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# Google's AMP: from addiction to withdrawal?

Accelerated Mobile Pages (AMP) technology, which Google unveiled in 2015, is a set of resources allowing web pages to be opened faster on mobile devices. Due to the possibilities offered, many content publishers – noting the increased use of the Internet on these devices – began to take it up and were interested in the potential benefits in terms of rankings.

Regrettably, these publishers have been faced with the numerous constraints and technical changes imposed by AMP. From content organisation to monetisation and user tracking features, the complicated implementation process has led many publishers to rethink their use of the technology. Some have already dropped it while others are planning to do so in the near future. The interviews we conducted seem to confirm that the phasing out, in 2021, of the preferential treatment afforded by Google to AMP pages in its search engine's results has spurred the trend that was already underway.

This fifth issue of the "*Shedding light on...*" series offers an overview of this controversial browsing technology to understand how it works, its technical and economic advantages and drawbacks, and current and future issues. In addition, a technical analysis backed up by experiments for which the code will soon be available in open-source, looks into AMP's loading performance. The first finding to note is that AMP pages open quickly mainly because the unessential features that slow them down are removed. This means that optimised websites are close to matching – or even exceed – AMP performance levels without having to comply with certain constraints imposed by the technology.

Shedding light on...

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## THE BACKGROUND TO AMP TECHNOLOGY

AMP technology encompasses a huge and broad range of resources and features. In May 2021, a developer described it as “a set of (opinionated) rules for authoring web stuff, a set of resources that reflect/support those rules [...], a mechanism to access privileged caching mechanisms (e.g. Google’s AMP cache), [... and] privileged Google search result types”.<sup>1</sup>

Google unveiled AMP technology in 2015 before rolling it out the following year. Its main aim is to enable web pages to be opened faster on mobile devices, especially those of news and media websites, to cater for new browsing habits on these devices on which Internet connection is often slower. This slowness was one of the reasons for the increased use of ad blockers to speed up web page load times.<sup>2</sup>

AMP was launched at the same time as new stakeholders emerged in the news and media promotion sector. Facebook Instant Articles and Apple News were introduced in 2015 although they operate separately from search engines. It also coincided with the ramping up of header bidding<sup>3</sup> which was developed between 2014 and 2015. It is a targeted advertising dissemination technology that functions independently from Google. For a number of years, this auction system could not be used with AMP – and its use is still limited today – with certain stakeholders going so far as to assert that AMP was designed specifically to combat this competition.<sup>4</sup>

AMP had a mixed reception as the acceleration (and increase) of mobile device traffic together with heightened visibility was countered by concerns about loss of advertising income or about Google imposing its choices and model on both the media and ad exchanges. In addition, since its 2015 launch, AMP technology has been subject to numerous changes, both technical and in terms of the benefits offered, and this sometimes caught out its users. These changes include:

- the release, in 2018,<sup>5</sup> of a new component called Real-Time Configuration (RTC) which made it possible to use header bidding for AMP-enabled pages.
- the phasing out, in April 2021,<sup>6</sup> of the preferential treatment for AMP pages in the Top Stories Carousel.<sup>7</sup> Certain stakeholders put this change of heart down to the legal pressure exerted on Google for antitrust practices during this period.<sup>8</sup> Now that this unquestionable benefit for content publishers has been removed, a number of them have decided, or are in the process of deciding, to stop using AMP. Today, although it is frequently used by news and media websites, its take-up is not widespread (see Figure 1). More broadly speaking, new issues have gradually emerged and these appear to have been subject to little

<sup>1</sup> <https://github.com/ampproject/meta-ac/issues/191#issuecomment-832932620>

<sup>2</sup> <https://www.cio.com/article/242392/google-takes-on-apple-news-facebook-instant-articles-with-amp.html>

<sup>3</sup> A method enabling competition between ad exchanges for the sale of ad inventories.

<sup>4</sup> The complaint from the State of Texas against Google for antitrust states: “To respond to the threat of header bidding, Google created Accelerated Mobile Pages (“AMP”), a framework for developing mobile web pages, and made AMP essentially incompatible with JavaScript and header bidding”.

<https://assets.documentcloud.org/documents/20514601/amended-texas-google-complaint.pdf>

<sup>5</sup> <https://www.adpushup.com/header-bidding-guide/#header-bidding-amp>

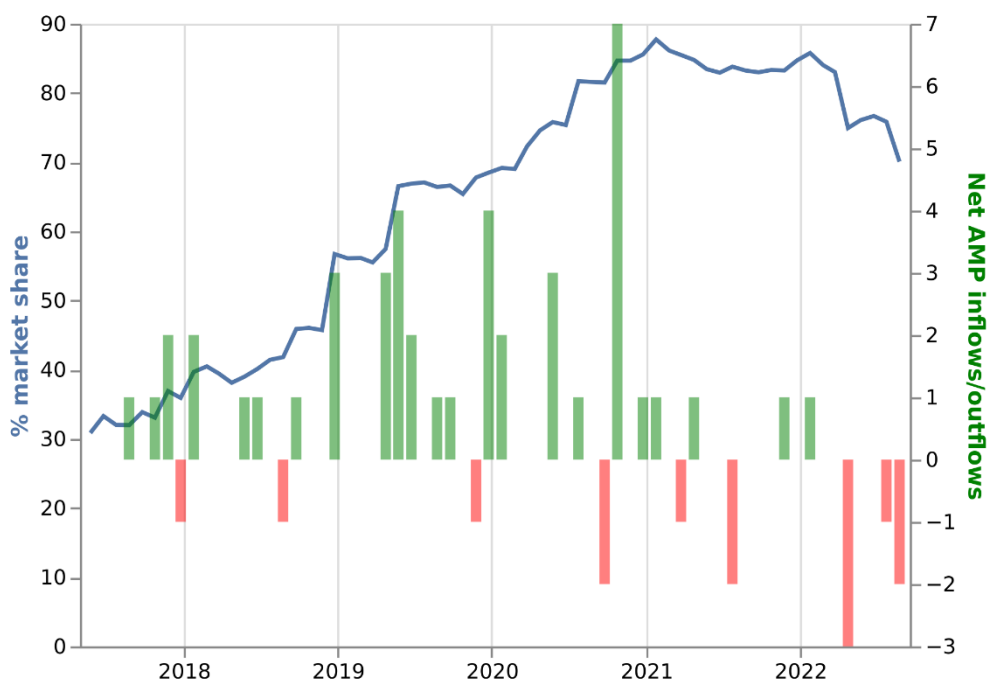
<sup>6</sup> <https://developers.google.com/search/blog/2021/04/more-details-page-experience#details>

<sup>7</sup> Set of links highlighted on the Google search page above the results coming from natural ranking.

<sup>8</sup> <https://plausible.io/blog/google-amp>

scrutiny in studies. Examples include the effect of the General Data Protection Regulation (GDPR) on AMP and the general tapering off of AMP's influence which has been illustrated by several stakeholders dropping it between 2021 and 2022.<sup>9</sup>

**Figure 1: Annual change in AMP use by French news and media websites**  
(Source – data available to the general public on the ACPM<sup>10</sup> website)



### **ALTHOUGH AMP APPEARS TO HAVE SHARED GOVERNANCE, GOOGLE IS STILL IN CHARGE**

From the outset, AMP governance was fully controlled by Google but it was overhauled on 30 November 2019 under intense stakeholder pressure. It is now more open and managed by three structures:<sup>11</sup>

- A Technical Steering Committee tasked with identifying the project's technical and commercial objectives. The Committee initially had seven members – three from Google, one from Twitter, one from Microsoft, one from Pinterest and one from Pantheon. This number has now been reduced to four, with three from Google and one from Microsoft, which means that Google exercises majority control.
- An Advisory Committee which is responsible for advising the Technical Steering Committee. It is composed of stakeholders from various backgrounds such as cache server<sup>12</sup> providers, representatives of content

<sup>9</sup> Notable examples include DuckDuckGo and Brave Browser: <https://www.lemondeinformatique.fr/actualites/lire-brave-et-duckduckgo-bloquent-les-pages-amp-de-google-86522.html> (in French).

<sup>10</sup> Alliance for Press and Media Figures.

<sup>11</sup> <https://amphtml.wordpress.com/2018/11/30/amp-projects-new-governance-model-now-in-effect>

<sup>12</sup> A server or set of servers duplicating web pages to enable pages to be opened faster by the user through, for instance, geographic proximity.

- publishers and independent developers. It currently has 13 members and minutes of its meetings were published up to June 2021.<sup>13</sup>
- Working Groups, with each one being defined as a segment of the community with expertise in a specific area such as monetisation, performance and the Code of Conduct. There are now 12 Working Groups,<sup>14</sup> each with three to ten members.

Despite Google's moves to share AMP governance, some members of the Advisory Committee have resigned as they felt that Google had retained control of the project.<sup>15</sup> One developer publicly criticised the lack of a roadmap and cohesive, open and shared priorities of AMP-as-a-product.<sup>16</sup>

## OVERVIEW OF THE FUNCTIONING OF AMP TECHNOLOGY

AMP is first and foremost a framework web.<sup>17</sup> This framework is governed by a certain number of rules (see below) which limit the use of so-called "slow" features, and by the optimised loading of certain resources.

Google has added other mechanisms to this framework to further speed up the loading of web pages from its search engine:

- "Caching" to store AMP pages on Google servers so that they are displayed more rapidly
- "Prerendering" which initiates the process of loading and measuring the rendering of AMP pages from the search engine even before the user has clicked on it

### **CLOSE-UP: What happens when a web page is loaded?**

Let's have a look at the various stages of web page loading to fully understand how AMP works and to assess its actual advantages.

When a user clicks on a link to access a web page, the browser executes a series of actions to recover the page's raw code on the distant servers hosting the website. The time taken to perform these actions is primarily contingent on the distance between the servers and the user, and the servers' performance levels. The server then recovers one or more files which are often made up of various elements:

- The core of the HTML code page which may include text, tables and links to images
- Cascading Style Sheets (CSS) for formatting all the page's styling elements (font, colours and layout, etc.)
- Scripts or programmes coded in JavaScript for dynamic interaction between the browser and user

<sup>13</sup> <https://github.com/ampproject/meta-ac/tree/main/meetings>

<sup>14</sup> <https://github.com/ampproject/meta/tree/main/working-groups>

<sup>15</sup> <https://wptavern.com/jeremy-keith-resigns-from-amp-advisory-committee-it-has-become-clear-to-me-that-amp-remains-a-google-product>

<sup>16</sup> <https://github.com/ampproject/meta-ac/issues/191#issuecomment-813522878>

<sup>17</sup> A design framework drawing primarily on HTML used to create web pages.

Once the files have been received, the browser “scours” and interprets them to build the page’s structure. The scripts are then executed by the browser. They are said to be asynchronous if they can be downloaded in parallel in a non-blocking manner. Otherwise, they are referred to as synchronous, meaning that all the processes are blocked pending execution of the process underway.

Once the structure has been built and the JavaScript executed, the browser starts or finalises the last stage called rendering, which involves applying the styling elements defined by the CSS to the HTML elements and displaying the final result in the browser. The user is then able to see and interact with the website (usually by clicking).

### What constraints weigh on the development of an AMP page?

Compared to traditional web pages, pages developed using AMP technology use specific mechanisms for faster loading in the browser.

AMP development constraints relate to the three types of files used to develop web pages:

- AMP HTML code: the size of the external resources loaded in the body of the page (images, videos, etc.) must be specified in the code to allow for better anticipation by the server and, therefore, greater optimisation. Certain parts of the code, such as tags, also differ from standard HTML.
- CSS code: this is inline,<sup>18</sup> or otherwise sandwiched between `<style amp-custom></style>` tags and the size must be less than 50 kB
- JavaScript scripts: only the asynchronous (non-blocking) code is authorised and the third-party JavaScript code is hosted in iframes<sup>19</sup> so as to avoid blocking the loading of the main page

Restrictions concerning JavaScript actually relate to the best practices to apply for web development even without using the AMP framework.

For each of the HTML pages of the website, developers using the AMP framework have to develop the corresponding AMP page by factoring in the previously-mentioned constraints, and also by following a syntax which, although very similar to HTML, is still different. As a result, the AMP version always references the corresponding HTML page, which is called the canonical page. This highlights the fact that it is impossible for a publisher to only use the AMP code without the HTML mirror page.

To compound these various limitations, Google has added further optimisation measures which are seamless for developers but which help speed up page rendering. These concern, inter alia, the order for downloading resources, the page rendering process and optimisation of character fonts.

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<sup>18</sup> This means that the CSS code is directly incorporated into the HTML code unlike an external CSS file.

<sup>19</sup> HTML element allowing another HTML page to be loaded inside the main page.

### Caching: storing AMP pages on Google's servers

In addition to the development rules laid down, Google has developed an AMP submodule (AMP Cache) to make page rendering even faster. AMP Cache is a server providing a document caching service free of charge. This allows copies of AMP pages and the associated resources (in particular images) to be stored. Cache servers are usually located in close geographic proximity to users thus fast-tracking the availability of resources.

Unlike the standard format where content publishers decide to use a specific cache and provider, with AMP, the cache provider can be selected by the search engine, as is the case with Google Search, the search engine market leader. In this respect, AMP's FAQ state: "By using AMP, content producers are making the content in AMP files available to be cached by third parties".<sup>20</sup>

### Prerendering: anticipating display of an AMP page prior to its consultation

The final brick in the AMP edifice is prerendering. This does not reduce the page load time but rather reduces the user's perception of this time. It only occurs when a user accesses an AMP page from a search engine.

When a user uses Google Search<sup>21</sup> from a mobile device, and provided an AMP link is visible, the corresponding page can be prerendered.<sup>22</sup> A hidden iframe (see above) will start loading the page located on Google's cache servers and prepare its rendering in spite of the fact that the user is still on Google's search results page. If the user clicks on the link, the iframe is therefore simply made visible, almost instantaneously. Despite potential over usage of data, this process is totally imperceptible for the user for two reasons:

- No slowing down of the search page will be noticeable as prerendering only starts when the remainder of the page is finished
- Prerendering will have no effect on displaying the user's page as they will see the AMP page with a URL which is nevertheless different from the page's standard URL and which will begin with "www.google.com/amp/".<sup>23</sup> So that the user knows the identity of the website, which is no longer directly visible in the URL, a banner is added at the top of the page.

Figure 2 shows all these stages and the timeline for the various queries made from searches using the Google search engine. It compares the usual rendering process for a page on a mobile device not using AMP (on the left) and using AMP (on the right). When prerendering is activated, not only is the page load time reduced compared to a non-AMP version due to the AMP framework and caching but, more importantly, the time between the user's click and the displaying of the page on the device's screen (perceived load time) is also significantly shorter.

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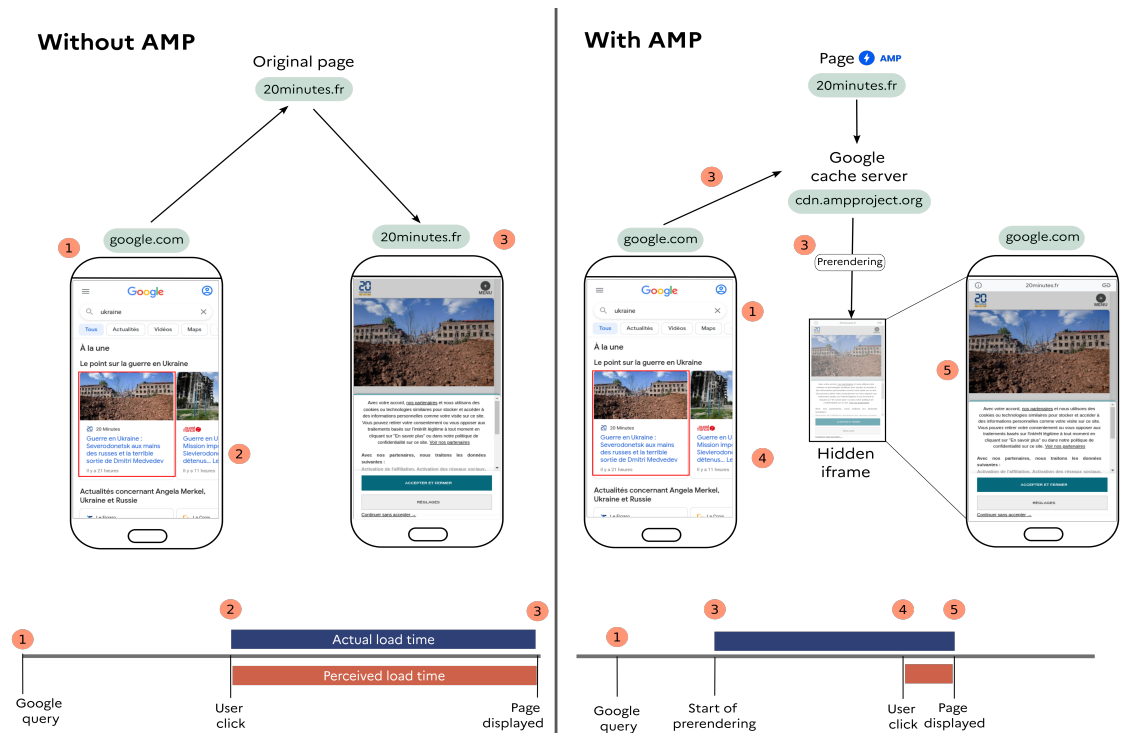
<sup>20</sup> <https://developers.google.com/amp/cache/faq>

<sup>21</sup> In the rest of the paragraph, the specific example of Google Search is used for the sake of simplicity (in 2021, Google had a 96% market share on the search engine market for mobile devices). Most of the observations also apply to Bing.

<sup>22</sup> If several AMP pages appear in the results, Google will only prerender the first one.

<sup>23</sup> This use of a separate URL stems from the use of iframes for the prerendering. For security reasons, these cannot belong to a domain other than that of the web page being displayed (in the case at hand, the results page of the search engine being used).

Figure 2: Comparative illustration of the functioning of AMP components during a Google Search search from a mobile device



### CLOSE-UP: What is the difference between prerender, prefetch, preload and preconnect?

There were methods to preload or prerender content using HTML code before AMP technology existed without these being used in Google's Chrome browser to avoid excess data usage.

Prefetch, preconnect, preload and prerender are four techniques for anticipating web page visits and carrying out certain actions in advance to speed up loading.

With prefetch, the browser performs DNS resolution<sup>24</sup> beforehand, whilst with preconnect, the secure connection, where applicable, is also established enabling up to several hundreds of milliseconds to be gained.

The preload command informs the browser that a resource must be downloaded as a priority.

Lastly, prerender is the most advanced extent of anticipation. It should be used sparingly and when it is highly likely that the user will visit the page. The process requires large volumes of data and calculation times. Not only is the DNS resolution anticipated and the resources loaded, but the page is also rendered in advance. In such cases, up to several seconds may be gained. It should be mentioned that prerendering is not currently supported on some browsers, such as Safari.

<sup>24</sup>Process during which the IP address of the server hosting the resources associated with the requested page is recovered using the domain name.

## AMP HAD HUGE TAKE-UP AMONG MEDIA PUBLISHERS WHICH WAS ULTIMATELY OVERSHADOWED BY ITS MANY SHORTCOMINGS

For many media publishers, changing over to AMP was crucial to ensure that their brand remained visible and retained its reputation. That said, very few studies have been published concerning the way in which this technology was received. Drawing on a number of interviews with media publishers who use or have used AMP, a summary of their different points of view can be drawn up.

### AMP, a technology with promising aspects...

For a long time, media publishers were attracted by the exclusive access to the Top Stories Carousel granted by AMP. This exclusivity could be perceived as a chance to stand out from the competition or as a requirement so as not to fall behind.

Another major factor for some stakeholders was the AMP logo, a little blue lightning bolt, which appeared next to the links and which was seen as a symbol of speed by many Internet users.

This meant that, until 2021, the year when these two aspects were phased out, many popular French news and media websites were using AMP.<sup>25</sup>

Figure 3: The Top Stories Carousel displayed before the search results



However, AMP's pledge to provide an improved user experience, owing to faster page loading, carried little weight in media publishers' decisions to use the technology. Nevertheless, they became more interested when Google began to focus on the speed of loading in the ranking of search results.<sup>26</sup>

<sup>25</sup> 19 of the 20 largest news and media websites in France which are members of the ACPM used AMP (source: ACPM)

<sup>26</sup> Google actually uses a set of performance indicators called Core Web Vitals (<https://web.dev/vitals/>).

... but with an adverse effect on advertising income and prohibitive technical constraints

Many media publishers claim that increased visits to their website due to faster and more user-friendly browsing, and improved rankings, have been offset by a decline in income-generating features: tracking and header bidding. Indeed, the restrictions laid down by AMP's development rules make it more difficult for publishers to track users which, ultimately, reduces their advertising income. As regards advertising, header bidding (see above), which was initially incompatible with use of AMP, is still the subject of debate concerning its ease of use.

There is also debate over the use of a cache server that is free of charge but mandatory. First, as most media publishers already pay to use a cache server, an additional one does not always present an interest. Second, there are consequences to forcing publishers to use a Google cache server when Internet users use Google Search. In reality, via its cache servers, Google becomes the content provider and this further hampers Internet user tracking by publishers who become, from a technical standpoint, third parties to their own content. Some also flag up a lack of visibility for their brand as the address displayed in the browser shows the domain name of AMP or Google rather than that of the publisher. The resources put forward by Google to address this criticism do not seem to reassure the publishers who consider them to be too complicated to use.

In addition, the technical constraints generated by the AMP development framework, especially on JavaScript and caching on Google servers, do not only affect the tracking of Internet users and advertising income. There is also an impact on the page's features with complex visualisation, intricate menus, search functions and the user experience often not being developed on AMP due to overly-convoluted implementation.

These problems have been compounded by very rapid changes to AMP standards with features being added or removed and this could put off some publishers. This is aggravated in the event of a development error when the page may no longer be listed by Google meaning that advertising campaigns may be brought to a halt.

Lastly, all the publishers mentioned an increased workload during implementation as well as in the long run due to the need to simultaneously develop and maintain two code bases.

To sum up, while AMP was taken up by a large number of stakeholders, none of the media publishers we spoke to now seem to consider this resource as advantageous but rather as a burden. It is hard to identify AMP's benefits, especially since Google's change of policy in 2021, and its drawbacks are still present.

## **A TECHNICAL ANALYSIS OF AMP PERFORMANCE**

Do AMP pages really load quicker than non-AMP pages? Is this increased speed attributable to restrictions on the AMP code or to caching? Do AMP pages still provide an advantage in terms of ranking? In this section, PEReN will provide a critical analysis of AMP, drawing on its experiments with the technology. It will also shortly release its code in open source and publish its research findings.

## Do web pages actually load quicker with AMP technology?

Accurately quantifying the increase in display speed provided by AMP is challenging: there are the combined effects of various AMP framework restrictions and optimisation measures (caching and prerendering). Distinguishing each of these effects is a complex task, but we have endeavoured insofar as possible to separate them out. We also made the decision to not incorporate the prerendering analysis into our load speed comparison. This is because prerendering does not directly contribute to improving a page's actual load time, but rather the perception of this time. All comparisons are made using the canonical version – i.e. the standard HTML version – the AMP version and the cached AMP version of pages.

### Effects of the AMP framework

Our analyses (see Appendix 1) reveal that the AMP versions of pages often load quicker than comparable non-AMP pages. However, the degree of the speed increase varies widely, and is highly contingent on the complexity of the landing page and how well it is developed. This is why, for certain publishers, performance scores have almost tripled, while for others they in fact dropped into the negatives.

The increase in load speeds is often the result of restrictions introduced when developing the page that do not require the use of the AMP framework (see p. 5). Reducing the number of elements to load and the requests for slow features will increase load speeds for pages. The paper "AMP up your mobile web experience"<sup>27</sup> found that the average load time for JavaScript is 667ms for a non-AMP page compared to just 22ms for its AMP counterpart. However, the best-performing JavaScript non-AMP pages have load times in a similar range as those of their AMP counterparts.

Conversely, certain of the aforementioned optimisation measures, such as the process of loading resources based on where the user has positioned the cursor on the page, are unique to AMP pages. That said, these measures seem to play a more secondary role given the meagre improvement in load times on the best-performing canonical versions (see Appendix 1).

In this respect, the main load speed improvements possible with AMP technology can generally also be achieved with optimised HTML code.

### *Effects of Google caching*

We have observed that for certain publishers, caching only marginally increases load speeds for their pages. For these websites, this seems to suggest that the content publisher is using a Content Delivery Network (CDN)<sup>28</sup> and is not using server resources from the Google AMP Cache (see above). In certain cases, the page cached by Google even turns out to be slightly slower than the page cached by the publisher, suggesting that the user and the CDN used by the publisher are geographically closer than the user and Google's servers. However, caching systematically has a positive

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<sup>27</sup> <https://dl.acm.org/doi/pdf/10.1145/3300061.3300137>

<sup>28</sup> A network of geographically distributed servers which work together to provide fast delivery of Internet content.

effect on time to interactive:<sup>29</sup> scripts that are required to be imported by all AMP pages are located directly on the Google AMP Cache server. To conclude, the reduced load times of sites employing AMP technology is mainly due to a use of the framework, and not because Google has cached the page.

### Do Google Search and Google News promote AMP pages more heavily?

We carried out some exercises on the Google Search results page with a view to answering the following questions:

- Do AMP pages have an edge over other pages in results rankings on mobile devices, all other factors being equal?
- Are AMP pages highlighted in results on Google Search and Google News?

Until 2021, Google promoted AMP pages on the results page of its search engine by exclusively featuring them on the Top Stories Carousel. Since then, Google announced that it would be scrapping this feature, and more generally that no direct preference will be given to AMP pages, even if, indirectly, their optimal performance means that on average they feature in the higher end of the ranking. This is because ranking is determined based on performance with a speed-based benefit decided by Google, and may or may not mirror user preferences.<sup>30</sup>

On initial examination, our experiments (see Appendix 2) are unable to provide an answer to the first question. Changes in search result rankings on a PC and on mobile devices, at the same time of the day, cannot be fully attributed to whether AMP technology is used by a publisher or not.

However, in spite of the official end of ranking benefits for AMP pages, differences in interface have not completely disappeared. For instance, users can see that the logos of publishers are far more visible for AMP articles than for other formats – for which only the page icon is used. But, this is not consistently applied and publishers are not necessarily aware of it (see Figure 4).

*Figure 4: Screenshots of the Google News results page for two searches on a mobile device (testing performed on an emulated Samsung Galaxy S8, with an empty search history).*

#### Observations:

In the left screenshot, barring the fourth result, all hits are links to AMP pages. Different highlighting is used in the first and fourth hits even though they relate to the same publisher. In the right screenshot, only the first hit is not a link to an AMP page.



<sup>29</sup> Time to interactive is the timespan between the moment when the page is displayed and when the user is able to interact with it.

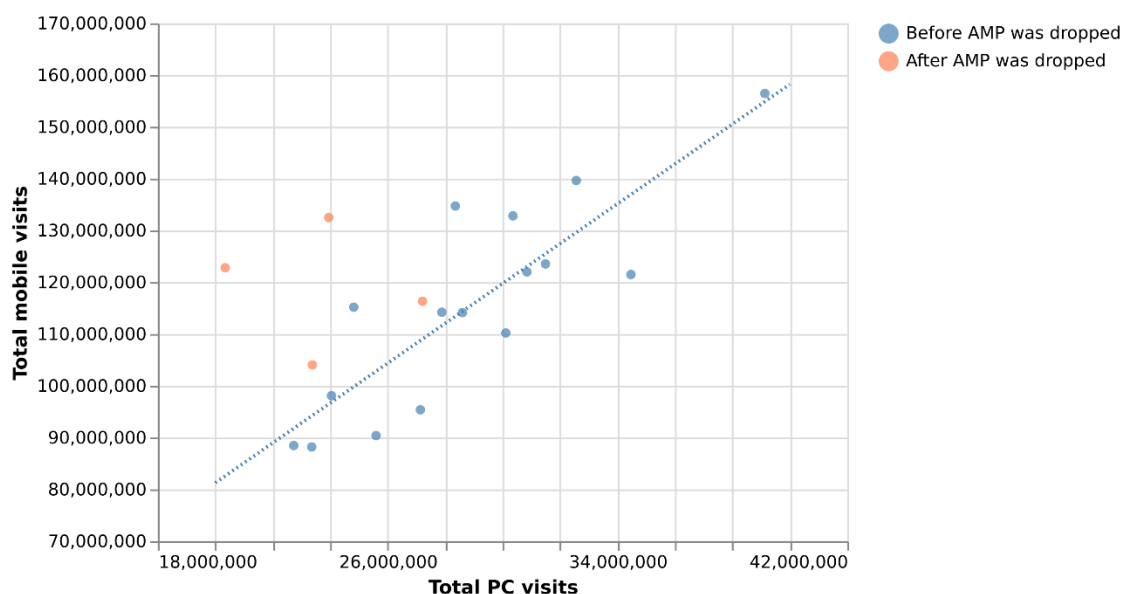
<sup>30</sup> AMP pages are often simplified versions of their HTML counterparts, with lower-quality visuals or functionalities. This speed-based benefit set by Google may also relate to gains that would have little benefit to some users (and for example could be not as advantageous as Internet connection or smartphone speed).

### What have been the repercussions of certain publishers axing AMP pages?

With certain publishers dropping this technology, including FranceTVInfo, the impact of AMP technology on website traffic can be determined. The website of the French non-profit organisation certifying the circulation of newspapers, the Alliance for Press and Media Figures (ACPM),<sup>31</sup> provides figures on this traffic, broken down into non-AMP mobile, AMP mobile and PC versions.

This data alone is insufficient to factor in the many potential biases (first and foremost a change in popularity of a publisher on a specific medium for reasons unrelated to AMP technology). However, a cursory analysis based on a comparison of traffic on mobile and PC versions before and after AMP technology was abandoned (see Figures 5 and 6) would suggest that this move did not significantly affect the publisher's visibility, and that AMP mobile traffic shifted adequately to the non-AMP mobile version. These initial observations are subject to confirmation by means of more in-depth analyses that would, in particular, take into account the wider context of FranceTVInfo's decision to axe AMP (i.e. the election period) and would be supported by a greater knowledge of the media industry.

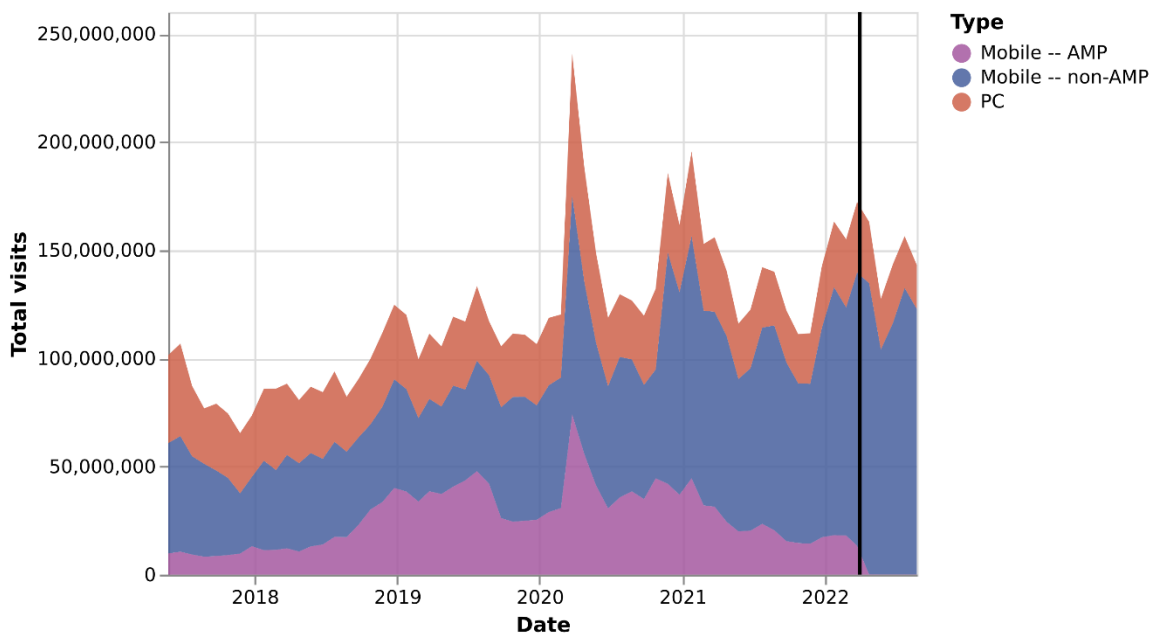
**Figure 5: Franceinfo.fr mobile version traffic (total number of visits per month)**  
(Source: PEReN, based on data available to the general public on the ACPM website)



<sup>31</sup> <https://www.acpm.fr/>

**Figure 6: Franceinfo.fr traffic by platform used**

(Source: PEReN, based on publicly available data on the ACPM website)  
The vertical black line indicates the date when AMP was dropped.



### CONCLUSION: THE GRADUAL DECLINE OF AMP?

This study has presented the overall workings of AMP and has gathered media publishers' views on the matter, as they are the main stakeholders affected by the introduction of this technology. Real-world experiments were conducted to get a clearer picture of the actual benefits of this technology. They demonstrated that the technical grounds for the restrictions introduced by AMP technology are at times weak, while the negative impact of these decisions on the capacity to monetise publisher content can be more directly verified. For example, the requirement for publishers to use the Google cache server allows the tech giant to more effectively track user activity at the expense of the publishers themselves, and restrictions on header bidding allowed Google to strengthen its foothold in the advertising market.

While the inherent benefits of AMP – at times arbitrarily attributed by Google to the technology – initially encouraged publishers to use it, since late 2021 the pros of its use have been outweighed by the cons to varying degrees.

Firstly, as mentioned previously, many media publishers have decided to no longer use AMP or are planning to drop it. They are certainly not the only **Internet stakeholders to turn their backs on it**, or even to block certain components of this technology: since November 2021, Twitter has no longer been redirecting users to the AMP version of pages;<sup>32</sup> the browser Brave and the search engine duckduckgo have been redirecting to non-AMP versions of pages since April 2022;<sup>33</sup> and various extensions can bypass the technology on any browser.

<sup>32</sup> <https://www.theverge.com/2021/11/19/22791002/twitter-amp-ios-android>

<sup>33</sup> <https://twitter.com/DuckDuckGo/status/1516534351974092805> ; <https://brave.com/privacy-updates/18-de-amp/>

On the governance front, Google's true role in AMP technology is the subject of discussion – and of an ongoing lawsuit.<sup>34</sup> The minutes of AMP Advisory Committee meetings reveal the doubts of certain members regarding the technology's future. They suggest a lack of transparency in the vision for AMP, defined by the Technical Steering Committee that is majority controlled by Google. These opaque governance issues are pushing a certain number of the publishers interviewed to consider disinvesting in Google's AMP technology. A lack of clarity concerning future developments, shaky governance, vague messages and constant changes made to the technology – in particular the loss of the benefits of its usage – seem to point to the gradual decline of AMP.

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<sup>34</sup><https://assets.documentcloud.org/documents/20514601/amended-texas-google-complaint.pdf>

## APPENDIX 1

### ANALYSIS OF THE ACCELERATION OF AMP PAGES

#### Methodology

Using the Google Trends site, we drew up a list of trending searches. We then gathered the URLs of AMP pages appearing in the results for these searches. For each AMP page, we obtained the canonical (original, non-AMP version of the page) and cached versions thereof. It is rather straightforward to determine the URLs of these different page versions once the URL of the AMP page is identified.<sup>35</sup> We were therefore able to compile a corpus of some one hundred pages in three different versions: AMP in the Google AMP Cache, AMP on the publisher's server and non-AMP. We then performed performance tests using Google Lighthouse, a tool developed by Google that can assess the main performance indicators of websites. Each page was assessed five times and the results shown represent the average of the indicators calculated over the five tests.

#### Metrics assessed

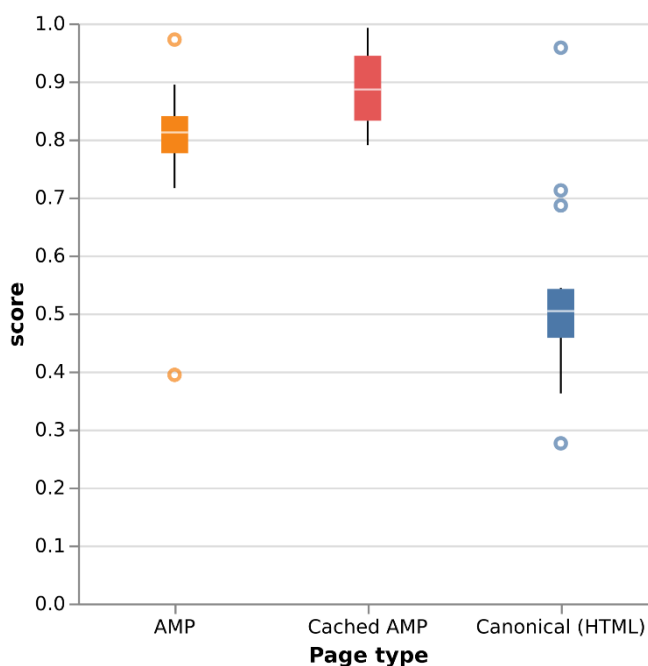
The performance metrics used are those utilised by Google to calculate its Core Web Vitals score:

- Largest Contentful Paint (LCP) – the time it takes for the largest content on the screen to load
- Cumulative Layout Shift (CLS) – the visual stability of a page
- First Input Delay (FID) – the time it takes for a page to respond to user input

Based on these three scores, Google calculates a performance score on a scale of 0 (poor performance) to 1 (very high performance).<sup>36</sup>

#### Results

*Figure 7: Statistics on the performance scores for various versions of the same page (N=30).*



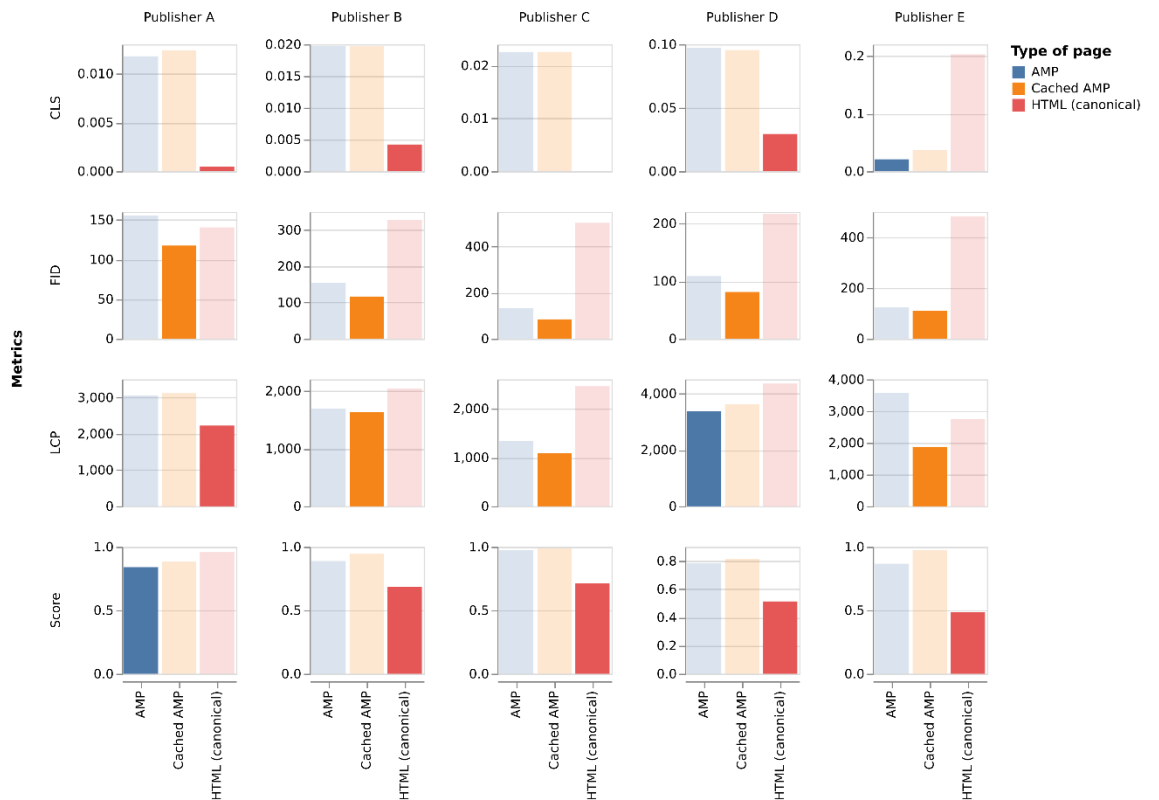
<sup>35</sup> A description of the standardised format of these URLs can be found here: <https://developers.google.com/amp/cache/overview?hl=en#amp-cache-url-format>

<sup>36</sup> The calculation is explained in detail here: <https://web.dev/performance-scoring/>

**Figure 8: Comparison of the performances of various versions of the same page visited on a mobile phone**



**Figure 9: Comparison of four metrics (LCP, FID, CLS, performance score) of five French media publishers for various versions of their websites.**

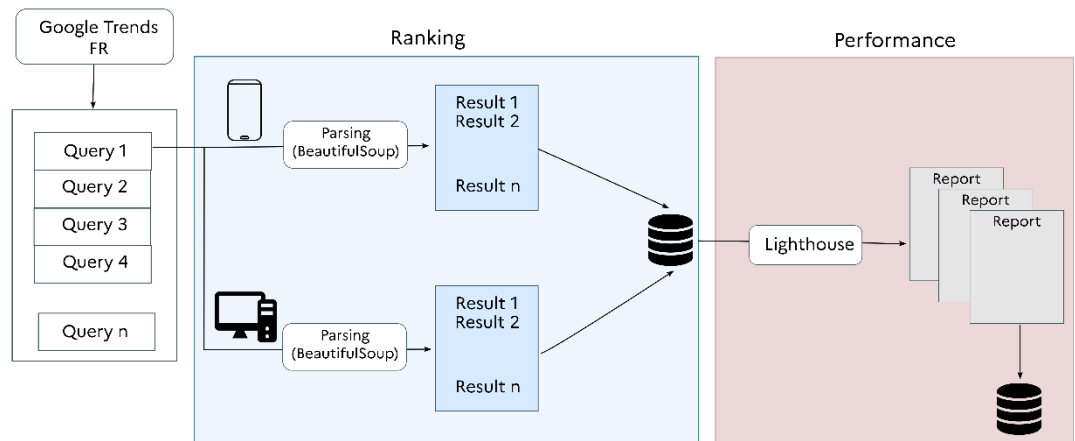


The best-performing version for a given publisher and a given metric are shown in a darker colour.

## APPENDIX 2 ANALYSIS OF THE IMPACT ON AMP PAGE RANKING

### Methodology

The diagram below sets out our methodology.



Based on trending searches obtained from Google Trends, a search is performed on the Google Search engine and the results page is analysed to obtain the position of various links (order of appearance). This search is carried out on a mobile device and a PC.

For each link obtained, several Lighthouse performance tests are performed. Lastly, the ranking data is cross-referenced with performance data and the differences in positioning between the results obtained on the mobile device and the PC are analysed with regard to the differences in performance and whether AMP is used.

Through the “Shedding light on...” series of articles, PEReN proposes elements of technical analysis on a wide variety of topics related to the regulation of online digital platforms.

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