



An A/B testers guide to Google Optimize implementation

WHITE PAPER

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Implementation of Google Optimize

Optimize allows you to AB-test variants of web pages and see how they perform against a goal that you specify. It monitors the performance of your experiment, and tells you which variant is best.

Optimize can be deployed from Tag Manager and this guide assumes that you use **Google Tag Manager** (GTM) on your web site. If you wish to implement Google Optimize without having GTM on your site please check the [official documentation for further instructions here](#).

Google's recommendation is to add the so called page hiding snippet to your website. This makes the website invisible while the active experiment loads. We at Conversionista strongly encourage that you add this to your website to avoid any form of *flickering* (also sometimes called FOOC *flash of original content*).

We will cover how you implement page-hiding snippet further down in the white paper. More general information on the page-hiding snippet is to be found at [Google's official support section](#).

Prerequisites

In order to continue this guide you will need an account for the following tools:

- **Google Analytics**
- **Google Tag Manager**
- **Google Optimize**

Also have your Analytics tracking ID and your Optimize container ID at hand. They should look like this:

- [Analytics tracking \(property\) ID](#): UA-XXXXXXXX-X
- [Tag manager container ID](#): GTM-YYYYYY
- [Optimize container ID](#): GTM-ZZZZZZ

If you have trouble finding any of the IDs, click the links above to see the official documentation for each tool.

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DataLayer best practices

When working with the page template always use this method to check and interact with the `dataLayer`. This helps you to avoid a horrible mistake. The [official GTM documentation](#) [suggests](#) that the `dataLayer` should be declared before the GTM snippet is initialized. Like this:

```
<script>
dataLayer = [{
  'variable' : 'value'
}];
</script>
<!-- GTM Container Snippet -->
```

This is **not** the **best practice**. Having one declaration works fine but when there are several declarations on the page, the last assignment completely overwrites the current datalayer. Or in other words, every time you make this declaration you replace the old datalayer with a new empty one.

```
<script>
dataLayer = [{
  'variable' : 'value'
}];
</script>

<!-- Some other code... -->

<script>
dataLayer = [{
  'anotherVariable' : 'anotherValue'
}];
</script>

<!-- GTM Container Snippet -->
```

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NOTE

To avoid this you should **always use** the `push()` method to interact with the `dataLayer`.

```
window.dataLayer = window.dataLayer || [];  
window.dataLayer.push({  
  'var' : 'val'  
});
```

The first line checks if the global variable has been declared or not, if it has not the first line assigns a new empty array to it. This ensures that the following `push()` on line 2 always will work.

1. In the beginning of the page template always check whether the `dataLayer` has been defined or not or initialize it as a new Array if necessary
2. Always use the `push()` method when interacting with the `dataLayer`

For more in-depth information on this specific topic, please read [this blog post by Simo Ahava](#). Also, please read the [official Tag Manager documentation on how to avoid other common pitfalls](#).

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Code snippet placement best practises

Generally the code placement order should be as follows¹:

1. Any JavaScript (e.g. jQuery) that you wish to use in Optimize experiments. We recommend you keep these to a minimum.
2. Initialization of any variables needed for targeting (data layer, JavaScript, cookies, etc).
3. Page-hiding snippet.
4. Modified Analytics tracking code with Optimize plugin.
5. Tag Manager container snippet.
6. Other JavaScript, trackers, and ad tags.

The code examples further down in this guide follow these general recommendations² (by Google) on how to add code to your website.

1. The page-hiding snippet should be placed immediately before the modified Analytics tracking code (after the `<meta charset>` declarations).
2. Move your Google Analytics tracking code up to the `<head>`, if it's not already there. It should immediately follow the page-hiding snippet, if possible.
3. The following should come **before** the modified Analytics tracking code:
 - `<meta charset>`
 - Data layer initialization.
 - Setting cookies.
 - Any scripts that you may want to use or that declare JavaScript variables that you wish to use in Optimize experiments. For example, jQuery and JavaScript used to target an Optimize variant.
 - Page-hiding snippet
4. The following should come **after** the modified Analytics tracking code:
 - Other trackers, analytics tags, ad tags and/or tags deployed by a tag-management system.
 - Other scripts that you won't target Optimize experiments against.

¹ <https://support.google.com/360suite/optimize/answer/6262084#tagging-best-practices>

² <https://support.google.com/360suite/optimize/answer/6262084#tagging-best-practices>

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Page-Hiding Snippet Timeout

The Optimize page-hiding snippet supports the loading of your Optimize container asynchronously while hiding the page until the container is ready, ensuring that users don't see the initial page content prior to it being modified by an experiment. More [in-depth information on the page-hiding snippet is found here](#).

The timeout *default value* is set to **4000 milliseconds**, which might be too high since many users expect a website to load under two seconds and up to 40% of the users will abandon a page if it loads over 3 seconds³.

Check your Google Analytics what your [average page load time is](#). If you have trouble interpreting the results, please refer to the [official documentation](#). If your website's *Avg. Document Interactive Time* or *Avg. Document Content Loaded Time* are way over 2 seconds you have a site speed problem on your website.

To change the default amount, update the number passed at the end of the snippet. From a usability perspective **2000 ms** is a good start. If you know that you've worked on your website performance you can go lower than that.

```
<style>.async-hide { opacity: 0 !important} </style>
<script>(function(a,s,y,n,c,h,i,d,e){s.className+=' '+y;h.start=1*new
Date;
h.end=i=function(){s.className=s.className.replace(RegExp(' ?'+y),'');
(a[n]=a[n]||[]).hide=h;setTimeout(function(){i();h.end=null},c);h.timeou
t=c;
})(window,document.documentElement,'async-hide','dataLayer', 2000,
{'GTM-XXXXXX':true});</script>
```

³ Based on the feedback of over 1000 online shoppers that were surveyed by Forrester Consulting <https://www.hobo-web.co.uk/your-website-design-should-load-in-4-seconds/>

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Preferred method – native

To run Optimize experiments, you must add a modified version of your Google Analytics tracking code directly to your page. The Optimize plugin is a line of code added to Analytics that loads the specified Optimize container.

When you deploy Analytics tags through Tag Manager, it is still recommended that you install the Analytics tracking code with the Optimize plugin directly on the page (as opposed to deploying Optimize through a tag in GTM). You will modify the code so that it doesn't send any Analytics hits. **You do not have to modify your Analytics tags in Tag Manager.** Also you don't need any Optimize tag in Tag Manager.

Step 1 – Modify the Analytics tracking code

If your Google Analytics tags in Tag Manager have custom Analytics tracker settings, you must add the same customizations to the code, e.g. if you want to add cross domain tracking.

```
<script>(function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||
|function(){ (i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new
Date();a=s.createElement(o),m=s.getElementsByTagName(o)[0];a.async=1;a.s
rc=g;m.parentNode.insertBefore(a,m)})(window,document,'script','https://
www.google-analytics.com/analytics.js','ga');

    ga('create', 'UA-ZZZZZZZZ-Z', 'auto');
    ga('require', 'GTM-XXXXXX');
    /* No pageview is sent here, it's still done through GTM */

</script>
```

Where **UA-ZZZZZZZZ-Z** is your Google Analytics property ID and where **GTM-XXXXXX** is your Google Optimize container ID.

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[Step 2 – Add the page-hiding snippet](#)

While this is optional, it significantly reduces the risk of *page flicker* and helps provide a better user experience especially to users on slow connections. Experiment variants will be shown only when the Optimize container loads within a certain period of time (under two seconds in this example). Google have designed this snippet to be as performant as possible.

```
<style>.async-hide { opacity: 0 !important} </style>
<script>(function(a,s,y,n,c,h,i,d,e){s.className+=' '+y;h.start=1*new Date;
h.end=i=function(){s.className=s.className.replace(RegExp(' ?'+y), '');}
(a[n]=a[n]||[]).hide=h;setTimeout(function(){i();h.end=null},c);h.timeout=c;
})(window,document.documentElement,'async-hide','dataLayer', 2000,
{'GTM-XXXXXX':true});</script>
```

[Step 3 – Put it all together and add the code to your web pages](#)

Final step is to add it to your web pages. [Down below is an example](#) where everything is put together according to the latest recommendations by Google.

Placement order

This placement order follows the tagging best practices discussed in [Code snippet placement best practises](#) above.

1. Meta charset (UTF-8)
2. (jQuery and/or other JavaScript dependencies) – *Optional*
3. (dataLayer) – *Optional*
4. Google Optimize Page-hiding Snippet
5. Google Analytics with Google Optimize
6. Google Tag Manager (js)
7. Google Tag Manager (iframe)

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Example #1 - Preferred method

```
<!DOCTYPE html>
<html>
<head>
  <!-- (REQUIRED) Meta charset (UTF-8) encoding -->
  <meta charset="utf-8">

  <!-- (OPTIONAL) Move jQuery or any other JavaScript
        that you wish to use in the Optimize Experiments here -->

  <!-- (OPTIONAL) dataLayer declaration -->
  <script type="text/javascript">
    window.dataLayer = window.dataLayer || [];
    window.dataLayer.push({
      'someVariable' : 'someVale'
    });
  </script>

  <!-- (REQUIRED) Google Optimize page hiding snippet w. Optimize Container ID -->
  <style>.async-hide { opacity: 0 !important}</style>
  <script>
    (function(a,s,y,n,c,h,i,d,e){s.className+=' '+y;
    h.end=i=function(){s.className=s.className.replace(RegExp(' ?'+y),'');
    (a[n]=a[n]||[]).hide=h;setTimeout(function(){i();h.end=null},c);
    })(window,document.documentElement,'async-hide','dataLayer', 2000,{ 'GTM-XXXXXX':true});
  </script>

  <!-- (REQUIRED) Google Analytics + Optimize snippet -->
  <script>
    (function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||function(){
    (i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new Date();a=s.createElement(o),
    m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m.parentNode.insertBefore(a,m)
    })(window,document,'script','https://www.google-analytics.com/analytics.js','ga');
    ga('create', 'UA-ZZZZZZZZ-Z', 'auto');
    ga('require', 'GTM-XXXXXX');
    /* No pageview is sent here, it's done through GTM */
  </script>

  <!-- (REQUIRED) Google Tag Manager w. GTM Container ID -->
  <script type="text/javascript">
    (function(w,d,s,l,i){w[l]=w[l]||[];w[l].push({'gtm.start':
    new Date().getTime(),event:'gtm.js'});var f=d.getElementsByTagName(s)[0],
    j=d.createElement(s),dl=l!='dataLayer'?'&l='+l:'';j.async=true;j.src=
    '//www.googletagmanager.com/gtm.js?id='+i+dl;f.parentNode.insertBefore(j,f);
    })(window,document,'script','dataLayer','GTM-YYYYYY');
  </script>
  <!-- ... Other <meta> tags goes here ... -->
  <!-- ... & rest of your <head> content goes here ... -->
</head>
<body>
  <!-- (REQUIRED) Google Tag Manager (noscript) w. GTM Container ID ... -->
  <noscript><iframe src="//www.googletagmanager.com/ns.html?id=GTM-YYYYYY" height="0"
width="0" style="display:none;visibility:hidden"></iframe></noscript>
  <!-- ... Rest of your web page ... -->
</body>
</html>
```

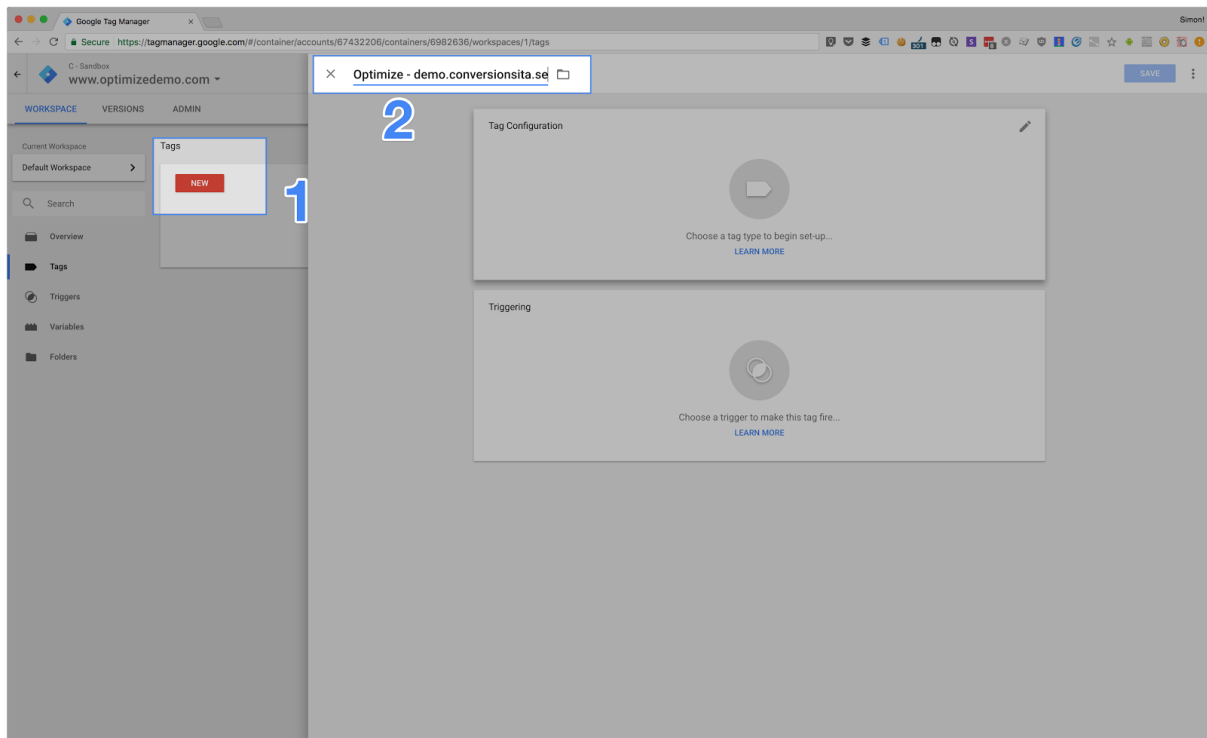
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Alternate method – via Google Tag Manager

When Optimize is served via Tag Manager, the GTM container must be loaded before the Optimize container. The result is that Optimize experiments only execute after both the Tag Manager and Optimize containers are loaded.

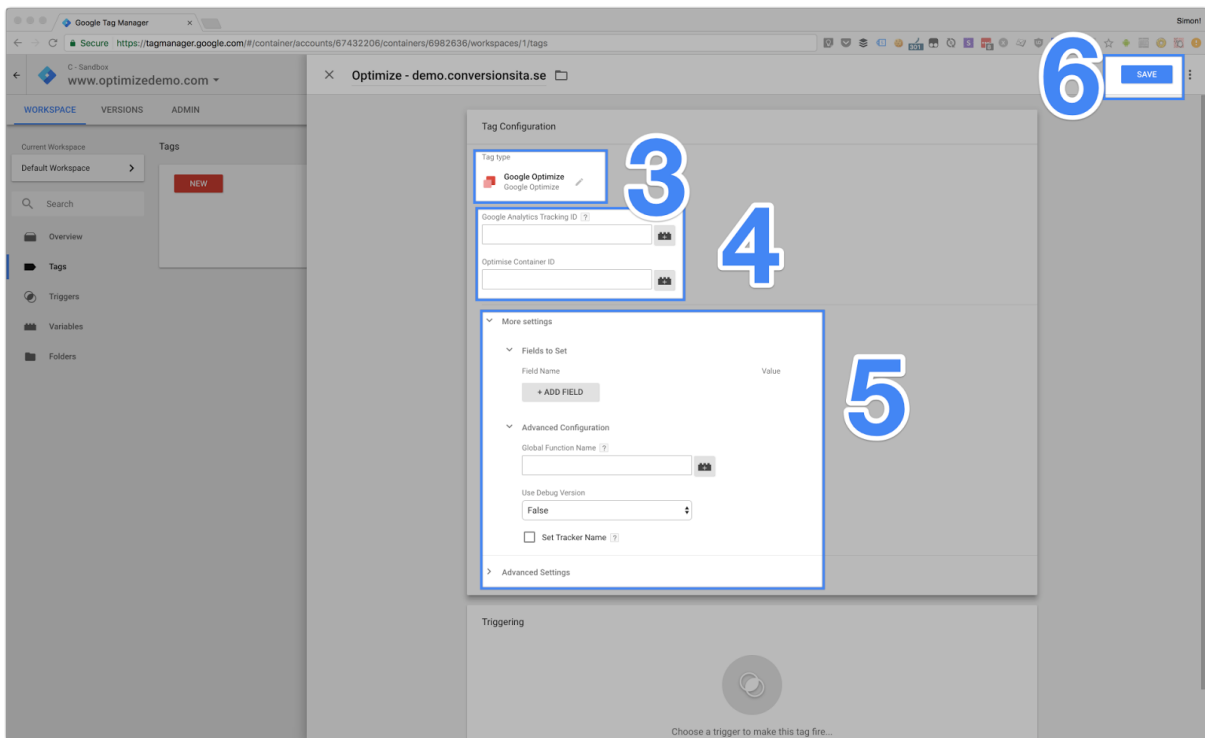
Step 1 – Configure the Optimize Tag in Tag Manager

Once you have the container IDs mentioned under prerequisites, follow the [Tag Setup Guide for Optimize in Google Tag Manager](#):



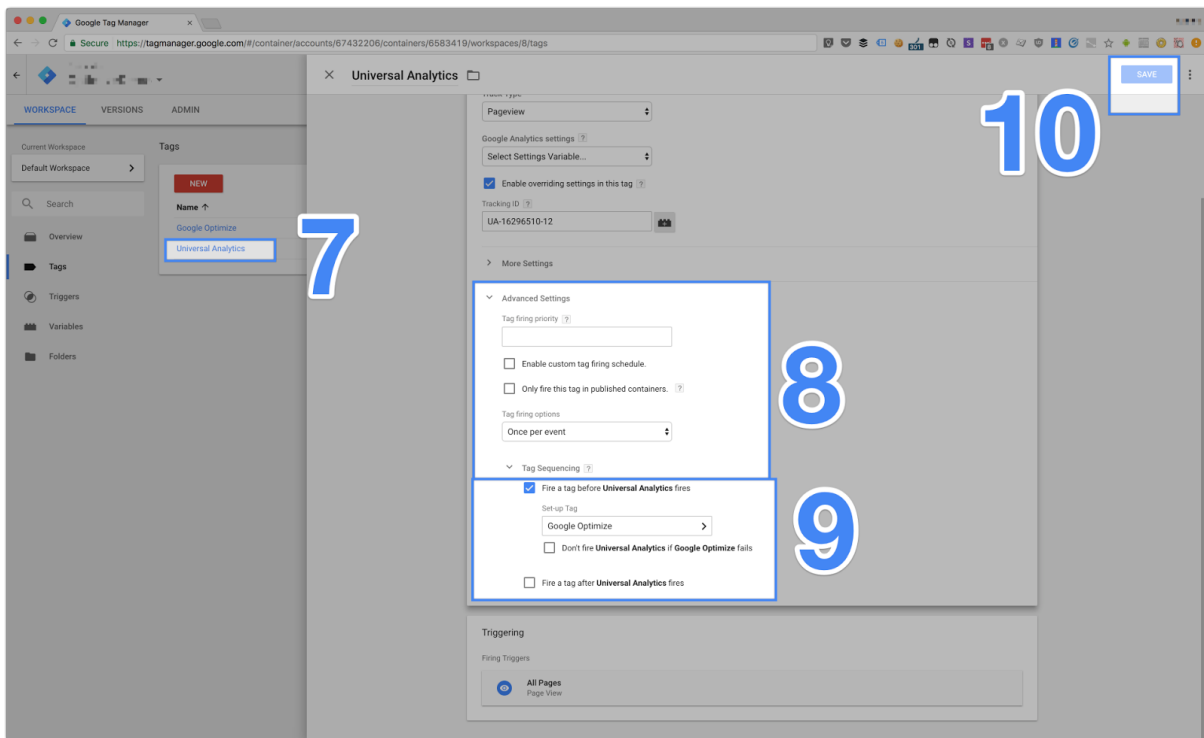
1. Click **Tags** → **New**.
2. Change the default name of "Untitled Tag" to a descriptive title, such as "Optimize - www.example.com"

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3. Click **Tag Configuration** → **Google Optimize**.
4. Enter your [Google Analytics Tracking ID](#) and your **Optimize container ID** (a.k.a. the Optimize snippet ID, available in the Optimize Container setup panel.)
5. Click **More settings**, and configure the **Fields to Set** and **Advanced Configuration** with the same values as your Google Analytics tags.
6. Click **Save**, and proceed to save the tag without triggers.

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7. Open any Google Analytics Page View tags that are being triggered on load of pages where you want the Google Optimize tag to be fired.
8. Click to edit the **Tag Configuration**, and open **Advanced Settings** → [Tag Sequencing](#).
9. Check the box to fire a tag before this tag fires, and select your Google Optimize tag as a “Setup Tag”.
10. Click to **Save** your Google Analytics Page View tag, and repeat on any other Google Analytics Page View tags as relevant. The goal is to fire Optimize on every page where you want to be able to run an experiment.

The above procedure makes sure that Optimize fires before any Page View tags, thus minimizing potential flickering or delay.

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[Step 2 – Add the page-hiding snippet](#)

While this is optional, it significantly reduces the risk of *page flicker* and helps provide a better user experience especially to users on slow connections. Experiment variants will be shown only when the Optimize container loads within a certain period of time (under two seconds in this example). Google have designed this snippet to be as performant as possible.

```
<style>.async-hide { opacity: 0 !important} </style>
<script>(function(a,s,y,n,c,h,i,d,e){s.className+=' '+y;h.start=1*new Date;
h.end=i=function(){s.className=s.className.replace(RegExp(' ?'+y),'')};
(a[n]=a[n]||[]).hide=h;setTimeout(function(){i();h.end=null},c);h.timeout=c;
})(window,document.documentElement,'async-hide','dataLayer', 2000,
{'GTM-XXXXXX':true});</script>
```

Step 3 – Put it all together and add the code to your web pages

Final step is to add it to your web pages. [Down below is an example](#) where everything is put together according to the latest recommendations by Google.

Placement order

This placement order follows the tagging best practices discussed in [code snippet placement best practises](#) above.

1. Meta charset (UTF-8)
2. (jQuery and/or other JavaScript dependencies) – *Optional*
3. (dataLayer) – *Optional*
4. Google Optimize Page-hiding Snippet
5. Google Tag Manager (js)
6. Google Tag Manager (iframe)

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Example #2 - Alternate method

```
<!DOCTYPE html>
<html>
<head>
  <!-- (REQUIRED) Meta charset (UTF-8) encoding -->
  <meta charset="utf-8">

  <!-- (OPTIONAL) Move jQuery or any other JavaScript
        that you wish to use in the Optimize Experiments here -->

  <!-- 2. (OPTIONAL) dataLayer declaration -->
  <script type="text/javascript">
    window.dataLayer = window.dataLayer || [];
    window.dataLayer.push({
      'someVariable' : 'someVale'
    });
  </script>

  <!-- (REQUIRED) Google Optimize page hiding snippet w. Optimize Container ID -->
  <style>.async-hide { opacity: 0 !important}</style>
  <script>
    (function(a,s,y,n,c,h,i,d,e){s.className+=' '+y;
    h.end=i=function(){s.className=s.className.replace(RegExp(' ?'+y),'')};
    (a[n]=a[n]||[]).hide=h;setTimeout(function(){i();h.end=null},c);
    })(window,document.documentElement,'async-hide','dataLayer', 2000,{'GTM-XXXXXX':true});
  </script>

  <!-- (REQUIRED) Google Tag Manager w. GTM Container ID -->
  <script type="text/javascript">
    (function(w,d,s,l,i){w[l]=w[l]||[];w[l].push({'gtm.start':
    new Date().getTime(),event:'gtm.js'});var f=d.getElementsByTagName(s)[0],
    j=d.createElement(s),dl=l!='dataLayer'?'&l='+l:'';j.async=true;j.src=
    '//www.googletagmanager.com/gtm.js?id='+i+dl;f.parentNode.insertBefore(j,f);
    })(window,document,'script','dataLayer','GTM-YYYYYY');
    /* Optimize & Google Analytics are triggered through GTM */
  </script>

  <!-- ... Other <meta> tags goes here ... -->
  <!-- ... & rest of your <head> content goes here ... -->

</head>
<body>
  <!-- (REQUIRED) Google Tag Manager (noscript) w. GTM Container ID ... -->
  <noscript>
    <iframe src="//www.googletagmanager.com/ns.html?id=GTM-YYYYYY"
    height="0" width="0" style="display:none;visibility:hidden"></iframe>
  </noscript>
  <!-- ... Rest of your web page ... -->
</body>
</html>
```

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Next step

When you have everything in place go ahead and create your first experiments. If you don't know where to start, check our blog post [3 things to start AB-testing](#).

Also, go ahead and read our [white paper on how to add custom objectives in Google Optimize](#).

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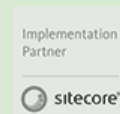
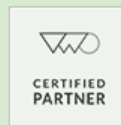
”We have come to Earth to save humans from bad conversion rates and websites that suck”



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hello@conversionista.se

+46 8 33 32 26

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