

# Nikkei achieves a new level of quality and performance with their multi-page PWA

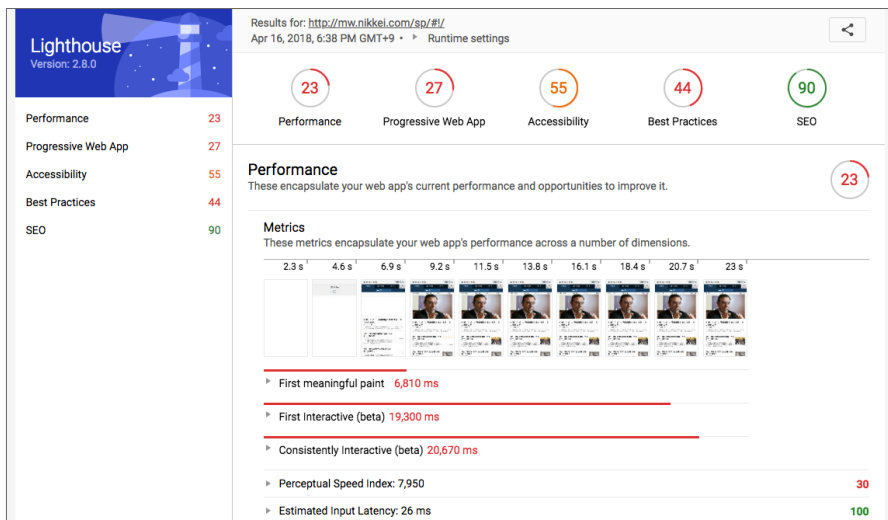
## About

With a publishing history of more than 140 years, Nikkei is one of the most authoritative media businesses in Japan. Along with their traditional print newspaper, they have over 450 million monthly visits to their digital properties. To provide a better user experience and accelerate their business on the web, Nikkei successfully launched a Progressive Web App (PWA) in November 2017. They're now seeing amazing results from the new platform.

## Challenge

Nikkei saw a rapid rise in mobile traffic to their legacy website as smartphones became the main point of entry to the web for many users. However, using [Lighthouse](#), an auditing tool that scans a web page and gives recommendations on how to improve across multiple categories, they understood that their site wasn't fully optimized for mobile across multiple areas, and was very slow to load.

Their website was taking ~20 seconds to become consistently interactive and averaged 10 seconds on the Speed Index. Knowing that 53% of mobile users will abandon an experience if it takes more than three seconds to load,<sup>1</sup> Nikkei wanted to reduce their load time to provide a better experience and accelerate their business on the web.



Lighthouse performance report before final PWA implementation.

<sup>1</sup> Google Data, aggregated, anonymized Google Analytics data from a sample of mWeb sites opted into sharing benchmark data, n=3.7K, Global, March 2016.



## Performance gains

- 2X** better Speed Index
- 14** seconds faster time-to-interactive
- 75%** faster loading with prefetching the next page

## Business impact

- 2.3X** organic traffic
- 58%** more conversions (subscriptions)
- 49%** more daily active users
- 2X** page view per session

“The value of speed is indisputable, especially for financial news. We made speed one of our core metrics, and our customers have appreciated the change.”

—Taihei Shigemori, Manager, Digital Strategy, Nikkei Online News Group

## Solution

Nikkei created and launched a Progressive Web App. Using responsive design, vanilla JavaScript, and a multi-page architecture, they focused on building a delightful user experience. By adding a service worker, they were able to provide predictable performance, regardless of the network. This also ensured that top articles were always available and loaded almost immediately because they were stored using cache storage. They added a web app manifest, which together with their service worker, allowed users to install the PWA, so it was easily accessible. And to ensure performance was entirely within their control, they optimized their third-party JavaScript.

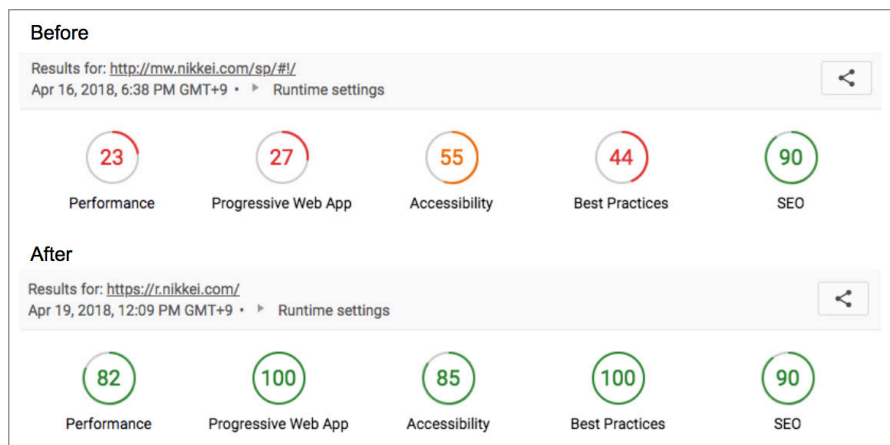
### Best Practices (see details in technical deep dive below)

- Improve load speed and interactivity by using modern web APIs, compression, and code optimization practices
- Progressively enhance UX by adding PWA features such as offline support and Add to Home Screen
- Build performance budgets into performance strategy

## Results

Nikkei achieved impressive performance gains. Their Lighthouse performance score soared from 23 to 82. Their time-to-interactive measurement dropped by 14 seconds. Organic traffic, speed, conversion rate, and active daily users all rose as well.

The PWA is a multi-page app (MPA) that reduces front-end complexity, built with vanilla JavaScript. It took Nikkei approximately one year and five engineers to build their PWA and achieve these impressive results.



Comparative Lighthouse report showing performance before and after full PWA implementation.

For technical details about Nikkei's implementation, visit <https://developers.google.com/web/showcase/2018/nikkei>.



Nikkei Progressive Web App on mobile device.

“The Nikkei front-end engineers have proven that great UX brings good business performance. We’re fully invested in continuing our journey of bringing a new level of quality to the web.”

— Hiroyuki Higashi, Product Manager, The Nikkei Digital Edition