Open
Web Advocacy

OWA - Break Google’s Search Monopoly without Breaking the Web

VERSION 1.0

Open Web Advocacy
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2. About Open Web Advocacy

Open Web Advocacy (OWA) is an independent non-profit dedicated to promoting fair competition in both browsers and web apps. We receive no funding from browser vendors, search engine providers, or any companies involved in this case, nor do we advocate on their behalf. Our work is focused entirely on defending the interests of consumers, developers, and the open web.

Our interest in this case is driven by concern over the potential unintended consequences of some of the DOJ's proposed remedies, and the broader impact these measures could have on the health of the web and the millions of developers and billions of consumers who rely upon it.

2.1. Key Takeaways (TL;DR)

Web platform *(noun)*: The technology and tools that let websites and web apps work in your browser.

Top 10 Key Takeaways:

1. DOJ wants to force Google to sell Chrome and ban search engine revenue share deals with other browser vendors, **resulting in a 70% drop in funding for the web platform**

2. Progress in new web features could stagnate, and the performance, stability of the existing web could deteriorate, risking its viability.

3. We estimate ending the **Apple-Google deal alone could cut Google's U.S. search share by 23–32%**

4. **Mozilla could go bankrupt, killing Gecko**, one of just 3 major browser engines.

5. Most Chromium-based browsers rely on Google's funding to function.

6. The open web supports **trillions in economic value** and it's mostly free to use.

7. The impact will likely fall hardest on small U.S. e-commerce businesses that depend on the open web to compete.

8. DOJ can reduce Google's market share below 50% without destroying browser funding.

9. New Chrome owner is likely to **gut web platform funding** to hit **short-term profit targets.**

10. **If the web is dealt this critical blow, users will be pushed over to Apple's and Google's closed ecosystems.**

3. Introduction

In late 2020, the U.S. Department of Justice (DOJ), in conjunction with state attorneys general representing 11 states, brought a landmark antitrust case against Google for unlawfully maintaining a monopoly in the general search engine market. In August 2024, Judge Mehta ruled in favor of the DOJ, declaring unequivocally that **"Google is a monopolist, and it has acted as one to maintain its monopoly"**.

We believe this ruling was correct, necessary, and that the DOJ's case is compelling.

The DOJ has proposed an extensive list of remedies aimed at restoring competitive conditions in the market for general search engines in the United States. The vast majority of the numerous remedies the DOJ has proposed seem reasonable and proportionate. But amidst this sweeping package, **two key remedies in particular have the potential to cause significant, severe, and sustained collateral damage to the web platform.**

They are:

- A total ban on search engine revenue sharing deals between browser vendors and Google.

- A forced sale of Chrome by Google (and barring Google from re-entering the browser market for 10 years).

We fully understand the rationale behind prohibiting search engine revenue-sharing agreements and support the DOJ's decision to cancel the Apple-Google search deal, which undermines iOS browser competition and, with a possibly 98.5% profit margin, channels only a minimal share of its value into web platform development. However, we are concerned about the unintended consequences this approach may have on smaller browsers, particularly Mozilla. **Stripping Google of, at most, an additional 1.15%, and likely only 0.74%, of U.S. search traffic does not justify the risk of bankrupting a key contributor to the open web ecosystem.**

Mozilla plays a uniquely valuable role in the internet ecosystem as a non-profit committed to an open, secure, and user-centric internet. Despite its modest market share, Mozilla has a large influence on web standards, holding equal footing with Google and Apple in governance bodies like the W3C TAG. Mozilla also maintains its own independent engine, Gecko, which ensures diversity in browser implementations. Gecko is one of only three engines left in major usage. Mozilla frequently serves as a crucial third implementor voice in standards discussions, offering a non-profit perspective grounded in the public interest. Removing Mozilla from this equation would do far more harm to the long-term health of

the web than any marginal competitive benefit from eliminating its Google deal, especially when other remedies are already projected to push Google's market share below 50% and the drop in Google's share from this remedy is so negligible.

Even more concerning is the likely collapse in web platform investment if Google is forced to sell Chrome. Google currently funds an estimated 90% of Chromium development. Chromium is the open-source project that powers a number of browsers including Chrome, Edge, Opera, Samsung Internet, Vivaldi, Brave, and many other smaller browsers. If Google is forced to divest Chrome and can no longer fund the project, that investment may evaporate overnight. Smaller browsers do not have the resources to fill that gap. **In total, this could result in an estimated 70% drop in funding for the web platform, a catastrophic blow to the ongoing evolution of the web. Progress in new web features could stagnate, and the performance and stability of the web platform will deteriorate.**

This in turn would harm the ability of the web to compete with the mobile app store duopoly of Apple and Google, directly undercutting the DOJ's case against Apple, and threatening recent progress by UK and EU regulators to improve competition between browsers and between web apps and native apps. Critical efforts to port both Chromium and Gecko to iOS could be abandoned entirely.

What makes the web unique is that it is not built to trap users in closed ecosystems. It is the world's only truly open and interoperable platform, one that requires no contracts with OS gatekeepers, no revenue cuts to intermediaries, and no permission from dominant platform owners. Anyone can create a website or web app without needing approval from Apple, Google, or any other gatekeeper. There are no lock-in mechanisms designed to keep users tethered to a single vendor's hardware or services. Users can switch browsers, change devices, or move between ecosystems without losing access to their data, tools, or digital lives. That level of freedom and portability simply does not exist in app store-controlled environments, where every update, transaction, and user interaction can be subject to control, censorship, or a mandatory financial cut. The web's architecture prioritizes user agency, developer freedom, and cross-platform compatibility. In short, the web is the antidote to operating system platform monopolies.

> *"Building an app, convincing users to install, and then to engage with it presents an incredibly high bar and massive friction. Major brands with established fans can achieve escape velocity, but the millions of SMBs trying to make their first sale? They stand no chance. They're operating on razor-thin margins, and the online store is the primary and predominant channel of choice because it is a one-tap destination for the potential buyer. It is also the only channel that gives them full creative control, one-tap open and permissionless discovery, and direct relationship*

> *with the customer. Continued success of the open web platform is essential to the success of all merchants, and existential for most SMBs."*
>
> Ilya Grigorik - Distinguished Engineer at Shopify

Perhaps even more troubling, the fallout wouldn't be limited to mobile. This could also harm the web on a platform it is already dominant: desktop. Over 70% of user time on desktop is spent in the browser, only possible thanks to the vast multi-year investment in web technologies over the last decade.

In trying to solve one monopoly problem, the DOJ could unintentionally harm the open web ecosystem, a sector worth trillions to the U.S. economy. Web technologies are also used in a vast array of native apps and power the code run on servers of the most high traffic applications in the world. From WebRTC to the V8 JavaScript engine that powers Node.js, the impact of this more than a billion-dollar annual investment in the web is staggering. No one truly knows what the impact of cutting this investment off will be. Certainly, all the code already written will not disappear, but new feature development will stall and severe bugs and security vulnerabilities are bound to become more frequent. This will reduce the stability that developers so desperately need, pushing them towards closed ecosystems.

Given the sheer scale of the web's usage, its role underpinning the multi-trillion dollar digital economy, the rapid pace of innovation that would be disrupted, and the weak competition on alternative platforms (such as the mobile app stores), **it is easy to predict that the resulting damage to US companies and consumers will be in the billions per year.**

We believe the DOJ can avoid this outcome. **We are optimistic that with targeted adjustments, the DOJ can achieve its goal of breaking Google's monopoly while safeguarding the web platform's funding and the vast benefits it brings so many US consumers and businesses every year, for free.** In fact, we believe that the DOJ could increase both funding and browser competition with adjustments to their existing remedies.

Given that just one of the DOJ's remedies, canceling the Apple-Google search deal, will by our estimate reduce Google's U.S. search market share **by approximately 21.8% to 30.2%**, there is a strong argument that the DOJ can succeed without resorting to remedies that risk gutting web platform funding.

We propose the following six potential targeted changes:

- Cap Google's default search deals to 50% per browser, excluding Apple, whose contract should be canceled entirely.
- Introduce a carve-out for smaller browsers.
- Mandate 90% reinvestment of Google search revenues into web platform and browser development.
- Restructure Chrome as an independent subsidiary within Alphabet.
- Limit Chrome's default search deal with Google to 50% of users and auction the remaining defaults to rival search engines.
- Enforce transparency and fair revenue share terms across all search deals.

Conservatively, we estimate these adjusted remedies would reduce Google's U.S. search market share to below 50%, the threshold for presumed monopoly power. Critically, though, rather than collapsing platform funding, these adjusted remedies would likely increase web platform investment by 150%, creating a healthier, more competitive, and more innovative internet ecosystem.

Since the primary justification for these remedies is to prevent actions that would inadvertently dismantle the funding that sustains the web platform, it is both logical and essential that they include concrete safeguards to ensure that goal is actually met. For this reason, we have proposed measures such as minimum reinvestment requirements for any revenue derived from Google search deals, so that these remedies not only avoid harm, but actively support the long-term health of the web platform.

Our goal is not to weaken the DOJ's case or shield Google. The anticompetitive behavior must be addressed, but the remedies must not destroy the very ecosystem that Google itself indexes.

The DOJ's case has the potential to unlock vast benefits, not just for search, but for the web itself. We urge both the DOJ and the court to carefully consider the ramifications of their remedies and adjust them where needed. **The web platform is too important, and too valuable, to become unnecessary collateral damage in the fight to rein in Google's search dominance.**

4. Quick Primer on the DOJ's Case

The federal antitrust case United States v. Google LLC was filed by the Department of Justice (DOJ) on October 20, 2020. The DOJ alleged that Google violated the Sherman Antitrust Act by unlawfully monopolizing the search engine market.

> *"Google has entered into a series of exclusionary agreements that collectively lock up the primary avenues through which users access search engines, and thus the internet, by requiring that Google be set as the preset default general search engine on billions of mobile devices and computers worldwide and, in many cases, prohibiting preinstallation of a competitor."*
>
> DOJ - Statement on Issuing Complaint

This lawsuit is part of a broader wave of antitrust actions by the DOJ and FTC against major tech companies, including Meta, Amazon, Apple, and another separate case targeting Google's advertising technology business.

On August 5, 2024, the DOJ won the suit when Judge Mehta ruled that Google held a monopoly in the general search services market, and had illegally used that position to maintain its monopoly.

> *"After having carefully considered and weighed the witness testimony and evidence, the court reaches the following conclusion: Google is a monopolist, and it has acted as one to maintain its monopoly."*
>
> Judge Mehta - Judgement

Following the ruling, on November 20, 2024, the DOJ released an initial proposed final judgment outlining potential remedies to address Google's monopolistic practices. The document is extensive and details numerous overlapping remedies, which will be discussed in more detail later.

The DOJ submitted its updated remedies on March 7, 2025, which coincidentally marked the one-year anniversary of the EU's Digital Markets Act coming into force.

Apple sought to join the proceedings but was decisively rejected on the grounds that it had waited nearly four years to make the request. The court also found that Google was sufficiently positioned to represent Apple's interests in the case. However, Apple was granted permission to submit an amicus brief, a filing by a non-party, intended to offer additional legal arguments or context for the court to consider.

A trial on these remedies started this monday, with a final ruling by Judge Mehta anticipated by August 2025.

However, legal experts predict the case will be appealed, likely delaying the implementation of any remedies further.

5. Did the DOJ Deserve to Win?

The core argument in the case is that Google leveraged its vast profits and dominant market position in the search engine industry to establish a series of overlapping contractual arrangements, creating significant barriers for new competitors to enter the market.

Although we are not legal experts or scholars, as technical professionals in the industry, we find the DOJ's case compelling. In our view, the ruling was well justified. While we might disagree with some individual points raised during the proceedings, it is evident that Google's practices have made it exceptionally challenging for competitors to gain a foothold in the search engine market. In our conversations with software engineers and academics, few questioned the fundamental validity of the DOJ's case.

6. What Remedies Are on the Table?

The list of remedies that the DOJ has proposed is extensive, and **it is essential to at least skim through it to grasp the scope and scale of the proposed measures.** Many of the remedies are profoundly impactful on their own. While some may not be adopted by the court, the DOJ appears to be advocating for the implementation of every remedy listed, not just a select few.

These have been abbreviated and rewritten for the purposes of readability and "brevity" but you can read the originals and updated remedies. In some cases remedies have been split for readability purposes. Finally you may also be interested in this justification document submitted at the same time by the DOJ.

1. Google is prohibited from compensating or incentivizing any third party to block entry into the General Search Engine market or the Search Text Ad market.

2. Google is prohibited from compensating or incentivizing any third party to give preferential treatment to Google Search or any Google Search Access Point (e.g., Google Search App, Chrome) over its competitors.

3. Google is prohibited from compensating or incentivizing any third party to set or maintain any General Search Engine as the default in a new or existing Search Access Point.

4. Google is prohibited from compensating or incentivizing any third party to discourage the use of competing General Search Engines.

5. Google is prohibited from compensating or incentivizing any third party for pre-installation, positioning, or setting any Search Access Point as the default.

6. Google is prohibited from compensating or incentivizing Apple to refrain from entering the General Search Engine or Search Text Ad markets, effectively nullifying the Google-Apple search agreement and broadly barring any future similar arrangements.

7. Google is not allowed to contract with publishers to licence data in any way which provides Google exclusivity or prevents the publisher from making the same data available to any other General Search Engine or AI product.

8. Google is not allowed to condition access to the Play Store or any other Google product on a distribution agreement for a GSE, Search Access Point, or Choice Screen. Similarly they may not condition it on not distributing a Competitor's product or service.

9. Google may not bundle or tie any Google Search Engine or Search Access Point by, for example, licensing a product to a distributor and including a General Search Engine or Search Access Point for free.

10. Google may not pay any distributor any amount that is calculated based on the usage of or revenue generated by any Google Search Engine. This is essentially a ban on all revenue sharing agreements that Google currently has.

11. Google must (within 6 months) sell any investment it has in any company that controls a Search Access Point, an AI Product or similar technologies that are potential entrants into the General Search Engine or Search Text Ads market or could be reasonably anticipated competitive threats to General Search Engines. Google must immediately refrain from taking any action that could discourage or disincentivize from developing products that would compete with or disrupt Google's General Search Engine or Search Text Ads.

12. Google must not without prior written consent of the United States acquire any interest in, invest in, partner with, expand the scope of an existing joint venture of any company that that competes with Google in the GSE or Search Text Ads markets or any company that controls a Search Access Point or query-based AI Product.

13. Google must promptly and fully divest Chrome, to a buyer approved by the Plaintiffs in their sole discretion subject to terms that the Court and Plaintiffs approve.

14. Google may not release any other Google Browser during the term of this Final Judgment (the next 10 years) absent approval by the Court.

15. Google must not use any Google-owned asset (including any software, website, device, service, dataset, algorithm, or app) to self-preference Google's GSE, Search Text Ads, or AI Products. The section provides a long list of examples.

16. Google must not use any Google-owned asset (including any software, website, device, service, dataset, algorithm, or app) to undermine or lessen the ability of a user to discover a rival GSE or of an advertiser to discover or shift its Search Text

Ad spending to a rival Search Text Ads provider. The section provides a long list of examples.

17. If the remedies fail to restore competition or if Google circumvents them, the Court may order additional measures, including divesting Android (and the Google Play Store). If the DOJ proves insufficient competition persists, Google must divest Android (and the Google Play Store) unless it proves that its ownership did not substantially hinder competition.

18. Google must provide its Search Index to Qualified Competitors at marginal cost, ensuring equal access for both Qualified Competitors and Google.

19. Google must include content from all its owned or operated platforms (e.g., YouTube) in the Search Index it shares.

20. Google must ensure the shared Search Index has the same latency and reliability as Google's own access.

21. Google cannot use or retain data that cannot be shared with Qualified Competitors due to privacy or security concerns.

22. Google must provide publishers, websites, and content creators a simple way to selectively opt-out of having the content of their web pages or domains used in search indexing, AI training, AI tools, or AI-generated content on Search Engine Result Pages. This opt-out applies to Google and all Search Index users, must be user-specific, and includes Google-owned platforms like YouTube, with no retaliation allowed.

23. Google must provide Qualified Competitors with free, non-discriminatory access to User-side Data while protecting privacy and security. Google has six months to implement the necessary technology, and competitors can choose real-time or daily access via API, data firehose, or other suitable mechanisms Google uses in its own search engine.

24. Google must allow Qualified Competitors to submit synthetic queries for free. Competitors may log and use the results, including ads and Search Engine Page Result content. The maximum number of allowable synthetic queries will be determined by the Plaintiffs in consultation with the Technical Committee.

25. Google must provide Qualified Competitors with free, non-discriminatory access to Ads Data while protecting privacy and security. Google has six months to

implement the necessary technology, and competitors can choose real-time or daily access via API, data firehose, or other suitable mechanisms Google uses in its own search engine.

26. Google must offer Qualified Competitors a 10-year syndication license at marginal cost, providing all non-advertising components of its General Search Engine (organic results, Search Features, Ranking Signals, and query understanding) to enable licensees to display Search Engine Page Result, understand ranking logic, and query modifications. The license must be non-discriminatory, unrestricted in use or display, and interoperable with Search Access Points and AI products, while allowing Google to protect its brand, reputation, and security. This only requires Google to provide syndication for queries that originate in the United States. The licence will have the following required features:

    a) Google must deliver syndicated content via an API with latency and reliability equivalent to its own Search Engine Result Page.

    b) Syndication access will start broadly and decline over 10 years, encouraging licensees to build independent search capabilities, with scope set by Plaintiffs and the Technical Committee.

    c) Google may not consent to licensees exceeding syndication limits set by Plaintiffs, and licensees must submit to the Technical Committee audits of syndication frequency.

27. Google must provide Qualified Competitors a 1-year non-discriminatory license for all components of its Search Text Ads, including any assets, extensions, or similar Search Text Ad variations that appear on Google's Search Engine Result Page or available through Google's AdSense for Search. Google must share all related Ads Data without restricting use, display, or interoperability with Search Access Points or AI products, while allowing reasonable protections for its brand, reputation, and security. This only requires Google to provide syndication for queries that originate in the United States. Additionally:

    a) Google must provide syndicated content via an API with latency and reliability equivalent to its own Search Text Ads on Search Engine Result Pages.

    b) Licensees may request syndicated ads for up to 25% of U.S.-originating queries, with no exceptions allowed. Licensees must also submit syndication frequency audits to the Technical Committee.

28. For existing Google syndication agreements or new contracts with third parties outside Qualified Competitors Google must:

    a) Google must allow Qualified Competitor to terminate its existing agreement in favor of the new rules.

    b) Google must follow the new rules either within two years of the Effective Date or when any current syndication contract ends, whichever comes first.

29. For any current or future agreements where Google licenses or syndicates search or search ads products to a competitor, Google cannot:

    a) Restrict how competitors use, display, or integrate these products with Search Access Points or AI tools, but Google can take reasonable steps to protect its brand, reputation, and security. Competitors can decide which queries or syndication components to use or display however they want.

    b) Keep or use data from syndicated queries or information from competitors for its own products or services.

30. Google must provide advertisers with detailed data for each Search Text Ad served or clicked from the preceding 18 months. This includes the query, keyword trigger, match type, CPC, SERP position, LTV, and other metrics to evaluate ad performance. Data must be accessible via an API for real-time downloads, reporting, and analysis, as well as through auto-generated monthly summaries in the Google Ads interface.

31. Google must provide advertisers with a keyword matching option that ensures ads enter the auction only when a query exactly matches the chosen keyword, with no variations. This option must also apply to negative keywords.

32. Google must allow advertisers to export all their ad and campaign data, including placement and performance metrics, in real time through an interface or API.

33. Each month, Google must report to the Technical Committee and DOJ all changes to its Search Text Ads auction, include public disclosures or explain why none were made, and identify any material changes.

34. Google must not pay Distributors for default settings, placement, or preinstallation of a General Search Engine or Search Access Point on non-Apple, third-party devices. Google cannot interfere with the ability of devices or preinstalled Search

Access Points to default to or work with non-Google General Search Engine or competitors. For preinstalled Google Search Access Points under prior agreements, Google must offer Distributors the option to display a Choice Screen to users which currently have Google as the default General Search Engine. Google must pay a fixed monthly amount for each such device, based on the average payments made in the past year for the device lifetime or one year, whichever is shorter. Chrome is considered a Google Search Access Point until divested.

35. Google must not pay any Distributor for any form of default, placement, or preinstallation distribution (including choice screens) related to making any General Search Engine a default within a new or existing Search Access Point.

36. Google must not preinstall any Search Access Point on any new Google Device.

37. Google must not hinder the ability of third-party Search Access Point to be set as default or interoperate with non-Google Search Engines or other competitive entrants.

38. For existing Search Access Point preinstalled on an existing Google Device before the date of entry of this Final Judgment, Google must implement a Choice Screen.

39. Google must display a Choice Screen on all Google Browsers where the user hasn't affirmatively set a default General Search Engine, including via settings.

40. Google must disclose each Choice Screens, related distribution agreements, and implementation plans to Plaintiffs and the Technical Committee at least 60 days before user display. The Choice Screen must offer a clear, unbiased selection between competitors, be accessible, user-friendly, and minimize choice friction based on user behavior data. After consulting a behavioral scientist, the Technical Committee will assess compliance and report to Plaintiffs, who must approve any Choice Screen under this Final Judgment.

41. A five-member Technical Committee (TC) will be appointed to monitor Google's compliance with the Final Judgment, ensuring fairness and preventing anti-competitive behavior. TC members must be experts, free from conflicts of interest, and will have access to Google's systems, source code, documents, facilities, and personnel to enforce compliance. The TC will report regularly to Plaintiffs, handle complaints, recommend modifications, and operate with Google-funded resources under strict confidentiality agreements. This section of the proposed final judgement is quite extensive on the powers of the technical

committee.

42. Google will appoint a compliance officer who among other duties will distribute a copy of the final judgement to ALL google employees and have them annually certify that they have read, will abide by its terms and understand that failure to do so may result in a finding of contempt of court. This includes appropriate training for all Google employees on how to comply with this judgement.

43. Google must not retaliate against anyone for competing with its GSE or Search Ads, filing complaints, participating in legal proceedings, or exercising rights under this Final Judgment.

44. Google is prohibited from enforcing or entering contracts that violate this Final Judgment. It must not replicate banned anti-competitive behavior, evade obligations, or undermine the Judgment's purpose. If found liable for antitrust violations in federal court, structural relief may be automatically ordered. These provisions apply globally to all Google conduct and contracts.

45. If after 5 years, Google has complied with all provisions and its competitors combined market share is greater than 50% in the US General Search Engine market then Google may petition the court to terminate this judgement.

6.1. Proposed Remedies and Their Potential Unintended Consequences

Out of the above quite substantial list, two remedies stand out above all others in terms of their impact on the web:

- A total ban on deals with Google that set search engine defaults or that share revenue with search engine entry points.

- Forcing Google to sell Chrome and banning Google from re-entering the browser market for 10 years.

While we fully understand the intent behind these remedies, we are concerned that the DOJ has not fully considered or appreciated the profound ramifications these remedies will have on the adjacent browser and web software market including:

- Bankrupting or shrinking the share of smaller browsers.

- Consolidating power in the browser market in even fewer hands.
- Plummeting investment in the Web, thus strengthening the non-interoperable app store model on mobile.

7. The Problem with Canceling Deals with Small Browsers

Google has agreements with several browser vendors to set Google as the default search engine for users who have not previously made a manual choice. In return, Google shares a portion of the revenue it earns from searches performed through those browsers.

The most prominent of these deals is with Apple, which receives an astronomical $20 billion per year from Google. This deal is also the most problematic as we estimate only a minute percentage of it (likely less than 3%) is invested back in Safari/WebKit, leaving the remainder as pure profit.

Google also maintains revenue-sharing agreements with several smaller browser vendors, including Mozilla. These browsers rely heavily on this funding to sustain operations. Google is estimated to pay Mozilla approximately $410-420 million per year, though public figures for its deals with other vendors are not available. While these browsers collectively represent only a small share of the market, they play a disproportionately important role in maintaining competition within the browser ecosystem. However, according to the court judgment, they account for just 1.15% of search queries in the United States.

Expanding the presence of smaller browsers is vital. A greater number of competitors leads to stronger and fiercer competition, pushing larger players to innovate and improve. It is essential that any remedies to the current market dynamics do not further reduce the number of players in the browser ecosystem.

Smaller browsers are our best hope for cultivating a more competitive market in the future. Ideally, in 5 to 10 years, a more balanced search engine landscape would lead to increased competition for placement deals, driving higher revenues for smaller browsers. This additional funding could help them grow and gain market share.

In the short term, however, blocking these funding arrangements could jeopardize the financial stability of smaller browser vendors. While they might seek deals with Bing or other search engines, those arrangements would likely yield lower payments, as Bing would only need to outbid smaller rivals and not Google, further reducing the resources available to these browsers.

Mozilla, in particular, is at significant risk due to the high costs associated with maintaining and advancing its Gecko browser engine. Losing Mozilla would be a major blow to competition, as it represents a unique alternative in the market. In contrast, larger browsers like Microsoft Edge and Apple Safari are likely to survive, supported by their

parent companies' vast resources and strategic interests. However, a market reduced to three dominant players, including Safari which operates solely on Apple's platforms, would critically undermine competition.

We believe that blocking smaller players from making search deals with Google is unjustified given the broader harm this would cause to the browser market. The potential benefits in the search engine market are minimal compared to the significant blow to browser competition. Ensuring the survival and growth of smaller browsers is key to a healthier, more competitive ecosystem.

Any remedy that would significantly impact the finances of the smaller browsers should be backed by detailed arguments as to why it will not cause the exit of these smaller players and consolidation in the hands of a few tech giants.

During the case, evidence showed that Mozilla reinvested much of the revenue from its Google search deal into Firefox and Gecko. However, its 3% market share was deemed too small to be relevant to significantly benefit the public.

This reasoning is flawed. If Mozilla's market share is considered negligible, then their share of Google's search payments, only 1.6% of what Google pays browsers and OEMs, should also be seen as insignificant in the broader context. It is inconsistent to argue that one metric matters while dismissing the other.

That is, the questions that should be asked are:

1. Do payments to Mozilla and other smaller browsers cause more harm by limiting opportunities for other search engines to enter the market, or do they provide greater benefits by enabling Mozilla's critical contributions to web standards, browser development, and the maintenance of Gecko, one of the three remaining browser engines?

2. Given Mozilla's 3% market share, doesn't its role in hindering other search engines pale in comparison to Google's other strategies, such as the Apple Search deal, Android OEM placements, revenue-sharing agreements, and defaults in Google's own browser?

We firmly believe the answer lies in allowing Mozilla and other smaller browsers that rely on Google's search deals to continue to make them. The DOJ can address Google's monopoly without crippling or mortally wounding Mozilla, an already struggling but vital player, or undermining the broader ecosystem of smaller browsers.

8. The Issue with Forcing Google to Sell Chrome

The DOJ has proposed that Google be required to sell Chrome and banned from re-entering the browser market for 10 years, which raises several important concerns.

A key question is: Who would buy Chrome, and once purchased, what would its revenue source be?

The proposed remedies prohibit any search deal with Google, including partial agreements, leaving its financial viability uncertain. **While this new entity would be free to make deals with other search engines such as Bing, would this be enough to cover costs, and would these search engine providers feel pressure to bid sufficiently large sums?**

We are particularly worried about the possibility of Chrome being acquired by an entity that does not value the open web, or worse, is actively opposed to it.

Another concern is whether a new owner would continue funneling the necessary investment, which we estimate at around $1 billion annually, into maintaining and advancing the platform. The web platform relies on a vast body of work that extends far beyond the code in any single browser engine. It includes infrastructure maintenance, security research, standards development, and the efforts of web advocates: individuals and organizations committed to improving the web as a whole. Today, the overwhelming majority of this work is funded either directly or indirectly by Google.

> *"Assuming they find a buyer, that buyer will be scrambling to find a way to make that investment worth it. Will they be choosing to employ people who are just abstractly making the web better? I would think not."*
>
> Chris Coyer - CSS Tricks

Google itself would have drastically reduced incentive to invest in Chromium, as it would no longer benefit directly from maintaining a browser. Moreover, the risk of another tech giant acquiring Chrome could create a similar antitrust issue down the road. For example, if Microsoft were to regain a dominant share of browsers on Windows, it could mirror the competitive concerns of its antitrust case from 20 years ago. While we support Edge as a minority browser, we remain critical of certain anti-competitive practices Microsoft is currently employing on Windows to increase its browser market share.

A potential disaster scenario emerges if Chrome is acquired by a buyer focused on short-term returns. After investing a substantial amount to acquire the browser, the new

owner would face strong incentives to prioritize rapid monetization over long-term investment in the web platform.

Corporate acquirers targeting high-risk, high-reward purchases typically aim for annual returns exceeding 15–20%. With a $20 billion purchase price under discussion, the buyer would be under significant pressure to generate $3–4 billion in annual profit to justify the investment. In that context, it would be entirely rational for them to focus solely on revenue-driving components.

This makes it likely that any investment in a newly acquired browser would be concentrated on user-facing features that grow or maintain market share. Improvements to the underlying web platform, which would benefit all Chromium-based browsers including direct competitors, would likely be deprioritized.

If the acquirer were unable to secure a lucrative search deal with Google (due to a prohibition from the court), the next logical option would be Microsoft's Bing. However, in a world where Google is not bidding, it's unclear how much Microsoft would be willing, or feel compelled, to pay. Without competitive tension in the bidding process, any resulting deal would likely be far less valuable.

This scenario could leave the acquirer with substantial engineering overhead and no clear path to recover those costs, let alone achieve the level of profitability their investment demands. The financial strain would be even greater if the acquisition were debt-financed, amplifying the risk of falling short.

This could result in drastic cost-cutting measures, including reducing staff to a bare minimum, terminating teams working on new web platform features, and maintaining only a skeleton crew for basic bug fixes and security updates. The new owners could also focus on extracting maximum revenue from search engine providers and other deals while neglecting long-term improvements to Chrome.

Investment in Chromium, both from this new entity and Google, would likely dry up overnight. The resulting stagnation in web development could have lasting repercussions for decades, as the Web falls behind closed, extractive native app ecosystems.

> *"Does it matter if the web platform adds new capabilities? And if it should, which ones? The web is a meta-platform. Like other meta-platforms the web thrives or declines to the extent it can accomplish the lion's share of the things we expect most computers to do.*
> *[...]*

> *There's no technical reason why, with continued investment, meta-platforms can't integrate new features. As the set expands, use cases that were previously the exclusive purview of native (single-OS) apps can transition to the meta-platform, gaining whatever benefits come with its model."*
>
> Alex Russell - Program Manager on Microsoft Edge

This would cause immense harm to countless smaller U.S. businesses that depend on a thriving and continuously evolving Web. Ultimately, it would shift power away from the Web, and into the hands of tech giants controlling the alternative.

Most industry experts we have consulted agree that this is, by far, the most likely outcome. **There is widespread fear across the industry, particularly among those who rely on the Web, that such a scenario would have devastating and far-reaching consequences for its future.**

9. The Browser Engine Landscape

9.1. Browser vs Platform

Browsers are highly sophisticated pieces of software, tasked with far more than simply rendering web pages. They interpret and execute HTML, CSS, and JavaScript; manage memory and isolate processes for stability; enforce critical security mechanisms like sandboxing and same-origin policies; protect users from malicious content; support audio and video playback; handle networking and caching; integrate with various operating system services; synchronize data such as bookmarks and passwords; and offer robust tools for developers, along with numerous other complex functions. Few, if any, engineers fully understand all the functions a modern browser performs.

Conceptually, browsers can be divided into two main components:

- **The Browser User Interface**
  This includes all the visible elements users interact with, such as tabs, address bars, bookmarks, and menus. It also manages user actions like navigating between pages or downloading files. Notably, this excludes the main content area where the web page is rendered, which is the responsibility of the browser engine.

- **The Browser Engine**
  Often considered the "heart" of the browser, the engine is responsible for rendering web pages, running JavaScript, interpreting HTML/CSS, and managing web APIs. It powers the browser platform, which serves as the foundation for web developers and businesses relying on the web as an application platform.

The term **"browser platform"** refers to the collection of tools, APIs, and capabilities that enable developers to create websites and web apps. It provides essential features like rendering, storage, communication, and graphics capabilities. While the boundaries of the browser platform can sometimes blur with the broader browser architecture, the bulk of it typically resides within the browser engine.

Industry conversations suggest a consistent view among engineers: building a browser involves roughly a 50-50 split (with about a 10% margin) between developing the browser UI and the underlying browser platform. This balance is generally seen among browsers that are the primary maintainers of their own engines, such as Chrome, Firefox, and Safari. However, other browsers, including well-funded ones like Edge, are believed to overwhelmingly focus their efforts on the browser UI, often allocating over 90% of their resources to it, contributing significantly less to the platform layer. While both components

are crucial to delivering a seamless experience for users, the browser platform holds particular importance for businesses and developers. It provides the tools they need to create innovative web applications, deliver services, and support their operations.

The significance of the browser platform cannot be overstated, as it forms the backbone of the modern web. Businesses depend on its reliability, security, and functionality to ensure their web applications perform efficiently across all devices and operating systems. Developers rely on its APIs and tools to push the boundaries of what is possible on the web.

The key factors driving the advancement of the web platform are fierce competition among browsers, the substantial funding necessary to maintain and push forward the platform, and a steadfast belief that given the web's unique attributes of openness and interoperability, the web can and should be allowed to compete fairly.

9.2. Browser Engines

Gecko traces its origins to the defunct Netscape Navigator browser. Mozilla began developing Gecko in 1998 after Netscape open-sourced its code. This effort culminated in the release of Firefox 1.0 in 2004, marking the beginning of renewed competition against the then-dominant Internet Explorer from Microsoft.

WebKit originated as a fork of the KHTML browser engine. As a fork WebKit inherited KHTML's LGPL copyleft license and powers Safari and several smaller browsers. Between the mid-2000s and early 2010s, both Google and Apple contributed code and resources to WebKit. However, disagreements over Apple's management of the project led Google to hard-fork WebKit in 2013, creating its own engine, Blink.

A **soft fork** refers to maintaining a customized version of a browser engine while continuing to accept upstream patches and improvements from the core project. In contrast, a **hard fork** involves taking full control of a new codebase, starting from a snapshot copy of the original, and developing it independently.

Blink powers Chrome, Edge, Opera, Samsung Internet, Vivaldi, Brave, and many other smaller browsers. Its popularity stems in part from the open-source project Chromium, which includes not only the Blink engine but also the full surrounding browser UI. This makes it easy for new browser vendors to create a soft-fork of Chromium, whereas with WebKit or Gecko, they would need to develop the entire browser UI themselves.

Other browser engines, such as Trident and Presto, have fallen out of active development. Trident, the engine behind Internet Explorer, was effectively abandoned when Microsoft

transitioned its Edge browser to use Chromium in 2018; it had been using a Trident fork called EdgeHTML. Presto, once used by Opera, was similarly retired in 2013 when Opera also switched to Chromium.

9.3. The Browsers

9.3.1. Chrome

Chrome is Google's browser, built on the open-source Blink engine and the Chromium project, both of which Google primarily develops and maintains. Chrome holds a dominant market share, with approximately 86% on Android, 67% on Windows and 55% on macOS. Google also maintains a Chrome-branded WebKit browser on iOS with a 15.6% share.

Google's motivations for maintaining and investing in Chrome are wide-ranging and deeply tied to its core business interests.

First, Chrome acts as a vital gateway to Google Search. With Google set as the default search engine for all Chrome users, the browser drives substantial search traffic, translating directly into revenue.

Second, as the operator of major web-based services like Gmail, YouTube, and Google Docs, Google has a strong incentive to ensure the underlying web platform remains fast, stable, and feature-rich, allowing these products to deliver a seamless user experience.

Third, Google's search business depends on access to the open web. By heavily investing in both Chrome and the web platform, Google increases the share of the world's data that is publicly indexable, enhancing the reach and relevance of its search engine.

Finally, Chrome plays a strategic role in supporting Google's advertising ecosystem. Search ads, especially in e-commerce, are typically priced on a per-conversion basis. Improving web performance and capabilities leads to higher conversion rates across the web, making Google's ads more effective and more valuable to advertisers.

9.3.2. Safari

Safari is Apple's browser, powered by the open-source WebKit engine, which Apple primarily develops and maintains. On iOS Safari has an 82.2% share, and holds approximately 37.8% of the browser market on macOS. While WebKit is open-source, Apple has unilateral control over the version and feature set of the WebKit that is shipped with and is available on iOS.

Safari plays a key role in Apple's branding, positioning itself as a privacy-focused alternative to Chrome.

One significant limitation of Safari as a competitor to Chrome is Apple's decision to restrict Safari's availability to its own platforms, including macOS, iOS, iPadOS, VisionOS, and WatchOS. This exclusivity prevents Safari from being a meaningful competitor in broader browser markets like Windows, Android, and Linux.

Apple has also effectively banned all rival browsers from competing on iOS via their browser engine ban. This lack of competition has diminished Apple's incentive to significantly enhance Safari on iOS beyond what is necessary to maintain its reputation among users. Developers, reliant on supporting iOS, and therefore Safari, often have to find workarounds for various issues.

> *"Apple has a browser monopoly on iOS, which is something Microsoft was never able to achieve with IE"*
>
> Scott Gilbertson - The Register

> *"because WebKit has literally zero competition on iOS, because Apple doesn't allow competition, the incentive to make Safari better is much lighter than it could (should) be."*
>
> Chris Coyier - CSS Tricks

> *"What Gruber conveniently failed to mention is that Apple's banning of third-party browser engines on iOS is repressing innovation in web apps."*
>
> Richard MacManus - NewsStack

Additionally, Apple has not provided web apps with the functionality and visibility they need to effectively compete with Apple's own app store while it simultaneously blocks third-parties from providing it via their browser engine ban.

Finally Apple collects $20 billion USD from Google per year, but only reinvests a small fraction of that back into Safari and WebKit, likely less than 3% of the total, leaving the remainder as pure profit. This is estimated at an astonishing 17.5% of Apple's operating profit.

9.3.3. Firefox

Firefox is Mozilla's browser and is powered by the Gecko engine. While it played a pivotal role in revitalizing competition against Internet Explorer in the mid-2000s, Firefox's market

share has dwindled to single digits in recent years. Mozilla relies primarily on its search engine deal with Google to fund the ongoing development of Firefox and its independent browser engine, Gecko.

Despite its declining market share, Mozilla and Firefox play an outsized and vital role in the development of the web and web standards. However, this role is hindered by insufficient funding. Unlike smaller browsers that can rely on Chromium to reduce costs, Mozilla shoulders the full burden of maintaining an independent browser engine. This independence is vital for web diversity but comes at a steep financial cost.

While Mozilla has undoubtedly made missteps, there is a compelling argument that they have been unfairly prevented from competing on equal terms. On iOS, Apple's ban on third-party browser engines has effectively barred Firefox from fully competing. Similarly, on Android, Mozilla has faced challenges due to overlapping and restrictive placement deals that favor Chrome. Over the past 15 years, these barriers have likely cost Mozilla billions in search engine revenue. This lost funding could have provided Mozilla with a significantly larger budget to compete head to head on platform via Gecko with Chrome. It would also have given Mozilla more room to make and recover from errors.

9.3.4. Microsoft Edge

Microsoft Edge is built on the Blink engine, utilizing the open-source Chromium project. In 2018, Microsoft transitioned Edge from its proprietary EdgeHTML engine to Chromium/Blink. While Edge is the default browser on Windows, it faces significant competition from Chrome, which remains the dominant browser on the platform.

Microsoft is heavily invested in the transition to a more web-centric future. Many of its key applications, such as Teams, Outlook and Visual Studio Code (VSCode), are built using web technologies (e.g., Electron), effectively making them web apps running in native wrappers powered by Chromium.

9.3.5. Smaller Browser Vendors

Smaller browsers include Samsung Internet, Opera, Vivaldi, Brave, Tor, and many others. Most of these browsers are built as forks of Chromium and rely on the Blink engine. Some, but not all, of these browsers have search deals with either Google or Bing.

These browsers have the ability to add, remove, or modify features in the Blink or Chromium codebase allowing them some significant ability to compete. Despite their small size, it is critical that these browsers be given the opportunity to grow and even now despite their small share they apply competitive pressure on Chrome to meet consumer and developer expectations or be replaced.

However, their ability to steer Blink and Chromium's future relies on these browsers' willingness and ability to invest in the platform's maintenance and development. Implementing and refining web standards is a costly and complex process, requiring substantial resources. Unfortunately, many smaller browsers have not reinvested enough into Chromium, even proportional to their market share. This leaves the vast majority of the financial and developmental burden for maintaining and advancing Chromium on Google.

For smaller vendors, it is often more difficult to justify investing in the shared platform, work that also benefits their competitors, rather than focusing on features unique to their own browser. By contrast, for companies with larger market share, investing in the underlying web platform is more easily justified. Enhancing the platform increases the overall value of the web, which in turn raises revenue across all browsers. This return on platform investment becomes more favorable the larger the browser share.

However, for the health of the web, it would be far better if the governance and funding of Chromium were more evenly distributed among participants and interested parties.

9.4. Standards Bodies

Web browsers implement designs that are developed and specified in many Standards Development Organisations ("SDOs") including, but not limited to:

- IETF (The Internet Engineering Task Force)
- W3C (The World Wide Web Consortium)
- WhatWG (Web Hypertext Application Technology Working Group)
- ECMA (The European Computer Manufacturer's Association)
- FIDO (The FIDO Alliance)
- AOM (the Alliance for Open Media)
- The Khronos Group
- ISO (The International Organization for Standardization)

- The Unicode Consortium
- IANA (the Internet Assigned Numbers Authority)

Each of these organisations contain a part of the "web standards community", but feature differing processes, publication gates, and formal mechanisms for including designs into official standards documents. Critically, all of these SDOs create voluntary standards. Companies contribute their intellectual property to the commons of voluntary web standards for complex reasons, but competition has historically driven this process.

In a healthy environment, Web Standards evolve quickly, spurred on by competing browser makers working with developers to solve important problems. This involves collaboration in standards bodies to improve compatibility, however if each vendor had to wait until there was consensus among every vendor regarding every design, it would be possible for a vendor (e.g. Apple) to game these processes. There is also significant risk that well-funded third-parties could infiltrate standards organisations in order to block/stall development or functionality in a manner that is not in the best interests of the user or of competition.

Browser vendors enjoy outsized influence in development of web standards, and providing them with a veto over all progress will only serve to reward the slowest mover by preventing competitors from taking market share. In the existing structure, it is enough for a vendor to withhold engagement and prevent functionality from being standardised. This could lead to a bad situation if there were any rules preventing engines from pushing ahead and using competition to push poor performance with market outcomes.

Typically, cutting edge features are deployed by browser makers in their own engines first, then, using real world feedback over several years, eventual standards are created.

No feature starts out as a web standard:

> *"Web Standards are voluntary. The force that most powerfully compels their adoption is competition, rather than regulation. This is an inherent property of modern browsers. Vendors participate in standards processes not because they need anyone else to tell them what to do, and not because they are somehow subject to the dictates of standards bodies, but rather to learn from developers and find agreement with competitors in a problem space where compatibility returns outsized gains"*
>
> Alex Russell - Program Manager on Microsoft Edge

No one can predict what web technologies will be important in the future, and disagreements between browser makers on the exact path forward are reasonable and expected. It is very difficult, if not impossible for regulators to predict which standards will be the most important and what their exact definition will end up being. It is a subtle and complex topic, and one that would require significant staffing, over a wide swath of technical areas, for any regulator to credibly participate in.

The existing patchwork of standards groups, along with the social and legal background of voluntary standards, makes recent proposals to bar browsers from implementing features ahead of formal standardisation deeply problematic.

Our analysis of the situation regarding browsers suggests that users and developers do not suffer from too much divergence of views about how to solve leading-edge problems, but rather a lack of engagement and investment in addressing those challenges. We believe this lack of investment stems from reduced competition that browser makers experience on iOS, and to a lesser extent, Android.

The suggestion that individual browser vendors or groups of browser vendors should be able to block all other browsers from producing functionality (that these browsers have no intention of implementing) would further stifle competition.

Requiring consensus before implementation would block the ability of users to signal their discontent by switching browsers to ones that offer the functionality they need. It would also remove any pressure browser vendors might feel to implement popular features if they can block all competitors from providing it. Subtly, it would also reduce the quality of features delivered, because it is only through market-oriented mechanisms like Origin Trials that leading engine teams ensure their designs are fit for purpose.

Apple has held back the Web on iOS (and mobile in general, thanks to network effects) for more than a decade via their veto on features for all browsers on iOS. Handing Apple explicit power to veto features for all browsers would be a disaster. One of the key aims is to break Apple's ability to prevent iOS users from accessing useful web functionality that competes with either their own apps or their App Store.

Browsers (and their engines) need to be free to lead and experiment on the competitive frontier. They need the freedom to be wrong but also to win users through unique features and leading edge capabilities. It is competition, developers and user choice that determines which features will be successful.

Standardization between similar features in browsers is desirable, but it is an outcome that comes at the end of the development and competitive process. It should not be placed as

a gate at the beginning. Further, the potential for blocking browsers' ability to differentiate themselves and compete would be catastrophic to competition.

Our primary concern is not that Apple will have a different vision for how particular features will function, but rather that Apple has already sought to delay features that allow the web to compete with its own, proprietary, Native Apps platform. By trying to ensure that competing features are not available, Apple removes pricing pressure on its native app ecosystem and extends power over developers.

It is important that the excellent work of the W3C and other standards organisations not be weaponized to block innovation and competition, a better approach is regulating to enable effective competition on the gatekeepers operating systems both between rival browsers and between Web Apps and Native Apps. Then allow market forces to push forward the changes (new web features) most beneficial to end users.

Both developers and users gain significant advantages from interoperable implementations of browser functionality. However, it is essential that any interventions ensure that the competitive aspects of browsers are protected including the pressure to significantly invest in new and cutting edge technologies.

Standards should be used to:

1. Increase interoperability between Browsers.

2. To allow multiple browser vendors from different companies an ability to be meaningfully involved and provide constructive feedback including but not limited to privacy and security concerns.

3. Provide implementation documentation for Browser Vendors.

Standards should not be used to:

1. Reduce or block the level of investment OR remove pressure on vendors to invest.

2. Reduce or block implementation of cutting edge functionality.

3. Designate functionality as being exclusive to native (proprietary) apps.

4. Enable third-parties to undermine features or functionality required by developers or users (i.e. Telecommunication or Advertising Companies attempting to undermine privacy rules).

10. Native App Closed Gardens vs The Open Web

Native app ecosystems are deeply flawed because they place unilateral control in the hands of tech giants, allowing them to dictate the rules, demand exorbitant fees, and centralize decision-making over what can and cannot be shipped. These companies, like Apple and Google, charge developers a 30% cut of revenue from all third-party apps, not because of added value but simply because they control the only avenues for app distribution. Beyond this financial toll, native apps are non-interoperable between operating systems, requiring developers to write and maintain separate versions for each platform. This dramatically increases costs and creates a form of lock-in, as developers invest heavily in specific ecosystems, making it even harder for them to leave or compete independently.

The lack of competition in mobile ecosystems is, at its heart, a structural issue. These companies wield vast power due to the security models on which mobile devices are built. Traditionally, operating systems such as Windows, macOS, and Linux have allowed users to install any application they want, with minimal interference from gatekeepers. Users could grant programs the permissions they needed, offering flexibility and control.

Locking down what applications can do, such as restricting which APIs they can access behind user permissions, is not by itself anti-competitive and can bring legitimate security advantages. However, the manner in which it has been implemented on mobile devices is both self-serving and significantly damages competition.

What is needed is a way to securely run interoperable and capable software across all operating systems. Luckily, such a solution already exists and is not only thriving on open desktop platforms but is dominating, and that dominance is growing every year. The solution is of course, the Web and more specifically Web Apps.

Today, more than 70% of users' time on desktop is done using web technologies, and that looks set to only grow.

These applications thrive on open desktop platforms, and their dominance is growing every year. Web apps run securely within the browser's sandbox, recognized by even Apple as "orders of magnitude more stringent than the sandbox for native iOS apps". They are interoperable, requiring no platform-specific adaptations, and do not require developers to sign contracts with operating system gatekeepers. They are capable of incredible things and 90% of the apps on your phone could be written as web apps today.

The web continues to thrive on desktop platforms, where openness and competition enable it to flourish. **So why is it struggling on mobile, where just 8% of users' time is**

spent in a browser, as noted in the UK's recent Browsers and Cloud Gaming Provisional Decision?

The simple answer to this question is lack of browser competition on iOS, and active hostility by Apple towards effective Web App support, both by their own mobile browser and by their mobile OS. Apple's own browser faces no competition on iOS, as they have effectively barred the other browsers from competing by prohibiting them from using or modifying their engines, the core part of what allows browser vendors to differentiate in stability, features, security and privacy.

This is referenced in the DOJ vs Apple case where they state:

> *"Developers cannot avoid Apple's control of app distribution and app creation by making web apps—apps created using standard programming languages for web-based content and available over the internet—as an alternative to native apps. Many iPhone users do not look for or know how to find web apps, causing web apps to constitute only a small fraction of app usage. Apple recognizes that web apps are not a good alternative to native apps for developers. As one Apple executive acknowledged, "[d]evelopers can't make much money on the web." Regardless, Apple can still control the functionality of web apps because Apple requires all web browsers on the iPhone to use WebKit, Apple's browser engine—the key software components that third-party browsers use to display web content."*
>
> DOJ vs Apple

The DOJ highlighted several ways Apple has suppressed web apps from being a viable replacement to their app store, including bans on third-party browser engines and poor visibility for web apps on iOS. By mandating WebKit for all browsers, Apple ensures it retains unilateral control, blocking competition from engines like Blink and Gecko. This has stifled innovation and entrenched Apple's dominance.

Fortunately, change is beginning in jurisdictions like the EU, UK, and Japan, where regulators are pushing Apple to relax its restrictions. Mozilla and Google are already working on porting their engines to iOS, and although Apple has erected significant barriers, regulatory pressure is forcing progress. If this trend continues, the web could finally become a competitive alternative to native ecosystems on mobile platforms.

However, this progress is at risk of being undermined by the DOJ's case against Google. The current funding model for browsers relies heavily on revenue from default search engine deals and this is what incentivises fighting to gain users. While we understand the DOJ's noble intent in canceling such deals, we believe that they have failed to appreciate

the depth of the collateral damage that will be done by removing this funding with no viable replacement.

> *"It won't happen overnight, but stagnation will set in. A stagnated web is incentive for the operating system makers of the world to invest in pulling developers toward those proprietary systems. The browser wars sucked but at least we were still making websites.* ***Being forced to make proprietary apps to reach people is an expensive prospect for the rest of us companies of the world****, it will probably be done poorly, and we'll all suffer for it."*
>
> Chris Coyer - CSS Tricks
> (emphasis added)

This will likely scuttle plans to port both Gecko and Blink to iOS in the EU and eventually in other jurisdictions as Apple is forced to allow competition. Mozilla is going to have a severe hit to their finances, Google will be forced to sell Chrome, and the new owners will be blocked entirely from making a search deal with Google. If the new owners of Chrome are not investing to port it to iOS, a non-trivial investment, this will make it incredibly expensive to port any of the other Chromium browsers, such as Edge, Opera, Vivaldi and Brave.

This will also greatly reduce Apple's incentive to sustain the recent increase in investment in Safari, which is likely driven by the threat of actual competition in EU, UK, Japan and potential other territories such as Australia.

Any remedy to the current antitrust cases must consider the broader battle between closed ecosystems and the open, interoperable web. History has shown that antitrust actions can inadvertently dismantle one monopoly only to empower another. This outcome is avoidable, but only with careful consideration of the risks to adjacent but interlocked ecosystems.

11. What's in Chromium?

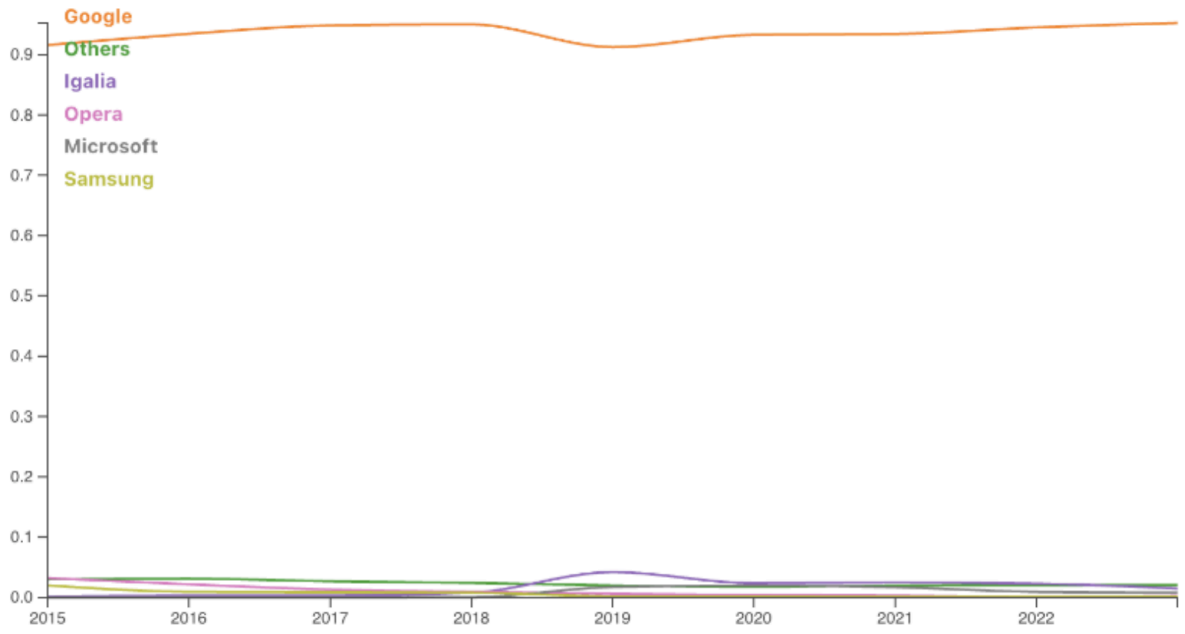
11.1. What is Chromium?

Chromium is an open-source web browser project that powers Google Chrome, Microsoft Edge, Vivaldi, Brave, and others. Unlike Blink which is a browser engine, Chromium is a full browser making it relatively easy for third-parties to soft-fork and make their own browsers without having to build the full browser shell themselves.

As we discuss below, a vast number of discrete and interconnected technologies are funded under Chromium, some of these technologies are used not only in native apps but are also used in other browsers with their own engines such as Safari and Firefox.

11.2. How is it Funded?

Google recently published a graph showing Chromium's committed contributions by organization, highlighting a striking statistic: [94% of the project's commits come from Google](#).



[Commits in Chromium](#)

This raises two perspectives: either Google wields too much influence over web standards, or many companies benefiting from Chromium are failing to contribute their fair share.

Ideally a healthier web would have the investment shared between a greater number of stakeholders, with Google providing sub 50% of the funding in the project. However, the core issue is that many companies have chosen not to fund Chromium adequately, despite the resources they have and the value they gain from Chromium.

The solution is not to cripple Chromium by destroying its primary funding source but to encourage broader investment, ensuring contributors support the project in proportion to their means while having a voice in its governance.

> *"Google, by virtue of having Chrome, invests heavily in the web itself. Not just Chrome-the-browser, but the web standards that power the web. I can't claim to know every detail of that investment, but I personally know people employed by Google that literally just try to make the web better all day.*
>
> *And there are evangelists, and documentation writers, and other people who aren't working directly on Chrome, but really the web itself.*
>
> *Will Google continue to invest like this if they are forced to sell Chrome? It would be hard to blame them if they did not."*
>
> Chris Coyer - CSS Tricks

11.3. What's in it?

The sheer scope of technologies developed and maintained under the Chromium umbrella is staggering, covering everything from core web rendering and JavaScript execution to advanced networking protocols, security frameworks, media codecs, and developer tools.

This list alone, already expansive, is likely missing additional crucial components that power modern web experiences. Without these technologies, much of the web (and indeed many native apps) simply wouldn't function at the level users expect today.

11.3.1. Core/Major Chromium Technologies

1. **Blink:** Chromium's Web Rendering Engine.

2. **V8**: High-performance JavaScript and WebAssembly engine.

3. **Chromium Embedded Framework (CEF):** Framework for embedding web browsers in desktop applications.

4. **Android WebView**: Web content rendering component for Android apps.

11.3.2. Graphics, Rendering and Visual

5. **Dawn**: Implementation of WebGPU, used in browsers and machine learning tasks.

6. **ANGLE (Almost Native Graphics Layer Engine)**: Abstraction layer for OpenGL ES on DirectX, Metal, and Vulkan. Used by both Mozilla and Android.

7. **Skia**: 2D platform-independent raster graphics library for rendering text, shapes, and images. Skia is used by Mozilla, Chromium, Android and many others.

8. **WebGL2**: (Significant Contributor) Open standard for interactive 2D and 3D graphics.

9. **WebGPU**: Successor to WebGL, offering lower-level access to GPU resources.

11.3.3. Networking and Communication

10. **Cronet**: Cross-platform networking library based on Chromium's networking stack.

11. **WebRTC**: Framework for real-time communication like audio, video, and data sharing. Significant collaboration with the IETF and W3C, but the majority of development is driven by Google's engineering teams. LibRTC, derived from WebRTC, is extensively used in native applications.

12. **QUIC/HTTP3**: Faster, secure transport protocol replacing TCP in many cases.

13. **SPDY/HTTP2**: Earlier work to optimize HTTP communication

14. **Brotli**: Advanced compression algorithm for web content.

15. **Certificate Transparency -** Chromium has driven the adoption of Certificate Transparency, a framework for logging all issued certificates in public, verifiable logs.

11.3.4. Developer Tools and Debugging

16. **Chrome DevTools:** The most widely used and essential suite of tools for web developers, enabling efficient debugging, profiling, and optimization of web applications. It is the primary choice for most developers developing on the web platform, providing unparalleled capabilities to inspect, edit, and debug HTML, CSS, JavaScript, and network performance in real time. Chrome DevTools is used within every Chromium-based browser.

17. **Lighthouse**: Automated tool for improving the quality of web pages (performance, accessibility and SEO).

18. **Remote Debugging Protocol**: Interface for debugging web applications remotely.

11.3.5. Security, Safety, and Privacy

19. **Sandboxing:** The largest investment in security and safety technology for browser processes isolation to limit security vulnerabilities. Benefits affect the entire ecosystem including webviews and electron apps.

20. **Safe Browsing:** Warns users of malicious websites and phishing attempts. This is used by all major browsers including Safari and Firefox.

21. **Fuzzers**: Automated tools designed to detect bugs and vulnerabilities by generating and testing unexpected or invalid inputs. The Chromium project has significantly contributed to advancing fuzzing technologies, including innovations like PartitionAlloc, which enhances memory safety and reliability.

11.3.6. Media and Codecs

22. **AV1**: Open-source, royalty-free video codec.

23. **VP8/VP9**: Predecessors of AV1, optimized for web video.

24. **WebM**: Media container for VP8/VP9 and Opus audio.

25. **WebP**: Image format with superior compression and quality.

26. **Opus**: Audio codec for low-latency, high-quality sound.

27. **Widevine**: Digital rights management (DRM) for streaming services.

28. **Encrypted Media Extensions (EME)**: Standard for DRM-protected content.

11.3.7. Collaboration with Standards Bodies

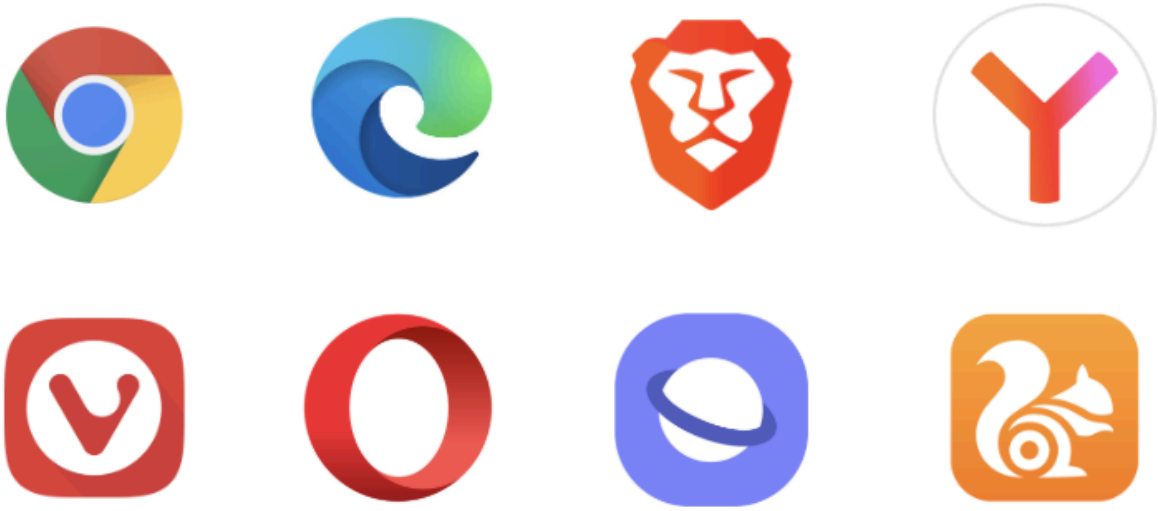
29. **W3C Contributions**: Development of web standards.

30. **IETF Contributions**: Work on HTTP protocols, QUIC, and other networking standards.

11.4. Where is it used?

This list is far from exhaustive; it simply highlights the surprisingly broad, varied, and critical areas where Chromium plays a role. A sudden disruption to its funding would have far-reaching and unpredictable consequences, even in industries that might seem unrelated, or immune.

11.4.1. Chromium Browsers



Chromium unsurprisingly is the core of all Chromium-based browsers. Google's open-source Chromium project significantly lowers the barrier to entering the browser market. Its open-source license allows any party to soft-fork or hard-fork the project without Google's approval.

Soft-forking, which involves creating a browser while still relying on updates from the project, can be done by a very small team. This allows these teams to focus on individual features to differentiate themselves while receiving the bulk of the code, features and maintenance (for example security patches) from the main Chromium project.

Hard-forking, where a party duplicates the project's current code and assumes governance, would be costly, likely costing in the hundreds of millions to low billions annually, though still far cheaper than developing a browser engine from scratch.

11.4.2. Non-Chromium Browsers

It may seem surprising, given that Firefox and Safari have their own distinct engines, but Chromium plays a significant role in supporting both. This happens in two key ways. First, several components, libraries, and services maintained under the Chromium project are used by these browsers. For example, Google Safe Browsing, WebRTC, HTTP3, various codecs, and graphics libraries.

Second, Google, through Chromium, drives a vast amount of exploratory specification work. This involves designing new web standards, implementing them in Chrome (often behind developer settings), and evaluating their viability. The process is expensive, and most proposals never progress beyond early experimentation or reach standardization.

Ideally, Mozilla and Apple would take on more of this exploratory development, but Mozilla lacks the budget to push the web forward at the same scale, while Apple, despite having the resources, is insufficiently incentivised (and in some cases disincentivized) to invest sufficiently in Safari. A key challenge in shaping sound web policies is ensuring Mozilla has the funding it needs and that Apple is properly incentivized to meaningfully invest in Safari and web platform innovation.

11.4.3. SpaceX Terminals

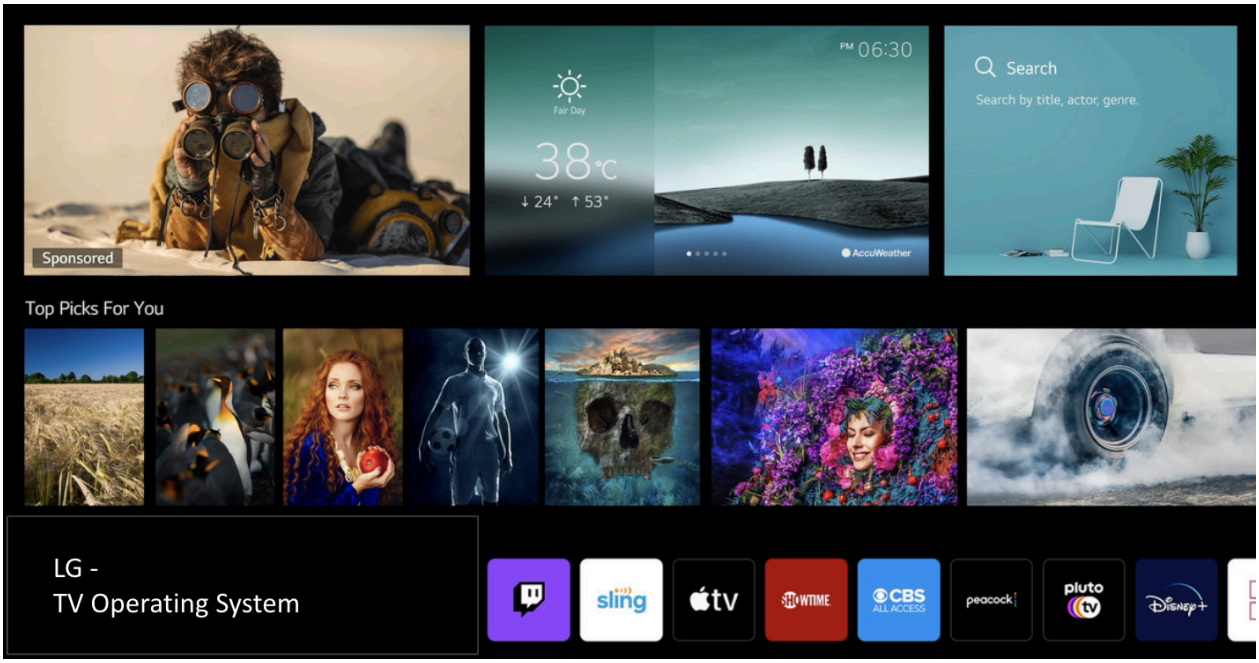
SpaceX uses Chromium for the touchscreen interfaces in its Dragon spacecraft, a striking endorsement of its stability and reliability. Spaceflight is an inherently high-risk endeavor, where every system must perform flawlessly. That a web-based technology is trusted for such critical operations highlights Chromium's robustness, not just for everyday browsing, but in extreme, high-stakes environments.

11.4.4. Bloomberg Terminals

The rendering and UI logic in Bloomberg's financial terminals run on Chromium, highlighting its diverse role beyond web browsing. These terminals handle vast amounts of real-time financial data, where stability and performance are crucial.

Bloomberg terminals are among the most relied-upon systems in global finance, used by traders, analysts, and institutions to make split-second decisions involving billions of dollars. They serve as a primary gateway to financial markets, providing access to market data, trading platforms, news, analytics, and communications tools.

11.4.5. LG's WebOS

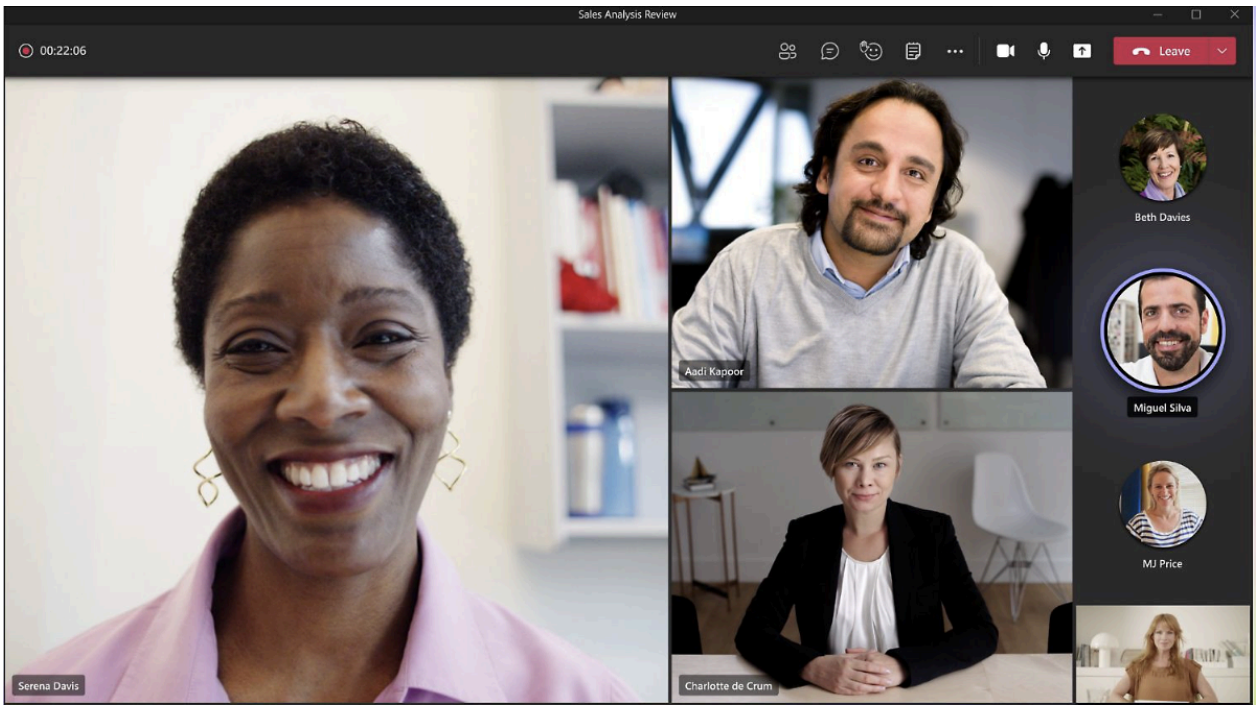


LG's webOS TV operating system was originally limited to LG TVs, but now has a [Chromium-based app programming environment] for content providers and aggregators.

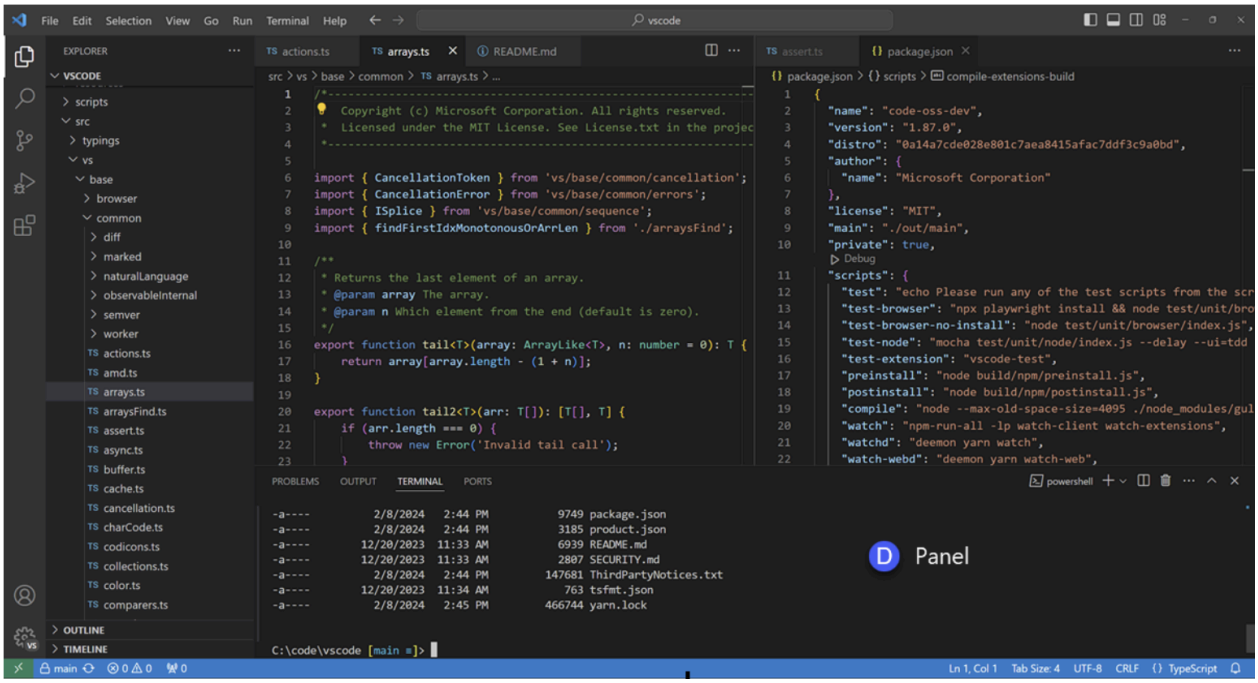
As of 2021, over 20 brands had adopted webOS for their smart TVs. By 2022, this had expanded to over 200 TV brands.

11.4.6. Native Applications

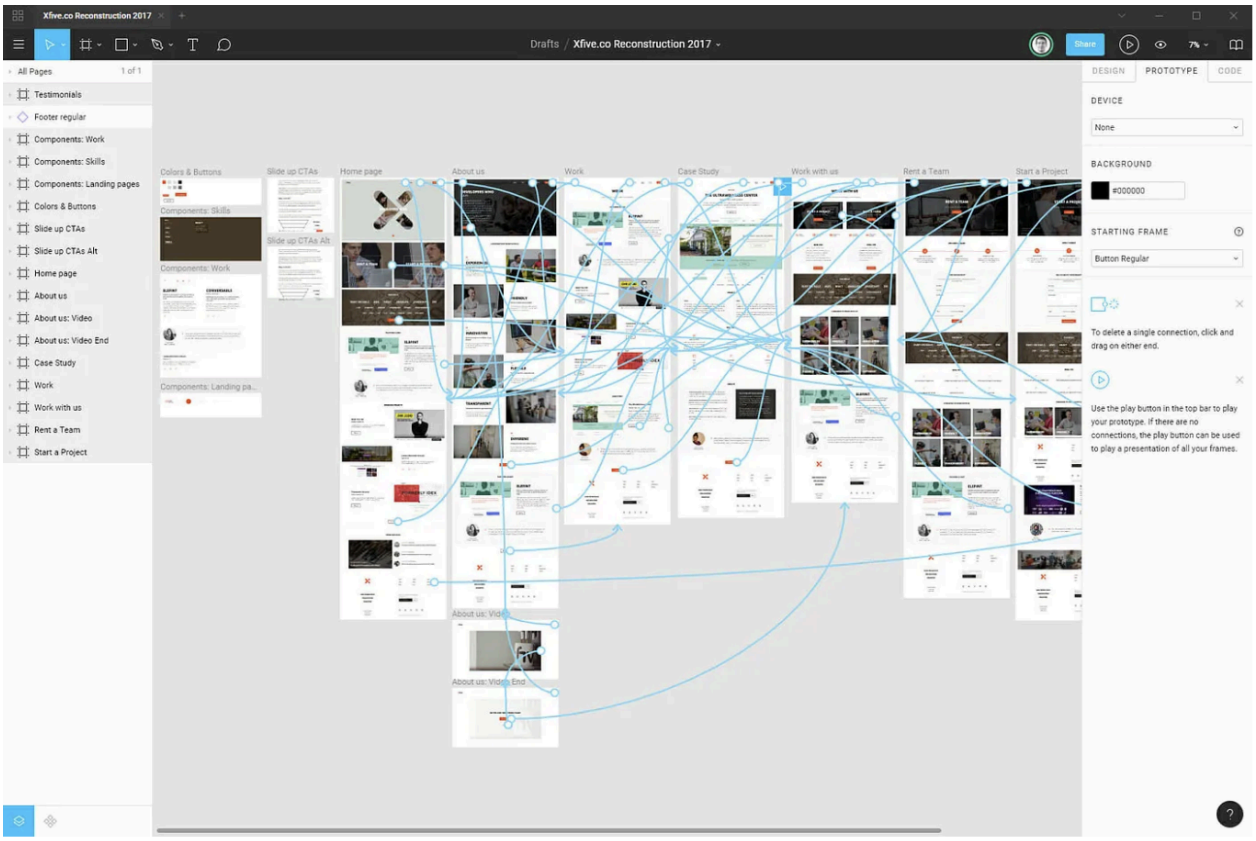
A vast number of applications that might be considered "native" are actually built using Chromium and web technologies, then packaged within a native shell called Electron.



Microsoft Teams



Visual Studio Code



Figma

This includes popular apps like:

- Microsoft Teams
- Microsoft Outlook
- Slack
- Visual Studio Code
- Skype
- WhatsApp's desktop client
- Discord
- Figma

- Spotify
- Bitwarden
- 1Password
- Netflix's desktop client
- Signal's desktop client

And many more. While these apps appear to be native desktop applications, they are fundamentally Chromium-based, running inside a cross-platform Electron wrapper, or a Chromium WebView.

11.4.7. V8 JavaScript Engine

The V8 engine is developed under the Chromium project and serves as a highly optimized JavaScript engine. While it powers Chromium-based browsers, its impact extends far beyond, as it is widely used on servers, thanks to the popularity of server-side JavaScript runtimes like Node.js.

V8 is particularly favored for handling high-demand, high-traffic applications and is extensively utilized by major organizations, including:

- PayPal
- Netflix

- Uber
- Trello
- Walmart
- NASA

11.4.8. Communication – WebRTC

WebRTC, originally based on technologies from GIPS and On2 Technologies (both acquired by Google), is primarily developed within the Chromium project, but is used across all major browsers and platforms. It serves as the backbone for real-time audio and video communication, powering nearly all modern communication platforms, including:

- Google Meet
- Facebook Messenger
- WhatsApp
- Facetime
- Zoom

- GoTo Meeting
- Microsoft Teams
- Slack
- Discord
- Twilio
- Whereby
- Jitsi
- WebEx

11.4.9. Graphics – Skia & Dawn

Skia and Dawn are two critical graphics technologies primarily developed within the Chromium project. Skia is a high-performance 2D graphics library used for rendering in Chromium-based browsers, as well as in Android, Flutter, and some parts of Firefox. It provides essential drawing capabilities, handling text, vector graphics, and images efficiently.

Dawn, Chromium's implementation of the WebGPU API, serves as an abstraction layer over modern GPU APIs like Vulkan, Metal, and Direct3D 12, enabling high-performance graphics and compute workloads on the web.

Together, Skia and Dawn power critical graphics rendering in Chromium-based browsers, Android applications, and emerging GPU-accelerated web technologies.

11.4.10. Video & Image Codecs – AV1, VP9, WebP

AV1, VP9, and WebP are video and image codecs primarily developed within the Chromium ecosystem, with significant contributions from the Alliance for Open Media (Amazon, Apple, Cisco, Google, Intel, Meta, Microsoft, Mozilla, Netflix, NVIDIA, Samsung, and Tencent). These codecs are designed to deliver high-quality compression with lower bandwidth usage, making them essential for modern web and media applications.

AV1, the successor to VP9, is an open-source, royalty-free video codec optimized for streaming efficiency. It is widely supported in Chromium-based browsers and Firefox, and is increasingly adopted by platforms like YouTube, Netflix, and Facebook.

VP9, developed by Google, remains a key video codec in YouTube and WebRTC applications, offering superior compression compared to H.264. It is supported in Chromium-based browsers and Firefox, and more recently in Safari.

WebP, a modern image format designed to replace JPEG and PNG, provides superior compression with lossless and lossy options. It is natively supported in Chromium-based browsers, Firefox and Safari.

These codecs are integral to efficient media delivery across the web, including for many native apps, reducing file sizes while maintaining high visual fidelity.

12. What Does It Cost to Develop and Maintain the Web Platform?

Determining the cost of developing a browser engine is challenging, as most companies keep this information private. Mozilla is one of the few exceptions, as its non-profit structure makes its budget more transparent.

Additionally, defining the full scope of browser engine development is complex. The web platform encompasses a vast range of technologies that evolve based on how the web is being used. In many ways, it functions as an interoperable operating system, running on top of major OS platforms while providing a foundation for countless applications and services.

The distinction between browser spending and platform spending is also crucial. Browser spending typically funds features specific to a single browser, focusing on user-facing improvements that do not necessarily benefit the broader web ecosystem or applications that rely on the platform. Platform spending, on the other hand, supports fundamental web technologies that are shared across all browsers using that engine, and often benefit other engines as well. This investment directly enhances the capabilities, performance, and reliability of web applications, making it essential for the long-term success of the open web. While both types of spending have value, platform investment is by far the most critical when assessing the net benefit of the web to the world.

Maintaining the current capabilities of the web platform is important, but equally critical is continuing to push it forward. Advancing the web requires significant investment in research and development, as creating new functionality is both complex and costly. Each new feature must be designed, tested with developers, and undergo a rigorous standardization process before becoming part of the platform. Many proposed features, even those that seem promising, fail to make it through this process and are ultimately abandoned.

Despite these challenges, ongoing innovation is essential for the web to remain competitive with proprietary platforms. Without sustained investment in developing and refining new web technologies, the web risks stagnation and falling behind.

12.1. How Much Does Blink/Chromium Cost?

Recent data published by Google indicates that it is responsible for approximately 94% of all Git commits to Chromium. While this is a crude metric, we believe it provides a

reasonable estimate of Google's relative financial contribution to Chromium's development which we estimate at approximately 90%.

Estimates suggest Google employs around 2,000 engineers working on Chrome and Blink/Chromium, with an estimated 50-50 split between browser and platform development. With an average cost of $500,000 per employee, this suggests that Google's technical staff alone costs roughly $1 billion annually.

When accounting for additional expenses, including legal, marketing, security, and other supporting departments, we estimate that Google's total annual investment in Blink/Chromium is approximately $1 billion with another $1 billion on the browser layer. This rough figure is consistent with estimates from academic researchers studying the topic.

12.2. How Much Does WebKit Cost?

We estimate that Apple spends between $300 – 400 million annually on Safari and WebKit. This estimate is derived from an analysis of employee contributions based on Git commits, Apple's presence in web standards discussions, average salaries at Apple, and expected overhead costs.

However, this remains an approximation, as there is no publicly available breakdown of Apple's investment in Safari. Without detailed financial disclosures or insider information, an exact figure is impossible to determine.

We have long argued that Safari is significantly underfunded compared to Chrome and that Apple needs genuine browser competition on iOS to create the incentive to invest more heavily in web platform development. Without meaningful competition, Apple has little motivation to allocate additional resources toward improving Safari and WebKit at the scale required to keep pace with the evolving web.

Additionally, Apple has a significant disincentive to allowing the web to compete effectively with its app store, which earns the company roughly $31 billion per year and has long feared a web-based alternative. In 2011, Philip Schiller internally sent an email to Eddy Cue to discuss the threat of HTML5 to the Apple App Store titled "**HTML5 poses a threat to both Flash and the App Store**".

> *"Food for thought: Do we think our 30/70% split will last forever? While I am a staunch supporter of the 30/70% split and keeping it simple and consistent across our stores, I don't think 30/70 will last unchanged forever. I think someday we will*

> *see a challenge from another platform or a web based solution to want to adjust our model"*
>
> Internal Apple Emails
> (emphasis added)

That is, as early as 2011, Apple's management viewed Web Apps as a credible threat to the App Store revenue model. This is perhaps unsurprising as Steve Jobs originally intended Web Apps to be the only way to deliver third-party apps on iOS.

12.3. What About the Other Chromium Browsers?

We lack precise data on how much other Chromium-based browsers invest beyond their contributions to Chromium itself. However, it is clear that Microsoft allocates significantly more resources to developing its browser than to contributing to the underlying platform, a strategy made possible by Google shouldering the majority of Chromium's development costs.

Smaller Chromium-based browsers can focus their limited resources, typically in the range of a few million to tens of millions, on niche features and differentiated user experiences rather than maintaining or contributing significantly to the Chromium core. This model of competition is valuable, as it pressures larger browsers (such as Chrome, Edge, Firefox, and Safari) to adopt new features they might otherwise ignore and preserves the potential for one of these smaller players to grow its market share over time.

12.4. How Much Does Gecko Cost?

Mozilla is one of the few browser vendors with publicly available spending data for its work on Firefox and the Gecko engine, with an annual budget of approximately $420 million. Although Mozilla allocates some resources to other initiatives, the bulk of its funding supports browser development and engine maintenance. Based on industry norms for browser vendors who maintain their own engines, it's reasonable to estimate a roughly 50-50 split between browser-specific features and web platform investment. This suggests a rough upper bound of $400 million currently being invested annually in Firefox and Gecko, with approximately $200 million directed specifically toward the Gecko engine.

12.5. Is $400 Million a Year Enough to Fund Gecko and Firefox?

Some have argued that Mozilla's budget could serve as a baseline for reasonable investment in the web platform, but this approach is deeply flawed for several reasons.

First, Firefox is a shrinking browser that is struggling to maintain market share. To thrive rather than simply survive, Mozilla would need significantly more funding than it currently receives. Treating its underfunded budget as a benchmark ignores the reality that Firefox is not in a strong competitive position.

Second, Mozilla benefits heavily from the vast amount of work done in Chromium, despite having its own distinct browser engine. Chromium's contributions extend far beyond its own ecosystem, influencing web standards, shared libraries, and platform innovations that Firefox incorporates. If Chromium's funding were drastically reduced, Mozilla's costs would rise significantly just to maintain its current pace of development and quality.

Third, the very remedies being proposed in this case, could bankrupt Mozilla. If search revenue-sharing deals are eliminated or severely restricted, Mozilla's primary funding source would disappear, threatening its survival entirely.

Finally, these remedies risk reducing total investment in web platform development by 70%. The idea that a collapse in funding of this magnitude would have no consequences for the web platform defies belief. The web provides trillions of dollars in economic value, and its continued growth depends on sustained investment in browser engines and platform evolution.

The DOJ has a legitimate case against Google and is right to take action to dismantle its search monopoly. However, remedies should not be applied like a sledgehammer, nor should the collateral damage to the adjacent markets of browsers and the web platform be ignored.

The DOJ does not have to choose between breaking Google's dominance and preserving a well-funded web, they can achieve both. It is possible to curb Google's monopoly, restore competition, and ensure continued, substantial investment in the web platform without crippling smaller browsers like Firefox. In fact, if structured correctly, the DOJ's remedies could increase investment in the web platform.

13. Tragedy of the Commons

If Google is forced to divest Chromium, the project faces a serious risk of falling into a tragedy of the commons, a scenario where an essential shared resource benefits many, yet no single entity is willing to sustain the cost of maintaining it.

Chromium is the foundation of the majority of modern web browsers, including Chrome, Edge, Opera, Vivaldi, and many others. It enables businesses across industries to generate trillions of dollars in value by providing a high-performance, secure, and continuously evolving web platform. However, the cost of maintaining and advancing Chromium is massive, requiring at least 1 billion dollars in annual investment to support its engineering teams, security updates, compatibility improvements, and new web standards development.

The challenge is that while many companies benefit from Chromium's existence, none may be willing to fund it at the scale necessary to keep it competitive. Microsoft, for example, benefits from Edge's Chromium foundation but contributes only a small fraction of what Google does to Chromium's development. Similarly, while companies like Meta and Amazon depend on the web platform for their core services, they contribute minimally to Chromium's ongoing development compared to Google. If Google is forced to divest the project, and if no individual company or consortium steps up to replace its funding, Chromium could stagnate or deteriorate, leading to slower web innovation, a significant increase in bugs, declining security, and greater reliance on proprietary platform ecosystems such as iOS and Android.

The full economic impact of such a scenario is difficult to quantify, but the risks are enormous. The U.S. digital economy alone is estimated to contribute $2.4 trillion and support 8 million jobs. The web has been well-funded for two decades, allowing it to become a critical pillar of the global economy. The repercussions of a crippling blow to the underlying funding of the web platform could have unpredictable and lasting consequences for businesses, developers, and users worldwide.

14. What's at Risk for the Open Web?

Mozilla faces a serious risk of bankruptcy if its primary source of funding is cut off. As one of the last independent browser vendors maintaining its own engine. Its collapse would leave the web even more dependent on a small group of dominant players while also silencing an independent voice in web standards development.

Chromium's funding could be severely reduced, resulting in slower development, increased security vulnerabilities, fewer new features, and a significant rise in bugs. This would weaken the web platform's overall competitiveness, making it less stable and reliable for businesses, developers, and organizations that depend on it.

Without sustained funding, efforts to bring alternative browser engines to iOS may never materialize. This work is primarily being driven by Google and Mozilla, and if financial constraints prevent them from completing it, Apple's long-standing restrictions on third-party browser engines will continue to suppress competition in both browsers and web apps on iOS. Even as regulatory intervention in the EU, UK, and Japan pushes for change, a lack of viable competitors could limit the effectiveness of those efforts. Additionally, this could undermine the DOJ's ability to address Apple's anti-competitive behavior alleged in its complaint.

A weaker browser market would reduce competitive pressure on the remaining players, slowing innovation and further entrenching Google and Apple's control over their respective mobile app ecosystems. With fewer challengers advocating for better performance, privacy, and open standards, users would face a stagnant web, leading to fewer choices, lower-quality software, and higher costs. Startups and independent developers may be locked out if the web becomes an unreliable distribution platform, increasing barriers to entry and making digital markets even more expensive to compete in.

15. Estimating the Impact on Web Platform Funding

If the DOJ proceeds with remedies requiring Google to divest Chrome and banning all search engine revenue sharing deals, including those with smaller browsers, the impact on web platform investment could be profound.

Quantifying this impact is inherently difficult. Current investment levels are largely opaque, with Mozilla being the only significant exception. What follows is informed, but ultimately speculative, analysis.

This concern may become moot if the DOJ finds a buyer for Chrome who is willing, capable, and incentivized to invest in the web at levels comparable to Google. **The central question is whether such a buyer actually exists.**

15.1. Mozilla

We estimate that Mozilla currently invests around $200 million per year in the web platform, with a similar amount going into the browser layer. If the Google search deal, which accounts for the vast majority of Mozilla's revenue, is terminated, it's hard to see Mozilla surviving in its current form.

However, Mozilla does have sizable financial reserves, so they won't vanish overnight. But those reserves won't last forever. In fact, for Mozilla to remain a meaningful player in the browser space, its budget would need to grow, not shrink. Firefox continues to lose users, even with the Google deal in place.

If Google is barred from revenue sharing and Mozilla turns to Bing or other search engines, it's unclear how much they would be willing to pay in a market without Google bidding up the price. If Microsoft pays half of what Google paid, for example, then Mozilla will, over the long term, decline into irrelevance and cease to be the positive force for the web that it is today.

That is, Mozilla's net contribution to the web platform is likely over the medium term to drop to near zero as a result of these remedies.

15.2. Google

Benefits for Google of a strong web platform such as support for its online services and keeping the world's data indexable will remain and are individually powerful, but these remedies will both mechanically and psychologically change Google's relationship with the web. We can see this with companies such as Meta, Amazon, Microsoft and Netflix, who radically benefit from the web, and while they do fund it, do not fund it to anywhere near the level that Google does.

The most immediate change is the disappearance of the most significant and clear financial incentive to fund Chrome and Chromium, the Google Search default. With Chrome divested and revenue sharing banned, Google would no longer derive direct financial benefit in this manner from the project. That changes the return on investment calculus dramatically.

There are also open questions about what happens to the engineering infrastructure around Chrome and Chromium. What becomes of the thousands of Chrome and Chromium engineers currently at Google? If the new owner of Chrome decides not to continue investing at current levels, and fires most of the team, can Google hire them back? Would that be permitted under the terms of the divestment?

Control over Chromium itself may also become contested. If the new owner of Chromium deprioritized or slowed down development and Google disagrees with the direction or pace, can it legally fork Chromium and resume independent investment? Would that be permitted under the court's remedies? These aren't abstract concerns, they directly affect whether Google retains the technical and legal ability to keep pushing the web forward and to continue to invest in the web platform. Remember, Google is widely believed to have forked Blink from WebKit due to frustration that Apple was preventing them from investing heavily and pushing the web forward. The risk here is that history repeats itself, but under far more constrained and politically sensitive conditions.

Beyond logistics, there's a psychological and political hurdle inside Google. After being forced to give up a major asset like Chrome, and losing the staff, control, and influence that came with it, it will be a hard internal sell to reinvest heavily in the web platform. The idea that Google should hire a new 2000 staff (the existing browser staff have presumably left with the new entity) and spend a billion dollars a year for the benefit of browsers it no longer owns, in a market it's been pushed out of, is going to face strong resistance.

Google's role in web standards bodies may also be affected. Without a browser, its influence could fade. If its position in standards processes is weakened, the strategic

value of continuing to invest in web platform research and development could shrink accordingly.

All of this points in one direction: a significant and prolonged decline in Google's support for the web platform. While investment won't drop to zero, we expect it to fall sharply.

Our best estimate is that Google's current ~$1 billion per year investment will decline to under $150 million annually if these remedies are enforced. Again, this is of course speculation but for those suggesting other figures they need to argue convincingly why (and mechanically how) Google will continue to invest at higher levels.

15.3. Microsoft

Based in part on Git commit activity, which is roughly one-twentieth that of Google, we estimate that Microsoft currently invests around $100 million per year into the web platform. Microsoft is believed to allocate significantly more funding to the browser layer of Edge.

Microsoft has strong incentives to invest in the web. It has a browser with reasonable market share, it has the second largest search engine in the world and a significant number of apps such as Teams and VS Code, that are essentially web apps wrapped in a native shell running on Chromium.

Additionally, Microsoft stands to gain from increased Bing revenue if Google is banned from revenue sharing, potentially giving it more financial room to support browser development.

However, Microsoft is also heavily dependent on Chromium. If Google sharply reduces its investment and the new owner of Chrome fails to fill the gap, Microsoft will feel the impact acutely. Much of the stability, security, and day-to-day maintenance of Chromium is currently shouldered by Google. Without that, Microsoft will be forced to pick up the slack.

It also has far more resources and web-aligned revenue than smaller Chromium-based browser vendors, which makes it better positioned to adapt. We believe Microsoft will maintain its current investment and may even slightly increase it.

That said, the nature of Microsoft's investment will likely shift. Today, Microsoft is able to focus on features that advance its own strategic goals because Google handles much of the foundational maintenance. But if Google steps back, Microsoft will need to redirect resources toward infrastructure work: security, bug fixing, and performance tuning, at the expense of new feature development.

We estimate that Microsoft will continue to invest around $100 million annually but with a more defensive and maintenance-focused allocation.

15.4. Apple

We estimate that Apple currently invests approximately $150 million per year into the web platform, with a similar amount directed toward the Safari browser layer.

Apple has clear incentives to ensure Safari remains "good enough" for everyday web use, sufficiently poor browser performance noticeable by consumers would damage the Apple brand. At the same time, Apple has strong disincentives to support web capabilities that could enable the web to meaningfully compete with its App Store. While it does face some competitive pressure from Chrome, Firefox, and Edge, this pressure is severely diminished by Apple's ban on third-party browser engines on iOS, which effectively eliminates true browser competition on its mobile devices.

In recent years, Apple has increased its investment in Safari. We believe this was driven by a combination of intensifying regulatory scrutiny, growing developer frustration over stagnation and our persistent advocacy. Perhaps foremost was a growing fear that they would need to actually compete against Blink and Gecko on iOS, Safari's largest and most important market.

However, if the proposed DOJ remedies are implemented, the landscape will shift dramatically. Mozilla may collapse, Google's investment in the web platform is expected to decline sharply, Microsoft will likely pivot toward stability over new features, and ports of Gecko and Chromium/Blink to iOS are likely to be canceled. In this environment, Apple will face far less competitive pressure to advance the web. While it will still be motivated to maintain a secure browser, if only to avoid damaging headlines and regulatory pushback, its incentives to support new web features will diminish significantly.

The cancellation of Apple's search deal with Google would further reshape the dynamics. Safari would go from generating an estimated $19.7 billion in pure profit annually, with an extraordinary 98.5% profit margin, to costing Apple an estimated $300 million per year. While Apple can easily afford to continue funding Safari and WebKit without a revenue stream, there will be psychological impact within the company. A once massively profitable product line will suddenly become a cost center.

Taking all of this into account, we expect Apple's investment in the web platform to decline. Our estimate is that annual spending would fall from $150 million to around $100 million.

15.5. Smaller Chromium Browser Vendors

Smaller browser vendors vary in how they generate revenue; some rely on search deals with Google or Bing, while others pursue alternative business models. However, compared to Google, Apple, Mozilla and Microsoft the financial resources available to these vendors is more limited. They also depend far more heavily on upstream contributions from Chromium rather than investing directly in the web platform themselves.

These vendors typically focus on innovation within the browser layer, such as user interface improvements, privacy tools, and niche features, instead of contributing to the underlying web platform. This is reflected in their minimal presence in Chromium's development, accounting for less than 1% of Git commits. Despite this, they play an important role in browser diversity and innovation. If any of them were to grow significantly in market share, their contribution to the web platform would likely increase accordingly.

Given the potential loss of search revenue and ongoing resource constraints, we expect their already small investment in the web platform to either stay flat or decline further.

15.6. Igalia

Igalia is an independent open-source consultancy that plays a valuable role in the browser ecosystem. Their team of skilled engineers contributes to a wide range of browser engines and web standards, often helping implement features across multiple platforms. In some cases, browser vendors hire them to fix bugs or implement features. In other cases, non-browser vendors hire them to implement or spec needed functionality. For example, Bloomberg paid Igalia to implement CSS Grid in Chromium and Webkit.

However, while they play a critical role in lowering the technical barrier to contributing to the web platform, particularly for parties without in-house browser engineering expertise, they typically do not directly fund this work themselves. Instead, they operate on a contract basis, with their efforts funded by clients who hire them to advance specific features or capabilities. As such, Igalia's overall contribution to the web platform tends to scale in proportion to the broader level of investment from other stakeholders. If overall funding for web platform development increases or decreases, Igalia's role is likely to grow or shrink proportionally.

15.7. Other Non-Browser Companies

Other non-browser companies, such as Intel, also contribute to the web platform. For example, contributions from these organizations account for approximately 1.5% of the commits to Chromium. It's worth noting that, as mentioned previously, many of these companies channel their contributions through contracted work with firms like Igalia, so a portion of non-browser vendor investment is already reflected within Igalia's overall activity.

How this investment will evolve remains uncertain. On one hand, if as predicted overall investment in the web platform plummets sharply, some of these companies may step up their involvement to ensure the continued development and support of features critical to their products. On the other hand, a significant drop in momentum and confidence in the web platform could prompt a strategic shift toward native ecosystems, leading these companies to reduce or withdraw their investment in the web platform altogether.

15.8. The Buyer of Chrome

Everything hinges on who, if anyone, ends up buying Chrome. The ideal buyer would need deep financial resources, strong technical capability, and a strategic incentive to keep the web open and competitive. But it's unclear whether such a buyer exists. Without one, Chrome risks being reduced to a cash-generating product with its roughly $1 billion annual web platform budget slashed.

The DOJ has not suggested any binding conditions requiring buyers to continue investing in Chromium or the web platform. It's also unclear what exactly the buyer would receive. Will they inherit the current engineering staff? Will they gain control over the Chromium open-source project, the Chromium brand, or Google's positions on key web standards bodies? These details matter, and currently, they remain unanswered.

While it would be ideal if the new entity maintained or even increased spending, as we've outlined earlier in this analysis, there will be immense financial pressure to cut costs. This is especially true given that this new owner will lose its most obvious revenue source: the ability to sell the default search engine slot to Google.

They will, of course, be able to sell that slot to another search engine, but it is not clear whether the resulting revenue will be sufficient. According to court documents, Microsoft offered Apple $4 billion:

> *"Microsoft offered Apple a revenue share rate of 90%, or a little under $20 billion over five years. [...] The analysis assumed that Microsoft would initially pay Apple 100% of Bing's revenue share, while Google would continue paying Apple % revenue share if retained as the default. The analysis showed that if Apple extended the ISA, it would gain about $40 billion from Google in the next five years, and then $70 billion in the following five years. Id. at 974.* ***This was double the $20 billion Microsoft offered Apple for the first five years.****"*
>
> Memorandum Opinion - United States of America vs Google LLC

However, the 90% revenue share rate is clearly unsustainable. Realistically, if Microsoft were not bidding against Google, it's unlikely to offer more than $1 to $1.5 billion per year. Meanwhile, Chrome and Chromium are estimated to cost $2 billion annually to develop. Servicing a $20 billion acquisition loan could add another $2 to $5 billion per year, depending on the loan's risk profile. Adding a modest 10% profit target, roughly $2 billion per year, brings the total funding requirement to between $6 and $9 billion annually. That would leave the buyer facing a shortfall of approximately $5.5 to $8 billion per year.

That said, even a short-term profit-driven buyer won't reduce spending to zero. It will still be in their interest to keep Chrome at least minimally secure and functional. However, we could expect most new feature development to be halted, the Chromium port to iOS likely canceled, and much of the engineering team acquired from Google to be laid off.

Taking all this into account, we estimate that the new Chrome owner would reduce investment in the web platform to, what Microsoft is estimated to be investing, roughly $100 million per year, down from the current $1 billion.

It's also important to note that this isn't the worst-case scenario. Given the challenging dynamics of such a sale, there remains a very real possibility that the new Chrome entity could ultimately go bankrupt.

15.9. What could the Total Impact Be?

We can now estimate the overall change in web platform investment based on the likely impact across the major contributors.

Current estimated annual investment:
Google: $1,000 million
Mozilla: $200 million
Microsoft: $100 million
Apple: $150 million

Total: $1.45 billion per year

Projected post-remedy investment:
Google: $150 million
Mozilla: $0 million
Microsoft: $100 million
Apple: $100 million
Chrome Buyer: $100 million

Total: $450 million per year

This represents a decline of roughly 70% in annual investment into the web platform, a dramatic reduction that could severely undermine the pace of web innovation and long-term competitiveness of the open web.

Again, it should be stressed that this is an estimate, but we have yet to see any other careful analysis on what the change in investment will be **or why a 70% plunge in investment for the web platform would not be catastrophic**. Anyone making such an analysis must answer the questions we pose in this section.

While a 70% drop in web platform investment may sound dramatic, it is not, in our view, the worst-case scenario, it is the most realistic and probable outcome based on the incentives created by the DOJ's proposed remedies. Google would lose its primary reason to invest, the new owner of Chrome would face severe financial pressure and lack viable revenue streams, Mozilla's funding would be cut off, Microsoft would shift toward maintenance over feature development, and Apple would have little incentive to increase or maintain its already limited investment. If this is not the median case, then those who argue otherwise must identify who will fund the web platform at current levels, and why.

16. Could this case be good for the Web?

Yes, Absolutely.

Enabling real competition between search engines would be a major win for the web.

For consumers, greater competition could lead to a better search experience offering higher-quality results, fewer ads, stronger privacy protections, and more choice. Many users have criticized Google for placing too many ads ahead of actual search results. If Google had to compete more aggressively for users, it would be incentivized to improve its services while keeping them free.

On the business side, Google serves as an aggregator between companies and their customers, with advertisers paying Google for placement. While this model is less extractive than mobile app stores, where Google and Apple demand a 30% cut, greater competition in search advertising would push ad prices down, ultimately reducing costs for businesses and, in turn, consumers. Regardless of the criticisms surrounding online advertising, it continues to be a crucial funding source for much of the internet.

It is also worth noting that the DOJ is pursuing a separate case against Google's alleged manipulation of the online ad market.

Finally, the DOJ's intervention could boost browser competition on both iOS and Android by terminating the Apple-Google search deal and eliminating Chrome's placement agreements on Android.

All of this could be a huge positive, provided the DOJ structures its remedies carefully to avoid plummeting investment in the web platform or bankrupting smaller browsers, which remain critical to a competitive internet.

17. Should the Apple Google Search Deal be Banned?

The Internet Services Agreement (ISA) is the official name of the landmark deal between Apple and Google, under which Google pays Apple a substantial share of its search advertising revenue from Safari on iOS and macOS. In return, Apple sets Google as the default search engine in Safari across both platforms and, in most cases, prioritizes Google Search for Siri and Spotlight queries. This partnership ensures Google's dominance in Apple's ecosystem while securing a significant revenue stream for Apple.

Astonishingly, on iOS, Google has also agreed to share its search engine revenue with Apple, even from its own browser, Chrome, a highly unusual arrangement. Google is effectively paying Apple for searches conducted by users who have already chosen Google's browser. The typical browser monetization strategy is to expand market share to maximize search revenue. Without the Chrome revenue share clauses, maximising Chrome's share on iOS would reduce the amount of revenue Google would have to share with Apple. However, the ISA comes strikingly close to a tacit agreement not to compete with Apple for browser share on iOS. This arrangement undermines Google's incentive to compete for browser market share on iOS.

> *"When Microsoft CEO Satya Nadella testified, he posited another reason for Apple to keep the Google deal going: Google might cause trouble if it went away. Google could use its ultra-popular apps like Gmail, Maps, and YouTube to promote Chrome and the Google app, diverting people away from Safari and potentially submarining the value of Apple's deal with any other search engine. In that sense, not only was the Google / Apple deal mutually beneficial but it may have also been something like a peace treaty."*
>
> The Verge - On Apple - Google Search Deal

This deal is also for a colossal amount of money even in the context of companies the size of Google and Apple.

> *"In 2022, Google's revenue share payment to Apple was an estimated $20 billion (worldwide queries). This is nearly double the payment made in 2020, which was then equivalent to 17.5% of Apple's operating profit. Google's 2022 payment under the ISA is more than all of its other revenue share payments combined and is approximately double that combined value."*
>
> Memorandum Opinion - United States of America vs Google LLC

This single deal accounted for roughly one-sixth of Apple's annual profit, a striking figure considering the immense success of its hardware sales, particularly the iPhone. Perhaps for this reason, this deal was specifically singled out by name as a significant issue to fix in the DOJ's opening statement when it filed the complaint in 2020.

> *"Entering into long-term agreements with Apple that require Google to be the default – and de facto exclusive – general search engine on Apple's popular Safari browser and other Apple search tools."*
>
> DOJ - Justice Department Sues Monopolist Google For Violating Antitrust Laws

An argument in favor of such a deal might be that Apple reinvests a significant portion of the revenue into developing Safari and WebKit. However, by our estimate, less than 3% is actually being reinvested into Safari and WebKit. Neither Google nor Apple provided concrete evidence to the contrary during the case:

> *"**The ISA does not require Apple to use revenue share payments to improve Safari, and Google has presented no evidence that Apple does so.** Mozilla likely does use its payments from Google to upgrade Firefox (given that those payments make up 80% of its operating budget), but Firefox's contribution to the overall search market is so small that the additional output it produces, at most, marginal procompetitive benefits."*
>
> Memorandum Opinion - United States of America vs Google LLC
> (emphasis added)

The DOJ has argued that search engine default deals have blocked rivals from effectively entering the search market and denied them the scale they need to outbid Google. Out of these deals, the ISA is by far and away the most significant.

> *"over half of all search volume in the United States flows through Apple devices"*

> *"Google's 2022 payment under the ISA is more than all of its other revenue share payments combined and is approximately double that combined value."*
>
> Memorandum Opinion - United States of America vs Google LLC
> (emphasis added)

The DOJ is undoubtedly correct that under the current market conditions for search engines in the United States, none of the other search engines has the ability to outbid Google for default placement. In court documents it was revealed that both Microsoft and DuckDuckGo repeatedly approached Apple to set up a search deal and replace Google as the default search engine on iOS and MacOS.

> *"Microsoft offered Apple a revenue share rate of 90%, or a little under $20 billion over five years"*
>
> *"When that offer was not accepted, Microsoft proposed sharing 100% of its Bing revenue with Apple to secure the default or even selling Bing to Apple."*
>
> Memorandum Opinion - United States of America vs Google LLC

Both Apple has claimed in both court documents and the media that it has chosen Google as it is the best search engine, implying that the size and reliability of the payments was not the primary concern.

> *"I think one of the benefits, for example, that Google gets from Apple is that we are telling the world that Google is the best search engine, because that's what they would expect Apple to pick."*
>
> Eddy Cue - Apple's Senior Vice-President of Services

Google has similarly echoed this sentiment:

> *"This decision recognizes that Google offers the best search engine, but concludes that we shouldn't be allowed to make it easily available."*
>
> Kent Walker - President of Google Global Affairs

However, reading through the court documents, it seems clear that this was about revenue above all else. Apple would not replace Google unless another party could reliably pay more.

> *"**Apple evaluated the potential financial impact of replacing Google with Bing.** See generally UPX273. The analysis assumed that Microsoft would initially pay Apple 100% of Bing's revenue share, while Google would continue paying Apple % revenue share if retained as the default. Id. at 975–76. The analysis showed that if Apple extended the ISA, it would gain about $40 billion from Google in the next five years, and then $70 billion in the following five years. Id. at 974. **This was double the $20 billion Microsoft offered Apple for the first five years**. Id. (**'Clearly, Microsoft can't commit to these numbers or even anything close to them.'**)."*
>
> *'In response to this analysis, Apple's Senior Vice President of Services, Eddy Cue, internally proposed that **the only way Apple could make the switch was if Microsoft were to guarantee minimum annual revenues of $4 billion the first year and a stepped increases of $1 billion per year over the next four years**, for a total of $30 billion in guarantees. Id. **Still, even that approach would produce revenues well short (by $10 billion) of Apple's expected earnings if it retained Google as the***

> ***default***. *Id. ("[T]his doesn't match Google ($30B v. $40B) and provides no protection for the following 5 years[.]"). Cue concluded that a Microsoft-Apple deal would only make sense if Apple "view[ed] Google as somebody [they] don't want to be in business with* ***and therefore are willing to jeopardize revenue to get out.*** *Otherwise it [was a]* ***no brainer to stay with Google as it is as close to a sure thing as can be****." Id.; Tr. at 2528:13-16 (Cue) ("And so Google's a sure thing. They have the best search engine, they know how to advertise, and they're monetizing really well.")."*
>
> Memorandum Opinion - United States of America vs Google LLC
> (emphasis added)

Apple also claims that they have no intention of building their own search engine and that they chose Google as it was the best search engine. While it is difficult to determine whether Apple has the capability or desire to develop a successful search engine, the alternative of selling the default search position to another party is easier to evaluate.

Is it truly credible that Apple secured such a substantial payment from Google without the implicit or explicit threat of replacing them? While this video is dated, it provides a valuable example of Apple's negotiation tactics in the past.

Setting aside the DOJ's extensive list of other proposed remedies, what would be the outcome if they successfully terminated the Apple-Google search deal, and what would the consequences be? It is important to note that the DOJ is particularly focused on Google's share of the U.S. search engine market, making U.S. statistics the most relevant in this context.

First, it is helpful to work out what success looks like in the DOJ's eyes. Luckily, the court documents include some interesting context here.

> *"[A] market share below 50% is rarely evidence of monopoly power, a share between 50% and 70% can occasionally show monopoly power, and a share above 70% is usually strong evidence of monopoly power."*
>
> Memorandum Opinion - United States of America vs Google LLC

It is also worth noting that the entire judgment can be withdrawn after five years if Google's market share falls below 50%.

In essence, the goal is to reduce Google's share in the U.S. search engine market from around 90% to either below 50%, a complete victory, or, at the very least, to somewhere between 50% and 60%.

So, if the DOJ decides to enforce this remedy, and it would be remarkable if they chose to withdraw it, what would happen?

Suddenly, Google would have a strong incentive to compete on iOS, assuming they were still allowed to participate in the browser market. Meanwhile, Apple would face a $20 billion annual shortfall from the lost Google deal and would be motivated to find an alternative revenue stream. While it is unclear whether Apple would enter the search engine market themselves, they would undoubtedly have a strong incentive to strike a deal with Bing or another search provider.

The case offers some insight into what such a deal might look like, though the value would likely be lower unless fierce competition emerged among the smaller search engines. But what if Apple suddenly switched all U.S. users who hadn't proactively chosen a default browser to another search engine? How many would manually switch back to Google?

Fortunately, Mozilla provides some relevant statistics, revealing that user behavior can vary significantly, likely depending on the quality of the replacement search engine.

When Mozilla swapped Google out for Yahoo in 2014, Yahoo gained a mere 20% of users. That is 70% of users switched back to Google or to another search engine.

> *"When Mozilla switched the Firefox default GSE from Google to Yahoo, the query volume for each search provider changed. Google's share of queries on Firefox abruptly dropped from between 80–90% to between 60–70%, a 20-point decline. Yahoo's share, in turn, increased from around 10% to 30% of the Firefox queries."*
>
> Memorandum Opinion - United States of America vs Google LLC

Later in 2016 when Mozilla experimented with switching the search engine to Bing, Bing only managed to retain a 20-35% share.

> *"In a 2016 experiment, Mozilla switched the default GSE on both new and existing users from Google to Bing. By the twelfth day, Bing had kept only 42% of the search volume. After some additional time, those numbers dropped to 20–35%, depending on certain variables."*
>
> Memorandum Opinion - United States of America vs Google LLC

However when Mozilla repeated the experiment 4 years later, in 2022, Bing retained 65% of the users. This is likely due to the improvement in the quality of Bing over those years.

> *"Mozilla found: (1) '35.5% of clients who had their default search engine switched to Bing changed their default to another search engine"*

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This suggests that unlike choice screens, which tend to have important but quite small effects, in the order of a few percentage points, actually switching everyone's default could be massively impactful. It seems likely that search quality plays a critical role in whether users switch back, i.e. users annoyed at poor search results are likely to manually switch back. Given that the DOJ proposal contains provisions such as forcing Google to allow other search engines to syndicate its results, this should result in a bump in quality for these search engines and would suggest they would manage even higher retention rates.

So were Apple to switch the default from Google to another reasonably high quality search engine (such as Bing), just how much of the United States search traffic would Google lose and what would its market share be reduced to?

17.1. Breakdown of Apple-Google Search Deal

Google Revenue Share iOS

Source	Shares Revenue with Apple
Spotlight - Google Result	Yes
Spotlight - Direct Link	Not Google
Siri - Google Result	Yes
Siri - Direct Link	Not Google
Safari - Search Bar	Yes
Safari - Google Bookmark	Yes
Safari - Manually loading google.com	Yes
Google Search App	No
Chrome	Yes
Other third-party browsers	No

Google Search Sources iOS

Source	Percentage Share
Safari	65.5%
Spotlight and Siri	8.2%
Google Search App	12.2%
Chrome	12.4%
Other Browsers	1.7%

These are calculated from the DOJ's and cloudflare's figures in the next section.

Google Revenue Share macOS

Source	Shares Revenue with Apple
Safari	Yes
Chrome	No
Other Browsers	No

Google Search Sources macOS

Source	Percentage Share
Safari	37.8%
Other Browsers	62.2%

17.2. How much share would Google lose if Apple changed the Default Search Engine?

In order to calculate an estimate we need a number of facts and simple calculations.

1. **50% of US search traffic flow via Apple devices.**

"over half of all search volume in the United States flows through Apple devices"
Memorandum Opinion - United States of America vs Google LLC

2. **Safari's market share on macOS is 37.8% and it is roughly that percent of the search entry points on macOS.**

3. **18% of Apple's searches happen on macOS and 82% on iOS.**
   iOS has a 28.7% operating system share and macOS has a 11.2% operating system share. 1.82 times as many searches are undertaken on mobile.

   "Significantly more searches are carried out on the mobile phone (64%) than on the desktop (35%).

   Johannes Beus - Sistrix

   Ratio between Mobile vs Desktop Searches

   $$= \frac{\text{Mobile Searches}}{\text{Desktop Searches}} = \frac{64\%}{35\%} = 1.82$$

   % iOS Share of Google Searches on Apple Devices

   $$= \frac{\text{iOS Share} \times \text{Ratio}}{\text{iOS Share} \times \text{Ratio} + \text{macOS Share}} = \frac{28.7\% \times 1.82}{28.7\% \times 1.82 + 11.2\%} = 82\%$$

   % macOS Share of Google Searches on Apple Devices

   $$= 100\% - \text{iOS Share of Google Searches on Apple Devices} = 100\% - 82\% = 18\%$$

4. **Google Search App has a 12.2% share of Google Searches on iOS**

   "Google receives only about 10% of its searches on Apple devices through the Google Search App"

   Memorandum Opinion - United States of America vs Google LLC

   The Google Search App is not available on macOS, so the entirety of this is on iOS. The case doesn't provide the percentage for iOS but we can calculate it.

   $$= \frac{\%\ \text{Google Search App share of Google Searches on Apple Devices}}{\text{iOS share of Google Searches on Apple Devices}} = \frac{10\%}{82\%} = 12.2\%$$

5. **Safari, Spotlight and Siri make up 73.7% of searches on iOS and roughly that percentage would be impacted by switching the default search engine.**

> *"Between Siri, Spotlight, and Safari, Apple gets about 10 billion user queries per week. Roughly 80% of those queries are entered into Safari; Siri and Spotlight thus make up a minority of queries."*
> Memorandum Opinion - United States of America vs Google LLC

Unfortunately the case doesn't provide a breakdown of search source per type on iOS but by combining it with browser share data from cloudflare we can come up with a reasonable estimate. On iOS, Safari holds 82.2% of the browser market, Chrome accounts for 15.6%, and all other browsers combined make up the remaining 2.2%.

The sources of traffic are Safari, Spotlight and Siri, Chrome, Google Search App and other browsers. From the above data and the previous points we know for iOS that the Google Search App is 12.2%, Safari is 5.3 times the Google traffic of Spotlight and Siri, 8 times the Google traffic of Chrome and 37.3 times the Google traffic of other small browsers combined. That is if Safari share of Google traffic on iOS is x then:

$$x + \frac{x}{5.3} + \frac{x}{8} + \frac{x}{37.3} = 100 - 12.2$$
$$\left(1 + \frac{1}{5.3} + \frac{1}{8} + \frac{1}{37.3}\right) x = 87.8$$
$$x = \frac{87.8}{1.34}$$
$$x = 65.5\%$$

Using this we can infer:

Source	Percentage Share Google Search
Safari	65.5%
Spotlight and Siri	8.2%
Google Search App	12.2%
Chrome	12.4%
Other Browsers	1.7%

That is Safari, Spotlight and Siri combined make up 73.7% of Google searches on iOS.

6. **67.1% of Apple's searches on both platforms would be impacted by changing the default search engine.**

   Note: that while Spotlight and Siri can show results that link directly to a third-party website, the case does not quantify how significant it was. Google does not appear to have attempted to make Apple remove this functionality via the search deal, instead they seemed more concerned about Apple potentially expanding it in future. As such we have assumed its impact is minimal.

$$
\begin{aligned}
&= (\text{iOS Google Search Percentage Affected by Changing Default}) \times (\%\text{ of Apple Google Searches on iOS}) \\
&+ (\text{macOS Google Search Percentage Affected by Changing Default}) \times (\%\text{ of Apple Google Searches on macOS}) \\
&= 73.7\% \times 82\% + 37.8\% \times 18\% \\
&= 67.1\%
\end{aligned}
$$

7. **More than 65% of users would keep the new search engine if Apple was to switch the default. Again this is likely conservative as it depends on search quality which will be significantly improved by the syndication remedy.**

   "Mozilla found: (1) '35.5% of clients who had their default search engine switched to Bing changed their default to another search engine"

   It makes sense to use the more recent figure as the change is mostly likely due to improved quality of Bing search between those dates.

8. **43.6% of Apple's US users would switch to and stick to a new search engine.**

   This calculation is a prediction of what would happen if Apple were to change the search engine default for all users on iOS and macOS for Safari, Spotlight and Siri to another search engine. Some percentage of users would switch back to Google, thus lessening the impact.

   *= (percentage Google Search traffic impacted by changing the default) * (retention rate of new search engine)*
   *= 67.1% * 65%*
   = 43.6%

9. **This would reduce Google's market share in the US by 21.8%.**

= (Percentage of Apple traffic moved to new Search Engine) * (Apple devices share of Google's search traffic in the United States)
= 43.6% * 50%
= 21.8%

10. **Google's search engine currently has an 89.2% market share in the United States.**

    "Measured by query volume, Google enjoys an 89.2% share of the market for general search services"

11. **Apple switching the default search engine on iOS and macOS would conservatively reduce Google's United States market share down to 67.4%.**

    = 89.2% - 21.8%
    = 67.4%

Conservatively, based on actual statistics, if Apple were to strike a deal with another search engine, and it is hard to imagine they wouldn't, over 21.8% of Google's search traffic would immediately shift to that new provider. This would result in another search engine gaining and retaining 21.8% of the U.S. search market and **reducing Google's market share from 89.2% to 67.4%.**

17.2.1. Google's Assessment

Our assessment is actually more conservative than Google's own which is even worse for Google, as cited in court documents.

> *"Google estimated that if it lost the Safari default placement, it would claw back more search volume on desktop than on mobile. (Google would recover only 30% on iOS but 70% on MacOS)"*
>
> Memorandum Opinion - United States of America vs Google LLC
> (emphasis added)

That is, if Apple were to switch the default on both iOS and MacOS to a search engine other than Google, Google would lose 70% of its share on iOS and 30% of its share on macOS.

We need some addition statistics to calculate the total predicted change in share here:

1. **18% of Apple's searches happen on macOS and 82% on iOS.**

As calculated in the previous section.

2. **62% of Apple's US users would switch to and stick to a new search engine.**

   Combining that with Google's figures of a 70% loss for iOS and a 30% loss on macOS, we get a 70% * 82% + 30% * 18% = 62% loss of market share overall on Apple devices.

3. **This would reduce Google's market share in the US by 31.0%.**

   62% * 50% = 31%

4. **Google's market share in the United States would be reduced down to 58.2%.**

   89.2% - 31.0% = 58.2%

This is even lower than our calculation of 65.7%. Note in both cases we would expect the loss to be higher due to the search engine syndication remedy increasing the quality of the other search engines. **So Google's own internal assessment predicts that this single remedy will reduce Google's market share in the United States to sub 60%.**

17.3. Impact of the Syndication Remedy

The DOJ judgment also includes a provision requiring Google to offer Qualified Competitors a 10-year syndication license at marginal cost, providing access to all non-advertising components of its General Search Engine.

This detail is crucial in evaluating the potential impact, as it directly affects whether other search engines can retain users while improving the quality of their own, non-Google syndicated search engines. Bing serves as a baseline with a 65% retention rate, but with Google syndication, this rate is almost certain to be higher.

Consider what happens when a company like Apple switches the default search engine. Users perform searches, and results from a non-Google search engine appear. If users encounter irrelevant results or struggle to find what they need after repeated searches, they'll likely switch back to Google, despite it being a relatively high-friction task. Conversely, if users receive high-quality, relevant results, they are far more likely to stick with the new search engine.

Using the calculations above, we can estimate the increased impact when combining the syndication remedy by adjusting the retention rate from the initial 65%. This involves replacing the 65% retention rate used in step 8 of the previous calculation.

Retention Percentage	Decrease in Google United States Market Share
65%	21.8%
70%	23.5%
80%	26.8%
90%	30.2%

That is the DOJ's syndication remedy should greatly improve the effectiveness of their remedy prohibiting the Apple-Google search deal.

17.4. Apple's Response to the Search Deal

In response to the DOJ's remedy proposal, Apple's Eddy Cue (Senior Apple Management) testified.

> *"I understand that Plaintiffs **seek a remedy that would prevent Apple from receiving any revenue share for distributing Google Search on Apple devices**, and that the proposed remedy would be in place **for the next 10 years**."*
>
> Eddy Cue - In Support of Apple Inc's Motion to Intervene
>
> (emphasis added)

He then argued that Apple's goal was for the best user experience possible or more specifically that the current Apple-Google search deal is part of Apple's efforts to best serve its users' needs (as opposed to earning Apple $20 billion per year).

> ***"Only Apple can speak to what kinds of future collaborations can best serve its users.** Apple is relentlessly focused on creating the best user experience possible and explores potential partnerships and arrangements with other companies to make that happen. **If the remedies above were implemented, it would hamstring Apple's ability to continue delivering products that best serve its users' needs."***
>
> Eddy Cue - In Support of Apple Inc's Motion to Intervene
>
> (emphasis added)

This is despite arguing against switching to Bing in 2015 on the basis that it would make Apple $10 billion less and be risky long term from a revenue perspective.

> *"In response to this analysis,* ***Apple's Senior Vice President of Services, Eddy Cue, internally proposed that the only way Apple could make the switch was if Microsoft were to guarantee minimum annual revenues of $4 billion the first year and a stepped increases of $1 billion per year over the next four years****, for a total of $30 billion in guarantees. Id. Still, even that approach would produce revenues well short (by $10 billion) of Apple's expected earnings if it retained Google as the default. Id. (****"[T]his doesn't match Google ($30B v. $40B) and provides no protection for the following 5 years[.]"****). Cue concluded that a Microsoft-Apple deal would only make sense if Apple "view[ed] Google as somebody [they] don't want to be in business with and therefore are willing to jeopardize revenue to get out. Otherwise it [was a] no brainer to stay with Google as it is as close to a sure thing as can be.****"*
>
> Memorandum Opinion - United States of America vs Google LLC
> (emphasis added)

He goes on to argue that were the DOJ to prohibit such a deal between Apple and Google then either Google would get users for free or that Apple would have entirely removed the ability for users to manually set Google as the default, something that the DOJ has never asked for. This is a slightly ridiculous framing, as currently the DOJ is not suggesting that Apple block users from manually selecting Google, simply that they can not be paid to set them as the default.

He frames this as a binary choice, missing the far more obvious alternative. Apple, absent its $20 billion annual payments from Google, sells that default to another search engine.

> *"If this Court prohibits Google from sharing revenue for search distribution, Apple would have two unacceptable choices.* ***It could still let users in the United States choose Google as a search engine for Safari, but Apple could not receive any share of the resulting revenue****, so* ***Google would obtain valuable access to Apple's users at no cost****.* ***Or Apple could remove Google Search as a choice on Safari****. But because customers prefer Google, removing it as an option would harm both Apple and its customers."*
>
> Eddy Cue - In Support of Apple Inc's Motion to Intervene
> (emphasis added)

Finally, he argues that Apple has no intention of developing a search engine.

> *"From what I understand,* ***Plaintiffs' proposed remedies assume that, without a revenue sharing agreement or other commercial terms with Google, Apple would***

> ***develop its own search engine*** *or enter the Search Text Ad market. Apple witnesses can offer testimony and evidence explaining why* ***that assumption is wrong****."*
>
> Eddy Cue - In Support of Apple Inc's Motion to Intervene
>
> (emphasis added)

Whether or not Apple would develop a search engine is hard to say, although certainly receiving $20 billion per year from Google would certainly disincentive it. In Apple's own internal discussions it appears that risk and a lower predicted revenue than from Google was the primary reason to not pursue this avenue.

> *Notwithstanding these investments, Apple has decided not to enter general search at this time. Apple would forego significant revenues under the ISA if it were to do so. (****2016 email from Cue to Apple CEO Tim Cook stating that Apple would have to "jeopardize revenue" if it stopped partnering with Google****); (internal Apple assessment from 2018, which concluded that,* ***even assuming that Apple would retain 80% of queries should it launch a GSE, it would lose over $12 billion in revenue during the first five years following a potential separation from Google****). It would also have to undertake the risk of consumer backlash, see (Giannandrea email stating, "****there is considerable risk that [Apple] could end up with an unprofitable search engine that [is] also not better for users****"), and forgo investment in other areas of product development, (Cue) ("And so if we took all of our resources and started spending them on search, sure,* ***we could have competed with Google*** *. . . [b]ut that meant we wouldn't have done other things.").*
>
> Memorandum Opinion - United States of America vs Google LLC
>
> (emphasis added)

However, even if we assume that he is right and that Apple would never create a search engine, **at no point in this testimony does he state that Apple would not sell the right to be the default search engine to another search engine provider.** His sole argument against that appears to be that Google would retain users but this time for free, something that the available statistics do not support.

17.5. Google's Response to the Search Deal

> *"As the Court found, Google achieved its popularity and success through innovation: by building the best search engine and making smart investment and business decisions, like our early investment in mobile. People don't use Google because they have to — they use it because they want to."*
>
> Lee-Anne Mulholland - Google Vice President, Regulatory Affairs

Google claims it has a dominant market share simply because it is the best search engine. While Google is an excellent product and very likely the current best search engine in the world, it stretches credulity that Google would be willing to pay Apple $20 billion per year if they believed that canceling the deal would have little or no negative impact on their market share. Google's own internal analysis does not support that belief.

Both Apple and Google are acting in public statements as if canceling the deal and allowing Apple to sell the default to a party other than Google will have limited impact on Google's share of the market. Suggesting that the court will be handing equivalent market power to Google but this time for free. **However the evidence in the court documents and even Google's own assessment show that the most likely outcome is that Google market share will be reduced from nearly 90% to less than 65%, and likely less than 60%, by this single remedy.**

17.6. Harms and Benefits from Canceling the Apple - Google Search Deal

What harms and benefits does the deal create for consumers?

Pros:

- Funds Safari/WebKit
- Increases Apple's revenue

Cons:

- Cements Google's dominance in search
- Disincentivizes Apple from selling the search engine default to another party
- Significantly reduces and may eliminate Google's incentive to compete in the browser market on iOS and macOS
- Disincentivizes Apple from competing in the Search Engine Market

17.6.1. Funds Safari/WebKit

Apple reinvests little of the money it receives from this deal back into Safari/WebKit. Neither Google nor Apple supplied concrete evidence to the contrary during the case. We estimate that as little as 3% could be reinvested by Apple back into Safari/WebKit:

> *"**The ISA does not require Apple to use revenue share payments to improve Safari, and Google has presented no evidence that Apple does so.** Mozilla likely does use its payments from Google to upgrade Firefox (given that those payments make up 80% of its operating budget), but Firefox's contribution to the overall search market*

> *is so small that the additional output it produces, at most, marginal procompetitive benefits."*
>
> Memorandum Opinion - United States of America vs Google LLC
> (emphasis added)

Given this, could Apple secure enough funds from another search engine, to fund Safari/WebKit?

> *"In 2015, prior to the signing of the 2016 ISA [...] Microsoft offered Apple a revenue share rate of 90%, or a little under $20 billion over five years."*
>
> Memorandum Opinion - United States of America vs Google LLC

While this figure is from 10 years ago, given that Bing's search quality has considerably improved since then (as noted multiple times throughout the court documents), it seems likely that both its retention and revenue per given volume of traffic would now be higher. It is not clear what percentage revenue share would be agreed between Apple and another search engine such as Bing. In the short term catapulting Bing to 30% or more market share would have significant value so it is likely Apple would still have considerable bargaining power, even without Google as a bidder. A reasonable estimate might be in the order of $1 to $1.5 billion per year.

While $1.5 billion annually is significantly less than $20 billion annually, accepting such a sum will be in Apple's best financial interest.

Given that we believe Apple's expenditure into Safari/WebKit (estimated by us at $300-400 million annually) is significantly lower than Google's expenditure into Blink/Chromium (estimated at between $1 and $2 billion annually), it is clear that this is more than enough to cover Apple's browser expenses. Apple also has significant external motivations to continue to fund Safari to at least its current level of expenditure, as Safari is a key part of Apple's branding and would be revenue positive. With iOS being opened up to third-party browser competition in the EU, UK, Australia, Japan (and possibly even the United States), pressure to invest is likely to increase, not decrease.

That is, it seems likely that canceling the Apple-Google deal by itself will not significantly reduce Apple's investment in either Safari or WebKit, nor have Apple submitted any evidence suggesting that it would.

But, let's assume that cutting this deal would have severe repercussions to Safari's financing. Even in that case, the most the DOJ should grant Apple, is that Google is only allowed to purchase 5% of the default on iOS and macOS, and there should be a clause

that 95%+ of those funds must be spent on Safari and WebKit. Such a remedy would actually increase Safari's budget.

17.6.2. Increases Apple's Revenue

Apple's already massive profits and cash reserves suggest that additional revenue from Google has limited benefits for consumers. The company operates with high margins and does not face sufficient competitive pressure to lower prices or significantly reinvest in ways that directly benefit users. Unlike companies in highly competitive markets that might use extra funds to reduce costs or enhance services, Apple is more likely to allocate this revenue toward maintaining its premium pricing, stock buybacks, or ecosystem control rather than passing savings or improvements to consumers. Moreover, its investment priorities are dictated by long-term strategic goals rather than immediate financial constraints, meaning that an increased budget does not necessarily accelerate consumer-friendly innovation beyond what Apple would have already pursued.

There doesn't appear to be a case that this additional revenue offers any benefits to consumers, nor have Apple submitted any evidence suggesting that.

17.6.3. The Benefits of Canceling the Apple-Google Search Deal

Canceling the Apple-Google search deal would significantly weaken Google's dominance, reducing its market share from nearly 90% to likely below 60%. Without Google's payments, Apple would have a strong financial incentive to sell its default search placement to another provider. Currently, Google's payments to Apple effectively lock out rivals from iOS, making it very difficult for them to gain meaningful traction in the search market.

Unlike Google's other search deals, where most of the revenue funds browser and platform development, Apple appears to pocket nearly all of it (likely more than 95%). These other deals have allowed and maintained browsers such as Firefox to continue to compete and exist.

Additionally, removing Google's financial incentive to remain the default search provider on Apple devices would force it to compete more aggressively in the browser market. Google currently has little reason to improve its browser offerings on iOS and macOS because it already benefits from being Safari's default search engine. This is especially true on iOS where it pays Apple the same revenue split for Chrome as Safari. If the deal were canceled, Google might be compelled to fight harder for the right to compete on all of Apple's platforms, improving browser competition and leading to better user experiences. A stronger Chrome competitor on iOS and macOS would put strong pressure on Safari to invest more, particularly once third-party browsers are allowed to ship their

real browsers with their own engines on iOS. This will increase features and reduce bugs for browsers on iOS.

Finally, Apple itself might be incentivized to develop its own search engine or enter the search market in a more meaningful way. As long as Google continues paying Apple billions of dollars, Apple has little reason to challenge the status quo. In the court documents it is revealed that Apple has explored creating a search engine but decided against it due to it being financially risky relative to the sure bet of Google's money.

17.7. Should the Deal be Canceled?

Yes, the DOJ should seek to cancel this deal and prohibit all future such deals with Apple for the next 10 years.

The deal offers very limited benefit, suppresses rather than promotes competition in the adjacent browser market, is substantial in scale, and appears poised to be highly effective in maintaining Google's dominance. Canceling based on available data would single-handedly reduce Google’s United States market share to below 60%.

17.8. What does this mean for the DOJs other remedies?

Given how effective this single remedy is likely to be, some of the DOJ’s other remedies that seem likely to cause significant harm to the adjacent market may not be warranted.

In particular, the total ban on search engine revenue sharing deals with smaller browsers and the divestment of Chrome (and exit of Google from the browser market). In this context these remedies should either be removed or adjusted to limit the harm to the web platform.

18. Should the Google Android Placement and Bundling Deals be Banned?

Google operates a global web of licensing agreements that govern the distribution of its popular applications, most notably the **Google Play Store**. These agreements are structured around a suite of proprietary apps known as **Google Mobile Services (GMS)**.

18.1. The 11 Core GMS Applications

These include:

- Google Play
- Google Search
- Google Chrome
- YouTube
- Google Drive
- Gmail
- Google Meet
- Google Maps
- Google Photos
- Google TV
- YouTube Music

> *"As of 2019, about 2.3 billion Android devices were subject to the MADA. Google employees were not aware of any non-MADA Android device sold in the United States."*
>
> Memorandum Opinion - United States of America vs Google LLC

Under MADA device manufacturers (OEMs) must pre-install all of Google's major applications if they want any of them. In court documents, OEMs available in the US consider Google Play essential.

> *"Under the MADA, partner OEMs must preload all 11 GMS applications onto a new device, including the Google Search Widget, Chrome, YouTube, Gmail, Google Maps, and Google Drive, among others. Six of these applications, including the Google Search application and Chrome (which both default to Google), cannot be deleted by the user. Without a MADA, an OEM cannot distribute any one of these GMS applications."*
>
> Memorandum Opinion - United States of America vs Google LLC

Additionally the search widget and Chrome must be prominently placed:

> *"Signatories of the MADA agree to preload and place the Widget on the default home screen of the device. Signatories also receive Chrome, and generally speaking, they agree to place Chrome in the Google applications folder, which appears on the default home screen. The MADA requires the Google applications folder to be on the default home screen, but it does not require its placement on the dock, sometimes known as the 'hotseat'"*
>
> Memorandum Opinion - United States of America vs Google LLC

On top of MADA Google has various revenue sharing and placement payments contingent on further conditions:

> *"A revenue share agreement, or RSA, is a separate agreement from the MADA. Each RSA generally follows a tiered structure, in which a carrier's or OEM's payment is tied to the degree of device exclusivity."*
>
> Memorandum Opinion - United States of America vs Google LLC

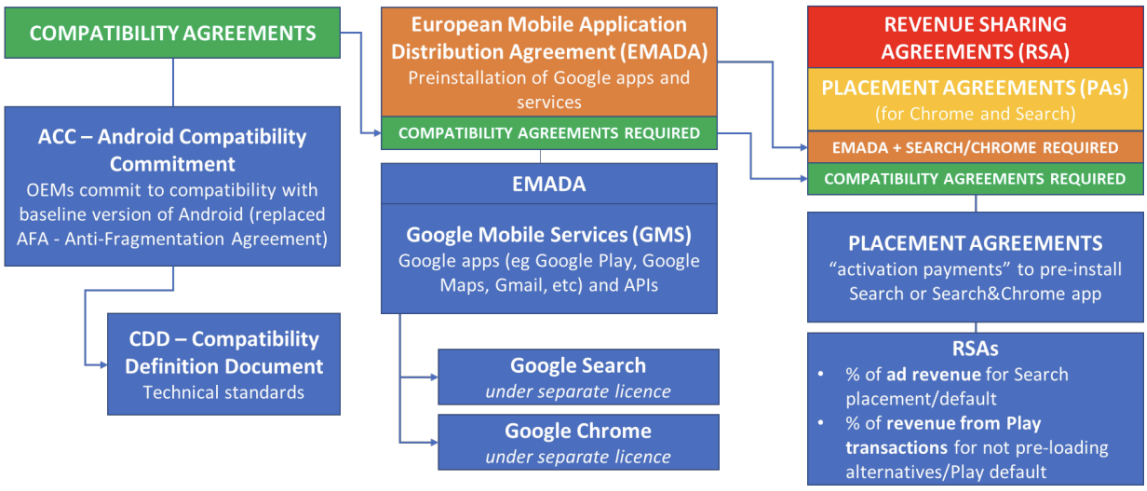
> *"The Samsung RSA also provides for "Enhanced Devices," which requires additional placements beyond the MADA, such as placing Chrome as the default browser (over S Browser) in the hotseat, or dock."*
>
> Memorandum Opinion - United States of America vs Google LLC

18.2. MADA vs EMADA

In 2018, the EU Commission fined Google €4.34 billion for breaching EU antitrust rules. In particular Google had required manufacturers to pre-install the Google Search app and Chrome, as a condition for licensing the Play Store and made payments to certain large manufacturers and mobile network operators on condition that they exclusively pre-installed the Google Search app on their devices.

Google subsequently updated and created a new agreement for Europe called the European Mobile Application Distribution Agreement (EMADA). Under this new agreement, Google Search and Chrome would not be force bundled with the rest of GMS. However, licensing Google Search and Chrome is conditional on a manufacturer entering the EMADA.

Figure E.1: Hierarchy of Google's agreements with manufacturers



Source: CMA analysis

UK - CMA - Mobile Ecosystems Investigation

However despite the more coercive tactic of bundling Google Search and Chrome with the other GMS applications being removed under EMADA, Google has managed to largely retain its position via placement and revenue sharing deals.

> *"Overall, through the PAs and RSAs in relation to Chrome, Google has considerable influence over the choice architecture on Android devices and this leads to Chrome being pre-installed, prominently placed and, in some cases, set as default on Android devices in factory settings"*
>
> UK Mobile Browsers and Cloud Gaming MIR

18.3. Should Google's OEM Deals Be Allowed?

Google's revenue sharing arrangements with smaller browser vendors serve a fundamentally different purpose than its deals with OEMs. While Firefox, for example, accounts for less than 1.6% of Google's total mobile RSA payouts, and less than 1.15% of the US search market, its contribution to the Web ecosystem is far greater than those

figures. Firefox helps sustain an independent browser engine and heavily engages in web standards which deliver outsized value to consumers and to the health of the open web. Thus the relative benefit is significantly greater than the relative harm of specifically those deals.

Google's OEM agreements represent a double bind that locks rivals out of the ecosystem entirely. First, Chrome is preinstalled, often as the default and non-removable browser. Second, Google's dominant position and extensive suite of apps mean that few OEMs would risk rejecting Google Play just to preinstall an alternative browser.

The result is a market where almost no manufacturer installs more than two browsers, and virtually none would sacrifice Play Store access to promote a competitor, even Microsoft felt obligated to accept such a deal. So even though revenue sharing agreements are not inherently problematic, the OEM variant is fundamentally different in nature and effect.

These deals are not just payments, they are interlocking control mechanisms that combine preinstallation, default status, placement mandates, and strong financial incentives.

We support the DOJ's remedies requiring the unbundling of Google Search and Chrome from the rest of the GMS suite, following the approach taken by the European Union.

> *"Google is not allowed to condition access to the Play Store or any other Google product on a distribution agreement for a GSE, Search Access Point, or Choice Screen. Similarly they may not condition it on not distributing a Competitor's product or service."*
>
> DOJ - Remedies

The question of whether revenue sharing agreements should be allowed is more nuanced. In the EU, even after bundling was formally ended, Google was still able to maintain the default placement and pre-installation of Google Search and Chrome through revenue sharing arrangements with OEMs.

Although potentially these OEM revenue sharing agreements may reduce the cost of handsets, **there is no clear evidence that ending them would cause significant or lasting harm to the broader Android ecosystem. For instance, ending such deals would not bankrupt Samsung nor plunge investment in the Android ecosystem.**

Therefore, at a minimum, the DOJ should consider limiting Google's ability to enter into such revenue sharing and placement agreements to no more than 50% of Android devices. And in the absence of compelling evidence that these deals serve the public interest, the DOJ is correct to attempt to prohibit them entirely.

19. Should all Search Engine Default Placement Deals be Banned?

Revenue-sharing deals are not inherently anti-competitive.

For instance, it is common for smartphone manufacturers to invest in advertising to boost their sales. Since all major players in the industry have the capability to engage in this kind of marketing, it is generally seen as healthy competition rather than a problem.

However, consider a scenario where one manufacturer becomes so dominant that it can outbid all others for nearly every advertising slot. If that dominance helps it capture nearly 90% of the smartphone market, it would be reasonable to impose restrictions on that company's ability to monopolize advertising channels, especially if that strategy locks out competitors and entrenches its market position.

This is precisely the concern at the heart of the DOJ's case against Google.

The DOJ argues, convincingly, that Google uses its revenue-sharing agreements to effectively shut out rival search engines from critical distribution channels, such as default placement on browsers and devices. This creates a self-reinforcing loop: Google's market dominance allows it to extract more revenue per search, which in turn gives it the financial power to secure exclusive or near-exclusive deals, further entrenching its position.

These kinds of deals wouldn't be problematic if either of the following were true:

1. Google's market share in general search was substantially lower at below 50–60%.

2. Google wasn't able to secure the vast majority of default search placements, as measured by search volume.

If the DOJ succeeds in its case and remedies are implemented wisely, there is real potential for long-term benefit to the broader browser and web ecosystem. In a competitive market where four or five search engines hold meaningful market share and bid aggressively for default placement, browser vendors could see significantly increased revenue. This, in turn, could drive more investment into the web platform as a whole.

Unfortunately, the current situation is far from competitive.

Google controls 89.2% of the general search market, and its deal with Apple alone covers over 50% of all U.S. search volume. Due to its scale, Google can outbid any competitor.

As Apple executive Eddy Cue stated, even if Microsoft offered Apple 100% of Bing's revenue, it still wouldn't be enough to compete with Google's offer.

So should all search default placement deals be banned?

Clearly not. There's nothing wrong with smaller search engines like Bing, DuckDuckGo, or Ecosia paying for default placement, these deals help fund browser development and support competition.

That leaves us to three distinct types of deals:

1. **The Apple-Google deal:**
   This arrangement is not justifiable in its current form. It covers over half of U.S. search traffic, yet Apple reinvests only a tiny fraction (estimated by us at below 2%) into Safari or WebKit. This deal should either be terminated or, at a minimum, capped at 50% of Apple's defaults. In addition, Apple should be required to reinvest the majority (at least 95%) of the proceeds into Safari, WebKit, and the broader web platform. This would ensure that the deal's continuation is directly tied to its public benefit.

2. **Google's deals with smaller browser vendors:**
   These should be allowed to continue, as they help support browser diversity and competition in the adjacent browser market. These deals are small totaling less than 1.9% of Google's revenue share payments. In the event that one of these browsers becomes too large then the 50% cap should apply. This should be done in a manner that does not disincentivize smaller browsers from gaining market share, such as the one discussed here.

3. **Chrome's default search engine behavior:**
   Chrome's default to Google is effectively an implicit internal deal. Given Google's substantial investment in Chromium and the web platform, it is reasonable to allow Chrome to default to Google, but only in part. Chrome should be required to allocate at least 50% of its default search traffic through competitive auction to other search providers. Moreover, the majority (at least 95%) of all proceeds from these auctions should be obligated to be reinvested into Chrome and the web platform.

20. Fixing the Problem Without Breaking the Web

While we understand the DOJ's intent behind its proposed remedies, we are deeply concerned that some measures could have unintended consequences, consolidating market power in browsers and the web platform even further into the hands of a few dominant players while plummeting investment in critical web technologies. This would reinforce the existing Google-Apple duopoly in mobile app markets, a problem that is already the subject of another DOJ complaint.

Ideal remedies would:

- Avoid bankrupting smaller browsers.
- Not cause the elimination of Gecko, one of the world's three remaining browser engines.
- Preserve funding for the Web platform, which requires substantial investment to sustain.
- Not prevent the web from effectively competing against closed platforms.

20.1. Protecting the Web Platform's Funding

The web plays a critical economic role in both the U.S. and global markets, requiring continuous and substantial investment to sustain its growth and competitiveness.

For the past two decades, search default deals have been the primary funding mechanism for web platform development. While alternative models potentially exist, the challenge lies in the sheer scale of funding required, which is extraordinarily large.

Without a clear, sustainable and substantial funding model, we risk a tragedy of the commons: a situation where a vital resource, the web platform, contributes trillions to the global economy, and serves as critical infrastructure powering our public and private services but lacks enough entities willing to adequately fund its development and maintenance.

To be clear, no one in the industry wants the web platform's primary funding source to be Google Search. However, it must be funded somehow. The real issue is not the existence of search default deals, but rather that Google monopolizes 100% of these agreements, preventing other search engines from scaling to a level where they can meaningfully compete.

A viable solution would be to guarantee other search engines access to at least half of the available search default placements. This could go a long way toward addressing the underlying competition problem without destabilizing web platform funding.

20.2. Preventing Browser Market Consolidation

Any remedies must not further shrink the number of players in the browser market.

The loss of Mozilla and the Gecko browser engine would be a major setback, eliminating one of the world's three browser engines and an important voice in web standards.

Smaller browsers represent our best opportunity for a more competitive future in the browser market. If solutions are not carefully considered, they could inadvertently cause significant browser market consolidation. This must not be allowed to happen.

21. Challenges for those Arguing for Chrome Divestment

Some proponents of a Chrome divestiture argue that even if browser funding were significantly reduced, the web would still survive. But that's an unhelpfully low bar for assessing harm. The question isn't whether the web continues to exist in some form, it will, but what condition it will be in, and what we risk losing in the process.

In many of these arguments, there is an implicit assumption that the current level of investment in Chromium is excessive, and that the open web could function just as well with far less. The analysis often suggests that since smaller engines like Gecko exist on a leaner budget, Chromium could operate on a similar scale without much consequence. But this overlooks critical realities: nearly every industry insider agrees that Firefox is under-funded, and there's no clear evidence that cutting Chromium's budget down to similar levels would have anything but a negative effect. The fact that such a drastic cut is being treated as inconsequential is deeply concerning.

Worse still, the potential side effects of these remedies are often considered in isolation, when in fact they are deeply interconnected. In this case, a Chrome divestment is coupled with an outright ban on revenue-sharing agreements, the very deals that currently fund much of the browser ecosystem. Evaluating these measures separately ignores their combined impact. A newly divested Chrome/Chromium entity would be left without a reliable or sufficiently large funding source to sustain its current level of development and maintenance. At the same time, independent browsers would lose critical revenue streams that enable them to compete. Taken together, the impact on the broader browser ecosystem, and on the web platform itself, is likely to be severe and deeply damaging.

> *"The web will suffer should Google be forced to sell Chrome. I think a fair assumption that overall investment and contribution to the open web will take a dive."*
>
> Chris Coyer - CSS Tricks

Research and development is one of the most costly and complex aspects of advancing the web platform. It's a long, iterative process involving experimentation, incubation, and active participation in standards bodies. Many ideas are tested and ultimately abandoned, but this process is essential, it's how virtually every new feature and improvement over the past decade has come to life.

Today, Google is the primary funder of web platform R&D. A significant drop in funding from Google would almost certainly lead to a disproportionate decline in this kind of

foundational work. While this wouldn't affect existing features and functionality, it would severely slow the pace of innovation. Given how heavily the industry has relied on Google to carry this load, it is highly uncertain that any other party, or even a coalition of them, would step in to fill the gap.

It is worth stating clearly: browsers and the web will not vanish. But that's not the metric by which these remedies should be judged. The more important questions are:

1. **How much will these remedies reduce overall funding for the web platform?**

   While exact figures are difficult to pin down, we can make a reasonable estimate of current investment in the web platform. Google likely contributes around $1 billion annually, with Microsoft investing approximately $100 million, Mozilla about $200 million, and Apple in the range of $150 to $200 million. If Chrome is left without a meaningful funding source, Mozilla is bankrupted, Microsoft is forced to shift resources from feature development to maintenance, competition in the browser space collapses, and confidence in the web as a platform erodes, the consequences would be severe.

   In such a scenario, Chrome's investment could shrink to a minimal maintenance budget, Mozilla's contributions would disappear almost entirely (though not immediately, due to reserves), and Apple's already limited investment could decline further in the absence of meaningful browser competition. **Altogether, this could amount to a loss of up to $1 billion in annual investment, an estimated 70 percent drop in funding for the web platform.**

2. **What will be the cost to businesses in terms of more bugs, lower stability, and a major slowdown in feature development?**

   There will be a sharp rise in bugs, delays in critical fixes, and a noticeable slowdown in innovation. Businesses that rely on the web will face higher engineering costs and reduced confidence in the consistency and reliability of the platform.

   Quantifying this in dollar terms is almost certainly impossible but given the digital ecosystem is worth trillions annually in the US alone and the degree to which web technologies are used, the figure is almost certainly in the billions annually.

3. **Will this lead to even more market consolidation, as only tech giants with unrelated revenue streams can afford to operate browsers without a viable business model?**

Yes, consolidation will increase. Although not all smaller vendors will disappear immediately, as they can remain competitive by relying on smaller teams focused on browser features rather than platform development, However these companies will suffer significantly from a plunge in Chromium funding. Mozilla, an independent non-profit, will likely go bankrupt if it loses its primary funding source. This would push the web into even fewer hands. Only the largest tech companies, like Apple and Microsoft, will have the resources to sustain full-scale browser and engine development, further concentrating control over the future of the web.

4. **Could this halt the deployment of non-WebKit browsers on iOS, due to funding cuts that weaken both Chromium and Gecko?**

   Yes. Without sufficient funding, both Gecko and Chromium will be unable to sustain the substantial engineering effort required to port their engines to iOS. Apple's long-standing platform restrictions already make this an unusually complex and costly undertaking. If Mozilla loses its primary source of funding, it will almost certainly be unable to port Gecko. Likewise, a divested Chrome entity may lack the resources, strategic priorities, or incentives to continue the Chromium iOS port. Other browser vendors depend on these core engine ports to support their own efforts. Without them, the prospect of future engine-level competition, and, more broadly, any realistic chance of meaningful browser competition on iOS, will never materialize.

5. **Will vendors like Microsoft be forced to pause new features and focus solely on maintenance, due to a lack of upstream fixes from Google?**

   Yes. Microsoft relies heavily on Google's upstream contributions to Chromium. If those slow down, Microsoft will be forced to allocate resources to stability and maintenance just to preserve existing functionality, leaving little room for innovation.

6. **What will be the knock-on effect on the many non-browser businesses that depend on technologies developed and maintained within Chromium?**

   They will face increased costs, slower progress, and growing technical debt. Frameworks like Electron, tools built on headless Chrome, and countless development workflows depend on a stable, well-funded Chromium. Those ecosystems will suffer directly.

7. **If browsers stagnate, will users and developers shift further toward native apps, strengthening Apple's and Google's control over mobile software distribution?**

   Yes, this shift will accelerate. As browser capabilities fall behind, developers will increasingly turn to native platforms for performance, deeper API access, and a more consistent user experience. Stability is also critical: if the web platform becomes underfunded, or unreliable, developers will be far less willing to build and scale businesses on top of it. The open web depends not just on feature parity, but on a predictable, well maintained foundation.

   This ecosystem has already been severely undermined by the long standing lack of engine level competition on iOS. Critical features on iOS such as install prompts have still not been implemented, and others like push notifications were delayed for years and remain incomplete and inconsistent. These missing capabilities make it significantly harder to build high quality web apps that can rival native ones. Without strong, sustained investment and broad platform support, the web risks falling further behind, giving up even more ground to Apple's and Google's tightly controlled native ecosystems.

22. Challenges for those Arguing for Banning Search Engine Deals with Small Browsers

> *Mozilla agrees that we need to improve search competition, but the DOJ's proposed remedies unnecessarily risk harming browser competition instead.*
> *[...]*
> *Punishing independent browsers will not solve the problem. Judge Mehta found that independent browsers account for just 1.15% of U.S. search queries. This means that cutting off our access to search deals won't fix the issue of search dominance—not by a landslide. Instead, it hurts browser competition.*
> *[...]*
> *Mozilla has played an outsized role in keeping the web open, private and advocating for choice. [...] Shaping the future of web standards—maintaining our own browser engine, Gecko, gives us a voice in defining how the web works and making decisions that are in support of people, not the bottom-line. [...] Ensuring interoperability—we fight for a web accessible to all—where anyone can create, access, and share content seamlessly, regardless of the devices or web services they use—not locked into a few ecosystems. [...] 'This isn't something we do because it's profitable or easy,' said Surman. 'We do it because it matters. The DOJ's proposal doesn't just miss the mark, it risks handing even more power to dominant industry players like Google or Apple, not less.'"*
>
> Mozilla

While it is entirely expected that Mozilla would advocate for its own survival, in this case, its arguments are clear, well reasoned, and compelling.

In the court proceedings, Mozilla's contribution to the web was largely dismissed based on its 2.6% market share, which was framed as too small to be meaningful. However, as Mozilla rightly pointed out and as the court itself acknowledged, independent browsers collectively account for just 1.15% of search queries in the United States.

So which is it? If 2.6% is considered insignificant, then 1.15% must be even more so. A consistent standard must be applied. The real question is whether the potential harm of allowing Google to pay for default placement in smaller browsers outweighs the very real benefit of continued funding for vendors like Mozilla.

It is also important to consider this figure in context. Google's current market share in general search is likely to fall below 60% under other remedies proposed by the Department of Justice. When viewed in that light, the potential impact of less than 1.15%

of search traffic becomes even smaller and harder to justify as a meaningful source of harm.

Like Mozilla, we believe that its value to the web ecosystem is far greater than its market share alone might suggest. As an independent nonprofit, Mozilla has been a consistent and influential voice in web standards discussions and has played a key role in advancing openness, privacy, and user choice. Losing that voice would leave the ecosystem less diverse, less accountable, and more heavily shaped by the interests of dominant tech companies.

It is true that Mozilla's management has made missteps, as any long running organization might. However, it is equally true that anti-competitive practices by both Apple and Google, have made it nearly impossible for Mozilla to gain meaningful share in the mobile market. This has limited its ability to generate revenue and denied it the room to recover from mistakes that larger companies can more easily absorb.

Smaller browser vendors should be exempt from any blanket ban on Google revenue sharing deals. However, to prevent abuse and ensure fair competition, Google's ability to enter into such deals should be capped based on the total percentage of the market they cover. This would guard against potential gaming of the system and account for scenarios where one or more smaller browsers rapidly gain significant market share.

For those advocating a total ban on all such deals, the burden is on them to present a detailed case. They must explain why the potential harm of allowing Google to gain up to an additional 1.15% of search share, particularly in the context of broader remedies that would reduce Google's overall market share below 50%, outweighs the clear and immediate harm of losing Mozilla from the browser market, stripping smaller vendors of critical funding, and accelerating the consolidation of browser development in the hands of a few dominant tech companies.

23. Potential Alternative Remedies

Given these concerns, what is the best path forward? How can the DOJ succeed in its core objective: breaking Google's search monopoly, without inflicting significant damage on the adjacent markets of browsers and the web platform?

One approach is to drop certain remedies entirely, such as the forced divestment of Chrome and the ban on search engine revenue-sharing deals. However, it remains essential that the DOJ is successful in preventing Google's anti-competitive conduct and that any deals that remain both do not contribute to a monopoly by Google and serve the public good via investment in the web platform. It is worth exploring targeted remedies that reduce Google's influence on the search market while still ensuring that both smaller browsers and the web platform remain sustainably funded.

With that in mind, there are several alternative remedies that are less severe but still effective, without harming the web platform. It is important to note that the vast majority of the DOJ's proposed remedies (approximately 45 in total) can remain unchanged and proceed as planned.

Other possible remedies include:

- Cap default search deals for browsers at 50%.
- Allow exceptions for small browsers.
- Require reinvestment of a percentage of search deal revenue into browsers and the web platform.
- Transfer Chrome to a non-profit.
- Allow the sale of Chrome but attach minimum platform investment conditions.
- Move Chrome into a separate legal entity within Alphabet, structurally independent from Google LLC.
- Cap Chrome's search defaults to Google at 50%.
- Require that Google's default search deals with browsers are public and have a single revenue share rate with all vendors.

- Ensure that any structural remedies do not prevent Google from continuing to invest in the open-source Chromium project.

23.1. Cap Default Search Deals at 50%

This remedy proposes capping the share of default search placements that Google can pay for at 50% of that browser user base.

While safeguards would be necessary to prevent manipulation by Google, the core concept is straightforward.

The key advantage is that it preserves funding for the web platform while opening significant opportunities for competing search engines. As these competitors scale through feedback loops, this approach could foster a competitive search market without jeopardizing continued investment in the web platform.

A major concern with an outright ban on search deals is that it could leave the web platform severely underfunded for years during a market transition, causing significant harm.

The core issue raised by the court is that Google has been so successful in securing these deals that it has completely blocked competitors from entering the market and gaining the necessary scale to effectively compete and outbid Google for search placements.

This remedy forces Google to relinquish at least 50% of the market for search deals, breaking its exclusive control while still allowing it to significantly contribute to web platform funding.

23.2. Allow Exceptions for Small Browsers

Even if a 50% cap on Google's ability to pay for default search placement were implemented, we believe it's essential to include a limited carve-out for smaller browsers.

We propose that smaller browsers, such as Mozilla, be allowed to sell 100% of their default search placement to Google. For these vendors, losing nearly half of their core revenue would likely be catastrophic.

As Judge Mehta noted in United States v. Google LLC:

> *"THE COURT: So I mean, it seems to me Mozilla, in some sense, would have a more compelling argument than you because it's not like Apple is going to go out of business if I don't -- you know, if you can no longer get revenue share.*
>
> *You've got other sources of revenue; Mozilla hardly has any."*
>
> UNITED STATES OF AMERICA vs GOOGLE LLC

This carve-out is justified because, while these smaller browsers account for only a minor share of search traffic, they play a vital role in sustaining browser competition and in governing the open web. A healthy browser market depends on preserving these potential future challengers.

Two potential concerns might be raised:

1. **Growth scenario**: A smaller browser, such as Firefox, Opera, or Samsung Internet, could significantly grow in market share over 5–10 years, reaching 20–40% of the market. While such growth is highly desirable from a competition standpoint, it could become problematic if Google continued paying for 100% of the default search placement at that scale.

2. **Aggregate deals scenario**: Google might strike numerous deals with smaller browsers, which in aggregate could exceed the 50% market share cap.

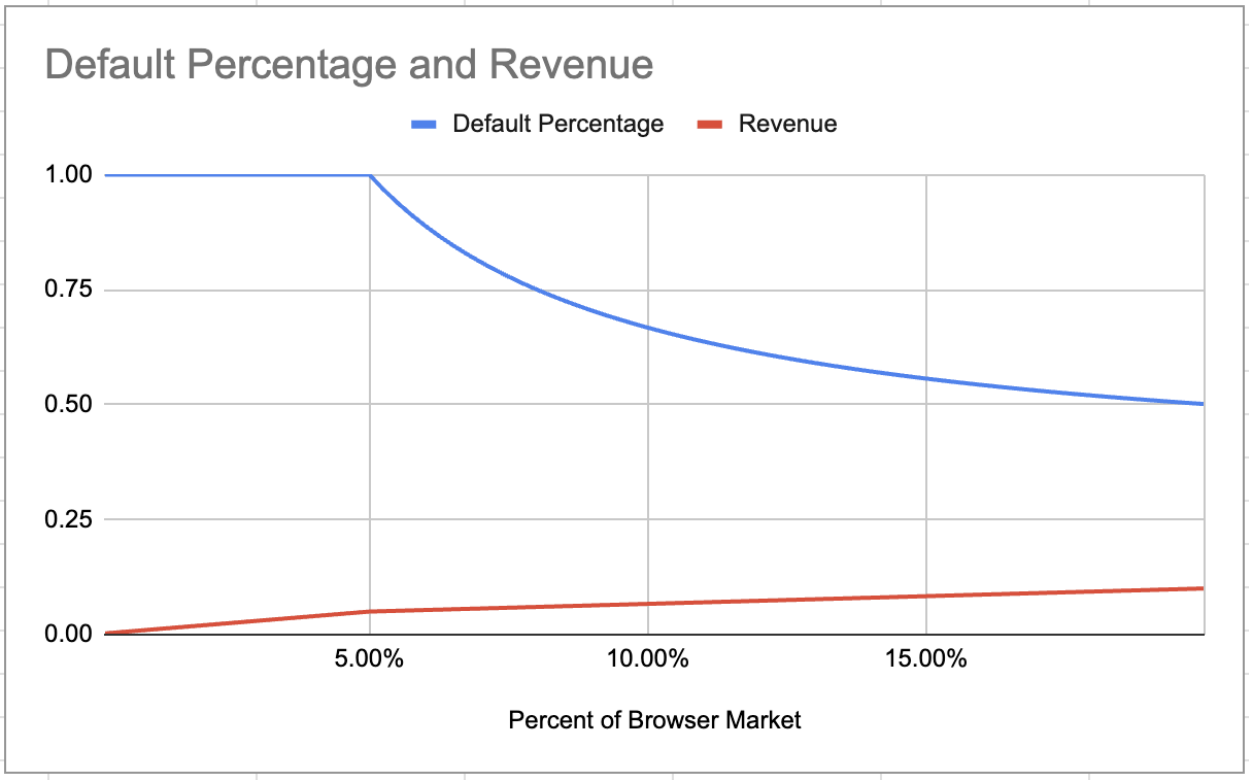
Both scenarios are solvable and, in our view, unlikely.

For the first case, the 50% cap could be applied progressively as a browser grows. The key is to avoid any disincentive for smaller browsers to expand their market share. Their revenue should increase as their user base grows, not decrease due to a hard threshold. This can be achieved with a tapered formula that gradually reduces the allowable default share Google can purchase, while ensuring that increased market share always results in increased revenue.

For example, the allowed default sale percentage could follow this structure:

- If $0\% \leq X \leq 5\%$, then 100% of the default can be sold to Google
- If $5\% < X \leq 20\%$, then allowed percentage = $5\% + ((X - 5\%) \times 33.5\%) / X$
- If $X > 20\%$, then capped at 50%

Where **X** is the browser's share of the total browser market.



This would result in a smooth tapering from 100% to 50% as market share increases from 5% to 20% which would look like the above.

For the second concern, Google's ability to pursue aggregate deals could be limited by enforcing a strict overall cap, e.g., prohibiting it from purchasing more than 50% of total browser defaults. This should be coupled with a ban on bundling or coercive agreements through arrangements like MADA or OEM partnerships that artificially steer distribution.

There are, of course, numerous implementation details to be considered. But the core idea is straightforward: it's possible to design clear, practical mechanisms that protect the viability of smaller browsers without undermining the broader goals of the DOJ's remedies.

23.3. Require Reinvestment of Search Revenue into Browsers and the Web Platform

This remedy builds upon the 50% cap proposal by ensuring that search deal payments directly support the browser ecosystem and the web platform.

If the court determines that these payments are harmful yet necessary for funding the web platform, it would be logical to impose conditions ensuring their use for public benefit. Under this approach, 90% of search revenue received from such deals with Google must be reinvested into browser development and the web platform, with at least 50% of that total specifically allocated to the web platform.

This would help guarantee that these funds serve a long-term public interest, rather than being diverted for other purposes.

23.4. Transfer Chrome to a Non-Profit

One intriguing option is to spin off Chrome into a non-profit organization dedicated to advancing the open web.

For this approach to succeed, several key conditions must be met:

- A substantial financial war chest to sustain operations for 3-4 years.
- The transfer of all relevant personnel, currently spread across various Google divisions and offices.
- A reliable and significant source of ongoing funding.
- A mission statement focused on advancing the web and the web platform.

If this new entity were able to secure a 50% search deal with Google, it could likely cover its required budget and remain financially viable.

However, the DOJ has not proposed this remedy, and it remains unclear whether such an approach would be legally feasible under U.S. law.

23.5. Allow Chrome's Sale with Minimum Platform Investment Conditions

The concerns surrounding a potential forced sale of Chrome could be entirely alleviated if a buyer were found who was both willing and financially capable of funding Chromium at a comparable level to Google's current investment.

If such a buyer emerged, the benefits of divestment would outweigh the now-mitigated risks. To ensure this, **the buyer should make a legally binding commitment to invest in**

Chromium at a level equivalent to Google's current annual funding for at least five years. While there is some risk that funding could decline after that period, there is no guarantee that Google itself will continue funding Chromium indefinitely. **Ideally, the buyer should be an entity with a strong financial interest in the long-term success of the web.**

Notably, if the new owner were able to sell 50% of its search default placement to Google, this would easily cover all ongoing development, maintenance, and web platform research costs while still allowing them to generate a healthy profit from other ventures, without contributing to majority market share for Google.

We appreciate that the DOJ is taking these concerns seriously and acknowledging the importance of a viable future for Chromium and the open web in its Revised Final Judgment Proposal, which now requires an evaluation of the buyer's business and investment plans, including those for the open-source Chromium project. The proposal states:

> *"The evaluation of any potential buyer **shall include the potential buyer's proposed business and investment plans (including those for open-source project Chromium)**, the United States' evaluation, at its sole discretion, of any potential risks to national security, the potential buyer's plans for sharing and protecting user data included in the acquisition, and any other issues a potential buyer may present."*
>
> Plaintiffs' Revised Proposed Final Judgment

However, we believe it is crucial that any commitments to continued funding be legally binding and that preventing a drastic decline in Chromium's funding should be a strict condition of sale.

23.6. Move Chrome from Google to Alphabet

One compelling alternative to a full divestiture is to restructure Chrome as a separate legal entity under Alphabet, independent from Google LLC.

Currently, Chrome operates within Google LLC, Alphabet's primary operating subsidiary. Under this remedy, Google would not need to sell Chrome outright but would instead be required to transfer it into a distinct corporate entity with its own governance, board of directors, financial independence, and operational autonomy.

This new Chrome entity would be permitted to sell no more than 50% of its default search placements to Google, with the remaining 50% auctioned off to competing search engines

for at least 10 years. This structure would ensure stable funding to maintain Chrome's current staffing levels and Chromium investment, while removing any contribution to a Google monopoly.

Additional requirements would include:

- 90% reinvestment of Google search revenue into browser and platform development, split evenly between Chrome and the web platform.
- A legally binding commitment to keep Chromium freely licensed and open-source.
- The removal of Google branding and integration from Chrome, and the adoption of a distinct privacy policy independent of Google or other Alphabet subsidiaries.
- Full operational autonomy from Google, with strict firewalls and oversight.

Crucially, this approach avoids the debt burden, likely in the range of $15–20 billion, that would come with an external sale. The restructured Chrome entity would remain profitable, well-resourced, and competitively neutral, allowing it to continue investing heavily in the web platform.

While this may seem like a subtle structural shift, it preserves web platform investment while preventing Google from monopolizing default search placement in the world's most widely used browser.

23.7. Cap Chrome's Search Defaults to Google at 50%

As outlined in the previous section, the DOJ should consider capping Chrome's default search allocation to Google at 50% while requiring the remaining 50% to be sold to other search engines through an auction-style system.

While search choice screens do offer some important benefits, they typically only shift a few percentage points of market share, which would be far less impactful than directly reallocating 50% of the default search market to competing providers.

This remedy will be even more effective if Chrome is removed from Google's corporate structure and established as a standalone entity under Alphabet, ensuring stronger operational independence and fully separate financial governance.

23.8. Transparency and Uniform Revenue Share Requirement

If the DOJ or the court chooses to permit Google to continue entering into default search engine agreements with browser vendors, the only defensible justification in the public interest is to support ongoing investment in smaller browsers and in the web platform more broadly. Without this justification, there would be a strong case for prohibiting Google from making such deals entirely.

If these agreements are allowed to continue, it is essential that they be made fully transparent to both the public and relevant third-party oversight bodies. Transparency exerts consistent pressure on dominant firms, helping to curb the use of opaque, preferential deals that distort market dynamics and limit fair competition.

At present, larger entities such as Apple possess significantly more bargaining power than smaller players like Mozilla. This disparity is evident in the scale of their respective deals with Google, which are far out of proportion to their actual browser market shares. For example, Safari holds a 17.6% share of the browser market, while Firefox accounts for 2.5%. Yet Apple reportedly receives around $20 billion per year from Google for default search placement, while Mozilla receives only $400 million. Even using a conservative estimate that Firefox users are only half as valuable to Google as Safari users (this is possible due to the on-average higher income and spending of iOS users), Mozilla should still be receiving approximately $1.4 billion annually if the revenue share rate were equal. That figure is more than three times Mozilla's current deal.

This imbalance highlights the need for the DOJ to require Google to apply a single, uniform revenue share rate across all browser vendors. This approach would effectively align the rate with the terms secured by the most powerful party, most likely Apple, and would help establish competitive parity. For smaller browsers such as Mozilla, this remedy could double or even triple their current revenue, providing much-needed funding for browser development and web platform innovation.

Another option is to set the revenue share rate for deals with smaller browsers to match the rate Google previously agreed upon with Apple. The rationale is that this represents a fair market rate, and that Google had been leveraging its dominant position to negotiate disproportionately lower payments with smaller browser vendors.

Economists widely recognize transparency and uniform pricing as tools to curb price discrimination in gatekeeper-dominated markets. Google's current ability to make individualized, confidential agreements allows it to favor certain partners and withhold critical resources from potential competitors.

Requiring Google to implement transparent, standardized revenue-sharing terms for all browser vendors would be a narrowly focused behavioral remedy. It directly addresses Google's currently entrenched position in the default search market while helping to sustain, and enhance, competition across the browser ecosystem.

23.9. Guarantee that Google Is Not Barred from Investing in Chromium

This remedy serves as a critical last resort. If the DOJ proceeds with its plan to divest Chrome, then in order to preserve web platform investment, the DOJ and the court must ensure that Google is not, either explicitly or implicitly, prohibited from continuing to invest in Chromium. The final remedy must clearly state that Google is permitted, and ideally encouraged, to contribute to Chromium, recognizing that Chromium functions as both a standalone browser and the foundation for many others.

This clarity is essential. Even under the most pessimistic scenarios, Google would still likely invest around $100 million annually in the web platform, primarily to ensure that core services like Search, YouTube, Google Docs, and Gmail continue to function smoothly and securely across browsers. If Google were barred from supporting Chromium, that remaining investment, still a significant portion of total global web platform funding, could drop to zero.

Regardless of the outcome of divestiture or other structural remedies, it is vital that the court preserve Google's ability to contribute to the foundational technologies of the web.

24. The Ideal Remedy Package

In the previous section, we explored a number of possibilities, but some of these remedies conflict with each other. So what does an ideal remedy package look like?

This is difficult to determine with certainty. What both the DOJ and the broader web ecosystem need is a carefully balanced set of remedies that prevents Google from monopolizing the search market, reduces its market share to below 60 percent, and does so without devastating investment in the web platform or undermining competition in the browser market.

With this in mind, and considering the evidence presented in this document, we believe that the following remedies package offers the best chance of achieving these goals while remaining legally viable and practically enforceable.

24.1. Remedies Package

24.1.1. Preserve and Implement Majority of the DOJ's Existing Remedies

The vast majority of the DOJ's proposed remedies are both appropriate and necessary, and should be fully implemented.

In particular, the search engine syndication remedies, which allow competing search engines to replicate Google's search results, are especially important. These remedies will strengthen the ability of alternative search engines to retain users gained through their own default placement deals. In turn, this will help these competitors generate the revenue needed to sustain and grow their operations. Combined with improved access to data through other remedies, this funding will enable them to enhance the long-term quality and competitiveness of their own search results.

24.1.2. Terminate the Apple-Google Search Agreement

While earlier sections explored the possibility of allowing a 50% default search deal, including for Safari, we ultimately agree with the DOJ that the Apple-Google agreement should be fully terminated, and that all similar deals between Apple and Google should be prohibited for the duration of the judgment, the next five to ten years.

Unlike other browser vendors, Apple reinvests only a small fraction of its search deal revenue into WebKit and Safari. Moreover, the sheer scale of this deal, representing over

50% of U.S. Google search traffic, means that any justification for retaining it, even in part, would need to be exceptionally compelling.

The strongest argument in favor of keeping the agreement is that it helps fund Apple's browser and engine development, which we estimate at approximately $300 million per year. **However, Apple does not need to receive $20 billion annually from Google to cover that investment.**

Court documents reveal that Microsoft offered $4 billion per year for this placement back in 2015. While future offers might be significantly lower in the absence of a bidding war with Google, the value of default placement on Apple's platforms is so high that **a non-Google search engine would almost certainly be willing to pay between $500 million and $1 billion per year for the opportunity.**

Combined with increasing global regulatory pressure on the browser engine ban on iOS, as well as our proposed remedies that promote broader browser competition and platform investment, and given their other many revenue streams and the importance of maintaining their brand recognition, Apple will have both the financial means and significant pressure to increase its investment in Safari and WebKit, even without Google's payments.

For these reasons, we strongly support the DOJ's position and advocate for the complete cancellation and long-term prohibition of all default search agreements between Apple and Google.

24.1.3. Eliminate OEM Placement, Revenue Sharing, Placement and Bundling Agreements

We support the DOJ's proposed remedies to eliminate OEM placement deals, revenue sharing agreements, and the bundling of Google Search and Chrome with other Google services. While Google and its OEM partners may argue that such agreements benefit consumers, for example by subsidizing device prices, we do not believe there is sufficient evidence to justify that claim. More importantly, these arrangements have long served to entrench Google's dominance, not only in the search engine market but also by significantly weakening browser competition on Android.

Unlike the termination of revenue-sharing deals with smaller browser vendors, which could pose a serious risk to web platform investment and browser diversity, eliminating OEM deals will not be catastrophic to the financial stability of large partners. For instance, Samsung will not be bankrupted by the loss of such agreements, as its core business and primary revenue streams remain unaffected.

Given the anti-competitive impact of these deals and the minimal risk posed by their removal, **we fully support the DOJ's remedies targeting the elimination of OEM placement, bundling, and revenue-sharing arrangements.**

24.1.4. Permit Browser Search Default Deals up to 50% Market Share, Excluding Apple

As previously discussed, this remedy would place a cap on Google's ability to secure default search engine placements, limiting Google to 50% of available default placements on any browser.

Crucially, Apple would be excluded from participating in such deals with Google, for reasons outlined here.

This approach strikes an important balance. It prevents Google from monopolizing the majority of available search defaults while still preserving the critical source of funding for the web platform. In our view, this remedy represents a proportionate and pragmatic solution, one that helps reduce Google's market share without triggering a sudden and damaging collapse in web platform investment, which underpins services relied upon by millions of American consumers and businesses.

24.1.5. Require Reinvestment of Search Revenue into Browser and Web Platform Development

The only compelling justification for allowing Google to continue making search engine default deals with browser vendors is to preserve and support funding for both smaller browsers and the broader web platform.

Given this rationale, it is entirely reasonable to attach conditions to such deals that require 90% of the resulting revenue to be reinvested directly into browser development and web platform improvements. This ensures that the agreements serve a clear public interest and are not simply used to subsidize unrelated corporate priorities.

If properly enforced, this condition would substantially increase the level of funding flowing into the web platform and would help ensure that the web continues to thrive as a viable platform for U.S. businesses.

24.1.6. Carve-Out for Smaller Browsers

As discussed earlier, smaller browsers will likely require a carve-out from the 50% default cap in order to remain viable. However, to prevent this exception from being exploited, the

share that each of these browsers could sell to Google would gradually decrease to 50% as their market share increases. This could be done using a tapered formula to prevent any sharp changes in revenue and preserve appropriate incentives.

Google's ability to pursue aggregate deals could be limited by enforcing a strict overall cap, e.g., prohibiting it from purchasing more than 50% of total browser defaults.

This carve-out is essential for preserving meaningful competition in the browser market, particularly from smaller and emerging vendors that play a critical role in innovation and preventing market consolidation.

24.1.7. Move Chrome from Google to Alphabet

Rather than requiring a full divestiture of Chrome, the DOJ should compel Google to restructure Chrome as a separate legal entity under Alphabet, with its own independent management. This approach avoids the complexity and risk of an external sale, prevents Google from securing 100% of Chrome's default search placements and provides Chrome (and Chromium) with a clear and sufficiently large revenue stream.

Under this proposal, the newly independent Chrome entity would be allowed to enter into a default search engine agreement with Google, but only for up to 50% of its available search defaults. The remaining 50% would be auctioned to competing search engines, ensuring that users are exposed to non-Google options at scale.

Critically, the Chrome organization must be independent from Google. It should operate at arm's length, with its own board of directors and full discretion over its spending. In addition, Chrome must adopt its own distinct privacy policy, separate from those of Google and other Alphabet subsidiaries.

This model is likely to be far more effective than the use of choice screens which typically result in only low single-digit market share shifts. Whereas, as evidenced in the court record, over 65% of users will stay with a non-Google default if the quality is high, which is likely under the DOJ's proposed syndication remedies. In fact, reliance on a choice screen could directly undermine this remedy by encouraging users to revert back to Google during setup.

Additionally, Chrome's share of revenue from the Google deal would be subject to a mandatory reinvestment requirement, with 50% allocated to Chrome and 50% to Chromium. This would not only preserve but significantly increase funding for the web platform, likely more than doubling current investment levels.

This remedy is also meaningfully distinct from a full divestiture which would likely saddle the new organization with substantial debt, potentially in the range of $15–20 billion. By contrast, restructuring Chrome as an independent entity under Alphabet avoids the financial burden of acquisition-related liabilities, allowing the organization to invest fully in browser development and open web infrastructure rather than servicing debt. This also avoids the large uncertainty related to attrition of critical talent and access to critical infrastructure that powers Chrome operations. Finally, Chromium will remain shielded by Google's extensive patent portfolio and formidable legal resources.

The newly structured Chrome entity would still be financially viable, generating profit from its other search engine partnerships and its share of Google's payment. At the same time, this remedy would:

- Prevent Google from using Chrome to gain over 50% market share in the general search engine market
- Enable competing search engines to gain meaningful share on Chrome
- Substantially expand investment in the web platform
- Remove the significant risk present in the divestment remedy

We believe this remedy is the appropriate balance that both achieves the DOJ's goals while not risking catastrophic damage to the web platform's funding.

24.1.8. Conditions on Search Deals

Finally, the DOJ should attach additional conditions to any search engine default deals that Google is permitted to retain.

First, all terms of these agreements should be made public. Transparency enables public scrutiny, which in turn creates meaningful pressure for fair and accountable behavior. It is unlikely that the Apple-Google search deal would have remained in its current form had its details been subject to public disclosure. Making these deals transparent would deter exploitative or anti-competitive terms and ensure they are structured in the public interest.

Second, the revenue share rate should be standardized and locked at the level agreed to in the Apple-Google search deal. There is currently a significant imbalance in bargaining power between Google and smaller browser vendors. Google's market dominance allows it to dictate terms, and in extreme cases, it could threaten the survival of smaller competitors, such as Mozilla, simply by walking away from negotiations. This imbalance

often results in lower revenue shares for smaller browsers, weakening their ability to compete with Chrome.

Only a company on the scale of Apple has sufficient leverage to negotiate more favorable terms. By standardizing the revenue share rate across all browser vendors based on the Apple deal, the DOJ can help ensure that smaller browsers receive a fair share of value from these agreements. This would strengthen competition in the browser market and ensure that any default search deals allowed to continue provide maximum benefit to the public.

At a minimum, the court should require Google to apply non-discriminatory terms to all allowed browser vendors in its default search agreements. This would ensure that no browser is offered significantly worse terms or rates than those given to the largest or most strategically valuable partners, most likely the new Chrome organization under Alphabet.

24.2. Estimated Impact on Web Funding

Now that we have a package of remedies, it is worth revisiting our analysis of the impact of the DOJ's existing remedies which we predicted would lead to a 70% decline in web platform funding and estimating what the impact of the adjusted remedies would likely be.

Again, as with the previous section, this is an informed but ultimately speculative estimate.

24.2.1. Google

> *"(28% through the ISA, 19.4% through the MADAs and RSAs, and the remaining 2.3% through third-party browser agreements). This figure does not include the 20% of all queries in the United States that flow through Google on user-downloaded Chrome"*
>
> *"Queries on user-downloaded Chrome make up 20% of searches conducted in the United States"*
>
> *"Over 50% of all search revenue on Android devices flows through the Google Search Widget alone."*
>
> Memorandum Opinion - United States of America vs Google LLC

Based on data from the DOJ's *Memorandum Opinion* in *United States of America vs. Google LLC*, we can estimate Chrome's contribution to U.S. Google Search traffic and use

that to establish a lower bound on the potential value of Chrome as a standalone entity within Alphabet.

The court found that **user-downloaded Chrome accounts for 20%** of U.S. Google Search queries. Additionally, **19.4%** of queries flow through **Android default access points**, and since **over 50%** of Android search revenue comes from the **Google Search Widget**, it's reasonable to estimate that the remaining share (roughly 9.7%) comes from **Chrome preloaded via MADA and RSA deals**.

Combining **downloaded Chrome (20%)** with **Chrome via Android defaults (~9.7%)** suggests Chrome contributes **~29.7%** of U.S. Google Search traffic.

For comparison, the Apple-Google default deal, which covers 28% of search traffic, is valued at **$20 billion annually**. Using that benchmark, **Chrome's traffic share could be worth a similar amount**. Even assuming Google's deal with Apple also served as a non-compete, preventing Apple from expanding Safari's role or building a competing search engine, the traffic value alone should be worth at least half of that, suggesting that **50% of Chrome's search share default is worth at least $5 billion per year**.

If that entire $5 billion were obligated to be reinvested into the **Chrome and Chromium** ecosystem on a **50-50 basis**, Google's annual direct spending on the web platform would rise to **$2.5 billion**, a very significant increase in its investment in the web platform.

24.2.2. Mozilla

Available data suggests that Google is significantly underpaying Mozilla relative to Apple for default search engine placement. Safari holds a 17.59% share of the global browser market, while Firefox holds 2.5%. **Yet Apple reportedly receives around $20 billion annually from Google, compared to just $400 million for Mozilla.**

Even assuming Firefox users are only half as valuable to Google as Safari users, a conservative estimate, **Mozilla should be receiving approximately $1.4 billion per year if the revenue share rate were equal.** That's more than three times what Mozilla currently receives.

The disparity stems from a stark imbalance in bargaining power. Google can afford to walk away from Firefox's small share of the search market. Mozilla, on the other hand, is financially dependent on Google's payments, and would likely face bankruptcy without them.

The remedy that makes these search engine contracts public and mandates that all browser vendors receive the same revenue share rate that Google has agreed to with

Apple redresses this imbalance. This ensures that more of Google's search revenue is returned to the public good and into smaller browsers that compete with Chrome.

Under such a model, Mozilla's payments would rise to roughly $1.4 billion annually. That could **boost their web platform budget to around $700 million per year**, enough to fund serious, sustained investment in Gecko and allow Mozilla to apply real competitive pressure on other browser engines and other browsers.

24.2.3. Microsoft

It is uncertain how Microsoft's own investment in the web platform will evolve under these conditions. While Microsoft will significantly benefit from increased investment in Chromium, it's unclear whether this will translate into a corresponding rise in their own contributions.

One likely outcome is that greater confidence in the web platform, driven by higher ecosystem investment, will accelerate Microsoft's existing efforts to transition more of its software to run on web technologies.

Overall, we expect Microsoft's investment in the web platform to either increase or at least remain stable in this scenario.

24.2.4. Apple

Apple currently receives an estimated $20 billion annually from Google in exchange for default search placement, yet reinvests only a small fraction of that into Safari and WebKit.

Whether Apple intends to build its own search engine remains unclear, and in any case, such a project would be long-term. Our position aligns with the U.S. Department of Justice: the Apple-Google default search deal should be entirely prohibited, along with any future arrangements of a similar nature. If enacted, Apple would lose access to that $20 billion yearly windfall.

However, Apple would almost certainly strike a new default search agreement with another provider, or a group of them, worth at a minimum between $500 million and $1 billion annually. That amount is still more than sufficient to fund Apple's estimated $300 million annual investment into Safari and WebKit. Moreover, Apple has the financial strength to support Safari even without direct search revenue. For context, Apple has demonstrated willingness to absorb losses exceeding $1 billion annually to support Apple TV+.

This ultimately comes down to Apple's strategic incentives. First, Apple will not want to cede control over the iOS web ecosystem to third-party browsers. Second, Apple will still have a valuable default search position to protect, even if sourced from different providers.

Until now, Apple has faced no real browser competition on iOS due to its longstanding ban on third-party browser engines. But that is changing, as regulatory actions in the EU, UK, Japan, Australia, and possibly the DOJ's own case will force Apple to open iOS to real browser competition. Combined with the surge in global web platform investment that our suggested alternative remedies will trigger, all major browsers will be ported to iOS, and those ports will likely, in the long term, be rolled out globally.

Apple will need to respond aggressively to retain Safari's share on iOS. That means significantly increasing its investment in Safari and WebKit. It may even require bringing Safari back to Windows, Android, and Linux in order to remain viable with developers. Currently, developers must purchase Apple hardware to test Safari, a practice that likely becomes unsustainable once real alternatives exist on iOS.

Given these dynamics, we expect Apple to at least double its investment in Safari and WebKit to a combined $600 million per year, if not more. That is, Apple's investment in the web platform will likely double to $300 million per year.

24.2.5. Smaller Browser Vendors

Smaller browser vendors with existing search engine deals would benefit directly from these remedies, as the mandated revenue share rate based on the Apple-Google benchmark, would significantly increase their payouts. The removal of the Apple-Google agreement would also raise competitive pressure among search engines to secure default placement, making such deals both more lucrative and more widely available.

Over the longer term, as alternative search engines grow in market share and quality, their ability to bid substantial sums for default placement will improve considerably, further boosting the revenue available to browser vendors.

In the short term, it's unclear whether this will translate into significant increases in web platform investment. Smaller vendors are typically incentivized to differentiate themselves through browser-specific features rather than low-level platform work. However, if any of these vendors achieve meaningful growth, made more likely by the removal of restrictive MADA clauses and the opening of iOS to full competition, we would expect their investments in the web platform to rise accordingly.

24.2.6. Other Non-Browser Companies

Investment in the web platform by non-browser companies tends to track overall confidence in the platform's ability to meet their technical and business needs. Given that these remedies will drive substantial increases in both web platform investment and meaningful browser competition, we expect a corresponding rise in investment from third-party developers, tool vendors, and other ecosystem participants.

As the web becomes a more capable and competitive environment, these companies will have stronger incentives to build on it.

24.2.7. Estimated Total Impact on Web Platform Investment

We can now estimate the overall change in web platform investment based on the likely impact of these alternative remedies across major contributors. While these projections are necessarily speculative, the underlying assumptions and rationale are well-grounded and reasonable.

Current estimated annual investment:
Google: $1,000 million
Mozilla: $200 million
Microsoft: $100 million
Apple: $150 million

Total: $1.45 billion per year

Projected post-alternative-remedy annual investment:
Google: $2,500 million
Mozilla: $700 million
Microsoft: $100 million
Apple: $300 million

Total: $3,600 million per year

This represents an approximate 150% increase in annual investment into the web platform. Such a dramatic rise would significantly accelerate web innovation and strengthen the long-term competitiveness of the open web. The ripple effects could be profound, challenging the dominance of closed ecosystems, particularly the mobile app store duopoly maintained by Apple and Google.

24.3. Estimated Impact of the Package on Google's Search Engine Market Share

We can also estimate the potential impact of these alternative remedies on Google Search's market share in the United States. While these figures are speculative, they are based on well-reasoned assumptions and the data available in the court documents.

24.3.1. Safari, Spotlight and Siri

As outlined earlier, terminating the Apple-Google search deal is expected to **reduce Google's U.S. search market share by approximately 21.8% to 30.2%**. The core assumption is that Apple will sell its default search placement to a competing engine, and given the rising quality of alternative search providers and the supporting syndication remedy, retention rates could match or exceed the 65% retention Bing achieved on Firefox in 2020. **This, combined with the fact that the Apple deal accounts for over 50% of Google's U.S. search traffic**, leads to such a steep decline in market share.

24.3.2. Chrome

As discussed, we can infer from court documents that Chrome accounts for approximately 29.7% of Google's U.S. search traffic. Under the proposed remedy, requiring Chrome to retain the default search engine for no more than 50% of its users and auction the default for the remaining 50%, an estimated 14.8% of Google's U.S. search traffic would initially be redirected to competing search engines.

Not all users will stay with the new default. Some will manually switch back to Google. However, using the 65% retention rate Bing achieved on Firefox in 2020 as a benchmark, and factoring in the effects of the syndication remedy, which should improve user retention for alternatives, the actual loss for Google is likely to be smaller, but still significant.

Thus, we estimate that this remedy alone would result in a reduction of between 9.5% and 13% in Google's U.S. search market share.

24.3.3. Other Remedies

It is almost impossible to evaluate the vast number of other remedies that the DOJ has proposed be imposed. Even "comparably minor" ones are individually highly significant, such as the removal of specific bundling terms in MADA agreements.

Given their cumulative effect, even a conservative estimate would suggest at least a 10% reduction in Google's U.S. search market share attributable solely to these other remedies.

24.3.4. Estimated Total Impact on Google Search Share

Combining these, we get a lower bound estimate of a reduction in Google's share of the search engine market for the United States of between 41.3% and 53.2%.

Currently, Google holds 89.2% of the U.S. search engine market. A 40.9% and 53.2% decline would reduce that share to between 36% and 48.3%.

But what does success look like for the DOJ? Fortunately, the court has already provided clear guidance on this point:

> *"[A] market share below 50% is rarely evidence of monopoly power, a share between 50% and 70% can occasionally show monopoly power, and a share above 70% is usually strong evidence of monopoly power."*
>
> Memorandum Opinion - United States of America vs Google LLC

It is also worth noting that the entire judgment can be withdrawn after five years if Google's market share falls below 50%.

In other words, even using lower-bound estimates, these alternative remedies would drive Google's share to below the threshold for presumed monopoly power, easily meeting the DOJ's own benchmark for success.

25. Final Thoughts

In our opinion, the Department of Justice (DOJ) was absolutely right to bring and win its case against Google. The court's finding that Google has maintained an illegal monopoly over general search is a landmark victory for competition. The proposed remedies are wide-ranging, and many of them are not only justified but necessary.

However, while most of the remedies will either benefit or have a neutral effect on the broader web platform, two stand out as collectively likely catastrophic: a total ban on search engine placement deals and forcing Google to divest Chrome.

A total ban on search engine placement deals would **likely bankrupt Mozilla** and strip a newly independent Chrome of its most reliable revenue stream. Even more concerning, forcing a Chrome divestment **could collapse investment in the web platform, likely cutting it by 70%**. Together, these actions risk destabilizing the browser ecosystem, concentrating power among even fewer players, and severely undermining innovation and long-term investment in the web platform.

We are deeply concerned that in trying to solve one monopoly problem, the DOJ could unintentionally harm the open web ecosystem, a sector worth trillions to the U.S. economy, and in doing so, strengthen other entrenched tech giants, potentially undermining its own antitrust efforts, including their case against Apple.

Critically, such a collapse in web investment would significantly weaken the web's ability to compete with the closed ecosystems operated by Apple and Google. Web apps offer the only viable cross-platform alternative to native apps locked behind app stores and OS restrictions. Undermining browser funding now would kneecap the web just as regulators around the world are starting to push for real competition on mobile platforms. Without sufficient funding, the open web cannot keep pace, and users, developers, and the broader digital economy will be the ones who suffer.

But this outcome is avoidable.

We believe the DOJ can not only break Google's monopoly without harming web platform funding, but also increase it, along with the competition that drives innovation in browsers, by making a few targeted adjustments to its remedies that protect browser competition and ensure sustainable investment in the web platform.

The DOJ has a historic opportunity not just to break Google's monopoly, but to **increase** investment in the web platform and strengthen competition in the browser market. By

making a few targeted changes to its remedy package, the DOJ can protect long-term innovation, enhance browser diversity, and ensure the open web continues to thrive.

We have proposed the following six potential targeted changes:

- **Cap Google's default search deals to 50% per browser, excluding Apple whose contract should be canceled entirely.**
- **Introduce a carve-out for smaller browsers.**
- **Mandate 90% reinvestment of Google search revenues into web platform and browser development.**
- **Restructure Chrome as an independent subsidiary within Alphabet.**
- **Limit Chrome's default search deal with Google to 50% of users and auction the remaining defaults to rival search engines.**
- **Enforce transparency and fair revenue share terms across all search deals.**

These adjustments would still achieve the DOJ's core goal: restoring meaningful competition in general search. Conservatively, we estimate these adjusted remedies would reduce Google's U.S. search market share to **below 50%**, the threshold for presumed monopoly power.

Critically, though, rather than collapsing platform funding, these adjusted remedies would likely **increase web platform investment by 150%**, creating a healthier, more competitive, and more innovative internet ecosystem.

With the right adjustments, the DOJ's case against Google can mark not just the end of a monopoly, but the start of a new era of competition and innovation on the web. This is a once-in-a-generation opportunity to restore balance and ensure the internet remains an open, competitive platform, one that continues to serve millions of Americans and fuel growth across the entire U.S. economy.

26. Toward A Brighter Future

OWA believes that the Web's unmatched track record of safely providing frictionless access to information and services has demonstrated that it can enable a more vibrant digital ecosystem. The web's open, interoperable, standards-based nature creates an inclusive environment that fosters competition, delivering the benefits of technology to users more effectively and reliably than any closed ecosystem.

OWA's goal is to ensure that browser competition is carried out under fair terms, that user choice in browsers matters, and that web applications are provided equal access and rights necessary to safely contest the market for digital services.

We have a critical opportunity to fix key issues that have undermined both browser and Web App competition for over a decade to the benefit of consumers and businesses worldwide. This will improve interoperability, contestability, and fairness leading to lower priced and higher quality apps.

OWA believes competition, not walled gardens, leads to the brightest future for consumers, businesses, and the digital ecosystem.

27. Open Web Advocacy

Open Web Advocacy is a not-for-profit organization made up of a loose group of software engineers from all over the world, who work for many different companies and have come together to fight for the future of the open web by providing regulators, legislators and policy makers the intricate technical details that they need to understand the major anti-competitive issues in our industry and potential ways to solve them.

It should be noted that all the authors and reviewers of this document are software engineers and not economists, lawyers or regulatory experts. The aim is to explain the current situation, outline the specific problems, how this affects consumers and suggest potential regulatory remedies.

This is a grassroots effort by software engineers as individuals and not on behalf of their employers or any of the browser vendors.

We are available to regulators, legislators and policy makers for presentations/Q&A and we can provide expert technical analysis on topics in this area.

For those who would like to help or join us in fighting for a free and open future for the web, please contact us at:

Email	contactus@open-web-advocacy.org
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Mastodon	@owa@mastodon.social
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LinkedIn	https://www.linkedin.com/company/open-web-advocacy