



To your analytics team

Step 1: Start tracking speed

There are several ways to measure speed and several metrics to choose between. Lighthouse and WebPageTest are two very good tools, but here we will initially focus on WebPageTest and calculate the correlation between speed and conversions with the help of Google Analytics.

1 Check your speed

This is how you measure speed in [WebPageTest.org](https://www.webpagetest.org):

- Enter the url of the page you want to test
- Chose a test location as close to your market as possible
- Chose connection, for example 3G Fast for Europe or 4G if you only sell in countries with very good network connections (remember that networks in the countryside seldom are as good as in the big cities)
- Click the tab Chrome and tic "Emulate Mobile Browser" + "Capture Lighthouse Report"
- Click "Start test"

2 Set targets

From the results of the test in WebPageTest, see if you reached these targets for a test on 3G Fast:

- **Start Render: <2s**
When the first dot of content shows on the screen
- **Speed Index: <3000**
How many milliseconds it takes to load the content above the fold
- **Load Time: <5s**
When the page is visually complete
- **Bytes In (Page Weight): <1Mb**

Did you reach the targets? If not, alert company stakeholders and help the developers get resources to fix speed issues.

▶ [Use this site to calculate how much revenue you lose](#)

Lab data vs field data

WebPageTest gives so called lab data since the test is performed in a controlled environment. If you want to calculate the correlation between speed and conversions, it can be easier to use Google Analytics. GA uses field data (Real User Monitoring) so it may change depending on which market your business focuses on and the level of Wi-Fi/4G/3G/2G. Thereby, WebPageTest is better for giving a detailed speed metric, while GA can be used when you look at big changes over several months.

▶ [Learn more about lab and field data](#)

3 Check correlation with conversions

Conversion rates alter depending on campaigns and seasonality, but since the same campaigns reach both mobile and desktop, you can divide the mobile conversion rate with the desktop conversion rate and see if the mobile site is becoming stronger regardless of campaigns. This metric is called Rel mCvR (Relative Mobile Conversion Rate).

- Use [this script](#) to check the correlation between page load times and Rel mCvR
 - Go to File > Make a copy
 - Go to tab Report Configuration, change View ID to the id of your Google Analytics view (see image to the right)
 - Install [this Google Analytics Add-on](#)
 - Go to Add-ons > Google Analytics > Run reports
 - The result is shown in the graph tab

4 Set up reporting within the company

Regular reports on speed and its correlation with conversions is the key to success.

- Make sure the stakeholders get the report on correlation between speed and Rel mCvR
- Make sure the engineers receive or do regular tracking of speed
- Make sure the creative team start tracking all new pages and make them below 1Mb

All accounts

Here you'll find your View ID

Views

1 Master View
92320289

An increase in page speed leads directly to an **increase in revenue**. To increase page speed you should reduce the page size - the most impactful way is to begin with the **optimisation of images**.

If you want to dive deeper into automated image optimisation, please check out [images_guide](#)

1 Prioritise critical images

"The most optimised image is the non-existing image"

Removing images can lead to fewer complications and less maintenance.

You should consider:

- Removing unused and unnecessary images
- Prioritising loading hero images first
- Use CSS effects and animations where possible
- Use web fonts instead of encoding text in images

▶ [Start working with image prioritization](#)

2 Choose the right format

Next, make sure your images are formatted correctly:

- JPEGs for pictures
- PNGs for transparencies
- Use SVGs if possible, and
- GIFs for animations



Use progressive JPEG for images over 10k bytes, and begin exploring [Next-Gen Formats](#), such as JPEG 2000, JPEG XR, and WebP.

▶ [Learn more about selecting the right image format](#)

3 Compress and resize

Optimising images can help you achieve the largest byte savings and performance improvements for your website.

- Compress images and remove metadata
- Experiment with quality settings for your formats
- Server side resizing of images
- Enable GZIP compression for files
- Use automated tools for image optimization
- Use responsive images to adjust to screen sizes

▶ [Dive deeper into this image optimization checklist](#)

4 Use loading techniques

Once everything else is in place, you need to make sure that your images are delivered as fast as possible.

- **Lazy loading:** Loading images only when needed
- **Multi-serving images:** Serve different image versions to different devices. Use srcset and the browser will figure out which image is best
- **Placeholders:** Display placeholders while loading
- **Enable caching:** Beneficial for returning visitors

▶ [Learn more about loading](#)

Make Speed a KPI

[In our research](#), we found that the number of images on a page was the second greatest predictor of conversions. Optimizing images is a fast and cost-effective way to experience results, but in order to make speed optimization long-term sustainable, you need to add Site Speed as a KPI across your organisation.

▶ [Learn more about KPI setting and performance budgets here](#)

Optimize your images today

One reason: **there's no downside**. Your site speed improves, which impacts both your search engine ranking and your conversions on the site.

Run a [Lighthouse Audit](#) to identify your opportunities.

Every byte counts!

Etsy discovered that 160KB of additional images caused their bounce rate to **increase 12% on mobile devices**

Source: Lara Hogan, "Designing for Performance", 2014.



To your engineers

Step 3: Optimize the critical rendering path

The critical rendering path refers to making sure that the content that visitors see and need first is displayed first. A Speed Index above 3000 measured through WebPageTest or Lighthouse shows that the below steps need to be taken.

1 Check metrics

- [Speed Index in WebPageTest](#) tells you if the content above the fold loads fast. Are you below 3000? If not, you need to optimize the code.
- [Time to Interactive in Lighthouse](#) shows you how fast visitors can interact with the content. Also check Speed Index here.

2 Check recommendations

Run an audit with [Lighthouse](#) to get recommendations about what to fix within the code. Each recommendation is connected to a link to learn more.

Use [Chrome DevTool](#) to go through your code and see where you have bottlenecks. [Here](#) you can learn how to audit your code.

3 Optimize CSS

Since CSS is a render-blocking resource, it's important to go through your CSS and only load what is needed on the page – check if you can inline. You can use media types and queries to unblock rendering of the CSS that can be loaded later.

▶ [Learn more about render-blocking CSS](#)

3 Optimize JavaScript

- JavaScript can also be render-blocking, so make sure you only load the necessary resources and then use defer or async for anything that can be loaded later.
- Does every script have an owner and is being used? If not, you might be able to clean some out
- Go through your tag manager and check if there's anything you can clean out here
- Talk to your marketing department regarding measurement scripts. Are all tools being used? Is it possible to use one measurement provider instead of two or three? Work together and try to find opportunities.

▶ [More about render-blocking JS and JS optimization](#)

Extra recommendations

- Review how your resources are being cached
- Make sure you use a CDN, especially if you sell internationally
- Shift to HTTP2 which makes it possible to load more resources at the same time

Need time and resources to solve speed?

[Use the Impact Calculator to calculate how much
your business will gain](#)