Facebook: The Capitol Forum Tested Facebook Browser Load Times; Facebook's Slow Load Times for In-app Browser Likely Push Users Towards Instant Articles and Native Content, Raising Antitrust Concern in EU

Update on Antitrust Risk

In our last Facebook article, we explained how Facebook's news feed algorithm prefers native content, or content housed on its platform, over non-native content, such as content that sends users to publishers' websites like NYTimes.com or WSJ.com. As with the EU search charges against Google, Facebook appears to lack neutrality, prioritize content that benefits the platform, and discriminate against its competitors, *i.e.* publishers vying for users' time spent online, user data, and online advertising dollars.

On Facebook's lack of neutrality, we have thus far identified three ways that Facebook favors native content over non-native content:

1. **Facebook Instant Articles**. Although Facebook denies that its news feed algorithms directly prioritizes Instant Articles through its ranking system, Instant Articles are "naturally" prioritized and appear higher within News Feeds than non-Instant Articles content because their faster load times increase "interactions," such as clicks, likes, and comments.

2. **Disabling out-of-app browser loading**. Facebook has worked to disable the ability to automatically load articles in vanilla Safari or another browser outside of the app in iOS rather than Facebook's in-app browser. This means iOS Facebook users who want to view content on publishers' websites outside of Facebook can only use Facebook's in-app browser to do so.

3. **Using a slow in-app browser.** This is another way for Facebook to reduce the rate at which users click to outside websites, and accordingly the rate at which Facebook users then share links to outside websites. Further, Facebook's in-app browser actually works to create some of the friction that Facebook says Instant Articles is meant to alleviate, which prods publishers to utilize Instant Articles.

We discussed the first two issues in our previous article. In this article, we take a deep dive into number three.

Update on Political Risk

Whether a Trump administration would bring antitrust suit against Facebook likely depends on his final team and antitrust leadership. Peter Thiel is currently on Trump's team and holds a stake in Facebook, which could lessen the risk of US enforcement, at least as long as he remains in favor. Nonetheless, as Facebook continues to become more and more important to news intake and distribution, political pressure could mount. Any action by the company to take an editorial role or somehow alter the News Feed algorithm could potentially draw the attention of the political spectrum at large: from Senate Democrats, who could question the outsize share of fake rightwing news stories on the platform, to a highly media-cognizant Trump administration that could see moves to curb certain kinds of media as unfair targeting.

In-Depth Look at Slowness of Facebook's In-App Browser

Through an analysis of the development tools available to iOS developers, we learned that Facebook uses one of the less-optimized in-app browser options among what Apple makes available. We conducted performance tests on the Facebook in-app browser and Apple's iOS Safari browser, and we found the Facebook browser loaded web pages about 3 seconds slower on average than Safari.

Loading times matter tremendously for non-native content to be able to compete with native content distributed via Facebook's platform. Studies showed that 40% of users abandon websites that take more than 3 seconds to load, 53% on mobile.

The following considers the Facebook user experience on iPhones, of which there are 90 million users in the United States. Those iOS users are only able to primarily use the in-app browser built into the Facebook app. We spoke with Dave Verwer, mobile development expert and author of industry newsletter iOS Dev Weekly as well as news media professionals on background.

Facebook uses slower in-app browser option that provides more control over data, user interface and user retention. For app developers on iOS, there are three choices of builds for in-app browsers: two custom web browsers built using APIs called UIWebView and WKWebView, and a third option called Safari View Controller, which essentially provides an in-app version of Safari. Apple makes these options available so that developers can create a cohesive user experience when users click a link to the open web that leads away from an app. In terms of load time optimization, Safari View Controller is the fastest, followed by WKWebView and then UIWebView. Based on the design of Facebook's in-app browser, the company uses either UIWebView or WKWebView, the two less-optimized choices.

One reason a developer could choose UIWebView or WKWebView is that they both provide more customization for developers in their in-app browsers. Facebook appears to use that customization in several ways. Also, that control allows for more seamless communication of user data from the web page back to the developer. Collection of user data is a top priority for Facebook.

Performance tests show Facebook in-app browser loads 30 percent slower than baked-in Safari on iOS. We created a performance test that compares the load times of the Facebook in-app browser and the baked-in Safari browser on iOS in order to determine whether the Facebook in-app browser somehow increases load times. For the test, we selected six articles from 24 popular online publications and loaded them once on the Facebook in-app browser and once on the Safari browser (we could not locate two of the selected articles on Facebook, so our final sample size was 142 articles).

To test Facebook links, we input the article URL into the search bar at the top of the app. If an article has been posted to Facebook by a user previously, inputting the URL brings up a page that contains an image from the story and a link to the open web of the article as well as Facebook content regarding the link like user comments and related articles. To test Safari links, we opened them from a list in the iOS "Notes" app. For both browsers, we began timing at the point of pressing a link and stopped timing when the progress bar in each of the browsers finished loading.

We used the same Internet connection and device throughout the tests and cleared the iPhone's web cache before each segment of the testing in order to prevent previously loaded data from skewing results. Also, we used video recording and slowed down frame rates while recording the load time results to guarantee accuracy.

Through our tests we found that upon first clicking a link until the article is fully loaded, articles accessed through the Facebook in-app browser load nearly three seconds slower on average than the same articles loaded within Safari. Facebook in-app browser articles loaded in about 10.7 seconds on average while Safari articles loaded in about 7.7 seconds on average. 107 of the 142 articles loaded during the tests, or about 75 percent, loaded faster on the Safari app.

Browser performance data. The tables below show the full results of our study. The articles that could not be located on Facebook are have load times listed as "n/a."

	Article 1 Load Time			Article 2 Load Time			Article 3 Load Time		
Publication	**FB**	**Safari**	**Diff.**	**FB**	**Safari**	**Diff.**	**FB**	**Safari**	**Diff.**
BBC	7.4	7.6	-0.2	6.7	10.3	-3.6	10.4	8.8	1.6
CBS	15.4	17.2	-1.8	n/a	n/a	n/a	7.6	6	1.6
Chicago Tribune	10.4	4.1	6.3	9.4	4.9	4.5	10.5	2.6	7.9
eonline	10.2	11	-0.8	8.6	5	3.6	13.3	10.8	2.5
Fox News	13.2	8.8	4.4	5.3	9.1	-3.8	10.2	6	4.2
Huffington Post	7.4	3	4.4	10	5.3	4.7	4.6	5.7	-1.1
Independent	11.7	3.6	8.1	15.8	11.9	3.9	14.8	3.3	11.5
Mashable	10.5	6.3	4.2	12.3	8.9	3.4	9.8	6.5	3.3
Breitbart	11.3	4.6	6.7	9.6	6.5	3.1	19.3	4.2	15.1
NBC News	11.4	6.4	5	8.4	8.6	-0.2	9.6	9.3	0.3
NY Post	11.5	9.6	1.9	10	13.3	-3.3	9.7	8.3	1.4
New Yorker	10.7	6.4	4.3	5.8	6.5	-0.7	6.1	6.2	-0.1
Newsweek	9.7	4.8	4.9	8.1	10.7	-2.6	9.7	8.1	1.6
People	9.4	9	0.4	14.4	15.3	-0.9	16.4	6.3	10.1
Politico	24.5	10.9	13.6	21.1	13.6	7.5	22.8	15.1	7.7
The Hill	15.8	10.5	5.3	8.6	15.7	-7.1	18.6	10	8.6
Time	16.8	12.3	4.5	18.2	9.5	8.7	26.9	12.4	14.5
TMZ	14.4	11.2	3.2	8.5	10.4	-1.9	13	8.3	4.7
WaPo	17.3	7.9	9.4	n/a	n/a	n/a	12.6	4.2	8.4
Wired	28.7	4.6	24.1	11	7.9	3.1	11	3.8	7.2
Bloomberg	15.7	7.4	8.3	9.4	5.7	3.7	13.9	6.4	7.5
Gizmodo	13	7.6	5.4	13.3	5.2	8.1	6.9	3.7	3.2
NYT	7.5	5.7	1.8	5.4	3.4	2	5.3	5.5	-0.2
USA Today	11.7	5.9	5.8	4.9	2.5	2.4	7.6	2.3	5.3

	Article 4 Load Time			Article 5 Load Time			Article 6 Load Time		
	FB	Safari	Diff.	FB	Safari	Diff.	FB	Safari	Diff.
BBC	6	6.6	-0.6	7.9	7	0.9	7.6	4.7	2.9
CBS	5.1	10.4	-5.3	5.5	7.7	-2.2	5.7	6.1	-0.4
Chicago Tribune	8.6	10.4	-1.8	8.6	2.9	5.7	13.9	9.9	4
eonline	12.3	5.9	6.4	4.7	7.1	-2.4	12.6	9.3	3.3
Fox News	8.8	3.2	5.6	12.2	9.8	2.4	11.2	8.3	2.9
Huffington Post	8.2	4.9	3.3	6	4.3	1.7	7.9	6.4	1.5
Independent	13.6	7.1	6.5	10.2	6.1	4.1	12.9	4.2	8.7
Mashable	8.2	11	-2.8	14.1	9	5.1	10.9	11.8	-0.9
Breitbart	3.9	5.5	-1.6	4.2	7.9	-3.7	7.1	2.8	4.3
NBC News	5.3	3.5	1.8	6	8.3	-2.3	9.4	7.1	2.3
NY Post	6.7	6.3	0.4	9	10.1	-1.1	7.3	9.9	-2.6
New Yorker	5.2	4.4	0.8	5.2	6.2	-1	0	4.7	-4.7
Newsweek	8.3	6.4	1.9	7.8	8.2	-0.4	11.1	9	2.1
People	11.6	12.9	-1.3	15.3	17.6	-2.3	19.9	15.2	4.7
Politico	10.7	12.4	-1.7	19	13.1	5.9	19.8	18.3	1.5
The Hill	11	10	1	9.4	8.7	0.7	12.9	10.6	2.3
Time	12.5	8.7	3.8	14.3	10.8	3.5	24.2	6.5	17.7
TMZ	7	10.3	-3.3	9.3	11.4	-2.1	9.1	10.5	-1.4
WaPo	7.4	4.6	2.8	25	15	10	12.4	6.4	6
Wired	10	6.8	3.2	8.4	4.4	4	7	5.1	1.9
Bloomberg	5.9	4.7	1.2	16.6	8.6	8	11.4	6.3	5.1
Gizmodo	8.8	5.6	3.2	8.2	3.9	4.3	5.7	8.9	-3.2
NYT	12.4	4.8	7.6	5.7	6.8	-1.1	6	4.7	1.3
USA Today	7.7	5.5	2.2	4.7	1.9	2.8	8.8	8.1	0.7

Considering the way Apple's Safari View Controller operates, if Facebook made use of it, web pages likely would load just as quickly as baked-in Safari. It appears that either Facebook has not maintained its in-app browser at the same pace as Safari or it adds some processes overtop of the Apple Safari framework that serve to increase load times. While they are not mutually exclusive, the latter seems likely since the reason Facebook and many other mobile apps implement in-app browsers rather than Safari View Controller is so they can have more control over valuable browsing data, which could add loading time strain on top of concurrent processes.

Less-optimized browser pushes publishers to consider Instant Articles. Considering Facebook's move to vertically integrate into publishing through Instant Articles, the company benefits from using a less-optimized version of Apple's in-app mobile browser. As we have previously reported, Facebook markets Instant Articles as a solution to the mobile web-browsing problem of load times. Creating friction in the form of browser load times pushes more publishers and media outlets into Instant Articles, further increasing publications' reliance on Facebook for an audience. Some publishers told us the user experience through the in-app browser was poor enough that it pushed them toward using Instant Articles.

Facebook reveals faulty media metrics for the second time. Facebook has reported for the second time in a few months that it has been incorrectly reporting some of the media metrics advertisers and publishers rely on when they distribute content on the platform. For example, the company increased user time spent on Instant

Articles by 7 percent to 8 percent on average since August 2015. We have previously written about how the structure of Facebook Instant Articles prevents publishers from optimally gathering first-party audience data, making publishers reliant on Facebook's metrics. That data is the currency by which publishers build rich audience profiles to convince advertisers to run campaigns. Facebook blames the statistical inaccuracies on errors and has promised more third-party verification moving forward. As Facebook becomes more of a gatekeeper for user metrics, it could exert greater control over media partners, especially as the accuracy of those metrics remain in question.