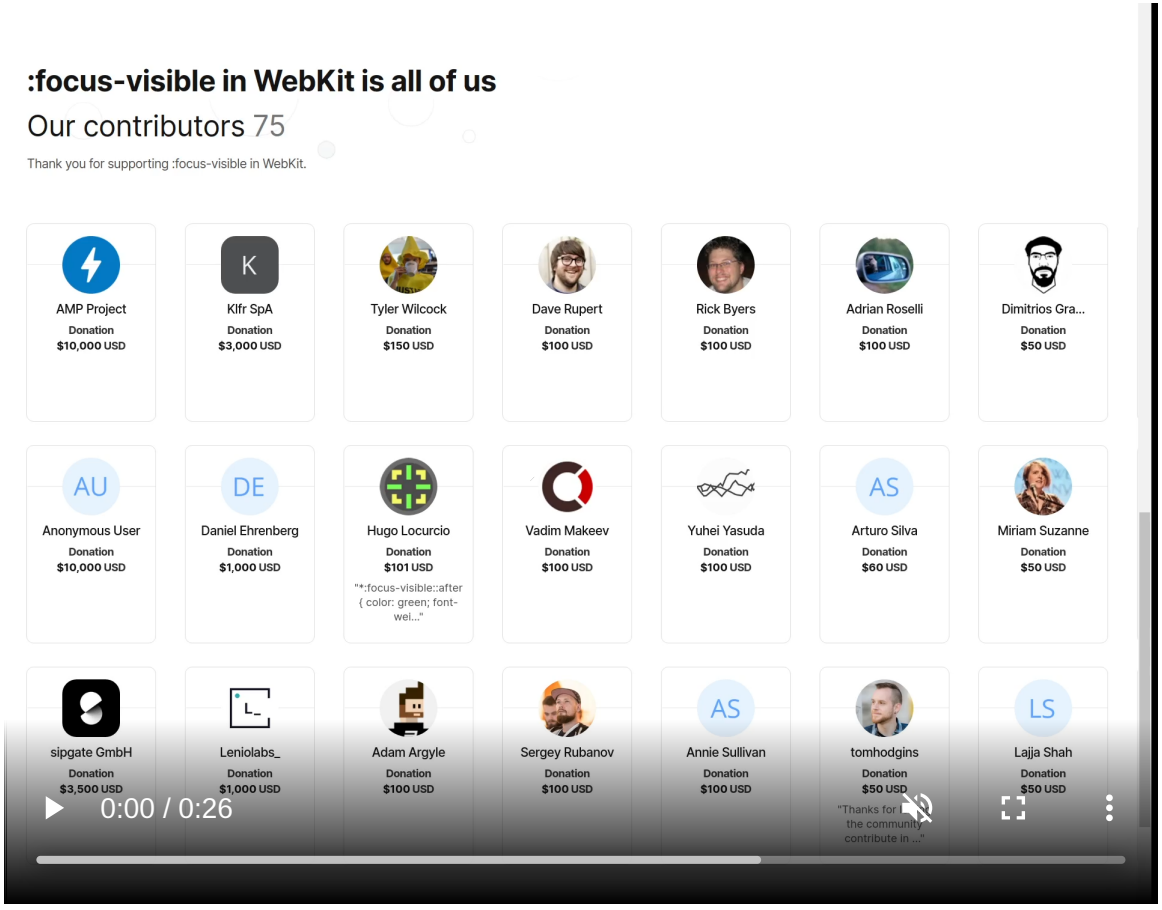
75 Contributors



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Work Done

Implementation

- From January to May 2021.
- Monthly reports on my blog: **https://blogs.igalia.com/mrego/**.
- WebKit implementation ready behind a runtime flag (not shipped yet).
- Passing all tests, some slight differences depending on the platform.

Develop > Experimental Features > :focus-visible pseudo-class

27 patches

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27 patches

26 patches

WebKit

27 patches

WPT

26 patches

Chromium

9 patches

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WebKit

27 patches

WPT

26 patches

Chromium

9 patches

Specs

3 patches

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UA Stylesheet Status

January 2021: Nobody was using `:focus-visible` in the default UA stylesheet.

May 2021: Chromium and Firefox started using `:focus-visible` in the default UA stylesheet.

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Web Platform Tests (WPT)

- The tests were not in a good shape.
- Fixed tests, added new tests, ended up with **~40 tests**.
- Tests use **WebDriver** (added missing bits in WebKit).

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Path	Chrome 97 Linux 20.04 d9da580 Nov 4, 2021	Edge 97 Windows 10.0 d9da580 Nov 4, 2021	Firefox 96 Linux 20.04 d9da580 Nov 4, 2021	Safari 125 preview macOS 10.15 d9da580 Nov 4, 2021
focus-visible-001.html	2 / 2	2 / 2	2 / 2	1 / 2
focus-visible-002.html	15 / 15	15 / 15	15 / 15	1 / 15
focus-visible-003.html	13 / 13	13 / 13	13 / 13	0 / 13
focus-visible-004.html	11 / 11	11 / 11	11 / 11	0 / 11
focus-visible-005.html	2 / 2	2 / 2	2 / 2	1 / 2
focus-visible-006.html	2 / 2	2 / 2	2 / 2	1 / 2
focus-visible-007.html	2 / 2	2 / 2	1 / 2	1 / 2

https://wpt.fyi/results/css/selectors/

Next Steps

Goal

Ship `:focus-visible` in WebKit (Safari)

Platform Conventions

- **Buttons are not click focusable** on Mac platforms.
- Thus buttons are not click focusable in Safari.
- Apple wants to be sure that `:focus-visible` changes are aligned with the platform conventions.

https://webkit.org/b/22261 (2008)

Examples

- Apple engineers were reluctant to hide the focus ring on click on `<div tabindex=0>`.
- Perhaps one possibility would be to hide the focus ring on click on `<div tabindex=0 role=button>`.
- How this affects user interaction (e.g. scrolling with spacebar) if focus ring is not visible?

https://github.com/WICG/focus-visible/issues/257

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Status

- Apple showed interested on `:focus-visible` at the **WebKit Contributors Meeting** (Sep 2021).
- Conversations are still ongoing, latest updates have been positive.
- **Interoperability** might weight in.

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Proposal?

- A **new HTML attribute** to identify an element that is **keyboard focusable but not mouse focusable**.
- This will allow to mimic Mac platform conventions regarding focus.

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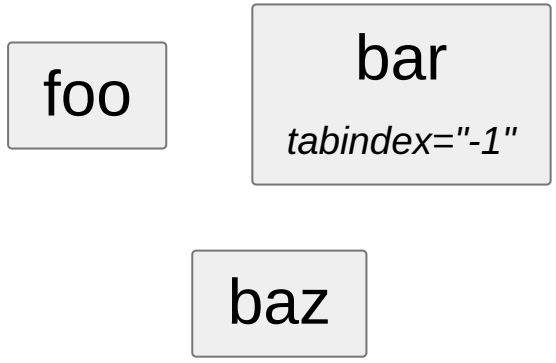
`tabindex="-1"` already allows to make an element **not keyboard focusable**.



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Today is not possible to make an element **keyboard focusable but not mouse focusable**.

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The Boy, the Mole, the Fox and the Horse by Charlie Mackesy

Thanks!

Email: rego@igalia.com Twitter: @regocas

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