과학기술정보통신부
nipa 정보통신산업진흥원
National IT Industry Promotion Agency
2021
공개SW
페스티벌
ONLINE FESTIVAL

2021 공개SW 페스티벌 ONLINE FESTIVAL

개발자와 함께 성장하는 오픈소스

브라우저 개발자의 Chromium Contribution

소속 : Igalia
이름 : 김정은

과학기술정보통신부 nipa 정보통신산업진흥원 National IT Industry Promotion Agency

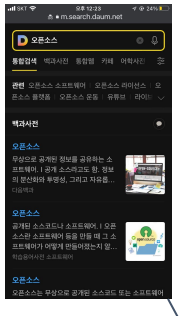
Browser

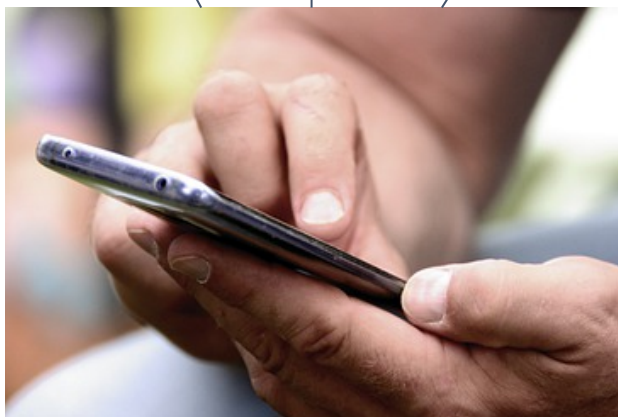
Chromium

Browser Developer?

Contribution

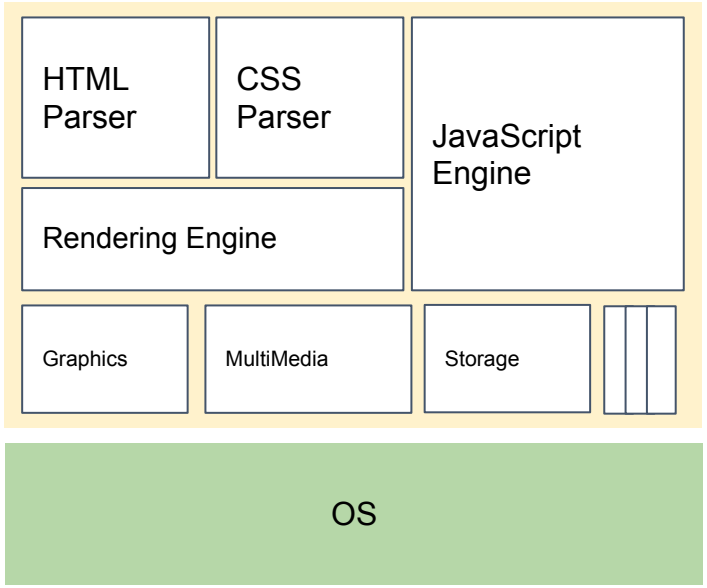
Web Pages





HTML	<input id="query" name="query" type="text" title="검색어 입력" maxlength="255" class="input_text" tabindex="1" accesskey="s" style="ime-mode:active;" autocomplete="off" placeholder="검색어를 입력해 주세요." onclick="document.getElementById('fbm').value=1;" value="" data-atcmp-element> </button>
CSS	<style> :root{color-scheme:light} A{display:none} </style>
Java Script	<script src="https://xxxxxxxx" type="text/javascript" ></script>

Browser



Open sources for Web Browsers

Chromium

WebKit

FireFox

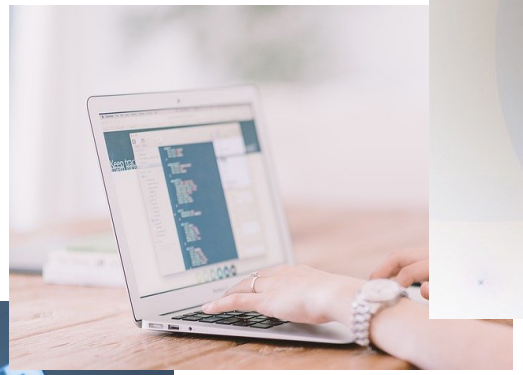
Chrome

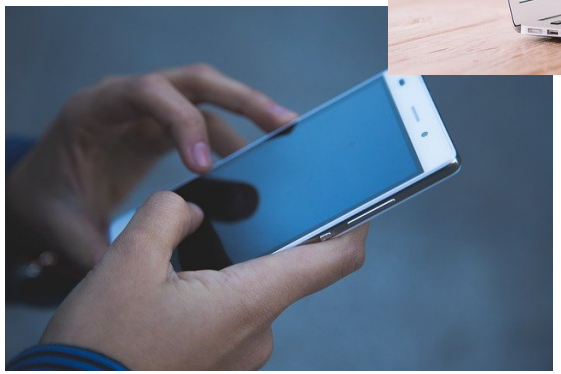
Edge

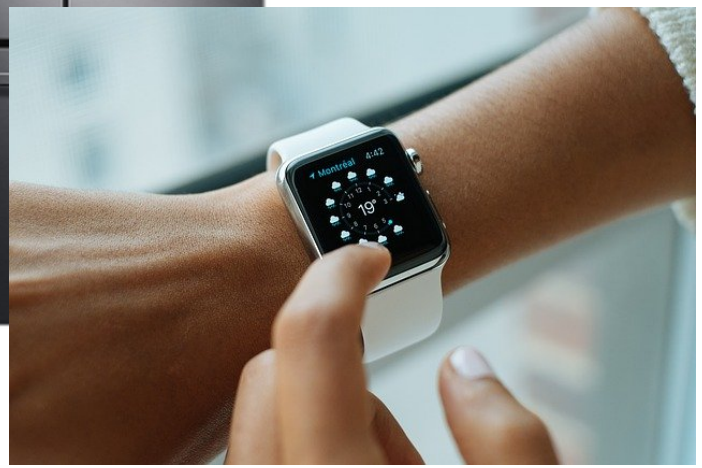
Safari

Commercialized Browser products

Where the Web browsers are used







Chromium

- https://www.chromium.org/
- Chromium is an open-source browser project that aims to build a safer, faster, and more stable way for all users to experience the web.
- “Principally developed and maintained by Google. Google uses the code to make its Chrome web browser, which has additional features.” from https://en.wikipedia.org/wiki/Chromium_(web_browser)
- 3-clause BSD license

Chromium Contribution

- Get the code
  - https://www.chromium.org/developers/how-tos/get-the-code
- A 64-bit intel machine with at least 8GB of RAM. More than 16GB is highly recommended.
- Compile time:
  - 5 hrs (16GB Memory, Intel® Core™ i7-7820HQ CPU @ 2.90GHz × 8, Ubuntu 20.04.3 LTS)
    - ICECC: A Distributed Compiler
    - GOMA: A distributed compiler service for open-source project
- Contributing to Chromium
  - https://chromium.googlesource.com/chromium/src/+/refs/heads/main/docs/contributing.md

Chromium Community

- Chromium.org
- Technical discussion groups:
  - https://www.chromium.org/developers/technical-discussion-groups
    - chromium-dev: https://groups.google.com/a/chromium.org/g/chromium-dev
    - blink-dev: https://groups.google.com/a/chromium.org/g/blink-dev
- Become a committer:
  - “Technically, a committer is someone who has write access to the Chromium src Git repository. A committer can submit their own patches or patches from others.”
  - https://www.chromium.org/getting-involved/become-a-committer
- Getting a @chromium.org email address
  - je_julie.kim@chromium.org

Igalia

20 YEARS OPEN

- A worked-owned cooperative of people in over 20 countries, over 100 people
- Headquartered in Spain, Igalia has become a global company based in Asia, Europe, Oceania and the Americas.

Igalia (Cont.)

- Building and advocating for healthy ecosystems around Free and OpenSource Software(FLOSS)
- Browsers are main areas of work (Layout, Graphics, Multimedia, etc)
- JavaScript Engines, Graphics Drivers, Multimedia libraries are also active areas of work
- Active participants in several standard organizations (e.g. TC39, W3C)
- Active Contributors for Web Engines (Chromium, WebKit, Servo)

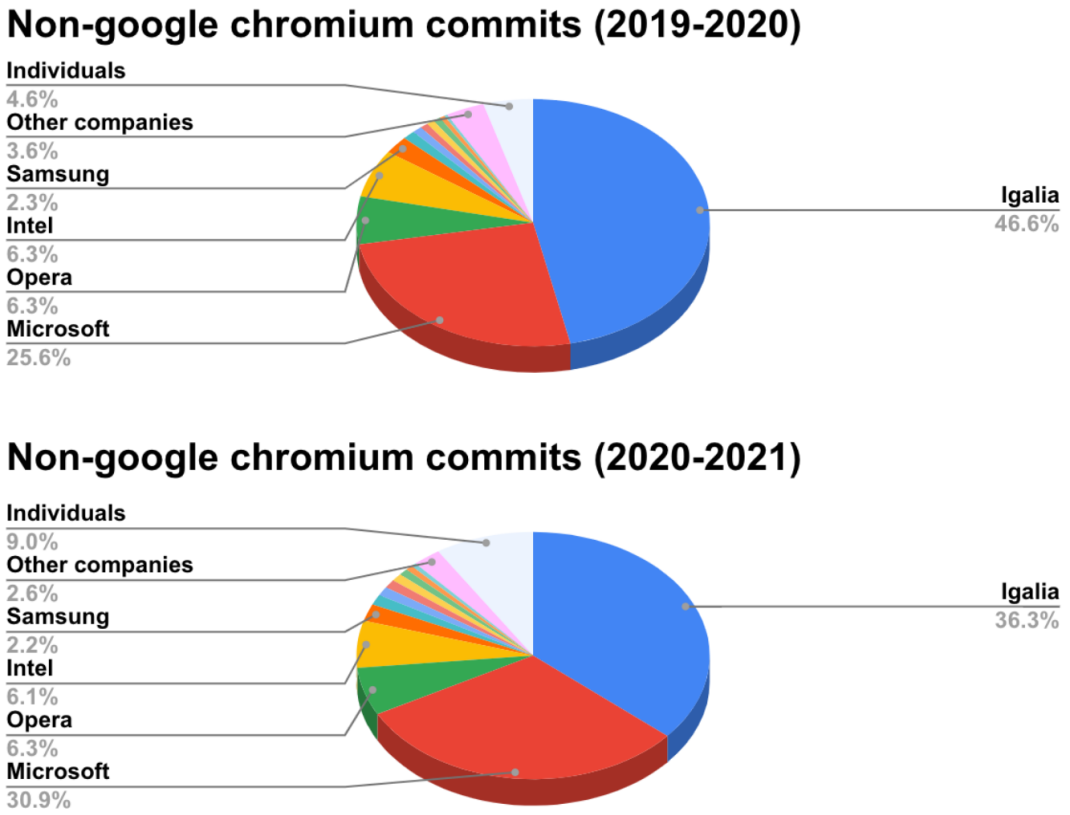
History

- 2001: Igalia is found
- 2003: Releases Fisterra, an opensource ERP solution build with GNOME technology
- 2008: First steps to consolidates as the leading WebKit consultancy
- 2010: Becomes a member of the Linux Foundation and a patron of the Free Software Foundation
- 2014: Becomes a leading contributor to Mesa3D and QEMU
- 2017: Begins to co-chair the W3C's ARIA Working Group and ECMA Javascript TC39 group. Igalia's work on CSS Grid Layout is publicly released.
- 2019: Becomes top contributors in all 3 browser engines for consecutive years, develops MathML-Core prototype in Chromium downstream
- 2020: Joins MDN Product Advisory Board, begins Igalia Chats podcast.
- 2021: Develops first collectively funded Web Platform features

Top Non-Google Contributor

Chromium

BlinkOn 14



Chromium

Igalia

Since Nov 5, 2020:

1081 CLs from 34 contributors

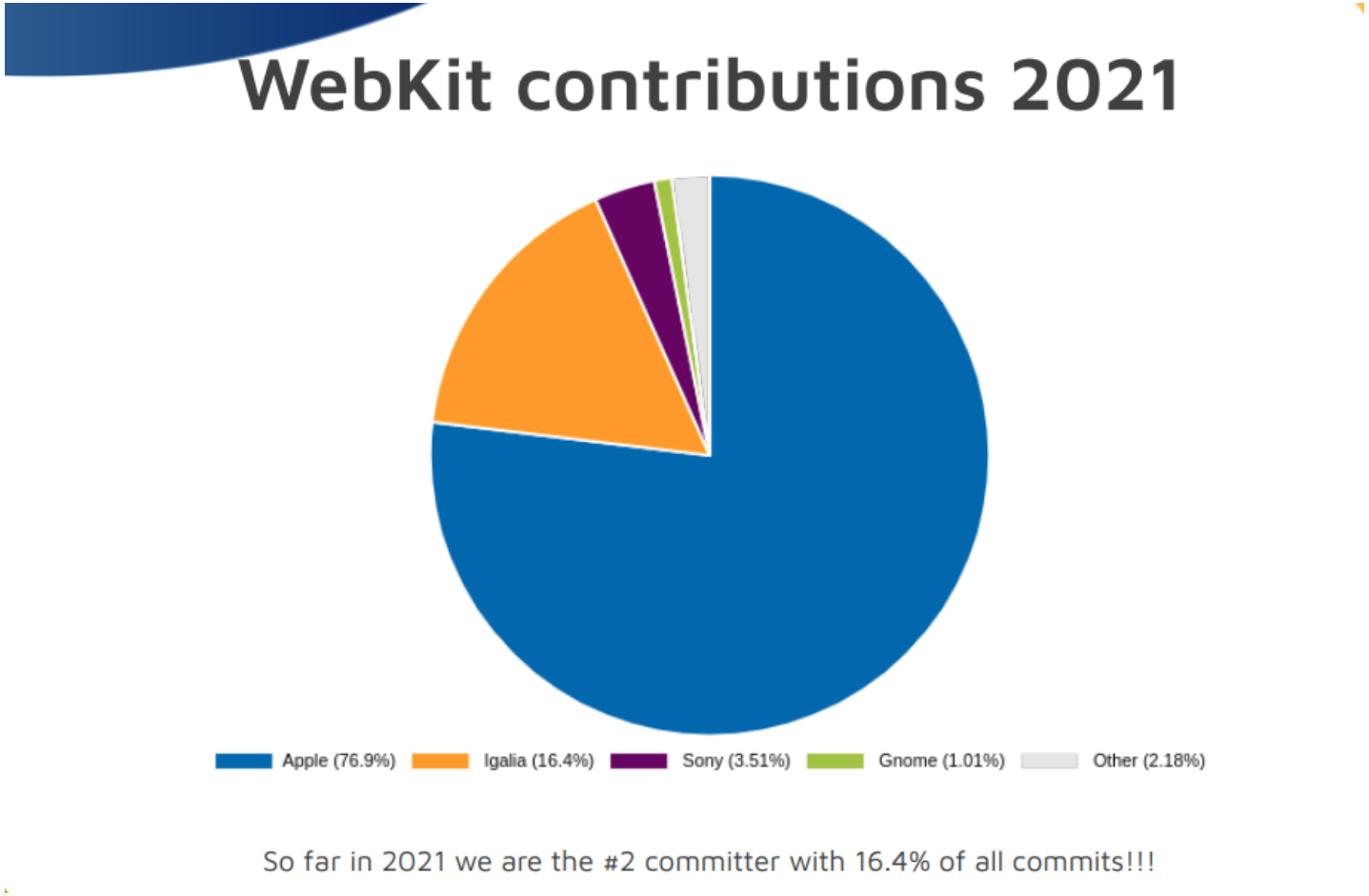
(Chromium, ANGLE, WPT etc)

- CSS improvements
- JS Private methods / Class fields
- MathML
- Protocol Handlers improvements
- Onion Soup
- Accessibility
- Container Queries
- CSS: flow-relative, :focus-visible, spelling & grammar feat.
- Ozone/Wayland
- Open Prioritization

https://docs.google.com/presentation/d/1WxwbecNNXp_5v0yUDR3EolXR5m86siHj4_QWgPnJ7lU/edit#slide=id.gd3ed2042b9_4_179

Top Non-Apple Contributor

WebKit



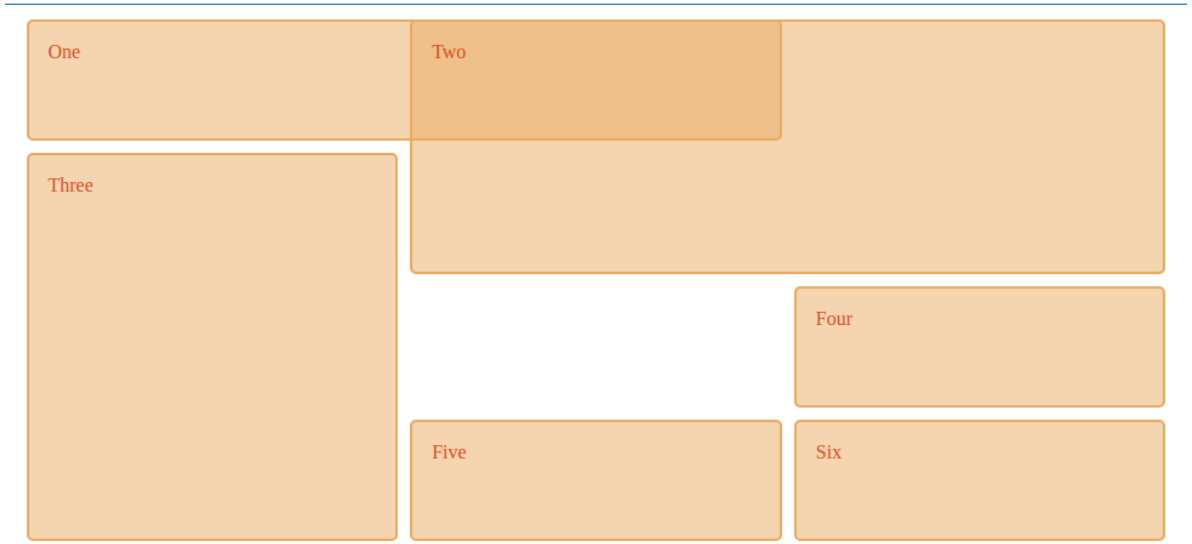
CSS Grid Layout

HTML

```html
<div class="wrapper">
  <div class="one">One</div>
  <div class="two">Two</div>
  <div class="three">Three</div>
  <div class="four">Four</div>
  <div class="five">Five</div>
  <div class="six">Six</div>
</div>
```

CSS

```css
.wrapper {
  display: grid;
  grid-template-columns: repeat(3, 1fr);
  grid-gap: 10px;
  grid-auto-rows: minmax(100px, auto);
}
.one {
  grid-column: 1 / 3;
  grid-row: 1;
}
.two {
  grid-column: 2 / 4;
  grid-row: 1 / 3;
}
.three {
  grid-column: 1;
  grid-row: 2 / 5;
}
.four {
  grid-column: 3;
  grid-row: 3;
}
.five {
  grid-column: 2;
  grid-row: 4;
}
.six {
  grid-column: 3;
  grid-row: 4;
}
```



- Bloomberg funded
- Worked on the standard (W3C CSS Grid Layout Module)
- Implement all engines (WebKit, Chromium, and Mozilla)

:has() CSS pseudo-class

Matching <a> elements that directly contain an <img>

The following selector matches only `<a>` elements that directly contain an `<img>` child:

```
a:has(> img)
```

https://developer.mozilla.org/en-US/docs/Web/CSS/:has

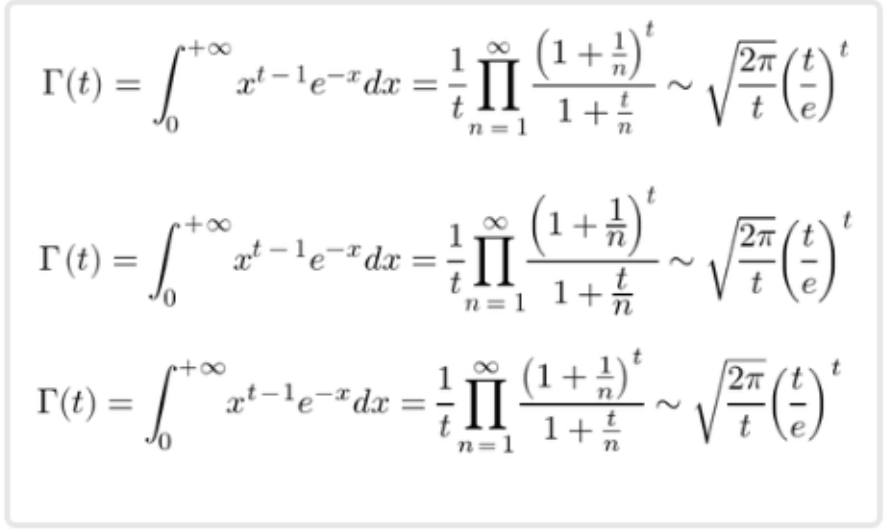
- EyeO funded
- Igalia proposed and implemented it in Chromium community.
  - https://www.chromestatus.com/feature/5794378545102848

WPE WebKit port

- Designed with performance, small footprint, accelerated content rendering, and simplicity of embedding in mind
- Widely used in embedded
- ¾ of our WebKit-related income comes from embedded industries
- There are billions of embedded devices and growing
- We are able to upstream many improvements to the wider WebKit community thanks to interest in this port from our business partners.

MathML

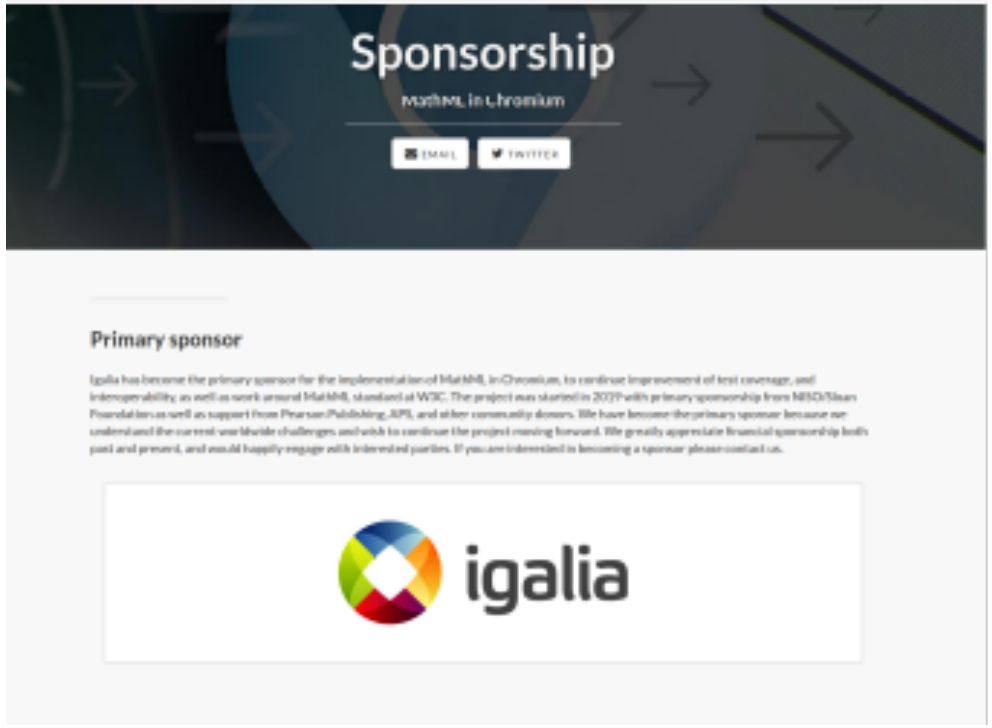
- A W3C standard for mathematical and scientific content, already included in ISO/IEC, HTML5, ebook and office formats
- Implemented in the open source web engines used by Firefox (Gecko) and Safari (WebKit)
- One of the most requested web platform features in Google Chrome (using Chromium) and Microsoft Edge (switching to Chromium)
- Igalia brought our expertise in both standardization and implementation to lead the specification work and provide both the final implementation in Chromium



From top to bottom: MathML formula rendered by Chromium (Igalia's build), Safari and Firefox

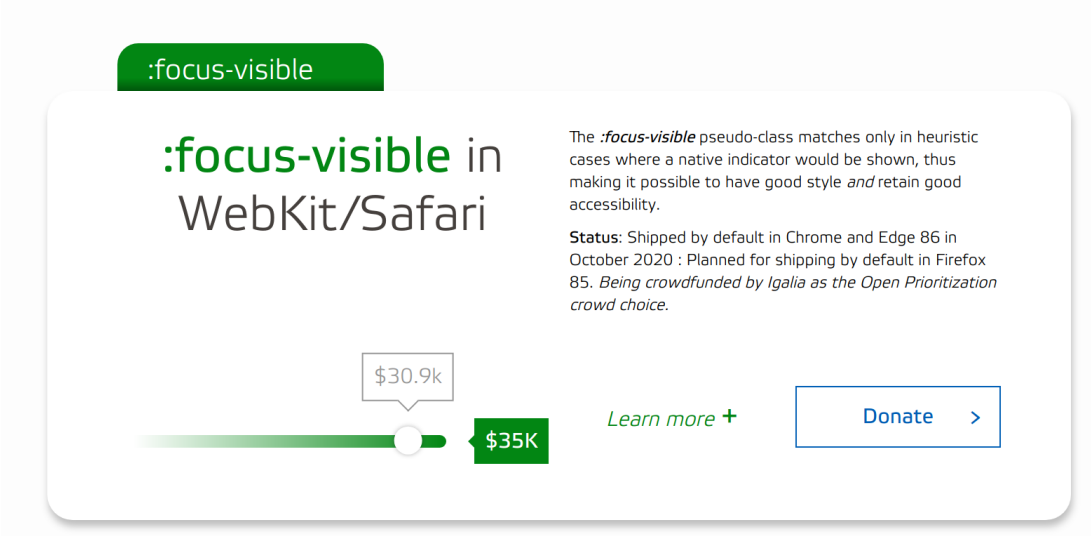
MathML

- Seeking sponsors



Open Prioritization

- An experiment in crowd-funding prioritization of new feature implementations for web browsers.
- Homepage: https://www.igalia.com/open-prioritization/
- Video: https://youtu.be/xCRxNVbUqhk



igalia

References

- https://www.chromium.org
- BlinkOn 14 KeyNote
- Igalia 2021/2022 Updates and Plans
- MDN CSS Grid Layout
- Igaia Open Prioritization

감사합니다

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