Open
Web
Advocacy

Response to MIR Issue Statement

VERSION 1.0

Open Web Advocacy
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2. Introduction

We strongly agree with the issues raised and believe that the MIR investigation is justified.

In our view Apple has effectively banned third party browsers via their 2.5.6 rule:

> *"2.5.6 Apps that browse the web must use the appropriate WebKit framework and WebKit Javascript."*

We believe browsers should compete on merit and user choice, not via control of operating systems or other underhanded behaviour. Browser competition is important as it is this competition that pushes browser vendors to secure their products, fix bugs and add new features. Without the constant threat of users potentially moving to another browser, browsers have limited incentive to compete. This threat is entirely absent on iOS, the other browsers on iOS have extremely limited ability to compete as Apple has banned them from editing their core, the browser engine. Instead iOS provides a uneditable Webview whose security, features set and stability is entirely under Apple's control. Under these conditions **there is effectively no browser competition on iOS.**

The CMA's report notes that:

> *"As a result of the WebKit restriction, **there is no competition in browser engines on iOS** and **Apple effectively dictates the features that browsers on iOS can offer** (to the extent that they are governed by the browser engine as opposed to by the UI)."*

> *"Importantly, due to the WebKit restriction, **Apple makes decisions on whether to support features not only for its own browser, but for all browsers on iOS.** This not only restricts competition (as it materially **limits the potential for rival browsers to differentiate themselves** from Safari on factors such as speed and functionality) but also limits the capability of all browsers on iOS devices, depriving iOS users of useful innovations they might otherwise benefit from."*

The report also notes that Apple has incentives to inhibit third party browser from competing due to its search deal with Google:

> *"Apple receives **significant revenue from Google by setting Google Search** as the default search engine on Safari, and therefore benefits financially from high usage of Safari. Safari has a strong advantage on iOS over other browsers because it is pre-installed and set as the default browser. The WebKit restriction may help to entrench this position by limiting the scope for other browsers on iOS to differentiate themselves from Safari (for example being less able to accelerate the speed of page loading and not being able to display videos in formats not supported by WebKit). As a result, it is less likely that users will choose other browsers over Safari, which in turn secures Apple's revenues from Google."*

Apple receives $15 billion USD a year from their Google Search engine deal, representing 9% of Apple's 2019 gross profit. Apple has not published the annual budget for Safari/Webkit but based on anecdotal evidence it is likely significantly less than 2% of this sum.

To make matters worse Apple appears to also have incentives to inhibit the capabilities of the Web on iOS Safari. Apple collected $72.3 billion USD in App Store fees in 2020, of which it keeps approximately 30%. Were Web Apps to have a comparable features set, stability and visibility as Native Apps this revenue would be threatened.

While it has not published the costs of App Store review, payment processing, refund handling etc, it has been estimated that the iOS App Store has a nearly 80% profit margin. Industries with healthy competition feature leading firms with profit margins between 5 and 20 percent. This imbalance strongly implies that Apple's removal of functional competition in the App Store and beyond have broken the mobile phone market for software and services for more than half of the UK's consumers.

The report also notes this:

> *"Apple generates revenue through its App Store, both by charging developers for access to the App Store and by taking a commission for payments made via Apple IAP. Apple therefore benefits from higher usage of native apps on iOS. By requiring all browsers on iOS to use the WebKit browser engine,* ***Apple is able to exert control over the maximum functionality of all browsers on iOS*** *and, as a consequence, hold up the development and use of web apps. This limits the* ***competitive constraint that web apps pose on native apps****, which in turn protects and benefits Apple's App Store revenues."*

Web Apps have the potential to be amazing. Web Apps are applications installed from the browser that utilise the user's browser to give users an experience on par with Native apps. They are interoperable between operating systems, have a very tight security/privacy model. Importantly Web Apps capabilities are determined by browsers. They don't need App Stores to be distributed, users can install by visiting a website and tapping an install button. They work offline. They are significantly more secure than Native Apps because they use the browsers "trust nothing" by default security model. This is the same security that stops hackers getting access to your banking website.

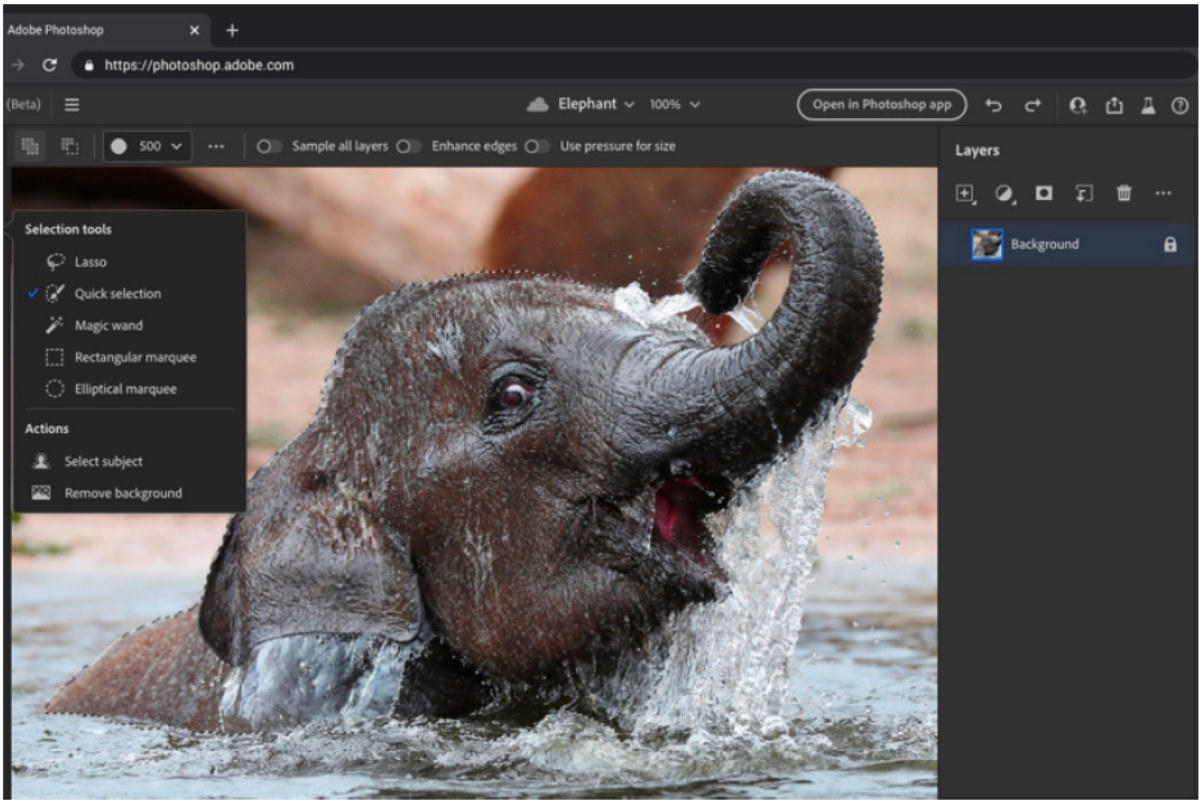
Gatekeepers like Apple can't charge a huge 30% tax simply because they have blocked all alternative installation methods.

Gatekeepers can't ban Web Apps that compete with their own Apps.

Web Apps don't require the user to download 50 to 200mb of content to run before they start, so users can start using them nearly instantly.

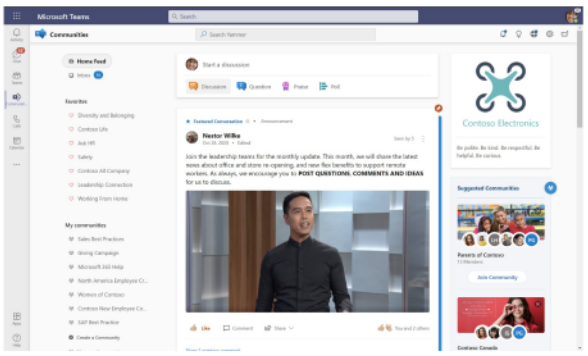
Right now, if competition was restored, 90% of the apps on your phone could be written as a Web App and would be indistinguishable, significantly cheaper and often BETTER than Native Apps. Native Apps will still have a lead in cutting edge graphics and gaming technology but if companies see the web platform as viable this gap will decrease over time.

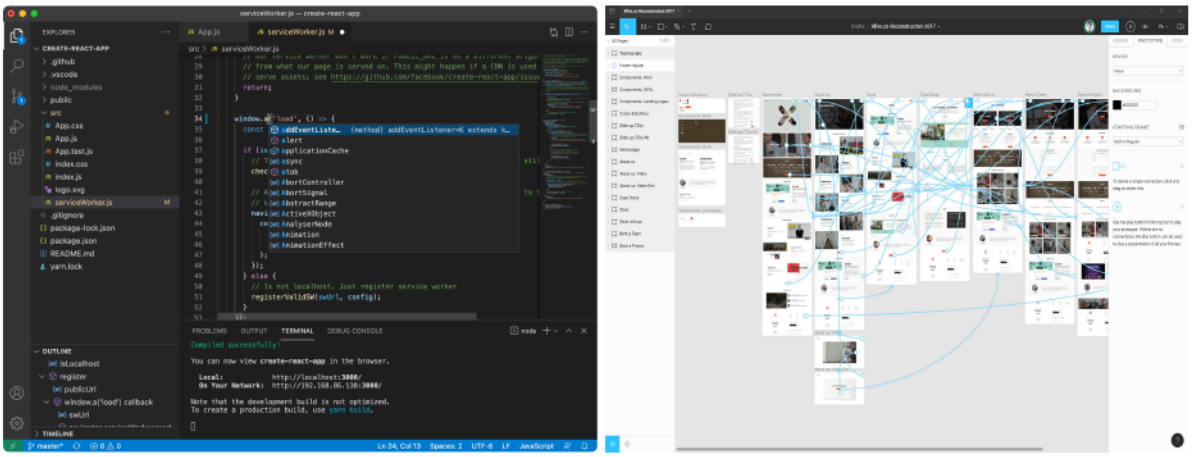
As a great example, Adobe has recently ported Photoshop to the Web. This is real photoshop using their 30 year old code base, enabling full compatibility with existing Photoshop files and providing full-fidelity editing for even multi-gigabyte files.



Four more great examples:

1. Microsoft teams provides nearly every feature of the native Teams experience through a capable Web App.
2. narrow.one is a 3d, multi-player game that users can instantly jump into without installing
3. Figma is perhaps the most used UX software today
4. Microsoft Visual Studio Code's UI is largely web based, and a highly capable PWA version is useable at https://insiders.vscode.dev





These examples focus on desktop, where the power of the Web has been allowed to grow and flourish, enabled by OSes that are not hostile to browsers and intense competition between browser vendors.

Apple's effective browser ban prevents the emergence of such an open and free universal platform for mobile apps. Unlike desktop, developers cannot build their application once and have it work across all consumer devices. Instead, these policies combine with Apple's trailing and feature-poor engine to force companies to create separate applications for iOS, significantly raising the cost and complexity of development and maintenance. Teams that accept the logic of native app store distribution for iOS may then feel compelled to do the same for Android. A single prominent OS holding back the Web is enough to undermine its entire value proposition as a frictionless, capable distribution mechanism.

Since the issuance of CMA's Mobile Ecosystems reports, other regulators have issued concurring analyses and findings. Japan's HDMC and Australia's ACCC have both written papers investigating the issues raised. The EU has included browsers, browser engines and Web Apps in their Digital Markets Act, with clear language indicating their intent to stop Apple's anti-competitive behaviour regarding browsers.

These are positive steps as several severe adverse effects on competition continue to this day.

Apple has been able to maintain an effective ban on competing browsers for more than a decade, and considering the huge financial incentives to continuing this practice, we believe that – barring intervention by competent regulators – that this ban will continue indefinitely, harming UK consumers and firms through reduced security, features and stability. These inevitably lead to higher costs.

Costs to Apple that are the result of proposed by remedies are best be viewed in light of the exorbitant amount that Apple makes directly through browser search deals, as well as harm done to consumers due to both higher development costs and the higher point-of-sale prices Apple can extract from Native Apps due to their stranglehold on app installation.

The issues raised by this statement are of utmost importance to the digital ecosystem, and the remedies outlined are reasonable, practical, proportionate, and timely.

3. Statement of Issues

The statement of issues covers a number of different lines of inquiry and we wholeheartedly approve of the general direction of the investigation.

3.1. Web Apps

The issues statement discusses the role of browsers and their browser engines in enabling the functionality of Web Apps. OWA strongly agrees with the CMA's market studies conclusion that due to Apple "Webkit Restriction", Web Apps on iOS are missing key features and are held back by bugs and glitches. We further assert that this greatly contributes to Apple's ability to extract taxes from developers through a monopoly on iOS native app distribution and services access.

As discussed in the introduction, were it not for Apple's behaviour Web Apps have the potential to be a free, open and interoperable platform across all the major operating systems be it phone, tablet, laptop or desktop.

3.2. Network Effects

OWA shares the concern that primary stewards of major browser engines (Google, Mozilla, Apple) could use their influence to add, or modify, features to the detriment of consumers. However, we believe several factors limit the power of any individual vendor.

With the exception of operating system based restrictions (such as Apple 2.5.6 rule or lack of access such as Google's lack of WebAPK minting for third party browsers), browsers are free to implement, edit, or turn off any feature they wish. This, in turn, becomes a point of potential marketing advantage when browsers are in true competition. This competition spans all aspects of browser capability on OSes with functional browser competition, including security, privacy, performance, scalability (memory use), and functionality.

Providing or precluding less popular features has little short-term impact on market share, but may impact the long-term balance. For example every Chromium browser aside from Chrome declined to implement FLOC, a Google proposed advertising solution. The proposal was later rescinded after testing with developers and new features are being developed in its place. This demonstrates that when vendors maintain control over the bits that are deployed to user machines, competition is effective in changing the ecosystem and disciplining poorly conceived proposals.

Browser engines (and in particular Blink) operate a very open process for discussing new features and how they should work. Interested parties can participate in these forums and shape the destiny of features built first in Blink.

Finally, we believe that in the event of an irreconcilable difference in views regarding the trajectory of feature development, that browser vendors could hard-fork Blink just as Google previously hard-forked Webkit to create Blink. This potential acts as an additional check against

anti-social behaviour on the part of project sponsors, as they would suffer reputational damage along with a potential loss of "upstream" contributions from collaborators in the Blink and Chromium projects.

3.3. Restrictions via control of operating system

OWA strongly supports CMA's intent to investigate mobile operating system restrictions regarding rival browsers. This is the primary cause of 'adverse effects on competition' (AEC) that can be meaningfully addressed through regulatory action.

Apple, and to a lesser extent Google, restrict rival browser competitiveness on their mobile OSes via control of system APIs and services. Apple has restricted browsers on iOS to such an extent that it has, in our opinion, no meaningful browser competition. While massively more open in general, Google has denied rival browsers access to WebAPK minting, which has the effect of denying rivals the ability to provide competitive Web Application (PWA) experiences. This self-preferencing regarding Web Application installation preferences Google's proprietary Android and Play Store ecosystem.

OWA encourages the CMA to request that Apple and Google disclose their rationale for denying competing browsers these abilities, despite their availability on nearly every desktop OS of note, from every browser that cares to implement support for PWA installation.

To recap, iOS browsers are restricted from providing functionality in three ways:

- App Store rules, guidelines, and opaque review processes
- Operating system feature and API access restrictions
- Side Agreements further restricting browsers

3.3.1. App Store Rules, Guidelines and Review

As the CMA's Market Study Report covers in great detail, Apple's 2.5.6 rule bans competing browser engines and locks all browsers on iOS into using a very specific version of Webkit bundled with the operating system whose features Apple unilaterally controls.

Additionally browser vendors may hold off implementing unique or differing features from fear of being arbitrarily blocked in App review.

3.3.2. Lack of Access to Operating System APIs/Features

Even if there are no rules restricting browsers, vendors need sufficient access to operating system features to compete. These include not only all the APIs that a gatekeeper's browser uses, but other functionality that may be needed to provide specific features beyond those provided in the gatekeeper's browser. We have provided a list of features that browser vendors could potentially need access to in "OWA - Mobile Browsers and Cloud Gaming (Response to CMA) - Section 8".

A cap on API access is doubly concerning when one considers that browsers provide a source of Web App competition with Native Apps. By hobbling the alternative these restrictions ensure that developers must use proprietary APIs and distribute software through high-tax App Stores rather than the free and open web.

On all OSes but iOS, this competition is safely enabled by the web's superior security track record.

3.3.3. Side Agreements

Browser vendors may be inhibited from competing by various life-or-death agreements extracted by gatekeepers for access to otherwise-common platform features. These agreements may be secret and signed under NDA. Such coercion is not a hallmark of fair negotiation considering the market power App Store gatekeepers exert over publishers. These agreements should be investigated and, if appropriate, preempted by regulation guaranteeing open API access for responsible browser vendors.

3.4. Restrictions via control of browser engine

OWA would characterise the situation differently to the CMA's description in Question 3.4.

In our view, most restrictions faced by competing browsers **are operating system restrictions**, both on iOS and Android.

It is **not**, Apple's stewardship of Webkit or Google's stewardship of Blink that restricts rival browser makers. Indeed, any third party (due to the browser engines' inherited licensing) can take Webkit or Blink and build a browser with any features they want.

Where third party browsers are restricted, reduced capabilities are the result of gatekeeper's OS policies. Rules like Apple's 2.5.6 "guideline" or Google's denial of WebAPK Minting to competing browsers, are possible to enforce due the end-to-end control of the OS by the OS vendor.

Hypothetically, if Apple chose, they could rebuild iOS Safari on Blink or Gecko, and still apply the same restrictions on all rival browsers on iOS; e.g., that they must use a specific Webview whose features Apple unilaterally controls. Such forks would not preclude unfair restrictions on rival browsers. It is the control of the operating system and its corresponding App Store that grants gatekeepers the power to restrict rival browsers and their functionality. This renders third party browsers unable to seriously compete with the App Stores distribution of software, something that the Web is fully capable of doing if these restrictions on rival browsers were lifted.

For example, in Section 62 of the CMA's findings – "*We will also consider whether a similar requirement would be appropriate on Android should we find that Google reserves superior access for the Blink browser engine.*" we believe this phrasing is potentially misleading.

Samsung Internet, Opera, Edge, Vivaldi, and Brave are based on Blink but are denied access to some functionality (like WebAPK Minting) which Chrome on Android enjoys access to. We might suggest alternative phrasing similar to "*Investigate whether Google reserves functionality for its own browser on Android*".

3.5. In-App Browsers

Many Native Apps use browser technology, for reasons including:

1. The ability to display HTML content or to render first-party and second-party content (e.g., adverts from an affiliated party)
2. To handle navigation to third party content via links

Native Apps rely on web rendering in four broad scenarios:

1. Use the system provided WebView (such as iOS's WKWebView or Android's WebView)
2. Bundle a browser engine inside the Native App (possible on Android, disallowed on iOS)
3. Open in the users default browser but inside an in-app tab
4. Open in a new window in the users default browser

OWA's primary concern is with Native Apps **that seek to block the user from using their default browser** to open links for third party content. Note, there is no issue with Ads and first-party content being handled with the system-provided WebView.

Native Apps that subvert user choice in browsers when visiting third-party content cause several problems:

1. WebView-based In-App Browsers suffer per-app amnesia. Users may be logged in to the BBC in their default browser, but these frankenbrowsers are unaware of this state and cause users additional friction in browsing the web through cookie, paywall, and other site-specific behaviour that is vastly superior in a user's default browser.
2. In-app browsers support fewer features. This can break web pages and Web App Browsers give embedding applications the ability to spy on users via injecting javascript into the third party page (this is both a privacy and security risk)
3. WebView-based In-App Browsers lack the ability to support Web App (PWA) installation
4. Loss of privacy and security delivered via Extensions installed in a user's default browser but unavailable from the WebView context.

We have written about this extensively in our paper: "In-App Browsers - Subverting Competition, User Privacy & Choice".

In this paper we propose that Native Apps should provide the choice of a user's default browser or an application's IAB. We further suggest that this should be paired with a system-wide choice.

We also propose a mechanism by which sites can communicate a preference for rendering in a user's default browser. This mechanism has also been supported by Microsoft in the WebView Community Group at the W3C, suggesting that it is feasible from an implementation perspective.

Another potential remedy is that all Native Apps must list which domains they intend to render through WebViews. Domains not in these lists would be presumed to belong to non-collaborating third-parties, and opened in the user's default browser. Such an intervention is harder to deploy than per-site opt-out of WebView rendering due to the complexity of ad publication. These are not exclusive remedies, and can be layered for maximum effective preservation of user choice in browser defaults.

The reason In-App browsers are a key focus of Open Web Advocacy is that In-App browsers enable apps to act as a browser without having to compete as a browser. The subversion of user choice also subverts browser competition and through that browser competition the viability of Web Apps.

3.6. Choice Architecture

OWA agrees with the CMA's findings and suggestions regarding default browser choice architecture.

Making it easier to switch default browsers, and reducing self preferencing of the operating system's own browser, are worthy goals for regulatory intervention and will do much to help repair and reform the market for mobile software.

3.7. Search Engine Revenue Sharing Agreements

We appreciate the CMA's careful language regarding revenue sharing agreements:

> *"47. In particular, the Market Study found that, in certain contexts, Google pays Apple a share of the search revenue it earns from browser traffic on iOS which may dampen incentives for competition between browsers on iOS.*
>
> *48. We will investigate the effects of search revenue sharing agreements on competition between browsers on iOS. In doing so, we will prioritise contractual or revenue sharing agreements whose primary purpose and/or effect appears to be to limit the ability or incentives for browser vendors to compete with one another."*

As the Market Study states, most browser development is funded via search engine integration deals. Browser and browser engine development is immensely complex and expensive. Consumers benefit from this technology for free. Additionally, improvements to browsers are largely published under Open Source, copy-left licences. We are concerned that if search engine deals are struck out, that many browsers would suddenly lack funding, further entrenching the power of proprietary, high-tax native platforms in the mobile ecosystem.

OWA believes search engine monetisation is not incompatible with competition, but we also welcome investigation into deals that undermine incentives for browser competition. As always, OWA stands for the principle that user choice of browsers should be meaningful and free from subversion and interference by powerful, interested parties who may resort to shortcuts rather than competition in the market.

It should be noted that some of the smaller browser vendors have told us that it is hard to get search engine revenue sharing agreements with the major search engines. This could be an area of focus to improve competition.

3.8. Restrictions on Cloud Gaming

This specific issue is outside of our organisation's mandate and expertise. That said, the arguments raised by CMA seem reasonable and coherent.

OWA are generally supportive of any changes that increase competition and reduce the ability of operating system gatekeepers to inhibit others from competing on their platforms.

4. Potential Remedies

We have outlined some suggested remedies in "OWA - Mobile Browsers and Cloud Gaming (Response to CMA) - Section 6".

OWA is heartened by CMA's inclusion of many of these remedies in the issues statement.

4.1. Browser Engines and Operating System Access

Engine choice, and OS access for competing engines, are vital in any effort to restore competition to mobile ecosystems.

Competition between browsers is important, but we also stress that functional browsers and competition is central to the potential of Web Apps to compete with Native Apps and closed, proprietary ecosystems over which gatekeepers exhibit extraordinary control. We believe broad access to APIs by responsible vendors is warranted and proportionate, particularly in light of the harm to competition that hobbled iOS Web Apps have inflicted to date.

> *"We will investigate whether removing Apple's restrictions on competing browser engines on iOS devices would reduce any barriers to entry and expansion in mobile browsers, increase the ability of browsers to differentiate themselves and offer greater choice to consumers, and potentially lead to greater support for innovations such as web apps.*
>
> *In designing any remedy to remove Apple's restrictions, we would need to consider the impact such changes would have on consumers in terms of the performance of mobile browsers on iOS, in particular relating to measures around security. We note that, in designing any such remedy, if appropriate,there may need to be measures put in place to mitigate any legitimate concerns identified, for example through the use of minimum standard requirements.*
>
> *We will consider whether any minimum standards for third-party browser engines should also apply to Android, in addition to iOS."*

We are concerned that simply removing Apple "Webkit restriction" would be insufficient, and so are pleased to see that the issues statement is also considering forcing Apple/Google to grant rival browsers sufficient access to compete:

> *"In order to address any AECs found from self-preferencing of browsers, we would consider further remedies requiring Apple and Google to provide equal access to functionality through APIs for rival browsers. Potential options include:*
>
> *(a) requiring equality of API/functionality access, whereby the controller of the operating system is not allowed to withhold access to device functionality exclusively for their own browser; and*

> *(b) requiring Apple and Google to open up access to specific operating system functionality, other than the functionality they make available to their own browser and native apps."*

To prevent gaming by Apple (or other gatekeepers), browsers need a **presumption of access to any operating system feature or API**. Such a presumption of access could be paired with a appeals process, but gatekeepers must not be allowed to deny access to browser developers in good standing.

We are also concerned that browsers could be deliberately inhibited from competing via new App Store rules, reviews or guidelines, or through secret side agreements which gatekeepers force onto browser makers in the course of commercial negotiations. Browser development and distribution must be free of such interference.

That said we do recognize the trusted position that browsers must be placed in. In order to compete and be performant some degree of protecting the user must be delegated to the browser vendor, for example via their own sandboxing.

We have proposed a method of implementing this remedy called "Trusted Browser Policy" which we outline in detail in "OWA - Mobile Browsers and Cloud Gaming (Response to CMA) - Section 4".

4.2. Easier to switch Default Browser

We support the issue statement remedy of making it easier to switch the default browser. Consumer choice is an important driver of browser competition and this remedy will remove unnecessary friction from such choices.

4.3. In-App Browsers Link Handling

> *"77. A possible remedy to increase competition in in-app browsing could be to mandate that any in-app links open with the user's default browser as set on the operating system."*

While we agree with the general intent of this remedy, we would scope it **to only cover third party content**. Native Apps should be able to render links for first party and affiliated content in their own in-app browser. Also, apps that are themselves browsers (that is, applications that can be installed as the default handler for links in the OS) should be exempt.

Denying Native Apps the ability to render third party content in their in-app browser is important because:

1. It denies the Native Apps the ability to view the users data on third party sites by injecting JavaScript into WebViews.

2. Dedicated browsers have a richer feature set and websites and Web Apps may break inside in-app browsers.
3. Users' extensions and other privacy/security settings of their default browser are not present in the in-app browser. This opens users up to additional tracking that they may have assumed their browser would block.

We have written about this extensively in our paper: "In-App Browsers - Subverting Competition, User Privacy & Choice".

4.4. Search Engine Revenue Agreements Modifications

OWA is concerned that a prohibition on search engine deals for browsers would suddenly deprive browser projects of revenue necessary to fund their development. Browsers are immensely complex and expensive to develop. Without a suggested replacement revenue stream for the hundreds of millions of pounds required to support such projects, it seems likely that interventions along these lines will do more harm than good to the web ecosystem.

We support the issue statement's more narrow remedy of addressing search engine deals that dampen browser competition as opposed to those that fund and incentivize it.

We would encourage the CMA to ensure that any search engine deals in place incentivize competition between browsers. Specifically the search engine deals should be related to the amount of users/traffic or some other metric which is closely related to the market share the browser provides that traffic has. If specific deals do not encourage browser vendors to compete on browser market share the CMA should intervene.

4.5. Allow Web Apps on iOS App Store

OWA supports the proposed remedy that requires Apple to allow Web Apps to directly compete on the iOS App Store. There is precedent on Windows, Android, Samsung devices, and ChromeOS for such listing and distribution of Web Apps in OS-default App Stores.

For maximum effect, it should be possible to submit Web Apps to app stores without the developer being required to purchase or own a specific device (i.e. a Mac with Xcode installed). To accomplish this, both a web-based process to submit the Web App is needed, along with removal of rules preventing listing of Web Apps that otherwise conform to Gatekeeper content restrictions.

Gatekeeper's should remove strictly unnecessary steps and requirements from the process of submitting Web Apps. This will:

1. Ensure that firms with limited resources do not have to choose between building Native Apps for discovery in stores vs. a website for discovery on the open web.

2. Increase the likelihood that developers will choose open technologies that will work across multiple ecosystems, lowering costs and improving competition.

3. Foster investment and expertise into the free, open, and interoperable web ecosystem instead of siloed native ecosystems. This directly lowers costs to businesses and users.

4. Reduce the cost of developing for the app stores by not requiring the developer to purchase expensive hardware or maintain expensive, per-target-OS application wrappers.

OWA also notes that Google's Play store creates similarly onerous technical steps for listing web apps (via "Trusted Web Activities"), when direct listing is known to be simple to implement. That both Google and Apple engage in creating hurdles for web developers looking to distribute via their app stores is, in our view, evidence of prejudice and a desire to keep the web from competing. CMA is best positioned to intervene thoughtfully in this area.

The primary reason this would encourage investment in open and free web technologies is that it would enable all developers to produce native apps with those technologies.

4.6. Cloud Gaming Remedies

We are broadly supportive of remedies that improve competition and user choice. That said the majority of these remedies are outside the scope of our organisation's mandate and expertise.

4.7. Mandating Safari implement core Web App Features

One remedy that was proposed in the Interim Market Study, but is not mentioned in the issues statement, is obligating Apple to implement key Web App functionality in iOS Safari.

While OWA believes this remedy is warranted, it is of secondary importance in our view. Remedies that enable ongoing competition over time and which strengthen the protections for user's choice in default browser would appear to have more impact over time.

Although **competition between browsers is the primary driver of functionality**, it's essential that Safari, as the default browser, implement important functionality necessary for Web Apps.

A remedy that would compel the implementation of key functionality would help Web Apps become viable and competitive with Native Apps.

Were CMA to intervene in this way, we suggest the following features be prioritised. OWA views them as the bare minimum to make Web Apps viable:

The primary functionality intervention we would like to see is so that users are able to discover and install Web Apps in Safari. Without this intervention or unless a majority share of Safari users migrates to an alternative browser with app discoverability(i.e. Install prompts) many developers will be pushed to the native app ecosystem.

- **Install Prompts/Installability**

  Web Apps should be as easy to discover and require as few steps to install as Native Apps.

  This includes the ability to display a banner and prompt the user to install an app from Safari. As described in *"Bringing Competition to Walled Gardens"* sections 5.4.5 and 5.4.3.1 the Web App install procedure is deeply obscured, whereas this is not the case on any other operating system.

- **Notifications**

  Push Notifications are essential for a wide range of applications

  Note: Apple announced in early 2021 that it would bring Web Push Notifications to iOS in 2023, but as of the drafting of this document, they are not currently available and no firm date has been announced for their launch. OWA is further concerned that analogous features launched for Safari on macOS are feature-poor relative to Web Push implementations in Firefox, Chrome, Edge, and other browsers on both desktop and Android.

- **Fullscreen API, Badging, Deep Links, and Screen Orientation Lock**
  These APIs are essential for a wide variety of Web Apps to be able to compete with their Native counterparts, particularly games.

- **Payments**
  Apple has not (and does not intend to) support third party payment handlers including through the Web. We have heard from several developers that In-App payments and the frictionless payment mechanisms the Native App ecosystems offer is one the main reasons preventing them from switching to Web Apps.

  We intend to do a deeper analysis into payments but we would also encourage the CMA to look at competition in Web Payments. We have done a short submission in section 7 of our previous submission to the CMA.

We hope that any proposed intervention regarding mandatory features is viewed as a one-off, as OWA's view is that the most effective driver of browser features is market competition. CMA and other regulators will quickly become swamped should they be asked to adjudicate every "Intent" email thread or feature prioritisation disagreement, which is why OWA has consistently encouraged a tight focus on gatekeeper restraints on competitors and actions that undermine the effectiveness of default browser choice.

5. International Cooperation

Issues affecting mobile competition in the UK are also problems for consumers and businesses globally. If a UK company wishes to sell their product internationally, then effective remedies must have broad international support and harmonisation. This concern has informed OWA's focus on a small number of fundamental changes that will enable competition, rather than a larger list of direct interventions that may be more difficult to align.

The CMA's Interim and Final reports have had a significant global impact. We believe as a direct result of the CMA's publications, the EU's Digital Markets Act was amended to include Browsers, Browser Engines and Web Apps leading to a huge step forward for competition worldwide. Additionally, because of this work other government agencies such as Japan's HDMC, Australia ACCC and the US's NTIA are now focusing on this area. These regulatory agencies have largely agreed with the CMAs conclusions.

Given the influence of the CMA and the UK as a leader on these issues, we believe that implementing key remedies within the UK is vital and warranted for two reasons. First, UK consumers will immediately and directly benefit from the greater choice and competition. Second, the CMA's actions will be followed closely by regulators from around the world. This will provide evidence and experience that other regulators can use as a blueprint for their own regulations and interventions.

We hope UK-specific interventions will precipitate a cascade, whereby many of these remedies become globally available. This will enable UK businesses to use the Web and Web Apps to compete across the world.

6. Brighter Future for Mobile Ecosystems

We believe that browsers should be free to compete on features, security and privacy. Further browsers and their engines should compete on consumer choice and merit, not via a gatekeeper's control of operating systems or deceptive behaviour.

Web Apps have the potential to do amazing things. They are one of the only truly cross platform development environments and it is browsers that enable all of their functionality. Thus effective browser competition on all platforms is a key ingredient of this brighter future.

If Apple was compelled to allow third party browsers and provide Web Apps an equal footing to Native Apps, companies would be able to develop a wide range of apps for a single standards based platform that would then be interoperable between iOS, macOS, Android, Windows and Linux. This would result in as much as a 2-5 fold drop in development and maintenance cost and result in higher quality Apps for end users.

A ban on third-party browsers benefits Apple and harms users, developers and businesses.

Competition not walled gardens leads to the best outcomes

7. References

OWA - Bringing Competition to Walled Gardens
https://open-web-advocacy.org/walled-gardens-report/

OWA - Mobile Browsers and Cloud Gaming
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1118238/Open_Web_Advocacy_-_Consultation_response_-_Publication_version.pdf

OWA - In-App Browsers - Subverting Competition, User Privacy & Choice
https://open-web-advocacy.org/files/OWA%20-%20%20In-App%20Browsers%20-%20Subverting%20Competition%2C%20User%20Privacy%20%26%20Choice%20-%20v1.1.pdf

UK CMA's - Mobile Ecosystems Final Report
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1096277/Mobile_ecosystems_final_report_-_full_draft_-_FINAL__.pdf

Apple's Rule 2.5.6
https://developer.apple.com/app-store/review/guidelines/#:~:text=2.5.6%20Apps%20that%20browse%20the%20web%20must%20use%20the%20appropriate%20WebKit%20framework%20and%20WebKit%20Javascript.

CMA's Mobile Ecoosystems Market Study Interim Report
https://www.gov.uk/government/publications/mobile-ecosystems-market-study-interim-report/interim-report#:~:text=Impact%20of%20the%20WebKit%20restriction

Google reportedly pays Apple $15 billion for iOS Search Deal
https://www.forbes.com/sites/johanmoreno/2021/08/27/google-estimated-to-be-paying-15-billion-to-remain-default-search-engine-on-safari/

Apple iOS App Store pulled in $72.3 billion USD in App Store fees in 2020
https://appleinsider.com/articles/21/01/05/app-store-earns-723-billion-in-2020-almost-double-google-play-revenues

iOS App Store estimated to have an 80% profit margin
https://www.marketwatch.com/story/how-profitable-is-apples-app-store-even-a-landmark-antitrust-trial-couldnt-tell-us-11622224506

Competitive firms tend to have 5-20% profit margin
https://www.brex.com/blog/what-is-a-good-profit-margin

Web Apps
https://developer.mozilla.org/en-US/docs/Web/Progressive_web_apps

Japan's HDMC Competition Assessment of the Mobile Ecosystem Interim Report Summary
https://www.kantei.go.jp/jp/singi/digitalmarket/pdf_e/documents_22220601.pdf

Australian Competition and Consumer Affairs - Digital platform services inquiry - NO.5
https://www.accc.gov.au/system/files/Digital%20platform%20services%20inquiry%20-%20September%202022%20interim%20report.pdf

Final Text of the EUs Digital Markets Act
https://eur-lex.europa.eu/legal-content/EN/TXT/?toc=OJ%3AL%3A2022%3A265%3ATOC&uri=uriserv%3AOJ.L_.2022.265.01.0001.01.ENG

FLOC
https://en.wikipedia.org/wiki/Federated_Learning_of_Cohorts

iOS WKWebView
https://developer.apple.com/documentation/webkit/wkwebview

Android's WebView
https://developer.android.com/reference/android/webkit/WebView

This site exposes the creepy things in-app browsers from TikTok and Instagram might track
https://www.theverge.com/2022/8/19/23312725/in-app-browser-tracking-facebook-instagram-privacy-tool

GNU Lesser General Public License
https://en.wikipedia.org/wiki/GNU_Lesser_General_Public_License

8. Open Web Advocacy

Open Web Advocacy is a not-for-profit organisation run by a loose group of software engineers from all over the world, who work for many different companies who 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
Twitter	@OpenWebAdvocacy
Web	https://open-web-advocacy.org